`dfg-crc` and reusable LaTeX packages
User guide and implementation

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About this manual

Start with Part I for the proposal and CV user guide. The implementation reference follows. Independent packages are documented in the final part, Part III: each package has a complete example file and output compiled independently of the proposal class.

The manual itself uses `dfg-crc`. Its class examples execute with the fictional metadata embedded in the DTX: source is shown beside the result, or above it for wide tables and plots. Independent package examples are compiled as their own standard-class documents and then included as PDFs.

Setup fragments, shell commands, and companion data files are shown as code. Complete proposal and CV examples follow the user guide, before the implementation reference; see Chapters 4 and 5.

“Documentation must be regarded as an integral part of the process of design and coding.”(Hoare 1973, p. 195)

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A Change history

Part I

The proposal and CV class

1 Shared commands and first steps

The dfg-crc class is a starting point for a Collaborative Research Centre proposal and the accompanying CV section. Authors write the proposal chapters and maintain structured records for people, institutions, projects, work packages, and funding. The class uses those records to create project headings, references, tables, collaboration plots, Gantt charts, and totals that stay consistent across the document.

The supplied files include a complete example proposal, example CV, and customization file. Start with the generated examples to see how the source files fit together, then replace their content and metadata with those of your own centre. This chapter introduces the commands reused throughout the proposal. Chapter 2 then follows the proposal itself; Chapter 3 collects the complete key and settings reference. Applicants should still compare the result with the current DFG forms and programme rules.

For independent use of the package components, begin with Part III. The class already loads them and supplies the proposal metadata adapters described in this part.

1.1 Compiling and generated files

The maintained source of this bundle is dfg-crc.dtx. Files such as local/dfg-crc.cls, README.md, and the example files in local/ are generated from that source. For template or documentation changes, edit the .dtx file and regenerate the derived files.

For a first local compile, use LuaLaTeX through latexmk:

First local compile

```
make files
cd local
latexmk -lualatex crc-proposal.tex
latexmk -lualatex crc-cv.tex
```

The class expects LuaLaTeX. Calling LaTeX with a capital L asks TeX for a format file named LaTeX.fmt; use lualatex or latexmk -lualatex instead.

If a change has no visible effect, check which generated class file is being loaded. Regenerate the class and local examples with make files, then compile the relevant example again.

To update a separately controlled proposal worktree, use make update-class TARGET_DIR=/path/to/proposal-worktree for the class alone. Use make update-all TARGET_DIR=/path/to/proposal-worktree to rebuild the manual and copy dfg-crc.cls, its module packages, dfg-crc.pdf, dfg-crc-proposal-example.pdf, and dfg-crc-cv-example.pdf. Both targets require the destination to be the root of another Git worktree and report the affected files without committing or pushing them. They leave the destination's README, changelog, and licence unchanged.

1.1.1 Automatic metadata caches

Ordinary and final builds automatically reuse raw metadata rows for repeated PI and project references and for generated tables. The project-leader table prefetches the person, project, institution, and affiliation rows before its repeated width measurements. Position and gender counts are retained for each requested funding phase, and PI surnames and initials are indexed for name disambiguation. These optimizations require no class option.

For predictable compile times, keep static metadata as plain text and apply presentation settings at the output location. Do not insert formatting macros such as \mbox, \textbf or \emph into IDs, person names or roles merely to control their appearance in a table. Use firstname={Verena} and configure alignment, emphasis and hyphenation in the table or reference formatting instead. Presentation macros in these fields can force the expensive original lookup on every use.

The caches check the stored database and column definitions before reuse; additions, edits, sorting, and locally scoped data changes are detected automatically. Field values remain unexpanded, so formatting, reference colors, first-name preferences, hyperlinks, and provenance tags follow the settings at the output location. Macro-valued names and roles use the original name-disambiguation scan. This fallback applies to the whole person database: even a formatting command such as `firstname={\mbox{Verena}}` disables the surname/initial index for every PI reference. Keep static names as plain text and control wrapping in the table layout instead. Nonliteral IDs, searches by other columns, and unsupported Datatool map readers use the original row lookup. Normal LaTeX reruns are still required when cross-references change.

1.2 How to read the examples

The examples use the same class commands as a proposal. In the template data, `per1` is Kim Sample, `per2` is Alex Example, and `A01` is their shared project. The manual has twelve PIs and fifteen active projects: `A01`–`A06`, `B01`–`B06`, and `Q01`–`Q03`. Research projects include both continuing and new projects; Q projects demonstrate service, research training, and administration. `A00` is a former, reference-only project and is excluded from active counts. Outputs are compiled from the displayed source.

Small examples place code beside its result; wide examples put the result below and allow it to continue onto another page. Headings inside live examples are unnumbered so they do not change the manual's outline. The complete shared metadata are listed once in Section 3.8. Finance examples show their additional input records at the point of use. Optional settings normally go immediately after the command, before its required arguments.

1.3 Declare records with `\addEntry`

Keep static field values as plain data wherever possible. In particular, IDs, person names and roles should contain no presentation macros; configure their typography in the output commands or table settings. Macro-valued identity fields can disable metadata indexes and substantially increase the runtime of every compilation pass; see the automatic-cache guidance above.

`\addEntry``[`⟨*key-set*⟩`]{`⟨*database*⟩`}{`⟨*key=value*⟩`}`

Adds an entry to the database ⟨*database*⟩ with the defined values from ⟨*key=value*⟩. An `id` is unique within its database. If a later call reuses the same `id`, the class issues a warning, removes all earlier rows with that `id`, and stores the later entry instead. The same `id` may still be used in a different database. Entries without an `id`, such as ordinary funding and staff rows, remain append-only.
See Example 1.1, Example 2.58.

A keyset defines the accepted fields; a database stores the resulting rows. Omit the optional keyset when it has the same name as the database, for example `\addEntry{person}{...}`. Give it explicitly for a separate collection, as below. Braces protect commas inside values. Use stable IDs rather than repeating names in the prose.

Example 1.1: Declare a record and retrieve its fields

```
\addEntry[person]{ManualContacts}{
  id        = {example-contact},
  firstname = {Kim},
  lastname  = {Sample}
}
\getEntry[ManualContacts]{example-
    contact}{firstname}\space
\getEntry[ManualContacts]{example-
    contact}{lastname}
```

Kim Sample

Store proposal records in `metadata/dfg-metadata.tex`, or in another metadata file loaded by the proposal. Tables share those records. The standard databases are `meta` (the CRC), `person`, `project`, `institution`, and `affiliation`; funding and staff tables use the named collections introduced with each table. Full field definitions are in Section 3.1.

1.4 Read, store, and compare fields

You can get any kind of information back from any database using `\getEntry`:

\getEntry[⟨*database*⟩]{⟨*value of id*⟩}{⟨*column*⟩}[⟨*alternative id-field*⟩]

Retrieve and typeset the value of ⟨*column*⟩ from the row whose id-cell equals ⟨*value of id*⟩. The optional ⟨*database*⟩ argument selects the `datatool` → CTAN database to query; it defaults to `\tmpLocalDB`, which is set by the surrounding context (typically by the table-generating command). The optional ⟨*alternative id-field*⟩ argument names the column that holds the row identifier and defaults to `id`; supply a different name when the row is keyed on something other than the standard id column (for example `ref-project-id` or `number`).

The retrieved value is wrapped in `\dfgShowTag` before being typeset, so when the `showtags` → P. 82 class option is active the output is annotated with a small overlay marker showing the originating database, id, and column. When the option is inactive, the value is typeset plain.

The command performs several checks and emits a warning to the log when something is wrong: a `database-name-not-given` warning if ⟨*database*⟩ is empty, a `database-not-found` warning if no database with the given name exists, and a `missing-key` warning if the row exists but the requested cell is empty or undefined. The last warning is suppressed during `tabularray` → CTAN's measuring phase to avoid duplicate log entries.

When the `fastcompile-project` class option is active, the lookup is skipped entirely. Project identifiers are typeset in bold black; other row identifiers use a quiet grey placeholder. Error diagnostics retain the configured `error` colour. Starred multi-field lookups initialise their destination macros to empty values without touching a database.

Examples:

Example 1.2: Field lookup and alternative identifier

```
\getEntry[person]{per9}{lastname}\
    par
\getEntry[project]{A06}{name}[number
    ]\par
\def\tmpLocalDB{person}
\getEntry{per9}{firstname}
```

Navarro
Modelling microbial resilience and recovery
Leonie

When several columns from the same row are needed, prefer the starred form `\getEntry*` → P. 5, which performs only a single row lookup.

See Example 1.2.

\getEntry* [⟨*database*⟩] {⟨*value of id*⟩} {⟨*assignments*⟩} [⟨*alternative id-field*⟩]

Starred variant of \getEntry. Retrieves multiple columns from the same row in a single lookup and assigns each value to the macro named on the left-hand side of the assignment. The ⟨*assignments*⟩ argument is a comma-separated list of ⟨*macro*⟩=⟨*column*⟩ pairs. For each pair, the value of ⟨*column*⟩ for the row whose id-cell equals ⟨*value of id*⟩ is stored in ⟨*macro*⟩. Unlike the unstarred form, this variant does not print anything and does not wrap results in \dfgShowTag – the caller is responsible for formatting the retrieved values.
Missing fields trigger the same missing-key warning as the unstarred form (suppressed during tabularray's measuring phase).

Example:

Example 1.3: Retrieve several fields at once

```
\getEntry*[person]{per8}{
  \exampleFirst = firstname,
  \exampleLast = lastname,
  \exampleDegree = academicdegree
}
\exampleDegree\space
\exampleFirst\space\exampleLast
```

Prof. Dr. rer. nat. Alexis-Marie Winters-Scholz

This is preferable over multiple \getEntry calls when several fields from the same row are needed: the row is located once instead of once per field.
See Example 1.3.

\tmpLocalDB {⟨*database*⟩}

Define the database locally (e.g. within a group) so you don't need to repeat it as [⟨*database*⟩] for e.g. \getEntry → P. 4.
See Example 1.2.

\compareEntry [⟨*database*⟩] {⟨*id*⟩} {⟨*field*⟩} {⟨*value*⟩} {⟨*true*⟩} {⟨*false*⟩}

Compare an entry with the ⟨*id*⟩ of ⟨*database*⟩ against ⟨*value*⟩ and show either ⟨*true*⟩ or ⟨*false*⟩.
See Example 1.4, Example 1.5.

For example, compare the surname of per6 against an expected value.

Example 1.4: Compare a database entry against something.

```
\compareEntry[person]{per6}{lastname}{
    Hartmann}
  {The surname matches.}{The surname
    differs.}
```

The surname matches.

The next example prints an affiliation only when the institution refers to it.

Example 1.5: Conditionally print an affiliation

```
\compareEntry[institution]{ins3}{ref-
    affiliation-id}{aff3}
  {\getEntry[affiliation]{aff3}{name}}
  {Another university}
```

Northbridge University

1.5 Follow references between records

A ref-institution-id value links a person to institutions; each institution's ref-affiliation-id links it to a university or other parent organisation. Use one brace argument per step, ending with the field to print. Multiple IDs are followed automatically, so prose stays correct when affiliations change.

\get [⟨*database*⟩] {⟨*id*⟩} {⟨*field or reference*⟩} …

Read a field directly, or follow metadata references before reading the final field. Each intermediate argument names a destination database and follows the current row's ref-<database>-id field. The source database defaults to \tmpLocalDB. No institution or affiliation ID needs to be repeated in the document text.

Example 1.6: Follow metadata references

```
\get[person]{per7}{lastname}\par
\get[person]{per7}{institution}{name
    }\par
\get[person]{per7}{institution}{
    affiliation}{name}\par
\get[project]{B04}{person}{lastname
    }\par
\get[RequestedFundingStaff]{per6}{
    person}[ref-person-id]{
    institution}{name}
```

Lindberg
Centre for Computational Microbiology,
Department of Experimental Immunology
Northbridge University
Miller, Sato
Centre for Computational Microbiology

The full reference-key spelling also works: \get[person]{MM}{ref-institution-id}{ref-affiliation-id}{name}. Traversal is generic: a ref-other-unit-id field points to rows of the other-unit database. The source may be any database populated by \addEntry → P. 3, including one using a separately named keyset. Each destination is matched by its id field. The lookup follows only the explicitly requested path; an affiliation reached through an institution therefore needs both steps.

A reference value may contain multiple comma-separated IDs. All branches are followed in stored order, and the resulting values are separated by commas. Repeated destination rows are printed once, in first-occurrence order. For example, two institutions of one university yield two institution names but only one affiliation name when the path ends at that university. Different rows with the same name are still distinct results.

Missing databases, rows, fields, and empty reference lists use the existing lookup warnings and contribute no value; valid branches still render without dangling separators. The final value retains its LaTeX formatting and the showtags → P. 82 annotation identifies the destination row and field. Focused fast compilation consumes the path but prints the source ID placeholder, just like \getEntry → P. 4.

With no following step, a full reference key returns its raw ID list: \get[person]{MM}{ref-institution-id}. An existing scalar field takes precedence over a shorthand relation name, so a following prose group is not absorbed. Use the explicit ref-<database>-id spelling if the names conflict. For a custom source identifier column, append the existing [id-field] argument after the first field/reference argument; destination rows still use id. The starred \get* form delegates to \getEntry* → P. 5 for assignments and does not traverse references. See Example 1.6, Example 1.7.

Two institution IDs may lead to the same affiliation. The final destination is printed once, so this also works when a person's metadata changes later.

Example 1.7: Raw reference IDs and resolved organisation names

```
IDs: \get[person]{per7}{ref-
    institution-id}\par
Institutions: \get[person]{per7}{
    institution}{name}\par
Affiliation:
\get[person]{per7}{institution}{
    affiliation}{name}
```

IDs: ins3,ins4
Institutions: Centre for Computational Microbiology, Department of Experimental Immunology
Affiliation: Northbridge University

A lookup may branch at several steps: from a project to its PIs, then to their institutions and affiliations. Shared affiliations are still deduplicated.

Example 1.8: Find the affiliations behind a project

```
\getProject*{B04}\par
PIs: \get[project]{B04}{person}{
    lastname}\par
Affiliations:
\get[project]{B04}{person}{institution
    }{affiliation}{name}
```

B04
PIs: Miller, Sato
Affiliations: Partner University, Westhaven Research Centre

1.6 Names and references in prose

To quickly get a name of a person there is a dedicated command:

\getName{⟨*<id>*⟩}

Get last name of person that has the ⟨*id*⟩. This sets the database to `person`.
See Example 1.9.

\getFullName*{⟨*id*⟩}
\getFullName{⟨*id*⟩}

Get the full name of the person with the ⟨*id*⟩. The starred version adds the academic title in front.
See Example 1.9.

Example 1.9: Names with and without academic titles

```
\getName{per9}\par
\getFullName{per9}\par
\getFullName*{per9}
```

Navarro
Leonie Navarro
Prof. Dr. rer. nat. Leonie Navarro

PI and project commands also have all-lowercase aliases, with identical arguments, starred forms, formatting, and links. For example, `\getpiwithproject{per6}` is equivalent to `\getPIWithProject{per6}`, and `\getpiofproject*{B05}` is equivalent to `\getPIofProject*{B05}`. This also applies to `\getPI`, `\getPIsWithRole`, `\getProject`, `\getProjectColor`, `\getProjectCount`, `\getProjectWithPI`, `\getPIOfProjectWithProject`, and the legacy commands `\getPIProject` and `\getProjectPI`. Legacy aliases share the same once-per-command, per-LaTeX-run deprecation warning as their canonical spelling. The mixed spellings `\getPIwithProject`, `\getProjectwithPI`, and `\getPIOfProject` are accepted as well. Other capitalizations remain case-sensitive in TeX.

\getPI*{⟨*id-list*⟩}
\getPI{⟨*id-list*⟩}

\getPI { ⟨*id-list*⟩ } [⟨*text*⟩]

Reference one or multiple PIs from the person database. The ⟨*id-list*⟩ is a comma-separated list of person ids. By default the command prints the lastname; the starred version also prints the firstname. If multiple PI records share a lastname, unstarred references automatically add the first given-name initial. For example, PI records for Kai Markus Schneider and Carolin V. Schneider are printed as **K. Schneider** and **C. Schneider**. If the initial is also shared, the full firstname is used instead. The comparison includes all records with role PI or Co-PI, independently of funding period or project selection. Project-first references inherit this distinction, for example **A04 (K. Schneider)** and **B09 (C. Schneider)**. With the optional ⟨*text*⟩ argument, ⟨*text*⟩ is printed instead, but the hyperlink still points to the PI. Set PIReferenceFirstName=true with \changeSettings → P. 11 to make the unstarred command include the firstname too. The starred form always includes it. This setting also applies to \getPIProject → P. 9 and \getPIofProject → P. 10. \getProjectPI → P. 10 keeps project PI names to lastnames with automatic disambiguation unless its starred form is used. Shared PI surnames use the initial rule even with PIReferenceFirstName=true; use the star to force full firstnames. Explicit display text bypasses automatic disambiguation. Fast project compilation retains the usual ID placeholder without reading the database.

The printed name is typeset bold, coloured with referencePI, and linked to the corresponding person's row in \printTable{ProjectLeaders}. Each row of that table provides the destination pi:⟨*id*⟩.

See Example 1.10.

Example 1.10: Reference one or multiple PIs.

```
\getPI{per6}\par
\getPI*{per6,per8}\par
\getPI{spokesperson}[the spokesperson]
```

Hartmann
Samira Hartmann and **Alexis-Marie Winters-Scholz**
the spokesperson

\getProject* { ⟨*id-list*⟩ } [⟨*text*⟩]

Reference one or multiple projects from the project database. The ⟨*id-list*⟩ is a comma-separated list of project ids. By default the command prints the project number; with the optional ⟨*text*⟩ argument, ⟨*text*⟩ is printed instead, but the hyperlink still points to the project. In CV mode the command prints the same text without a hyperlink. The starred form always uses this compact project-only representation, independently of projectPIOncePerSection → P. 84 and its first-reference state. Projects declared with reference-only → P. 71=true are never hyperlinked; instead, "former project" is appended to make the missing project section explicit. The printed project reference is typeset bold and coloured according to the first letter of the project id. Multiple project references are joined as a natural-language list with commas and a final "and". With projectPIOncePerSection → P. 84=true, the command behaves like the unstarred \getProjectPI → P. 10: the first reference to each project in a section includes its PIs and later references use the compact project form. Generated tables and lists remain compact.

See Example 1.11.

Example 1.11: Reference one or multiple projects.

```
\changeSettings{
    projectPIOncePerSection=false}
\getProject{A03,B04,Q01}\par
\getProject{A06}[the modelling project
    ]\par
\getProject*{A00}
```

A03, **B04**, and **Q01**
the modelling project
A00 (former project)

\getProjectCount [⟨*area*⟩]

Print the number of active projects. A project is active when its `project-status` →P. 71 is `C` or `N` and `consider-for-lists` →P. 71 is `true` and `reference-only` →P. 71 is `false`. With no optional argument all active projects are counted. Any explicit `project-area` →P. 71 value may be supplied to restrict the result; where that metadata is absent, the first character of the project ID is used. All area totals are computed together on first use and cached for subsequent calls.
See Example 1.12.

Example 1.12: Count active projects.

```
All: \getProjectCount\par
Area A: \getProjectCount[A]\par
Area B: \getProjectCount[B]\par
Area Q: \getProjectCount[Q]
```

All: 15
Area A: 6
Area B: 6
Area Q: 3

\CRC{⟨*crc-number*⟩}
\CRC*{⟨*crc-number*⟩}
\CRC*[⟨*crc-title*⟩]{⟨*crc-number*⟩}

Print a CRC reference. For the current CRC, identified by the `number` →P. 80 field of the `meta` entry with id `crc`, the unstarred command prints the short form stored in `\thisCRC`; the starred command prints the long form with the CRC title.
For a different CRC number, the unstarred command prints only the short reference, while the starred form prints a long reference. If ⟨*crc-title*⟩ is given, it is used as the title of the external CRC; otherwise the command falls back to the CRC number.
See Example 1.13.

\TRR{⟨*trr-number*⟩}
\TRR*{⟨*trr-number*⟩}
\TRR*[⟨*trr-title*⟩]{⟨*trr-number*⟩}

Print a CRC/TRR reference. The command follows the same rules as `\CRC`, but uses "CRC/TRR" as the printed programme type. A line break is permitted after the slash; the TRR abbreviation and programme number remain together.
See Example 1.13.

Example 1.13: Reference current and external CRCs.

```
\CRC{9999}\par
\CRC*{9999}\par
\CRC*[External CRC title]{999}\par
\TRR*[External CRC/TRR title]{999}
```

CRC 9999
CRC 9999 *Mechanisms of Host–Microbiome Communication*
CRC 999 *External CRC title*
CRC/TRR 999 *External CRC/TRR title*

\getPIProject*{⟨*person-id-list*⟩}
\getPIProject{⟨*person-id-list*⟩}

Print one or multiple PIs together with their assigned projects. The ⟨*person-id-list*⟩ is a comma-separated list of ids from the `person` database. For each PI, the command reads `ref-project-id` → P. 80 from the person entry and prints the referenced project identifiers in parentheses using `\getProject*`, without repeating the projects' PI names.
The starred version prints firstnames in addition to lastnames.
See Example 1.14.

Example 1.14: Print PIs with their projects.

```
\changeSettings{
    projectPIOncePerSection=false}
\getPIProject{per6,per11}\par\medskip
\getPIProject*{per6,per11}
```

Hartmann (**A02** / **A03**) and **Sato** (**B03** / **B04**)

Samira Hartmann (**A02** / **A03**) and **Mira Sato** (**B03** / **B04**)

Use `\getPIWithProject` for the same person-first output. It takes person ids and prints each PI followed by their project list. The legacy `\getPIProject` remains available but warns that it is deprecated.

\getProjectPI* { ⟨*project-id-list*⟩ }
\getProjectPI { ⟨*project-id-list*⟩ }

Print one or multiple projects together with their assigned PIs. The ⟨*project-id-list*⟩ is a comma-separated list of ids from the `project` database. For each project, the command reads `ref-person-id` → P. 67 from the project entry and prints the referenced PIs in parentheses using `\getPI` → P. 7.
If a project id is identical to the current project established by `\printProjectHead` → P. 43, only the project itself is printed, just as with `\getProject` → P. 8; its PIs are omitted. In a list containing several projects, this exception applies only to the matching project.
By default, PI names are shown only for the first `\getProject` → P. 8 or `\getProjectPI` reference to each project within a section. Both commands share the same remembered state, and a new section resets it. Generated tables and lists remain compact. Set `projectPIOncePerSection` → P. 84`=false` with `\changeSettings` → P. 11 to make `\getProject` → P. 8 always compact and `\getProjectPI` always expanded.
The starred version prints firstnames in addition to lastnames.
See Example 1.15.

Example 1.15: Print projects with their PIs.

```
\changeSettings{
    projectPIOncePerSection=false}
\getProjectPI{A03,B04}\par\medskip
\getProjectPI*{A03,B04}
```

A03 (**Hartmann** / **Lindberg**) and **B04** (**Miller** / **Sato**)

A03 (**Samira Hartmann** / **Noah Lindberg**) and **B04** (**Kimmi Miller** / **Mira Sato**)

Use `\getProjectWithPI` for the same project-first output. It takes project ids and prints each project followed by its PI list. The legacy `\getProjectPI` remains available but warns that it is deprecated.

\getPIOfProjectWithProject* { ⟨*project-id-list*⟩ }

Print the PIs of one or more projects, followed by each project's compact reference in parentheses. The argument is a comma-separated list of project ids, matching the project named after "OfProject" in the command. The starred form includes firstnames; the `PIReferenceFirstName=true` setting also enables firstnames in the unstarred form.

\getPIofProject* [⟨*properties*⟩] { ⟨*project-id*⟩ } [⟨*delimiter*⟩]

Print the PIs assigned to a project. The command reads `ref-person-id` → P. 67 from the

project entry and then prints selected person fields from the `person` database. Each name links to its row in the PI table and uses the same reference styling as `\getPI` → P. 7. The optional ⟨*properties*⟩ argument is a comma-separated list of fields to print and defaults to `lastname`. Typical values are `academicdegree`, `firstname`, and `lastname`. The optional ⟨*delimiter*⟩ separates multiple PIs and defaults to `\,` / `\,`.
The starred form defaults to `firstname,lastname` and joins names as "Alice Example, Bob Sample and Carol Demo". With two PIs it uses only "and"; with one PI it adds no separator. Explicit properties still override the default. In the starred form, an explicit trailing delimiter replaces only the final "and" separator; earlier names remain comma-separated.
See Example 1.16.

Example 1.16: Print the PIs of a project.

```
\getPIofProject{B05}\par
\getPIofProject[firstname,lastname]{B
    05}[; ]\par
\getPIofProject*{Q02}\par
\getPIofProject*{Q03}\par
\getPIofProject*[lastname]{Q03}
```

Redata / Keller
Friedhelm Redata; **Robin Keller**
Friedhelm Redata and **Leonie Navarro**
Hansi Meier and **Robin Keller**
Meier and **Keller**

1.7 Change shared settings

`\changeSettings``{`⟨*key=value*⟩`}`

Customize fonts, logo paths, colors, `thumbindex` → P. 87, and other class defaults. The former `\changeSetting` spelling remains available as a compatibility alias.
See Example 1.17.

Put proposal-wide settings in `preamble/dfg-customization.tex`. For example, `\changeSettings{salary@PhD=83700}` sets the annual salary used in funding calculations. Table, list, and plot options apply to a single call; shared settings establish defaults. The full list is in Section 3.2.

`\getValue``{`⟨*customization key*⟩`}`

Read the current value of any key accepted by `\changeSettings`. The command is expandable and follows local changes, so numeric values can also be used in `\num` and calculations. For example:

Using customization values in text

```
Housing costs are \num{\getValue{animalHousing@mouse}}\,EUR per mouse per ⤸
    ⤹week.
The annual postdoctoral rate is \num{\getValue{salary@postDoc}}\,EUR.
The configured font is \getValue{font}.
Thumb index enabled: \getValue{thumbindex}.
The reference color is \getValue{color@reference@PI}.
```

These examples read the configured values without changing them. With no override, `animalHousing@mouse` returns `0.75`; the getter uses the same stored rate as the animal-housing table. It returns a value without a currency or unit suffix; add those in the surrounding text.
Booleans return `true` or `false`; dimensions return points. Automatic thumb-index margins return `auto`, and orientation returns `inwards` or `outwards`. Text and formatting values retain their LaTeX commands. The compatibility keys `biblatexstyle` and `biblatexstyleFeature` read the current document mode's CV or proposal setting. Leading and trailing spaces around a key are ignored; unknown keys raise an error. This interface

covers customization keys, not arbitrary commands or packages defined in the customization file.

dfgLocation=⟨*text*⟩
dfgDate=⟨*text*⟩
dfgTitle=⟨*text*⟩
InfoTeX=⟨*text*⟩

Override the matching public commands through `\changeSettings`, including from `preamble/dfg-customization.tex`. The defaults are `<Location>`, `<date>`, the quoted CRC name from metadata, and `LuaLaTeX (via Overleaf).`, respectively. The first three commands append `\xspace`; `InfoTeX` prints its value exactly. Values are stored without expansion, so references and formatting can be used in them. No fixed submission date is supplied. See Example 1.17.

Example 1.17: Set proposal text in the customization file

```
\changeSettings{
  dfgLocation = {Example City},
  dfgDate     = {30 September 2026},
  dfgTitle    = {Collaborative
    research programme},
  InfoTeX     = {LuaLaTeX, local build}
}
\dfgTitle\par
\dfgLocation, \dfgDate\par
\InfoTeX
```

Collaborative research programme
Example City, 30 September 2026
LuaLaTeX, local build

These macros already exist when the customization file is read, so direct overrides with `\renewcommand` work there too. For the three space-aware commands, include `\xspace` yourself when using `\renewcommand`. Definitions supplied before loading the class are preserved until explicitly overridden. If both interfaces assign a value, the last assignment wins.

1.8 Tables, lists, and plots: one calling convention

The dispatcher selects a named output and passes its arguments to it. Put settings in the leading square brackets. A simple target needs one pair of braces; a target with arguments uses an outer pair around the entire sequence: `\printTable{ProjectLeaders}`, `\printTable{{Projects}{A}{Area title}}`. The following chapter introduces each built-in target beside its result.

\printTable[⟨*options*⟩]{⟨*name*⟩}

Print one of the predefined template tables. The ⟨*name*⟩ is the table base name without the suffix `Table`; for example `ProjectLeaders` calls `\ProjectLeadersTable`. If ⟨*name*⟩ is a braced list, the first item is used as the table base name and the remaining items are passed as arguments to that table command. The gap above a table follows the normal subsection-to-text gap by default. The class derives `\dfgTablePreSep` from the final document fonts and paragraph spacing at the beginning of the document. A nonnegative value set in the customization file or preamble overrides this default; for example, `\setlength{\dfgTablePreSep}{12pt}` selects a fixed common gap. It applies after headings and paragraphs, including the requested-funding staff roster and the `FundingDirectCostsTable` → P. 60 breakdowns. Long tables receive the length through their `presep` option. Put options before the table specification. For example, `\printTable[all-sexes]{GenderEqualityProjectLeaders}` selects the expanded gender overview for that call only. The shared `note={text}` option adds a footnote-sized “Note:” below the table. For example:
`\printTable[note={Additional information.}]{{RequestedFunding}{A01}}`

On a multi-page table the note appears once, below its last part. Existing table notes are retained; text is appended to an existing “Note” remark, or a new “Note:” is added after other remarks. The fixed “Figures in EUR.” notice always ends with a full stop. Empty or whitespace-only notes add no text or space. Formatting, citations, commas inside braces, paragraph breaks, and `\footnote` are supported. With `theme=main`, wrapped remarks, including these notes, have no hanging indent: second and later lines start at the left edge of the remark. Footnotes retain their text and hyperlinks in the normal page footer; no surrounding environment is required. Combine the note with target-specific options in the same brackets, for example `[all-sexes,note={Additional information.}]` or `[MyStaffDatabase,note={Additional information.}]`. The note applies only to this call. A skipped table or a no-data message receives no orphan note. For staff rosters it appears before the institution legend and job descriptions. The command inserts `\par` before and after its output, so surrounding text always starts in separate paragraphs, even without blank source lines. Directly after a heading, it also inserts a zero-size rule and a no-break penalty to prevent overlap at a page break. The rule adds no interline gap, so the spacing is controlled by `\dfgTablePreSep`. Do not insert a manual `\null` before `\printTable`: it would add another interline gap.
See Example 2.6, Example 2.58, Example 2.33.

`\printList``[`⟨*options*⟩`]{`⟨*name*⟩`}`

Print one of the predefined template lists. The ⟨*name*⟩ is the list base name without the suffix `List`; for example `ParticipatingInstitutions` calls `\ParticipatingInstitutionsList`. The optional ⟨*options*⟩ are passed to the generated list command. Put sorting, formatting, database, and raster settings together in this leading option list, as with `\printPlot`. Both `{ParticipatingInstitutions}` and `{{ParticipatingInstitutions}}` are accepted as the list specification. Older trailing options remain supported, with leading settings taking precedence. A person’s institutions use `\printList{{Institutions}{per1}}`; that form needs the person ID, while `\printList{ParticipatingInstitutions}` lists participating institutions across the proposal, with affiliation names in bold.
See Example 2.7, Example 2.9, Example 2.17.

`\printPlot` uses the same convention: `\printPlot[options]{{type}{project-id}}`. Within a project, omit the ID to use that project. The complete option and result examples follow the work-package declarations in Section 2.4.5.

2 Build the proposal in order

Follow the generated proposal from the title page through general information, finances, individual projects, bylaws, declarations, and back matter. Each output example pairs its source with its result. All sixteen built-in table targets, all three lists, and both plot types appear at their point of use. The shared metadata are documented once in Section 3.8; table-specific records are shown directly before their printing command.

2.1 Title page and applicant universities

\dfgApplicantAffiliationsTF { ⟨*singular*⟩ } { ⟨*plural*⟩ }

Use ⟨*singular*⟩ when `meta.ref-affiliation-id` contains one applicant affiliation and ⟨*plural*⟩ when it contains several. The title page, applicant-university section heading, bylaws, and declarations use this helper for their grammar. `\theCRCaffiliation` and `\theCRCaffiliationLocation` contain the complete human-readable name and location lists. The first id is the coordinating university and is exposed as `\theCRCCoordinatingAffiliation`; any remaining ids are exposed as `\theCRCOtherApplicantAffiliations`, matching the two separate fields on the DFG title page.
See Example 2.1.

Example 2.1: Choose applicant wording from metadata

```
\dfgApplicantAffiliationsTF
  {Applicant university:}
  {Applicant universities:}
\theCRCaffiliation.
```

Applicant university: Example University.

\crcLogo [⟨*graphics-options*⟩]

Print the CRC logo. The optional ⟨*graphics-options*⟩ are passed to `\includegraphics`. The actual file is configured with `crcLogoPath` → P. 83 through `\changeSettings` and remains available as `\crcLogoPath`.
See Example 2.3.

\affiliationLogo [⟨*graphics-options*⟩]

Print the affiliation logo. The optional ⟨*graphics-options*⟩ are passed to `\includegraphics`. The actual file is configured with `affiliationLogoPath` → P. 83 through `\changeSettings` and remains available as `\affiliationLogoPath`.
See Example 2.3.

\Hrule [⟨*key=value*⟩]

Print a configurable horizontal rule. The available keys are `color`, `above`, `below`, and `thickness`.
See Example 2.2.

Example 2.2: A horizontal rule with custom spacing

```
Scientific objectives
\Hrule[color=blue,thickness=.6pt,above
    =4pt,below=6pt]
Experimental approach
```

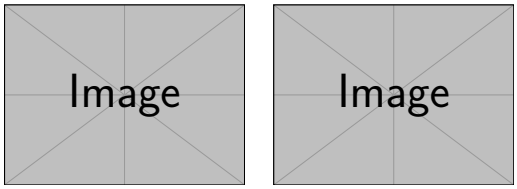
Scientific objectives

Experimental approach

Use your own logo files in a proposal. This example substitutes the bundled placeholder image so the size options can be tried without external files.

Example 2.3: Configure and print the title-page logos

```
\changeSettings{
  crcLogoPath=example-image,
  affiliationLogoPath=example-image
}
\crcLogo[width=.4\linewidth]\quad
\affiliationLogo[width=.4\linewidth]
```



2.2 General information

2.2.1 Key data: governing bodies and contact details

`\getPersonInformation` [⟨*database*⟩] {⟨*person-id-list*⟩}

Print full PI contact details, including institutions and contact fields. The database defaults to `person`. Use explicit person IDs for a selected pair; use `\getPIsWithRole` below to select people by their metadata role. In project heads, one PI occupies a full-width one-column raster and several PIs occupy a two-column raster. Both use the same raster alignment and spacing below the “Project leader(s)” heading; the number of PIs does not tighten that gap.
See Example 2.4.

Example 2.4: Contact details for two selected PIs

```
\getPersonInformation[person]{per1,per2}
```

Kim Sample, Prof. Dr. rer. nat.
0000-0000-0000-0001
Institute of Microbial Systems Medicine
Example University
University Avenue 1, 12345 Example City
(Germany)

Department of Translational Biosciences
Partner University
Research Road 2, 54321 Partner City
(Germany)
+49 000 100-1000
kim.sample@example.org

Alex Example, Prof. Dr. phil.
0000-0000-0000-0002
Department of Translational Biosciences
Partner University
Research Road 2, 54321 Partner City
(Germany)
+49 000 200-2000
alex.example@example.org

`\getPIsWithRole` [⟨*options*⟩] {⟨*role*⟩}

Print persons with the given ⟨*role*⟩ in PI boxes. Put all options before the role, for example `database=person,raster columns=2`. The database defaults to `person`. Only persons belonging to the current funding period are shown. The default three-column raster has a 12 pt column gap. Rows of boxes and the content after the raster are separated by 20 pt. Raster settings in ⟨*options*⟩ are passed to the underlying `tcolorbox` CTAN raster and may override those defaults. Use `academicdegree-below` to place the academic degree on a separate line below the name, inside the same PI-box title. This applies only to the current call; omitting the option or setting `academicdegree-below=false` keeps the degree inline after the name. For example: `\getPIsWithRole[academicdegree-below]{steering-committee-member}`. The contact markers in each PI box are controlled globally with `\changeSettings{PIcontactStyle=icons}` (the default), `PIcontactStyle=text` for the labels “Phone:” and “E-Mail:”, or `PIcontactStyle=none` to suppress both markers.

Older calls with a bare database name or trailing raster options remain supported; leading settings take precedence over trailing settings.
In both this raster and the two-column raster of `\getPersonInformation`, titles are ragged right and top-aligned. Each title reserves the height of the tallest title in its raster, keeping the contact information aligned when names or academic degrees wrap. Equal-height groups settle over successive LaTeX runs; a clean build can require three passes. Phone and email each remain unbroken, but their one-em separating space permits a line break when both contacts do not fit on the same line.
See Example 2.5.

Example 2.5: Print all PIs with a given role.

```
\getPIsWithRole[raster columns=2]{steering-committee-member}
```

Alex Example, Prof. Dr. phil.
0000-0000-0000-0002
Department of Translational Biosciences
Partner University
Research Road 2, 54321 Partner City
(Germany)
+49 000 200-2000
alex.example@example.org

Samira Hartmann, Prof. Dr. rer. nat.
0000-0000-0000-0016
Centre for Computational Microbiology
Northbridge University
Science Avenue 3, 34567 Northbridge
(Germany)
+49 000 300-0006
samira@example.org

Hansi Meier, Dr. rer. nat.
0000-0000-0000-0003
Department of Translational Biosciences
Partner University
Research Road 2, 54321 Partner City
(Germany)
+49 000 200-3000
hansi.meier@example.org

Friedhelm Redata, Prof. Dr.-Ing.
0000-0000-0000-0005
Institute of Microbial Systems Medicine
Example University
University Avenue 1, 12345 Example City
(Germany)
+49 000 100-5000
friedhelm.redata@example.org

Morgan Sample, Prof. Dr. med.
0000-0000-0000-0006
Institute of Microbial Systems Medicine
Example University
University Avenue 1, 12345 Example City
(Germany)
+49 000 100-6000
morgan.sample@example.org

2.2.2 Project leaders

The table resolves each PI's institutions and affiliations from the shared metadata (Section 3.8). Declare those records once; changing a name or institution then updates every table and reference.

Example 2.6: Project leaders and their affiliations

```
\printTable{ProjectLeaders}
```

Project leader	Doctorate obtained in		Home institution, location	Project(s)
Example, Alex Prof. Dr. phil.	m	1999	Department of Translational Biosciences Partner University Research Road 2, 54321 Partner City (Germany)	**A01** **B01** **Q01**
Hartmann, Samira Prof. Dr. rer. nat.	f	2010	Centre for Computational Microbiology Northbridge University Science Avenue 3, 34567 Northbridge (Germany)	**A02** **A03**
Keller, Robin Prof. Dr. rer. nat.	d	2010	Institute of Microbial Systems Medicine Example University University Avenue 1, 12345 Example City (Germany) Centre for Clinical Translation Westhaven Research Centre Science Avenue 3, 34567 Westhaven (Germany)	**B05** **B06** **Q03**
Lindberg, Noah Prof. Dr. rer. nat.	m	2010	Centre for Computational Microbiology Northbridge University Science Avenue 3, 34567 Northbridge (Germany) Department of Experimental Immunology Northbridge University Science Avenue 3, 34567 Northbridge (Germany)	**A03** **A04** **Q01**
Meier, Hansi Dr. rer. nat.	f	1999	Department of Translational Biosciences Partner University Research Road 2, 54321 Partner City (Germany)	**B01** **B03** **Q03**
Miller, Kimmi Prof. Dr. rer. nat.	f	1999	Department of Translational Biosciences Partner University Research Road 2, 54321 Partner City (Germany)	**B02** **B04**
Navarro, Leonie Prof. Dr. rer. nat.	f	2010	Institute of Metabolic Medicine Westhaven Research Centre Science Avenue 3, 34567 Westhaven (Germany)	**A05** **A06** **Q02**
Okafor, Daniel Prof. Dr. rer. nat.	m	2010	Institute of Metabolic Medicine Westhaven Research Centre Science Avenue 3, 34567 Westhaven (Germany) Centre for Clinical Translation Westhaven Research Centre Science Avenue 3, 34567 Westhaven (Germany)	**A06** **B02** **B06**
Redata, Friedhelm Prof. Dr.-Ing.	m	1998	Institute of Microbial Systems Medicine Example University University Avenue 1, 12345 Example City (Germany)	**B05** **Q02**
Sample, Kim Prof. Dr. rer. nat.	d	2000	Institute of Microbial Systems Medicine Example University University Avenue 1, 12345 Example City (Germany) Department of Translational Biosciences Partner University Research Road 2, 54321 Partner City (Germany)	**A01** **A02**
Sato, Mira Prof. Dr. rer. nat.	f	2010	Centre for Clinical Translation Westhaven Research Centre Science Avenue 3, 34567 Westhaven (Germany)	**B03** **B04**
Winters-Scholz, Alexis-Marie Prof. Dr. rer. nat.	d	2010	Department of Experimental Immunology Northbridge University Science Avenue 3, 34567 Northbridge (Germany)	**A04** **A05**

2.2.3 Participating institutions

Use `columns=2` or `columns=3` to flow affiliation groups down balanced columns, keeping each affiliation with its institutions. Short groups follow one another without equal-height row padding. Reading order is down each column. The gap defaults to 12 pt; set `column sep=16pt` to change it. Flowing lists start a new paragraph with `\medskipamount` space above them.

Without `columns`, participating institutions use one raster cell per affiliation, including its institutions.

The default is one column, with a 12 pt column gap and a 10 pt row gap. Pass `raster columns=2` or other tcolorbox[→CTAN] raster options through ⟨*options*⟩. Sorting defaults to `order=count`; `order=alpha` sorts affiliations alphabetically. The bare `count` and `alpha` options remain accepted.

Example 2.7: Flowing institution columns

```
\printList[columns=2]{ParticipatingInstitutions}
```

Northbridge University (Northbridge)
Centre for Computational Microbiology
Department of Experimental Immunology

Westhaven Research Centre (Westhaven)
Institute of Metabolic Medicine
Centre for Clinical Translation

Example University (Example City)
Institute of Microbial Systems Medicine

Partner University (Partner City)
Department of Translational Biosciences

Example 2.8: Three flowing institution columns

```
\printList[columns=3,column sep=16pt]{ParticipatingInstitutions}
```

Northbridge University (Northbridge)
Centre for Computational Microbiology
Department of Experimental Immunology

Westhaven Research Centre (Westhaven)
Institute of Metabolic Medicine
Centre for Clinical Translation

Example University (Example City)
Institute of Microbial Systems Medicine

Partner University (Partner City)
Department of Translational Biosciences

Example 2.9: Alphabetical institution raster

```
\printList[order=alpha,raster columns=2]{ParticipatingInstitutions}
```

Example University (Example City)
Institute of Microbial Systems Medicine

Partner University (Partner City)
Department of Translational Biosciences

Northbridge University (Northbridge)
Centre for Computational Microbiology
Department of Experimental Immunology

Westhaven Research Centre (Westhaven)
Institute of Metabolic Medicine
Centre for Clinical Translation

Example 2.10: Institution raster ordered by PI count

```
\printList[order=count,raster columns=3]{ParticipatingInstitutions}
```

Example 2.10: Institution raster ordered by PI count (continued)

Northbridge University (Northbridge)
Centre for Computational Microbiology
Department of Experimental Immunology

Partner University (Partner City)
Department of Translational Biosciences

Westhaven Research Centre (Westhaven)
Institute of Metabolic Medicine
Centre for Clinical Translation

Example University (Example City)
Institute of Microbial Systems Medicine

2.2.4 Project groups and projects

Projects are grouped by their area. The same command serves each area; the second argument supplies the heading. The shared dataset contains six A, six B, and three Q projects, declared once in Section 3.8.

Example 2.11: Project overview: area A

```
\printTable{{Projects}{A}{Microbiota and metabolic pathways}}
```

Project area A – Microbiota and metabolic pathways

Project		Title	Research area	Project leader(s), institute(s), location(s)
A01		Microbial signalling across epithelial barriers	2.21-02	Kim **Sample,** Institute of Microbial Systems Medicine, Example University; Department of Translational Biosciences, Partner University Alex **Example,** Department of Translational Biosciences, Partner University
A02	N	Metabolic control of tissue-resident immunity	2.21-05	Kim **Sample,** Institute of Microbial Systems Medicine, Example University; Department of Translational Biosciences, Partner University Samira **Hartmann,** Centre for Computational Microbiology, Northbridge University
A03		Microbiome-derived metabolites and immune memory	2.21-02	Samira **Hartmann,** Centre for Computational Microbiology, Northbridge University Noah **Lindberg,** Centre for Computational Microbiology, Northbridge University; Department of Experimental Immunology, Northbridge University
A04	N	Spatial niches of host–microbe interactions	2.21-02	Noah **Lindberg,** Centre for Computational Microbiology, Northbridge University; Department of Experimental Immunology, Northbridge University Alexis-Marie **Winters-Scholz,** Department of Experimental Immunology, Northbridge University
A05		Dietary control of microbial community dynamics	2.21-02	Alexis-Marie **Winters-Scholz,** Department of Experimental Immunology, Northbridge University Leonie **Navarro,** Institute of Metabolic Medicine, Westhaven Research Centre

Continue on the following page …

…continuing from previous page.

Project		Title	Research area	Project leader(s), institute(s), location(s)
A06	N	Modelling microbial resilience and recovery	2.21-02	Leonie **Navarro,** Institute of Metabolic Medicine, Westhaven Research Centre Daniel **Okafor,** Institute of Metabolic Medicine, Westhaven Research Centre; Centre for Clinical Translation, Westhaven Research Centre

Example 2.12: Project overview: area B

```
\printTable{{Projects}{B}{Immune mechanisms and clinical translation}}
```

Project area B – Immune mechanisms and clinical translation

Project		Title	Research area	Project leader(s), institute(s), location(s)
B01		Host defence during microbiome perturbation	2.21-03 2.21-05 2.22-15	Hansi **Meier,** Department of Translational Biosciences, Partner University Alex **Example,** Department of Translational Biosciences, Partner University
B02	N	Molecular signatures of tissue regeneration	2.22-15	Kimmi **Miller,** Department of Translational Biosciences, Partner University Daniel **Okafor,** Institute of Metabolic Medicine, Westhaven Research Centre; Centre for Clinical Translation, Westhaven Research Centre
B03		Immune circuits linking intestine and liver	2.21-02	Hansi **Meier,** Department of Translational Biosciences, Partner University Mira **Sato,** Centre for Clinical Translation, Westhaven Research Centre
B04	N	Cross-organ consequences of inflammatory stress	2.21-02	Kimmi **Miller,** Department of Translational Biosciences, Partner University Mira **Sato,** Centre for Clinical Translation, Westhaven Research Centre
B05		Patient-derived models of metabolic disease	2.21-02	Friedhelm **Redata,** Institute of Microbial Systems Medicine, Example University Robin **Keller,** Institute of Microbial Systems Medicine, Example University; Centre for Clinical Translation, Westhaven Research Centre
B06	N	Translating microbial biomarkers into interventions	2.21-02	Daniel **Okafor,** Institute of Metabolic Medicine, Westhaven Research Centre; Centre for Clinical Translation, Westhaven Research Centre Robin **Keller,** Institute of Microbial Systems Medicine, Example University; Centre for Clinical Translation, Westhaven Research Centre

Example 2.13: Service, training, and administration projects

```
\printTable{{Projects}{Q}{Shared services, training, and coordination}}
```

Project area Q – Shared services, training, and coordination

Project	Title	Research area	Project leader(s), institute(s), location(s)
Q01	Integrated imaging and analysis services	2.21-02 2.22-15	Alex **Example,** Department of Translational Biosciences, Partner University Noah **Lindberg,** Centre for Computational Microbiology, Northbridge University; Department of Experimental Immunology, Northbridge University
Q02	Integrated Research Training Group		Friedhelm **Redata,** Institute of Microbial Systems Medicine, Example University Leonie **Navarro,** Institute of Metabolic Medicine, Westhaven Research Centre
Q03	Central coordination and data stewardship		Hansi **Meier,** Department of Translational Biosciences, Partner University Robin **Keller,** Institute of Microbial Systems Medicine, Example University; Centre for Clinical Translation, Westhaven Research Centre

The status legend can follow the project overview. The funding-period wording and research-area list are taken from metadata, so they stay consistent with the tables. The footnote remains in the normal page flow.

Example 2.14: Project-status legend and research areas

```
{\footnotesize
N: New projects started in the \theFundingPeriodText\space funding period;\space
E: Ending projects not continued in the \theFundingPeriodText\space funding period
    ;\space
Research areas according to the German Research Foundation (2024--2028)%
\footnote{\raggedright
  \url{https://www.dfg.de/resource/blob/331950/fachsystematik-2024-2028-en.pdf}}:
\printList{ResearchAreasFromProjects}\par}
```

N: New projects started in the third funding period; E: Ending projects not continued in the third funding period; Research areas according to the German Research Foundation (2024–2028)[1]: **2.21-02**: Microbial Ecology and Applied Microbiology, **2.21-03**: Medical Microbiology and Mycology, Hygiene, Molecular Infection Biology, **2.21-05**: Immunology, and **2.22-15**: Gastroenterology.

Example 2.15: Research areas excluding selected projects

```
\printList[A01,B01]{ResearchAreasFromProjects}
```

2.21-02: Microbial Ecology and Applied Microbiology, **2.21-05**: Immunology, and **2.22-15**: Gastroenterology.

The optional argument of `ResearchAreasFromProjects` excludes the listed project IDs from the collection of research areas. Like the project tables, the legend includes research and service projects whose status is not `E`. Projects with `consider-for-lists=false`, training projects, and administrative projects do not contribute codes. The sorted, deduplicated list is rebuilt for every call, including calls with different exclusions.

The project tables use a 15 mm research-area column, wide enough for the unbroken heading at the default table size. Codes are centered as text, including cells containing several codes. Left alignment of the title and project-leader columns is handled separately.

1 https://www.dfg.de/resource/blob/331950/fachsystematik-2024-2028-en.pdf

Example 2.16: Look up research-area descriptions

```
\dfgResearchAreasList{2.21-02}\par
\dfgResearchAreasList{2.21-05}
```

2.21-02: Microbial Ecology and Applied Microbiology
2.21-05: Immunology

Person-specific institution lists Use `\printList{{Institutions}{per7}}` to print the institutions assigned to person `per7`. The person ID is required. For a non-default database, use `\printList[database=other]{{Institutions}{per7}}`; the database defaults to `person`. Put formatting options in the same leading list, as in `\printList[database=person,abbreviation,narrow]{{Institutions}{per7}}`. The older bare-database and trailing-formatting forms remain supported. The list reads `ref-institution-id`→P. 80 from the person entry and then resolves the referenced entries in the `institution` and `affiliation` databases. Options are `abbreviation`, `narrow`, `noaddress`, `nozip`, and `nolocation`.

In the standard layout, every institution prints the institution name, affiliation name, street, ZIP code, location, and country when these values are available. If a person references more than one institution, the entries are separated by a paragraph break with a small vertical gap. If an institution row has an empty `name`→P. 80, the output starts directly with the affiliation name.

`abbreviation` Use the institution's `abbreviation`→P. 74 instead of its full `name`→P. 80. If the abbreviation is absent, the full name is used for compatibility.

`narrow` Print a compact inline form. Fields inside one institution are separated by commas and multiple institutions by semicolons. This is useful in narrow CV/table cells.

`noaddress` Omit the street address.

`nozip` Omit the ZIP code.

`nolocation` Omit the location and country.

The former `\dfgInstitutionList` spelling remains as a compatibility alias.

Example 2.17: One person with multiple institutions

```
\get[person]{per7}{ref-institution-id
    }\par
\printList{{Institutions}{per7}}
\medskip
\printList[abbreviation,narrow,
    noaddress,nozip,nolocation]
  {{Institutions}{per7}}
```

ins3,ins4
Centre for Computational Microbiology
Northbridge University
Science Avenue 3, 34567 Northbridge
(Germany)

Department of Experimental Immunology
Northbridge University
Science Avenue 3, 34567 Northbridge
(Germany) CCM, Northbridge University; DEI,

Northbridge University

2.2.5 Frame-text references

`\printFrameBibliography`[⟨*biblatex options*⟩]

Print the frame-text bibliography, forwarding the optional arguments to `\printbibliography` and preserving its normal font size. With `emphasizeEntries`→P. 90 enabled, a complete entry is bold when its `keywords` field contains `frametext-highlight`. Project highlight keywords do not affect this list; the frame keyword does not affect project lists or inline cita-

tions. Like project bibliographies, output is suppressed when `fastcompile-project-show-publications` → P. 82 is disabled.

Add the keyword to the publication's existing keywords, for example `keywords = {pabst-A, B06-highlight, frametext-highlight}`. The keyword controls formatting, not inclusion: cite the entry or add it with `\nocite` as usual. Enable `emphasizeEntries` → P. 90 in `\changeSettings`, then use:

```
\defbibnote{frame-references}{%
  \usekomafont{subsection}%
  \bfseries\sffamily References
}
\printFrameBibliography[
  prenote={frame-references},
  heading=none
]
```

Replace the plain `\printbibliography` call in existing chapter 1 files; template updates preserve those edited files.

2.2.6 Research profile: summaries and highlighted statements

`\begin{`**`dfgBoxEnv`**`}` [⟨*further specifications*⟩]
⟨*environment content*⟩
`\end{`**`dfgBoxEnv`**`}`

Box environment to be used for highlighting things To be used in `content.tex`. See Example 2.18.

Example 2.18: Highlight text with a box environment

```
\begin{dfgBoxEnv}[title={Research
    question}]
How do host and microbiome communicate
    ?
\end{dfgBoxEnv}
```

Research question

How do host and microbiome communicate?

`\begin{`**`dfgSummaryBox`**`}` [⟨*further specifications, e.g. 'title=NN'*⟩]
⟨*environment content*⟩
`\end{`**`dfgSummaryBox`**`}`

Box environment to be used for e.g. summaries that are lists. Use `\item` for bulletpoints. To be used in `content.tex`
See Example 2.19.

Example 2.19: Example use of a summary box

```
\begin{dfgSummaryBox}[title={Next
    steps}]
  \item Validate biomarkers.
  \item Share the results.
\end{dfgSummaryBox}
```

Next steps

- Validate biomarkers.
- Share the results.

`\dfgBox` [⟨*further specifications*⟩] {⟨*content*⟩}

Box environment to be used for anything. To be used anywhere in the text. The mandatory content argument accepts paragraph breaks.
See Example 2.20.

Example 2.20: Example of a minimal box

```
\dfgBox[title={Research finding}]
  {Microbial signals shape immunity.}
```

Research finding

Microbial signals shape immunity.

2.2.7 Tables and figures in the scientific narrative

Use the following environments when the prose needs a table or a figure that is not one of the predefined metadata tables.

`\begin{TableEnv}[`⟨*outer options*⟩`]{`⟨*column specification*⟩`}[`⟨*table options*⟩`]{`⟨*caption*⟩`}{`⟨*label*⟩`}`
⟨*environment content*⟩
`\end{TableEnv}`

Typeset a generic long table using the template's main table theme. The leading optional ⟨*outer options*⟩ extend the tabularray outer specification. For explanations applying to the whole table, use `remark{Abbreviations}={Definitions.}` or `remark{Note}={Additional information.}`. For marked footnotes referenced from cells, use `note{a}={Footnote text.}` and `\TblrNote{a}`. In `theme=main`, remark continuation lines start flush with the left edge of the remark, without a hanging indent. Lettered notes keep tabularray's standard formatting. The optional ⟨*table options*⟩ after the column specification are inserted into the inner `tabularray` → CTAN specification and default to an empty option list, so the square brackets may be omitted when no additional options are needed. Body cells default to left alignment; explicit column and row alignments take precedence. Use `halign=l`, `halign=c`, or `halign=r` for alignment, and reserve `font` for font settings. Left alignment is configured once in the shared theme setup with standard `\raggedright`; individual cells need no paragraph-alignment prefix. In `theme=main`, header text uses `valign=m` for vertical centring, including cells spanning several header rows. Use the same setting for additional header rows in a multirow heading. Column specifications can override theme defaults. `TableEnv` reapplies its header alignment after the column specification, before caller options. For a custom `tblr`, put `row{1-2}={valign=m}` after its column specification when the header spans two rows, and use `m` in spanning header cells. Explicit row and cell options can override the default alignment. Table text defaults to `\footnotesize` at theme scope. Consequently, cell-local declarations such as `font=\bfseries` or `font=\itshape` retain the default size; include an explicit size such as `font=\normalsize\bfseries` only when a table or cell should override it.
See Example 2.21, Example 2.36.

Example 2.21: TableEnv with column and row options

```
\begin{TableEnv}[remark{Note}={
    Illustrative project counts.}]{X[2,
    l] X[1,r]}[
  row{1}={font=\bfseries},
  rowsep=3pt,
  column{2}={halign=r}
]{Projects by area}{tab:manual-area-
    counts}
Area & Projects \\
A & \getProjectCount[A] \\
B & \getProjectCount[B] \\
Q & \getProjectCount[Q]
\end{TableEnv}
```

Table 1: Projects by area

Area	Projects
A	6
B	6
Q	3

Note: Illustrative project counts.

2.2.8 Figures

For inserting figures we highly recommend to use the command from the package hvfloat.

\hvFloat* [⟨*options*⟩] + {⟨*floattype*⟩} {⟨*floatingobject*⟩} [⟨*shortcaption*⟩] {⟨*longcaption*⟩} {⟨*label*⟩}

See Example 2.22.

Example 2.22: A figure with a caption

```
\hvFloat[capPos=bottom]{figure}
  {\includegraphics[width=\linewidth]{
    example-image}}
  {Example artwork and its caption.}
  {fig:manual-hvfloat}
```

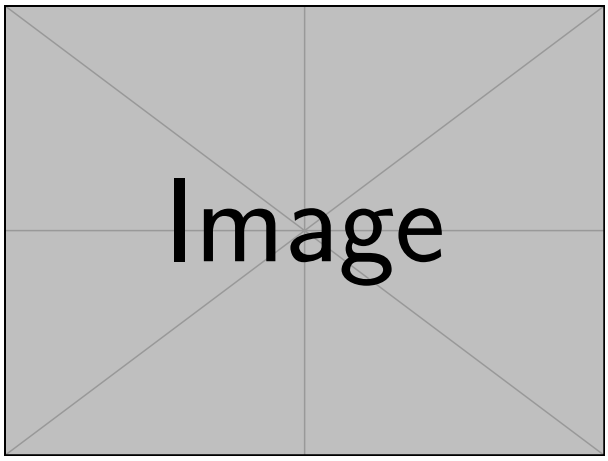


Fig. 1: Example artwork and its caption.

2.2.9 Early-career researchers and equality objectives

\EarlyCareerResearchersTable [⟨*database*⟩]

List doctoral candidates from EarlyCareerResearcher, using the person keyset. This is a named training roster, separate from the monetary staff request. PhD and MD select the row colours. An empty periodEnd prints an ongoing appointment as “since”. A nonempty dateDefense automatically makes the surname and first name bold. Other cells retain their configured styles, including the row colour and topic italics. Missing, empty, or whitespace-only dates leave the ordinary name style. Former-project markers and their explanatory legend are omitted in this training roster, including direct calls with a custom database.

See Example 2.23.

Example 2.23: Doctoral candidates: completed, ongoing, and medical projects

```
\addEntry[person]{EarlyCareerResearcher}{
  id             = {doc-phd-completed},
  ref-project-id = {A01},
  firstname      = {Robin},
  lastname       = {Meyer},
  dateDefense    = {2025-09-15},
  financed-by    = {DFG},
  category       = {PhD},
  topic          = {Microbial metabolites and epithelial signalling},
  periodStart    = {2021-10},
  periodEnd      = {2025-09}
}
\addEntry[person]{EarlyCareerResearcher}{
  id             = {doc-phd-ongoing},
  ref-project-id = {B03},
  firstname      = {Alex},
  lastname       = {Reed},
```

Example 2.23: Doctoral candidates: completed, ongoing, and medical projects (continued)

```
  financed-by     = {University},
  category        = {PhD},
  topic           = {Tissue-resident immune-cell programming},
  periodStart     = {2025-04},
  periodEnd       = {}
}
\addEntry[person]{EarlyCareerResearcher}{
  id              = {doc-md},
  ref-project-id  = {B04},
  firstname       = {Sam},
  lastname        = {Taylor},
  financed-by     = {DFG},
  category        = {MD},
  topic           = {Clinical markers of cross-organ inflammation},
  periodStart     = {2026-04},
  periodEnd       = {2026-09}
}
\printTable{EarlyCareerResearchers}
```

Project	Surname, first name	Type of funding	Topic	Duration
A01 **B03**	**Meyer, Robin** Reed, Alex	DFG University	*Microbial metabolites and epithelial signalling* *Tissue-resident immune-cell programming*	2021-10–2025-09 since 2025-04
B04	Taylor, Sam	DFG	*Clinical markers of cross-organ inflammation*	2026-04–2026-09

A. Objectives for the participation of female researchers

This example supplies the previous objective, observed number and percentage, and future objective for doctoral and postdoctoral researchers. All figures are fictitious. Use the `GenderEquality` keyset for both equality tables.

Example 2.24: A. Objectives for the participation of female researchers

```
\addEntry[GenderEquality]{GenderEqualityStaff}{
  position                              = {PhD},
  previous-objective-percentage-female  = {40},
  status-quo-number-female              = {12},
  status-quo-percentage-female          = {50},
  future-objective-percentage-female    = {50}
}
\addEntry[GenderEquality]{GenderEqualityStaff}{
  position                              = {postDoc},
  previous-objective-percentage-female  = {40},
  status-quo-number-female              = {4},
  status-quo-percentage-female          = {40},
  future-objective-percentage-female    = {50}
}
\printTable{GenderEqualityStaff}
```

	Second funding period			Third funding period
	Objective [%]	Status Quo[a]		Objective [%]
		Number	[%]	f
Doctoral researchers	40	12	50	50

Continue on the following page …

…continuing from previous page.

	Second funding period			Third funding period
	Objective [%]	Status Quo[a]		Objective [%]
		Number	[%]	f
Postdoctoral researchers	40	4	40	50

[a] Reference date: proposal for third funding period

B. Project leaders

Here the records specify objectives for each career category. Status-quo counts and percentages are calculated from the `gender`, `position`, and funding-period membership of the `person` records shown in Section 2.2.4. Only proposals with `fundingPeriodNumeral = {3}` show the additional first-funding-period columns, using membership in period 1. By default, the table shows only female numbers and percentages. For a third-period proposal, it follows DFG form 60.200: periods 1 and 2 each have Number/Percentage columns; period 3 has its original objective and current Number/Percentage columns. The existing `future-objective-percentage-female` field supplies that period 3 objective. Include period 3 membership in the person records to calculate the proposed leadership composition.

Pass `[all-sexes]` before the table name in `\printTable` → P. 12 to select the expanded f/m/d comparison. For a third-period proposal, every period includes Number and Percentage columns for f/m/d, alongside the previous period's objective and the proposed period's future objective. All percentages use the complete f/m/d population in the same career category (or across the four categories in the total row). Do not enter these calculated values again in the objectives database; include historical PIs with the appropriate `period` membership.

```
\printTable{GenderEqualityProjectLeaders}            % default: female-only
\printTable[all-sexes]{GenderEqualityProjectLeaders} % f/m/d for all periods
```

`all-sexes``=true|false` (initially `false`)

A per-table option for `\GenderEqualityProjectLeadersTable`. The bare flag `[all-sexes]` selects f/m/d counts and percentages, including period 3 in a third-period proposal, alongside the previous/future objectives. Omit the option (or use `[all-sexes=false]`) for the female-only DFG layout. Percentages always use all genders as their denominator. The option affects only the current table and does not change subsequent tables or prose commands. Use `[database=MyObjectives,all-sexes]` for a custom objectives database; the older bare database argument also remains supported.

Example 2.25: B. Project leaders: objectives and calculated participation

```
\addEntry[GenderEquality]{GenderEqualityProjectLeaders}{
  position                              = {postDoc},
  previous-objective-percentage-female  = {40},
  future-objective-percentage-female    = {50}
}
\addEntry[GenderEquality]{GenderEqualityProjectLeaders}{
  position                              = {groupLeader},
  previous-objective-percentage-female  = {40},
  future-objective-percentage-female    = {50}
}
\addEntry[GenderEquality]{GenderEqualityProjectLeaders}{
  position                              = {prof-W2},
  previous-objective-percentage-female  = {40},
  future-objective-percentage-female    = {50}
```

Example 2.25: B. Project leaders: objectives and calculated participation (continued)

```
}
\addEntry[GenderEquality]{GenderEqualityProjectLeaders}{
  position                                = {prof-W3},
  previous-objective-percentage-female    = {40},
  future-objective-percentage-female      = {50}
}
\printTable{GenderEqualityProjectLeaders}
```

Position (female)	First funding period		Second funding period		Status Quo[a] Third funding period		
	Number	[%]	Number	[%]	Original objective [%]	Number	[%]
Postdoctoral researchers	0	0	1	100	50	1	100
Research group leaders, junior research group leaders, junior professors	0	0	0	0	50	0	0
Professors W2/C3	0	0	1	100	50	4	44
Professors W3/C4	0	0	0	0	50	0	0
Total	**0**	**0**	**2**	**50**		**5**	**42**

[a] Reference date: proposal for third funding period

Use the same statistics in prose

\getPositionGenderPhaseAmount [⟨*database*⟩] {⟨*position*⟩} {⟨*gender*⟩} {⟨*period*⟩} prints the count for one position/gender/period tuple. See Example 2.26.

\getPositionPhaseTotal [⟨*database*⟩] {⟨*position*⟩} {⟨*period*⟩} prints the all-gender total. See Example 2.26.

\getGenderPhaseTotal [⟨*database*⟩] {⟨*gender*⟩} {⟨*period*⟩} prints the all-position total. See Example 2.26.

\getPositionGenderPhasePercentage [⟨*database*⟩] {⟨*position*⟩} {⟨*gender*⟩} {⟨*period*⟩} prints the rounded integer percentage value within a position. See Example 2.26.

\getGenderPhasePercentage [⟨*database*⟩] {⟨*gender*⟩} {⟨*period*⟩} prints the rounded integer percentage value across all counted positions. See Example 2.26.

The period argument is the funding-period number, not a calendar year. Percentage commands return a number; append `\%` when using it in prose. The commands below retrieve the numbers printed in section 1.4.2 B for any funding period, independently of which proposal period is currently selected. Use `f`, `m`, or `d` for the gender. The supported table positions are `postDoc`, `groupLeader`, `prof-W2`, and `prof-W3`. The total-row commands sum these four positions and count each person with `role=PI` once per period; a person belonging to several periods is counted in each matching period. The optional database defaults to `person`. Percentages are rounded to the nearest integer and return zero if their denominator is zero. These are person statistics; calculating the share of projects with female leadership requires a separate calculation that counts each project once.

```
% First funding period: female W3 professors, number and percentage.
\getPositionGenderPhaseAmount{prof-W3}{f}{1}
\getPositionGenderPhasePercentage{prof-W3}{f}{1}\%
% All genders within the same career category.
\getPositionPhaseTotal{prof-W3}{1}
% First-period total row: female project leaders, number and percentage.
\getGenderPhaseTotal{f}{1}
```

```
\getGenderPhasePercentage{f}{1}\%
% Second-period total row: change only the final argument.
\getGenderPhaseTotal{f}{2}
\getGenderPhasePercentage{f}{2}\%
```

Example 2.26: Person counts and percentages for a funding period

```
W3 professors in period 3:
\getPositionPhaseTotal{prof-W3}{3}.\
    par
Women among them:
\getPositionGenderPhaseAmount{prof-W
    3}{f}{3}
(\getPositionGenderPhasePercentage{
    prof-W3}{f}{3}\%).\par
Women across counted positions:
\getGenderPhaseTotal{f}{3}
(\getGenderPhasePercentage{f}{3}\%).
```

W3 professors in period 3: 1.
Women among them: 0 (0%).
Women across counted positions: 5 (42%).

2.3 Existing and requested funds

The proposal-wide tables combine institutional resources and project requests. The class transfers project declarations through the auxiliary files, so compile with `latexmk` until the totals settle. The project-level declarations and their local tables follow in Section 2.4.6.

2.3.1 Finances: existing funds and resources

The following overviews precede the project chapters in a proposal. By default, current-period figures are restored from project declarations through the auxiliary file; compile again after changing those declarations. Custom databases in the next two examples isolate their inputs from the other demonstrations.

Existing funds for direct costs

The five historical rows use full EUR amounts. Current-period rows group funds by `ref-affiliation-id`: the applicant affiliation `aff1`, another participant `aff2`, and the special value `other-funds`. Funding-source text does not choose the column. In a proposal, declare the current rows in `RequestedAndExistingFundingDirectCosts` and use `\printTable{ExistingFundsDirectCosts}` to collect them automatically.

Example 2.27: Existing direct costs: previous and new funding periods

```
\addEntry[funding]{PreviousExistingFundsDirectCosts}{
  year                = {1},
  applicant           = {2000},
  participant         = {1000},
  other-funds         = {500}
}
\addEntry[funding]{PreviousExistingFundsDirectCosts}{
  year                = {2},
  applicant           = {2000},
  participant         = {1000},
  other-funds         = {500}
}
\addEntry[funding]{PreviousExistingFundsDirectCosts}{
  year                = {3},
```

Example 2.27: Existing direct costs: previous and new funding periods (continued)

```
  applicant             = {2000},
  participant           = {1000},
  other-funds           = {500}
}
\addEntry[funding]{PreviousExistingFundsDirectCosts}{
  year                  = {4},
  applicant             = {2000},
  participant           = {1000},
  other-funds           = {500}
}
\addEntry[funding]{PreviousExistingFundsDirectCosts}{
  year                  = {5},
  applicant             = {2000},
  participant           = {1000},
  other-funds           = {500}
}
\addEntry[funding]{ManualExistingCosts}{
  ref-project-id        = {A01},
  ref-affiliation-id    = {aff1},
  financed-by           = {Example core or third-party funds},
  sum                   = {year1 = {4000}, year2 = {4000}, year3 = {4000}, year4 =
    {4000}, year5 = {4000}}
}
\addEntry[funding]{ManualExistingCosts}{
  ref-project-id        = {A01},
  ref-affiliation-id    = {aff2},
  financed-by           = {Example core or third-party funds},
  sum                   = {year1 = {2000}, year2 = {2000}, year3 = {2000}, year4 =
    {2000}, year5 = {2000}}
}
\addEntry[funding]{ManualExistingCosts}{
  ref-project-id        = {A01},
  ref-affiliation-id    = {other-funds},
  financed-by           = {Example core or third-party funds},
  sum                   = {year1 = {1000}, year2 = {1000}, year3 = {1000}, year4 =
    {1000}, year5 = {1000}}
}
\printTable[ManualExistingCosts]{ExistingFundsDirectCosts}
```

Financial year/ funding period	Core support provided by applicant university	Core support provided by other participating institutions	Other funds	Total
2022|2	2,000	1,000	500	3,500
2023	2,000	1,000	500	3,500
2024	2,000	1,000	500	3,500
2025	2,000	1,000	500	3,500
2026|1	2,000	1,000	500	3,500
Ending Funding period	10,000	5,000	2,500	17,500
2027|2	4,000	2,000	1,000	7,000
2028	4,000	2,000	1,000	7,000
2029	4,000	2,000	1,000	7,000
2030	4,000	2,000	1,000	7,000
2031|1	4,000	2,000	1,000	7,000
New Funding period	20,000	10,000	5,000	35,000

Note: Figures in EUR.

Existing staff

These records inherit institutions from the PI metadata already shown. The custom database supplies all columns read by the overview; empty organisation fields allow the person's institution references to be used. The overview counts existing staff at applicant and participating affiliations. In a proposal, add them to `RequestedFundingStaff` and use `\printTable{OverviewExistingStaff}` without a database override.

Example 2.28: Existing staff by affiliation and career category

```
\addEntry[staff]{ManualExistingStaff}{
  ref-project-id       = {A01},
  funding-status       = {existing},
  staff-type           = {research},
  ref-person-id        = {per1},
  lastname             = {Sample},
  category             = {prof-W3},
  ref-institution-id   = {},
  ref-affiliation-id   = {},
  field-of-research    = {Life sciences},
  commitment           = {8},
  funding-source       = {State funds}
}
\addEntry[staff]{ManualExistingStaff}{
  ref-project-id       = {A02},
  funding-status       = {existing},
  staff-type           = {research},
  ref-person-id        = {per6},
  lastname             = {Hartmann},
  category             = {prof-W2},
  ref-institution-id   = {},
  ref-affiliation-id   = {},
  field-of-research    = {Life sciences},
  commitment           = {8},
  funding-source       = {State funds}
}
\addEntry[staff]{ManualExistingStaff}{
  ref-project-id       = {B03},
  funding-status       = {existing},
  staff-type           = {research},
  ref-person-id        = {per11},
  lastname             = {Sato},
  category             = {prof-W2},
  ref-institution-id   = {},
  ref-affiliation-id   = {},
  field-of-research    = {Life sciences},
  commitment           = {8},
  funding-source       = {State funds}
}
\printTable[ManualExistingStaff]{OverviewExistingStaff}
```

Category	Number of persons			
	at the applicant university	at other participating institutions		
	EU	PU	NU	WRC
Professors	1	1	1	1
Junior research group leaders	0	0	0	0

Continue on the following page …

…continuing from previous page.

Category	Number of persons			
	at the applicant university	at other participating institutions		
	EU	PU	NU	WRC
Postdoctoral researchers	0	0	0	0
Doctoral researchers	0	0	0	0
Other research staff	0	0	0	0
Non-research staff	0	0	0	0
Student and graduate assistants	0	0	0	0

Abbreviations: EU: Example University; PU: Partner University; NU: Northbridge University; WRC: Westhaven Research Centre.

\ExistingInstrumentationTable [⟨*database*⟩]

List equipment already available to the projects. The database defaults to `existingInstrumentation` and uses the `instrumentation` keyset. The `cost` field is in thousands of euros: `250` means EUR 250,000. Set `cost={n.a.}` when the purchase cost is unavailable, for example for donated equipment; it is printed as text rather than interpreted as a number or as zero. Numeric costs retain the usual formatting and precision. A supplied `quantity` prefixes the description with a text multiplication sign. A comma-separated `ref-project-id` lists shared equipment once for several projects. Rows are sorted in ascending order by `ref-project-id`; shared equipment is ordered by its listed project IDs and remains a single row. Description cells use standard `\raggedright` with natural word spacing; the column heading remains centred.
See Example 2.29.

Example 2.29: Existing instrumentation, including shared equipment

```
\addEntry[instrumentation]{existingInstrumentation}{
  ref-project-id = {A01},
  quantity       = {1},
  instrument     = {Confocal laser-scanning microscope},
  company        = {Example Instruments},
  year           = {2025},
  cost           = {250},
  financed-by    = {DFG}
}
\addEntry[instrumentation]{existingInstrumentation}{
  ref-project-id = {A01,B03},
  quantity       = {2},
  instrument     = {Anaerobic workstation},
  company        = {Example Laboratory Systems},
  year           = {2024},
  cost           = {80},
  financed-by    = {University funds}
}
\addEntry[instrumentation]{existingInstrumentation}{
  ref-project-id = {B03},
  quantity       = {1},
  instrument     = {Donated incubator},
  company        = {Example Laboratory Systems},
  year           = {2024},
  cost           = {n.a.},
  financed-by    = {Donation}
}
\printTable{ExistingInstrumentation}
```

Project	Description of instrumentation	Year of purchase	Cost of purchase[a]	Source of funding
A01	1 × Confocal laser-scanning microscope (Example Instruments)	2025	250	DFG
A01 / B03	2 × Anaerobic workstation (Example Laboratory Systems)	2024	80	University funds
B03	1 × Donated incubator (Example Laboratory Systems)	2024	n.a.	Donation

[a] Figures in thousands

2.3.2 Finances: previous funding and new requests

The next table combines five historical rows with the current requests declared in the funding examples. Its new-period amounts include the earlier `A02` requests, the equipment records below, and the complete `A06` request in Section 2.4.6. These records are collected from the auxiliary file even when their declarations follow the overview. All input amounts are full EUR; do not duplicate a project declaration to populate this overview.

Example 2.30: Previous funding and current requests across all five groups

```
\addEntry[funding]{PreviousRequestedFunding}{
  year                = {1},
  staff               = {100000},
  costs               = {20000},
  instrumentation     = {30000},
  fellowships         = {5000},
  globalfunds         = {10000}
}
\addEntry[funding]{PreviousRequestedFunding}{
  year                = {2},
  staff               = {100000},
  costs               = {20000},
  instrumentation     = {0},
  fellowships         = {5000},
  globalfunds         = {10000}
}
\addEntry[funding]{PreviousRequestedFunding}{
  year                = {3},
  staff               = {100000},
  costs               = {20000},
  instrumentation     = {0},
  fellowships         = {5000},
  globalfunds         = {10000}
}
\addEntry[funding]{PreviousRequestedFunding}{
  year                = {4},
  staff               = {100000},
  costs               = {20000},
  instrumentation     = {0},
  fellowships         = {5000},
  globalfunds         = {10000}
}
\addEntry[funding]{PreviousRequestedFunding}{
  year                = {5},
  staff               = {100000},
  costs               = {20000},
  instrumentation     = {0},
  fellowships         = {5000},
  globalfunds         = {10000}
}
```

Example 2.30: Previous funding and current requests across all five groups (continued)

```
\printTable{PreviousAndCurrentRequestedFunding}
```

Financial year/ funding period	Funding for					Total
	Staff	Direct costs	Instrumentation	Fellowships	Globalfunds	
2022|2	100,000	20,000	30,000	5,000	10,000	165,000
2023	100,000	20,000	0	5,000	10,000	135,000
2024	100,000	20,000	0	5,000	10,000	135,000
2025	100,000	20,000	0	5,000	10,000	135,000
2026|1	100,000	20,000	0	5,000	10,000	135,000
Ending Funding period	500,000	100,000	30,000	25,000	50,000	705,000
2027|2	54,404	2,000	170,000	3,000	1,500	230,904
2028	108,810	4,000	0	6,000	3,000	121,810
2029	108,810	4,000	45,000	6,000	3,000	166,810
2030	108,810	4,000	0	6,000	3,000	121,810
2031|1	54,404	2,000	0	3,000	1,500	60,904
New Funding period	435,238	16,000	215,000	24,000	12,000	702,238

Note: Figures in EUR.

The staff overview counts requested positions by category and year; salary percentages affect monetary costs, not the number of positions. This example uses a separate database, `ManualStaffRequest`, to show precisely these two records. Pass that database as the leading optional argument. In a proposal, use `RequestedFunding` for the records and omit the table's optional argument to collect requests across all projects. Projects without requested positions remain visible with empty-value markers.

Example 2.31: Requested staff positions by category and year

```
\addEntry[funding]{ManualStaffRequest}{
  ref-project-id = {B03},
  funding-type   = {staff},
  category       = {PhD},
  percentage     = {65},
  quantity       = {
    year1 = {1}, year2 = {1}, year3 = {2}, year4 = {2}, year5 = {1}
  }
}
\addEntry[funding]{ManualStaffRequest}{
  ref-project-id = {Q01},
  funding-type   = {staff},
  category       = {postDoc},
  percentage     = {100},
  quantity       = {
    year1 = {0}, year2 = {1}, year3 = {1}, year4 = {1}, year5 = {0}
  }
}
\printTable[ManualStaffRequest]{OverviewOfFundsRequestedForStaff}
```

Project	2027|2					2028					2029					2030					2031|1				
	Postdoctoral researchers	Doctoral researchers	Other research staff	Non-research staff	Student and graduate assistants	Postdoctoral researchers	Doctoral researchers	Other research staff	Non-research staff	Student and graduate assistants	Postdoctoral researchers	Doctoral researchers	Other research staff	Non-research staff	Student and graduate assistants	Postdoctoral researchers	Doctoral researchers	Other research staff	Non-research staff	Student and graduate assistants	Postdoctoral researchers	Doctoral researchers	Other research staff	Non-research staff	Student and graduate assistants
A01	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×

Continue on the following page …

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Project	2027|2					2028					2029					2030					2031|1				
	Postdoctoral researchers	Doctoral researchers	Other research staff	Non-research staff	Student and graduate assistants	Postdoctoral researchers	Doctoral researchers	Other research staff	Non-research staff	Student and graduate assistants	Postdoctoral researchers	Doctoral researchers	Other research staff	Non-research staff	Student and graduate assistants	Postdoctoral researchers	Doctoral researchers	Other research staff	Non-research staff	Student and graduate assistants	Postdoctoral researchers	Doctoral researchers	Other research staff	Non-research staff	Student and graduate assistants
A02	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
A03	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
A04	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
A05	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
A06	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
B01	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
B02	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
B03	×	1	×	×	×	×	1	×	×	×	×	2	×	×	×	×	2	×	×	×	×	1	×	×	×
B04	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
B05	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
B06	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Q01	×	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	×	×	×	×	×
Q02	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Q03	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Total	×	**1**	×	×	×	**1**	**1**	×	×	×	**1**	**2**	×	×	×	**1**	**2**	×	×	×	×	**1**	×	×	×

Requested equipment belongs in `RequestedFunding` with `funding-type={instrumentation}`. Unlike existing-equipment purchase costs, the yearly `sum` values are full EUR amounts. The overview collects these project declarations through the auxiliary file; two compilations may be needed after adding or changing them. Its result also includes the `A06` imaging workstation declared in the complete project-funding example in Section 2.4.6.

Example 2.32: Requested instrumentation by project and year

```
\addEntry[funding]{RequestedFunding}{
  ref-project-id = {Q01},
  funding-type   = {instrumentation},
  category       = {Live-cell imaging system},
  sum            = {
    year1 = {150000},
    year2 = {0},
    year3 = {0},
    year4 = {0},
    year5 = {0}
  }
}
\addEntry[funding]{RequestedFunding}{
  ref-project-id = {B03},
  funding-type   = {instrumentation},
  category       = {Automated sample preparation},
  sum            = {
    year1 = {0},
    year2 = {0},
    year3 = {45000},
    year4 = {0},
```

Example 2.32: Requested instrumentation by project and year (continued)

```
    year5 = {0}
  }
}
\printTable{OverviewFundsRequestedInstrumentation}
```

Project	Description of instrumentation	Funds requested for				
		2027|2	2028	2029	2030	2031|1
A06	Imaging workstation	20,000	0	0	0	0
B03	Automated sample preparation	0	0	45,000	0	0
Q01	Live-cell imaging system	150,000	0	0	0	0
Total		170,000	0	45,000	0	0

Note: Figures in EUR.

Upkeep of laboratory animals

Each row specifies the animal count, average weeks kept, purchase cost per animal, and requested and existing funds in EUR. Housing rates come from the animal-type registry. The built-in IDs `mouse`, `rat`, and `mouse-gnotobiotic` retain their existing class settings and rates. Subtotals include only groups represented by table rows. Gnotobiotic mice have their own rate and row label, but contribute to the `mouse` subtotal. The last row counts all animals and sums the explicitly supplied funding.

\DeclareAnimalType{⟨*id*⟩}{⟨*key-value list*⟩}

Register or update an animal/housing type, normally in `preamble/dfg-customization.tex`. This command is available while that file is read. IDs start with a lowercase letter and contain only lowercase letters, digits, and hyphens. New types require `label` and `housing-rate`. `label-plural` defaults to `label` and supplies subtotal text. `total-group` defaults to the type's own ID. It can name the type itself or an already registered type, whose plural label is used for the grouped subtotal. It is a direct grouping ID; it does not inherit the target's housing rate or follow chains of groups. Redeclarations retain omitted fields and invalid declarations retain the previous definition. All assignments follow ordinary TeX grouping.

```
\DeclareAnimalType{zebrafish}{
  label={Zebrafish}, label-plural={Zebrafish},
  housing-rate=0.12 % Example EUR per animal per week
}
\DeclareAnimalType{mouse-gnotobiotic}{total-group=mouse}
```

The existing `animalHousing@mouse` →P. 87, `animalHousing@mouseGnotobiotic` →P. 87, and `animalHousing@rat` →P. 87 settings remain live. Updating a built-in type's `housing-rate` also updates its corresponding setting and compatibility accessor. This table accepts `totals-by=group` (default) or `totals-by=type` through the optional argument of `\printTable`. The latter separates housing types:

```
\printTable[totals-by=type]{UpkeepLaboratoryAnimals}
\printTable[database=MyAnimals,totals-by=group]{UpkeepLaboratoryAnimals}
% The former bare database argument is also supported:
\printTable[MyAnimals]{UpkeepLaboratoryAnimals}
```

Subtotals follow registry declaration order; data rows are sorted by project. Quantities must be non-negative integers; weeks and costs accept non-negative decimal numbers. Blank or invalid

values print a dash. An asterisk marks totals that exclude missing or invalid values; if no valid value is available, the total is a dash. Explicit zero remains zero. Rows with a missing/unregistered type are shown under `Unclassified` rather than silently disappearing. Purchasing unit prices and average weeks retain decimals. Funding totals continue to use the declared funding columns and whole-EUR display: no purchase/housing cost formula replaces those amounts. Every table call prepares its own rows and totals before tabularray measures cells, preventing repeated rendering or another database from double-counting.

\getAnimalCount [⟨*options*⟩]

Print the count from the animal data read so far. The default selects the entire `UpkeepLaboratoryAnimals` database. Use `group=mouse` to include all rows whose `total-group` is `mouse`, or `type=mouse` to match only that exact type. Both selectors require a registered type ID and cannot be combined. `database=MyAnimals` selects another database.

\getAnimalCosts [⟨*options*⟩]

Accept the same selectors and a `cost` option:

requested (default), existing Sum the supplied requested or existing funding amounts.

purchase Sum quantity times purchase price per animal.

housing Sum quantity times average weeks kept times the row's own housing rate. Grouping never substitutes a shared rate.

total Sum the calculated purchase and housing components.

Funding amounts print as whole EUR, matching the table. Calculated costs retain up to two decimal places; neither command adds a currency/unit suffix. These are formatted printing commands, not expandable numeric expressions.

Both commands work before or after a table, after the relevant `\addEntry` declarations. They read current data and grouping/rates, independently of the last table's `totals-by` option. A registered selection with no rows returns zero; unknown IDs, conflicting selectors, unknown options, and missing databases produce a warning and a dash. Missing/invalid numeric inputs produce an asterisk and a diagnostic. A partial calculated total includes all known purchase/housing components; if none is known it prints a dash with an asterisk. All required factors must be supplied, including for zero-quantity rows.

```
Mice: \getAnimalCount[group=mouse].
Only gnotobiotic mice: \getAnimalCount[type=mouse-gnotobiotic].
Requested: \getAnimalCosts[group=mouse,cost=requested]\,EUR.
Housing: \getAnimalCosts[group=mouse,cost=housing]\,EUR.
```

Example 2.33: Laboratory animals: purchase, housing, and funding

```
\addEntry{UpkeepLaboratoryAnimals}{
  ref-project-id       = {A01},
  species              = {mouse},
  quantity             = {100},
  weeks-kept           = {12},
  purchasing-costs     = {25},
  requested-funds      = {9000},
  existing-funds       = {3000}
}
\addEntry{UpkeepLaboratoryAnimals}{
  ref-project-id       = {B03},
  species              = {rat},
  quantity             = {20},
  weeks-kept           = {8},
```

Example 2.33: Laboratory animals: purchase, housing, and funding (continued)

```
  purchasing-costs      = {40},
  requested-funds       = {1600},
  existing-funds        = {800}
}
\addEntry{UpkeepLaboratoryAnimals}{
  ref-project-id        = {A02},
  species               = {mouse-gnotobiotic},
  quantity              = {30},
  weeks-kept            = {10},
  purchasing-costs      = {50},
  requested-funds       = {6000},
  existing-funds        = {2500}
}
\DeclareAnimalType{zebrafish}{
  label={Zebrafish}, label-plural={Zebrafish}, housing-rate=0.12
}
\addEntry{UpkeepLaboratoryAnimals}{
  ref-project-id        = {A03},
  species               = {zebrafish},
  quantity              = {200},
  weeks-kept            = {12},
  purchasing-costs      = {2},
  requested-funds       = {688},
  existing-funds        = {0}
}
\printTable{UpkeepLaboratoryAnimals}
Mice: \getAnimalCount[group=mouse].\par
Requested for mice: \getAnimalCosts[group=mouse,cost=requested]\,EUR.\par
Housing for mice: \getAnimalCosts[group=mouse,cost=housing]\,EUR.
```

Project	Species	Quantity	Average number of weeks kept	Housing costs per animal per week[a]	Purchase costs per animal[a]	Requested funds[a]	Existing funds[a]
A01	Mouse	100	12	0.75	25	9,000	3,000
A02	Mouse (gnotobiotic)	30	10	3.9	50	6,000	2,500
A03	Zebrafish	200	12	0.12	2	688	0
B03	Rat	20	8	1.4	40	1,600	800
	Mice	130					
	Rats	20					
	Zebrafish	200					
Total	**All animals**	350				17,288	6,300

[a] Figures in EUR.

Mice: 130.

Requested for mice: 15,000 EUR.

Housing for mice: 2,070 EUR.

2.3.3 Refer to financial totals in prose

The near-identical funding names encode two different scopes. Commands using the singular name `RequestedFunding` use the proposal-wide `RequestedFundingOverview` database by default. Commands using the plural name `RequestedFunds` use the project-level `RequestedFunding` database and therefore require a project id. In the signatures below, ⟨*sum-fields*⟩ means one or

more fields such as sum-year1 through sum-year5.

\getCountRequestedStaff [⟨*project*⟩] {⟨*year*⟩} {⟨*category*⟩} prints the requested staff quantity, optionally restricted to one project. See Example 2.35.

\getSumRequestedFunding [⟨*database*⟩] {⟨*year*⟩} {⟨*type*⟩} prints the proposal-wide total for one funding type; use year=all for all five years. See Example 2.34.

\getTotalSumRequestedFunding [⟨*database*⟩] {⟨*year*⟩} {⟨*type*⟩} has the same proposal-wide scope and additionally accepts type=all for the grand total. See Example 2.34.

\getSumPreviousRequestedFunding [⟨*database*⟩] {⟨*year*⟩} {⟨*fields*⟩} totals the selected columns in the previous-period database; year=all includes every row.

\getSumRequestedFunds [⟨*database*⟩] {⟨*project*⟩} {⟨*type*⟩} {⟨*sum-fields*⟩} prints a project total for one funding type. See Example 2.34.

\getTotalSumRequestedFunds [⟨*database*⟩] {⟨*project*⟩} {⟨*sum-fields*⟩} prints a project total across all funding types. See Example 2.34.

\getSumRequestedFundsInstrumentation [⟨*project*⟩] {⟨*sum-fields*⟩} prints the proposal-wide instrumentation total or restricts it to the optional project.

\getSumRequestedFundingDirectCosts [⟨*database*⟩] {⟨*year*⟩} {⟨*group*⟩} totals direct costs for applicant, participant, other-funds, or all.

\getSumExistingFunds [⟨*database*⟩] {⟨*project*⟩} {⟨*sum-fields*⟩} prints existing direct-cost funding for one project.

For example:

Example 2.34: Project counts and funding totals

```
Area A projects: \getProjectCount[A]\
    par
Staff: \getSumRequestedFunding{all}{
    staff}\par
Total: \getTotalSumRequestedFunding{
    all}{all}\par
A02 staff, year 1:
\getSumRequestedFunds{A02}{staff}{sum-
    year1}\par
A02 total, year 1:
\getTotalSumRequestedFunds{A02}{sum-
    year1}
```

Area A projects: 6
Staff: 435,238
Total: 702,238
A02 staff, year 1: 27,202
A02 total, year 1: 28,202

Use the optional project argument to compare a project with the full request. Here 1 is the first funding-year column; PhD is the staff category.

Example 2.35: Requested positions and multi-year direct costs

```
A02 doctoral positions, year 1:
\getCountRequestedStaff[A02]{1}{PhD}.\
    par
All doctoral positions, year 1:
\getCountRequestedStaff{1}{PhD}.\par
A02 direct costs, years 1 and 2:
\getSumRequestedFunds{A02}{costs}{sum-
    year1,sum-year2}\,EUR.
```

A02 doctoral positions, year 1: 1.
All doctoral positions, year 1: 1.
A02 direct costs, years 1 and 2: 3,000 EUR.

2.4 Individual projects

2.4.1 Choose the structure from project status and type

Set `project-status` in the project's metadata: `N` for new, `C` for continuing, and `E` for ending. This is independent of `project-type`: `research`, `service`, `mgk` (integrated research training), or `admin` (central coordination). Changing metadata adjusts the generated heading and some tables; it does not rewrite the authored sections. Start from the matching generated content file.

Example 2.36: New, continuing, and ending project structures

```
\begin{TableEnv}{X[1,l] X[2,l] X[3,l]}[row{1}={font=\bfseries}]
  {Choose a project structure}{tab:manual-project-status}
Status & Background & Forward-looking content \\
N: new & Research rationale and preliminary work
  & Project plan, collaborations, and requested funding \\
C: continuing & Progress to date and current state of research
  & Project plan, collaborations, and requested funding \\
E: ending & Project history, report, and published results
  & Closing funding and staff from the ending period
\end{TableEnv}
```

Table 2: Choose a project structure

Status	Background	Forward-looking content
N: new	Research rationale and preliminary work	Project plan, collaborations, and requested funding
C: continuing	Progress to date and current state of research	Project plan, collaborations, and requested funding
E: ending	Project history, report, and published results	Closing funding and staff from the ending period

The starter files `03_project_A02.tex` and `03_project_A01.tex` demonstrate new and continuing research projects, respectively. Both have a summary, aims, work packages, a timeline, the relevance of sex/gender/diversity, the project's CRC role, differentiation from other grants, and project funding. The ending example `03_project_A00.tex` instead contains a report, three result categories, and closing funding information; it does not request a new period or present a new work programme.

For service projects, `03_project_Q01.tex` uses the continuing structure but focuses on services, access, capacity, and quality assurance. The training example `03_project_Q02.tex` and coordination example `03_project_Q03.tex` have dedicated content structures. Their headings, like ending-project headings, omit the research-area line. A `reference-only=true` project is a separate concept: it records a former project for references and is excluded from active counts. The manual's `A00` demonstrates this case.

2.4.2 Start and finish a project

\printProject [⟨*setup code*⟩] {⟨*specification*⟩}

Use the unified project-boundary interface. Start a project with its id and finish the active project without repeating that id:

```
\printProject{{Head}{A01}}
\ldots
\printProject{{Tail}}
```

The `Head` form delegates to `\printProjectHead` → P. 43; the `Tail` form delegates to

\printProjectTail → P. 44. The original commands remain available as compatibility fallbacks.
An optional argument on Head runs setup code before the project header. Its local assignments remain active for the complete project and are restored by the matching Tail:

```
\printProject[
  \changeSettings{journalTitle=shortjournal,emphasizeEntries=false}
]{{Head}{B02}}
% Project text, bibliographies, figures, and funding tables.
\printProject{{Tail}}
```

The argument contains executable LaTeX code, rather than a bare settings list. Both the unified tail and the legacy \printProjectTail close this scope. An explicitly empty argument [] also creates a project scope; omitting the argument retains the existing unscoped behaviour for projects without automatic ending-project defaults. Optional setup code is accepted only on Head; projects must not be nested.
Scoped projects start on a new page and flush their last page before the settings are restored, including in fastcompile-project → P. 82 mode. This keeps page headers and deferred output within the project's scope. Always supply the matching tail. Only ordinary local assignments are restored; explicit global definitions remain global.
When the loaded project metadata has project-status → P. 71 E, the head automatically selects emphasizeAuthors=true, emphasizeEntries=false in a project scope, even without an optional argument. Explicit setup code runs afterwards and takes precedence, for example:

```
\printProject[
  \changeSettings{emphasizeAuthors=false,emphasizeEntries=true}
]{{Head}{B02}}
% This project overrides the ending-project emphasis defaults.
\printProject{{Tail}}
```

The default is selected from metadata, rather than from a project's ID. Metadata-free fast project builds cannot infer a status; explicit setup code remains available in that mode.
This mechanism applies to settings read while the project is rendered, such as journalTitle → P. 89, emphasizeEntries → P. 90, and funding rates. It does not reload packages or rerun class initialization: bibliography styles and the initial font-family setup still belong in the customization file before the class loads their packages.
See Example 2.37, Example 2.39.

\printProjectHead [⟨*setup code*⟩] {⟨*project-id*⟩}

Start the section for one project. The command sets the current project, creates the project heading, resets project-local counters, starts a bibliography refsection, prints the project leaders, and prepares the project-specific thumbindex and headers. Active research and service projects also receive the DFG research-areas heading from their research-area → P. 72 metadata; ending, MGK, and administrative projects do not. For every person id in the project's comma-separated ref-person-id → P. 67 value, all names stored in name-alias → P. 67 are registered as emphasized bibliography names. An empty alias value is ignored. The optional setup argument and automatic ending-project emphasis defaults are the same as for the unified \printProject interface. The projectTitle customization independently selects full or short titles in the TOC, running head and "Project title:" heading; all three initially use the full name → P. 80. See the projectTitle examples.
With fastcompile-project → P. 82, the current-project state, counters, labels, a compact running header containing the project ID, and the optional bibliography refsection are prepared. A light hook-based draft watermark is added to every shipped page. The calculated heading, project-leader cards, contract information and legal-issues table are replaced by a labeled

<project-id-header> placeholder. Its space and the following section counters come from the last normal build's ordinary .aux file, including any complete header pages. Header metadata are not read for this. The thumb index and table-of-contents entry are omitted.
Keep auxiliary files when switching modes. After changes to header metadata, fonts or layout, compile normally until the header settles, then return to focused mode. The snapshot is checked against the current text width and height; other changes require that explicit normal refresh. Without a matching record, a warning and an approximate half text height label identify the fallback, which reserves half of the current \textheight. Its spacing is an estimate, and the first authored section still follows General information as section 2.
See Example 2.38.

\printProjectTail

Finish the current project section. The command closes the bibliography refsection, resets bold bibliography names, restores the table-of-contents depth, and starts a new page. In fastcompile-project → P. 82, it only closes the optional publication refsection and does not force a page break. When the project was opened with optional setup code or automatic ending-project defaults, the tail also closes that setup scope and restores the preceding settings; in this case it flushes the final project page even in fast project mode.
See Example 2.38.

These commands manage complete pages and bibliography sections. The following code/result examples therefore show the beginning of the actual example proposal pages, rather than running a project wrapper inside the manual's own section. The complete proposal and inline examples share the same metadata. The omitted project body belongs between the two commands. Former project A00 illustrates the ending-project structure; it remains excluded from active project counts and funding requests.

Example 2.37: New project: heading excerpt from the example proposal

```
% In project metadata: project-status = {N}
\printProject{{Head}{A02}}
% Summary, research rationale, plan, and funding.
\printProject{{Tail}}
```

3.1 General information about Project A02 N

3.1.1 Project title: Metabolic control of tissue-resident immunity

3.1.2 Research area: 2.21-05: Immunology

3.1.3 Project leaders

Kim Sample, Prof. Dr. rer. nat.
0000-0000-0000-0001
Institute of Microbial Systems Medicine
Example University
University Avenue 1, 12345 Example City
(Germany)

Department of Translational Biosciences
Partner University
Research Road 2, 54321 Partner City
(Germany)

Samira Hartmann, Prof. Dr. rer. nat.
0000-0000-0000-0016
Centre for Computational Microbiology
Northbridge University
Science Avenue 3, 34567 Northbridge
(Germany)
+49 000 300-0006
samira@example.org

Example 2.38: Continuing project: heading excerpt from the example proposal

```
% In project metadata: project-status = {C}
\printProjectHead{A01}
% Summary, progress to date, plan, and funding.
\printProjectTail
```

3.1 General information about Project A01

3.1.1 Project title: Microbial signalling across epithelial barriers

3.1.2 Research area: 2.21-02: Microbial Ecology and Applied Microbiology

3.1.3 Project leaders

Kim Sample, Prof. Dr. rer. nat.

0000-0000-0000-0001
Institute of Microbial Systems Medicine
Example University
University Avenue 1, 12345 Example City
(Germany)

Department of Translational Biosciences
Partner University
Research Road 2, 54321 Partner City
(Germany)

Alex Example, Prof. Dr. phil.

0000-0000-0000-0002
Department of Translational Biosciences
Partner University
Research Road 2, 54321 Partner City
(Germany)
+49 000 200-2000
alex.example@example.org

Example 2.39: Ending project: heading excerpt from the example proposal

```
% In project metadata: project-status = {E}
\printProject{{Head}{A00}}
% Project history, published results, closing funding.
\printProject{{Tail}}
```

3.1 General information about Project A00 (former project) E

3.1.1 Project title: Former project on microbial community dynamics

3.1.2 Project leaders

Kimmi Miller, Prof. Dr. rer. nat.

0000-0000-0000-0004
Department of Translational Biosciences
Partner University
Research Road 2, 54321 Partner City
(Germany)
+49 000 200-4000
kimmi.mueller@example.org

Daniel Okafor, Prof. Dr. rer. nat.

Institute of Metabolic Medicine
Westhaven Research Centre
Science Avenue 3, 34567 Westhaven
(Germany)

Centre for Clinical Translation
Westhaven Research Centre

2.4.3 Publications for new and continuing projects

\projectPublicationsHeading

Print the standard project-publications subsection heading only when `fastcompile-project-show-publications` → P. 82 is enabled.
See Example 2.40.

\projectNocite{⟨*entry keys*⟩}

Add project publication entries with \nocite only when fastcompile-project-show-publications → P. 82 is enabled.
See Example 2.40.

\printProjectBibliography [⟨*biblatex options*⟩]

Print a project bibliography only when fastcompile-project-show-publications → P. 82 is enabled. Use these three project-specific commands together so disabling publication output also removes its heading and explicit bibliography work. Project bibliography entries are typeset in \footnotesize. With emphasizeEntries → P. 90 enabled, an entry carrying the current project's <project-id>-highlight keyword is printed in bold. A direct \printbibliography call bypasses this formatting, the font setting, and the publication-output switch.
See Example 2.40.

A local refsection keeps this example's bibliography independent of the manual. In an ordinary project, use the reference section established by the project wrapper. The leading options are passed to biblatex.

Example 2.40: Project publications with the standard heading

```
\begin{refsection}
\projectPublicationsHeading
\projectNocite{FAIR2016}
\printProjectBibliography[heading=none]
\end{refsection}
```

Project- and subject-related list of publications

Wilkinson, M. D. et al. (2016). "The FAIR Guiding Principles for scientific data management and stewardship". In: *Scientific Data* 3.1, p. 160018. DOI: 10.1038/sdata.2016.18. (Visited on 05/31/2021).

2.4.4 Project plan: aims and work packages

For writing aims and workpackages we provide some special commands and features, including a gantt-chart.

\begin{**aims**} [⟨*options*⟩]
⟨*environment content*⟩
\end{**aims**}

Environment to be used in a project section to summarize in a condensed way the aims of the project. Use label={RDM Aims} to replace the default Aim prefix, keeping the item number and colon. The same text is used verbatim for singular and plural references through \cref, \Cref, and \getAim → P. 47, including references outside the list or before it. Compile twice after changing labels. Without this option, the defaults remain Aim and Aims. Other list options, such as start=3 and itemsep=2pt, are passed to enumitem.
Use resume to continue numbering from the previous aims list. Repeat the custom prefix, as in [label={RDM Aims},resume], to keep it in the numbered items and their cross-references. With [resume] alone, numbering continues but the prefix returns to the default Aim/Aims. Resuming uses the previous aims list regardless of its label text; custom labels do not create separate counters.
See Example 2.41.

\addAim{⟨*label*⟩}

Add an aim within the aims environment. You can refer to this aim by using \getAim → P. 47{⟨*label*⟩}.
See Example 2.41.

These aim and work-package examples use project A03 as their current project, as normally established by \printProjectHead.

Example 2.41: Aims and their references

```
\begin{aims}
  \addAim{manual-a} Identify pathways.
  \addAim{manual-b} Validate
    biomarkers.
  \addAim{manual-c} Test interventions.

\end{aims}
See \getAim{manual-a,manual-b,manual-c
    }.
\begin{aims}[label={RDM Aims}]
  \addAim{manual-rdm-a} Document
    research data.
  \addAim{manual-rdm-b} Publish
    reusable datasets.
\end{aims}
See \getAim{manual-rdm-a,manual-rdm-b}.

\begin{aims}[label={RDM Aims},resume]
  \addAim{manual-rdm-c} Archive the
    datasets.
\end{aims}
Continued as \getAim{manual-rdm-c}.
```

Aim 1: Identify pathways.

Aim 2: Validate biomarkers.

Aim 3: Test interventions.

See **Aims 1 to 3**.

RDM Aims 1: Document research data.

RDM Aims 2: Publish reusable datasets.

See **RDM Aims 1 and 2**.

RDM Aims 3: Archive the datasets.

Continued as **RDM Aims 3**.

\getAim{⟨*label*⟩}

Refer to an aim with the {⟨*label*⟩} in the aims→ P. 46 environment. You can refer to multiple aims, too: \getAim{A,B,C}.
The default is referencing the aims of the same project. You can also refer to an aim of a different project: \getAim[⟨*project-id*⟩]{⟨*label*⟩}.
See Example 2.41, Example 2.45.

\begin{**workpackages**}
⟨*environment content*⟩
\end{**workpackages**}

Environment to be used in a project section when workpackages are written. This environment contains all descriptions of the workpackages that are introduced by \addWP.
See Example 2.42, Example 2.44.

\addWP{⟨*label*⟩}{⟨*key=values*⟩}

Add a work package with the stable identifier ⟨*label*⟩. Use title for its narrative heading and group chart-specific settings under gantt. At the top level, the title is printed as a bold work-package heading. Sub-workpackages start directly with the authored prose after their list label; their title is not printed as a heading. Immediate source whitespace, including a blank line after \addWP, is consumed for sub-workpackages.
The existing flat keys remain supported without deprecation warnings. Both syntaxes work in normal and focused project compilation, including focused mode with images disabled. The new syntax requires a class extracted from this updated source; older released classes accept the flat syntax only.
See Example 2.42, Example 2.43, and Example 2.44.

title=⟨*text*⟩

Narrative heading for a first-level work package. This value also supplies the default chart label when neither gantt/label nor the legacy description key has been supplied in a

declaration using the new syntax. An explicitly empty `title={}` overrides `name`; focused mode then retains its existing WP-ID heading fallback.

gantt=⟨*key-value list*⟩

Group of chart-specific options: `label`, `start`, `end`, and `style`. The notation `gantt/label` below means `label` inside this group.

`gantt/label` is the text printed after the work-package reference in the chart. Omission uses the resolved title, unless a legacy `description` is present. An explicitly empty `label={}` suppresses this text while retaining the work-package reference and its link.

`gantt/start` and `gantt/end` specify positions on the existing 1–16 chart axis. Supply both when plotting a scheduled work package. Equal endpoints suppress its bar, as with the legacy period keys. These values do not change the chart's existing calendar or units.

`gantt/style` selects the bar style: `default`, `alternative`, `crosshatch`, `important`, or `striped`. Omission selects `default`. An invalid value warns and falls back to `default`; an empty style selects the default without a warning. See also `style` → P. 51 for the colour settings.

Compatibility and precedence The following flat keys continue to work in `\addWP`. They also remain the stored database field names, so existing `\getEntry` queries and direct `\addEntry[gantt]` declarations keep working.

Existing key	New key
`name`	`title`
`description`	`gantt/label`
`periodStart`	`gantt/start`
`periodEnd`	`gantt/end`
`style`	`gantt/style`

You can migrate one field at a time. For each field, an explicitly supplied new key takes precedence over its flat counterpart, regardless of their order in the declaration. If the new key is absent, the flat value is used. Explicit empty values count as supplied: `gantt={label={}}` overrides a nonempty `description`. In declarations using the new syntax, repeated assignments within one spelling use the last value. Legacy-only declarations retain the original parser and its validation. Values are stored without expansion, preserving formatting commands and references for their output context.

The title-to-label fallback applies only when `title` or `gantt` occurs. A declaration using only the old keys retains its previous output: a missing or empty `description` does not suddenly produce a label from `name`. For example, `title={New heading}` overrides `name={Old heading}`, while `description={Short label}` still supplies the chart label. The new keys belong to `\addWP`; direct `\addEntry[gantt]` calls continue to use the existing flat database keys.

Example 2.42: Work packages and their references

```
\begin{workpackages}
  \addWP{manual-wp1}{
    title={Identify pathways},
    gantt={label={Pathway discovery},
      start=1, end=6, style=alternative}
  }
  Collect and analyse samples.
  \addWP{manual-wp2}{
    title={Validate biomarkers},
    gantt={label={Validation},
      start=7, end=12, style=important}
  }
  Test independent cohorts.
\end{workpackages}
See \getWP{manual-wp1,manual-wp2}.
```

WP 1: Identify pathways Collect and analyse samples.

WP 2: Validate biomarkers Test independent cohorts.

See **WPs 1** and **2**.

The next example uses project `A04`. The first chart row inherits its text from `title`. The second keeps only its WP reference because its chart label is explicitly empty. The narrative headings are independent of this choice.

Example 2.43: Grouped Gantt options: omitted and empty labels

```
\begin{workpackages}
  \addWP{manual-label-title}{
    title={Analyse imaging data},
    gantt={start=1, end=8}
  }
  Develop and validate the analysis tools.
  \addWP{manual-label-empty}{
    title={Coordinate imaging services},
    gantt={label={}, start=4, end=16,
      style=alternative}
  }
  Support the collaborating projects.
\end{workpackages}
\printPlot{{gantt}}
```

WP 1: Analyse imaging data Develop and validate the analysis tools.

WP 2: Coordinate imaging services Support the collaborating projects.

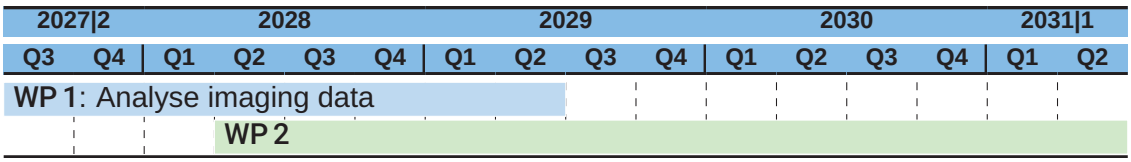


Fig. 2: Gantt chart of **A04**.

Furthermore, PI, work-package, and aim references each have an independent color setting. They

default to black and are independent of color@reference@boldAuthor → P. 87. Configure them with \changeSettings:

```
\changeSettings{
  color@reference@PI   = my-blue,
  color@reference@WP   = my-blue,
  color@reference@Aim = my-blue
}
```

\getWP{⟨*label*⟩}

Refer to a workpackage with the {⟨*label*⟩} in the workpackages → P. 47 environment. You can refer to multiple workpackages, too: \getWP{wp2,wp3,wp4}. Consecutive references under the same parent work package are compacted into a range. Its to connector uses the surrounding font weight while the WPs prefix and endpoint labels stay bold. A narrow, unbreakable space separates WP or WPs from its number. References under later parent work packages remain separate and are not discarded during compaction.
The default is referencing the workpackage of the same project. You can also refer to a workpackage of a different project: \getWP[⟨*project-id*⟩]{⟨*label*⟩}. Parent and nested work packages can be combined in one call, for example \getWP{wp1a,wp1b,wp2,wp3a,wp3b}. The parent wp2 is retained alongside the nested items; sorting follows the hierarchy and ranges do not cross parent boundaries.
See Example 2.42, Example 2.44.

For this example the current project is B04. Parent and nested work packages can be referenced together; nested ranges stay within their parent.

Example 2.44: Nested work packages and mixed references

```
\begin{workpackages}
  \addWP{manual-nested-1}{title={Discovery}}
  \begin{workpackages}
    \addWP{manual-nested-1a}{} Recruit participants.
    \addWP{manual-nested-1b}{} Profile samples.
    \addWP{manual-nested-1c}{} Validate signals.
  \end{workpackages}
  \addWP{manual-nested-2}{title={Translation}}
  Test the selected intervention.
\end{workpackages}
See \getWP{manual-nested-1a,manual-nested-1b,manual-nested-1c,manual-nested-2}.
```

WP 1: Discovery

WP 1a: Recruit participants.

WP 1b: Profile samples.

WP 1c: Validate signals.

WP 2: Translation Test the selected intervention.

See **WPs 1a** to **1c** and **2**.

The next example is in A03. Its explicit [B04] argument points back to the work packages above, while [A03] selects the earlier aim example.

Example 2.45: References to another project's work packages

```
Exchange samples with
\getWP[B04]{manual-nested-1a,manual-
    nested-2}.\par
This supports \getAim[A03]{manual-a,
    manual-c}.
```

Exchange samples with **WPs 1a** and **2**.
This supports **Aims 1 and 3**.

While some keys have been described already, here is what is missing so far:

style=default|alternative|crosshatch|important|striped (initially: default)

Define the style of the bar of this workpackage in the gantt-chart.
For customizing the colors of the various styles have a look at: color@gantt@default → P. 89, color@gantt@alternative → P. 89, color@gantt@crosshatch → P. 89, color@gantt@important → P, color@gantt@stripe-one → P. 89 and color@gantt@stripe-two → P. 89.
See Example 2.55, Example 2.56, and Example 2.57.

2.4.5 Timeline and collaboration plots

\printPlot [⟨*options*⟩] {⟨*plot specification*⟩}

Print a Gantt or collaboration plot. Use the lowercase type names gantt and collaboration in the braced specification. The second braced item selects a project, as in \printPlot{{gantt}{B06}} or \printPlot{{collaboration}{B06}}. Omit the project ID inside a project to use its current ID: \printPlot{{gantt}} or \printPlot{{collaboration}}. Without a current project, give the ID. Place plot options before the specification, for example \printPlot[arcs=true]{{collaboration}{B06}} or \printPlot[caption={Additional details}]{{gantt}}. Use the same leading caption option with an explicit ID, as in \printPlot[caption={Additional details}]{{gantt}{B
Captions default to below the plots; older trailing captions remain supported. Both plot types forward all other options to \hvFloat → P. 25, for example \printPlot[floatPos=!t,caption={}]{{gantt}{Q01}} or \printPlot[floatPos=!t,capP
Plot-specific keys such as caption, layout, and arcs are handled by the class; the remaining keys are interpreted and validated by hvfloat. Defaults are floatPos=!hb and capPos=bottom. Explicit options override these defaults for that call only, including through compatibility aliases. Use plotOptions → P. 86 in \changeSettings → P. 11 for shared defaults, and ganttPlotOptions → P. 86 or collaborationPlotOptions → P. 86 for one type. These settings also accept native style= names. The class supplies proposalPlots; see the customization examples below. Gantt figures always have the label fig:gantt-<project-id>, independently of additional caption text. For project A02, use \cref{fig:gantt-A02}. The same label applies to the compatibility command \printGantt. Update older caption-free references such as fig:ganttA02 to the dashed form. By default, both plot types prefer their source position and may otherwise move to the bottom of the current or a later page. Selecting a different floatPos explicitly changes this placement policy. For either plot type, an empty caption={} leaves the default caption intact and serves as a placeholder for additional project-specific text. The former type names Gantt, ProjectCollaboration, and the plural lowercase collaborations remain accepted as compatibility aliases.
The collaboration arc diagram is the default. Select the heatmap with layout=heatmap. Heatmap columns use a shared dynamic box width based on the project area with the most projects, and inactive no-collaboration projects have white backgrounds. Project areas are read from the optional project-area field of each project entry; if it is absent, the first character of the project ID is used. Rows are created for every distinct area, ordered by

area and project ID. The familiar A, B, and Q colors are retained; other areas use a rotating palette. Override individual colors with `area-colors={C=orange,D=violet}` or replace the fallback palette with `area-palette={teal,brown,magenta}` in the plot options. Use `collaborationAreaColors` → P. 86 and `collaborationAreaPalette` → P. 86 in `\changeSettings` → P. 11 to apply the same customization to every collaboration plot.
See Example 2.53, Example 2.48, Example 2.50. For bar colours and patterns, see Example 2.55 and Example 2.56.

Live plot variants For examples without an explicit ID, the current project is `A03`, as it would be after `\printProjectHead{A03}`. Specifying `B04` overrides that context for that call. Each example starts with the default plot options.

Example 2.46: Collaborations of the current project

```
\printPlot{{collaboration}}
```

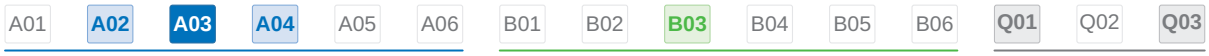


Fig. 3: Collaborations of **A03**.

Example 2.47: Explicit ID overrides the current project

```
\printPlot{{collaboration}{B04}}
```

Fig. 4: Collaborations of **B04**.

Example 2.48: Current-project connections as arcs

```
\printPlot[arcs=true]{{collaboration}}
```

Fig. 5: Collaborations of **A03**.

Example 2.49: Current-project heatmap

```
\printPlot[layout=heatmap]{{collaboration}}
```

Example 2.49: Current-project heatmap (continued)

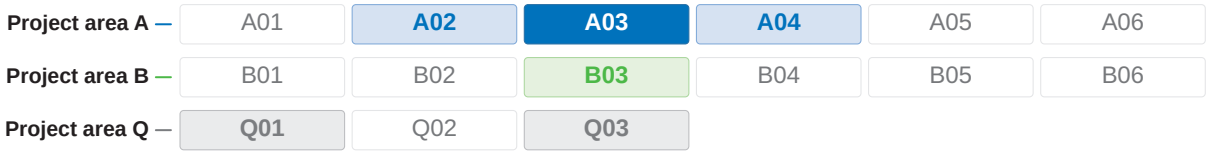


Fig. 6: Collaborations of **A03**.

Example 2.50: Explicit-project heatmap and caption

```
\printPlot[layout=heatmap,caption={Shared experimental platforms.}]
  {{collaboration}{B04}}
```

Fig. 7: Collaborations of **B04**. Shared experimental platforms.

Example 2.51: Custom project-area colours

```
\printPlot[layout=heatmap,area-colors={A=teal,B=orange,Q=violet}]
  {{collaboration}{A03}}
```

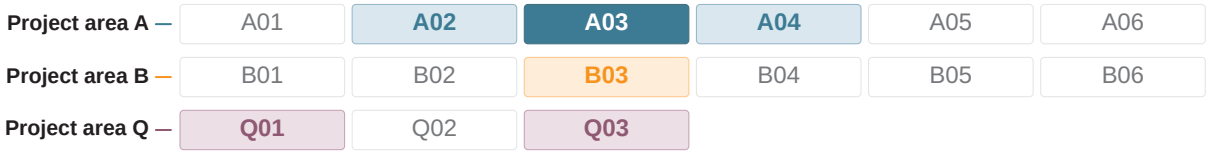


Fig. 8: Collaborations of **A03**.

Example 2.52: Layout aliases and additional caption

```
\printPlot[arc-diagram,caption={Partners of the imaging service.}]
  {{collaboration}{Q01}}
```

Fig. 9: Collaborations of **Q01**. Partners of the imaging service.

Example 2.53: Gantt chart of the current project

```
\printPlot[caption={Discovery followed by validation.}]{{gantt}}
```

Example 2.53: Gantt chart of the current project (continued)

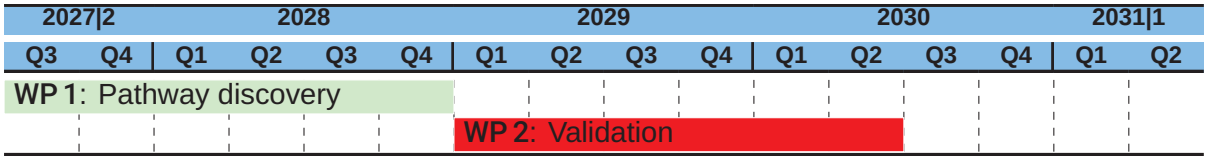


Fig. 10: Gantt chart of **A03**. Discovery followed by validation.

Example 2.54: Gantt chart with explicit project ID

```
\printPlot{{gantt}{A03}}
```

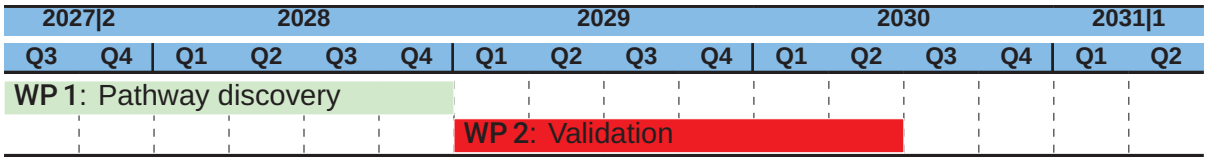


Fig. 11: Gantt chart of **A03**.

For older sources, `Gantt` means `gantt`; `ProjectCollaboration` and `collaborations` mean `collaboration`. These aliases render the same results and accept the same leading options.

Gantt bar styles and colours Choose a bar's appearance with `gantt={style=...}` in `\addWP` →P. 47. The flat `style` →P. 51 key remains supported. The three solid fills are `default`, `alternative`, and `important`; `crosshatch` adds a hatch pattern, and `striped` alternates two colours. The following example defines one work package of each style in `B06`. Its five rows are reused in the palette examples below, so the colours can be compared without changing the work plan.

Example 2.55: Five Gantt bar styles

```
\begin{workpackages}
  \addWP{manual-colour-default}{
    title={Baseline},
    gantt={label={Default}, start=1, end=6, style=default}
  }
  \addWP{manual-colour-alternative}{
    title={Parallel analysis},
    gantt={label={Alternative}, start=3, end=9, style=alternative}
  }
  \addWP{manual-colour-important}{
    title={Validation},
    gantt={label={Important}, start=7, end=12, style=important}
  }
  \addWP{manual-colour-crosshatch}{
    title={Integration},
    gantt={label={Crosshatch}, start=9, end=14, style=crosshatch}
  }
  \addWP{manual-colour-striped}{
    title={Joint experiments},
```

Example 2.55: Five Gantt bar styles (continued)

```
    gantt={label={Striped}, start=11, end=16, style=striped}
  }
\end{workpackages}
\printPlot[caption={One row for each built-in bar style.}]{{gantt}{B06}}
```

WP 1: Baseline

WP 2: Parallel analysis

WP 3: Validation

WP 4: Integration

WP 5: Joint experiments

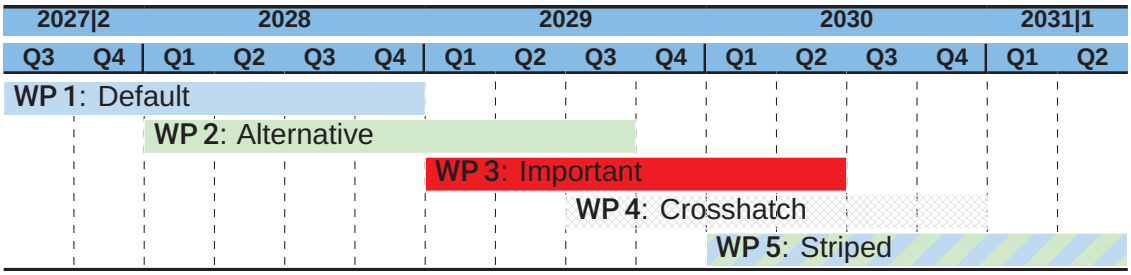


Fig. 12: Gantt chart of **B06**. One row for each built-in bar style.

For a document-wide palette, put `\changeSettings` in `preamble/dfg-customization.tex`. These colour settings are applied at `\begin{document}`. They accept colour names and xcolor mixes such as `teal!45`. The `frame` colour controls the outline of the bars, while `crosshatch` controls the hatch strokes and `stripe-one`/`stripe-two` control the two alternating stripe colours.

Document-wide Gantt palette: place in the customization file

```
\changeSettings{
  color@gantt@default     = {teal!45},
  color@gantt@alternative = {orange!50},
  color@gantt@important   = {violet!70},
  color@gantt@crosshatch  = {black!25},
  color@gantt@stripe-one  = {teal!20},
  color@gantt@stripe-two  = {teal!80},
  color@gantt@frame       = {black!50}
}
```

To recolour just one chart after the document has started, use `\colorlet` on the live colour names inside a group. The next example also defines an RGB colour; the surrounding group restores the previous palette afterwards. The colour names are set before `\printPlot` → P. 51; they are not plot options.

Example 2.56: Custom colours for one Gantt chart

```
\begingroup
\definecolor{ganttOcean}{RGB}{0,114,178}
\colorlet{color@gantt@default}{ganttOcean!45}
\colorlet{color@gantt@alternative}{teal!50}
\colorlet{color@gantt@important}{orange!90}
```

Example 2.56: Custom colours for one Gantt chart (continued)

```
\colorlet{color@gantt@crosshatch}{violet!35}
\colorlet{color@gantt@stripe-one}{ganttOcean!25}
\colorlet{color@gantt@stripe-two}{ganttOcean!55}
\colorlet{color@gantt@frame}{black!50}
\printPlot[caption={Custom fills, coloured hatching, and two-tone stripes.}]
  {{gantt}{B06}}
\endgroup
```

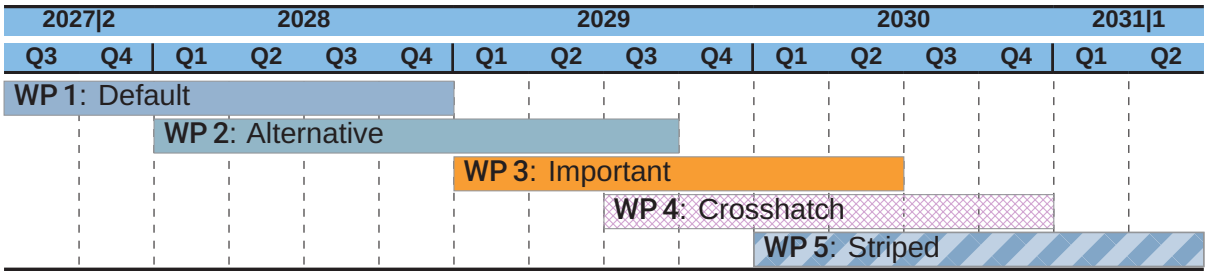


Fig. 13: Gantt chart of B06. Custom fills, coloured hatching, and two-tone stripes.

For grayscale output, use different gray levels and retain the hatch and stripe patterns. The following chart uses the same work packages and dates; its black outlines make the bar boundaries explicit.

Example 2.57: Grayscale Gantt bars with patterns

```
\begingroup
\colorlet{color@gantt@default}{black!20}
\colorlet{color@gantt@alternative}{black!35}
\colorlet{color@gantt@important}{black!50}
\colorlet{color@gantt@crosshatch}{black!25}
\colorlet{color@gantt@stripe-one}{white}
\colorlet{color@gantt@stripe-two}{black!35}
\colorlet{color@gantt@frame}{black}
\printPlot[caption={Grayscale fills with hatching and stripes.}]{{gantt}{B06}}
\endgroup
```

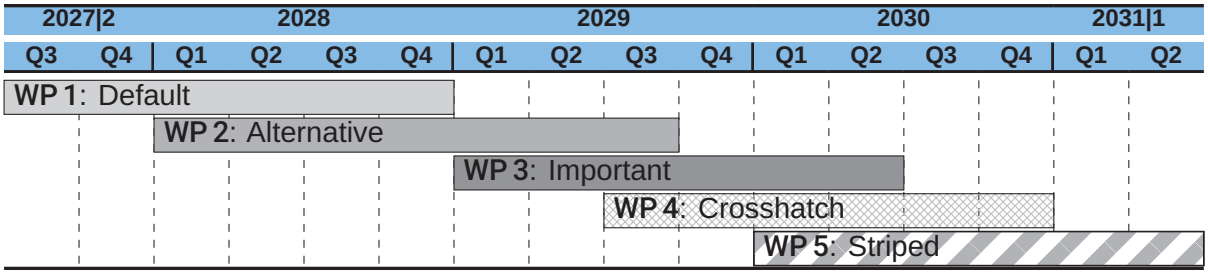


Fig. 14: Gantt chart of B06. Grayscale fills with hatching and stripes.

2.4.6 Individual project funding

The example below adds a funding request for `A06`, whose project metadata are already loaded. It covers all five funding groups: `staff`, `costs`, `fellowships`, `globalfunds`, and `instrumentation`. The doctoral position at 65% uses the configured annual salary; the other

groups specify full EUR amounts directly, including a one-off equipment purchase. The year headings and partial-year factors come from `meta.fundingYears`. The earlier `A02` funding examples use separate records.

Example 2.58: Requested funding for a project

```
\changeSettings{salary@PhD=83700}
\addEntry[funding]{RequestedFunding}{
  ref-project-id = {A06},
  funding-type   = {staff},
  category       = {PhD},
  percentage     = {65},
  quantity       = {
    year1 = {1},
    year2 = {1},
    year3 = {1},
    year4 = {1},
    year5 = {1}
  }
}
\addEntry[funding]{RequestedFunding}{
  ref-project-id = {A06},
  funding-type   = {costs},
  category       = {consumables},
  sum            = {
    year1 = {1000},
    year2 = {2000},
    year3 = {2000},
    year4 = {2000},
    year5 = {1000}
  }
}
\addEntry[funding]{RequestedFunding}{
  ref-project-id = {A06},
  funding-type   = {fellowships},
  category       = {Short-term research fellowships},
  sum            = {
    year1 = {3000},
    year2 = {6000},
    year3 = {6000},
    year4 = {6000},
    year5 = {3000}
  }
}
\addEntry[funding]{RequestedFunding}{
  ref-project-id = {A06},
  funding-type   = {globalfunds},
  category       = {Training and networking},
  sum            = {
    year1 = {1500},
    year2 = {3000},
    year3 = {3000},
    year4 = {3000},
    year5 = {1500}
  }
}
\addEntry[funding]{RequestedFunding}{
  ref-project-id = {A06},
  funding-type   = {instrumentation},
  category       = {Imaging workstation},
  sum            = {
    year1 = {20000},
```

Example 2.58: Requested funding for a project (continued)

```
    year2 = {0},
    year3 = {0},
    year4 = {0},
    year5 = {0}
  }
}
\printTable[note={Illustrative amounts for this example.}]{{RequestedFunding}{A06}}
```

Funding for	2027|2		2028		2029		2030		2031|1	
Staff	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum
Doctoral researcher, 65 %	1	27,202	1	54,405	1	54,405	1	54,405	1	27,202
Total		27,202		54,405		54,405		54,405		27,202
Direct Costs		Sum		Sum		Sum		Sum		Sum
consumables		1,000		2,000		2,000		2,000		1,000
Total		1,000		2,000		2,000		2,000		1,000
Fellowships		Sum		Sum		Sum		Sum		Sum
Short-term research fellowships		3,000		6,000		6,000		6,000		3,000
Total		3,000		6,000		6,000		6,000		3,000
Globalfunds		Sum		Sum		Sum		Sum		Sum
Training and networking		1,500		3,000		3,000		3,000		1,500
Total		1,500		3,000		3,000		3,000		1,500
Instrumentation		Sum		Sum		Sum		Sum		Sum
Imaging workstation		20,000		0		0		0		0
Total		20,000		0		0		0		0
Total		52,702		65,405		65,405		65,405		32,702

Note: Figures in EUR. Illustrative amounts for this example.

The project staff roster describes who does the work. It uses `staff` records in `RequestedFundingStaff`; monetary requests remain separate `funding` records. Existing staff may inherit their name and institution through `ref-person-id`. Use `lastname={TBA}` for an unnamed requested position. The `description` text is printed as a numbered job description below the table.

Example 2.59: Project staff: an existing investigator and a doctoral vacancy

```
\addEntry[staff]{RequestedFundingStaff}{
  ref-project-id    = {B03},
  funding-status    = {existing},
  staff-type        = {research},
  ref-person-id     = {per11},
  field-of-research = {Immunology},
  commitment        = {8},
  funding-source    = {State funds},
  description       = {Supervises the experiments and data analysis.}
}
\addEntry[staff]{RequestedFundingStaff}{
  ref-project-id     = {B03},
  funding-status     = {requested},
  staff-type         = {research},
  lastname           = {TBA},
  positionText       = {Doctoral researcher (65\%)},
  field-of-research  = {Immunology},
  ref-institution-id = {ins1},
  category           = {PhD},
  description        = {Performs longitudinal experiments and prepares the thesis.}
}
\printTable{{RequestedFundingStaff}{B03}}
```

	No.	Name, academic degree, position	Field of research	Departm. of (non-)univers. institution	Project commitm. (h/wk)	Category	Funding source
Existing staff							
Research staff	1.	**Sato**, Mira, Prof. Dr. rer. nat. (Professor of Systems Medicine)	Immunology	CCT	8		State funds
Requested staff							
Research staff	2.	TBA (Doctoral researcher (65%))	Immunology	IMSM		Doctoral researcher	

Abbreviations: CCT: Centre for Clinical Translation (WRC); IMSM: Institute of Microbial Systems Medicine (EU); WRC: Westhaven Research Centre; EU: Example University.

Job descriptions of staff for the proposed funding period (supported through existing funds):

1. **Mira Sato** Supervises the experiments and data analysis.

Job descriptions of staff for the proposed funding period (requested funds):

2. **TBA** Performs longitudinal experiments and prepares the thesis.

Existing direct-cost funding is declared separately from new requests. The following records identify the participating affiliations and funding sources; the `sum` values are full EUR amounts for each funding-year column.

Example 2.60: Existing direct-cost funding from two sources

```
\addEntry[funding]{RequestedAndExistingFundingDirectCosts}{
  ref-project-id     = {B03},
  ref-affiliation-id = {aff1},
  financed-by        = {University core funds},
  sum                = {
    year1 = {1000}, year2 = {2000}, year3 = {2000}, year4 = {2000}, year5 = {1000}
  }
}
\addEntry[funding]{RequestedAndExistingFundingDirectCosts}{
  ref-project-id     = {B03},
  ref-affiliation-id = {aff2},
  financed-by        = {Partner university},
  sum                = {
    year1 = {500}, year2 = {1000}, year3 = {1000}, year4 = {1000}, year5 = {500}
  }
}
\printTable{{RequestedAndExistingFundingDirectCosts}{B03}}
```

	2027|2	2028	2029	2030	2031|1
EU: existing funds from University core funds	1,000	2,000	2,000	2,000	1,000
PU: existing funds from Partner university	500	1,000	1,000	1,000	500
Sum of existing funds	1,500	3,000	3,000	3,000	1,500
Sum of requested funds	0	0	0	0	0

Note: Figures in EUR.

`\begin{`**`FundingDirectCostsTable`**`}[`⟨*heading*⟩`]`
⟨*environment content*⟩
`\end{`**`FundingDirectCostsTable`**`}`

Typeset a three-column breakdown of direct costs that can continue across pages. Page breaks occur between rows; an individual row stays together. The optional heading stays with the first row and is printed once, without a table number or a list-of-tables entry. Continuation notices

identify subsequent parts of the table. The gap above the heading (or above the table if no heading is supplied) uses \dfgTablePreSep, like the long tables. A fixed 4 pt gap separates an optional heading from the table itself. The currency column uses its natural width so that codes such as EUR fit in the selected font; the description column fills the remaining width.
See Example 2.61.

Example 2.61: Explain individual direct-cost items

```
\begin{FundingDirectCostsTable}[
    Consumables]
  Assay reagents & EUR & 1200 \\
  Culture media & EUR & 800 \\
\end{FundingDirectCostsTable}
```

Consumables

Assay reagents	EUR	1,200
Culture media	EUR	800

2.4.7 Report and results of an ending project

\printProjectResults{⟨*key-value list*⟩}

Print the three result categories required for an ending project. The keys quality-assured, other, and patents each accept a comma-separated list of bibliography entry keys. Use the literal value none when a category produced no results. An omitted or empty key retains a drafting instruction instead, so an unfinished list is not accidentally reported as empty.
Every non-empty category is placed in a separate biblatex reference segment within the reference section opened by \printProjectHead. Consequently, category membership is local to the current project. The command also places any pending floats before the result lists. The combined result-key list is written to the project's auxiliary file. On the next normal LaTeX pass, a projectReport bibliography uses this list to omit report citations that are printed later as project results. This follows the usual biblatex compilation cycle and does not require the entry keys to be duplicated in the report.
See Example 2.62.

\begin{**projectReport**}
⟨*environment content*⟩
\end{**projectReport**}

Isolate all citations in the project report in their own reference segment and print that segment's bibliography at the end of the environment. Any entries assigned to \printProjectResults for the same project are omitted, because they are printed in the later result lists. Place the environment immediately after the report subsection heading and label.
See Example 2.62.

Example 2.62: Published results of an ending project

```
\begin{refsection}
\begin{projectReport}
  Follow the FAIR principles \cite{FAIR2016}
  and document software design \cite{Hoare1973}.
\end{projectReport}
\printProjectResults{
  quality-assured={FAIR2016},
  other=none,
  patents=none
}
\end{refsection}
```

Example 2.62: Published results of an ending project (continued)

Follow the FAIR principles Wilkinson et al. 2016 and document software design Hoare 1973.

References

Hoare, C. A. R. (1973). “Hints on programming language design”. In: *Computer Systems Reliability*. Ed. by C. Bunyan. State of the Art Report 20, pp. 193–216. (Visited on 2018).

Publications with scientific quality assurance

Wilkinson, M. D. et al. (2016). “The FAIR Guiding Principles for scientific data management and stewardship”. In: *Scientific Data* 3.1, p. 160018. DOI: 10.1038/sdata.2016.18. (Visited on 05/31/2021).

Other publications and published results

None.

Patents

None.

For `project-status=E`, the staff table reuses `\printTable{{RequestedFundingStaff}{project-id}}`. Rows with `funding-status=requested` describe staff funded with approved grant money in the ending period, rather than a request for a new period. The complete B02 example shows this closing table together with its input records.

2.5 Bylaws and declarations

The bylaws are authored prose in `content/04_bylaws-of-the-crc.tex`. Use the applicant-wording helper introduced with the title page for singular or plural university names. The declaration file `content/05_declarations.tex` then prints the required signatures from the same person metadata.

`\printSignature``[`⟨*database*⟩`]{`⟨*id-description-pairs*⟩`}`

Print one signature block for each `{`⟨*id*⟩`}{`⟨*description*⟩`}` pair. The ⟨*database*⟩ defaults to `person`. Inside ⟨*description*⟩, `\theAffiliationOfRoleID` contains the person’s affiliation id and can be used for further database lookups.
See Example 2.63.

`\printSignaturesWithRole``[`⟨*database*⟩`]{`⟨*role*⟩`}{`⟨*description*⟩`}`

Print a signature block for every current-period person with ⟨*role*⟩. This is used for the rector, chancellor, or president of every applicant university, so a proposal with several applicants does not require a hard-coded list of person ids. Inside ⟨*description*⟩, `\theAffiliationOfRoleID` refers to the affiliation of the current signatory.
See Example 2.64.

Example 2.63: Signature blocks

```
\printSignature{
  {spokesperson}{(Spokesperson of \thisCRC)}
  {rector}{(Rector of Example University)}
}
```

Example 2.63: Signature blocks (continued)

Example City
<date>

Prof. Dr. med. Morgan Sample
(Spokesperson of CRC 9999)

Example City
<date>

Prof. Dr. Robin Rector
(Rector of Example University)

The role-based form resolves the affiliation for each signatory; it avoids repeating names or maintaining a separate list of rectors in the content.

Example 2.64: Select signatories by role

```
\printSignaturesWithRole{rector}{%
  Rector of
  \get[affiliation]{\theAffiliationOfRoleID}{name}}
```

Example City
<date>

Prof. Dr. Casey President
Rector of Partner University

Example City
<date>

Prof. Dr. Robin Rector
Rector of Example University

2.6 Back matter: compact project overview

The closing overview reuses the project and PI records already used in general information. No separate database is needed.

On the dedicated closing page, the table uses a minimum row height of 2.4 `\baselineskip`. If the project records need more vertical space than is available below the CRC logo, the complete table is scaled down proportionally to fit on that page. A shorter table retains its natural type size. The logo keeps its configured size. No manual row-height adjustment is needed when projects are added or their titles or project-leader names grow.

Example 2.65: Compact project overview for the closing pages

```
\printTable{projectOverview}
```

Project	Title	Project leader(s)
A01	Microbial signalling across epithelial barriers	Kim **Sample** Alex **Example**
A02 N	Metabolic control of tissue-resident immunity	Kim **Sample** Samira **Hartmann**
A03	Microbiome-derived metabolites and immune memory	Samira **Hartmann** Noah **Lindberg**
A04 N	Spatial niches of host–microbe interactions	Noah **Lindberg** Alexis-Marie **Winters-Scholz**
A05	Dietary control of microbial community dynamics	Alexis-Marie **Winters-Scholz** Leonie **Navarro**
A06 N	Modelling microbial resilience and recovery	Leonie **Navarro** Daniel **Okafor**
B01	Host defence during microbiome perturbation	Hansi **Meier** Alex **Example**
B02 N	Molecular signatures of tissue regeneration	Kimmi **Miller** Daniel **Okafor**
B03	Immune circuits linking intestine and liver	Hansi **Meier** Mira **Sato**
B04 N	Cross-organ consequences of inflammatory stress	Kimmi **Miller** Mira **Sato**
B05	Patient-derived models of metabolic disease	Friedhelm **Redata** Robin **Keller**
B06 N	Translating microbial biomarkers into interventions	Daniel **Okafor** Robin **Keller**
Q01	Integrated imaging and analysis services	Alex **Example** Noah **Lindberg**
Q02	Integrated Research Training Group	Friedhelm **Redata** Leonie **Navarro**
Q03	Central coordination and data stewardship	Hansi **Meier** Robin **Keller**

3 Metadata and configuration reference

This chapter collects the detailed field definitions, class settings, CV and bibliography conventions, and maintenance notes. Read it as a reference while working through the preceding proposal examples.

3.1 Metadata, databases and keysets

This reference lists the accepted fields for each keyset. The walkthrough introduces the records at their point of use; consult this section when adding fields or choosing a non-default value. The class stores records with `datatool`→CTAN.

Databases We have these databases that are used and picked up by several commands by default:

meta All the metainformation about the proposal

person Everything that is related to a person

project Anything that is related to a project

institution Info about an institution, that is linked to:

affiliation storing info about the affiliation

There are also more databases created on the fly but mainly used for project specific purposes. The examples below use one coherent sample dataset: `MM` and `KM` are persons, `A01` is a project, `IAIS` is an institution, and `RWTH` is the related affiliation.

3.1.1 Keyset person

Example keyset to describe a person-entity.

```
\addEntry→P.3{person}{
  id→P.79                    = {MM},
  firstname→P.79             = {Max S.},
  lastname→P.79              = {Doe},
  academicdegree→P.79        = {Prof. Dr. rer. nat.},
  gender→P.79                = {m},
  ref-institution-id→P.80    = {IAIS},
  ref-project-id→P.80        = {A01},
  role→P.79                  = {PI,spokesperson},
  position→P.80              = {prof-W3},
  positionText→P.80          = {Professor of Microbial Systems},
  period→P.79                = {1},
  name-alias→P.67            = {{Max Doe},{M. S. Doe}},
  orcid→P.67                 = {0000-0002-3555-7218},
  email→P.66                 = {max.doe@example.edu},
  phone→P.66                 = {+49 241 80 12345},
  url→P.66                   = {https://example.edu/mm},
  doctorateYear→P.67         = {1995},
  doctorate→P.67             = {Dr. rer. nat.},
  financed-by→P.66           = {RWTH},
  topic→P.66                 = {Host--microbiome interactions},
  category→P.66              = {prof},
  dateDefense→P.68           = {1995},
  periodStart→P.68           = {2025},
  periodEnd→P.68             = {2029},
  contract-information→P.66  = {
    C1→P.66   = {yes},
    C2→P.66   = {no},
    C3→P.66   = {no},
```

```
      C4→P.66  = {yes},
    }
  }
```

There are several keys you can and should use regarding a person. They are described further done as an example on how to use \addEntry→P.3 etc.

email=⟨*string*⟩

Provide the email-address of the person.

url=⟨*url*⟩

URL of the persons academic/professional homepage (e.g. institute).

phone=⟨*string*⟩

Provide the phone number of the person.

financed-by=⟨*string*⟩

Describe the source of funding for the person's e.g. position etc.

topic=⟨*string*⟩

Especially for the early career researchers describe their topic of research.

category=groupLeader|prof|postDoc|medDoc|PhD|
research|nonResearch|student|assistant

category is used in various databases. Mostly it is used to state the category of the person, but it is also used then for the early career researchers.

contract-information=⟨*key-values*⟩

Provide information about the person's contractual situation. The ⟨*key-value*⟩ is further specified with C1, C2, C2a, C2b, C3, C3a, C4, C4a→P.67. The generated wording for the yes/no keys C1–C4 is singular/plural sensitive. It is adjusted automatically to match the number of project leaders and institutions represented in the proposal.

C1=yes|no

This key collects the answer to *Is the employment of the project leader(s) at the institution(s) indicated contractually secured for the duration of the proposed funding period?*

C2=yes|no

This key collects the answer to *Do any of the above mentioned persons hold fixed-term positions?*

C2a=⟨*YYYY-MM-DD*⟩

If key C2 has been answered with ⟨*yes*⟩, this question *End date of fixed-term contract:*⟨*YYYY-MM-DD*⟩ requires ⟨*YYYY-MM-DD*⟩ as answer, too.

C2b⟨*YYYY-MM-DD*⟩

If key C2 has been answered with ⟨*yes*⟩, this question *Further employment is planned until* ⟨*YYYY-MM-DD*⟩ requires ⟨*YYYY-MM-DD*⟩ as answer, too.

C3=yes|no

This key collects the answer to *Will one or more of the above-mentioned persons retire during the proposed funding period?*.

C3a=⟨*YYYY-MM-DD*⟩

If key C3 has been answered with ⟨*yes*⟩, this question *anticipated retirement date:* ⟨*YYYY-MM-DD*⟩ requires ⟨*YYYY-MM-DD*⟩ as answer, too.

C4=yes|no

This key collects the answer to *Funding for the position(s) of the project leader(s) at the institution(s) indicated is covered by core support (state funds or similar):*

C4a=⟨*string*⟩

If key C4 → P. 66 has been answered with ⟨*no*⟩, this key provides type and source of funding.

Following keys are mainly used for the CV-section but are closely tight to the person:

orcid=⟨*0000-0000-0000-0000*⟩

The individual string with the ORCiD. This value is also required for \getORCiD → P. 92.

name-alias=⟨*string*⟩

More versions of the person's name. The various aliases for name-alias are also described under \addboldnames → P. 94.

doctorateYear=⟨*YYYY*⟩
doctorate=⟨*string*⟩
degree-programme=⟨*string*⟩

Providing information about the doctorate.

3.1.2 Database entries for a cv

CV box titles, body text, publication lists, and consent text use \normalsize. They follow the selected document base size, normally the class's nominal 11 pt setting, instead of imposing a smaller CV font. Personal-data labels and career stages occupy one quarter of the row width. Multiline labels align with the first line of the details without enlarging the gap before its next paragraph. Short entries reserve the full label height, and long details remain breakable across pages.

The header of the CV section is (partly) based on the information you parse to the document using the \addEntry → P. 3 command with the keyset **person**: Keys like name-alias, orcid, doctorate, degree-programme, url → P. 66 are used especially for the CV-section.

Let's assume we have a person with the following information:

Partly person-entity dataset focussing on its CV-entry.

```
\addEntry→P. 3{person}{
  id→P. 79                ={MM},
  firstname→P. 79         ={Max S.},
  lastname→P. 79          ={Doe},
  academicdegree→P. 79 ={Prof. Dr. rer. nat.},
  role→P. 79              ={PI},
  \ldots
  name-alias        ={{Maxi Doe},{Maximilian Doe}},
  orcid             ={0000-0002-3555-7218},
  doctorateYear     ={1995},
  doctorate         ={Dr. rer. nat.},
  degree-programme ={Biology},
  url→P. 66                 ={https://example.edu/mm},
}
```

This set of information is unique to a person and therefore only needs to be parsed once.

In the cv we need more dedicated information about the person. This is done with a separate keyset so it will not clutter the person-entry too much. You can have multiple of the following entries below for a person. Most important stages should be indicated with cv-type=mandatory. If you state cv-type=supplement you only need to use the key description, same goes for cv-type=activities which will then be in a different section, and last cv-type=supervision. There are more sections with further information about the PI. All the information go to the database ⟨*cv*⟩.

ref-person-id=⟨*id*⟩

Use the ⟨*id*⟩ of the person to whom this entry belongs to.

description=⟨*string*⟩

Further description of the current entry.

cv-type=mandatory|supplement|activities|
supervision|distinction|other

Specifying the type of one CV entry with additional information. Each CV of a person needs to have a ⟨*mandatory*⟩ entry (as part of *Qualification and Career*).

periodStart={⟨*date*⟩} (starting date)
periodEnd={⟨*date*⟩} (ending date)
dateDefense={⟨*date*⟩} (date of the defense of the thesis)

Specifying the time span of an event. The ⟨*date*⟩ should be given in an IS8601-form.

Some information comes from the block described above, but for the *Stages* you need to describe them separately using the keys ref-person-id→P. 67, cv-type, periodStart, periodEnd, name→P. 80, position→P. 80, positionText→P. 80, description, ref-institution-id→P. 80.

Example dataset-entry for a mandatory person-cv-entity.

```
\addEntry→P. 3{cv}{
  ref-person-id→P. 67      ={MM},
  cv-type         ={mandatory},
  periodStart         ={1995},
  periodEnd           ={1998},
  position→P. 80              ={prof-W3},
  positionText→P. 80             ={Professor of Microbial Systems},
  description         ={Established an independent research group on ↩
   ↪host--microbiome interactions.},
  ref-institution-id→P. 80 ={IAIS},
}
```

For each stage on the career path repeat the \addEntry{⟨*cv*⟩}{⟨ *…, type=mandatory, …*⟩}-block.

There are five more blocks to which a researcher can provide information. For each block and for each entry within one block you need to create an entry.

supplement: Supplementary Career Information

activities: Activities in the Research System

supervision: Supervision of Researchers in Early Career Phases

distinction: Academic Distinctions

other: Other Information

Here is a more concrete example

Example dataset-entry for a common CV-entity

```
\addEntry→P. 3{cv}{
  ref-person-id→P. 67      ={MM},
  cv-type             ={supplement},
  description         ={Member of the university research council since 2024.},
}
```

\dfgCV{⟨*person-id*⟩}

Print the complete CV for one person. The command expects a dedicated cv-⟨*person-id*⟩ database and combines the header, mandatory career stages, optional CV sections, selected publications, and the data privacy statement.
See Example 3.1.

\dfgCVsection [⟨*database*⟩]

Print the CVs for all PIs in the current funding period. The ⟨*database*⟩ defaults to `person`; persons are sorted by lastname and firstname before their CVs are printed with `\dfgCV`. See Example 3.1.

The starter CV loads person and career records from `metadata/dfg-metadata.tex` and `metadata/dfg-metadata-cv.tex`. The following example shows the first CV page produced by the complete appendix. Its first PI is `per2` (Alex Example); selecting just that person produces the same CV. The local proposal, CV appendix, and manual use the same twelve-PI consortium. All pages, including the privacy statement, follow in Chapter 5.

Example 3.1: Generate the CV appendix or select one person

```
\documentclass[english,cv,final=true]{dfg-crc}
\begin{document}
\dfgCVsection
% For one person, replace the line above with:
% \dfgCV{per2}
\end{document}
```

Example 3.1: Generate the CV appendix or select one person (continued)

Curriculum Vitae

Prof. Dr. phil.

Alex Example

Personal Data	
Title	Prof. Dr. phil.
First name	Alex
Name	Example
Current position	Research group leader
Current institution(s)/ site(s), country	Department of Translational Biosciences Partner University Research Road 2, 54321 Partner City (Germany)
ORCiD	0000-0000-0000-0002

Qualifications and Career	
Stages	**Periods and Details**
Degree programme	Data Science, Partner University
Doctorate	1999 Dr. phil., Partner University
since 2016: Current appointment	Research group leader *Develops statistical models linking molecular measurements with clinical phenotypes.*
2004–2015: Independent research	Independent research group leader *Established a research team on multimodal data integration and reproducible analysis and developed collaborative methods.*
2000–2003: Postdoctoral training	Postdoctoral researcher *Developed experimental and analytical approaches to multimodal data integration and reproducible analysis.*

Supplementary Career Information

Research focus: multimodal data integration and reproducible analysis. A visiting fellowship at the Example Centre for Interdisciplinary Research supported new collaborations and exchange of methods.

Activities in the Research System

Leads the data standards working group and maintains the consortium code-review programme. Contributes to peer review and open teaching materials.

Supervision of Researchers in Early Career Phases

Supervises doctoral projects in statistics and biology, with paired computational and experimental mentors. Regular progress reviews include research integrity and publication planning.

Scientific results – Category A

Articles in peer-reviewed journals, contributions to peer-reviewed conferences or to anthology volumes, and book publications

1. A. Example. “Illustrative study of multimodal data integration and reproducible analysis”. In: *Fictional Journal of Consortium Research* 1 (2025), pp. 1–8.

A 5

3.1.3 Keyset project

The following keys describe a project. Optional fields are identified below.

Example dataset-entry to describe a project-entity.

```
\addEntry→P.3{project}{
  id→P.79 = {A01},
  number→P.80 = {A01},
  name→P.80 = {Microbial metabolism in barrier tissues},
  short-title→P.71 = {Barrier metabolism},
  project-type→P.71 = {research},
  project-status→P.71 = {N},
  project-area→P.71 = {A},
  consider-for-lists→P.71 = {true},
  reference-only→P.71 = {false},
```

```
    research-area→P. 72 = {1.11-01,1.11-03},
    ref-person-id→P. 67 = {MM,KM},
    collaboration→P. 72 = {A02,B01,Q01},
    legal-issues→P. 72  = {
      L1→P. 72  = {yes},
      L1a→P. 72 = {yes},
      L2→P. 72  = {no},
      L2a→P. 72 = {},
      L3→P. 72  = {yes},
      L4→P. 72  = {no},
      L5→P. 72  = {no},
      L5a→P. 72 = {},
      L6→P. 73  = {no},
      L7→P. 73  = {no},
      L7a→P. 73 = {},
    }
  }
```

Other required keys are `id`→P. 79, `name`→P. 80, `number`→P. 80, `ref-person-id`→P. 67.

short-title=⟨*string*⟩ (optional, initially absent)

Store a concise alternative to the full project title in `name`→P. 80. This field alone does not change any output. Select its use independently for the table of contents, running head and project-start title with `\changeSettings{projectTitle={...}}`, documented below. If the field is absent, empty or whitespace-only, each selected short title falls back to `name`→P. 80. Existing metadata therefore need no changes. Generic metadata getters and project overview tables continue to use the full `name`→P. 80.

Within an `\addEntry`→P. 3`{project}{...}` entry, the `ref-person-id`→P. 67 field is reserved exclusively for the person or persons who are PIs of that project. Every person listed in this field is interpreted as a project PI; no other person roles are inspected or considered. Persons associated with the project only in another role must therefore not be included in this field.

project-type=`research|service|mgk|admin`

Hereby you specify the type of the project. ⟨*research*⟩ stands for a classical research project, ⟨*service*⟩ is service project, ⟨*mgk*⟩ is an integrated graduate college, ⟨*admin*⟩ is an administrative project.

project-status=`N|E|C`

Define the status of the project, where ⟨*N*⟩ means a *new* project, ⟨*E*⟩ stands for *ending* and ⟨*C*⟩ for *continuing* project. The generated local proposal contains complete, separate source examples for all three statuses. Continuing projects use “Project progress to date”, new projects use “Research rationale”, and ending projects use the shorter “Project history”, “Published project results”, and “Funding” structure. In every case `\printProjectHead`→P. 43 supplies the preceding general-information section from metadata.

project-area=⟨*area-id*⟩

Assign the project to a collaboration-plot area such as `A`, `B`, or `Q`. Any number of area identifiers is supported. If the key is omitted or empty, the first character of the project ID is used for compatibility with existing metadata (for example, `A01` belongs to area `A`).

consider-for-lists=`true|false`

Control whether the project participates in automatically generated project lists, project overview tables, research-area aggregates, and project counts. The default is `true`. Setting this key to `false` does not remove the database row, so the project remains available to explicit reference commands such as `\getProject`→P. 8.

reference-only=`true|false`

Declare that the project exists only so historical or external project ids can be referenced. The default is `false`. A reference-only project is printed without a hyperlink because it has no project section that could provide a link target. In prose it receives the explicit “former project” indicator. Generated tables and lists instead append a compact superscript asterisk and add a local “Former project” legend when at least one such project occurs. This key is independent of `consider-for-lists`: an ending project with a real project section can be excluded from lists without becoming reference-only.

research-area=⟨*ticklist*⟩

Collect all research areas (according to the DFG list) in a comma-separated structure. Spaces around individual codes are ignored, e.g. `2.21-02, 2.22-31`.

collaboration=⟨*project-id-list*⟩

List the other CRC projects collaborating with this project. Collaborations are treated as undirected and duplicate declarations are collapsed, so the reverse relation does not need to be repeated. The project collaboration plot reads its edges from this field and its nodes from the same `project` database. Its default arc layout shows all active projects on one axis and highlights the focus project and its direct collaborators. Set `arcs=true` to draw the connecting arcs, or select the optional heatmap layout. Ending, reference-only, and `consider-for-lists=false` projects are omitted, as are edges to those intentionally excluded nodes. All arcs reach one common peak height, so their horizontal span does not imply collaboration strength or weight. Project identifiers are printed inside the nodes, and in the arc layout each project-area rule spans its complete contiguous group of nodes.

collaborations=⟨*project-id-list*⟩

Compatibility alias for `collaboration`. New sources should use the singular spelling, consistently with the plot type and local plot option.

legal-issues=⟨*further key-values*⟩

Provide information about the project’s legal issues. The ⟨*key-value*⟩ is further specified with `L1`, `L1a`, `L2`, `L2a`, `L3`, `L4`, `L5`, `L5a`. `L6`→P. 73. `L7`→P. 73. `L7a`→P. 73.

L1=`yes|no`

This key records whether the project requires compliance with discipline-specific research ethics guidelines.

L1a=`yes|no`

If key `L1` has been answered with ⟨*yes*⟩, this statement records whether a statement from the responsible ethics committee is required and will be obtained before funding starts.

L2=`yes|no`

This key collects the answer to *clinical trials*

L2a=`yes|no`

If key `L2` has been answered with ⟨*yes*⟩, this statement *A copy of the studies’ registration is included with the proposal* requires an answer, too.

L3=`yes|no`

This key collects the answer to *experiments involving vertebrates*

L4=`yes|no`

This key collects the answer to *experiments involving recombinant DNA*

L5=`yes|no`

This key collects the answer to *research involving human embryonic stem cells*

L5a=`yes|no`

If key `L5` has been answered with ⟨*yes*⟩, this statement *Legal authorization has been obtained* requires an answer, too.

L6=yes|no

This key collects the answer to *research concerning the Convention on Biological Diversity*

L7=yes|no

This key collects the answer to *investigations involving dual use research of concern*

L7a=yes|no

If key L7 has been answered with ⟨*yes*⟩, this statement *A copy of the statement by the institution's research ethics committee is included with the proposal* requires an answer, too.

3.1.4 Keyset institution

An institution describes the organisational unit a person belongs to, for example an institute, department, centre, or clinic. It is linked to its parent affiliation through ref-affiliation-id→P. 80. The abbreviation→P. 74 is the compact, reader-facing label used in generated table cells; the internal id→P. 79 is never intended as display text. Full institution lists and legends continue to use name→P. 80. For compatibility, a missing abbreviation→P. 74 falls back to name→P. 80. The name→P. 80 key may be left empty when the affiliation itself is the relevant institution-level text; in that case institution-list commands start with the affiliation name.

Example dataset-entry to describe an institution-entity.

```
\addEntry→P. 3{institution}{
  id→P. 79 = {IAIS},
  name→P. 80 = {Institute for Applied Immunology and Systems Biology},
  abbreviation→P. 74 = {IAIS},
  ref-affiliation-id→P. 80 = {RWTH},
}
```

Institution without a separate institution name.

```
\addEntry→P. 3{institution}{
  id→P. 79 = {RWTH-main},
  name→P. 80 = {},
  abbreviation→P. 74 = {RWTH},
  ref-affiliation-id→P. 80 = {RWTH},
}
```

Person with multiple institutions.

```
\addEntry→P. 3{person}{
  id→P. 79 = {MM},
  firstname→P. 79 = {Maria},
  lastname→P. 79 = {Sample},
  ref-institution-id→P. 80 = {IAIS,RWTH-main},
}
```

In standard institution lists, multiple institutions are printed as separate paragraphs with a small vertical gap. In narrow mode, they are joined inline with semicolons. The abbreviation option selects institution abbreviations (with a full-name fallback); generated compact tables enable this option automatically.

3.1.5 Keyset affiliation

Following keys are required to describe an affiliation.

Example dataset-entry to describe an affiliation-entity.

```
\addEntry→P. 3{affiliation}{
  id→P. 79                = {RWTH},
  name→P. 80              = {Rheinisch-Westfälische Technische Hochschule Aachen},
  abbreviation→P. 74      = {RWTH Aachen University},
  addressStreet→P. 74     = {Templergraben 55},
  addressZIP→P. 74        = {52062},
  location→P. 74          = {Aachen},
  country→P. 74           = {Germany}
}
```

abbreviation=⟨*string*⟩

In addition to `name`→P. 80 provide an abbreviated version of this affiliation.

addressStreet=⟨*string*⟩

Specify the street of the affiliation.

addressZIP=⟨*string*⟩

Specify the ZIP code of the affiliation.

location=⟨*string*⟩

Specify the location (city) of the affiliation.

country=⟨*string*⟩

Specify the country the affiliation is located at.

3.1.6 Keyset funding

Each row represents one funding line. For a staff row, the class can derive the annual amount from the declared personnel category, percentage, and yearly quantity. For other funding types, annual values continue to be supplied with `sum`→P. 75.

Complete dataset for a funding entity. Not all keys are always required.

```
\addEntry→P. 3[funding]{RequestedFunding}{
  id→P. 79                    = {A01-staff-prof},
  ref-project-id→P. 80        = {A01},
  ref-affiliation-id→P. 80    = {RWTH},
  financed-by→P. 66           = {DFG},
  funding-type→P. 75          = {staff},
  percentage→P. 75            = {100},
  category→P. 75              = {prof},
  quantity→P. 75              = {
    { year1 = {1} },
    { year2 = {1} },
    { year3 = {1} },
    { year4 = {1} },
    { year5 = {1} },
  },
  sum→P. 75 = {
    { year1 = {1000} },
    { year2 = {1000} },
    { year3 = {1000} },
    { year4 = {1000} },
    { year5 = {1000} },
  },
  year→P. 76                  = {2026},
  applicant→P. 76             = {5000},
  participant→P. 76           = {2000},
  other-funds→P. 76           = {0},
```

```
    staff→P.76                = {5000},
    costs→P.76                = {1200},
    instrumentation→P.76      = {0},
    fellowships→P.76          = {0},
    globalfunds→P.76          = {0}
}
```

Not all of the above mentioned keys are necessary for each funding table. We will provide examples for the various funding databases and their required keysets.

funding-type=staff|costs|fellowships|globalfunds|instrumentation

Define the type of this funding according to the predefined set. This is important since different features are activated depending on the value of this key.

percentage=⟨*number*⟩

This is only relevant when `funding-type` is set to `staff`. State the percentage of a full position, for example `100` for a full position or `65` for a 65% position. Integer and decimal values are accepted by the automatic calculation.

positionText=⟨*text*⟩

Optional replacement for the staff description in the requested-funding table. When supplied, it is printed instead of the translated `category` name. If omitted or empty, the category name is printed. The category still determines the salary calculation.

category=groupLeader|prof|prof-W2|prof-W3|postDoc|medDoc|PhD|research|nonResearch|student|assistant

This is only relevant when `funding-type` is set to `staff`. Describe the kind of the required person. Depending on this ⟨*category*⟩ the matching `salary@...` setting is used. The categories `prof`, `prof-W2`, and `prof-W3` all use `salary@prof`→P.86; the other category names correspond directly to their setting names below.

quantity=⟨*key=value*⟩

This is a key that enables further ⟨*key-values*⟩ with a predefined subset `year1` through `year5`. State how many positions of the `category` are required in each year. Decimal quantities are supported, for example `year1={0.5}` for half a position.

sum=⟨*key=value*⟩

This is a key that enables further ⟨*key-values*⟩ with a predefined subset for the individual years. State the sum for a person for a certain `category`. For `funding-type=staff` this key is optional: every omitted yearly sum is calculated from the salary setting for `category`, `percentage`, and that year's `quantity`. Because the five-year CRC period starts and ends with a half-year, automatically calculated amounts for `year1` and `year5` receive an additional factor of `0.5`; `year2` through `year4` use the complete annual rate. The result is rounded to the nearest euro. An explicit yearly sum remains an override, so existing declarations and exceptional personnel costs keep their stated value.

For every omitted staff sum, the class applies

$$\text{round}\left(\text{salary(category)} \times \frac{\text{percentage}}{100} \times \text{quantity(year)} \times \text{period-factor(year)}, 0\right).$$

Here, period-factor $= 0.5$ for `year1` and `year5` and 1 for `year2`–`year4`. Thus the two half-years together count as one complete salary year. The calculation is performed when the row is added and the result is stored in the normal `sum-year1` through `sum-year5` fields. Funding tables therefore use calculated and explicitly supplied amounts in exactly the same way. A missing salary setting, percentage, or valid quantity produces a warning instead of silently inventing an amount.

Staff funding with automatically calculated sums.

```
\addEntry→P. 3[funding]{RequestedFunding}{
  ref-project-id→P. 80 = {A01},
  funding-type   = {staff},
  category       = {PhD},
  percentage     = {65},
  quantity       = {
    year1 = {1}, year2 = {1}, year3 = {1},
    year4 = {1}, year5 = {1}
  }
}
```

year=⟨*integer*⟩

State the year as integer. Actually only relevant in combination with `applicant`, `participant`, `other-funds`, `staff`, `costs`, `instrumentation`, `fellowships`, `globalfunds`.

applicant=⟨*integer*⟩

State the sum of direct costs for the applicant institution.

participant=⟨*integer*⟩

State the sum of direct costs for any other participating (i.e. not-applicant) institution.

other-funds=⟨*integer*⟩

State the sum of direct costs when neither the applicant nor a participating institution is covering the costs.

staff=⟨*integer*⟩

State the ⟨*sum*⟩ of staff for the previous funding phase. This is a fixed sum and therefore not necessary to calculate the sum like we do with `category`→P. 75 etc.

costs=⟨*integer*⟩

State the ⟨*sum*⟩ of direct costs for the previous funding phase. This is a fixed sum and therefore not necessary to calculate the sum like we do with `category`→P. 75 etc.

instrumentation=⟨*integer*⟩

State the ⟨*sum*⟩ of instrumentation for the previous funding phase. This is a fixed sum and therefore not necessary to calculate the sum like we do with `category`→P. 75 etc.

fellowships=⟨*integer*⟩

State the ⟨*sum*⟩ of staff for the previous funding phase. This is a fixed sum and therefore not necessary to calculate the sum like we do with `category`→P. 75 etc.

globalfunds=⟨*integer*⟩

State the ⟨*sum*⟩ of globalfunds for the previous funding phase. This is a fixed sum and therefore not necessary to calculate the sum like we do with `category`→P. 75 etc.

3.1.7 Keyset staff: requested-funding roster

The `staff` key family also supplies the project-level roster required by the DFG section “Requested funding for staff”. These records use the fixed database `RequestedFundingStaff` and are independent of the monetary `RequestedFunding` rows above. The public output call is `\printTable`→P. 12`{{RequestedFundingStaff}{A01}}`.

Complete staff-roster declaration.

```
\addEntry→P. 3[staff]{RequestedFundingStaff}{
  ref-project-id→P. 77      = {A01},
```

```
    funding-status→P. 77      = {existing},
    staff-type→P. 77          = {research},
    ref-person-id→P. 77       = {MM},
    field-of-research→P. 77   = {Microbiology},
    commitment→P. 78          = {8},
    funding-source→P. 77      = {State funds},
    description→P. 77         = {
      Leads the experimental work and supervises the research staff.
    }
  }
```

ref-project-id=⟨*project-id*⟩

Required. Selects the project for which the roster row is printed. The value must match the project argument in the table call. For example, a row with `ref-project-id={A01}` is selected when `A01` is passed as the project argument to `\printTable`→P. 12.

funding-status=existing|requested
staff-type=research|nonResearch

These two required keys select one of the four official DFG groups. Empty subgroups are omitted and declaration order is retained within each group. In a project with `project-status=E`, `funding-status=requested` denotes staff funded with approved grant money in the ending funding period; the table changes that group label and its job-description heading automatically.

ref-person-id=⟨*string*⟩
firstname=⟨*string*⟩
lastname=⟨*string*⟩
academic-degree=⟨*string*⟩
positionText=⟨*string*⟩

A resolvable `ref-person-id` obtains the name, academic degree, position, category, and organisation from the central `person` fields `firstname`, `lastname`, `academicdegree`, `positionText`, `position`, `ref-institution-id`, and the compatibility fallback `ref-affiliation-id`. Any explicitly supplied roster field overrides the central value. An empty or omitted `academic-degree` is silently left out of the roster. Job-description lead-ins print only the first and last name, without an academic degree. For an unnamed vacancy, use `lastname={TBA}`; `firstname` may then also be omitted, and both the roster and the job-description lead-in print a clean “TBA” marker. Multiple unnamed vacancies are distinguished by their category, position, field of research, and institution when duplicate records are checked. Either a person reference or at least a last name is required. For existing staff resolved through `ref-person-id`, the lastname is printed in bold in the roster. Omitting `positionText` inherits the central person’s position text. If no position text is available, the category supplies the position line and follows `categoryAbbreviations`→P. 85, for example “Postdoc”. Explicit or inherited position text is printed as supplied, even if it matches a full category name. An explicit `positionText={}` suppresses the line. If neither a position text nor a category is available, its line and parentheses are omitted without a missing-field warning. The former roster key `position` remains accepted as a compatibility alias for `positionText`.

field-of-research=⟨*string*⟩
funding-source=⟨*string*⟩
description=⟨*string*⟩

`field-of-research` supplies its table cell for every roster row. It may be empty or omitted for existing and requested non-research staff; in that case the empty cell receives the `tableNoValue` background and no missing-field warning is issued. It remains an applicable, warning-checked value for both research-staff groups. `funding-source` applies only to existing staff; the corresponding cell for requested staff is marked as not applicable. `description`

supplies the numbered text below the table and accepts ordinary paragraph material, citations, and other LaTeX commands. Each description is an item in the applicable existing- or requested-staff list. Its number is the flush-left item label; first name, last name, and all continuation lines share a consistent hanging indent. The bold name and description are separated by a normal interword space. Missing applicable values are highlighted and reported in the log.

ref-institution-id=⟨*id-list*⟩

Resolve one or more comma-separated institution ids through the central `institution` database. Each institution's `abbreviation` → P. 74 is printed in the department/institution column; the full `name` → P. 80 is retained in the automatically generated legend, followed by the parent-affiliation abbreviation in parentheses. Entries have the form "abbreviation: full institution name (affiliation abbreviation)" and are separated by commas. After a semicolon, each used affiliation is expanded as "abbreviation: full affiliation name". Institutions and affiliations are each explained once, in first-use order. The complete legend uses normal font weight, without bold labels or section headings. This key may be omitted when a resolvable `ref-person-id` → P. 77 already supplies `person.ref-institution-id`; a value on the staff row acts as an explicit override. When `ref-person-id` → P. 77 is empty or omitted, `ref-institution-id` must be supplied explicitly. The class warns at declaration time if both keys are empty, because the institution cannot be inherited and an existing staff member could not be assigned to an affiliation in `\OverviewExistingStaffTable` → P. 327.

department=⟨*string*⟩

Compatibility override for unstructured declarations. When present, this text is printed directly and takes precedence over institution lookup. New declarations should normally use `ref-institution-id`.

ref-affiliation-id=⟨*affiliation-id*⟩

Compatibility fallback used only when neither `department` nor `ref-institution-id` is supplied. It prints the affiliation abbreviation and adds a direct "abbreviation: full affiliation name." entry to the affiliation list, also when no institution is used. New declarations should use `ref-institution-id` so the organisational unit and its parent affiliation remain separate structured data. In particular, this compatibility key does not replace the required `ref-institution-id` on a row that has no `ref-person-id` → P. 77.

commitment=⟨*number*⟩

Project commitment in hours per week for existing staff. The value may be a non-negative integer or decimal; no artificial upper limit is imposed. For requested staff the table cell is marked as not applicable and no commitment value is required. Missing-field warnings identify the row's `funding-status` and its displayed staff number. A missing commitment on an existing-staff row prompts for hours per week and explains that `funding-status=requested` does not require commitment; correct the status only if the row actually represents requested staff.

category=`prof|groupLeader|postDoc|medDoc|PhD|research|nonResearch|student|assistant|prof-W2|prof-W3`

Required for requested staff unless it can be inherited from `person.position` through `ref-person-id` → P. 77. Only keys registered in `\g__dfg_dfg_category_names_prop` are accepted, and the table expands each key to the label stored in that property; for example, `postDoc` prints "Postdoctoral researcher", or "Postdoc" with `categoryAbbreviations` → P. 85. Existing staff inherit the category for the chapter-2 overview when possible, but may still supply an explicit override; their Category cell in the project-level roster is marked as not applicable.

The table traverses `RequestedFundingStaff` only once for the selected project, then assigns continuous sequence numbers in display order. The same numbers are reused below the table

for the two job-description blocks. Missing values, unresolved references, and exact duplicate identities produce warnings and visible placeholders without stopping compilation.

Reuse in chapter 2: overview of existing staff The same declarations also populate the proposal-wide table in section 2.1.2; no separate totals database is needed. The call is `\printTable` → P. 12 `{OverviewExistingStaff}`. It selects only rows with `funding-status={existing}`, counts one person per distinct parent affiliation, and groups the values into the seven categories prescribed by the DFG form. An unnamed or otherwise unreferenced person therefore needs an explicit `ref-institution-id`; omitting both it and `ref-person-id` produces a warning when the roster row is declared. The mappings are `prof`, `prof-W2`, and `prof-W3` to Professors, `groupLeader` to Junior research group leaders, `postDoc` to Postdoctoral researchers, `PhD` to Doctoral researchers, `research` and `medDoc` to Other research staff, `nonResearch` to Non-research staff, and `student` and `assistant` to Student and graduate assistants.

The category column uses the available flexible width with `X[l]`; centred affiliation columns use `Q[c]` so their headings and abbreviations determine their natural widths instead of being clipped in equal-width cells. The existing- and requested-staff tables share one abbreviation-note renderer: regular footnote-size text, a plain “Abbreviations:” label, semicolon- separated entries and normal spacing after the table. All three header rows and the body values are vertically centred, including spanning header cells. The category label reads “Junior research group” on its first line and “leaders” on its second line. This layout is maintained in the class source, so a proposal customization override is not needed after updating the generated class.

The proposal workspace contains a standalone layout test at `proposal-overleaf-com/__admin/scripts/test-overview-staff.tex`. It declares 85 complete fictional staff records across all seven categories and nine real affiliations in an isolated database, independently of project auxiliary files. The source lists the expected counts and build commands. Run LuaLaTeX twice from the proposal workspace; the PDF is written to `output/pdf/test-overview-staff.pdf`. The test PDF labels the counts as illustrative rather than proposal totals.

The applicant affiliation or affiliations are read as a comma-separated list from `meta.ref-affiliation-id` and printed first; other affiliations are obtained from each row’s `ref-institution-id`. The group heading says enquoteapplicant university for one id and enquoteapplicant universities for several ids, spanning all corresponding columns. Multiple institutions belonging to the same affiliation count that person only once in that affiliation column. Since the project declarations normally occur after chapter 2, the class transfers the rows through the `.aux` file. The normal multi-pass `latexmk` build therefore fills the table automatically on the next pass.

3.1.8 Shared identifiers and CRC metadata

Following keys are available for the ⟨*person*⟩-keyset.

id=⟨*unique string*⟩

Any kind of a unique string that serves as an id, especially for commands like `\getEntry` → P. 4. Almost all databases require this key.

firstname=⟨*string*⟩
lastname=⟨*string*⟩
academicdegree=⟨*string*⟩
gender=f|m|d
period=1|2|3 (multi choice!!)
role=PI|spokesperson|manager|steering-committee-member|rector

position=PhD|postDoc|groupLeader|research|
nonResearch|student|prof|prof-W2|prof-W3
positionAtYear=⟨*string*⟩ (Specifying the position of the person, current or in the CV-section for the respective period.)

Personal and individual *required* information about a person.

ref-institution-id=⟨*string*⟩
ref-affiliation-id=⟨*string*⟩
ref-project-id=⟨*string*⟩

Referencing to an external database with its dedicated ⟨*id*⟩. **Note:** When you reference using `ref-institution-id`, there is no need to explicitly reference the affiliation with `ref-affiliation-id`.

The institution data is resolved through a two-step relationship. A person stores one or more institution ids in `ref-institution-id`; each institution stores the id of its parent affiliation in `ref-affiliation-id`. Commands such as `\printList` → P. 13 therefore follow this chain:

`person.ref-institution-id` ⟶ `institution.id` ⟶ `institution.ref-affiliation-id` ⟶ …

The affiliation id usually does not need to be duplicated in the person entry.

For the database `meta` there are also dedicated keys. The database `meta` contains specific information on the metalevel about the CRC. For the `meta` row with `id=crc`, `ref-affiliation-id` accepts one or more comma-separated affiliation ids, for example `{aff1,aff2}`. These are the applicant or coordinating universities. Their names and locations are resolved in declaration order for the title page and related prose; applicant funding totals include every listed id. Besides `id` → P. 79, `ref-affiliation-id` there are these dedicated keys:

name=⟨*string*⟩ (applicable to other keysets, too.)
nameAddon=⟨*string*⟩
number=⟨*integer*⟩
fundingPeriodNumeral=1|2|3
fundedSince=⟨*YYYY*⟩
fundingYears=⟨*YYYY1,YYYY2,YYYY3,YYYY4,YYYY5*⟩
fundingYearsPrevious=⟨*YYYY1,YYYY2,YYYY3,YYYY4,YYYY5*⟩ (applicable to 2nd and 3rd phases)

Specify the core information of a CRC. The key `fundingPeriodNumeral` corresponds to `period` → P. 79.

3.2 Adjustments and Customizations

3.2.1 Page layout and paragraph spacing

The class uses A4 paper and KOMA-Script's nominal `fontsize=11pt` setting. With this setting, `\normalsize` selects 10.95 pt type with a 13.6 pt baseline distance; the option name follows the usual LaTeX 11 pt convention. The current default font families are documented under `font` → P. 90 and `sansfont` → P. 90.

The default two-sided layout has the following dimensions:

Text block	165 mm wide, 250 mm high
Nominal inner margin	20 mm
Binding correction (`BCOR` → P. 81)	5 mm
Effective inner clearance	25 mm
Outer margin	20 mm
Top margin	20 mm
Bottom margin, including footer	15 mm
Footer baseline distance (`\footskip`)	12 mm
Margin-note width and separation	13 mm and 2 mm

The width is `210mm - 20mm - 5mm - 20mm = 165mm`. Because the geometry option `includefoot` is active, the height is `297mm - 20mm - 15mm - 12mm = 250mm`. The footer contains the page number and the CRC logo; its distance is reserved separately from the text block. Inner and outer margins switch sides on facing pages. The header is outside the text block, with 20 pt reserved for two-line running heads.

Paragraphs have no first-line indentation. Their gap is `3.5pt plus 1pt minus 0.5pt`: 3.5 pt normally, with 1 pt of stretch and 0.5 pt of shrink available to TeX. The class sets this through KOMA-Script's `\setparsizes` interface, so a font-size change does not restore the former half-baseline gap. The third argument below keeps the final line of a paragraph freely stretchable. Immediately after a displayed heading, the paragraph gap uses only its natural dimension (3.5 pt by default), without stretch or shrink. This applies to numbered and unnumbered headings, while the gaps between ordinary paragraphs retain their elasticity. Section, subsection, and subsubsection headings have `afterskip=0pt`; chapter headings retain their fixed `0.1ex` after-skip.

Default paragraph and footer spacing in the main preamble.

```
% After \documentclass{dfg-crc}, before \begin{document}:
\setparsizes{0pt}{3.5pt plus 1pt minus 0.5pt}{0pt plus 1fil}
\geometry{footskip=12mm}
```

Change the dimensions in this example to adjust the spacing. The `\setparsizes` call may also go directly into `preamble/dfg-customization.tex`, outside `\changeSettings`. Geometry overrides belong after `\documentclass` in the main preamble: the class applies its geometry defaults after reading the customization file. Changing `BCOR` changes the available text width; see its description below. Figures sized with `width=\linewidth` follow the resulting width and also change height when their aspect ratio is preserved.

3.2.2 Documentclass options

`\documentclass`{⟨*key=value*⟩}

Adjust on a metalevel various options (e.g. `showmarginalia`, `fastcompile`, `fastcompile-show-tags`, `fastcompile-project`→P. 82, `fastcompile-project-show-images`→P. 82, `fastcompile-project-show-publications`→P. 82, `fastcompile-project-show-funding-tables`→P. 82, `showtags`→P. 82, `showtags-tables`→P. 82, `skip10pub`→P. 83, `cv`→P. 83, `final`→P. 83, `colorscheme`→P. 83) for the whole document. Not so much content wise but rather organisational.
See Example 3.1.

`BCOR`=⟨*dim*⟩ (initially `5mm`)

Reserve binding space on the inner edge of each page. The class passes this KOMA-Script option to geometry as its binding offset. With the default 20 mm nominal inner margin, `BCOR=5mm` gives 25 mm of inner clearance and a 165 mm text block; `BCOR=8mm` gives 28 mm and 162 mm.

`showmarginalia`=`true|false` (initially `false`.)

Show further information in the marginpar area, esp. total sum in funding tables.

`fastcompile`=`true|false` (initially `false`.)

Skip generated tables and lists, role-card grids, Gantt charts, and the CV publication block. Metadata and ordinary database-backed references remain available, making this the less aggressive compatibility mode.

`fastcompile-show-tags`=`true|false` (initially `false`.)

Show database provenance annotations during either fast-compilation mode. In focused project mode, annotations show the starting row and requested lookup path because metadata rows are skipped. This option has no effect outside fast compilation; final mode disables the annotations.

fastcompile-project=true|false (initially false.)

Compile authored project text with minimal calculated framing. This mode implies fastcompile→P. 81, does not load metadata files unless fastcompile-project-show-images needs project rows, and executes only the three project-local funding entry types when fastcompile-project-show-funding-tables is enabled. It replaces the calculated project head with a labeled placeholder occupying the space recorded by a normal build in the ordinary .aux file. A multi-page header retains its recorded page span. No header fields are measured in focused mode. Keep auxiliary files, and refresh them with a normal build after changing header data, fonts or layout. A missing record or different text width/height produces a visibly marked placeholder reserving half of the current \textheight and a warning; it cannot predict the true space. The mode also disables title/front-matter helpers when wrapped with \dfgIfFastCompileProjectF, and uses draft links. Graphics also default to draft placeholders unless fastcompile-project-show-images is enabled. Database references fall back to their IDs so prose remains readable. Apart from the optional project funding tables, generated tables and lists retain the same visible skipped-item notice as fastcompile→P. 81.

fastcompile-project-show-images=true|false (initially false.)

Render images and generated plots encountered in the selected project while fastcompile-project is active. Project entries from the metadata file are retained for database-backed plots such as \printPlot{{ProjectCollaboration}{B06}}; other metadata entries, calculated headings, generated tables and the remaining fast-mode work stay disabled. With the default value, graphicx stays in draft mode, displays image placeholders, and \printPlot→P. 51 emits the usual skipped item notice.

fastcompile-project-show-publications=true|false (initially false.)

Show or suppress project publication headings, explicit project \nocite lists, project bibliographies, report references, and ending-project result lists while fastcompile-project is active. Ordinary and final builds always enable publication output. When this option is false in focused project mode, inline citation commands render compact bibliography-key markers without requesting biber.

fastcompile-project-show-funding-tables=true|false (initially true.)

Show or suppress \RequestedFundingTable, \RequestedFundingStaffTable→P. 365, and \RequestedAndExistingFundingDirectCostsTable while fastcompile-project is active. Focused mode processes only the corresponding project-local RequestedFunding, RequestedFundingStaff, and RequestedAndExistingFundingDirectCo entries. Local staff-cost and total calculations remain available, including the per-year and full-period sums of existing direct-cost rows. Multiple rows accumulate in those local sums. Missing staff-table values use field-name placeholders such as <firstname> instead of “not provided” in fast compilation, since metadata needed for inherited values may have been skipped. Auxiliary-file restoration and proposal-wide overview caches stay disabled. This option has no effect on ordinary or final builds, where these tables are always rendered.

showtags=true|false (initially false.)

Annotate direct database values with their database, row identifier, and field, and calculated values with a concise calculation and source-database label. Successive labels alternate between two vertical levels to keep adjacent annotations legible. During fast compilation, fastcompile-show-tags→P. 81 controls whether these annotations appear. In focused project mode, annotations identify the starting row and full requested field path because skipped metadata cannot supply destination row identifiers. Final mode disables annotations.

showtags-tables=true|false (initially true.)

Allow provenance tags inside generated table cells when showtags is enabled. Set this to

false to retain tags in prose and other output while keeping tables uncluttered. It has no effect when showtags is disabled.

skip10pub=⟨*true*|*false*⟩ (initially false.)

Especially in the CV part, it might take longer to compile the reference list with the 10 most important publications. With this set to ⟨*true*⟩ the reference list will be skipped.

colorscheme=rgb|cmyk (initially cmyk.)

Set the colorscheme according to your needs. For a PDF that is meant for only being displayed on a screen, go with ⟨*rgb*⟩, for a printed version choose ⟨*cmyk*⟩.

cv=true|false (initially false.)

In the document which prints the CVs, set this option to ⟨*true*⟩, since it will show additional/needed text and modifications.

final=true|false (initially false.)

When your proposal has been finalised and is ready to be submitted, set this option to ⟨*true*⟩ for the final compilation. The capitalized alias Final is accepted for compatibility. This option has consequences for showmarginalia →P. 81, showtags →P. 82, fastcompile →P. 81, fastcompile-project →P. 82, skip10pub, fastcompile-project-show-publications →P. 82, colorscheme, and open-access markers in the bibliography. Open-access DOI API lookup is enabled only in final documents when doiAPIMail is non-empty and LuaSocket is available.

Example configuration for documentclass mit final-flag

```
\documentclass[
  final           =true,
% sets to false:
showmarginalia →P. 81 =false,
  showtags →P. 82       =false,
  fastcompile →P. 81    =false,
  fastcompile-project →P. 82=false,
  fastcompile-project-show-funding-tables →P. 82=true,
  skip10pub      =false,
  fastcompile-project-show-publications →P. 82=true,
  colorscheme    =cmyk
]{dfg-crc}
```

3.2.3 Change default settings

In the preamble/dfg-customization.tex you can overwrite the default settings of this documentclass.

Read these settings in text with \getValue →P. 11, for example \num{\getValue{animalHousing@mouse}}

The following keys are to be set or changed in \changeSettings →P. 11:

crcLogoPath=⟨*file path*⟩ (initially example-image-a)
affiliationLogoPath=⟨*file path*⟩ (initially example-image-b)

Select the image files used by \crcLogo and \affiliationLogo. As with \includegraphics, the file extension may be omitted.

doiAPIMail=⟨*email address*⟩ (initially empty)

Set the contact address required by the DOI API used for automatic open-access markers. Network lookup remains disabled unless this value is non-empty, the document uses final=true, and LuaLaTeX has socket support.

projectTitle=⟨*key-value list*⟩ (all contexts initially full)

Choose `full` (the project's `name` → P. 80) or `short` (its optional `short-title` → P. 71) independently for three contexts: `toc` is the project entry in the table of contents; `runningHead` is the title beside the PI names in the running head; `projectStart` is the "Project title:" heading at the beginning of the project. Omitted subkeys keep their current setting. The initial setting for all three is `full`. A missing or blank short title falls back to `name`. PDF project bookmarks independently use the project number followed by the PI surnames, for example "A02 | Able - Baker". Surnames retain their spelling and the order of `ref-person-id`; first names, academic degrees, project status and project titles are omitted. If no surname is available, the bookmark contains only the project number. Settings obey TeX grouping and may be overridden in the optional project setup argument until the matching project tail. The fast project mode continues to replay recorded header space without reading title metadata; refresh that record in normal mode after a title or selection change. `\getValue{projectTitle}` returns the three current selections.

Short titles only in running heads.

```
% In the existing project metadata entry:
\addEntry{project}{
  id=Q02, number=Q02,
  name={Functional microbiome analysis},
  short-title={Microbiome analysis},
  project-type=service, project-status=C,
  ref-person-id={pi-id}
}
% In the preamble; TOC and project-start heading retain the full name:
\changeSettings{projectTitle={runningHead=short}}
% The complete equivalent selection is:
\changeSettings{projectTitle={toc=full,runningHead=short,projectStart=full}}
```

Independent selection and a local project override.

```
% Use short titles in TOC and running heads, full titles at project starts:
\changeSettings{projectTitle={toc=short,runningHead=short,projectStart=full}}
% Temporarily use the short title at this project's start as well:
\printProject[\changeSettings{projectTitle={projectStart=short}}]{{Head}{Q02}}
% ... project text ...
\printProject{{Tail}{Q02}}
% projectStart=full is restored for the next project.
```

`cvTableAfterSkip`=⟨*dimension*⟩ (initially `0pt`)

Adjust vertical space after the titled CV section boxes, including personal data, career, optional information, publications, and privacy. Categories A and B receive the adjustment separately; empty or skipped publication lists add no space. Negative values reduce the gap; positive values add space. Set `0pt` to disable the adjustment entirely. Expressions such as `-.5\baselineskip` are stored without expansion and evaluated after each box, so they follow the current line spacing. The default is zero because the boxes provide their own normal spacing. Settings obey TeX grouping. The existing `\dfgReduceSpace` command applies this setting, and `\getValue{cvTableAfterSkip}` returns its current value in points.

CV section spacing in the customization file

```
\changeSettings{cvTableAfterSkip={-.5\baselineskip}}
% Or retain the table's normal spacing:
\changeSettings{cvTableAfterSkip=0pt}
```

`projectPIOncePerSection`=`true|false` (initially `true`)

Show the PIs attached to a project only on that project's first shared `\getProject` → P. 8 or

\getProjectPI→ P. 10 reference in each section. Later references use the compact project form. Set this to false to keep \getProject→ P. 8 compact and repeat the PI names at every \getProjectPI→ P. 10 reference. References to the current project and references in generated tables and lists always remain compact.

PIReferenceFirstName=true|false (initially false)

Include the firstname in unstarred \getPI→ P. 7 references. The starred form always includes it. Set this through \changeSettings→ P. 11; it also affects person-first \getPIProject→ P. 9 and \getPIofProject→ P. 10. Project-first \getProjectPI→ P. 10 references keep lastnames unless the command is starred. Shared PI surnames are automatically disambiguated by the first given-name initial in unstarred references, regardless of this setting. If that initial is also shared, the full firstname is used. Use the starred command to request full firstnames explicitly.

projectsTableInstitutionAbbreviations=true|false (initially false)

Control the institution display in \ProjectsTable and \ProjectLeadersTable. With true, both tables use compact institution abbreviations; each projects table is followed by a tightly set legend containing only the abbreviations used in that table, sorted alphabetically by abbreviation. Reusing one abbreviation for different institution names raises a package warning. With false, full institution names are printed and no legend is added.

categoryAbbreviations=true|false (initially false)

Select compact English category labels with \changeSettings{categoryAbbreviations=true}. The setting applies to \dfgCategoryName, \RequestedFundingTable, the Category column and category-derived position lines of \RequestedFundingStaffTable, and CV positions that use a category label. Explicit or inherited positionText values retain their supplied text, even when they match a full category name. Set false to use the full names again; grouped and project-local settings are supported. Metadata continue to use the same category IDs in either mode. A custom category without a short label falls back to its registered full name.

Category ID	Short label
PhD	Doct. cand.
postDoc	Postdoc
medDoc	Med. doc.
groupLeader	Group leader
research	Other res.
nonResearch	Non-res.
student	Stud./grad. asst.
assistant	Res. asst.
prof	Prof.
prof-W2	Prof. (W2/C3)
prof-W3	Prof. (W3/C4)

Automatic position labels and custom overrides

```
\changeSettings{categoryAbbreviations=true}
\addEntry[staff]{RequestedFundingStaff}{
  ref-project-id=A01, funding-status=requested, staff-type=research,
  lastname=TBA, category=postDoc, ref-institution-id=ins1,
  field-of-research=Biology,
  description={Performs the mechanistic experiments.}
}
% With no positionText, the position line is (Postdoc).
% Add positionText={Senior scientist} to retain custom wording.
% Add positionText={} to hide the position line.
\printTable{{RequestedFundingStaff}{A01}}
```

plotOptions=⟨*option list*⟩ (initially empty)
ganttPlotOptions=⟨*option list*⟩ (initially empty)
collaborationPlotOptions=⟨*option list*⟩ (initially empty)

Configure defaults for `\printPlot` → P. 51 in `preamble/dfg-customization.tex`. The shared `plotOptions` list applies to Gantt and collaboration plots; the other two lists apply to their respective plot types. Each list accepts the same options as the corresponding plot call, including `caption`, native `hvFloat` options, and, for collaboration plots, `layout`, `arcs`, `area-colors`, and `area-palette`. Put options that only one renderer understands in its type-specific list.

Options are processed in this order: built-in defaults (`floatPos=!hb`, `capPos=bottom`, and collaboration `layout=arc`, `arcs=false`), shared `plotOptions`, type-specific defaults, and per-call options. Later options override earlier ones. A legacy trailing caption takes precedence over all `caption` keys. Compatibility aliases use the same defaults. Settings are local to their TeX group and do not affect unrelated figures. Assigning a setting replaces its stored list; use `{}` to clear that layer. `\getValue{plotOptions}` and the corresponding type-specific getters return the currently stored lists. Native options are validated by `hvfloat` when a plot is printed.

Proposal-wide plot defaults and local overrides

```
\changeSettings{
  plotOptions={floatPos=!t,capPos=bottom},
  ganttPlotOptions={floatCapSep=8pt},
  collaborationPlotOptions={layout=heatmap,arcs=true}
}
\printPlot{{gantt}{Q01}}
\printPlot[floatPos=!hb,capPos=top]{{collaboration}{Q01}}
```

The class defines the native `hvFloat` style `proposalPlots` with `floatPos=!t`, `capPos=top`, `floatCapSe`
Select it directly in the customization file; no style definition or class hook is required there. The style is available to both plot types and is only applied when selected.

Select the built-in hvFloat style for generated plots

```
\changeSettings{plotOptions={style=proposalPlots}}
% An individual plot can override the named style:
\printPlot[capPos=bottom]{{gantt}{Q01}}
```

collaborationAreaColors=⟨*color list*⟩ (initially `A=projectA, B=projectB, Q=projectQ`)
collaborationAreaPalette=⟨*color list*⟩ (initially a rotating seven-color palette)

Set collaboration-area colors once for every collaboration plot. `collaborationAreaColors` is a key–value mapping such as `{A=projectA, B=projectB, C=orange}`. Areas absent from that mapping receive colors from `collaborationAreaPalette` in deterministic area order. The corresponding `area-colors` and `area-palette` plot options override these settings for one `\printPlot` → P. 51 call.

salary@prof=⟨*euros per year*⟩ (initially `126600`)
salary@groupLeader=⟨*euros per year*⟩ (initially `105000`)
salary@postDoc=⟨*euros per year*⟩ (initially `90600`)
salary@medDoc=⟨*euros per year*⟩ (initially `112200`)
salary@PhD=⟨*euros per year*⟩ (initially `83700`)
salary@research=⟨*euros per year*⟩ (initially `69000`)
salary@nonResearch=⟨*euros per year*⟩ (initially `61500`)
salary@student=⟨*euros per year*⟩ (initially `1`)
salary@assistant=⟨*euros per year*⟩ (initially `1`)

Set the annual salary rates used to calculate requested staff funding when a funding entry omits its explicit yearly sums. The professorial rate is shared by the `prof`, `prof-W2`, and `prof-W3` categories.

animalHousing@mouse=⟨*euros per animal and week*⟩ (initially `0.75`)
animalHousing@mouseGnotobiotic=⟨*euros per animal and week*⟩ (initially `3.9`)
animalHousing@rat=⟨*euros per animal and week*⟩ (initially `1.4`)

Set the weekly animal-housing rates used by the upkeep-of-laboratory-animals table. All salary and animal-housing settings accept integer or decimal numbers. Register additional animal types and their rates with `\DeclareAnimalType` → P. 38.

thumbindex=`true|false` (initially `true`)

Shows a thumbindex in the outer margin. This can be customized further.

Customize further all about the thumbindex. Modification done in `dfg-customization.tex`.

thumbindex@pattern=⟨*int*⟩ (initially `10`)

Define how long the pattern of the `thumbindex` is until it starts again from the top of the page.

thumbindex@topmargin=⟨*dim*⟩`|auto` (initially `auto`)
thumbindex@bottommargin=⟨*dim*⟩`|auto` (initially `auto`)

With `auto`, the first tab starts at the top of the text block and the last tab ends at its bottom; the tabs divide the current `\textheight` into `thumbindex@pattern` equal slots. Set either key to a dimension to place that end of the tab stack the specified distance from the corresponding page edge. With the default `auto` values, the dimensions are recalculated for the current page layout, so changes to the text height also change the thumb-index spacing. Tabs are positioned directly when the page is shipped out; their placement does not depend on picture coordinates from an earlier LaTeX pass.

thumbindex@width=⟨*dim*⟩ (initially `1.2cm`)

Define how far a thumb-index tab extends into the outer margin. The default 12 mm tab fits inside the 13 mm marginal column.

thumbindex@orientation=`outwards|inwards` (initially `outwards`)

Choose which way the thumb-index text faces on both left and right pages. With `outwards`, the tops of the letters point towards the outer page edge (the existing orientation). With `inwards`, they point towards the text block: the label is turned by 180 degrees. The tab's position, dimensions, and slot order stay the same. In both orientations the label is inset 2 mm from the tab center towards the text block on each page side. Set `\changeSettings{thumbindex@orientation=inwards}` in `preamble/dfg-customization.tex` to flip the labels.

thumbindex@font=⟨*ticklist*⟩ (initially `\bfseries\Huge`)

Define the ⟨*font*⟩ style of the text in the thumbindex.

color@thumbindex@bg=⟨*colorname*⟩ (initially `black`)
color@thumbindex@font=⟨*colorname*⟩ (initially `white`)

Define the color of the thumbindex: like the background color (⟨*bg*⟩) or the color of the ⟨*font*⟩

You can adjust any color in this template. In case you want to reuse a custom color of e.g. your corporate design, set this up first:

```
\definecolor{my-blue}{RGB}{0,84,159}
```

Afterwards you can use `my-blue` to any of the colors below.

color@reference@boldAuthor=⟨*colorname*⟩ (initially `black`)

Define the color of emphasized author names in bibliographies.

color@reference@PI=⟨*colorname*⟩ or current (initially black)

Define the color of references to principal investigators. Use current to inherit the surrounding text color at each reference instead of applying a fixed color. This applies to \getPI (including its starred and custom-text forms) and the project-reference commands that use it. Set this key in the preamble, for example:

```
\changeSettings{color@reference@PI=current}
% Or use a named xcolor color:
\changeSettings{color@reference@PI=blue}
```

color@reference@WP=⟨*colorname*⟩ (initially black)

Define the color of references to work packages.

color@reference@Aim=⟨*colorname*⟩ (initially black)

Define the color of references to aims.

color@table@headingsBG=⟨*colorname*⟩ (initially blue-50)

Define the background color of a table header (i.e. first row).

color@table@headingsBGalt=⟨*colorname*⟩ (initially blue-25)

Define an alternative background color of a table header (i.e. for subdividing row).

color@table@headingsFont=⟨*colorname*⟩ (initially black)

Define the color for the font in the header rows.

color@table@rows=⟨*colorname*⟩ (initially black-10)

Define the color for alternating rows.

color@table@lines=⟨*colorname*⟩ (initially black-10)

Define the color for inner table lines.

color@table@outerLines=⟨*colorname*⟩ (initially black)

Define the color for outer table lines and both the horizontal rules and dashed vertical grid lines in Gantt charts.

color@table@noValue=⟨*colorname*⟩ (initially black-10)

Define the color for cells that are supposed to contain no value.

color@table@firstColumn=⟨*colorname*⟩ (initially black)

Set the foreground color of first-column cells in layouts that use this setting. Other tables retain their own column styles.

color@table@link=⟨*colorname*⟩ (initially black)

Set the table-link color so hyperlinks remain readable against the table-heading background.

color@table@contFootHead=⟨*colorname*⟩ (initially black)

Set the text color of the continuation heading and footer of long tables.

color@table@caption=⟨*colorname*⟩ (initially black)

Set the text color of table captions.

color@tags@font=⟨*colorname*⟩ (initially red-100)
color@tags@line=⟨*colorname*⟩ (initially black-50)

Adjust the color of ⟨*font*⟩ or ⟨*line*⟩ when showmarginalia → P. 81 is activated.

color@item@i=⟨*colorname*⟩ (initially black)

Depending on the color of the table heading, we need to modify the color of the hyperlink since it can be the same as the colorlink from hyperref → CTAN.

color@font@alternative=⟨*colorname*⟩ (initially black-50)

Define the alternative color for headline fonts, especially in the CV section, cv→ P. 83.

color@gantt@frame=⟨*colorname*⟩ (initially white)
color@gantt@default=⟨*colorname*⟩ (initially blue-25)
color@gantt@alternative=⟨*colorname*⟩ (initially green-25)
color@gantt@crosshatch=⟨*colorname*⟩ (initially black-10)
color@gantt@important=⟨*colorname*⟩ (initially red)
color@gantt@stripe-one=⟨*colorname*⟩ (initially blue-25)
color@gantt@stripe-two=⟨*colorname*⟩ (initially green-25)

Adjust the colors for the various styles of the gantt chart in the project section. The style striped is a alternating combination of color@gantt@stripe-one and color@gantt@stripe-two. Set these keys with \changeSettings→ P. 11 in the customization file, before the document starts. For rendered examples and grouped overrides of an individual chart, see Example 2.55, Example 2.56, and Example 2.57.

biblatexstyleCV=⟨*style*⟩ (initially ext-numeric-comp)
biblatexstyleFeatureCV=⟨*clist*⟩ (initially sorting=none)
biblatexstyleProposal=⟨*style*⟩ (initially ext-authoryear-ecomp)
biblatexstyleFeatureProposal=⟨*clist*⟩ (initially empty)

Adjust the citation and bibliography style separately for standalone CVs and proposals. The feature values are comma-separated additional biblatex package options. Proposal features default to empty so changing styles does not pass unsupported options. Add style-specific options such as dashed=false explicitly when supported. Options shared by both modes, including backend=biber, autocite=inline, defernumbers=true, giveninits=true, the citation-name limits, and maxbibnames=99, are supplied by the class. The class selects the CV pair when the document-class option cv→ P. 83 is true and the proposal pair otherwise. The legacy keys biblatexstyle and biblatexstyleFeature remain available; each applies its value to both modes.

Configure CV and proposal bibliographies independently.

```
\changeSettings{
  biblatexstyleCV              = ext-numeric-comp,
  biblatexstyleFeatureCV       = {sorting=none},
  biblatexstyleProposal        = ext-authoryear-ecomp,
  biblatexstyleFeatureProposal = {},
}
```

journalTitle=⟨*field*⟩ (initially journaltitle)

Select the journal title printed in bibliographies and full citations: journaltitle uses the full title; shortjournal uses the standard biblatex abbreviation field. If shortjournal is absent, the full journal title and its subtitle are retained. When a short title is available, the full journal subtitle is omitted. The bibliography style still controls typography and punctuation. Store both forms in the same BibTeX entry, preferably using the NLM Title Abbreviation from the NLM Catalog or PubMed. Do not invent abbreviations for unidentified journals. This setting selects existing data; it performs no network requests during compilation.

Full journal titles by default; abbreviations on request.

```
@article{example,
  author       = {Example, Alice},
  title        = {An example article},
  journaltitle = {Journal of Hepatology},
  shortjournal = {J Hepatol},
```

```
  date          = {2026},
}
```

Choose the printed journal-title field.

```
\changeSettings{journalTitle=journaltitle} % default: full titles
% Alternatively:
\changeSettings{journalTitle=shortjournal} % abbreviations with fallback
```

The choice can also be scoped to a group around a bibliography or `\fullcite`; changing it does not require a new Biber run when both fields are already present in the processed bibliography. The source data remain available in both forms.

Bibliography font and entry spacing The length `\bibitemsep` controls the extra vertical gap between bibliography entries, independently of the line spacing within an entry. A gap can already be present without a template override: the alphabetic styles inherit `\itemsep` at package load time; this may already be zero in the current class and list configuration. Other styles can supply different defaults.

To use footnote-sized text and remove this extra gap, add the following hook outside `\changeSettings` in `preamble/dfg-customization.tex`. The file is read before biblatex, so its lengths and font command must be changed after the package has loaded.

Compact bibliographies through the customization file.

```
\AddToHook{package/biblatex/after}{%
  \renewcommand*{\bibfont}{\normalfont\footnotesize}%
  \setlength{\bibitemsep}{0pt}%
}
```

This applies to ordinary `\printbibliography` calls and to `\printProjectBibliography` → P. 46 and `\printFrameBibliography` → P. 22. Replace `0pt` with `2pt`, for example, to keep a small extra gap. The CV publication environment `DFGlist` uses `nosep` already; to add space there, set `itemsep=2pt` after `nosep` in its list configuration. There is no `\changeSettings` key for entry spacing.

emphasizeAuthors=`true|false` (initially `true`.)

Emphasize the authors in a e.g. project section when they are authors of a referenced publication.

emphasizeEntries=`true|false` (initially `false`.)

Bold a complete entry in `\printProjectBibliography` when its `Keywords` field contains the current project ID followed by `-highlight`. For example, `B06-highlight` applies only to Project B06. In `\printFrameBibliography`, the keyword `frametext-highlight` selects complete entries instead. Each keyword applies only to its corresponding bibliography context. This setting is independent of `emphasizeAuthors`, which controls name highlighting. A `B06-project` keyword alone does not trigger bold type. To show only the keyword-selected full entries in bold, use `emphasizeAuthors=false` together with `emphasizeEntries=true`.

font=⟨*name*⟩ (initially `Arimo`)
sansfont=⟨*name*⟩ (initially `Arimo`)

Define the main font and the sansserif font.

fontspec=⟨*name*⟩ (initially `none`)
sansfontspec=⟨*name*⟩ (initially `ItalicFont=Roboto-LightItalic, BoldFont=Roboto-Medium, BoldItalicFont=Roboto-Medium-Italic`)

Customize font and sansserif font features.

The current `sansfontspec` → P. 90 default explicitly selects Roboto faces for italic, bold, and bold italic sansserif text. Changing only `sansfont` → P. 90 does not remove these selections. To let fontspec select all faces from one installed family, clear these feature overrides, for example:

Select all main and sansserif faces from Arimo.

```
\changeSettings{
  font         = Arimo,
  sansfont     = Arimo,
  sansfontspec = {},
}
```

To use Arial instead, replace both family names with `Arial`; that font must be installed on the compiling system.

3.2.4 Thumbindex

In your document you can use the following commands for displaying or switching off a thumbindex *locally*.

The tabs are correctly positioned on the first LuaLaTeX run, without an extra run for remembered TikZ coordinates. This concerns the thumb-index placement only: the table of contents, cross-references and bibliography may still need further compilation runs.

`\printThumbIndex` [⟨*options*⟩] {⟨*string*⟩}

Select a tab displaying ⟨*string*⟩ for the current and following pages. The complete tab, including its label, is drawn in the page background; overlapping document text or graphics are printed over it. The optional comma-separated keys `bg` and `fg` set its background and label colours. Both accept named colours and xcolor mixtures. Omitted colours use `color@thumbindex@bg` and `color@thumbindex@font` from `\changeSettings`. The overrides last until another tab is selected, within the surrounding TeX scope; they do not change these configured defaults. Every call starts from the configured defaults, including calls with no optional argument or with `[]`. Thus a dark label selected for a light tab does not carry over to the next project's tab. The old bare-colour syntax remains accepted as shorthand for `bg` only; it also uses the default label colour. Unlike the old background inheritance, an omitted background now returns to the configured default.

Tab colours and the compatible background shorthand.

```
\printThumbIndex[bg=black!20,fg=black]{1}
% For the next tab, end the current page first:
\clearpage
\printThumbIndex[blue-100]{A01}
% Equivalent to: \printThumbIndex[bg=blue-100]{A01}
% The label uses the configured default colour again.
```

To override only the label colour, use `\printThumbIndex[fg=black]{1}`. A macro may supply a colour value or the entire options argument. If the new tab should start on the next page, first finish the current page with `\clearpage`, then call this command.

`\printThumbIndexOff`

Remove the tab from following pages. This changes visibility only.

`\resetThumbIndex`

Reset the thumb-index slot counter. The next `\printThumbIndex` call starts at the first slot again. This changes only the position counter; use `\printThumbIndexOff` separately if the current tab should be hidden.

3.2.5 ORCiD

The ORCiD is foremost used in the CV section and stated in the entry of a person. So there is no need for a manual insertion of it. However you can do so using one of two following commands.

\ORCiD{⟨*number*⟩}

Display the ORCiD with the given ⟨*number*⟩. Adding the ORCiD logo in front.
See Example 3.2.

\getORCiD{⟨*id*⟩}

Display the ORCiD of the person with the given ⟨*id*⟩ If there is no `orcid`-entry in the database for this person, then a warning will be thrown and you can read about in the `.log`-file.
See Example 3.2.

Example 3.2: An ORCiD from metadata

```
\ORCiD{0000-0000-0000-0001}\par
\getORCiD{per1}\par
\getORCiDvalue{per1}
```

(0000-0000-0000-0001)
0000-0000-0000-0001

3.3 Bibliography/Publication

3.3.1 Equal contribution

In some cases it is very important to state that two or more authors have contributed equally to a publication. Take the following publication as example:

```
Schneider, K.M.*, C. Elfers*, A. Ghallab, C.V. Schneider,
E.J.C. Galvez, A. Mohs, W. Gui, L.S. Candels, T.H. Wirtz,
S. Zuehlke, M. Spiteller, M. Myllys, A. Roulet, A.
Ouzerdine, B. Lelouvier, K. Kilic, L. Liao, A. Nier, E.
Latz, I. Bergheim, C.A. Thaiss, J.G. Hengstler, T.
Strowig, and C. Trautwein. 2020. Intestinal Dysbiosis
Amplifies Acetaminophen-Induced Acute Liver Injury. Cell.
Mol. Gastroenterol. Hepatol. 11(4):909-933. *equal contribution
```

The first authors have `equal contribution`. In the bibtex-entry add *two* lines:

```
author+an       = {1=equal;2=equal},
addendum        = equal,
```

With `author+an` you annotate the authors, the numbers refer to the position of the author in the authors's list.

The complete entry of the mentioned example looks like:

```
@article{schneider2020a,
  author          = {Schneider, Kai Markus and Elfers, Carsten and Ghallab,
      Ahmed and Schneider, Carolin Victoria and Galvez, Eric J.C.
      and Mohs, Antje and Gui, Wenfang and Candels, Lena Susanna and
      Wirtz, Theresa Hildegard and Zuehlke, Sebastian and Spiteller,
      Michael and Myllys, Maiju and Roulet, Alain and Ouzerdine,
      Amirouche and Lelouvier, Benjamin and Kilic, Konrad and Liao,
      Lijun and Nier, Anika and Latz, Eicke and Bergheim, Ina and
      Thaiss, Christoph A. and Hengstler, Jan G. and Strowig, Till
      and Trautwein, Christian},
  author+an       = {1=equal;2=equal},
  date            = 2020,
  title           = {Intestinal Dysbiosis Amplifies Acetaminophen-Induced Acute
```

```
      Liver Injury},
  volume          = 11,
  pages           = {909--933},
  language        = {pt},
  journal         = {Cellular and Molecular Gastroenterology and Hepatology},
  doi             = {10.1016/j.jcmgh.2020.11.002},
  number          = 4,
  source          = {Crossref},
  url             = {https://doi.org/10.1016/j.jcmgh.2020.11.002},
  publisher       = {Elsevier BV},
  issn            = {2352-345X},
  date            = 2021,
  addendum        = equal,
}
```

3.3.2 Shared last authorship

Very similar to the `equal contribution`-part there is also a way to specify authors who `shared last authorship`.

In the bibtex-entry add *two* lines:

```
  author+an       = {1=sharedLast;2=sharedLast},
  addendum        = sharedLast,
```

Here is a complete example.

```
@Article{roessner2021a,
  Author          = {Roessner, P.M. and Cid, L.Llao and Lupar, E. and Roider,
      T. and Bordas, M. and Schifflers, C. and Arseni, L. and
      Gaupel, A.C. and Kilpert, F. and Krotschel, M. and
      Arnold, S.J. and Sellner, L. and Colomer, D. and
      Stilgenbauer, S. and Dietrich, S. and Lichter, P. and
      Izcue, A. and Seiffert, M.},
  Date            = {2021},
  author+an       = {17=sharedLast;18=sharedLast},
  Addendum        = sharedLast,
  Keywords        = {MM-A},
  Title           = {{EOMES} and {IL}-10 regulate antitumor activity of T
      regulatory type 1 {CD4(+)} T cells in chronic lymphocytic
      leukemia},
  Volume          = {35},
  Pages           = {2311--2324},
  Language        = {en},
  JournalTitle    = {Leukemia}
}
```

3.3.3 Emphasizing authors

You can have certain authors in bold letters in your bibliography section to highlight e.g. the core people of the proposal.

Notice: This feature is automatically triggered (unless switched off, see `emphasizeAuthors` → P. 90) for the CV section (see 3.1.2). We explain its function for additional use.

The switch is also evaluated during rendering. A project with loaded metadata `project-status=E` defaults to `emphasizeAuthors=true`, `emphasizeEntries=false`. Its project leaders' `name-alias` → P. 67 values are registered automatically. Optional setup on `\printProject` or `\printProjectHead` takes precedence over these defaults, and the matching tail restores the previous settings.

To add a person to the (sectioned) bibliography use \addboldnames.

\addboldnames{⟨{*nn*}, {*nn*}, {*nn*}⟩}

Displaying authors in an emphasized way.

Notice that for each variation of a person's name you have to add one set of {⟨*nn*⟩}. For example you have an author with different spellings in your .bib-file, you have to list all of them to get them in bold letters (or adjust the entries in your .bib-file).

```
\addboldnames{
  {Max Doe},
  {M. Doe},
  {Doe, Max H.},
  {Doe, Max Heinrich}
}
```

After a (sectioned) bibliography and you do not want to display the before defined authors in bold letters anymore, you can use \resetboldnames:

\resetboldnames

Switch off showing the under \addboldnames defined names.

In case you do not need to have authors in bold letters you can disable the feature modification done in dfg-customization.tex.

3.3.4 Providing publication information

Providing the most relevant publications is done through the referenced .bib-file. Within a bibtex-entry you need to add a keyword with certain values to it preceeded with the ID of the person.

-A: Category A – Articles in peer-reviewed journals, contributions to peer-reviewed conferences or to anthology volumes, and book publications
-B: Category B – Any other form of published results

For example:

```
@article{...,
    keywords = {<ID>-A},
  }
```

To bold the complete bibliography entry only in Project B06, add its project-specific highlight keyword alongside any publication keywords:

```
@article{...,
  keywords = {pabst-A,B06-highlight},
}
```

This affects project bibliography lists, including project-report references and published-result lists. The same entry is not bolded in other projects unless their own <project-id>-highlight keyword is present. Set emphasizeEntries=true in \changeSettings to enable this feature. Only one highlight keyword per distinct project is needed, even when several PIs from that project coauthor the publication. For a publication to be bold in both B06 and Q04, use each keyword once:

```
@article{...,
  keywords = {pabst-A,B06-highlight,Q04-highlight},
}
```

The optional B06-project keyword can record project membership for other workflows, but it does not activate emphasizeEntries → P. 90. Existing CV-selection keywords such as pabst-A can stay in the same field.

For the frame-text bibliography in chapter 1, add `frametext-highlight` and use `\printFrameBibliography` → P. 22:

```
@article{...,
  keywords = {pabst-A,B06-highlight,frametext-highlight},
}
```

With `emphasizeEntries=true`, this entry is bold in both the B06 project bibliography and the frame-text bibliography. Neither keyword changes formatting in other bibliography contexts or in inline citations.

Of course several people can use the same reference for this section:

```
@article{...,
    keywords = {<ID1>-A, <ID2>-B, <ID3>-A},
  }
```

Open-access markers are handled by `biblatex-ext-oa`. The symbol remains a link to the detected accessible version. In DOI API mode the class clears the package's `api:bestoaurl` bibliography macro, suppressing the additional "open access version at" text and URL. The bibliography style still controls ordinary DOI, eprint, and URL output. This does not disable the open-access lookup or the linked symbol.

If the API-based open-access request does not work for a publication, add the fallback annotation directly to the relevant `.bib` entry:

```
@article{...,
    options         = {openaccess=auto},
    doi+an:default  = {=openaccess},
  }
```

3.4 Automatic wording and list cardinality

Automatic singular, plural, and cardinality-dependent output The class derives the following visible wording and layout from the number of metadata items. These are the places where changing a one-item list to two or more items changes more than the retrieved data itself.

Project PIs `\printProjectHead` → P. 43 counts the comma-separated PI ids in the project's `ref-person-id` → P. 67 field. Exactly one id selects the singular branch; two or more ids select the plural branch. The field is required, so an empty list is invalid metadata; internally it falls back to the singular branch.

This PI count controls all of the following output:

• the heading "Project leader" or "Project leaders";

• the `\getPersonInformation` layout, which shows one PI in a full-width one-column raster and several PIs in a two-column raster of cards, with the same gap below the heading;

• contract question C1, which uses "project leader at the institution" or "project leaders at the institutions";

• contract question C2, which switches between "Does the above mentioned person hold a fixed-term position?" and "Do any of the above mentioned persons hold fixed-term positions?";

• contract question C3, which switches between "Will the above mentioned person" and "Will one or more of the above-mentioned persons";

• contract question C4, which again uses singular or plural "project leader(s)" and "institution(s)"; and

• contract answers, where PI surnames are appended in parentheses only when several PIs must be distinguished. Lists of dates or other follow-up values likewise append surnames when more than one matching PI contributes a value.

Research areas In `\printProjectHead` → P. 43, one value in the project's `research-area` → P. 72 field produces the heading "Research area"; two or more values produce "Research areas".

Applicant affiliations `\dfgApplicantAffiliationsTF` → P. 14 selects its first argument for one id in `meta.ref-affiliation-id` and its second argument for two or more ids. This helper controls:

• whether the title page prints an additional-applicant block;

• "applicant university" or "applicant universities" in the existing-direct-costs table;

• the Chapter 1 heading "Research profile of the applicant university/universities";

• "coordinating university/universities" in the Chapter 4 bylaws heading; and

• both the noun and verb in the Chapter 5 declaration: "The applicant university confirms" or "The applicant universities confirm".

On the title page, `\dfgOtherApplicantAffiliationsTF` applies the same rule after the first, coordinating affiliation has been removed: exactly two applicant affiliations in total produce "Other applicant university", while three or more produce "Other applicant universities".

Existing-staff overview `\OverviewExistingStaffTable` → P. 327 uses the number of applicant affiliations for its spanning group heading: one applicant id produces "applicant university", while several produce "applicant universities". Other affiliation columns do not affect this wording.

One-, two-, and longer-item lists Several formatters change punctuation rather than nouns. In prose, `\getPI` → P. 7, `\getProject` → P. 8, `\getProjectPI` → P. 10, and `\getPIProject` → P. 9 print one item without a separator, two items with "and", and three or more with commas plus a final "and". Project and PI references inside tables instead use compact slash separators. The complete applicant-name, applicant-location, and other-applicant lists exposed by `\theCRCaffiliation`, `\theCRCaffiliationLocation`, and `\theCRCOtherApplicantAffiliations` use the same natural-language rule. `\printList` → P. 13`{ResearchAreasFromProjects}` uses a comma for exactly two items and a final "and" for lists of three or more.

Fixed text written directly in project content is not altered automatically; authors must choose its singular or plural form themselves.

3.5 Project-area entries in the contents

`\dfgTOCprojectPart``{`⟨*letter*⟩`}[`⟨*label*⟩`]{`⟨*title*⟩`}`

Add a project-area heading to the table of contents. The ⟨*letter*⟩ identifies the project area, ⟨*label*⟩ defaults to `Project area`, and ⟨*title*⟩ is the text printed after the area label.

Wrap a project section.

```
\dfgTOCprojectPart{A}{Microbiota and metabolic pathways}
\printProjectHead{A01}
\ldots
\printProjectTail
```

3.6 Optional inputs and diagnostics

`\checkFile``{`⟨*file*⟩`}`

Input ⟨*file*⟩ if it exists. If the file is missing, compilation continues and a warning is written to the log. This is used for optional metadata, customization, and content files.

3.7 Troubleshooting

The class reports missing or inconsistent data in the terminal and the `.log` file. If your editor does not collect those messages, this command shows the class messages together:

Show DFG class messages in a log file

```
grep 'Package dfg' <filename>.log
```

`Unknown database name` The database has not been loaded, or the database name was misspelled. Check the relevant metadata file and whether it is input by the class.

Missing or empty key warnings The row exists, but the requested field is empty. This is intentional where the template needs to alert the user, for example for missing ORCiD values.

`Not allowed in LR mode` Vertical material such as `\vspace`, `\addvspace`, or a paragraph break was inserted in a table place that only accepts horizontal material. Prefer the documented table and list commands, or use options such as `narrow` for compact table output.

Stale output Regenerate the class with `make files`, and check whether the document uses the generated class from `local/`.

3.8 Complete shared metadata for the examples

The following records define the people, institutions, affiliations, and projects used throughout the live examples. They are extracted from the same DTX records loaded by this manual and generated into `local/metadata/dfg-metadata.tex` for the local proposal and CV. Matching career records are generated into `local/metadata/dfg-metadata-cv.tex`. The shared data are listed once here to avoid repeating the setup before every PI and project table. Adapt these declarations for your own consortium, then use the table and list commands from the walkthrough. The final command produces the project-leader table already shown in the general-information section.

Example 3.3: Shared input records for the proposal examples

```
\addEntry{meta}{
  id                    = {crc}, %<--- id (do not change)
  name                  = {Mechanisms of Host--Microbiome Communication},
  nameAddon             = {From Molecular Interactions to Organ Function},
  number                = {9999},
  fundingPeriodNumeral = {3}, % 1|2|3
  ref-affiliation-id    = {aff1}, % or {aff1,aff2} for two applicants
  fundedSince           = {2019-07-01},
  fundingYears          = {2027|2,2028,2029,2030,2031|1},
  fundingYearsPrevious = {2022|2,2023,2024,2025,2026|1}
}

\addEntry{institution}{
  id                 = {ins1},
  name               = {Institute of Microbial Systems Medicine},
  abbreviation       = {IMSM},
  ref-affiliation-id = {aff1}
}

\addEntry{institution}{
  id                 = {ins2},
  name               = {Department of Translational Biosciences},
  abbreviation       = {DTB},
```

Example 3.3: Shared input records for the proposal examples (continued)

```
  ref-affiliation-id = {aff2}
}

\addEntry{affiliation}{
  id             = {aff1},
  name           = {Example University},
  abbreviation   = {EU},
  addressStreet  = {University Avenue 1},
  addressZIP     = {12345},
  location       = {Example City},
  country        = {Germany}
}

\addEntry{affiliation}{
  id             = {aff2},
  name           = {Partner University},
  abbreviation   = {PU},
  addressStreet  = {Research Road 2},
  addressZIP     = {54321},
  location       = {Partner City},
  country        = {Germany}
}

\addEntry{person}{
  id                    = {per1},
  firstname             = {Kim},
  lastname              = {Sample},
  academicdegree        = {Prof. Dr. rer. nat.},
  period                = {1,2,3},
  role                  = {PI},
  gender                = {d},
  ref-institution-id    = {ins1,ins2},
  ref-project-id        = {A01,A02},
  name-alias            = {
    {Kim Sample},
    {Sample, Kim S.}
  },
  orcid                 = {0000-0000-0000-0001},
  doctorateYear         = {2000},
  doctorate             = {Dr. rer. nat., Example University},
  degree-programme      = {Biology, Example University},
  position              = {prof-W3},
  positionText          = {Professor and Director},
  url                   = {https://www.example.org/kim-sample},
  phone                 = {+49 000 100-1000},
  email                 = {kim.sample@example.org},
  contract-information = {
    C1  = {no},
    C2  = {yes},
    C2a = {2028-12-31},
    C2b = {2029-01-03},
    C3  = {yes},
    C3a = {2054-03-10},
    C4  = {no},
    C4a = {DFG}
  }
}

\addEntry{person}{
  id                    = {per2},
  period                = {2,3},
```

Example 3.3: Shared input records for the proposal examples (continued)

```
  firstname            = {Alex},
  lastname             = {Example},
  academicdegree       = {Prof. Dr. phil.},
  position             = {groupLeader},
  positionText         = {Research group leader},
  role                 = {PI,steering-committee-member},
  doctorateYear        = {1999},
  doctorate            = {Dr. phil., Partner University},
  degree-programme     = {Data Science, Partner University},
  gender               = {m},
  ref-institution-id   = {ins2},
  ref-project-id       = {A01,B01,Q01},
  orcid                = {0000-0000-0000-0002},
  phone                = {+49 000 200-2000},
  email                = {alex.example@example.org},
  contract-information = {
    C1  = {no},
    C2  = {no},
    C2a = {},
    C2b = {},
    C3  = {no},
    C3a = {},
    C4  = {yes},
    C4a = {BMFTR}
  }
}

\addEntry{person}{
  id                   = {per3},
  period               = {2,3},
  firstname            = {Hansi},
  lastname             = {Meier},
  academicdegree       = {Dr. rer. nat.},
  position             = {postDoc},
  positionText         = {Senior research scientist},
  role                 = {PI,steering-committee-member},
  doctorateYear        = {1999},
  doctorate            = {Dr. rer. nat., Partner University},
  degree-programme     = {Microbiology, Partner University},
  gender               = {f},
  ref-institution-id   = {ins2},
  ref-project-id       = {B01,B03,Q03},
  orcid                = {0000-0000-0000-0003},
  phone                = {+49 000 200-3000},
  email                = {hansi.meier@example.org},
  contract-information = {
    C1  = {yes},
    C2  = {no},
    C2a = {},
    C2b = {},
    C3  = {no},
    C3a = {},
    C4  = {yes},
    C4a = {DFG}
  }
}

\addEntry{person}{
  id                   = {per4},
  period               = {2,3},
  firstname            = {Kimmi},
```

Example 3.3: Shared input records for the proposal examples (continued)

```
  lastname             = {Miller},
  academicdegree       = {Prof. Dr. rer. nat.},
  position             = {prof-W2},
  positionText         = {Professor of Molecular Medicine},
  role                 = {PI},
  doctorateYear        = {1999},
  doctorate            = {Dr. rer. nat., Partner University},
  degree-programme     = {Molecular Medicine, Partner University},
  gender               = {f},
  ref-institution-id   = {ins2},
  ref-project-id       = {B02,B04},
  orcid                = {0000-0000-0000-0004},
  phone                = {+49 000 200-4000},
  email                = {kimmi.mueller@example.org},
  contract-information = {
    C1  = {yes},
    C2  = {no},
    C2a = {},
    C2b = {},
    C3  = {no},
    C3a = {},
    C4  = {yes},
    C4a = {DFG}
  }
}

\addEntry{person}{
  id                   = {per5},
  period               = {3},
  firstname            = {Friedhelm},
  lastname             = {Redata},
  academicdegree       = {Prof. Dr.-Ing.},
  orcid                = {0000-0000-0000-0005},
  position             = {prof-W2},
  positionText         = {Professor of Research Training},
  role                 = {PI,steering-committee-member},
  doctorateYear        = {1998},
  doctorate            = {Dr.-Ing., Example University},
  degree-programme     = {Biomedical Engineering, Example University},
  gender               = {m},
  ref-institution-id   = {ins1},
  ref-project-id       = {B05,Q02},
  phone                = {+49 000 100-5000},
  email                = {friedhelm.redata@example.org},
  contract-information = {
    C1  = {yes},
    C2  = {yes},
    C2a = {2028-12-31},
    C2b = {2029-01-03},
    C3  = {yes},
    C3a = {2054-03-10},
    C4  = {no},
    C4a = {DFG}
  }
}

\addEntry{project}{
  id                 = {A01},
  project-area       = {A},
  number             = {A01},
  project-status     = {C},
```

Example 3.3: Shared input records for the proposal examples (continued)

```
  consider-for-lists = {true},
  reference-only     = {false},
  name               = {Microbial signalling across epithelial barriers},
  project-type       = {research},
  research-area      = {2.21-02},
  ref-person-id      = {per1,per2},
  collaboration      = {A02,A04,A06,B01,B03,B06,Q01},
  legal-issues       = {
      L1  = yes,
      L1a = no,
      L2  = no,
      L2a = no,
      L3  = no,
      L4  = no,
      L5  = no,
      L5a = no,
      L6  = no,
      L7  = no,
      L7a = no
    }
}

\addEntry{project}{
  id                 = {A02},
  project-area       = {A},
  number             = {A02},
  project-status     = {N},
  consider-for-lists = {true},
  reference-only     = {false},
  project-type       = {research},
  name               = {Metabolic control of tissue-resident immunity},
  research-area      = {2.21-05},
  ref-person-id      = {per1,per6},
  collaboration      = {A01,A03,B02,Q02},
  legal-issues       = {
    L1  = no,
    L1a = no,
    L2  = yes,
    L2a = no,
    L3  = yes,
    L4  = yes,
    L5  = no,
    L5a = no,
    L6  = yes,
    L7  = no,
    L7a = yes
  }
}


\addEntry{project}{
  id                 = {B01},
  project-area       = {B},
  number             = {B01},
  project-status     = {C},
  consider-for-lists = {true},
  reference-only     = {false},
  project-type       = {research},
  research-area      = {2.21-03,2.21-05,2.22-15},
  name               = {Host defence during microbiome perturbation},
  ref-person-id      = {per3,per2},
```

Example 3.3: Shared input records for the proposal examples (continued)

```
  collaboration      = {A01,B02,B03,Q02},
  legal-issues       = {
    L1  = no,
    L1a = no,
    L2  = no,
    L2a = no,
    L3  = no,
    L4  = no,
    L5  = no,
    L5a = no,
    L6  = no,
    L7  = no,
    L7a = no
  }
}

\addEntry{project}{
  id                 = {B02},
  project-area       = {B},
  number             = {B02},
  project-status     = {N},
  consider-for-lists = {true},
  reference-only     = {false},
  project-type       = {research},
  research-area      = {2.22-15},
  name               = {Molecular signatures of tissue regeneration},
  ref-person-id      = {per4,per10},
  collaboration      = {A02,B01,B04,Q01},
  legal-issues       = {
      L1  = yes,
      L1a = no,
      L2  = yes,
      L2a = yes,
      L3  = yes,
      L4  = yes,
      L5  = yes,
      L5a = no,
      L6  = yes,
      L7  = yes,
      L7a = no
    }
}

\addEntry{project}{
  id                 = {Q01},
  project-area       = {Q},
  number             = {Q01},
  project-status     = {C},
  consider-for-lists = {true},
  reference-only     = {false},
  project-type       = {service},
  name               = {Integrated imaging and analysis services},
  research-area      = {2.21-02,2.22-15},
  ref-person-id      = {per2,per7},
  collaboration      = {A01,A03,A04,A06,B02,B03,B05},
  legal-issues       = {
    L1  = no,
    L1a = no,
    L2  = no,
    L2a = no,
    L3  = no,
```

Example 3.3: Shared input records for the proposal examples (continued)

```
    L4  = no,
    L5  = no,
    L5a = no,
    L6  = no,
    L7  = no,
    L7a = no
  }
}

\addEntry{project}{
  id                 = {Q02},
  project-area       = {Q},
  number             = {Q02},
  project-status     = {C},
  consider-for-lists = {true},
  reference-only     = {false},
  project-type       = {mgk},
  name               = {Integrated Research Training Group},
  research-area      = {},
  ref-person-id      = {per5,per9},
  collaboration      = {A02,A05,B01,B04,B06}
}

\addEntry{project}{
  id                 = {Q03},
  project-area       = {Q},
  number             = {Q03},
  project-status     = {C},
  consider-for-lists = {true},
  reference-only     = {false},
  project-type       = {admin},
  name               = {Central coordination and data stewardship},
  research-area      = {},
  ref-person-id      = {per3,per12},
  collaboration      = {A01,A02,A03,A04,A05,A06,B01,B02,B03,B04,B05,B06,Q01,Q02}
}




\addEntry{affiliation}{
  id                  = {aff3},
  name                = {Northbridge University},
  abbreviation        = {NU},
  addressStreet       = {Science Avenue 3},
  addressZIP          = {34567},
  location            = {Northbridge},
  country             = {Germany}
}

\addEntry{affiliation}{
  id                  = {aff4},
  name                = {Westhaven Research Centre},
  abbreviation        = {WRC},
  addressStreet       = {Science Avenue 3},
  addressZIP          = {34567},
  location            = {Westhaven},
  country             = {Germany}
}
```

Example 3.3: Shared input records for the proposal examples (continued)

```
\addEntry{institution}{
  id                  = {ins3},
  name                = {Centre for Computational Microbiology},
  abbreviation        = {CCM},
  ref-affiliation-id  = {aff3}
}

\addEntry{institution}{
  id                  = {ins4},
  name                = {Department of Experimental Immunology},
  abbreviation        = {DEI},
  ref-affiliation-id  = {aff3}
}

\addEntry{institution}{
  id                  = {ins5},
  name                = {Institute of Metabolic Medicine},
  abbreviation        = {IMM},
  ref-affiliation-id  = {aff4}
}

\addEntry{institution}{
  id                  = {ins6},
  name                = {Centre for Clinical Translation},
  abbreviation        = {CCT},
  ref-affiliation-id  = {aff4}
}

\addEntry{person}{
  id                  = {per6},
  orcid               = {0000-0000-0000-0016},
  firstname           = {Samira},
  lastname            = {Hartmann},
  academicdegree      = {Prof. Dr. rer. nat.},
  period              = {3},
  role                = {PI,steering-committee-member},
  gender              = {f},
  ref-institution-id  = {ins3},
  ref-project-id      = {A02,A03},
  position            = {prof-W2},
  positionText        = {Professor of Systems Medicine},
  doctorateYear       = {2010},
  doctorate           = {Dr. rer. nat., Example University},
  degree-programme    = {Life Sciences, Example University},
  phone               = {+49 000 300-0006},
  email               = {samira@example.org}
}

\addEntry{person}{
  id                  = {per7},
  firstname           = {Noah},
  lastname            = {Lindberg},
  academicdegree      = {Prof. Dr. rer. nat.},
  period              = {3},
  role                = {PI},
  gender              = {m},
  ref-institution-id  = {ins3,ins4},
  ref-project-id      = {A03,A04,Q01},
  position            = {prof-W2},
  positionText        = {Professor of Systems Medicine},
  doctorateYear       = {2010},
```

Example 3.3: Shared input records for the proposal examples (continued)

```
  doctorate           = {Dr. rer. nat., Example University},
  degree-programme    = {Life Sciences, Example University},
  phone               = {+49 000 300-0007},
  email               = {noah@example.org}
}

\addEntry{person}{
  id                  = {per8},
  firstname           = {Alexis-Marie},
  lastname            = {Winters-Scholz},
  academicdegree      = {Prof. Dr. rer. nat.},
  period              = {3},
  role                = {PI},
  gender              = {d},
  ref-institution-id  = {ins4},
  ref-project-id      = {A04,A05},
  position            = {prof-W2},
  positionText        = {Professor of Systems Medicine},
  doctorateYear       = {2010},
  doctorate           = {Dr. rer. nat., Example University},
  degree-programme    = {Life Sciences, Example University},
  phone               = {+49 000 300-0008},
  email               = {alexis-marie@example.org}
}

\addEntry{person}{
  id                  = {per9},
  firstname           = {Leonie},
  lastname            = {Navarro},
  academicdegree      = {Prof. Dr. rer. nat.},
  period              = {3},
  role                = {PI},
  gender              = {f},
  ref-institution-id  = {ins5},
  ref-project-id      = {A05,A06,Q02},
  position            = {prof-W2},
  positionText        = {Professor of Systems Medicine},
  doctorateYear       = {2010},
  doctorate           = {Dr. rer. nat., Example University},
  degree-programme    = {Life Sciences, Example University},
  phone               = {+49 000 300-0009},
  email               = {leonie@example.org}
}

\addEntry{person}{
  id                  = {per10},
  firstname           = {Daniel},
  lastname            = {Okafor},
  academicdegree      = {Prof. Dr. rer. nat.},
  period              = {3},
  role                = {PI},
  gender              = {m},
  ref-institution-id  = {ins5,ins6},
  ref-project-id      = {A06,B02,B06},
  position            = {prof-W2},
  positionText        = {Professor of Systems Medicine},
  doctorateYear       = {2010},
  doctorate           = {Dr. rer. nat., Example University},
  degree-programme    = {Life Sciences, Example University},
  phone               = {+49 000 300-0010},
  email               = {daniel@example.org}
```

Example 3.3: Shared input records for the proposal examples (continued)

```
}

\addEntry{person}{
  id                  = {per11},
  firstname           = {Mira},
  lastname            = {Sato},
  academicdegree      = {Prof. Dr. rer. nat.},
  period              = {3},
  role                = {PI},
  gender              = {f},
  ref-institution-id  = {ins6},
  ref-project-id      = {B03,B04},
  position            = {prof-W2},
  positionText        = {Professor of Systems Medicine},
  doctorateYear       = {2010},
  doctorate           = {Dr. rer. nat., Example University},
  degree-programme    = {Life Sciences, Example University},
  phone               = {+49 000 300-0011},
  email               = {mira@example.org}
}

\addEntry{person}{
  id                  = {per12},
  firstname           = {Robin},
  lastname            = {Keller},
  academicdegree      = {Prof. Dr. rer. nat.},
  period              = {3},
  role                = {PI},
  gender              = {d},
  ref-institution-id  = {ins1,ins6},
  ref-project-id      = {B05,B06,Q03},
  position            = {prof-W2},
  positionText        = {Professor of Systems Medicine},
  doctorateYear       = {2010},
  doctorate           = {Dr. rer. nat., Example University},
  degree-programme    = {Life Sciences, Example University},
  phone               = {+49 000 300-0012},
  email               = {robin@example.org}
}

\addEntry{project}{
  id                  = {A03},
  project-area        = {A},
  number              = {A03},
  project-status      = {C},
  consider-for-lists  = {true},
  reference-only      = {false},
  name                = {Microbiome-derived metabolites and immune memory},
  project-type        = {research},
  research-area       = {2.21-02},
  ref-person-id       = {per6,per7},
  collaboration       = {A02,A04,B03,Q01}
}

\addEntry{project}{
  id                  = {A04},
  project-area        = {A},
  number              = {A04},
  project-status      = {N},
  consider-for-lists  = {true},
  reference-only      = {false},
```

Example 3.3: Shared input records for the proposal examples (continued)

```
  name                = {Spatial niches of host--microbe interactions},
  project-type        = {research},
  research-area       = {2.21-02},
  ref-person-id       = {per7,per8},
  collaboration       = {A01,A03,A05,B04,Q01}
}

\addEntry{project}{
  id                  = {A05},
  project-area        = {A},
  number              = {A05},
  project-status      = {C},
  consider-for-lists  = {true},
  reference-only      = {false},
  name                = {Dietary control of microbial community dynamics},
  project-type        = {research},
  research-area       = {2.21-02},
  ref-person-id       = {per8,per9},
  collaboration       = {A04,A06,B05,Q02}
}

\addEntry{project}{
  id                  = {A06},
  project-area        = {A},
  number              = {A06},
  project-status      = {N},
  consider-for-lists  = {true},
  reference-only      = {false},
  name                = {Modelling microbial resilience and recovery},
  project-type        = {research},
  research-area       = {2.21-02},
  ref-person-id       = {per9,per10},
  collaboration       = {A01,A05,B06,Q01}
}

\addEntry{project}{
  id                  = {B03},
  project-area        = {B},
  number              = {B03},
  project-status      = {C},
  consider-for-lists  = {true},
  reference-only      = {false},
  name                = {Immune circuits linking intestine and liver},
  project-type        = {research},
  research-area       = {2.21-02},
  ref-person-id       = {per3,per11},
  collaboration       = {A01,A03,B01,B05,Q01}
}

\addEntry{project}{
  id                  = {B04},
  project-area        = {B},
  number              = {B04},
  project-status      = {N},
  consider-for-lists  = {true},
  reference-only      = {false},
  name                = {Cross-organ consequences of inflammatory stress},
  project-type        = {research},
  research-area       = {2.21-02},
  ref-person-id       = {per4,per11},
  collaboration       = {A04,B02,B06,Q02}
```

Example 3.3: Shared input records for the proposal examples (continued)

```
}

\addEntry{project}{
  id                  = {B05},
  project-area        = {B},
  number              = {B05},
  project-status      = {C},
  consider-for-lists  = {true},
  reference-only      = {false},
  name                = {Patient-derived models of metabolic disease},
  project-type        = {research},
  research-area       = {2.21-02},
  ref-person-id       = {per5,per12},
  collaboration       = {A05,B03,B06,Q01}
}

\addEntry{project}{
  id                  = {B06},
  project-area        = {B},
  number              = {B06},
  project-status      = {N},
  consider-for-lists  = {true},
  reference-only      = {false},
  name                = {Translating microbial biomarkers into interventions},
  project-type        = {research},
  research-area       = {2.21-02},
  ref-person-id       = {per10,per12},
  collaboration       = {A01,A06,B04,B05,Q02}
}


\printTable{ProjectLeaders}
```

3.9 Release workflow for maintainers

For a new release, update `\dfgVersion` and `\dfgVersionDate` at the top of `dfg-crc.dtx`, the release line in the README block, and `dfg-crc.pkg`. Add a `\changes{version}{date}{description}` entry in the documented source. The manual records these entries with `\RecordChanges` and prints them with `\PrintChanges`; `latexmk` runs MakeIndex using `gglo.ist` through the repository configuration. Keep the release changes in one commit. Licensing is recorded at the top of the DTX; no separate changelog or license file is generated or included in the archive.

Release and CTAN checks

```
make ctan-check
make check
% Optional online validation without submission:
make ctan-validate
```

The focused targets `make test-command-options` and `make test-participating-institutions` run 30 argument/option checks and 10 layout cases, respectively. The command-options fixture also checks 14 document-text cases: the generic date, early customization, later settings, direct redefinitions, deferred references, and local scope. Both targets are included in `make check`. The target `make test-workpackage-metadata` checks stored raw fields, new-key precedence in either source order, omitted and empty labels, partial migration and deferred macro values. It compiles in normal mode and in focused project mode with images

enabled and disabled, then checks the rendered headings, nested references and chart labels. Its fixture is extracted from the DTX; ci/check-workpackage-metadata.lua validates the PDFs. This target is included in make check. The target make test-project-head-layout records normal header geometry, then compiles the same six projects without metadata in focused mode. It compares following headings and paragraph coordinates, page breaks, section counters and cache persistence at two text heights. A poisoned metadata file and database assertions detect unintended metadata reads. Missing-record and changed-dimension cases check the marked fallback. The fixture and runner are in ci/; the target is included in make check. The target make test-plot-section-order checks physical PDF positions for collaboration and Gantt plots near page boundaries in normal and focused image builds. It covers explicit/current project IDs, compatibility shorthands and both caption forms. The fixture keeps the real dispatcher and float wrapper and substitutes only deterministic picture contents; the checker requires the plot to follow its section heading on the same or a later page. The general regression fixture lives in ci/test-template.tex; its build copy is local/test-template.tex. The manual scratch file local/test.tex is neither generated nor compiled by these checks.

The first command builds the manual and the curated output/ctan/dfg-crc.zip, verifies its exact allow-list, extracts it in a clean temporary directory, runs the portable installer, and compiles a minimal document against the resulting class. The online target validates but does not submit the archive. Before committing, inspect git status --short, run git diff --check, and review the ZIP file list.

3.9.1 Maintaining executable examples

The driver uses documentation=true to keep the class typography and rendering commands while loading its fixtures explicitly. This option defaults to false; it suppresses automatic proposal customization, metadata, and bibliography inputs. It is intended for this manual, not for ordinary proposals. The fixtures and the manual driver are maintained in the DTX. A documentation build extracts them again, so the manual needs no private proposal files.

Add runnable examples with the manual's dfgExample environment. Its required argument is the title; add a stable label={ex:manual-name} option and refer to it from the relevant command description with \dfgExampleRef{ex:manual-name}. Add dfg wide to the options for full-width output below the code. Each example executes the displayed code in a local group. Floating output is set to non-floating inside the result panel. Use the fictional IDs per1, per2, ins1, aff1, and A01 where possible. Use dfg project=A03 on the example environment when an example needs a current-project context, and explain that context in the surrounding text. Keep data-only declarations, incomplete preamble fragments, full-document project wrappers, external commands, and BibTeX records in dispListing. The shared project and PI metadata are listed once with \dfgTableSetup in the reference chapter; live table examples and the generated local proposal use those same records. Maintain matching cv-person-id career records in the meta-cv block and fictional bibliography records with person-id-A or person-id-B keywords for every PI included in the example CV appendix. Project-boundary examples show labelled excerpts from the standalone proposal, because those commands change pages, headers, and bibliography scope. Running make doc checks that the PDFs contain all fifteen active project chapters, the ending-project example, and twelve PI CVs before compiling the manual. Inspect the PDF as well as the build log after changing a layout example.

4 Complete example proposal

The following pages show the complete fictional proposal generated from this DTX using the same metadata as the documentation examples: twelve PIs, six projects in area A, six in area B, and three in area Q. The title page, general information, financial overviews, all fifteen active project descriptions, the former project A00, bylaws, declarations, and back matter are included. The scientific text, people, figures, and funding values are illustrative.

The proposal is built with `final=true`, which suppresses draft tags and margin diagnostics. Each imported page is reduced to 82% and framed, with an “Example proposal” label above it. The proposal’s own page numbers, headers, and thumb index remain inside the frame; the manual page number appears below it, clearly separating the two documents. For the proposal’s own clickable references and bookmarks, open the accompanying standalone example proposal PDF.

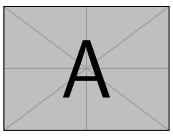
To regenerate the manual and both complete examples from the DTX, run `make doc` in the template repository. Use `make proposal-doc-example` to build only the standalone example. Both the local proposal and the final-mode documentation build use the same metadata and chapter inputs in `local/`. Its generated wrapper is:

```
\PassOptionsToClass{final=true}{dfg-crc}
\input{crc-proposal.tex}
```

Collaborative Research Centre 9999

Mechanisms of Host–Microbiome Communication

From Molecular Interactions to Organ Function



Example University

Funding Proposal

for the third Funding Period
2027|2–2028–2029–2030–2031|1

Proposal for the third Funding Period of
Collaborative Research Centre 9999

"**Mechanisms of Host–Microbiome Communication: From Molecular Interactions to Organ Function**"

funded since

2019-07-01

for

2027|2–2028–2029–2030–2031|1

Coordinating university:

Example University

Spokesperson of the Collaborative Research Centre:

Morgan Sample, Prof. Dr. med.
0000-0000-0000-0006
Institute of Microbial Systems Medicine
Example University
University Avenue 1, 12345 Example City
(Germany)
+49 000 100-6000
morgan.sample@example.org

Management or office of the Collaborative Research Centre:

Jamie Coordinator, Dr. rer. nat.
0000-0000-0000-0007
Department of Translational Biosciences
Partner University
Research Road 2, 54321 Partner City
(Germany)
+49 000 200-7000
jamie.coordinator@example.org

Example City
<date>

Prof. Dr. med. Morgan Sample
(Spokesperson of Collaborative Research Centre)

Example City
<date>

Prof. Dr. Casey President
(Rector, chancellor, or president of Partner University)

Example City
<date>

Prof. Dr. Robin Rector
(Rector, chancellor, or president of Example University)

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4 Bylaws of the Collaborative Research Centre

5 Declarations

1 General information

1.1 Key data

1.1.1 Governing bodies of the Collaborative Research Centre

Steering Committee of the CRC 9999

Alex Example, Prof. Dr. phil.
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Department of Translational Biosciences
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friedhelm.redata@example.org

Morgan Sample, Prof. Dr. med.
0000-0000-0000-0006
Institute of Microbial Systems Medicine
Example University
University Avenue 1, 12345 Example City (Germany)
+49 000 100-6000
morgan.sample@example.org

For the third funding period, the steering committee includes representatives of both research areas and the Integrated Research Training Group. The spokesperson and committee members are elected by the CRC general assembly in accordance with the bylaws. The composition is reviewed annually with regard to scientific breadth, career stage, and equitable participation.

1.1.2 Project leaders

Project leader		Doctorate obtained in	Home institution, location	Project(s)
Example, Alex Prof. Dr. phil.	m	1999	Department of Translational Biosciences Partner University Research Road 2, 54321 Partner City (Germany)	A01 B01 Q01
Hartmann, Samira Prof. Dr. rer. nat.	f	2010	Centre for Computational Microbiology Northbridge University Science Avenue 3, 34567 Northbridge (Germany)	A02 A03
Keller, Robin Prof. Dr. rer. nat.	d	2010	Institute of Microbial Systems Medicine Example University University Avenue 1, 12345 Example City (Germany) Centre for Clinical Translation Westhaven Research Centre Science Avenue 3, 34567 Westhaven (Germany)	B05 B06 Q03

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Project leader	Doctorate obtained in		Home institution, location	Project(s)
Lindberg, Noah Prof. Dr. rer. nat.	m	2010	Centre for Computational Microbiology Northbridge University Science Avenue 3, 34567 Northbridge (Germany) Department of Experimental Immunology Northbridge University Science Avenue 3, 34567 Northbridge (Germany)	A03 A04 Q01
Meier, Hansi Dr. rer. nat.	f	1999	Department of Translational Biosciences Partner University Research Road 2, 54321 Partner City (Germany)	B01 B03 Q03
Miller, Kimmi Prof. Dr. rer. nat.	f	1999	Department of Translational Biosciences Partner University Research Road 2, 54321 Partner City (Germany)	B02 B04
Navarro, Leonie Prof. Dr. rer. nat.	f	2010	Institute of Metabolic Medicine Westhaven Research Centre Science Avenue 3, 34567 Westhaven (Germany)	A05 A06 Q02
Okafor, Daniel Prof. Dr. rer. nat.	m	2010	Institute of Metabolic Medicine Westhaven Research Centre Science Avenue 3, 34567 Westhaven (Germany) Centre for Clinical Translation Westhaven Research Centre Science Avenue 3, 34567 Westhaven (Germany)	A06 B02 B06
Redata, Friedhelm Prof. Dr.-Ing.	m	1998	Institute of Microbial Systems Medicine Example University University Avenue 1, 12345 Example City (Germany)	B05 Q02
Sample, Kim Prof. Dr. rer. nat.	d	2000	Institute of Microbial Systems Medicine Example University University Avenue 1, 12345 Example City (Germany) Department of Translational Biosciences Partner University Research Road 2, 54321 Partner City (Germany)	A01 A02
Sato, Mira Prof. Dr. rer. nat.	f	2010	Centre for Clinical Translation Westhaven Research Centre Science Avenue 3, 34567 Westhaven (Germany)	B03 B04
Winters-Scholz, Alexis-Marie Prof. Dr. rer. nat.	d	2010	Department of Experimental Immunology Northbridge University Science Avenue 3, 34567 Northbridge (Germany)	A04 A05

1.1.3 Participating institutions

Northbridge University (Northbridge)
Centre for Computational Microbiology
Department of Experimental Immunology

Westhaven Research Centre (Westhaven)
Institute of Metabolic Medicine
Centre for Clinical Translation

Example University (Example City)
Institute of Microbial Systems Medicine

Partner University (Partner City)
Department of Translational Biosciences

1.1.4 Project groups and projects

Project area A – Microbiota and metabolic pathways

Project		Title	Research area	Project leader(s), institute(s), location(s)
A01		Microbial signalling across epithelial barriers	2.21-02	Kim **Sample,** Institute of Microbial Systems Medicine, Example University; Department of Translational Biosciences, Partner University Alex **Example,** Department of Translational Biosciences, Partner University
A02	N	Metabolic control of tissue-resident immunity	2.21-05	Kim **Sample,** Institute of Microbial Systems Medicine, Example University; Department of Translational Biosciences, Partner University Samira **Hartmann,** Centre for Computational Microbiology, Northbridge University
A03		Microbiome-derived metabolites and immune memory	2.21-02	Samira **Hartmann,** Centre for Computational Microbiology, Northbridge University Noah **Lindberg,** Centre for Computational Microbiology, Northbridge University; Department of Experimental Immunology, Northbridge University
A04	N	Spatial niches of host–microbe interactions	2.21-02	Noah **Lindberg,** Centre for Computational Microbiology, Northbridge University; Department of Experimental Immunology, Northbridge University Alexis-Marie **Winters-Scholz,** Department of Experimental Immunology, Northbridge University
A05		Dietary control of microbial community dynamics	2.21-02	Alexis-Marie **Winters-Scholz,** Department of Experimental Immunology, Northbridge University Leonie **Navarro,** Institute of Metabolic Medicine, Westhaven Research Centre
A06	N	Modelling microbial resilience and recovery	2.21-02	Leonie **Navarro,** Institute of Metabolic Medicine, Westhaven Research Centre Daniel **Okafor,** Institute of Metabolic Medicine, Westhaven Research Centre; Centre for Clinical Translation, Westhaven Research Centre

Project area B – Immunological circuits

Project		Title	Research area	Project leader(s), institute(s), location(s)
B01		Host defence during microbiome perturbation	2.21-03 2.21-05 2.22-15	Hansi **Meier,** Department of Translational Biosciences, Partner University Alex **Example,** Department of Translational Biosciences, Partner University
B02	N	Molecular signatures of tissue regeneration	2.22-15	Kimmi **Miller,** Department of Translational Biosciences, Partner University Daniel **Okafor,** Institute of Metabolic Medicine, Westhaven Research Centre; Centre for Clinical Translation, Westhaven Research Centre
B03		Immune circuits linking intestine and liver	2.21-02	Hansi **Meier,** Department of Translational Biosciences, Partner University Mira **Sato,** Centre for Clinical Translation, Westhaven Research Centre
B04	N	Cross-organ consequences of inflammatory stress	2.21-02	Kimmi **Miller,** Department of Translational Biosciences, Partner University Mira **Sato,** Centre for Clinical Translation, Westhaven Research Centre

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Project		Title	Research area	Project leader(s), institute(s), location(s)
B05		Patient-derived models of metabolic disease	2.21-02	Friedhelm **Redata,** Institute of Microbial Systems Medicine, Example University Robin **Keller,** Institute of Microbial Systems Medicine, Example University; Centre for Clinical Translation, Westhaven Research Centre
B06	N	Translating microbial biomarkers into interventions	2.21-02	Daniel **Okafor,** Institute of Metabolic Medicine, Westhaven Research Centre; Centre for Clinical Translation, Westhaven Research Centre Robin **Keller,** Institute of Microbial Systems Medicine, Example University; Centre for Clinical Translation, Westhaven Research Centre

Project area Q – Central projects

Project	Title	Research area	Project leader(s), institute(s), location(s)
Q01	Integrated imaging and analysis services	2.21-02 2.22-15	Alex **Example,** Department of Translational Biosciences, Partner University Noah **Lindberg,** Centre for Computational Microbiology, Northbridge University; Department of Experimental Immunology, Northbridge University
Q02	Integrated Research Training Group		Friedhelm **Redata,** Institute of Microbial Systems Medicine, Example University Leonie **Navarro,** Institute of Metabolic Medicine, Westhaven Research Centre
Q03	Central coordination and data stewardship		Hansi **Meier,** Department of Translational Biosciences, Partner University Robin **Keller,** Institute of Microbial Systems Medicine, Example University; Centre for Clinical Translation, Westhaven Research Centre

N: New projects started in the third funding period; E: Ending projects not continued in the third funding period; Research areas according to the German Research Foundation (2024–2028)[1]: **2.21-02**: Microbial Ecology and Applied Microbiology, **2.21-03**: Medical Microbiology and Mycology, Hygiene, Molecular Infection Biology, **2.21-05**: Immunology, and **2.22-15**: Gastroenterology.

1 https://www.dfg.de/resource/blob/331950/fachsystematik-2024-2028-en.pdf

1.2 Research profile of the Collaborative Research Centre

Spotlights: Moving Forward

- Resolve causal mechanisms of communication between microbial communities, epithelial barriers, and tissue-resident immune cells.
- Combine spatial profiling, experimental perturbation, and predictive modelling across the participating projects.
- Translate shared methods into reproducible services, interoperable data, and structured training for researchers in early career phases.

1.2.1 Summary of the research programme

The CRC investigates how microbial and host-derived signals cross epithelial barriers and influence organ function. During the previous funding periods, the consortium established shared cohorts, experimental models, imaging workflows, and computational methods. The new programme links these resources in hypothesis-driven projects that test causality across molecular, cellular, and tissue scales.

1.2.2 Detailed presentation of the research programme

Project area A examines microbial metabolites and barrier signalling, whereas project area B focuses on immune circuits and tissue responses. The central projects provide imaging, analysis, training, coordination, and research-data services. Common samples, harmonised metadata, and reciprocal collaborations connect the individual work programmes and enable validation across models and participating institutions.

1.2.3 Positioning of the Collaborative Research Centre within its general research area

The programme combines mechanistic microbiome research with systems immunology and organ physiology. Its distinguishing feature is the coordinated validation of candidate signals from discovery cohorts through controlled experimental systems to tissue-level readouts, supported by shared technology and transparent data-management standards.

1.2.4 National and international cooperation and networking

The CRC maintains method-oriented collaborations with national infrastructure networks and international partner laboratories. Cooperation agreements define sample and data transfer, authorship, quality assurance, and access to specialised technologies. Visiting-researcher and exchange formats are coordinated through the Integrated Research Training Group.

1.3 Research profile of the applicant university

1.3.1 Strategy and planning

Example University has identified host–microbiome research as a strategic priority and supports the CRC through permanent scientific positions, shared technical platforms, research-data infrastructure, and central administration. Annual reviews align institutional investments with the scientific milestones of the consortium.

1.3.2 Staff situation

The participating units contribute principal investigators, research staff, technical personnel, data stewards, and administrative support. Recruitment planning prioritises timely appointments, transparent selection procedures, career development, and continuity of essential technical expertise.

1.3.3 Research infrastructure

The CRC has access to advanced microscopy, flow cytometry, sequencing, gnotobiotic facilities, secure data storage, and high-performance computing. Central projects coordinate access, training, maintenance, and quality control so that methods and datasets remain comparable across all projects.

1.4 Support structures

1.4.1 Researchers in early career phases

Researchers in early career phases receive structured scientific and career mentoring, transferable-skills training, annual progress reviews, and access to methods courses and exchange opportunities organised by Q02 (**Redata** / **Navarro**).

Project	Surname, first name	Type of funding	Topic	Duration
A01	Sample, Kimmi	DFG	*Epithelial sensing of microbial metabolites*	2025-04–2029-06
B01	Wunderlich, Kimmi	DFG	*Immune signatures during microbiome perturbation*	2025-04–2029-06

1.4.2 Promotion of equity and diversity

Recruitment, supervision, and committee appointments follow transparent criteria and are monitored by career stage and gender. Flexible working arrangements, mentoring, accessibility measures, and targeted career support are available through the central coordination project.

A. Objectives for the participation of female researchers

	Second funding period			Third funding period
	Objective [%]	Status Quo[a]		Objective [%]
		Number	[%]	f
Doctoral researchers	40	20	14	40
Postdoctoral researchers	22	34	44	34

[a] Reference date: proposal for third funding period

B. Project leaders

Position (female)	First funding period		Second funding period		Status Quo[a] Third funding period		
	Number	[%]	Number	[%]	Original objective [%]	Number	[%]
Postdoctoral researchers	0	0	1	100	34	1	100
Research group leaders, junior research group leaders, junior professors	0	0	0	0	34	0	0
Professors W2/C3	0	0	1	100	34	4	44
Professors W3/C4	0	0	0	0	34	0	0
Total	**0**	**0**	**2**	**50**		**5**	**42**

[a] Reference date: proposal for third funding period

1.4.3 Knowledge transfer and science communication

The CRC communicates results through open research resources, public lectures, school and patient-group activities, and dialogue formats with clinical and societal stakeholders. Transfer opportunities are assessed early, with clear procedures for intellectual property, responsible communication, and reusable research outputs.

1.5 Risks in international cooperation

International partnerships are reviewed for legal, ethical, export-control, data-protection, and research-security risks. Written agreements specify permitted data and material transfers, access rights, publication principles, and responsibilities. The participating universities reassess collaborations when partners, technologies, or regulatory conditions change.

1.6 Considerations on aspects of ecological sustainability in project planning and implementation

The CRC considers ecological sustainability when planning experiments, procurement, travel, computing, sample storage, and shared infrastructure. Projects consolidate measurement campaigns, share equipment and reference materials, select proportionate data-retention and computing strategies, and prefer lower-emission travel or remote participation where this is compatible with the scientific objective. The steering committee reviews these measures alongside scientific feasibility, research quality, legal obligations, animal welfare, and the responsible use of resources.

2 Existing funds and requested funds

2.1 Existing funds

2.1.1 Overview of existing funds for direct costs

Financial year/ funding period	Core support provided by applicant university	Core support provided by other participating institutions	Other funds	Total
2022|2	1,000	2,000	3,000	6,000
2023	1,000	2,000	3,000	6,000
2024	1,000	2,000	3,000	6,000
2025	1,000	2,000	3,000	6,000
2026|1	1,000	2,000	3,000	6,000
Ending Funding period	5,000	10,000	15,000	30,000
2027|2	13,600	3,200	0	16,800
2028	56,300	2,500	0	58,800
2029	23,600	23,100	0	46,700
2030	3,100	7,600	0	10,700
2031|1	40,800	5,400	0	46,200
New Funding period	137,400	41,800	0	179,200

Note: Figures in EUR.

2.1.2 Overview of existing staff

Category	Number of persons	
	at the applicant university EU	at other participating institutions PU
Professors	1	2
Junior research group leaders	0	0
Postdoctoral researchers	0	0
Doctoral researchers	0	0
Other research staff	0	0
Non-research staff	1	1
Student and graduate assistants	0	0

Abbreviations: EU: Example University; PU: Partner University.

2.1.3 List of existing instrumentation

Project	Description of instrumentation	Year of purchase	Cost of purchase[a]	Source of funding
A01	1 × Confocal laser-scanning microscope (Example Instruments GmbH)	2025	250	DFG
A01 / B01	2 × Anaerobic workstation (Laboratory Systems AG)	2024	80	Institutional funds

[a] Figures in thousands

2.2 Previous and requested funds

2.2.1 Overview

Financial year/ funding period	Funding for					Total
	Staff	Direct costs	Instrumentation	Fellowships	Globalfunds	
2022|2	1,000	2,000	3,000	4,000	5,000	15,000
2023	1,000	2,000	3,000	4,000	5,000	15,000
2024	1,000	2,000	3,000	4,000	5,000	15,000

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Financial year/ funding period	Staff	Direct costs	Funding for Instrumentation	Fellowships	Globalfunds	Total
2025	1,000	2,000	3,000	4,000	5,000	15,000
2026|1	1,000	2,000	3,000	4,000	5,000	15,000
Ending Funding period	5,000	10,000	15,000	20,000	25,000	75,000
2027|2	734,158	19,112	6,000	1,000	6,000	766,270
2028	1,468,325	28,067	2,000	1,000	7,000	1,506,392
2029	1,468,325	39,843	3,000	1,000	8,000	1,520,168
2030	1,468,325	34,375	4,000	1,000	9,000	1,516,700
2031|1	734,158	25,983	5,000	1,000	10,000	776,141
New Funding period	5,873,291	147,380	20,000	5,000	40,000	6,085,671

Note: Figures in EUR.

2.2.2 Overview of funds requested for staff

Project	2027|2					2028					2029					2030					2031|1				
	Postdoctoral researchers	Doctoral researchers	Other research staff	Non-research staff	Student and graduate assistants	Postdoctoral researchers	Doctoral researchers	Other research staff	Non-research staff	Student and graduate assistants	Postdoctoral researchers	Doctoral researchers	Other research staff	Non-research staff	Student and graduate assistants	Postdoctoral researchers	Doctoral researchers	Other research staff	Non-research staff	Student and graduate assistants	Postdoctoral researchers	Doctoral researchers	Other research staff	Non-research staff	Student and graduate assistants
A01	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×
A02	1	1	×	×	×	1	1	×	×	×	1	1	×	×	×	1	1	×	×	×	1	1	×	×	×
A03	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×
A04	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×
A05	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×
A06	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×
B01	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×
B02	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×
B03	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×
B04	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×
B05	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×
B06	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×
Q01	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×
Q02	×	1	×	1	×	×	1	×	1	×	×	1	×	1	×	×	1	×	1	×	×	1	×	1	×
Q03	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×	×	×	×	1	×
Total	**2**	**12**	×	**3**	×	**2**	**12**	×	**3**	×	**2**	**12**	×	**3**	×	**2**	**12**	×	**3**	×	**2**	**12**	×	**3**	×

2.2.3 Overview of funds requested for instrumentation

Project	Description of instrumentation	Funds requested for				
		2027|2	2028	2029	2030	2031|1
A01	Live-cell imaging system	1,000	2,000	3,000	4,000	5,000
A02	Specialised instrument	5,000	0	0	0	0
Total		6,000	2,000	3,000	4,000	5,000

Note: Figures in EUR.

2.3 Upkeep of laboratory animals

Project	Species	Quantity	Average number of weeks kept	Housing costs per animal per week[a]	Purchase costs per animal[a]	Requested funds[a]	Existing funds[a]
A01	Mouse	1,212	43	0.75	23	100	232
A01 / A02	Rat	2	3	1.4	23.54	1,230	232
B01	Mouse (gnotobiotic)	3	43	3.9	23	201	132
	Mice	1,215					
	Rats	2					
Total	**All animals**	1,217				1,531	596

[a] Figures in EUR.

3 Project details

3.1 General information about Project A01

3.1.1 Project title: Microbial signalling across epithelial barriers

3.1.2 Research area: 2.21-02: Microbial Ecology and Applied Microbiology

3.1.3 Project leaders

Kim Sample, Prof. Dr. rer. nat.

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Institute of Microbial Systems Medicine
Example University
University Avenue 1, 12345 Example City
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kim.sample@example.org

Alex Example, Prof. Dr. phil.

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(Germany)
+49 000 200-2000
alex.example@example.org

A01

- Is the employment of the project leaders at the institutions indicated contractually secured for the duration of the proposed funding period? **no** (Sample), **no** (Example)
- Do any of the above mentioned persons hold fixed-term positions? **yes** (Sample), **no** (Example)
  - End date of fixed-term contract: **2028-12-31**
  - Further employment is planned until: **2029-01-03**
- Will one or more of the above-mentioned persons retire during the proposed funding period? **yes** (Sample), **no** (Example)
  - Anticipated retirement date: **2054-03-10**
- Funding for the position of the project leaders at the institutions indicated is covered by core support (state funds or similar): **no** (Sample), **yes** (Example)
  - Type and source of funding: **DFG**

3.1.4 Legal issues

This project includes

1. research requiring compliance with discipline-specific research ethics guidelines.	✔ yes
A statement from the responsible ethics committee is required and will be obtained before funding starts.	✘ no
2. clinical trials	✘ no
3. experiments involving vertebrates.	✘ no
4. experiments involving recombinant DNA.	✘ no
5. research involving human embryonic stem cells.	✘ no
6. research concerning the Convention on Biological Diversity.	✘ no
7. investigations involving dual use research of concern.	✘ no

3.2 Summary

Summarise the continuing project's central question, progress, planned work, methods, and contribution to the Collaborative Research Centre.

3.3 Project progress to date

3.3.1 Report and current state of research

Report the work and results from the previous funding periods, relate them to the current state of research, and explain how they motivate the new plan.

3.3.2 Project- and subject-related list of publications

Wilkinson, M. D. et al. (2016). "The FAIR Guiding Principles for scientific data management and stewardship". In: *Scientific Data* 3.1, p. 160018. DOI: 10.1038/sdata.2016.18. (Visited on 05/31/2021).

3.4 Project plan

Aim 1: Define the underlying mechanism.
Aim 2: Validate the mechanism experimentally.
Aim 3: Integrate the findings across the CRC.

Refer to one aim as **Aim 1**, or to several as **Aims 1 to 3**.

WP 1: Mechanistic analysis

Describe the work, methods, milestones, risks, and expected results of **WP 1**.

WP 1a: Establish and validate the experimental system.

WP 1b: Perform the mechanistic experiments and define decision points.

WP 2: Experimental validation

Describe the validation strategy, expected results, and contingency plan of **WP 2**.

A01

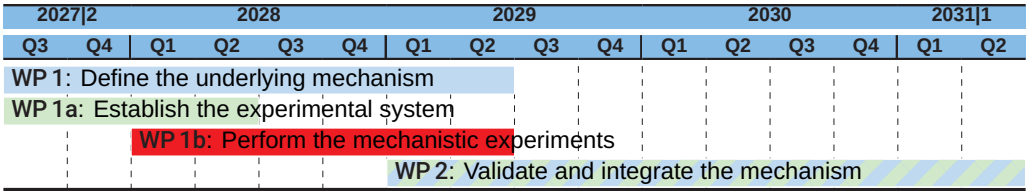

Fig. 1: Gantt chart of A01.

3.5 Relevance of sex, gender and/or diversity in the research project

Explain whether and how sex, gender, and diversity affect the research questions, design, analysis, and interpretation.

3.6 Role within the Collaborative Research Centre

Describe the project's contribution to the CRC and its principal collaborations.

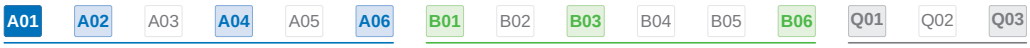

Fig. 2: Collaborations of A01.

3.7 Differentiation from other funded projects

Explain how this project differs from, and complements, other funded work of the project leaders.

3.8 Project funding

3.8.1 Previous funding

Funding of this project within the Collaborative Research Centre started in July 2019. Preparatory work was funded by Example University's seed-fund programme from January 2018 to June 2019 (reference number EU-EXAMPLE-01).

3.8.2 Requested funding

Funding for	2027|2		2028		2029		2030		2031|1	
Staff	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum
Professor, 100 %	2	126,600	2	253,200	2	253,200	2	253,200	2	126,600
Doctoral researcher, 65 %	1	26,500	1	53,000	1	53,000	1	53,000	1	26,500
Total		153,100		306,200		306,200		306,200		153,100
Direct Costs		Sum		Sum		Sum		Sum		Sum
Laboratory consumables		2,112		67		9,843		2,375		983
Sequencing and data analysis		1,000		2,000		3,000		4,000		5,000
Total		3,112		2,067		12,843		6,375		5,983
Instrumentation		Sum		Sum		Sum		Sum		Sum
Live-cell imaging system		1,000		2,000		3,000		4,000		5,000
Total		1,000		2,000		3,000		4,000		5,000
Total		157,212		310,267		322,043		316,575		164,083

Note: Figures in EUR.

A01

Requested funding for staff for the new funding period

	No.	Name, academic degree, position	Field of research	Departm. of (non-)univers. institution	Project commitm. (h/wk)	Category	Funding source
Existing staff							
Research staff	1.	**Sample**, Kim, Prof. Dr. rer. nat. (Professor and Director)	Microbiology and systems medicine	IMSM, DTB	8		State funds
Non-research staff	2.	Example, Alex, M.Sc. (Technical assistant)	Laboratory management	IMSM	20		Core support
Requested staff							
Research staff	3.	TBA (Postdoctoral researcher)	Host–microbiome interactions	DTB		Postdoctoral researcher	
Non-research staff	4.	Demo, Taylor, B.Sc. (Research assistant)	Biobanking and data curation	DTB		Research assistant	

Abbreviations: IMSM: Institute of Microbial Systems Medicine (EU); DTB: Department of Translational Biosciences (PU); EU: Example University; PU: Partner University.

Job descriptions of staff for the proposed funding period (supported through existing funds):

1. **Kim Sample** Leads the experimental programme and supervises the research staff assigned to the project.
2. **Alex Example** Maintains shared laboratory workflows and coordinates sample logistics.

Job descriptions of staff for the proposed funding period (requested funds):

3. **TBA** Performs the planned mechanistic experiments and integrates molecular and clinical datasets.
4. **Taylor Demo** Supports biobanking, quality control, and structured curation of the project datasets.

Requested funding for direct costs for the new funding period

	2027|2	2028	2029	2030	2031|1
PU: existing funds from Partner University core support	1,200	500	21,100	5,600	3,400

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	2027|2	2028	2029	2030	2031|1
EU: existing funds from Example University core support	11,100	53,800	21,100	600	38,300
Sum of existing funds	12,300	54,300	42,200	6,200	41,700
Sum of requested funds	3,112	2,067	12,843	6,375	5,983

Note: Figures in EUR.

Text

Laboratory consumables and antibodies	EUR	15,000
Single-cell sequencing and spatial profiling	EUR	12,000
Research data storage and analysis	EUR	3,000

Requested funding for instrumentation for the new funding period

Text

Automated live-cell imaging system	EUR	95,000
Environmental control module	EUR	18,000
Analysis workstation and software	EUR	7,000

A01

3.1 General information about Project A02 N

3.1.1 Project title: Metabolic control of tissue-resident immunity

3.1.2 Research area: 2.21-05: Immunology

3.1.3 Project leaders

Kim Sample, Prof. Dr. rer. nat.

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Samira Hartmann, Prof. Dr. rer. nat.

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(Germany)
+49 000 300-0006
samira@example.org

- Is the employment of the project leaders at the institutions indicated contractually secured for the duration of the proposed funding period? **no** (Sample), **no** (Hartmann)
- Do any of the above mentioned persons hold fixed-term positions? **yes** (Sample), **no** (Hartmann)
  - End date of fixed-term contract: **2028-12-31**
  - Further employment is planned until: **2029-01-03**
- Will one or more of the above-mentioned persons retire during the proposed funding period? **yes** (Sample), **no** (Hartmann)
  - Anticipated retirement date: **2054-03-10**
- Funding for the position of the project leaders at the institutions indicated is covered by core support (state funds or similar): **no** (Sample), **no** (Hartmann)
  - Type and source of funding: **DFG** (Sample), **NULL** (Hartmann)

3.1.4 Legal issues

This project includes	
1. research requiring compliance with discipline-specific research ethics guidelines.	✗ no
2. clinical trials	✓ yes
A copy of the studies' registration is included with the proposal.	✗ no
3. experiments involving vertebrates.	✓ yes
4. experiments involving recombinant DNA.	✓ yes
5. research involving human embryonic stem cells.	✗ no
6. research concerning the Convention on Biological Diversity.	✓ yes
7. investigations involving dual use research of concern.	✗ no

3.2 Summary

Summarise the new project's central hypothesis, methods, expected results, and contribution to the Collaborative Research Centre.

3.3 Research rationale

3.3.1 Current state of research and preliminary work

Describe the relevant state of research, preliminary work, open questions, and the scientific rationale for the proposed project.

3.3.2 Project- and subject-related list of publications

Wilkinson, M. D. et al. (2016). "The FAIR Guiding Principles for scientific data management and stewardship". In: *Scientific Data* 3.1, p. 160018. DOI: 10.1038/sdata.2016.18. (Visited on 05/31/2021).

3.4 Project plan

Aim 1: Establish the experimental and analytical framework.

Aim 2: Test the central hypothesis and validate the findings.

WP 1: Framework and pilot experiments

Describe the methods, milestones, expected results, and risks of **WP 1** and its contribution to **Aim 1**.

WP 2: Hypothesis testing and validation

Describe the validation strategy and contingency plan for **WP 2** and **Aim 2**.

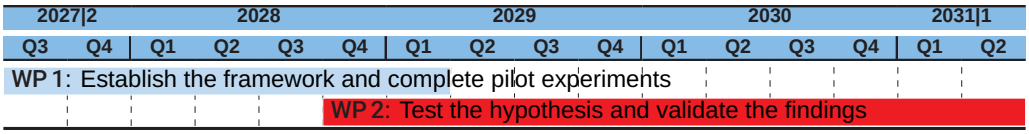

Fig. 1: Gantt chart of A02.

3.5 Relevance of sex, gender and/or diversity in the research project

Explain whether and how sex, gender, and diversity affect the research questions, design, analysis, and interpretation.

3.6 Role within the Collaborative Research Centre

Describe the project's contribution to the CRC and its principal collaborations.

Fig. 2: Collaborations of A02.

3.7 Differentiation from other funded projects of the project leader(s)

Explain how this new project differs from, and complements, other funded work of the project leaders.

3.8 Project funding

3.8.1 Previous funding

State that this is a new CRC project and list related previous funding of the project leaders where applicable.

3.8.2 Requested funding

Funding for	2027|2		2028		2029		2030		2031|1	
Staff	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum
Postdoctoral researcher, 100 %	1	45,300	1	90,600	1	90,600	1	90,600	1	45,300
Doctoral researcher, 65 %	1	26,500	1	53,000	1	53,000	1	53,000	1	26,500
Total		71,800		143,600		143,600		143,600		71,800
Direct Costs		Sum		Sum		Sum		Sum		Sum
Consumables		2,000		2,000		2,000		2,000		2,000
Total		2,000		2,000		2,000		2,000		2,000

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Funding for	2027|2	2028	2029	2030	2031|1
Instrumentation	Sum	Sum	Sum	Sum	Sum
Specialised instrument	5,000	0	0	0	0
Total	5,000	0	0	0	0
Total	78,800	145,600	145,600	145,600	73,800

Note: Figures in EUR.

Requested funding for staff

	No.	Name, academic degree, position	Field of research	Departm. of (non-)univers. institution	Project commitm. (h/wk)	Category	Funding source
Requested staff							
Research staff	1.	TBA (Postdoctoral researcher)	Experimental systems medicine	IMSM		Postdoctoral researcher	

Abbreviations: IMSM: Institute of Microbial Systems Medicine (EU); EU: Example University.

Job descriptions of staff for the proposed funding period (requested funds):

1. **TBA** Establishes the new experimental platform, performs the mechanistic studies, and analyses the resulting datasets.

Provide the scientific and organisational justification for every requested staff position.

Requested funding of direct costs

	2027|2	2028	2029	2030	2031|1
EU: existing funds from State funds	500	500	500	500	500
Sum of existing funds	500	500	500	500	500
Sum of requested funds	2,000	2,000	2,000	2,000	2,000

Note: Figures in EUR.

Text

Consumables for pilot experiments	EUR	10,000
External data analysis	EUR	5,000

Requested funding for instrumentation

Text

Specialised instrument including installation	EUR	5,000

3.1 General information about Project A03

3.1.1 Project title: Microbiome-derived metabolites and immune memory

3.1.2 Research area: 2.21-02: Microbial Ecology and Applied Microbiology

3.1.3 Project leaders

Samira Hartmann, Prof. Dr. rer. nat.

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Noah Lindberg, Prof. Dr. rer. nat.

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Northbridge University
Science Avenue 3, 34567 Northbridge
(Germany)

Department of Experimental Immunology
Northbridge University
Science Avenue 3, 34567 Northbridge
(Germany)
+49 000 300-0007 noah@example.org

- Is the employment of the project leaders at the institutions indicated contractually secured for the duration of the proposed funding period? **no** (Hartmann), **no** (Lindberg)
- Do any of the above mentioned persons hold fixed-term positions? **no** (Hartmann), **no** (Lindberg)
- Will one or more of the above-mentioned persons retire during the proposed funding period? **no** (Hartmann), **no** (Lindberg)
- Funding for the position of the project leaders at the institutions indicated is covered by core support (state funds or similar): **no** (Hartmann), **no** (Lindberg)
  - Type and source of funding: **NULL** (Hartmann), **NULL** (Lindberg)

3.1.4 Legal issues

This project includes	
1. research requiring compliance with discipline-specific research ethics guidelines.	✗ no
2. clinical trials	✗ no
3. experiments involving vertebrates.	✗ no
4. experiments involving recombinant DNA.	✗ no
5. research involving human embryonic stem cells.	✗ no
6. research concerning the Convention on Biological Diversity.	✗ no
7. investigations involving dual use research of concern.	✗ no

A03

3.2 Summary

This project investigates Microbiome-derived metabolites and immune memory. Its project leaders combine experimental and analytical approaches within the shared research programme of CRC 9999.

3.3 Project progress to date

The preceding funding period established the experimental models and shared datasets. The next phase tests causal mechanisms and validates their relevance across the participating projects.

3.3.1 Project- and subject-related list of publications

Wilkinson, M. D. et al. (2016). “The FAIR Guiding Principles for scientific data management and stewardship”. In: *Scientific Data* 3.1, p. 160018. DOI: 10.1038/sdata.2016.18. (Visited on 05/31/2021).

3.4 Project plan

Aim 1: Establish reproducible experimental and analytical workflows.

Aim 2: Validate the findings in complementary models and datasets.

WP 1: Experimental framework Define the controls, sampling strategy, and analysis workflow for **Aim 1**.

WP 2: Validation and integration Test robustness and share the validated results for **Aim 2**.

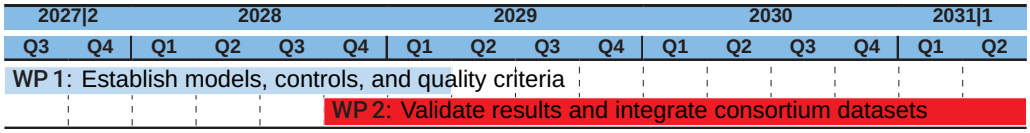

Fig. 1: Gantt chart of A03.

3.5 Relevance of sex, gender and/or diversity in the research project

Include relevant biological variables in sampling and analysis; document the rationale for each model and the limits of generalisation.

3.6 Role within the Collaborative Research Centre

Share methods, data, and validation resources with the linked projects.

Fig. 2: Collaborations of A03.

3.7 Differentiation from other funded projects

The proposed work addresses the CRC-specific hypothesis and does not duplicate personnel or experiments supported by other grants.

3.8 Project funding

Funding for	2027|2		2028		2029		2030		2031|1	
Staff	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum
Doctoral researcher, 65 %	1	27,202	1	54,405	1	54,405	1	54,405	1	27,202
Total		27,202		54,405		54,405		54,405		27,202
Direct Costs		Sum		Sum		Sum		Sum		Sum
consumables		1,000		2,000		2,000		2,000		1,000
Total		1,000		2,000		2,000		2,000		1,000
Total		28,202		56,405		56,405		56,405		28,202

Note: Figures in EUR.

The doctoral researcher performs the experiments and integrates the data. Consumables cover sample preparation, assays, and independent validation.

3.1 General information about Project A04 N

3.1.1 Project title: Spatial niches of host–microbe interactions

3.1.2 Research area: 2.21-02: Microbial Ecology and Applied Microbiology

3.1.3 Project leaders

Noah Lindberg, Prof. Dr. rer. nat.

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Alexis-Marie Winters-Scholz, Prof. Dr. rer. nat.

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alexis-marie@example.org

- Is the employment of the project leaders at the institutions indicated contractually secured for the duration of the proposed funding period? **no** (Lindberg), **no** (Winters-Scholz)
- Do any of the above mentioned persons hold fixed-term positions? **no** (Lindberg), **no** (Winters-Scholz)
- Will one or more of the above-mentioned persons retire during the proposed funding period? **no** (Lindberg), **no** (Winters-Scholz)
- Funding for the position of the project leaders at the institutions indicated is covered by core support (state funds or similar): **no** (Lindberg), **no** (Winters-Scholz)
  - Type and source of funding: **NULL** (Lindberg), **NULL** (Winters-Scholz)

3.1.4 Legal issues

This project includes

1. research requiring compliance with discipline-specific research ethics guidelines.	✗ no
2. clinical trials	✗ no
3. experiments involving vertebrates.	✗ no
4. experiments involving recombinant DNA.	✗ no
5. research involving human embryonic stem cells.	✗ no
6. research concerning the Convention on Biological Diversity.	✗ no
7. investigations involving dual use research of concern.	✗ no

3.2 Summary

This project investigates Spatial niches of host–microbe interactions. Its project leaders combine experimental and analytical approaches within the shared research programme of CRC 9999.

3.3 Research rationale

Preliminary observations motivate a new testable hypothesis. The project establishes its experimental framework and independent validation strategy during the requested funding period.

3.3.1 Project- and subject-related list of publications

Wilkinson, M. D. et al. (2016). “The FAIR Guiding Principles for scientific data management and stewardship”. In: *Scientific Data* 3.1, p. 160018. DOI: 10.1038/sdata.2016.18. (Visited on 05/31/2021).

3.4 Project plan

Aim 1: Establish reproducible experimental and analytical workflows.

Aim 2: Validate the findings in complementary models and datasets.

WP 1: Experimental framework Define the controls, sampling strategy, and analysis workflow for **Aim 1**.

WP 2: Validation and integration Test robustness and share the validated results for **Aim 2**.

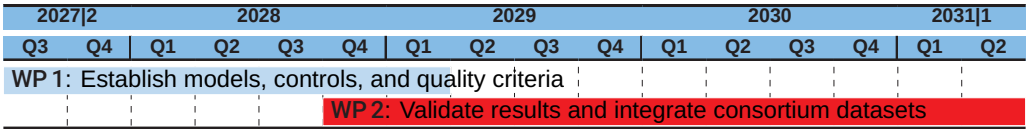

Fig. 1: Gantt chart of A04.

3.5 Relevance of sex, gender and/or diversity in the research project

Include relevant biological variables in sampling and analysis; document the rationale for each model and the limits of generalisation.

3.6 Role within the Collaborative Research Centre

Share methods, data, and validation resources with the linked projects.

Fig. 2: Collaborations of A04.

3.7 Differentiation from other funded projects

The proposed work addresses the CRC-specific hypothesis and does not duplicate personnel or experiments supported by other grants.

3.8 Project funding

Funding for	2027|2		2028		2029		2030		2031|1	
Staff	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum
Doctoral researcher, 65 %	1	27,202	1	54,405	1	54,405	1	54,405	1	27,202
Total		27,202		54,405		54,405		54,405		27,202
Direct Costs		Sum		Sum		Sum		Sum		Sum
consumables		1,000		2,000		2,000		2,000		1,000
Total		1,000		2,000		2,000		2,000		1,000
Total		28,202		56,405		56,405		56,405		28,202

Note: Figures in EUR.

The doctoral researcher performs the experiments and integrates the data. Consumables cover sample preparation, assays, and independent validation.

3.1 General information about Project A05

3.1.1 Project title: Dietary control of microbial community dynamics

3.1.2 Research area: 2.21-02: Microbial Ecology and Applied Microbiology

3.1.3 Project leaders

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- Is the employment of the project leaders at the institutions indicated contractually secured for the duration of the proposed funding period? **no** (Winters-Scholz), **no** (Navarro)
- Do any of the above mentioned persons hold fixed-term positions? **no** (Winters-Scholz), **no** (Navarro)
- Will one or more of the above-mentioned persons retire during the proposed funding period? **no** (Winters-Scholz), **no** (Navarro)
- Funding for the position of the project leaders at the institutions indicated is covered by core support (state funds or similar): **no** (Winters-Scholz), **no** (Navarro)
  - Type and source of funding: **NULL** (Winters-Scholz), **NULL** (Navarro)

3.1.4 Legal issues

This project includes

1. research requiring compliance with discipline-specific research ethics guidelines.	✗ no
2. clinical trials	✗ no
3. experiments involving vertebrates.	✗ no
4. experiments involving recombinant DNA.	✗ no
5. research involving human embryonic stem cells.	✗ no
6. research concerning the Convention on Biological Diversity.	✗ no
7. investigations involving dual use research of concern.	✗ no

3.2 Summary

This project investigates Dietary control of microbial community dynamics. Its project leaders combine experimental and analytical approaches within the shared research programme of CRC 9999.

3.3 Project progress to date

The preceding funding period established the experimental models and shared datasets. The next phase tests causal mechanisms and validates their relevance across the participating projects.

3.3.1 Project- and subject-related list of publications

Wilkinson, M. D. et al. (2016). “The FAIR Guiding Principles for scientific data management and stewardship”. In: *Scientific Data* 3.1, p. 160018. DOI: 10.1038/sdata.2016.18. (Visited on 05/31/2021).

3.4 Project plan

Aim 1: Establish reproducible experimental and analytical workflows.

Aim 2: Validate the findings in complementary models and datasets.

WP 1: Experimental framework Define the controls, sampling strategy, and analysis workflow for **Aim 1**.

WP 2: Validation and integration Test robustness and share the validated results for **Aim 2**.

3.5 Relevance of sex, gender and/or diversity in the research project

Include relevant biological variables in sampling and analysis; document the rationale for each model and the limits of generalisation.

3.6 Role within the Collaborative Research Centre

Share methods, data, and validation resources with the linked projects.

3.7 Differentiation from other funded projects

The proposed work addresses the CRC-specific hypothesis and does not duplicate personnel or experiments supported by other grants.

3.8 Project funding

Funding for	2027|2		2028		2029		2030		2031|1	
Staff	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum
Doctoral researcher, 65 %	1	27,202	1	54,405	1	54,405	1	54,405	1	27,202
Total		27,202		54,405		54,405		54,405		27,202
Direct Costs		Sum		Sum		Sum		Sum		Sum
consumables		1,000		2,000		2,000		2,000		1,000
Total		1,000		2,000		2,000		2,000		1,000
Total		28,202		56,405		56,405		56,405		28,202

Note: Figures in EUR.

The doctoral researcher performs the experiments and integrates the data. Consumables cover sample preparation, assays, and independent validation.

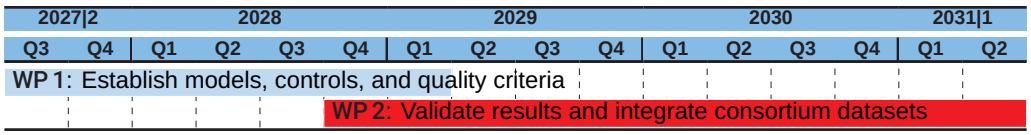

Fig. 1: Gantt chart of A05.

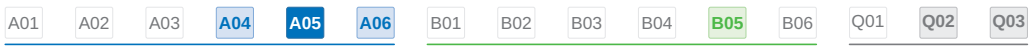

Fig. 2: Collaborations of A05.

3.1 General information about Project A06 N

3.1.1 Project title: Modelling microbial resilience and recovery

3.1.2 Research area: 2.21-02: Microbial Ecology and Applied Microbiology

3.1.3 Project leaders

Leonie Navarro, Prof. Dr. rer. nat.

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Daniel Okafor, Prof. Dr. rer. nat.

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(Germany)
+49 000 300-0010
daniel@example.org

- Is the employment of the project leaders at the institutions indicated contractually secured for the duration of the proposed funding period? **no** (Navarro), **no** (Okafor)
- Do any of the above mentioned persons hold fixed-term positions? **no** (Navarro), **no** (Okafor)
- Will one or more of the above-mentioned persons retire during the proposed funding period? **no** (Navarro), **no** (Okafor)
- Funding for the position of the project leaders at the institutions indicated is covered by core support (state funds or similar): **no** (Navarro), **no** (Okafor)
  - Type and source of funding: **NULL** (Navarro), **NULL** (Okafor)

3.1.4 Legal issues

This project includes	
1. research requiring compliance with discipline-specific research ethics guidelines.	✗ no
2. clinical trials	✗ no
3. experiments involving vertebrates.	✗ no
4. experiments involving recombinant DNA.	✗ no
5. research involving human embryonic stem cells.	✗ no
6. research concerning the Convention on Biological Diversity.	✗ no
7. investigations involving dual use research of concern.	✗ no

3.2 Summary

This project investigates Modelling microbial resilience and recovery. Its project leaders combine experimental and analytical approaches within the shared research programme of CRC 9999.

3.3 Research rationale

Preliminary observations motivate a new testable hypothesis. The project establishes its experimental framework and independent validation strategy during the requested funding period.

3.3.1 Project- and subject-related list of publications

Wilkinson, M. D. et al. (2016). “The FAIR Guiding Principles for scientific data management and stewardship”. In: *Scientific Data* 3.1, p. 160018. DOI: 10.1038/sdata.2016.18. (Visited on 05/31/2021).

3.4 Project plan

Aim 1: Establish reproducible experimental and analytical workflows.

Aim 2: Validate the findings in complementary models and datasets.

WP 1: Experimental framework Define the controls, sampling strategy, and analysis workflow for **Aim 1**.

WP 2: Validation and integration Test robustness and share the validated results for **Aim 2**.

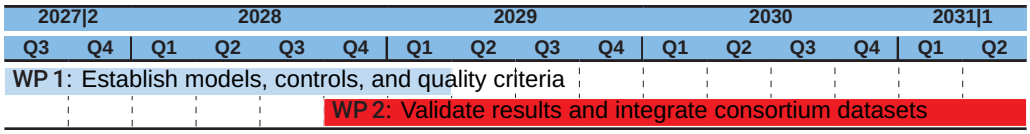

Fig. 1: Gantt chart of A06.

3.5 Relevance of sex, gender and/or diversity in the research project

Include relevant biological variables in sampling and analysis; document the rationale for each model and the limits of generalisation.

3.6 Role within the Collaborative Research Centre

Share methods, data, and validation resources with the linked projects.

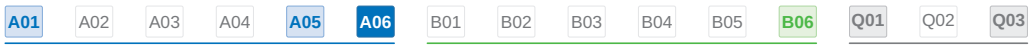

Fig. 2: Collaborations of A06.

3.7 Differentiation from other funded projects

The proposed work addresses the CRC-specific hypothesis and does not duplicate personnel or experiments supported by other grants.

3.8 Project funding

Funding for	2027|2		2028		2029		2030		2031|1	
Staff	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum
Doctoral researcher, 65 %	1	27,202	1	54,405	1	54,405	1	54,405	1	27,202
Total		27,202		54,405		54,405		54,405		27,202
Direct Costs		Sum		Sum		Sum		Sum		Sum
consumables		1,000		2,000		2,000		2,000		1,000
Total		1,000		2,000		2,000		2,000		1,000
Total		28,202		56,405		56,405		56,405		28,202

Note: Figures in EUR.

The doctoral researcher performs the experiments and integrates the data. Consumables cover sample preparation, assays, and independent validation.

3.1 General information about Project B01

3.1.1 Project title: Host defence during microbiome perturbation

3.1.2 Research areas: 2.21-03: Medical Microbiology and Mycology, Hygiene, Molecular Infection Biology, 2.21-05: Immunology, 2.22-15: Gastroenterology

3.1.3 Project leaders

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- Is the employment of the project leaders at the institutions indicated contractually secured for the duration of the proposed funding period? **yes** (Meier), **no** (Example)
- Do any of the above mentioned persons hold fixed-term positions? **no** (Meier), **no** (Example)
- Will one or more of the above-mentioned persons retire during the proposed funding period? **no** (Meier), **no** (Example)
- Funding for the position of the project leaders at the institutions indicated is covered by core support (state funds or similar): **yes** (Meier), **yes** (Example)

3.1.4 Legal issues

This project includes

1. research requiring compliance with discipline-specific research ethics guidelines.	✗ no
2. clinical trials	✗ no
3. experiments involving vertebrates.	✗ no
4. experiments involving recombinant DNA.	✗ no
5. research involving human embryonic stem cells.	✗ no
6. research concerning the Convention on Biological Diversity.	✗ no
7. investigations involving dual use research of concern.	✗ no

3.2 Summary

Summarise the continuing project and the work proposed for the new funding period.

3.3 Project progress to date

3.3.1 Report and current state of research

Report the previous work, published and unpublished results, and the current state of research.

3.3.2 Project- and subject-related list of publications

Wilkinson, M. D. et al. (2016). “The FAIR Guiding Principles for scientific data management and stewardship”. In: *Scientific Data* 3.1, p. 160018. DOI: 10.1038/sdata.2016.18. (Visited on 05/31/2021).

3.4 Project plan

Aim 1: Complete the mechanistic analysis.

Aim 2: Validate the findings with CRC partners.

WP 1: Mechanistic analysis Describe **WP 1**, including methods, milestones, and risks.

WP 2: Collaborative validation Describe **WP 2** and its links to **Aim 2**.

B01

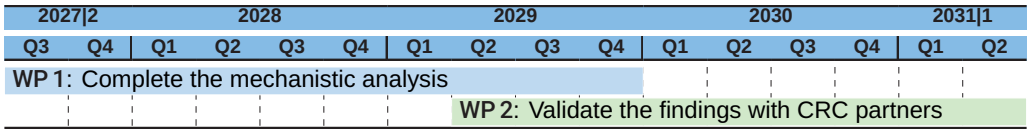

Fig. 1: Gantt chart of B01.

B01

A

3.5 Relevance of sex, gender and/or diversity in the research project

Explain the relevance of sex, gender, and diversity, or justify why they do not affect this project's research questions and methods.

3.6 Role within the Collaborative Research Centre

Describe the role of the project and its reciprocal collaborations.

Fig. 2: Collaborations of B01.

3.7 Differentiation from other funded projects

Differentiate the project from other funded work of its project leaders.

3.8 Project funding

3.8.1 Previous funding

State when CRC funding began and list other relevant previous funding.

3.8.2 Requested funding

Funding for	2027|2		2028		2029		2030		2031|1	
Staff	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum
(Jr.) Research group leader, 100 %	2	105,000	2	210,000	2	210,000	2	210,000	2	105,000
Postdoctoral researcher, 100 %	1	45,000	1	90,000	1	90,000	1	90,000	1	45,000
Total		150,000		300,000		300,000		300,000		150,000
Globalfunds		Sum		Sum		Sum		Sum		Sum
Project-wide data stewardship		1,000		2,000		3,000		4,000		5,000
Total		1,000		2,000		3,000		4,000		5,000
Total		151,000		302,000		303,000		304,000		155,000

Note: Figures in EUR.

Requested funding for staff for the new funding period

	No.	Name, academic degree, position	Field of research	Departm. of (non-)univers. institution	Project commitm. (h/wk)	Category	Funding source
Requested staff							
Research staff	1.	TBA (Research group leader)	Translational microbiology	DTB		(Jr.) Research group leader	

Abbreviations: DTB: Department of Translational Biosciences (PU); PU: Partner University.

Job descriptions of staff for the proposed funding period (requested funds):

1. **TBA** Coordinates the experimental programme and the collaborative validation studies.

Requested funding for direct costs for the new funding period

	2027|2	2028	2029	2030	2031|1
PU: existing funds from Institutional funds	1,000	1,000	1,000	1,000	1,000

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	2027|2	2028	2029	2030	2031|1
Sum of existing funds	1,000	1,000	1,000	1,000	1,000
Sum of requested funds	0	0	0	0	0

Note: Figures in EUR.

Text

Experimental consumables	EUR	10,000
Data-processing services	EUR	5,000

Requested funding for instrumentation for the new funding period

Text

No instrumentation requested	EUR	0

B01

3.1 General information about Project B02 N

3.1.1 Project title: Molecular signatures of tissue regeneration

3.1.2 Research area: 2.22-15: Gastroenterology

3.1.3 Project leaders

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daniel@example.org

- Is the employment of the project leaders at the institutions indicated contractually secured for the duration of the proposed funding period? **yes** (Miller), **no** (Okafor)
- Do any of the above mentioned persons hold fixed-term positions? **no** (Miller), **no** (Okafor)
- Will one or more of the above-mentioned persons retire during the proposed funding period? **no** (Miller), **no** (Okafor)
- Funding for the position of the project leaders at the institutions indicated is covered by core support (state funds or similar): **yes** (Miller), **no** (Okafor)
  - Type and source of funding: **NULL**

3.1.4 Legal issues

This project includes	
1. research requiring compliance with discipline-specific research ethics guidelines.	✓ yes
A statement from the responsible ethics committee is required and will be obtained before funding starts.	✗ no
2. clinical trials	✓ yes
A copy of the studies' registration is included with the proposal.	✓ yes
3. experiments involving vertebrates.	✓ yes
4. experiments involving recombinant DNA.	✓ yes
5. research involving human embryonic stem cells.	✓ yes
Legal authorization has been obtained.	✗ no
6. research concerning the Convention on Biological Diversity.	✓ yes
7. investigations involving dual use research of concern.	✓ yes
A copy of the statement by the institution's research ethics committee is included with the proposal.	✗ no

3.2 Summary

This project investigates Molecular signatures of tissue regeneration. Its project leaders combine experimental and analytical approaches within the shared research programme of CRC 9999.

3.3 Research rationale

Preliminary observations motivate a new testable hypothesis. The project establishes its experimental framework and independent validation strategy during the requested funding period.

3.3.1 Project- and subject-related list of publications

Wilkinson, M. D. et al. (2016). "The FAIR Guiding Principles for scientific data management and stewardship". In: *Scientific Data* 3.1, p. 160018. DOI: 10.1038/sdata.2016.18. (Visited on 05/31/2021).

B02

3.4 Project plan

Aim 1: Establish reproducible experimental and analytical workflows.

Aim 2: Validate the findings in complementary models and datasets.

WP 1: Experimental framework Define the controls, sampling strategy, and analysis workflow for **Aim 1**.

WP 2: Validation and integration Test robustness and share the validated results for **Aim 2**.

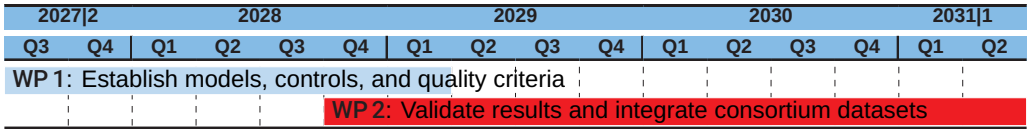

Fig. 1: Gantt chart of B02.

3.5 Relevance of sex, gender and/or diversity in the research project

Include relevant biological variables in sampling and analysis; document the rationale for each model and the limits of generalisation.

3.6 Role within the Collaborative Research Centre

Share methods, data, and validation resources with the linked projects.

Fig. 2: Collaborations of B02.

3.7 Differentiation from other funded projects

The proposed work addresses the CRC-specific hypothesis and does not duplicate personnel or experiments supported by other grants.

3.8 Project funding

Funding for	2027|2		2028		2029		2030		2031|1	
Staff	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum
Doctoral researcher, 65 %	1	27,202	1	54,405	1	54,405	1	54,405	1	27,202
Total		27,202		54,405		54,405		54,405		27,202
Direct Costs		Sum		Sum		Sum		Sum		Sum
consumables		1,000		2,000		2,000		2,000		1,000
Total		1,000		2,000		2,000		2,000		1,000
Total		28,202		56,405		56,405		56,405		28,202

Note: Figures in EUR.

The doctoral researcher performs the experiments and integrates the data. Consumables cover sample preparation, assays, and independent validation.

3.1 General information about Project B03

3.1.1 Project title: Immune circuits linking intestine and liver

3.1.2 Research area: 2.21-02: Microbial Ecology and Applied Microbiology

3.1.3 Project leaders

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Mira Sato, Prof. Dr. rer. nat.
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- Is the employment of the project leaders at the institutions indicated contractually secured for the duration of the proposed funding period? **yes** (Meier), **no** (Sato)
- Do any of the above mentioned persons hold fixed-term positions? **no** (Meier), **no** (Sato)
- Will one or more of the above-mentioned persons retire during the proposed funding period? **no** (Meier), **no** (Sato)
- Funding for the position of the project leaders at the institutions indicated is covered by core support (state funds or similar): **yes** (Meier), **no** (Sato)
  - Type and source of funding: **NULL**

3.1.4 Legal issues

This project includes

1. research requiring compliance with discipline-specific research ethics guidelines.	✗ no
2. clinical trials	✗ no
3. experiments involving vertebrates.	✗ no
4. experiments involving recombinant DNA.	✗ no
5. research involving human embryonic stem cells.	✗ no
6. research concerning the Convention on Biological Diversity.	✗ no
7. investigations involving dual use research of concern.	✗ no

3.2 Summary

This project investigates Immune circuits linking intestine and liver. Its project leaders combine experimental and analytical approaches within the shared research programme of CRC 9999.

3.3 Project progress to date

The preceding funding period established the experimental models and shared datasets. The next phase tests causal mechanisms and validates their relevance across the participating projects.

3.3.1 Project- and subject-related list of publications

Wilkinson, M. D. et al. (2016). “The FAIR Guiding Principles for scientific data management and stewardship”. In: *Scientific Data* 3.1, p. 160018. DOI: 10.1038/sdata.2016.18. (Visited on 05/31/2021).

3.4 Project plan

Aim 1: Establish reproducible experimental and analytical workflows.

Aim 2: Validate the findings in complementary models and datasets.

WP 1: Experimental framework Define the controls, sampling strategy, and analysis workflow for **Aim 1**.

WP 2: Validation and integration Test robustness and share the validated results for **Aim 2**.

3.5 Relevance of sex, gender and/or diversity in the research project

Include relevant biological variables in sampling and analysis; document the rationale for each model and the limits of generalisation.

3.6 Role within the Collaborative Research Centre

Share methods, data, and validation resources with the linked projects.

3.7 Differentiation from other funded projects

The proposed work addresses the CRC-specific hypothesis and does not duplicate personnel or experiments supported by other grants.

3.8 Project funding

Funding for	2027|2		2028		2029		2030		2031|1	
Staff	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum
Doctoral researcher, 65 %	1	27,202	1	54,405	1	54,405	1	54,405	1	27,202
Total		27,202		54,405		54,405		54,405		27,202
Direct Costs		Sum		Sum		Sum		Sum		Sum
consumables		1,000		2,000		2,000		2,000		1,000
Total		1,000		2,000		2,000		2,000		1,000
Total		28,202		56,405		56,405		56,405		28,202

Note: Figures in EUR.

The doctoral researcher performs the experiments and integrates the data. Consumables cover sample preparation, assays, and independent validation.

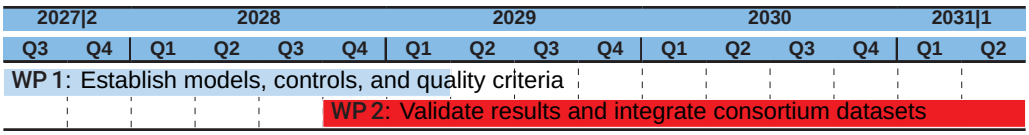

Fig. 1: Gantt chart of B03.

Fig. 2: Collaborations of B03.

3.1 General information about Project B04 N

3.1.1 Project title: Cross-organ consequences of inflammatory stress

3.1.2 Research area: 2.21-02: Microbial Ecology and Applied Microbiology

3.1.3 Project leaders

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B04

- Is the employment of the project leaders at the institutions indicated contractually secured for the duration of the proposed funding period? **yes** (Miller), **no** (Sato)
- Do any of the above mentioned persons hold fixed-term positions? **no** (Miller), **no** (Sato)
- Will one or more of the above-mentioned persons retire during the proposed funding period? **no** (Miller), **no** (Sato)
- Funding for the position of the project leaders at the institutions indicated is covered by core support (state funds or similar): **yes** (Miller), **no** (Sato)
  - Type and source of funding: **NULL**

3.1.4 Legal issues

This project includes

1. research requiring compliance with discipline-specific research ethics guidelines.	✗ no
2. clinical trials	✗ no
3. experiments involving vertebrates.	✗ no
4. experiments involving recombinant DNA.	✗ no
5. research involving human embryonic stem cells.	✗ no
6. research concerning the Convention on Biological Diversity.	✗ no
7. investigations involving dual use research of concern.	✗ no

3.2 Summary

This project investigates Cross-organ consequences of inflammatory stress. Its project leaders combine experimental and analytical approaches within the shared research programme of CRC 9999.

3.3 Research rationale

Preliminary observations motivate a new testable hypothesis. The project establishes its experimental framework and independent validation strategy during the requested funding period.

3.3.1 Project- and subject-related list of publications

Wilkinson, M. D. et al. (2016). “The FAIR Guiding Principles for scientific data management and stewardship”. In: *Scientific Data* 3.1, p. 160018. DOI: 10.1038/sdata.2016.18. (Visited on 05/31/2021).

3.4 Project plan

Aim 1: Establish reproducible experimental and analytical workflows.

Aim 2: Validate the findings in complementary models and datasets.

WP 1: Experimental framework Define the controls, sampling strategy, and analysis workflow for **Aim 1**.

WP 2: Validation and integration Test robustness and share the validated results for **Aim 2**.

3.5 Relevance of sex, gender and/or diversity in the research project

Include relevant biological variables in sampling and analysis; document the rationale for each model and the limits of generalisation.

3.6 Role within the Collaborative Research Centre

Share methods, data, and validation resources with the linked projects.

3.7 Differentiation from other funded projects

The proposed work addresses the CRC-specific hypothesis and does not duplicate personnel or experiments supported by other grants.

3.8 Project funding

Funding for	2027|2		2028		2029		2030		2031|1	
Staff	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum
Doctoral researcher, 65 %	1	27,202	1	54,405	1	54,405	1	54,405	1	27,202
Total		27,202		54,405		54,405		54,405		27,202
Direct Costs		Sum		Sum		Sum		Sum		Sum
consumables		1,000		2,000		2,000		2,000		1,000
Total		1,000		2,000		2,000		2,000		1,000
Total		28,202		56,405		56,405		56,405		28,202

Note: Figures in EUR.

The doctoral researcher performs the experiments and integrates the data. Consumables cover sample preparation, assays, and independent validation.

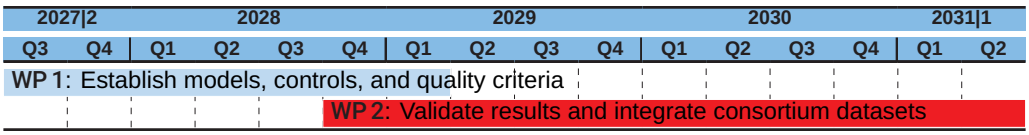

Fig. 1: Gantt chart of B04.

Fig. 2: Collaborations of B04.

3.1 General information about Project B05

3.1.1 Project title: Patient-derived models of metabolic disease

3.1.2 Research area: 2.21-02: Microbial Ecology and Applied Microbiology

3.1.3 Project leaders

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(Germany)

Centre for Clinical Translation
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(Germany)
+49 000 300-0012 robin@example.org

- Is the employment of the project leaders at the institutions indicated contractually secured for the duration of the proposed funding period? **yes** (Redata), **no** (Keller)
- Do any of the above mentioned persons hold fixed-term positions? **yes** (Redata), **no** (Keller)
  - End date of fixed-term contract: **2028-12-31**
  - Further employment is planned until: **2029-01-03**
- Will one or more of the above-mentioned persons retire during the proposed funding period? **yes** (Redata), **no** (Keller)
  - Anticipated retirement date: **2054-03-10**
- Funding for the position of the project leaders at the institutions indicated is covered by core support (state funds or similar): **no** (Redata), **no** (Keller)
  - Type and source of funding: **DFG** (Redata), **NULL** (Keller)

3.1.4 Legal issues

This project includes

1. research requiring compliance with discipline-specific research ethics guidelines.	✗ no
2. clinical trials	✗ no
3. experiments involving vertebrates.	✗ no
4. experiments involving recombinant DNA.	✗ no
5. research involving human embryonic stem cells.	✗ no
6. research concerning the Convention on Biological Diversity.	✗ no
7. investigations involving dual use research of concern.	✗ no

3.2 Summary

This project investigates Patient-derived models of metabolic disease. Its project leaders combine experimental and analytical approaches within the shared research programme of CRC 9999.

3.3 Project progress to date

The preceding funding period established the experimental models and shared datasets. The next phase tests causal mechanisms and validates their relevance across the participating projects.

3.3.1 Project- and subject-related list of publications

Wilkinson, M. D. et al. (2016). “The FAIR Guiding Principles for scientific data management and stewardship”. In: *Scientific Data* 3.1, p. 160018. DOI: 10.1038/sdata.2016.18. (Visited on 05/31/2021).

3.4 Project plan

Aim 1: Establish reproducible experimental and analytical workflows.

Aim 2: Validate the findings in complementary models and datasets.

WP 1: Experimental framework Define the controls, sampling strategy, and analysis workflow for **Aim 1**.

WP 2: Validation and integration Test robustness and share the validated results for **Aim 2**.

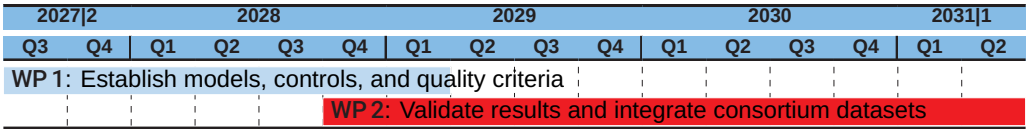

Fig. 1: Gantt chart of B05.

3.5 Relevance of sex, gender and/or diversity in the research project

Include relevant biological variables in sampling and analysis; document the rationale for each model and the limits of generalisation.

B05

3.6 Role within the Collaborative Research Centre

Share methods, data, and validation resources with the linked projects.

Fig. 2: Collaborations of B05.

3.7 Differentiation from other funded projects

The proposed work addresses the CRC-specific hypothesis and does not duplicate personnel or experiments supported by other grants.

3.8 Project funding

Funding for	2027|2		2028		2029		2030		2031|1	
Staff	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum
Doctoral researcher, 65 %	1	27,202	1	54,405	1	54,405	1	54,405	1	27,202
Total		27,202		54,405		54,405		54,405		27,202
Direct Costs		Sum		Sum		Sum		Sum		Sum
consumables		1,000		2,000		2,000		2,000		1,000
Total		1,000		2,000		2,000		2,000		1,000
Total		28,202		56,405		56,405		56,405		28,202

Note: Figures in EUR.

The doctoral researcher performs the experiments and integrates the data. Consumables cover sample preparation, assays, and independent validation.

3.1 General information about Project B06 N

3.1.1 Project title: Translating microbial biomarkers into interventions

3.1.2 Research area: 2.21-02: Microbial Ecology and Applied Microbiology

3.1.3 Project leaders

Daniel Okafor, Prof. Dr. rer. nat.

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Westhaven Research Centre
Science Avenue 3, 34567 Westhaven
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Centre for Clinical Translation
Westhaven Research Centre
Science Avenue 3, 34567 Westhaven
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+49 000 300-0010
daniel@example.org

Robin Keller, Prof. Dr. rer. nat.

Institute of Microbial Systems Medicine
Example University
University Avenue 1, 12345 Example City
(Germany)

Centre for Clinical Translation
Westhaven Research Centre
Science Avenue 3, 34567 Westhaven
(Germany)
+49 000 300-0012 robin@example.org

- Is the employment of the project leaders at the institutions indicated contractually secured for the duration of the proposed funding period? **no** (Okafor), **no** (Keller)
- Do any of the above mentioned persons hold fixed-term positions? **no** (Okafor), **no** (Keller)
- Will one or more of the above-mentioned persons retire during the proposed funding period? **no** (Okafor), **no** (Keller)
- Funding for the position of the project leaders at the institutions indicated is covered by core support (state funds or similar): **no** (Okafor), **no** (Keller)
  - Type and source of funding: **NULL** (Okafor), **NULL** (Keller)

B06

3.1.4 Legal issues

This project includes	
1. research requiring compliance with discipline-specific research ethics guidelines.	✗ no
2. clinical trials	✗ no
3. experiments involving vertebrates.	✗ no
4. experiments involving recombinant DNA.	✗ no
5. research involving human embryonic stem cells.	✗ no
6. research concerning the Convention on Biological Diversity.	✗ no
7. investigations involving dual use research of concern.	✗ no

3.2 Summary

This project investigates Translating microbial biomarkers into interventions. Its project leaders combine experimental and analytical approaches within the shared research programme of CRC 9999.

3.3 Research rationale

Preliminary observations motivate a new testable hypothesis. The project establishes its experimental framework and independent validation strategy during the requested funding period.

3.3.1 Project- and subject-related list of publications

Wilkinson, M. D. et al. (2016). “The FAIR Guiding Principles for scientific data management and stewardship”. In: *Scientific Data* 3.1, p. 160018. DOI: 10.1038/sdata.2016.18. (Visited on 05/31/2021).

3.4 Project plan

Aim 1: Establish reproducible experimental and analytical workflows.

Aim 2: Validate the findings in complementary models and datasets.

WP 1: Experimental framework Define the controls, sampling strategy, and analysis workflow for **Aim 1**.

WP 2: Validation and integration Test robustness and share the validated results for **Aim 2**.

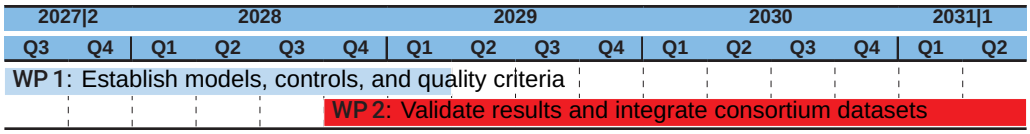

Fig. 1: Gantt chart of B06.

3.5 Relevance of sex, gender and/or diversity in the research project

Include relevant biological variables in sampling and analysis; document the rationale for each model and the limits of generalisation.

3.6 Role within the Collaborative Research Centre

Share methods, data, and validation resources with the linked projects.

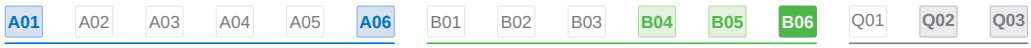

Fig. 2: Collaborations of B06.

B06

3.7 Differentiation from other funded projects

The proposed work addresses the CRC-specific hypothesis and does not duplicate personnel or experiments supported by other grants.

3.8 Project funding

Funding for	2027|2		2028		2029		2030		2031|1	
Staff	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum
Doctoral researcher, 65 %	1	27,202	1	54,405	1	54,405	1	54,405	1	27,202
Total		27,202		54,405		54,405		54,405		27,202
Direct Costs		Sum		Sum		Sum		Sum		Sum
consumables		1,000		2,000		2,000		2,000		1,000
Total		1,000		2,000		2,000		2,000		1,000
Total		28,202		56,405		56,405		56,405		28,202

Note: Figures in EUR.

The doctoral researcher performs the experiments and integrates the data. Consumables cover sample preparation, assays, and independent validation.

3.1 General information about Project Q01

3.1.1 Project title: Integrated imaging and analysis services

3.1.2 Research areas: 2.21-02: Microbial Ecology and Applied Microbiology, 2.22-15: Gastroenterology

3.1.3 Project leaders

Alex Example, Prof. Dr. phil.

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alex.example@example.org

Noah Lindberg, Prof. Dr. rer. nat.

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Department of Experimental Immunology
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(Germany)
+49 000 300-0007 noah@example.org

- Is the employment of the project leaders at the institutions indicated contractually secured for the duration of the proposed funding period? **no** (Example), **no** (Lindberg)
- Do any of the above mentioned persons hold fixed-term positions? **no** (Example), **no** (Lindberg)
- Will one or more of the above-mentioned persons retire during the proposed funding period? **no** (Example), **no** (Lindberg)
- Funding for the position of the project leaders at the institutions indicated is covered by core support (state funds or similar): **yes** (Example), **no** (Lindberg)
  - Type and source of funding: **NULL**

3.1.4 Legal issues

This project includes

1. research requiring compliance with discipline-specific research ethics guidelines.	✗ no
2. clinical trials	✗ no
3. experiments involving vertebrates.	✗ no
4. experiments involving recombinant DNA.	✗ no
5. research involving human embryonic stem cells.	✗ no
6. research concerning the Convention on Biological Diversity.	✗ no
7. investigations involving dual use research of concern.	✗ no

Q01

3.2 Summary

Summarise the service portfolio, its scientific purpose, its users, and the developments planned for the new funding period.

3.3 Project progress to date

3.3.1 Report and current state of research

Report completed and ongoing services, usage by CRC projects, technical developments, quality assurance, and relevant service-project research.

3.3.2 Project- and subject-related list of publications

Wilkinson, M. D. et al. (2016). “The FAIR Guiding Principles for scientific data management and stewardship”. In: *Scientific Data* 3.1, p. 160018. DOI: 10.1038/sdata.2016.18. (Visited on 05/31/2021).

3.4 Project plan

Aim 1: Maintain and quality-assure the core service portfolio.

Aim 2: Extend the portfolio for new collaborative requirements.

WP 1: Core service provision Describe access, sample or data handover, turnaround, quality assurance, responsibilities, and capacity for **WP 1**.

WP 2: Service development Describe development milestones and the projects participating in **WP 2**.

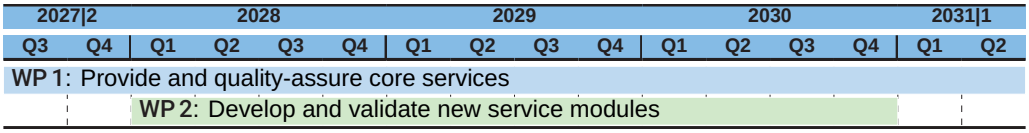

Fig. 1: Gantt chart of Q01.

3.5 Relevance of sex, gender and/or diversity in the research project

Explain relevance for the service methods and the studies supported by them.

3.6 Role within the Collaborative Research Centre

Describe which projects use the services and how priorities, access, and collaborations are coordinated.

Fig. 2: Collaborations of Q01.

Q01

3.7 Differentiation from other funded projects

Differentiate the CRC service from existing institutional infrastructure and other funded service activities.

3.8 Project funding

3.8.1 Previous funding

State when the service project began and describe relevant previous funding.

3.8.2 Requested funding

Funding for	2027|2		2028		2029		2030		2031|1	
Staff	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum
Non-research staff, 65 %	1	19,988	1	39,975	1	39,975	1	39,975	1	19,988
Research assistant, 50 %	1	9,000	1	18,000	1	18,000	1	18,000	1	9,000
Total		28,988		57,975		57,975		57,975		28,988
Direct Costs		Sum		Sum		Sum		Sum		Sum
Invitation		1,000		2,000		3,000		4,000		5,000
Total		1,000		2,000		3,000		4,000		5,000
Total		29,988		59,975		60,975		61,975		33,988

Note: Figures in EUR.

Requested funding for staff for the new funding period

	No.	Name, academic degree, position	Field of research	Departm. of (non-)univers. institution	Project commitm. (h/wk)	Category	Funding source
Requested staff							
Non-research staff	1.	Specialist, Service (Technical specialist)	Core-facility services	IMSM		Non-research staff	

Abbreviations: IMSM: Institute of Microbial Systems Medicine (EU); EU: Example University.

Job descriptions of staff for the proposed funding period (requested funds):

1. **Service Specialist** Operates the service platform, performs quality control, and supports participating projects.

Requested funding for direct costs for the new funding period

	2027|2	2028	2029	2030	2031|1
EU: existing funds from Core-facility funds	1,000	1,000	1,000	1,000	1,000
Sum of existing funds	1,000	1,000	1,000	1,000	1,000
Sum of requested funds	1,000	2,000	3,000	4,000	5,000

Note: Figures in EUR.

Text		
Service-specific consumables	EUR	10,000
Maintenance and quality assurance	EUR	5,000

Requested funding for instrumentation for the new funding period

Text		
Service-platform upgrade	EUR	5,000

3.1 General information about Project Q02

3.1.1 Project title: Integrated Research Training Group

3.1.2 Project leaders

Friedhelm Redata, Prof. Dr.-Ing.

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Leonie Navarro, Prof. Dr. rer. nat.

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leonie@example.org

- Is the employment of the project leaders at the institutions indicated contractually secured for the duration of the proposed funding period? **yes** (Redata), **no** (Navarro)
- Do any of the above mentioned persons hold fixed-term positions? **yes** (Redata), **no** (Navarro)
  - End date of fixed-term contract: **2028-12-31**
  - Further employment is planned until: **2029-01-03**
- Will one or more of the above-mentioned persons retire during the proposed funding period? **yes** (Redata), **no** (Navarro)
  - Anticipated retirement date: **2054-03-10**
- Funding for the position of the project leaders at the institutions indicated is covered by core support (state funds or similar): **no** (Redata), **no** (Navarro)
  - Type and source of funding: **DFG** (Redata), **NULL** (Navarro)

3.2 Summary

Summarise the objectives, development, and added value of the Integrated Research Training Group.

3.3 Tabular report

Provide the required tabular report of all researchers funded by the Integrated Research Training Group to date.

3.4 Qualification programme

Describe the qualification programme, workshops, courses, retreats, career development measures, and other training activities.

3.5 Management and supervision

Describe management responsibilities, recruitment, supervision arrangements, mentoring, conflict-resolution processes, and quality assurance.

3.6 Environment of the Integrated Research Training Group

Describe the scientific, institutional, interdisciplinary, and international training environment.

3.7 Interim assessment and outlook

Assess progress during the current funding period and describe priorities and measurable objectives for the next funding period.

3.8 Project funding

3.8.1 Previous funding

The Integrated Research Training Group has been funded within the Collaborative Research Centre since April 2018. Replace this date and add any relevant funding under another programme.

3.8.2 Existing funds for the new funding period

Describe the coordination, training, staff, and direct-cost resources made available to the Integrated Research Training Group by the participating institutions.

Existing staff

	No.	Name, academic degree, position	Field of research	Departm. of (non-)univers. institution	Project commitm. (h/wk)	Category	Funding source
Existing staff							
Non-research staff	1.	Trainer, Taylor (Training coordinator)	Structured doctoral training	DTB	20		Partner University core funds

Abbreviations: DTB: Department of Translational Biosciences (PU); PU: Partner University.

Job descriptions of staff for the proposed funding period (supported through existing funds):

1. **Taylor Trainer** Coordinates recruitment, course administration, progress monitoring, mentoring, and quality assurance for the qualification programme.

	2027|2	2028	2029	2030	2031|1
PU: existing funds from Graduate-school funds	1,000	1,000	1,000	1,000	1,000
Sum of existing funds	1,000	1,000	1,000	1,000	1,000
Sum of requested funds	2,000	2,000	2,000	2,000	2,000

Note: Figures in EUR.

3.8.3 Requested funding

Funding for	2027|2		2028		2029		2030		2031|1	
Staff	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum
Doctoral researcher, 65 %	1	27,202	1	54,405	1	54,405	1	54,405	1	27,202
Non-research staff, 50 %	1	15,000	1	30,000	1	30,000	1	30,000	1	15,000
Total		42,202		84,405		84,405		84,405		42,202
Direct Costs		Sum		Sum		Sum		Sum		Sum
Qualification programme		2,000		2,000		2,000		2,000		2,000
Total		2,000		2,000		2,000		2,000		2,000
Fellowships		Sum		Sum		Sum		Sum		Sum
Short-term fellowships		1,000		1,000		1,000		1,000		1,000
Total		1,000		1,000		1,000		1,000		1,000
Globalfunds		Sum		Sum		Sum		Sum		Sum
Training and networking		3,000		3,000		3,000		3,000		3,000
Total		3,000		3,000		3,000		3,000		3,000
Total		48,202		90,405		90,405		90,405		48,202

Note: Figures in EUR.

Q02

3.8.4 Requested funding for staff

Text

Doctoral-researcher position: interdisciplinary research and participation in the complete qualification programme	EUR	5,000

3.8.5 Requested funding for direct costs

Text

Workshops and transferable-skills courses	EUR	10,000
Visiting researchers and networking	EUR	5,000

3.8.6 Requested funding for fellowships

Text

Short-term research fellowships: state the type of fellowship, average number of fellows, average duration, monthly allowance per person, and justification	EUR	5,000

3.8.7 Requested global funds

Text

Training and networking measures: explain the purpose, allocation rules, selection process, and administration	EUR	15,000

3.1 General information about Project Q03

3.1.1 Project title: Central coordination and data stewardship

3.1.2 Project leaders

Hansi Meier, Dr. rer. nat.

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Robin Keller, Prof. Dr. rer. nat.

Institute of Microbial Systems Medicine
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(Germany)

Centre for Clinical Translation
Westhaven Research Centre
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(Germany)
+49 000 300-0012 robin@example.org

3.2 Documentation of the central activities of the Collaborative Research Centre

Document governance and decision-making, scientific coordination, reporting, internal communication, data stewardship, publication support, equal- opportunity measures, early-career support, outreach, and the interfaces with all applicant and participating institutions. Distinguish CRC-specific tasks from permanent institutional duties and state responsibilities, workflows, results from the current period, and priorities for the new funding period.

3.3 Project funding

3.3.1 Existing funds for the new funding period

Describe the central staff, facilities, and direct-cost resources contributed by the applicant and participating institutions.

Existing staff

	No.	Name, academic degree, position	Field of research	Departm. of (non-)univers. institution	Project commitm. (h/wk)	Category	Funding source
Existing staff							
Non-research staff	1.	**Coordinator**, Jamie, Dr. rer. nat. (Scientific manager)	Research management	DTB	20		Partner University core funds

Abbreviations: DTB: Department of Translational Biosciences (PU); PU: Partner University.

Job descriptions of staff for the proposed funding period (supported through existing funds):

1. **Jamie Coordinator** Coordinates governance, reporting, internal communication, central measures, and interfaces with applicant and participating institutions.

	2027|2	2028	2029	2030	2031|1
EU: existing funds from Central university funds	1,000	1,000	1,000	1,000	1,000
Sum of existing funds	1,000	1,000	1,000	1,000	1,000
Sum of requested funds	2,000	2,000	2,000	2,000	2,000

Note: Figures in EUR.

3.3.2 Requested funding for the new funding period

Funding for	2027|2		2028		2029		2030		2031|1	
Staff	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum	Qty	Sum
Non-research staff, 100 %	1	30,750	1	61,500	1	61,500	1	61,500	1	30,750
Research assistant, 50 %	1	12,500	1	25,000	1	25,000	1	25,000	1	12,500
Total		43,250		86,500		86,500		86,500		43,250
Direct Costs		Sum		Sum		Sum		Sum		Sum
Central coordination and communication		2,000		2,000		2,000		2,000		2,000
Total		2,000		2,000		2,000		2,000		2,000
Globalfunds		Sum		Sum		Sum		Sum		Sum
Central measures		2,000		2,000		2,000		2,000		2,000
Total		2,000		2,000		2,000		2,000		2,000
Total		47,250		90,500		90,500		90,500		47,250

Note: Figures in EUR.

3.3.3 Requested funding for staff

Text		
Scientific coordination: justify the category, percentage, period, and CRC-specific responsibilities	EUR	5,000

3.3.4 Requested funding for direct costs

Text		
Governance meetings and scientific exchange	EUR	10,000
Communication and outreach	EUR	5,000

3.3.5 Requested global funds

Text		
Central measures: explain the purpose, allocation rules, selection process, and administration	EUR	10,000

3.1 General information about Project A00 (former project) E

3.1.1 Project title: Former project on microbial community dynamics

3.1.2 Project leaders

Kimmi Miller, Prof. Dr. rer. nat.

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daniel@example.org

3.2 Project history

3.2.1 Report

Describe the complete funding history, objectives, methods, results, and contribution of the ending project. Citations used only in the report are printed automatically at the end of this environment. This dummy citation also demonstrates the exclusion of a result listed below (Wilkinson et al. 2016).

References

3.2.2 Published project results

Publications with scientific quality assurance

Wilkinson, M. D. et al. (2016). “The FAIR Guiding Principles for scientific data management and stewardship”. In: *Scientific Data* 3.1, p. 160018. DOI: 10.1038/sdata.2016.18. (Visited on 05/31/2021).

Other publications and published results

None.

Patents

None.

3.3 Funding

Funding of this project within the Collaborative Research Centre started in April 2018. The project will be completed by the end of the current funding period. Replace these dates and, where applicable, add previous funding under another DFG programme and its reference number.

3.3.1 Project staff in the ending funding period

	No.	Name, academic degree, position	Field of research	Departm. of (non-)univers. institution	Project commitm. (h/wk)	Category	Funding source
Existing staff							
Research staff	1.	**Miller**, Kimmi, Prof. Dr. rer. nat. (Professor of Molecular Medicine)	Molecular tissue regeneration	DTB	8		State funds

Continue on the following page …

…continuing from previous page.

	No.	Name, academic degree, position	Field of research	Departm. of (non-)univers. institution	Project commitm. (h/wk)	Category	Funding source
Staff funded with approved grant money							
Research staff	2.	TBA (Postdoctoral researcher)	Regenerative cell biology	DTB		Postdoctoral researcher	

Abbreviations: DTB: Department of Translational Biosciences (PU); PU: Partner University.

Job descriptions of staff (supported through existing funds):

1. **Kimmi Miller** Led the project, supervised the experimental work, and integrated its results across the CRC throughout the ending funding period.

Job descriptions of staff (funded with approved grant money):

2. **TBA** Completed the final validation experiments and data publication from April 2025 until the end of the current funding period.

A00

4 Bylaws of the Collaborative Research Centre

§1 Name, coordinating university, and purpose of the Collaborative Research Centre

§1.1 The Collaborative Research Centre (CRC) “Mechanisms of Host–Microbiome Communication – From Molecular Interactions to Organ Function” is a legally dependent institution of Example University.

§1.2 The Collaborative Research Centre conducts interrelated research on microbial signalling, epithelial barriers, immune regulation, and organ function. It is divided into research project areas and central projects.

§1.3 The Collaborative Research Centre promotes interaction with other research institutions, supports researchers in early career phases, and fosters responsible international cooperation, equity, and equal opportunity.

§2 Membership and governing bodies

§2.1 Members are the project leaders and persons appointed to central scientific or administrative responsibilities by the general assembly.

§2.2 The governing bodies are the general assembly, the spokesperson, and the steering committee. The general assembly elects the spokesperson and steering committee for the applicable funding period.

§2.3 The steering committee prepares strategic and budgetary decisions, monitors milestones, and reports to the general assembly at least once per year.

§3 Decisions and allocation of shared resources

§3.1 Decisions are normally taken by simple majority of members present; changes to these bylaws require a two-thirds majority.

§3.2 Shared funds and infrastructure are allocated through documented, transparent procedures based on scientific need, feasibility, and equal access across participating projects.

§3.3 Members disclose conflicts of interest and do not participate in the corresponding deliberation or decision.

§4 Research integrity, equity, and conflict resolution

§4.1 All members follow the applicable rules of good research practice, data protection, animal welfare, research ethics, and occupational safety.

§4.2 The CRC implements equal-opportunity and accessibility measures and monitors participation in recruitment, training, and governance.

§4.3 Concerns may be raised confidentially with the spokesperson, the CRC management, or the competent independent offices of the participating institutions.

§5 Research-data governance

§5.1 Projects document data, code, samples, access rights, retention, and publication in project-specific data-management plans.

§5.2 Central data stewardship defines common metadata and quality standards, manages controlled access, and supports publication according to the FAIR principles and applicable legal requirements.

5 Declarations

I/We hereby confirm the accuracy of the information contained in the proposal, including the research profiles.

The *DFG Rules of Procedure for Dealing with Scientific Misconduct* (*known as VerfOwF*) apply to individuals with a high level of scientific/academic responsibility in connection with funding proposals submitted by universities. The applicant university confirms that all individuals with a high level of scientific/academic responsibility in the project proposal submitted by the university (cf. programme guidelines, DFG form 50.06) recognise the *DFG Rules of Procedure for Dealing with Scientific Misconduct* as legally binding by submitting a corresponding declaration of commitment.

In submitting this proposal, all project leaders undertake to comply with the relevant discipline-specific research ethics guidelines, to determine whether a statement from the responsible ethics committee is required and, where necessary, to obtain it in good time before the start of funding. They will inform the DFG immediately if an ethics committee expresses substantive concerns or issues a negative statement and will submit the statement if the DFG requests it.

The DFG takes the protection of your personal data very seriously. Please note the DFG's data protection notice on research funding, which can be viewed and downloaded at `www.dfg.de/privacy_policy`

Please forward this information to those individuals whose data will be processed by the DFG because they are mentioned in your proposal.

I/We have read the DFG's data protection notice.

I/We consent to the processing and transfer of special categories of personal data (including the data of all parties involved) for the purposes stated in the Privacy Policy if, after careful consideration, I/we provide such data either now or at a later date.

Example City
<date>

Prof. Dr. med. Morgan Sample
(Spokesperson of Collaborative Research Centre)

Example City
<date>

Prof. Dr. Casey President
(Rector, chancellor, or president of Partner University)

Example City
<date>

Prof. Dr. Robin Rector
(Rector, chancellor, or president of Example University)

Project	Title	Project leader(s)
A01	Microbial signalling across epithelial barriers	Kim **Sample** Alex **Example**
A02 N	Metabolic control of tissue-resident immunity	Kim **Sample** Samira **Hartmann**
A03	Microbiome-derived metabolites and immune memory	Samira **Hartmann** Noah **Lindberg**
A04 N	Spatial niches of host–microbe interactions	Noah **Lindberg** Alexis-Marie **Winters-Scholz**
A05	Dietary control of microbial community dynamics	Alexis-Marie **Winters-Scholz** Leonie **Navarro**
A06 N	Modelling microbial resilience and recovery	Leonie **Navarro** Daniel **Okafor**
B01	Host defence during microbiome perturbation	Hansi **Meier** Alex **Example**
B02 N	Molecular signatures of tissue regeneration	Kimmi **Miller** Daniel **Okafor**
B03	Immune circuits linking intestine and liver	Hansi **Meier** Mira **Sato**
B04 N	Cross-organ consequences of inflammatory stress	Kimmi **Miller** Mira **Sato**
B05	Patient-derived models of metabolic disease	Friedhelm **Redata** Robin **Keller**
B06 N	Translating microbial biomarkers into interventions	Daniel **Okafor** Robin **Keller**
Q01	Integrated imaging and analysis services	Alex **Example** Noah **Lindberg**
Q02	Integrated Research Training Group	Friedhelm **Redata** Leonie **Navarro**
Q03	Central coordination and data stewardship	Hansi **Meier** Robin **Keller**

5 Complete example CV appendix

The following pages contain the complete fictional CV appendix generated from `crc-cv.tex` and the shared consortium metadata. It includes the cover, contents, and all twelve PI CVs. Each shows three career stages, supplementary research information, activities, supervision, distinctions, and further information, followed by two category-A articles, a category-B dataset, and the privacy statement. The bibliography records are explicitly fictional and use person-specific selection keywords such as `per12-A` and `per12-B`. Replace them with real publications and the appropriate keywords, as explained in Section 3.3.4. See Example 3.1 for the code that selects all PIs or one person.

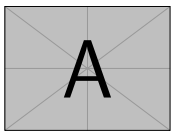
The CV sections use breakable `tcolorbox` containers. Career entries retain their two-column appearance and can continue onto the following page; section titles are repeated with a continuation marker. Titles, body text, publication lists, and consent text use `\normalsize` (the nominal 11 pt base size).

As with the proposal, the CV is built with `final=true`. Every imported page is reduced to 82%, framed, and labelled “Example CV appendix”; the manual page number stays outside the frame. Open the accompanying standalone example CV PDF for its own clickable references and bookmarks. Run `make cv-doc-example` to regenerate just that PDF, or `make doc` to rebuild both examples and this manual from the DTX.

Collaborative Research Centre 9999

Mechanisms of Host–Microbiome Communication

From Molecular Interactions to Organ Function



Example University

Funding Proposal

for the third Funding Period
2027|2–2028–2029–2030–2031|1

Appendix: Research profiles

Proposal for the third Funding Period of
Collaborative Research Centre 9999

"**Mechanisms of Host–Microbiome Communication: From Molecular Interactions to Organ Function**"

funded since

2019-07-01

for

2027|2–2028–2029–2030–2031|1

Coordinating university:

Example University

Spokesperson of the Collaborative Research Centre:

Morgan Sample, Prof. Dr. med.
0000-0000-0000-0006
Institute of Microbial Systems Medicine
Example University
University Avenue 1, 12345 Example City
(Germany)
+49 000 100-6000
morgan.sample@example.org

Management or office of the Collaborative Research Centre:

Jamie Coordinator, Dr. rer. nat.
0000-0000-0000-0007
Department of Translational Biosciences
Partner University
Research Road 2, 54321 Partner City
(Germany)
+49 000 200-7000
jamie.coordinator@example.org

Example City
<date>

Prof. Dr. med. Morgan Sample
(Spokesperson of Collaborative Research Centre)

Example City
<date>

Prof. Dr. Casey President
(Rector, chancellor, or president of Partner University)

Example City
<date>

Prof. Dr. Robin Rector
(Rector, chancellor, or president of Example University)

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Curriculum Vitae

Prof. Dr. phil.

Alex Example

Personal Data

Title	Prof. Dr. phil.
First name	Alex
Name	Example
Current position	Research group leader
Current institution(s)/ site(s), country	Department of Translational Biosciences Partner University Research Road 2, 54321 Partner City (Germany)
ORCiD	0000-0000-0000-0002

Qualifications and Career

Stages	Periods and Details
Degree programme	Data Science, Partner University
Doctorate	1999 Dr. phil., Partner University
since 2016: Current appointment	Research group leader *Develops statistical models linking molecular measurements with clinical phenotypes.*
2004–2015: Independent research	Independent research group leader *Established a research team on multimodal data integration and reproducible analysis and developed collaborative methods.*
2000–2003: Postdoctoral training	Postdoctoral researcher *Developed experimental and analytical approaches to multimodal data integration and reproducible analysis.*

Supplementary Career Information

Research focus: multimodal data integration and reproducible analysis. A visiting fellowship at the Example Centre for Interdisciplinary Research supported new collaborations and exchange of methods.

Activities in the Research System

Leads the data standards working group and maintains the consortium code-review programme. Contributes to peer review and open teaching materials.

Supervision of Researchers in Early Career Phases

Supervises doctoral projects in statistics and biology, with paired computational and experimental mentors. Regular progress reviews include research integrity and publication planning.

Scientific results – Category A

Articles in peer-reviewed journals, contributions to peer-reviewed conferences or to anthology volumes, and book publications

1. A. Example. “Illustrative study of multimodal data integration and reproducible analysis”. In: *Fictional Journal of Consortium Research* 1 (2025), pp. 1–8.

2. A. Example. “Reproducible methods for multimodal data integration and reproducible analysis”. In: *Fictional Journal of Consortium Research* 1 (2024), pp. 1–8.

Scientific results – Category B

Any other form of published results

1. A. Example. *Fictional demonstration dataset: multimodal data integration and reproducible analysis*. Version 1.0. Example Research Repository, 2025.

Academic Distinctions

2024: Partner University award for open research software. 2021: consortium mentoring recognition for support of early-career researchers.

Other Information

Makes analysis protocols and training resources available for reuse. No commercial interests related to the proposed research. All career details and distinctions in this CV are fictional examples.

Data protection and consent to the processing of optional data

✗ I (Prof. Dr. phil. Alex Example) expressly consent to the processing of the voluntary (optional) information, including “special categories of personal data” in connection with the DFG’s review and decision-making process regarding my proposal. This also includes forwarding my data to the external reviewers, committee members and, where applicable, foreign partner organisations who are involved in the decision-making process. To the extent that these recipients are located in a third country (outside the European Economic Area), I additionally consent to them being granted access to my data for the above-mentioned purposes, even though a level of data protection comparable to EU law may not be guaranteed. For this reason, compliance with the data protection principles of EU law is not guaranteed in such cases. In this respect, there may be a violation of my fundamental rights and freedoms and resulting damages. This may make it more difficult for me to assert my rights under the General Data Protection Regulation (e.g. information, rectification, erasure, compensation) and, if necessary, to enforce these rights with the help of authorities or in court.

I may *revoke* my consent in whole or in part at any time – with effect for the future, freely and without giving reasons – vis-à-vis the DFG (postmaster@dfg.de). The lawfulness of the processing carried out up to that point remains unaffected. Insofar as I transmit “special categories of personal data” relating to third parties, I confirm that the necessary legitimation under data protection law exists (e.g. based on consent).

I have taken note of the DFG’s Data Protection Notice relating to research funding, which I can access at `www.dfg.de/privacy_policy` and I will forward it to such persons whose data the DFG processes as a result of being mentioned in this CV.

Curriculum Vitae

Prof. Dr. rer. nat.

Samira Hartmann

Personal Data

Title	Prof. Dr. rer. nat.
First name	Samira
Name	Hartmann
Current position	Professor of Systems Medicine
Current institution(s)/ site(s), country	Centre for Computational Microbiology Northbridge University Science Avenue 3, 34567 Northbridge (Germany)
ORCiD	0000-0000-0000-0016

Qualifications and Career

Stages	Periods and Details
Degree programme	Life Sciences, Example University
Doctorate	2010 Dr. rer. nat., Example University
since 2018: Current appointment	Professor of Systems Medicine *Combines microbial genetics with functional assays of host metabolic responses.*
2015–2017: Independent research	Independent research group leader *Established a research team on microbial metabolic pathways and immune adaptation and developed collaborative methods.*
2011–2014: Postdoctoral training	Postdoctoral researcher *Developed experimental and analytical approaches to microbial metabolic pathways and immune adaptation.*

Supplementary Career Information

Research focus: microbial metabolic pathways and immune adaptation. A visiting fellowship at the Example Centre for Interdisciplinary Research supported new collaborations and exchange of methods.

Activities in the Research System

Coordinates the pathway-discovery workshop and joint protocol reviews across the consortium. Contributes to peer review and open teaching materials.

Supervision of Researchers in Early Career Phases

Supervises paired microbiology and immunology projects, including laboratory exchanges for doctoral researchers. Regular progress reviews include research integrity and publication planning.

Scientific results – Category A

Articles in peer-reviewed journals, contributions to peer-reviewed conferences or to anthology volumes, and book publications

1. S. Hartmann. “Illustrative study of microbial metabolic pathways and immune adaptation”. In: *Fictional Journal of Consortium Research* 1 (2025), pp. 1–8.
2. S. Hartmann. “Reproducible methods for microbial metabolic pathways and immune adaptation”. In: *Fictional Journal of Consortium Research* 1 (2024), pp. 1–8.

Scientific results – Category B

Any other form of published results

1. S. Hartmann. *Fictional demonstration dataset: microbial metabolic pathways and immune adaptation*. Version 1.0. Example Research Repository, 2025.

Academic Distinctions

2024: Example Foundation award for microbial systems research. 2021: consortium mentoring recognition for support of early-career researchers.

Other Information

Makes analysis protocols and training resources available for reuse. No commercial interests related to the proposed research. All career details and distinctions in this CV are fictional examples.

Data protection and consent to the processing of optional data

✗ I (Prof. Dr. rer. nat. Samira Hartmann) expressly consent to the processing of the voluntary (optional) information, including “special categories of personal data” in connection with the DFG’s review and decision-making process regarding my proposal. This also includes forwarding my data to the external reviewers, committee members and, where applicable, foreign partner organisations who are involved in the decision-making process. To the extent that these recipients are located in a third country (outside the European Economic Area), I additionally consent to them being granted access to my data for the above-mentioned purposes, even though a level of data protection comparable to EU law may not be guaranteed. For this reason, compliance with the data protection principles of EU law is not guaranteed in such cases. In this respect, there may be a violation of my fundamental rights and freedoms and resulting damages. This may make it more difficult for me to assert my rights under the General Data Protection Regulation (e.g. information, rectification, erasure, compensation) and, if necessary, to enforce these rights with the help of authorities or in court.
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I have taken note of the DFG’s Data Protection Notice relating to research funding, which I can access at `www.dfg.de/privacy_policy` and I will forward it to such persons whose data the DFG processes as a result of being mentioned in this CV.

Curriculum Vitae

Prof. Dr. rer. nat.

Robin Keller

Personal Data

Title	Prof. Dr. rer. nat.
First name	Robin
Name	Keller
Current position	Professor of Systems Medicine
Current institution(s)/ site(s), country	Institute of Microbial Systems Medicine Example University University Avenue 1, 12345 Example City (Germany) Centre for Clinical Translation Westhaven Research Centre Science Avenue 3, 34567 Westhaven (Germany)
ORCiD	

Qualifications and Career

Stages	Periods and Details
Degree programme	Life Sciences, Example University
Doctorate	2010 Dr. rer. nat., Example University
since 2018: Current appointment	Professor of Systems Medicine *Combines patient-derived models with biomarker translation and stewardship of shared research data.*
2015–2017: Independent research	Independent research group leader *Established a research team on patient-derived models and biomarker translation and developed collaborative methods.*
2011–2014: Postdoctoral training	Postdoctoral researcher *Developed experimental and analytical approaches to patient-derived models and biomarker translation.*

Supplementary Career Information

Research focus: patient-derived models and biomarker translation. A visiting fellowship at the Example Centre for Interdisciplinary Research supported new collaborations and exchange of methods.

Activities in the Research System

Chairs the consortium reproducibility forum and coordinates workshops on reusable clinical research data. Contributes to peer review and open teaching materials.

Supervision of Researchers in Early Career Phases

Co-supervises doctoral researchers across clinical and computational projects, with individual career-development plans. Regular progress reviews include research integrity and publication planning.

Scientific results – Category A

Articles in peer-reviewed journals, contributions to peer-reviewed conferences or to anthology volumes, and book publications

1. R. Keller. “Illustrative study of patient-derived models and biomarker translation”. In: *Fictional Journal of Consortium Research* 1 (2025), pp. 1–8.
2. R. Keller. “Reproducible methods for patient-derived models and biomarker translation”. In: *Fictional Journal of Consortium Research* 1 (2024), pp. 1–8.

Scientific results – Category B

Any other form of published results

1. R. Keller. *Fictional demonstration dataset: patient-derived models and biomarker translation*. Version 1.0. Example Research Repository, 2025.

Academic Distinctions

2024: Example University award for reproducible translational medicine. 2021: consortium mentoring recognition for support of early-career researchers.

Other Information

Makes analysis protocols and training resources available for reuse. No commercial interests related to the proposed research. All career details and distinctions in this CV are fictional examples.

Data protection and consent to the processing of optional data

✗ I (Prof. Dr. rer. nat. Robin Keller) expressly consent to the processing of the voluntary (optional) information, including “special categories of personal data” in connection with the DFG’s review and decision-making process regarding my proposal. This also includes forwarding my data to the external reviewers, committee members and, where applicable, foreign partner organisations who are involved in the decision-making process. To the extent that these recipients are located in a third country (outside the European Economic Area), I additionally consent to them being granted access to my data for the above-mentioned purposes, even though a level of data protection comparable to EU law may not be guaranteed. For this reason, compliance with the data protection principles of EU law is not guaranteed in such cases. In this respect, there may be a violation of my fundamental rights and freedoms and resulting damages. This may make it more difficult for me to assert my rights under the General Data Protection Regulation (e.g. information, rectification, erasure, compensation) and, if necessary, to enforce these rights with the help of authorities or in court.

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I have taken note of the DFG’s Data Protection Notice relating to research funding, which I can access at `www.dfg.de/privacy_policy` and I will forward it to such persons whose data the DFG processes as a result of being mentioned in this CV.

Curriculum Vitae

Prof. Dr. rer. nat.

Noah Lindberg

Personal Data

Title	Prof. Dr. rer. nat.
First name	Noah
Name	Lindberg
Current position	Professor of Systems Medicine
Current institution(s)/ site(s), country	Centre for Computational Microbiology Northbridge University Science Avenue 3, 34567 Northbridge (Germany) Department of Experimental Immunology Northbridge University Science Avenue 3, 34567 Northbridge (Germany)
ORCiD	

Qualifications and Career

Stages	Periods and Details
Degree programme	Life Sciences, Example University
Doctorate	2010 Dr. rer. nat., Example University
since 2018: Current appointment	Professor of Systems Medicine *Links spatial profiling to microscopy and quantitative descriptions of immune-cell neighbourhoods.*
2015–2017: Independent research	Independent research group leader *Established a research team on spatial immune niches and quantitative imaging and developed collaborative methods.*
2011–2014: Postdoctoral training	Postdoctoral researcher *Developed experimental and analytical approaches to spatial immune niches and quantitative imaging.*

Supplementary Career Information

Research focus: spatial immune niches and quantitative imaging. A visiting fellowship at the Example Centre for Interdisciplinary Research supported new collaborations and exchange of methods.

Activities in the Research System

Leads the imaging quality-control forum and teaches the annual spatial-analysis course. Contributes to peer review and open teaching materials.

Supervision of Researchers in Early Career Phases

Mentors doctoral researchers in image analysis, with shared supervision across experimental and computational groups. Regular progress reviews include research integrity and publication planning.

Scientific results – Category A

Articles in peer-reviewed journals, contributions to peer-reviewed conferences or to anthology volumes, and book publications

1. N. Lindberg. “Illustrative study of spatial immune niches and quantitative imaging”. In: *Fictional Journal of Consortium Research* 1 (2025), pp. 1–8.
2. N. Lindberg. “Reproducible methods for spatial immune niches and quantitative imaging”. In: *Fictional Journal of Consortium Research* 1 (2024), pp. 1–8.

Scientific results – Category B

Any other form of published results

1. N. Lindberg. *Fictional demonstration dataset: spatial immune niches and quantitative imaging*. Version 1.0. Example Research Repository, 2025.

Academic Distinctions

2024: Example Imaging Society early-career research prize. 2021: consortium mentoring recognition for support of early-career researchers.

Other Information

Makes analysis protocols and training resources available for reuse. No commercial interests related to the proposed research. All career details and distinctions in this CV are fictional examples.

Data protection and consent to the processing of optional data

✗ I (Prof. Dr. rer. nat. Noah Lindberg) expressly consent to the processing of the voluntary (optional) information, including “special categories of personal data” in connection with the DFG’s review and decision-making process regarding my proposal. This also includes forwarding my data to the external reviewers, committee members and, where applicable, foreign partner organisations who are involved in the decision-making process. To the extent that these recipients are located in a third country (outside the European Economic Area), I additionally consent to them being granted access to my data for the above-mentioned purposes, even though a level of data protection comparable to EU law may not be guaranteed. For this reason, compliance with the data protection principles of EU law is not guaranteed in such cases. In this respect, there may be a violation of my fundamental rights and freedoms and resulting damages. This may make it more difficult for me to assert my rights under the General Data Protection Regulation (e.g. information, rectification, erasure, compensation) and, if necessary, to enforce these rights with the help of authorities or in court.

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I have taken note of the DFG’s Data Protection Notice relating to research funding, which I can access at `www.dfg.de/privacy_policy` and I will forward it to such persons whose data the DFG processes as a result of being mentioned in this CV.

Curriculum Vitae

Dr. rer. nat.

Hansi Meier

Personal Data

Title	Dr. rer. nat.
First name	Hansi
Name	Meier
Current position	Senior research scientist
Current institution(s)/ site(s), country	Department of Translational Biosciences Partner University Research Road 2, 54321 Partner City (Germany)
ORCiD	0000-0000-0000-0003

Qualifications and Career

Stages	Periods and Details
Degree programme	Microbiology, Partner University
Doctorate	1999 Dr. rer. nat., Partner University
since 2018: Current appointment	Senior research scientist *Coordinates experimental infection models and validation of immune mechanisms.*
2004–2017: Independent research	Independent research group leader *Established a research team on microbial sensing and innate immune memory and developed collaborative methods.*
2000–2003: Postdoctoral training	Postdoctoral researcher *Developed experimental and analytical approaches to microbial sensing and innate immune memory.*

Supplementary Career Information

Research focus: microbial sensing and innate immune memory. A visiting fellowship at the Example Centre for Interdisciplinary Research supported new collaborations and exchange of methods.

Activities in the Research System

Organises a practical course on host defence and serves on the laboratory methods committee. Contributes to peer review and open teaching materials.

Supervision of Researchers in Early Career Phases

Mentors early-career scientists in experimental design, biosafety and reproducible laboratory practice. Regular progress reviews include research integrity and publication planning.

Scientific results – Category A

Articles in peer-reviewed journals, contributions to peer-reviewed conferences or to anthology volumes, and book publications

1. H. Meier. “Illustrative study of microbial sensing and innate immune memory”. In: *Fictional Journal of Consortium Research* 1 (2025), pp. 1–8.
2. H. Meier. “Reproducible methods for microbial sensing and innate immune memory”. In: *Fictional Journal of Consortium Research* 1 (2024), pp. 1–8.

Scientific results – Category B

Any other form of published results

1. H. Meier. *Fictional demonstration dataset: microbial sensing and innate immune memory*. Version 1.0. Example Research Repository, 2025.

Academic Distinctions

2024: Example Society prize for translational infection research. 2021: consortium mentoring recognition for support of early-career researchers.

Other Information

Makes analysis protocols and training resources available for reuse. No commercial interests related to the proposed research. All career details and distinctions in this CV are fictional examples.

Data protection and consent to the processing of optional data

✗ I (Dr. rer. nat. Hansi Meier) expressly consent to the processing of the voluntary (optional) information, including “special categories of personal data” in connection with the DFG’s review and decision-making process regarding my proposal. This also includes forwarding my data to the external reviewers, committee members and, where applicable, foreign partner organisations who are involved in the decision-making process. To the extent that these recipients are located in a third country (outside the European Economic Area), I additionally consent to them being granted access to my data for the above-mentioned purposes, even though a level of data protection comparable to EU law may not be guaranteed. For this reason, compliance with the data protection principles of EU law is not guaranteed in such cases. In this respect, there may be a violation of my fundamental rights and freedoms and resulting damages. This may make it more difficult for me to assert my rights under the General Data Protection Regulation (e.g. information, rectification, erasure, compensation) and, if necessary, to enforce these rights with the help of authorities or in court.

I may *revoke* my consent in whole or in part at any time – with effect for the future, freely and without giving reasons – vis-à-vis the DFG (postmaster@dfg.de). The lawfulness of the processing carried out up to that point remains unaffected. Insofar as I transmit “special categories of personal data” relating to third parties, I confirm that the necessary legitimation under data protection law exists (e.g. based on consent).

I have taken note of the DFG’s Data Protection Notice relating to research funding, which I can access at `www.dfg.de/privacy_policy` and I will forward it to such persons whose data the DFG processes as a result of being mentioned in this CV.

Curriculum Vitae

Prof. Dr. rer. nat.

Kimmi Miller

Personal Data

Title	Prof. Dr. rer. nat.
First name	Kimmi
Name	Miller
Current position	Professor of Molecular Medicine
Current institution(s)/ site(s), country	Department of Translational Biosciences Partner University Research Road 2, 54321 Partner City (Germany)
ORCiD	0000-0000-0000-0004

Qualifications and Career

Stages	Periods and Details
Degree programme	Molecular Medicine, Partner University
Doctorate	1999 Dr. rer. nat., Partner University
since 2015: Current appointment	Professor of Molecular Medicine *Connects organoid perturbation experiments with molecular measurements of tissue recovery.*
2004–2014: Independent research	Independent research group leader *Established a research team on epithelial repair and tissue regeneration and developed collaborative methods.*
2000–2003: Postdoctoral training	Postdoctoral researcher *Developed experimental and analytical approaches to epithelial repair and tissue regeneration.*

Supplementary Career Information

Research focus: epithelial repair and tissue regeneration. A visiting fellowship at the Example Centre for Interdisciplinary Research supported new collaborations and exchange of methods.

Activities in the Research System

Coordinates the organoid methods network and an interdisciplinary regeneration seminar. Contributes to peer review and open teaching materials.

Supervision of Researchers in Early Career Phases

Supervises doctoral researchers in molecular medicine and provides mentoring for clinician scientists. Regular progress reviews include research integrity and publication planning.

Scientific results – Category A

Articles in peer-reviewed journals, contributions to peer-reviewed conferences or to anthology volumes, and book publications

1. K. Miller. “Illustrative study of epithelial repair and tissue regeneration”. In: *Fictional Journal of Consortium Research* 1 (2025), pp. 1–8.
2. K. Miller. “Reproducible methods for epithelial repair and tissue regeneration”. In: *Fictional Journal of Consortium Research* 1 (2024), pp. 1–8.

Scientific results – Category B

Any other form of published results

1. K. Miller. *Fictional demonstration dataset: epithelial repair and tissue regeneration*. Version 1.0. Example Research Repository, 2025.

Academic Distinctions

2024: Partner University award for collaborative tissue research. 2021: consortium mentoring recognition for support of early-career researchers.

Other Information

Makes analysis protocols and training resources available for reuse. No commercial interests related to the proposed research. All career details and distinctions in this CV are fictional examples.

Data protection and consent to the processing of optional data

✗ I (Prof. Dr. rer. nat. Kimmi Miller) expressly consent to the processing of the voluntary (optional) information, including “special categories of personal data” in connection with the DFG’s review and decision-making process regarding my proposal. This also includes forwarding my data to the external reviewers, committee members and, where applicable, foreign partner organisations who are involved in the decision-making process. To the extent that these recipients are located in a third country (outside the European Economic Area), I additionally consent to them being granted access to my data for the above-mentioned purposes, even though a level of data protection comparable to EU law may not be guaranteed. For this reason, compliance with the data protection principles of EU law is not guaranteed in such cases. In this respect, there may be a violation of my fundamental rights and freedoms and resulting damages. This may make it more difficult for me to assert my rights under the General Data Protection Regulation (e.g. information, rectification, erasure, compensation) and, if necessary, to enforce these rights with the help of authorities or in court.

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I have taken note of the DFG’s Data Protection Notice relating to research funding, which I can access at `www.dfg.de/privacy_policy` and I will forward it to such persons whose data the DFG processes as a result of being mentioned in this CV.

Curriculum Vitae

Prof. Dr. rer. nat.

Leonie Navarro

Personal Data

Title	Prof. Dr. rer. nat.
First name	Leonie
Name	Navarro
Current position	Professor of Systems Medicine
Current institution(s)/ site(s), country	Institute of Metabolic Medicine Westhaven Research Centre Science Avenue 3, 34567 Westhaven (Germany)
ORCiD	

Qualifications and Career

Stages	Periods and Details
Degree programme	Life Sciences, Example University
Doctorate	2010 Dr. rer. nat., Example University
since 2018: Current appointment	Professor of Systems Medicine *Integrates dietary interventions with metabolic profiling and predictive modelling.*
2015–2017: Independent research	Independent research group leader *Established a research team on nutrient sensing and predictive metabolic models and developed collaborative methods.*
2011–2014: Postdoctoral training	Postdoctoral researcher *Developed experimental and analytical approaches to nutrient sensing and predictive metabolic models.*

Supplementary Career Information

Research focus: nutrient sensing and predictive metabolic models. A visiting fellowship at the Example Centre for Interdisciplinary Research supported new collaborations and exchange of methods.

Activities in the Research System

Organises the metabolic modelling summer school and contributes to graduate admissions panels. Contributes to peer review and open teaching materials.

Supervision of Researchers in Early Career Phases

Mentors doctoral researchers in model validation, interdisciplinary communication and career planning. Regular progress reviews include research integrity and publication planning.

Scientific results – Category A

Articles in peer-reviewed journals, contributions to peer-reviewed conferences or to anthology volumes, and book publications

1. L. Navarro. “Illustrative study of nutrient sensing and predictive metabolic models”. In: *Fictional Journal of Consortium Research* 1 (2025), pp. 1–8.
2. L. Navarro. “Reproducible methods for nutrient sensing and predictive metabolic models”. In: *Fictional Journal of Consortium Research* 1 (2024), pp. 1–8.

Scientific results – Category B

Any other form of published results

1. L. Navarro. *Fictional demonstration dataset: nutrient sensing and predictive metabolic models*. Version 1.0. Example Research Repository, 2025.

Academic Distinctions

2024: Example Society distinction for integrative metabolic research. 2021: consortium mentoring recognition for support of early-career researchers.

Other Information

Makes analysis protocols and training resources available for reuse. No commercial interests related to the proposed research. All career details and distinctions in this CV are fictional examples.

Data protection and consent to the processing of optional data

✗ I (Prof. Dr. rer. nat. Leonie Navarro) expressly consent to the processing of the voluntary (optional) information, including “special categories of personal data” in connection with the DFG’s review and decision-making process regarding my proposal. This also includes forwarding my data to the external reviewers, committee members and, where applicable, foreign partner organisations who are involved in the decision-making process. To the extent that these recipients are located in a third country (outside the European Economic Area), I additionally consent to them being granted access to my data for the above-mentioned purposes, even though a level of data protection comparable to EU law may not be guaranteed. For this reason, compliance with the data protection principles of EU law is not guaranteed in such cases. In this respect, there may be a violation of my fundamental rights and freedoms and resulting damages. This may make it more difficult for me to assert my rights under the General Data Protection Regulation (e.g. information, rectification, erasure, compensation) and, if necessary, to enforce these rights with the help of authorities or in court.

I may *revoke* my consent in whole or in part at any time – with effect for the future, freely and without giving reasons – vis-à-vis the DFG (postmaster@dfg.de). The lawfulness of the processing carried out up to that point remains unaffected. Insofar as I transmit “special categories of personal data” relating to third parties, I confirm that the necessary legitimation under data protection law exists (e.g. based on consent).

I have taken note of the DFG’s Data Protection Notice relating to research funding, which I can access at `www.dfg.de/privacy_policy` and I will forward it to such persons whose data the DFG processes as a result of being mentioned in this CV.

Curriculum Vitae

Prof. Dr. rer. nat.

Daniel Okafor

Personal Data

Title	Prof. Dr. rer. nat.
First name	Daniel
Name	Okafor
Current position	Professor of Systems Medicine
Current institution(s)/ site(s), country	Institute of Metabolic Medicine Westhaven Research Centre Science Avenue 3, 34567 Westhaven (Germany) Centre for Clinical Translation Westhaven Research Centre Science Avenue 3, 34567 Westhaven (Germany)
ORCiD	

Qualifications and Career

Stages	Periods and Details
Degree programme	Life Sciences, Example University
Doctorate	2010 Dr. rer. nat., Example University
since 2018: Current appointment	Professor of Systems Medicine *Connects patient-derived measurements with biomarker validation and experimental tissue models.*
2015–2017: Independent research	Independent research group leader *Established a research team on microbial biomarkers and clinical tissue responses and developed collaborative methods.*
2011–2014: Postdoctoral training	Postdoctoral researcher *Developed experimental and analytical approaches to microbial biomarkers and clinical tissue responses.*

Supplementary Career Information

Research focus: microbial biomarkers and clinical tissue responses. A visiting fellowship at the Example Centre for Interdisciplinary Research supported new collaborations and exchange of methods.

Activities in the Research System

Coordinates the translational data-analysis workshop and the clinical assay harmonisation group. Contributes to peer review and open teaching materials.

Supervision of Researchers in Early Career Phases

Supervises clinician scientists and laboratory researchers in joint translational thesis projects. Regular progress reviews include research integrity and publication planning.

Scientific results – Category A

Articles in peer-reviewed journals, contributions to peer-reviewed conferences or to anthology volumes, and book publications

1. D. Okafor. “Illustrative study of microbial biomarkers and clinical tissue responses”. In: *Fictional Journal of Consortium Research* 1 (2025), pp. 1–8.
2. D. Okafor. “Reproducible methods for microbial biomarkers and clinical tissue responses”. In: *Fictional Journal of Consortium Research* 1 (2024), pp. 1–8.

Scientific results – Category B

Any other form of published results

1. D. Okafor. *Fictional demonstration dataset: microbial biomarkers and clinical tissue responses*. Version 1.0. Example Research Repository, 2025.

Academic Distinctions

2024: Westhaven Research Centre translational science award. 2021: consortium mentoring recognition for support of early-career researchers.

Other Information

Makes analysis protocols and training resources available for reuse. No commercial interests related to the proposed research. All career details and distinctions in this CV are fictional examples.

Data protection and consent to the processing of optional data

✗ I (Prof. Dr. rer. nat. Daniel Okafor) expressly consent to the processing of the voluntary (optional) information, including “special categories of personal data” in connection with the DFG’s review and decision-making process regarding my proposal. This also includes forwarding my data to the external reviewers, committee members and, where applicable, foreign partner organisations who are involved in the decision-making process. To the extent that these recipients are located in a third country (outside the European Economic Area), I additionally consent to them being granted access to my data for the above-mentioned purposes, even though a level of data protection comparable to EU law may not be guaranteed. For this reason, compliance with the data protection principles of EU law is not guaranteed in such cases. In this respect, there may be a violation of my fundamental rights and freedoms and resulting damages. This may make it more difficult for me to assert my rights under the General Data Protection Regulation (e.g. information, rectification, erasure, compensation) and, if necessary, to enforce these rights with the help of authorities or in court.

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Curriculum Vitae

Prof. Dr.-Ing.

Friedhelm Redata

Personal Data

Title	Prof. Dr.-Ing.
First name	Friedhelm
Name	Redata
Current position	Professor of Research Training
Current institution(s)/ site(s), country	Institute of Microbial Systems Medicine Example University University Avenue 1, 12345 Example City (Germany)
ORCiD	0000-0000-0000-0005

Qualifications and Career

Stages	Periods and Details
Degree programme	Biomedical Engineering, Example University
Doctorate	1998 Dr.-Ing., Example University
since 2014: Current appointment	Professor of Research Training *Directs the graduate programme and evaluates interdisciplinary training formats.*
2003–2013: Independent research	Independent research group leader *Established a research team on structured doctoral training and research integrity and developed collaborative methods.*
1999–2002: Postdoctoral training	Postdoctoral researcher *Developed experimental and analytical approaches to structured doctoral training and research integrity.*

Supplementary Career Information

Research focus: structured doctoral training and research integrity. A visiting fellowship at the Example Centre for Interdisciplinary Research supported new collaborations and exchange of methods.

Activities in the Research System

Chairs the graduate curriculum committee and coordinates the annual doctoral retreat. Contributes to peer review and open teaching materials.

Supervision of Researchers in Early Career Phases

Supports thesis committees, individual development plans and peer mentoring across all research areas. Regular progress reviews include research integrity and publication planning.

Scientific results – Category A

Articles in peer-reviewed journals, contributions to peer-reviewed conferences or to anthology volumes, and book publications

1. F. Redata. “Illustrative study of structured doctoral training and research integrity”. In: *Fictional Journal of Consortium Research* 1 (2025), pp. 1–8.

2. F. Redata. “Reproducible methods for structured doctoral training and research integrity”. In: *Fictional Journal of Consortium Research* 1 (2024), pp. 1–8.

Scientific results – Category B

Any other form of published results

1. F. Redata. *Fictional demonstration dataset: structured doctoral training and research integrity*. Version 1.0. Example Research Repository, 2025.

Academic Distinctions

2024: Example University prize for doctoral education. 2021: consortium mentoring recognition for support of early-career researchers.

Other Information

Makes analysis protocols and training resources available for reuse. No commercial interests related to the proposed research. All career details and distinctions in this CV are fictional examples.

Data protection and consent to the processing of optional data

✗ I (Prof. Dr.-Ing. Friedhelm Redata) expressly consent to the processing of the voluntary (optional) information, including “special categories of personal data” in connection with the DFG’s review and decision-making process regarding my proposal. This also includes forwarding my data to the external reviewers, committee members and, where applicable, foreign partner organisations who are involved in the decision-making process. To the extent that these recipients are located in a third country (outside the European Economic Area), I additionally consent to them being granted access to my data for the above-mentioned purposes, even though a level of data protection comparable to EU law may not be guaranteed. For this reason, compliance with the data protection principles of EU law is not guaranteed in such cases. In this respect, there may be a violation of my fundamental rights and freedoms and resulting damages. This may make it more difficult for me to assert my rights under the General Data Protection Regulation (e.g. information, rectification, erasure, compensation) and, if necessary, to enforce these rights with the help of authorities or in court.
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I have taken note of the DFG’s Data Protection Notice relating to research funding, which I can access at `www.dfg.de/privacy_policy` and I will forward it to such persons whose data the DFG processes as a result of being mentioned in this CV.

Curriculum Vitae

Prof. Dr. rer. nat.

Kim Sample

Personal Data

Title	Prof. Dr. rer. nat.
First name	Kim
Name	Sample
Current position	Professor and Director
Current institution(s)/ site(s), country	Institute of Microbial Systems Medicine Example University University Avenue 1, 12345 Example City (Germany) Department of Translational Biosciences Partner University Research Road 2, 54321 Partner City (Germany)
ORCiD	0000-0000-0000-0001

Qualifications and Career

Stages	Periods and Details
Degree programme	Biology, Example University
Doctorate	2000 Dr. rer. nat., Example University
since 2013: Current appointment	Professor and Director *Leads the mechanistic microbiome programme and coordinates the shared experimental strategy.*
2005–2012: Independent research	Independent research group leader *Established a research team on microbial metabolites and epithelial signalling and developed collaborative methods.*
2001–2004: Postdoctoral training	Postdoctoral researcher *Developed experimental and analytical approaches to microbial metabolites and epithelial signalling.*

Supplementary Career Information

Research focus: microbial metabolites and epithelial signalling. A visiting fellowship at the Example Centre for Interdisciplinary Research supported new collaborations and exchange of methods.

Activities in the Research System

Chairs the consortium steering committee and an annual host–microbiome symposium. Contributes to peer review and open teaching materials.

Supervision of Researchers in Early Career Phases

Mentors laboratory and clinical doctoral researchers through joint thesis committees. Regular progress reviews include research integrity and publication planning.

Scientific results – Category A

Articles in peer-reviewed journals, contributions to peer-reviewed conferences or to anthology volumes, and book publications

1. **K. Sample**. “Illustrative study of microbial metabolites and epithelial signalling”. In: *Fictional Journal of Consortium Research* 1 (2025), pp. 1–8.
2. **K. Sample**. “Reproducible methods for microbial metabolites and epithelial signalling”. In: *Fictional Journal of Consortium Research* 1 (2024), pp. 1–8.

Scientific results – Category B

Any other form of published results

1. **K. Sample**. *Fictional demonstration dataset: microbial metabolites and epithelial signalling*. Version 1.0. Example Research Repository, 2025.

Academic Distinctions

2024: Example Academy fellowship for interdisciplinary microbiome research. 2021: consortium mentoring recognition for support of early-career researchers.

Other Information

Makes analysis protocols and training resources available for reuse. No commercial interests related to the proposed research. All career details and distinctions in this CV are fictional examples.

Data protection and consent to the processing of optional data

✗ I (Prof. Dr. rer. nat. Kim Sample) expressly consent to the processing of the voluntary (optional) information, including “special categories of personal data” in connection with the DFG’s review and decision-making process regarding my proposal. This also includes forwarding my data to the external reviewers, committee members and, where applicable, foreign partner organisations who are involved in the decision-making process. To the extent that these recipients are located in a third country (outside the European Economic Area), I additionally consent to them being granted access to my data for the above-mentioned purposes, even though a level of data protection comparable to EU law may not be guaranteed. For this reason, compliance with the data protection principles of EU law is not guaranteed in such cases. In this respect, there may be a violation of my fundamental rights and freedoms and resulting damages. This may make it more difficult for me to assert my rights under the General Data Protection Regulation (e.g. information, rectification, erasure, compensation) and, if necessary, to enforce these rights with the help of authorities or in court.

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Curriculum Vitae

Prof. Dr. rer. nat.

Mira Sato

Personal Data

Title	Prof. Dr. rer. nat.
First name	Mira
Name	Sato
Current position	Professor of Systems Medicine
Current institution(s)/ site(s), country	Centre for Clinical Translation Westhaven Research Centre Science Avenue 3, 34567 Westhaven (Germany)
ORCiD	

Qualifications and Career

Stages	Periods and Details
Degree programme	Life Sciences, Example University
Doctorate	2010 Dr. rer. nat., Example University
since 2018: Current appointment	Professor of Systems Medicine *Coordinates tissue sampling and comparative analyses of inflammatory responses across organs.*
2015–2017: Independent research	Independent research group leader *Established a research team on inflammatory circuits between intestine and liver and developed collaborative methods.*
2011–2014: Postdoctoral training	Postdoctoral researcher *Developed experimental and analytical approaches to inflammatory circuits between intestine and liver.*

Supplementary Career Information

Research focus: inflammatory circuits between intestine and liver. A visiting fellowship at the Example Centre for Interdisciplinary Research supported new collaborations and exchange of methods.

Activities in the Research System

Leads the clinical sample-coordination group and teaches a course on cross-organ immunology. Contributes to peer review and open teaching materials.

Supervision of Researchers in Early Career Phases

Mentors doctoral researchers in clinical cohort design, sample governance and mechanistic validation. Regular progress reviews include research integrity and publication planning.

Scientific results – Category A

Articles in peer-reviewed journals, contributions to peer-reviewed conferences or to anthology volumes, and book publications

1. M. Sato. “Illustrative study of inflammatory circuits between intestine and liver”. In: *Fictional Journal of Consortium Research* 1 (2025), pp. 1–8.
2. M. Sato. “Reproducible methods for inflammatory circuits between intestine and liver”. In: *Fictional Journal of Consortium Research* 1 (2024), pp. 1–8.

Scientific results – Category B

Any other form of published results

1. M. Sato. *Fictional demonstration dataset: inflammatory circuits between intestine and liver*. Version 1.0. Example Research Repository, 2025.

Academic Distinctions

2024: Example Clinical Research Society award for collaborative immunology. 2021: consortium mentoring recognition for support of early-career researchers.

Other Information

Makes analysis protocols and training resources available for reuse. No commercial interests related to the proposed research. All career details and distinctions in this CV are fictional examples.

Data protection and consent to the processing of optional data

✗ I (Prof. Dr. rer. nat. Mira Sato) expressly consent to the processing of the voluntary (optional) information, including “special categories of personal data” in connection with the DFG’s review and decision-making process regarding my proposal. This also includes forwarding my data to the external reviewers, committee members and, where applicable, foreign partner organisations who are involved in the decision-making process. To the extent that these recipients are located in a third country (outside the European Economic Area), I additionally consent to them being granted access to my data for the above-mentioned purposes, even though a level of data protection comparable to EU law may not be guaranteed. For this reason, compliance with the data protection principles of EU law is not guaranteed in such cases. In this respect, there may be a violation of my fundamental rights and freedoms and resulting damages. This may make it more difficult for me to assert my rights under the General Data Protection Regulation (e.g. information, rectification, erasure, compensation) and, if necessary, to enforce these rights with the help of authorities or in court.

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Curriculum Vitae

Prof. Dr. rer. nat.

Alexis-Marie Winters-Scholz

Personal Data

Title	Prof. Dr. rer. nat.
First name	Alexis-Marie
Name	Winters-Scholz
Current position	Professor of Systems Medicine
Current institution(s)/ site(s), country	Department of Experimental Immunology Northbridge University Science Avenue 3, 34567 Northbridge (Germany)
ORCiD	

Qualifications and Career

Stages	Periods and Details
Degree programme	Life Sciences, Example University
Doctorate	2010 Dr. rer. nat., Example University
since 2018: Current appointment	Professor of Systems Medicine *Develops experimental models of diet-dependent microbial colonisation and mucosal responses.*
2015–2017: Independent research	Independent research group leader *Established a research team on dietary perturbations and mucosal microbial communities and developed collaborative methods.*
2011–2014: Postdoctoral training	Postdoctoral researcher *Developed experimental and analytical approaches to dietary perturbations and mucosal microbial communities.*

Supplementary Career Information

Research focus: dietary perturbations and mucosal microbial communities. A visiting fellowship at the Example Centre for Interdisciplinary Research supported new collaborations and exchange of methods.

Activities in the Research System

Coordinates the experimental-models working group and a public seminar series on microbiome science. Contributes to peer review and open teaching materials.

Supervision of Researchers in Early Career Phases

Supervises doctoral projects in microbial ecology and supports exchange placements between partner laboratories. Regular progress reviews include research integrity and publication planning.

Scientific results – Category A

Articles in peer-reviewed journals, contributions to peer-reviewed conferences or to anthology volumes, and book publications

1. A.-M. Winters-Scholz. “Illustrative study of dietary perturbations and mucosal microbial communities”. In: *Fictional Journal of Consortium Research* 1 (2025), pp. 1–8.
2. A.-M. Winters-Scholz. “Reproducible methods for dietary perturbations and mucosal microbial communities”. In: *Fictional Journal of Consortium Research* 1 (2024), pp. 1–8.

Scientific results – Category B

Any other form of published results

1. A.-M. Winters-Scholz. *Fictional demonstration dataset: dietary perturbations and mucosal microbial communities*. Version 1.0. Example Research Repository, 2025.

Academic Distinctions

2024: Example University award for experimental microbiome research. 2021: consortium mentoring recognition for support of early-career researchers.

Other Information

Makes analysis protocols and training resources available for reuse. No commercial interests related to the proposed research. All career details and distinctions in this CV are fictional examples.

Data protection and consent to the processing of optional data

✗ I (Prof. Dr. rer. nat. Alexis-Marie Winters-Scholz) expressly consent to the processing of the voluntary (optional) information, including “special categories of personal data” in connection with the DFG’s review and decision-making process regarding my proposal. This also includes forwarding my data to the external reviewers, committee members and, where applicable, foreign partner organisations who are involved in the decision-making process. To the extent that these recipients are located in a third country (outside the European Economic Area), I additionally consent to them being granted access to my data for the above-mentioned purposes, even though a level of data protection comparable to EU law may not be guaranteed. For this reason, compliance with the data protection principles of EU law is not guaranteed in such cases. In this respect, there may be a violation of my fundamental rights and freedoms and resulting damages. This may make it more difficult for me to assert my rights under the General Data Protection Regulation (e.g. information, rectification, erasure, compensation) and, if necessary, to enforce these rights with the help of authorities or in court.
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Part II

Implementation reference

6 Code documentation

The following part is meant for developers. Don't worry if you might not understand parts of the code. We try to use as much LaTeX3 as possible for a more granular data handling.

6.1 Documentclass

The class requires the June 2022 LaTeX kernel, whose native `\ProcessKeyOptions` interface processes class options through expl3 key families. `\ProvidesExplClass` declares the class to the kernel and simultaneously activates the expl3 (LaTeX3) syntax, so every line from here onwards may use the `:`, `_` and `@@` conventions of the L3 programming layer.

The ⟨*version*⟩ and ⟨*date*⟩ values come from the single definition at the very top of the `.dtx` file (`\def\dfgVersion` etc.), so a version bump only ever needs to be made in one place.

```
\NeedsTeXFormat{LaTeX2e}[2022-06-01]
\ProvidesExplClass
{dfg-crc}
{\dfgVersionDate}
{\dfgVersion}
{Create DFG Collaborative Research Centre proposals and CVs}
```

6.1.1 Message catalogue

All user-visible diagnostics are declared here once using `\msg_new:nnn` from the L3 message system. Centralising them serves several purposes:

1. The exact wording of every log line can be reviewed and updated in one place without searching through the entire code.
2. They are bound to the `dfg` module name, so a user can grep the `.log` with `grep "Package dfg"` to see a condensed overview.
3. Using the L3 message system instead of raw `\PackageWarning` gives consistent formatting, the fileline context via `\msg_line_context:`, and the ability to suppress or redirect messages at a global level with `\msg_redirect_module:nnn`.

The engine check fails early with a direct instruction instead of letting fontspec or a later `\directlua` call produce a less helpful error. The next message is emitted when an optional input file (e.g. a metadata or preamble fragment) cannot be found on the search path. Compilation is not aborted, but the user is strongly warned.

```
\msg_new:nnn { dfg } { unsupported-engine }
{
  The~dfg-crc~class~requires~LuaLaTeX.^^J
  Compile~this~document~with~lualatex~or~latexmk~-lualatex.
}
\sys_if_engine_luatex:F
  { \msg_fatal:nn { dfg } { unsupported-engine } }

\msg_new:nnn { dfg } { file-not-found }
{ File~'#1'~not~found.^^J
  ~You~can~proceed~without~it~
  but~it~is~not~recommended.
}
```

database-not-found Emitted by `\getEntry` → P. 4, `\compareEntry` → P. 5 and each table command when the database name passed by the user does not exist in the datatool register. The most common cause is a typo in the database name, or calling a retrieval command before the corresponding `\addEntry` → P. 3 block has been processed.

```
\msg_new:nnn { dfg } { database-not-found }
{ Unknown~ database~ name:~ #1^^J^^J
  Database~'#1'~not~found~\msg_line_context:.~
  Either~you~have~misspelled~it~or~
  ~the~database~has~not~yet~been~created.
}
```

database-name-not-given Fired when the optional ⟨*database*⟩ argument of `\getEntry` → P. 4 is empty because `\tmpLocalDB` has not been set and no explicit database name was supplied. The message text suggests two remedies: set `\tmpLocalDB` at the top of a section, or pass the database name inline.

```
\msg_new:nnn { dfg } { database-name-not-given }
{ Missing~ database~ name~ for~ entry:~ #1^^J ^^J
  You~forgot~to~pass~a~database~name~\msg_line_context:.~
  You~can~provide~a~name~with~ e.g.~ '\def\tmpLocalDB{<database>}'
  ~or~within~entries~like~
  '\getEntry[<database>]{<id>}{<field>}'.
}
```

biblatex-ext-oa-doiapi-unavailable Warns when biblatex-ext-oa's DOI API integration cannot be enabled because `socket.http` is not available in the current LuaTeX run. The package is still loaded, so manual BibTeX annotations continue to work.

```
\msg_new:nnn { dfg } { biblatex-ext-oa-doiapi-unavailable }
{ biblatex-ext-oa~ DOI~ API~ lookup~ disabled:~ LuaSocket~ module~
  'socket.http'~ is~ not~ available~ in~ this~ LuaTeX~ run.~
  Compile~ with~ '--socket'~ to~ enable~ DOI~ API~ requests.~
  Open-access~ markers~ still~ work~ from~ manual~ BibTeX~ annotations.
}
```

biblatex-ext-oa-doiapi-email-missing DOI lookups require a real contact address. An empty default keeps network access opt-in and prevents all users of the class from sharing a placeholder or maintainer address.

```
\msg_new:nnn { dfg } { biblatex-ext-oa-doiapi-email-missing }
{ biblatex-ext-oa~ DOI~ API~ lookup~ disabled:~ no~contact~address~was~set.^^J
  Set~'doiAPIMail=<address>'~with~\string\changeSettings~to~enable~lookups.
  Open-access~markers~still~work~from~manual~BibTeX~annotations.
}
```

missing-orcid Triggered specifically by `\getORCiD` → P. 92 when the `orcid` field is absent or empty for the requested person. The message body reproduces the exact `\addEntry` → P. 3 snippet the user needs to fill in, lowering the barrier to fixing the data.

```
\msg_new:nnn { dfg } { missing-orcid }
{DB:~'#1';~ID:~'#2';~null/empty:~'orcid'.~^^J^^J
  The~ORCiD~for~the~person~with~the~ID~'#2'~has~not~been~given.~
  You~asked~for~it~\msg_line_context: ~^^J
  If~the~person~has~an~ORCiD, ~go~to~where~you~have~written~^^J
  \addEntry{#1}{^^J
   id   =#2, ^^J
   orcid=<INSERT~ORCID~HERE>^^J
  }
}
```

missing-key Generic warning for any database field that is null or empty when `\getEntry` → P. 4 tries to retrieve it. The check is deliberately suppressed during the tabularray cell-measuring pass (`\lTblrMeasuringBool` is `true`) to prevent each cell from generating duplicate log entries — tabularray renders each cell twice for width calculation before the final output pass.

```
\msg_new:nnn { dfg } { missing-key }
{DB:~'#1';~ID:~'#2';~null/empty:~'#3'.^^J^^J
  In~ the~ database~ '#1', the~ key~ '#3'~ which~ belongs~ to~ the~ ID~ '#2'~
  is~ either~ null/not~ given~ or~ simply~ empty.~^^J
  You~ asked~ for~ it~ \msg_line_context:  }
```

item-skipped / \dfgItemSkipped Tables built from the datatool databases are the most expensive part of each compilation run because they involve full database queries. When either fastcompile mode is active, generated table/list commands call \dfgItemSkipped instead of rendering the real content. This prints a red placeholder in the PDF and issues an item-skipped note to the log. The colour red is overridden to white when final=true, so the placeholder is invisible in a submission build.

```
\msg_new:nnn { dfg } { item-skipped }
{Item~ #1~ skipped~ (compile-time).^^J
  To~ see~ the~ item,~ disable~ fast~ compilation^^J
  in~ the~ documentclass-options.^^J
  The~ item~ is~ \msg_line_context:  }
\NewDocumentCommand{\dfgItemSkipped}{m}{%
  \msg_note:nne {dfg}{item-skipped}{ #1 }
  \group_begin:
  \color{error}
  Item~ \emph{\normalcolor#1}~ skipped~ due~ to~ faster~ compilation.~\\
  \bool_if:NTF \l_@@_class_fastcompile_project_bool
  { To~ see~ the~ item,~ set~ \texttt{fastcompile-project=false}~(default)~ }
  { To~ see~ the~ item,~ set~ \texttt{fastcompile=false}~(default)~ }
  in~ the~ documentclass-options.
  \group_end:
}
```

research-area-not-found The property list \g_@@_dfg_research_areas_prop contains every DFG research area code from the official classification list. When a code stored in the project database does not appear in that map the formatted label cannot be generated and this warning is raised. The raw code is still printed so the proposal remains compilable.

```
\msg_new:nnn { dfg } { research-area-not-found }
{ Unknown~ research~ area:~ #1^^J^^J
  Doublecheck~ the~ research~ area~ in~ the~ database:~^^J
  \addEntry{project}{~^^J
   research-area~ =~ {#1}~^^J
  }
}
```

item-not-matched Raised as a generic fall-through in \str_case:VnF dispatchers where a string value is not matched by any of the expected branches.

```
\msg_new:nnn { dfg } { item-not-matched }
{ The~ string~ '#1'~does~not~match.~^^J^^J
  Doublecheck~ your~input!~^^J
  The~ item~ is~ \msg_line_context:
}
```

unknown-key and invalid-value These two messages are the default handlers wired into the unknown .code:n and \meta{choice} / unknown .code:n slots of every \keys_define:nn block. They give the user immediate feedback in the log whenever a key name is misspelled or a value is outside the permitted set, instead of silently ignoring the input or producing a cryptic low-level TeX error.

```
\msg_new:nnn { dfg } { unknown-key }
{
  Key~ '\l_keys_path_str'~ is~ unknown~ and~ being~ ignored.~^^J^^J
  You~passed~the~value~'#1'~ to~ that~ key.~^^J
  Check~the~key~spelling~and~the~keys~documented~for~this~family.~^^J
  The~value~was~supplied~\msg_line_context:.
}
```

Warning issued when a key receives a value outside its set of permitted alternatives. This message is the standard fallback for keys defined with the l3keys → CTAN .choices:nn property when their /unknown handler delegates to the dispatcher \person_questions_invalid:n. The two arguments are the rejected value and a comma-separated list of the values that would have been

accepted. The full key path is taken from \l_keys_path_str, so the warning identifies not only the offending value but also which key was being set when the error occurred – useful when the same value name (such as yes or 1) is plausible for several keys but only valid for some of them. The warning does not stop processing; the database field is simply not created for the rejected value, and subsequent keys in the same \addEntry→ P. 3 call continue to be parsed. Diagnostics list input values users can supply, not internal variable names. List-valued keys report each rejected item separately, preserving valid items. Format checks use invalid-format with examples; handlers that replace an invalid choice use invalid-value-fallback and name the replacement. Date warnings explicitly state that the input is retained.

```
\msg_new:nnn { dfg } { invalid-value }
{
  Invalid~value~'#1'~for~key~'\l_keys_path_str'.~^^J^^J
  Allowed~values~are:~'#2'.~^^J
  This~value~is~ignored.~^^J
  The~value~was~supplied~\msg_line_context:.
}
\msg_new:nnn { dfg } { invalid-value-fallback }
{
  Invalid~value~'#1'~for~key~'\l_keys_path_str'.~^^J^^J
  Allowed~values~are:~'#2'.~^^J
  Using~'#3'~instead.~^^J
  The~value~was~supplied~\msg_line_context:.
}
\msg_new:nnn { dfg } { invalid-format }
{
  Invalid~value~'#1'~for~key~'\l_keys_path_str'.~^^J^^J
  Expected~#2.~This~value~is~ignored.~^^J
  The~value~was~supplied~\msg_line_context:.
}
\msg_new:nnn { dfg } { unknown-name }
{
  Unknown~#1~'#2'.~^^J
  Allowed~values~are:~'#3'.~^^J
  A~mismatch~marker~is~printed.~^^J
  The~value~was~used~\msg_line_context:.
}
\msg_new:nnn { dfg } { unknown-institution-order }
{
  Invalid~order~'#1'~for~ParticipatingInstitutions.~^^J
  Allowed~values~are:~'alpha,~count'.~Using~'alpha'~instead.~^^J
  The~order~was~supplied~\msg_line_context:.
}
\msg_new:nnn { dfg } { invalid-project-count-area }
{
  No~active,~list-considered~projects~were~found~for~area~'#1'~in~
  \string\getProjectCount;~printing~0.
}
\msg_new:nnn { dfg } { collaboration-focus-not-found }
{
  Cannot~draw~the~project~collaboration~plot:~focus~project~'#1'~is~not~an~
  eligible~row~of~the~project~database.
}
\msg_new:nnn { dfg } { collaboration-target-not-found }
{
  Ignoring~collaboration~'#1--#2':~project~'#2'~is~not~an~eligible~row~of~
  the~project~database.
}
\msg_new:nnn { dfg } { plot-current-project-missing }
{
  Cannot~print~the~'#1'~plot:~no~current~project~has~been~set.~Start~a~
  project~first,~or~pass~an~explicit~project~ID.
}
```

Warning issued when a date-typed key receives a value that does not match the ISO-8601 calendar-date shape YYYY-MM-DD. Used by the contract-information helper \dfg_contract_date:nn for the fields C2a→ P. 66, C2b→ P. 66, and C3a→ P. 66, all of which are expected to hold dates. The two arguments are the field name and the offending value. The check is purely structural: it verifies that the value consists of four digits, a hyphen, two digits, a hyphen, and two digits, but it does

not validate the resulting date as a real calendar entry (so `2025-13-45` passes the format check). When the warning fires, the supplied value is still recorded in the database so the typeset output makes the malformed entry visible; this trades log-cleanliness for ease of locating the source of the problem in the rendered document.

```
\msg_new:nnn { dfg } { invalid-date }
{
  Invalid~date~'#2'~for~key~'\l_keys_path_str'~(field~'#1').~^^J
  Expected~YYYY-MM-DD,~for~example~2026-10-11,~or~an~empty~value.~^^J
  The~supplied~value~is~retained;~correct~its~format~in~the~source.~^^J
  The~value~was~supplied~\msg_line_context:.
}
```

Requested-funding staff diagnostics The staff roster is deliberately permissive at output time: incomplete or unresolved records remain visible in the document while these messages make the underlying metadata problem searchable in the log.

```
\msg_new:nnn { dfg } { requested-staff-no-data }
{ No~RequestedFundingStaff~data~have~been~provided~for~project~'#1'. }
\msg_new:nnn { dfg } { requested-staff-required }
{ RequestedFundingStaff~entry~is~missing~required~metadata:~#1. }
\msg_new:nnn { dfg } { requested-staff-institution-required }
{
  RequestedFundingStaff~entry~for~project~'#1'~has~neither~ref-person-id~nor~
  ref-institution-id.~Provide~ref-institution-id~when~the~person~is~not~
  referenced;~otherwise~the~institution~cannot~be~resolved.
}
\msg_new:nnn { dfg } { requested-staff-missing-field }
{
  Project~'#1':~#3~staff~no.~#2~(funding-status=#3):~#4~is~missing.
}
\msg_new:nnn { dfg } { existing-staff-missing-commitment }
{
  Project~'#1':~existing~staff~no.~#2~(funding-status=existing):~
  commitment~is~missing.~^^J
  Set~commitment={hours~per~week}~for~this~existing~staff~row.~^^J
  Requested~staff~(funding-status=requested)~do~not~require~commitment.~
  If~this~row~is~requested~staff,~correct~its~funding-status.
}
\msg_new:nnn { dfg } { requested-staff-unresolved-person }
{ Project~'#1':~person~reference~'#2'~cannot~be~resolved. }
\msg_new:nnn { dfg } { requested-staff-unresolved-institution }
{ Project~'#1':~institution~reference~'#2'~cannot~be~resolved. }
\msg_new:nnn { dfg } { requested-staff-unresolved-affiliation }
{ Project~'#1':~affiliation~reference~'#2'~cannot~be~resolved. }
\msg_new:nnn { dfg } { requested-staff-missing-abbreviation }
{ Affiliation~'#1'~has~no~abbreviation;~its~full~name~is~used. }
\msg_new:nnn { dfg } { duplicate-institution-abbreviation }
{
  Institution~abbreviation~'#1'~is~assigned~to~different~institutions:~^^J
  '#2'~and~'#3'~(institution~ids:~#4).~^^J
  Use~a~unique~abbreviation~for~each~institution.
}
\msg_new:nnn { dfg } { duplicate-entry-id }
{
  Duplicate~id~'#2'~in~database~'#1'.~^^J
  The~earlier~row(s)~are~removed;~the~later~entry~replaces~them.~^^J
  The~replacement~is~\msg_line_context:.
}
\msg_new:nnn { dfg } { requested-staff-duplicate }
{ Duplicate~RequestedFundingStaff~entry~for~#1. }
\msg_new:nnn { dfg } { funding-staff-cost-unavailable }
{ Automatic~staff-cost~calculation~is~not~available~for~#1. }
\msg_new:nnn { dfg } { existing-staff-no-data }
{ No~existing~staff~rows~were~found~in~database~'#1'. }
\msg_new:nnn { dfg } { existing-staff-no-organisation }
{ Existing~staff~entry~'#1'~cannot~be~assigned~to~an~affiliation. }
```

`\StartTimer` `\StopTimer` A simple pair of profiling helpers for measuring how long a stretch of LaTeX code takes to execute. Wrap the code under investigation between `\StartTimer` and `\StopTimer{`⟨*label*⟩`}`; the elapsed

time in milliseconds is written to the terminal and the `.log` file, prefixed with the supplied ⟨*label*⟩ so several measurements in one run can be told apart.

Typical use:

```
\StartTimer
\ParticipatingInstitutionsList[count]
\StopTimer{ParticipatingInstitutionsList}
```

producing a line such as

```
TIMING ParticipatingInstitutionsList: 115 ms
```

in the log.

Only one measurement can be in progress at any one time, since the start time is held in a single shared integer variable. For nested or overlapping measurements, define additional counters or switch to the labelled-timer variant.

The implementation uses the kernel-native expl3 function `\sys_timer:`, which abstracts over the engine-specific timer and avoids an additional package dependency.

```
\int_new:N \l_@@_timer_int
```

Storage for the start timestamp. We use an `int` rather than a `tl` so the later subtraction in `\int_eval:n` is unambiguous.

```
\NewDocumentCommand { \StartTimer } { }
{
  \bool_if:NF \l_@@_class_fastcompile_project_bool
  { \int_set:Nn \l_@@_timer_int { \sys_timer: } }
}
```

`\sys_timer:` expands to the time since job start in *scaled seconds* – units of $1/65536$ s. We capture that raw value here and convert to milliseconds only at reporting time, to keep the start-up overhead minimal.

```
\NewDocumentCommand { \StopTimer } { m }
{
  \bool_if:NF \l_@@_class_fastcompile_project_bool
  {
    \iow_term:x
    {
      TIMING~#1:~
      \int_eval:n
      { ( \sys_timer: - \l_@@_timer_int ) * 1000 / 65536 }
      \c_space_tl ms
    }
  }
}
```

The arithmetic computes elapsed scaled-seconds first, then multiplies by 1000 before dividing by 65536. Doing the multiplication first preserves precision: a naive `(now - start) / 65536 * 1000` would truncate sub-second measurements to zero. The result is an integer count of milliseconds, accurate to roughly ± 1 ms.

`\iow_term:x` writes to the terminal *and* the log, fully expanding its argument once – which is what makes `\int_eval:n` produce a literal number rather than the unevaluated expression. `\c_space_tl` inserts a real space between the number and the `ms` unit; a literal space there would be consumed by `expl3`'s tokenisation rules.

Note that the reported time is wall-clock and includes any `\typeout`, file I/O, or shell-escape work performed inside the timed block. For tight measurements of pure computation, silence debugging output during the run, and take the second of two consecutive timings to avoid first-run effects such as font caching or `.aux` reads.

6.1.2 Documentclass Options

We have very few global options we use from the KOMAscript. But you can use any known option of the KOMAscript `scrbook`. The initial `parskip=half-` option establishes the KOMA paragraph style; `\setparsizes` below replaces its gap with the compact 3.5 pt default.

```
\PassOptionsToClass{
  fontsize  =11pt, % DFG template
  twoside   =true,
  BCOR      =5mm,
  headings  =optiontoheadandtoc,
  parskip   =half-,
  numbers   =noenddot,
  toc       =indentunnumbered
}{scrbook}
```

6.1.3 Class options (`dfg/class` key family)

All class-level toggles live in the `dfg/class` key family and are processed via `\ProcessKeyOptions`. They control the two major compilation modes (`fastcompile`→P. 81, `fastcompile-project`→P. 82, `final`→P. 83) plus several debugging and output flags.

The general design principle is that every flag defaults to `false` or to a safe, submission-ready value. Authors enable the helpers they need during drafting and simply remove them (or set `final=true`) before submitting. Setting `final=true` enforces this by hard-resetting all drafting flags to `false` automatically.

```
\keys_define:nn { dfg / class }
{
```

The manual loads explicit example inputs, independent of proposal files.

```
  documentation .bool_set:N = \l_@@_class_documentation_bool,
  documentation .initial:n = false,
```

`final`→P. 83: Set to `true` immediately before submission. It forces `cmyk` colour model (required for print), silently sets `fastcompile=false`, `showtags=false`, `showmarginalia=false` and `skip10pub=false`, and turns the draft-green placeholder colour to white so it is invisible in the output.

```
  final      .bool_set:N = \l_@@_class_final_bool,
  final      .initial:n  = false,
  Final      .meta:n     = { final = #1 },
  Final      .default:n  = true,
```

`fastcompile`→P. 81: When `true`, generated tables and lists are replaced by a placeholder. It also suppresses role-card grids, the Gantt chart, and the ten-publications CV block while retaining metadata-backed prose references. Automatically disabled when `final=true`.

```
  fastcompile   .bool_set:N = \l_@@_class_fastcompile_bool,
  fastcompile   .initial:n  = false,
```

`fastcompile-project`→P. 82: Aggressive project-text drafting mode. It implies `fastcompile`→P. 81, but additionally prevents metadata rows from being loaded or restored, replaces calculated project headings with recorded-space placeholders, uses draft rendering for graphics and links, and provides literal fallbacks for database-backed references. Authored sections, paragraphs, aims, work packages, labels, and inline citations remain. Automatically disabled when `final=true`.

```
  fastcompile-project .bool_set:N = \l_@@_class_fastcompile_project_bool,
  fastcompile-project .initial:n  = false,
```

`fastcompile-project-show-images`→P. 82: Opt back into real image rendering while aggressive project drafting is active. It has no effect on ordinary builds, where graphics are rendered normally. Final mode resets it to `false` together with the other drafting controls.

```
  fastcompile-project-show-images .bool_set:N = \l_@@_class_fastcompile_project_show_images_bool,
  fastcompile-project-show-images .initial:n  = false,
```

fastcompile-project-show-publications→ P. 82: Controls the standard project publication heading, explicit project \nocite lists, project bibliographies, project-report references, and ending-project result lists during focused project drafting. Ordinary and final builds force it to true.

```
246  fastcompile-project-show-publications .bool_set:N = \l_@@_class_fastcompile_project_show_publications_boo
247  fastcompile-project-show-publications .initial:n  = false,
```

fastcompile-project-show-funding-tables→ P. 82: Retain the three project-local funding tables in aggressive project drafting mode. The option defaults to true and has no effect outside that mode.

```
248  fastcompile-project-show-funding-tables .bool_set:N = \l_@@_class_fastcompile_project_show_funding_tables
249  fastcompile-project-show-funding-tables .initial:n  = true,
```

fastcompile-show-tags→ P. 81: Enables provenance overlays during fast compilation. Focused project lookups show their source row and requested field path because metadata rows are skipped.

```
250  fastcompile-show-tags .bool_set:N = \l_@@_class_fastcompile_show_tags_bool,
251  fastcompile-show-tags .initial:n  = false,
```

showtags→ P. 82: Enables provenance overlays for direct database values and concise source labels for calculated values in ordinary builds. During fast compilation, fastcompile-show-tags→ P. 81 controls the setting instead.

```
252  showtags   .bool_set:N = \l_@@_class_showtags_bool,
253  showtags   .initial:n  = false,
```

showtags-tables→ P. 82: Controls only provenance overlays rendered in table cells. It defaults to true, but remains inert unless showtags→ P. 82 is enabled. Keeping it separate lets authors debug prose without widening or visually overloading dense generated tables.

```
254  showtags-tables  .bool_set:N = \l_@@_class_showtags_tables_bool,
255  showtags-tables  .initial:n  = true,
```

showmarginalia→ P. 81: Enables marginal notes that display running subtotals alongside the funding tables. Useful for cross-checking calculated sums during data entry. Disabled by final=true.

```
256  showmarginalia .bool_set:N = \l_@@_class_showmarginalia_bool,
257  showmarginalia .initial:n  = false,
```

skip10pub→ P. 83: Suppresses the mandatory ten-publication block in each CV section. Because each bibliography list requires a full biber run and can take several seconds per PI, skipping it during early drafting significantly reduces compilation time. Automatically disabled by final=true.

```
258  skip10pub  .bool_set:N = \l_@@_class_skipTENpublications_bool,
259  skip10pub  .initial:n  = false,
```

colorscheme→ P. 83: Passed directly to \selectcolormodel at \AtBeginDocument. Use cmyk for press-quality PDF output (DFG submission default) or RGB for on-screen review. Overridden to cmyk when final=true.

```
260  colorscheme .tl_set:N   =  \l_@@_class_color_model_tl,
261  colorscheme .initial:n  = cmyk,
```

cv→ P. 83: Set to true in the standalone CV document (crc-cv.tex). When true, the class adjusts heading styles and suppresses proposal-specific front matter so the output is a self-contained curriculum vitae suitable for DFG submission.

```
262  cv   .bool_set:N = \l_@@_class_cv_bool,
263  cv   .initial:n  = false,
264  unknown .code:n = { \PassOptionsToClass{\CurrentOption}{scrbook} },
265  }
```

6.1.4 Conditional execution based on class options

The class option cv toggles whether the document is rendered as a CV (curriculum vitae) supplement. Internally this is stored in the expl3 boolean \l_@@_class_cv_bool. Since end-user document

files should not be required to wrap conditional content in \ExplSyntaxOn / \ExplSyntaxOff, the following three commands expose the switch through a conventional LaTeX interface.

\dfgIfCV \dfgIfCV{⟨*true code*⟩}{⟨*false code*⟩}

Executes ⟨*true code*⟩ if the cv option is active, otherwise ⟨*false code*⟩. Use this when both branches need to produce content, for instance to switch between a full bibliography and a short selected-publications list:

```
\dfgIfCV{\printbibliography[heading=none]}{\printshortbib}
```

\dfgIfCVT \dfgIfCVT{⟨*true code*⟩}

Shorthand for the common case where only the true branch matters. Typical use is gating a section that exists only in the CV variant:

```
\dfgIfCVT{\par\textcolor{tableHeadingsFont}{Appendix:~Research~profiles}}
```

Equivalent to \dfgIfCV{⟨*true code*⟩}{} but avoids the empty second argument and reads more naturally in document source.

\dfgIfCVF \dfgIfCVF{⟨*false code*⟩}

Mirror image of \dfgIfCVT: executes ⟨*false code*⟩ only when the cv option is *not* active. Useful for content that belongs in the main proposal but should be suppressed in the CV variant.

None of these commands evaluates its arguments unless the relevant branch is taken, so wrapping expensive or side-effecting code is safe. All three are defined with \NewDocumentCommand, so their arguments are read as standard mandatory braced groups and may contain verbatim material only where the underlying typesetting context permits.

```
\NewDocumentCommand \dfgIfCV  { +m +m }
  { \bool_if:NTF \l_@@_class_cv_bool {#1} {#2} }
\NewDocumentCommand \dfgIfCVT { +m }
  { \bool_if:NT  \l_@@_class_cv_bool {#1} }
\NewDocumentCommand \dfgIfCVF { +m }
  { \bool_if:NF  \l_@@_class_cv_bool {#1} }

\NewDocumentCommand \dfgIfFinalF { +m }
  { \bool_if:NF  \l_@@_class_final_bool {#1} }
\NewDocumentCommand \dfgIfFastCompileProject { +m +m }
  { \bool_if:NTF \l_@@_class_fastcompile_project_bool {#1} {#2} }
\NewDocumentCommand \dfgIfFastCompileProjectT { +m }
  { \bool_if:NT \l_@@_class_fastcompile_project_bool {#1} }
\NewDocumentCommand \dfgIfFastCompileProjectF { +m }
  { \bool_if:NF \l_@@_class_fastcompile_project_bool {#1} }
\NewDocumentCommand \dfgIfProjectPublications { +m +m }
  { \bool_if:NTF \l_@@_class_fastcompile_project_show_publications_bool {#1} {#2} }
```

Unknown options are forwarded by the key handler above, so ordinary KOMA-Script options remain available without processing the class options a second time. Finally process and execute all options and key-values.

```
\ProcessKeyOptions[ dfg / class ]
% Resolve mode precedence before any package, customisation, metadata, or
% auxiliary-file work can observe the drafting booleans.
\bool_if:NTF \l_@@_class_final_bool
{
  \bool_set_false:N \l_@@_class_fastcompile_bool
  \bool_set_false:N \l_@@_class_fastcompile_project_bool
  \bool_set_false:N \l_@@_class_fastcompile_project_show_images_bool
  \bool_set_true:N  \l_@@_class_fastcompile_project_show_funding_tables_bool
  \bool_set_false:N \l_@@_class_showtags_bool
  \bool_set_false:N \l_@@_class_showmarginalia_bool
  \bool_set_false:N \l_@@_class_skipTENpublications_bool
  \bool_set_true:N  \l_@@_class_fastcompile_project_show_publications_bool
}
{
  \bool_if:NTF \l_@@_class_fastcompile_project_bool
  {
    \bool_set_true:N  \l_@@_class_fastcompile_bool
    \bool_set_false:N \l_@@_class_showmarginalia_bool
```

```
      \bool_set_true:N  \l_@@_class_skipTENpublications_bool
      \PassOptionsToPackage{draft}{hyperref}
      \PassOptionsToPackage{draft}{microtype}
    }
    { \bool_set_true:N \l_@@_class_fastcompile_project_show_publications_bool }
    \bool_if:NT \l_@@_class_fastcompile_bool
    {
      \bool_if:NTF \l_@@_class_fastcompile_show_tags_bool
        { \bool_set_true:N \l_@@_class_showtags_bool }
        { \bool_set_false:N \l_@@_class_showtags_bool }
    }
  }
  \LoadClass{scrbook}
  % A negative initial value requests the font-derived default; a nonnegative
  % value supplied by the customization file or preamble overrides it.
  \newlength{\dfgTablePreSep}
  \setlength{\dfgTablePreSep}{-1pt}
```

Use KOMA-Script's paragraph interface so the compact gap also applies after font-size changes. Retain zero indentation and a freely stretchable final line. The customization file is loaded later and may override these values with `\setparsizes`.

```
  \setparsizes{0pt}{3.5pt plus 1pt minus 0.5pt}{0pt plus 1fil}
  \PassOptionsToPackage{table}{xcolor} % getting rid of errors and conflicts.
  \RequirePackage{xcolor}
```

6.1.5 Colour palette

All colours follow the RWTH Aachen corporate-identity palette and are defined in all four models at once (`cmyk/RGB/HTML/gray`) using xcolor's multiple-model syntax. This allows the same symbolic name to be used regardless of the active colour model chosen via `colorscheme=`.

Each hue comes in five tints named `-100` (full) through `-10` (near white), matching the official RWTH tint steps. This naming scheme is intentional: table headers, zebra stripes and box backgrounds are all specified in terms of these canonical names (e.g. `blue-50`, `black-10`), so a complete rebranding only requires changing the definitions here.

The ORCiD brand green is also declared here since it is used by `\orcidIcon` throughout the document.

```
  \definecolor{blue-100}{cmyk/RGB/HTML/gray}{1,.50,0,0/0,84,159/00549F/1}% primary
  \definecolor{blue-75}{cmyk/RGB/HTML/gray}{.75,.38,0,0/64,127,183/407FB7/.75}%
  \definecolor{blue-50}{cmyk/RGB/HTML/gray}{.45,.14,0,0/142,186,229/8EBAE5/.5}% secondary
  \definecolor{blue-25}{cmyk/RGB/HTML/gray}{.23,.07,0,0/199,221,242/C7DDF2/.25}%
  \definecolor{blue-10}{cmyk/RGB/HTML/gray}{.09,.03,0,0/232,241,250/E8F1FA/.1}%

  \definecolor{black-100}{cmyk/RGB/HTML}{0,0,0,1/0,0,0/000000}%
  \definecolor{black-75}{cmyk/RGB/HTML}{0,0,0,.75/100,101,103/646567}%
  \definecolor{black-50}{cmyk/RGB/HTML}{0,0,0,.5/156,158,159/9C9E9F}%
  \definecolor{black-25}{cmyk/RGB/HTML}{0,0,0,.25/207,209,210/CFD1D2}%
  \definecolor{black-10}{cmyk/RGB/HTML}{0,0,0,.1/236,237,237/ECEDED}%

  \definecolor{green-100}{cmyk/RGB/HTML}{.7,0,1,0/87,171,39/57AB27}%
  \definecolor{green-75}{cmyk/RGB/HTML}{.52,0,.75,0/141,192,96/8DC060}%
  \definecolor{green-50}{cmyk/RGB/HTML}{.35,0,.5,0/184,214,152/B8D698}%
  \definecolor{green-25}{cmyk/RGB/HTML}{.18,0,.25,0/221,235,206/DDEBCE}%
  \definecolor{green-10}{cmyk/RGB/HTML}{.07,0,.1,0/242,247,236/F2F7EC}%

  \definecolor{red-100}{cmyk/RGB/HTML}{.15,1,1,0/204,7,30/CC071E}%
  \definecolor{red-75}{cmyk/RGB/HTML}{.11,.75,.75,0/216,92,65/D85C41}%
  \definecolor{red-50}{cmyk/RGB/HTML}{.8,.5,.5,0/230,150,121/E69679}%
  \definecolor{red-25}{cmyk/RGB/HTML}{.4,.25,.25,0/243,205,187/F3CDBB}%
  \definecolor{red-10}{cmyk/RGB/HTML}{.2,.1,.1,0/250,235,227/FAEBE3}%

  \definecolor{bordeaux-100}{cmyk/RGB/HTML}{.25,1,.70,.20/161,16,53/A11035}%
  \definecolor{bordeaux-75}{cmyk/RGB/HTML}{.19,.75,.52,15/182,82,86/B65256}%
  \definecolor{bordeaux-50}{cmyk/RGB/HTML}{.13,.5,.35,.1/205,139,135/CD8B87}%
  \definecolor{bordeaux-25}{cmyk/RGB/HTML}{.06,.25,.18,.05/229,197,192/E5C5C0}%
  \definecolor{bordeaux-10}{cmyk/RGB/HTML}{.03,.1,.07,.02/245,232,229/F5E8E5}%

  \definecolor{orcid}{cmyk/RGB}{0.15,0.00,0.59,0.20/174,205,84}
```

Let's start with the common section on packages etc.

6.1.6 Customisation key family (dfg/custom)

We provide as much as possible all settings to customize to your desire and needs. The customization is done with key-values, which we set up below.

```
% Public document text exists before the customization file is read. Keep
% externally supplied definitions (including InfoTeX from the build command).
\providecommand{\dfgLocation}{
  \bool_if:NTF \l_@@_class_fastcompile_bool
    { \textcolor{error}{<Location>} }
    { <Location> }\xspace
}
\providecommand{\dfgDate}{
  \bool_if:NTF \l_@@_class_fastcompile_bool
    { \textcolor{error}{<date>} }
    { <date> }\xspace
}
\providecommand{\dfgTitle}{\enquote{\get[meta]{crc}{name}}\xspace}
\providecommand{\InfoTeX}{LuaLaTeX~ (via~ Overleaf).}
\bool_new:N \l_@@_custom_thumbindex_topmargin_set_bool
\bool_new:N \l_@@_custom_thumbindex_bottommargin_set_bool
\dim_new:N \l_@@_custom_thumbindex_topmargin_dim
\dim_new:N \l_@@_custom_thumbindex_bottommargin_dim
\int_new:N \l_@@_custom_thumbindex_rotation_int
\tl_new:N \l_@@_custom_pi_contact_style_tl
\tl_new:N \l_@@_custom_cv_table_after_skip_tl
\tl_new:N \l_@@_custom_plot_options_tl
\tl_new:N \l_@@_custom_gantt_plot_options_tl
\tl_new:N \l_@@_custom_collaboration_plot_options_tl
\tl_new:N \l_@@_custom_journal_title_tl
\tl_new:N \l_@@_custom_project_title_toc_tl
\tl_new:N \l_@@_custom_project_title_runningHead_tl
\tl_new:N \l_@@_custom_project_title_projectStart_tl
\keys_define:nn { dfg / project-title }
{
  toc .choices:nn = {full,short}
    { \tl_set:Nn \l_@@_custom_project_title_toc_tl {#1} },
  toc .initial:n = full,
  toc .value_required:n = true,
  runningHead .choices:nn = {full,short}
    { \tl_set:Nn \l_@@_custom_project_title_runningHead_tl {#1} },
  runningHead .initial:n = full,
  runningHead .value_required:n = true,
  projectStart .choices:nn = {full,short}
    { \tl_set:Nn \l_@@_custom_project_title_projectStart_tl {#1} },
  projectStart .initial:n = full,
  projectStart .value_required:n = true,
}
\keys_define:nn { dfg / custom  }
{
  projectTitle .code:n = \keys_set:nn { dfg / project-title } {#1},
  projectTitle .value_required:n = true,
  % Assign without expansion; metadata references resolve when printed.
  dfgLocation .code:n = \cs_set:Npn \dfgLocation {#1\xspace},
  dfgDate     .code:n = \cs_set:Npn \dfgDate {#1\xspace},
  dfgTitle    .code:n = \cs_set:Npn \dfgTitle {#1\xspace},
  InfoTeX     .code:n = \cs_set:Npn \InfoTeX {#1},

  % You can pass any font you like (and |fontspec| will understand or is known to
  % your system). The current main and sansserif defaults are Arimo; the
  % sansserif face overrides below retain selected Roboto variants.
  font                        .tl_set:N   = \l_@@_custom_font_tl,
  fontspec                    .tl_set:N   = \l_@@_custom_fontspec_tl,
  font                        .initial:n  = Arimo,
  sansfont                    .tl_set:N   = \l_@@_custom_sansfont_tl,
  sansfontspec                .tl_set:N   = \l_@@_custom_sansfontspec_tl,
  sansfont                    .initial:n  = Arimo,
  sansfontspec             .initial:n     = {
    ItalicFont=Roboto-LightItalic,
    BoldFont=Roboto-Medium,
    BoldItalicFont=Roboto-Medium-Italic},
```

```
419   % \paragraph{Logo paths}
420   crcLogoPath                .tl_set:N   = \l_@@_custom_crc_logo_path_tl,
421   crcLogoPath                .initial:n  = example-image-a,
422   affiliationLogoPath        .tl_set:N   = \l_@@_custom_affiliation_logo_path_tl,
423   affiliationLogoPath        .initial:n  = example-image-b,
424   % \paragraph{Project-reference repetition}
425   projectPIOncePerSection      .bool_set:N =
426     \l_@@_custom_project_pi_once_per_section_bool,
427   projectPIOncePerSection      .initial:n  = true,
428   PIReferenceFirstName .bool_set:N =
429     \l_@@_custom_pi_reference_firstname_bool,
430   PIReferenceFirstName .initial:n = false,
431   % Project tables use full institution names by default. Set true for
432   % compact abbreviations and a table-local full-name legend.
433   projectsTableInstitutionAbbreviations .bool_set:N =
434     \l_@@_custom_projects_table_institution_abbreviations_bool,
435   projectsTableInstitutionAbbreviations .initial:n = false,
436   % Use compact English labels for personnel categories.
437   categoryAbbreviations .bool_set:N = \l_@@_custom_category_abbreviations_bool,
438   categoryAbbreviations .initial:n = false,
439   % Evaluate relative dimensions when each CV block finishes, not at setup.
440   cvTableAfterSkip .tl_set:N = \l_@@_custom_cv_table_after_skip_tl,
441   cvTableAfterSkip .initial:n = {0pt},
442   cvTableAfterSkip .value_required:n = true,
443   % Plot options are stored without expansion and parsed when a plot is printed.
444   % Merge order: shared defaults, type defaults, then per-call options.
445   plotOptions .tl_set:N = \l_@@_custom_plot_options_tl,
446   plotOptions .initial:n = {},
447   plotOptions .value_required:n = true,
448   ganttPlotOptions .tl_set:N = \l_@@_custom_gantt_plot_options_tl,
449   ganttPlotOptions .initial:n = {},
450   ganttPlotOptions .value_required:n = true,
451   collaborationPlotOptions .tl_set:N = \l_@@_custom_collaboration_plot_options_tl,
452   collaborationPlotOptions .initial:n = {},
453   collaborationPlotOptions .value_required:n = true,
454   % Contact labels in PI boxes: icons (default), text labels, or no labels.
455   PIcontactStyle .tl_set:N = \l_@@_custom_pi_contact_style_tl,
456   PIcontactStyle .initial:n = icons,
457   % Collaboration-plot area colors can be set once for the complete proposal.
458   % Per-plot area-colors and area-palette options may override these defaults.
459   collaborationAreaColors      .tl_set:N =
460     \l_@@_custom_collaboration_area_colors_tl,
461   collaborationAreaColors      .initial:n =
462     { A=projectA, B=projectB, Q=projectQ!75!black },
463   collaborationAreaPalette     .code:n =
464     {
465       \clist_if_empty:nF {#1}
466         { \tl_set:Nn \l_@@_custom_collaboration_area_palette_tl {#1} }
467     },
468   collaborationAreaPalette     .initial:n =
469     { orange!80!black, violet!75!black, teal!70!black,
470       brown!75!black, magenta!70!black, cyan!70!black, lime!60!black },
471   % \paragraph{DFG salary and animal-housing rates}
472   salary@prof                .fp_set:N   = \l_@@_custom_salary_prof_fp,
473   salary@prof                .initial:n  = 126600,
474   salary@groupLeader         .fp_set:N   = \l_@@_custom_salary_group_leader_fp,
475   salary@groupLeader         .initial:n  = 105000,
476   salary@postDoc             .fp_set:N   = \l_@@_custom_salary_postdoc_fp,
477   salary@postDoc             .initial:n  = 90600,
478   salary@medDoc              .fp_set:N   = \l_@@_custom_salary_meddoc_fp,
479   salary@medDoc              .initial:n  = 112200,
480   salary@PhD                 .fp_set:N   = \l_@@_custom_salary_phd_fp,
481   salary@PhD                 .initial:n  = 83700,
482   salary@research            .fp_set:N   = \l_@@_custom_salary_research_fp,
483   salary@research            .initial:n  = 69000,
484   salary@nonResearch         .fp_set:N   = \l_@@_custom_salary_nonresearch_fp,
485   salary@nonResearch         .initial:n  = 61500,
486   salary@student             .fp_set:N   = \l_@@_custom_salary_student_fp,
487   salary@student             .initial:n  = 1,
488   salary@assistant           .fp_set:N   = \l_@@_custom_salary_assistant_fp,
489   salary@assistant           .initial:n  = 1,
490   animalHousing@mouse        .fp_set:N   = \l_@@_custom_animal_mouse_fp,
491   animalHousing@mouse        .initial:n  = 0.75,
492   animalHousing@mouseGnotobiotic .fp_set:N =
```

```
    \l_@@_custom_animal_mouse_gnotobiotic_fp,
  animalHousing@mouseGnotobiotic .initial:n = 3.9,
  animalHousing@rat           .fp_set:N   = \l_@@_custom_animal_rat_fp,
  animalHousing@rat           .initial:n  = 1.4,
  % \paragraph{Thumb-index keys}
  % These keys control the decorative side tab on the outer margin.
  % The index divides the text block into \meta{pattern} equal-height slots by
  % default.  Explicit page-edge margins can override either end of the stack.
  % Each call to \cs{printThumbIndex}
  % advances the slot counter; when it reaches \meta{pattern} it wraps,
  % creating a repeating stripe aiding chapter navigation.
  %
  thumbindex                .bool_set:N = \l_@@_custom_thumbindex_bool,
  thumbindex                .initial:n  = true,
  %
  thumbindex@pattern        .int_set:N  = \l_@@_custom_thumbindexpattern_int,
  thumbindex@pattern        .initial:n  = 10,
  %
  thumbindex@topmargin .code:n =
    {
      \str_if_eq:nnTF {#1} {auto}
        { \bool_set_false:N \l_@@_custom_thumbindex_topmargin_set_bool }
        {
          \dim_set:Nn \l_@@_custom_thumbindex_topmargin_dim {#1}
          \bool_set_true:N \l_@@_custom_thumbindex_topmargin_set_bool
        }
    },
  thumbindex@topmargin .initial:n = auto,
  %
  thumbindex@bottommargin .code:n =
    {
      \str_if_eq:nnTF {#1} {auto}
        { \bool_set_false:N \l_@@_custom_thumbindex_bottommargin_set_bool }
        {
          \dim_set:Nn \l_@@_custom_thumbindex_bottommargin_dim {#1}
          \bool_set_true:N \l_@@_custom_thumbindex_bottommargin_set_bool
        }
    },
  thumbindex@bottommargin .initial:n = auto,
  %
  thumbindex@width     .dim_set:N  = \l_@@_custom_thumbindex_width_dim,
  thumbindex@width .initial:n  = 1.2cm,
  %
  thumbindex@orientation .choice:,
  thumbindex@orientation / outwards .code:n =
    \int_zero:N \l_@@_custom_thumbindex_rotation_int,
  thumbindex@orientation / inwards .code:n =
    \int_set:Nn \l_@@_custom_thumbindex_rotation_int {180},
  thumbindex@orientation .initial:n = outwards,
  thumbindex@orientation .value_required:n = true,
  %
  thumbindex@font .tl_set:N = \l_@@_custom_thumbindex_font_tl,
  thumbindex@font .initial:n = \bfseries\Huge,
  % \paragraph{Bibliography keys}
  % |emphasizeAuthors| controls the bold-name mechanism.  When true (the
  % default), it marks every PI's name in bold across all bibliography and
  % citation lists.
  % |emphasizeEntries| independently bolds entire bibliography entries with
  % the current project ID plus |-highlight| in project lists, or with
  % |frametext-highlight| in the frame-text list.
  % CV and proposal bibliography styles and features are stored separately.
  %
  doiAPIMail                 .tl_set:N  = \l_@@_custom_doi_api_mail_tl,
  doiAPIMail                 .initial:n = {},
  %
  emphasizeAuthors          .bool_set:N = \l_@@_custom_emphasize_authors_bool,
  emphasizeAuthors          .initial:n  = true,
  emphasizeEntries          .bool_set:N = \l_@@_custom_emphasize_entries_bool,
  emphasizeEntries          .initial:n  = false,
  % Select the printed field without changing the stored bibliography data.
  journalTitle .choice:,
  journalTitle / journaltitle .code:n =
    \tl_set:Nn \l_@@_custom_journal_title_tl {journaltitle},
  journalTitle / shortjournal .code:n =
```

```
    \tl_set:Nn \l_@@_custom_journal_title_tl {shortjournal},
  journalTitle .initial:n = journaltitle,
  journalTitle .value_required:n = true,
  %
  biblatexstyleCV                .tl_set:N  = \l_@@_custom_biblatexstyle_cv_tl,
  biblatexstyleCV                .initial:n = ext-numeric-comp,
  biblatexstyleFeatureCV         .tl_set:N  = \l_@@_custom_biblatexfeatures_cv_tl,
  biblatexstyleFeatureCV         .initial:n = {sorting=none},
  biblatexstyleProposal          .tl_set:N  = \l_@@_custom_biblatexstyle_proposal_tl,
  biblatexstyleProposal          .initial:n = ext-authoryear-ecomp,
  biblatexstyleFeatureProposal   .tl_set:N  = \l_@@_custom_biblatexfeatures_proposal_tl,
  biblatexstyleFeatureProposal   .initial:n = {},
  % Compatibility: the former keys apply the supplied value to both modes.
  biblatexstyle .code:n =
    {
      \tl_set:Nn \l_@@_custom_biblatexstyle_cv_tl       {#1}
      \tl_set:Nn \l_@@_custom_biblatexstyle_proposal_tl {#1}
    },
  biblatexstyleFeature .code:n =
    {
      \tl_set:Nn \l_@@_custom_biblatexfeatures_cv_tl       {#1}
      \tl_set:Nn \l_@@_custom_biblatexfeatures_proposal_tl {#1}
    },
  % \paragraph{Colour keys}
  % All colour keys store a colour \emph{name} referencing an already-defined
  % xcolor colour (e.g.\ |blue-50|, |black-10|).  Actual \cs{colorlet}
  % bindings happen in \cs{AtBeginDocument} so preamble overrides are
  % processed first.  Groups: |color@gantt@*| for the five bar styles;
  % |color@table@*| for all table chrome; |color@thumbindex@*| for the
  % thumb tab; |color@tags@*| for the showtags debug annotations.
  %
  color@reference@boldAuthor .tl_set:N   = \l_@@_custom_referenceBoldAuthor_tl,
  color@reference@boldAuthor .initial:n  = black,
  color@reference@PI .tl_set:N           = \l_@@_custom_referencePI_tl,
  color@reference@PI .initial:n          = black,
  color@reference@WP .tl_set:N           = \l_@@_custom_referenceWP_tl,
  color@reference@WP .initial:n          = black,
  color@reference@Aim .tl_set:N          = \l_@@_custom_referenceAim_tl,
  color@reference@Aim .initial:n         = black,

  color@gantt@frame      .tl_set:N    = \l_@@_custom_gantt_frame_tl,
  color@gantt@frame      .initial:n = {white},
  color@gantt@default    .tl_set:N    =\l_@@_custom_gantt_default_tl,
  color@gantt@default    .initial:n = {blue-25},
  color@gantt@alternative    .tl_set:N    =\l_@@_custom_gantt_alternative_tl,
  color@gantt@alternative    .initial:n = {green-25},
  color@gantt@crosshatch .tl_set:N    = \l_@@_custom_gantt_crosshatch_tl,
  color@gantt@crosshatch .initial:n = {black-10},
  color@gantt@important  .tl_set:N    = \l_@@_custom_gantt_important_tl,
  color@gantt@important  .initial:n = {red},
  color@gantt@stripe-one .tl_set:N    = \l_@@_custom_gantt_stripe_one_tl,
  color@gantt@stripe-one .initial:n = {blue-25},
  color@gantt@stripe-two .tl_set:N    = \l_@@_custom_gantt_stripe_two_tl,
  color@gantt@stripe-two .initial:n = {green-25},

  color@table@headingsBG     .tl_set:N   = \l_@@_custom_tableHeadingsBG_tl,
  color@table@headingsBG     .initial:n  = blue-50,
  color@table@headingsBGalt  .tl_set:N   = \l_@@_custom_tableHeadingsBGalt_tl,
  color@table@headingsBGalt  .initial:n  = black-25,
  color@table@headingsFont   .tl_set:N   = \l_@@_custom_tableHeadingsFont_tl,
  color@table@headingsFont   .initial:n  = black,
  color@table@rows           .tl_set:N   = \l_@@_custom_tableRows_tl,
  color@table@rows           .initial:n  = black-10,
  color@table@lines          .tl_set:N   = \l_@@_custom_tableLines_tl,
  color@table@lines          .initial:n  = black-10,
  color@table@outerLines     .tl_set:N   = \l_@@_custom_tableOuterLines_tl,
  color@table@outerLines     .initial:n  = black,
  color@table@noValue        .tl_set:N   = \l_@@_custom_tableNoValue_tl,
  color@table@noValue        .initial:n  = black-10,
  color@table@firstColumn    .tl_set:N   = \l_@@_custom_tableFirstColumn_tl,
  color@table@firstColumn    .initial:n  = black,
  color@table@link           .tl_set:N   = \l_@@_custom_tableLink_tl,
  color@table@link           .initial:n = black,
  color@table@contFootHead   .tl_set:N  = \l_@@_custom_tableContFootHead_tl,
```

```
    color@table@contFootHead   .initial:n = black,
    color@table@caption        .tl_set:N  = \l_@@_custom_tableCaption_tl,
    color@table@caption        .initial:n = black,
    color@thumbindex@bg        .tl_set:N  = \l_@@_custom_thumbIndexBG_tl,
    color@thumbindex@bg        .initial:n = black,
    color@thumbindex@font      .tl_set:N  = \l_@@_custom_thumbIndexFont_tl,
    color@thumbindex@font      .initial:n = white,
    color@tags@font            .tl_set:N  = \l_@@_custom_colorTagsFont_tl,
    color@tags@font            .initial:n = red-100,
    color@tags@line            .tl_set:N  = \l_@@_custom_colorTagsLine_tl,
    color@tags@line            .initial:n = black-50,
    % The alternative font color which is used e.g. for the CV headline.
    color@font@alternative     .tl_set:N  = \l_@@_custom_colorfontalternative_tl,
    color@font@alternative     .initial:n = black-50,

    color@item@i               .tl_set:N  = \l_@@_custom_color_item_i_tl,
    color@item@i               .initial:n = black,
    % That's it with the key-values.
  }
```

Bibliography package options must be fixed before biblatex is loaded. Consequently the customization file is read here, after all custom keys have been declared but before package loading. It is not read a second time at the end of the class.

```
\NewDocumentCommand{\changeSettings}{m}
  { \keys_set:nn { dfg / custom } {#1} }
% Compatibility alias for proposals created before the command was pluralised.
\NewDocumentCommand{\changeSetting}{m}
  { \changeSettings{#1} }
```

Read live storage, not cached input: typed values are normalised, grouped changes unwind, and internal overrides remain visible. Keep the registry in sync with all public keys in `dfg/custom`.

```
\prop_const_from_keyval:Nn \c_@@_custom_getters_prop
  {
    font = { \tl_use:N \l_@@_custom_font_tl },
    fontspec = { \tl_use:N \l_@@_custom_fontspec_tl },
    sansfont = { \tl_use:N \l_@@_custom_sansfont_tl },
    sansfontspec = { \tl_use:N \l_@@_custom_sansfontspec_tl },
    crcLogoPath = { \tl_use:N \l_@@_custom_crc_logo_path_tl },
    affiliationLogoPath = { \tl_use:N \l_@@_custom_affiliation_logo_path_tl },
    projectPIOncePerSection = { \bool_if:NTF \l_@@_custom_project_pi_once_per_section_bool {true} {false}
    PIReferenceFirstName = { \bool_if:NTF \l_@@_custom_pi_reference_firstname_bool {true} {false} },
    projectsTableInstitutionAbbreviations = { \bool_if:NTF \l_@@_custom_projects_table_institution_abbrev
    categoryAbbreviations = { \bool_if:NTF \l_@@_custom_category_abbreviations_bool {true} {false} },
    cvTableAfterSkip = { \dim_eval:n {\l_@@_custom_cv_table_after_skip_tl} },
    plotOptions = { \tl_use:N \l_@@_custom_plot_options_tl },
    ganttPlotOptions = { \tl_use:N \l_@@_custom_gantt_plot_options_tl },
    collaborationPlotOptions = { \tl_use:N \l_@@_custom_collaboration_plot_options_tl },
    projectTitle = {
      toc=\tl_use:N \l_@@_custom_project_title_toc_tl,
      runningHead=\tl_use:N \l_@@_custom_project_title_runningHead_tl,
      projectStart=\tl_use:N \l_@@_custom_project_title_projectStart_tl
    },
    PIcontactStyle = { \tl_use:N \l_@@_custom_pi_contact_style_tl },
    collaborationAreaColors = { \tl_use:N \l_@@_custom_collaboration_area_colors_tl },
    salary@prof = { \fp_use:N \l_@@_custom_salary_prof_fp },
    salary@groupLeader = { \fp_use:N \l_@@_custom_salary_group_leader_fp },
    salary@postDoc = { \fp_use:N \l_@@_custom_salary_postdoc_fp },
    salary@medDoc = { \fp_use:N \l_@@_custom_salary_meddoc_fp },
    salary@PhD = { \fp_use:N \l_@@_custom_salary_phd_fp },
    salary@research = { \fp_use:N \l_@@_custom_salary_research_fp },
    salary@nonResearch = { \fp_use:N \l_@@_custom_salary_nonresearch_fp },
    salary@student = { \fp_use:N \l_@@_custom_salary_student_fp },
    salary@assistant = { \fp_use:N \l_@@_custom_salary_assistant_fp },
    animalHousing@mouse = { \fp_use:N \l_@@_custom_animal_mouse_fp },
    animalHousing@mouseGnotobiotic = { \fp_use:N \l_@@_custom_animal_mouse_gnotobiotic_fp },
    animalHousing@rat = { \fp_use:N \l_@@_custom_animal_rat_fp },
    thumbindex = { \bool_if:NTF \l_@@_custom_thumbindex_bool {true} {false} },
    thumbindex@pattern = { \int_use:N \l_@@_custom_thumbindexpattern_int },
    thumbindex@width = { \dim_use:N \l_@@_custom_thumbindex_width_dim },
    thumbindex@font = { \tl_use:N \l_@@_custom_thumbindex_font_tl },
    doiAPIMail = { \tl_use:N \l_@@_custom_doi_api_mail_tl },
```

```
    emphasizeAuthors = { \bool_if:NTF \l_@@_custom_emphasize_authors_bool {true} {false} },
    emphasizeEntries = { \bool_if:NTF \l_@@_custom_emphasize_entries_bool {true} {false} },
    journalTitle = { \tl_use:N \l_@@_custom_journal_title_tl },
    biblatexstyleCV = { \tl_use:N \l_@@_custom_biblatexstyle_cv_tl },
    biblatexstyleFeatureCV = { \tl_use:N \l_@@_custom_biblatexfeatures_cv_tl },
    biblatexstyleProposal = { \tl_use:N \l_@@_custom_biblatexstyle_proposal_tl },
    biblatexstyleFeatureProposal = { \tl_use:N \l_@@_custom_biblatexfeatures_proposal_tl },
    color@reference@boldAuthor = { \tl_use:N \l_@@_custom_referenceBoldAuthor_tl },
    color@reference@PI = { \tl_use:N \l_@@_custom_referencePI_tl },
    color@reference@WP = { \tl_use:N \l_@@_custom_referenceWP_tl },
    color@reference@Aim = { \tl_use:N \l_@@_custom_referenceAim_tl },
    color@gantt@frame = { \tl_use:N \l_@@_custom_gantt_frame_tl },
    color@gantt@default = { \tl_use:N \l_@@_custom_gantt_default_tl },
    color@gantt@alternative = { \tl_use:N \l_@@_custom_gantt_alternative_tl },
    color@gantt@crosshatch = { \tl_use:N \l_@@_custom_gantt_crosshatch_tl },
    color@gantt@important = { \tl_use:N \l_@@_custom_gantt_important_tl },
    color@gantt@stripe-one = { \tl_use:N \l_@@_custom_gantt_stripe_one_tl },
    color@gantt@stripe-two = { \tl_use:N \l_@@_custom_gantt_stripe_two_tl },
    color@table@headingsBG = { \tl_use:N \l_@@_custom_tableHeadingsBG_tl },
    color@table@headingsBGalt = { \tl_use:N \l_@@_custom_tableHeadingsBGalt_tl },
    color@table@headingsFont = { \tl_use:N \l_@@_custom_tableHeadingsFont_tl },
    color@table@rows = { \tl_use:N \l_@@_custom_tableRows_tl },
    color@table@lines = { \tl_use:N \l_@@_custom_tableLines_tl },
    color@table@outerLines = { \tl_use:N \l_@@_custom_tableOuterLines_tl },
    color@table@noValue = { \tl_use:N \l_@@_custom_tableNoValue_tl },
    color@table@firstColumn = { \tl_use:N \l_@@_custom_tableFirstColumn_tl },
    color@table@link = { \tl_use:N \l_@@_custom_tableLink_tl },
    color@table@contFootHead = { \tl_use:N \l_@@_custom_tableContFootHead_tl },
    color@table@caption = { \tl_use:N \l_@@_custom_tableCaption_tl },
    color@thumbindex@bg = { \tl_use:N \l_@@_custom_thumbIndexBG_tl },
    color@thumbindex@font = { \tl_use:N \l_@@_custom_thumbIndexFont_tl },
    color@tags@font = { \tl_use:N \l_@@_custom_colorTagsFont_tl },
    color@tags@line = { \tl_use:N \l_@@_custom_colorTagsLine_tl },
    color@font@alternative = { \tl_use:N \l_@@_custom_colorfontalternative_tl },
    color@item@i = { \tl_use:N \l_@@_custom_color_item_i_tl },
    dfgLocation = { \dfgLocation },
    dfgDate = { \dfgDate },
    dfgTitle = { \dfgTitle },
    InfoTeX = { \InfoTeX },
    collaborationAreaPalette = { \tl_use:N \l_@@_custom_collaboration_area_palette_tl },
    thumbindex@topmargin = { \bool_if:NTF \l_@@_custom_thumbindex_topmargin_set_bool { \dim_use:N \l_@@_c
    thumbindex@bottommargin = { \bool_if:NTF \l_@@_custom_thumbindex_bottommargin_set_bool { \dim_use:N \
    thumbindex@orientation = { \int_compare:nNnTF {\l_@@_custom_thumbindex_rotation_int} = {0} {outwards}
    biblatexstyle = { \bool_if:NTF \l_@@_class_cv_bool {\tl_use:N \l_@@_custom_biblatexstyle_cv_tl} {\tl_
    biblatexstyleFeature = { \bool_if:NTF \l_@@_class_cv_bool {\tl_use:N \l_@@_custom_biblatexfeatures_cv
  }
\msg_new:nnn { dfg } { unknown-customization-value }
  { Unknown~customization~key~'#1'~in~\string\getValue.
    ~Use~a~key~supported~by~\string\changeSettings. }
\cs_new:Npn \@@_get_custom_value:n #1
  {
    \prop_if_in:NnTF \c_@@_custom_getters_prop {#1}
      { \exp_args:Ne \use:n { \prop_item:Nn \c_@@_custom_getters_prop {#1} } }
      { \msg_expandable_error:nnn {dfg} {unknown-customization-value} {#1} }
  }
\NewExpandableDocumentCommand \getValue { m }
  { \exp_args:Ne \@@_get_custom_value:n { \tl_trim_spaces:n {#1} } }
% Compatibility accessors retained for the funding and animal-cost code.
\NewExpandableDocumentCommand{\dfgSalaryProf}{}
  { \fp_use:N \l_@@_custom_salary_prof_fp }
\NewExpandableDocumentCommand{\dfgSalaryGroupLeader}{}
  { \fp_use:N \l_@@_custom_salary_group_leader_fp }
\NewExpandableDocumentCommand{\dfgSalaryPostDoc}{}
  { \fp_use:N \l_@@_custom_salary_postdoc_fp }
\NewExpandableDocumentCommand{\dfgSalaryMedDoc}{}
  { \fp_use:N \l_@@_custom_salary_meddoc_fp }
\NewExpandableDocumentCommand{\dfgSalaryPhD}{}
  { \fp_use:N \l_@@_custom_salary_phd_fp }
\NewExpandableDocumentCommand{\dfgSalaryResearch}{}
  { \fp_use:N \l_@@_custom_salary_research_fp }
\NewExpandableDocumentCommand{\dfgSalaryNonResearch}{}
  { \fp_use:N \l_@@_custom_salary_nonresearch_fp }
\NewExpandableDocumentCommand{\dfgSalaryStudent}{}
  { \fp_use:N \l_@@_custom_salary_student_fp }
```

```
\NewExpandableDocumentCommand{\dfgSalaryAssistant}{}
  { \fp_use:N \l_@@_custom_salary_assistant_fp }
\NewExpandableDocumentCommand{\dfgMouseHousing}{}
  { \fp_use:N \l_@@_custom_animal_mouse_fp }
\NewExpandableDocumentCommand{\dfgMouseHousingGnotobiotic}{}
  { \fp_use:N \l_@@_custom_animal_mouse_gnotobiotic_fp }
\NewExpandableDocumentCommand{\dfgRatHousing}{}
  { \fp_use:N \l_@@_custom_animal_rat_fp }
```

6.1.7 Laboratory-animal types

The registry is available before loading the customization file. Its assignments follow ordinary TeX grouping, like `\changeSettings`. Built-in housing rates retain their original floating-point registers; declarations and the legacy settings therefore share one source of truth. Group IDs name a registered type whose plural label is used for the total. They are grouping buckets, not an inheritance chain.

```
\msg_new:nnn { dfg } { animal-type-invalid }
  { Animal~type~'#1':~#2.~The~declaration~is~ignored. }
\msg_new:nnn { dfg } { animal-row-invalid }
  { Animal~table~'#1',~project~'#2':~#3.~Unavailable~numbers~
    are~shown~as~dashes;~totals~omitting~them~are~marked~incomplete. }
\msg_new:nnn { dfg } { animal-total-incomplete }
  { Animal~table~'#1':~the~total~for~'#2'~is~incomplete.~
    Only~supplied,~valid~values~are~summed. }
\prop_new:N \l_@@_animal_types_prop
\seq_new:N \l_@@_animal_type_ids_seq
\tl_new:N \l_@@_animal_id_tl
\tl_new:N \l_@@_animal_label_tl
\tl_new:N \l_@@_animal_plural_tl
\tl_new:N \l_@@_animal_group_tl
\tl_new:N \l_@@_animal_rate_tl
\tl_new:N \l_@@_animal_rate_value_tl
\bool_new:N \l_@@_animal_declaration_valid_bool
\keys_define:nn { dfg / animal-type }
  {
    label        .tl_set:N = \l_@@_animal_label_tl,
    label        .value_required:n = true,
    label-plural .tl_set:N = \l_@@_animal_plural_tl,
    label-plural .value_required:n = true,
    total-group  .tl_set:N = \l_@@_animal_group_tl,
    total-group  .value_required:n = true,
    housing-rate .tl_set:N = \l_@@_animal_rate_tl,
    housing-rate .value_required:n = true,
    unknown .code:n =
      {
        \msg_warning:nnee {dfg}{animal-type-invalid}
          {\l_@@_animal_id_tl}{unknown~key~'\l_keys_key_str'}
        \bool_set_false:N \l_@@_animal_declaration_valid_bool
      }
  }
\cs_new_protected:Npn \@@_animal_type_get:nnN #1#2#3
  {
    \prop_get:NeNTF \l_@@_animal_types_prop {#1/#2} #3
      {} { \tl_clear:N #3 }
  }
\cs_new_protected:Npn \@@_animal_type_reject:n #1
  {
    \msg_warning:nnee {dfg}{animal-type-invalid}
      {\l_@@_animal_id_tl}{#1}
    \bool_set_false:N \l_@@_animal_declaration_valid_bool
  }
\NewDocumentCommand \DeclareAnimalType { m m }
  {
    \tl_set:Ne \l_@@_animal_id_tl { \tl_trim_spaces:n {#1} }
    \bool_set_true:N \l_@@_animal_declaration_valid_bool
    \@@_animal_type_get:nnN {\l_@@_animal_id_tl}{label}
      \l_@@_animal_label_tl
    \@@_animal_type_get:nnN {\l_@@_animal_id_tl}{label-plural}
      \l_@@_animal_plural_tl
    \@@_animal_type_get:nnN {\l_@@_animal_id_tl}{housing-rate}
      \l_@@_animal_rate_tl
```

```
    \@@_animal_type_get:nnN {\l_@@_animal_id_tl}{total-group}
      \l_@@_animal_group_tl
    \tl_if_blank:VT \l_@@_animal_group_tl
      { \tl_set_eq:NN \l_@@_animal_group_tl \l_@@_animal_id_tl }
    \keys_set:nn { dfg / animal-type } {#2}
    \tl_trim_spaces:N \l_@@_animal_group_tl
    \exp_args:NnV \regex_match:nnF
      {\A [a-z] [a-z0-9-]* \Z} \l_@@_animal_id_tl
      { \@@_animal_type_reject:n {use~a~lowercase~ID~such~as~'mouse-spf'} }
    \tl_if_blank:VT \l_@@_animal_label_tl
      { \@@_animal_type_reject:n {a~nonempty~'label'~is~required} }
    \tl_if_blank:VT \l_@@_animal_plural_tl
      { \tl_set_eq:NN \l_@@_animal_plural_tl \l_@@_animal_label_tl }
    \tl_set:Ne \l_@@_animal_rate_value_tl { \l_@@_animal_rate_tl }
    \tl_trim_spaces:N \l_@@_animal_rate_value_tl
    \exp_args:NnV \regex_match:nnF
      {\A \d+ (?: \. \d+ )? \Z} \l_@@_animal_rate_value_tl
      { \@@_animal_type_reject:n
          {'housing-rate'~must~be~a~non-negative~number~using~a~decimal~point} }
    \tl_if_eq:NNF \l_@@_animal_id_tl \l_@@_animal_group_tl
      {
        \prop_if_in:NeF \l_@@_animal_types_prop
          {\l_@@_animal_group_tl/label}
          { \@@_animal_type_reject:n
              {declare~the~total-group~'\l_@@_animal_group_tl'~first} }
      }
    \bool_if:NT \l_@@_animal_declaration_valid_bool
      {
        \seq_if_in:NVF \l_@@_animal_type_ids_seq \l_@@_animal_id_tl
          { \seq_put_right:NV \l_@@_animal_type_ids_seq \l_@@_animal_id_tl }
        \str_case:VnF \l_@@_animal_id_tl
          {
            {mouse}
              {
                \fp_set:Nn \l_@@_custom_animal_mouse_fp
                  {\l_@@_animal_rate_value_tl}
                \tl_set:Nn \l_@@_animal_rate_tl {\dfgMouseHousing}
              }
            {mouse-gnotobiotic}
              {
                \fp_set:Nn \l_@@_custom_animal_mouse_gnotobiotic_fp
                  {\l_@@_animal_rate_value_tl}
                \tl_set:Nn \l_@@_animal_rate_tl {\dfgMouseHousingGnotobiotic}
              }
            {rat}
              {
                \fp_set:Nn \l_@@_custom_animal_rat_fp
                  {\l_@@_animal_rate_value_tl}
                \tl_set:Nn \l_@@_animal_rate_tl {\dfgRatHousing}
              }
          }
          {
            \tl_set:Ne \l_@@_animal_rate_tl
              {\fp_eval:n {\l_@@_animal_rate_value_tl}}
          }
        \prop_put:NeV \l_@@_animal_types_prop
          {\l_@@_animal_id_tl/label} \l_@@_animal_label_tl
        \prop_put:NeV \l_@@_animal_types_prop
          {\l_@@_animal_id_tl/label-plural} \l_@@_animal_plural_tl
        \prop_put:NeV \l_@@_animal_types_prop
          {\l_@@_animal_id_tl/total-group} \l_@@_animal_group_tl
        \prop_put:NeV \l_@@_animal_types_prop
          {\l_@@_animal_id_tl/housing-rate} \l_@@_animal_rate_tl
      }
  }
\DeclareAnimalType{mouse}
  {label=Mouse,label-plural=Mice,housing-rate=\dfgMouseHousing}
\DeclareAnimalType{mouse-gnotobiotic}
  {label={Mouse~{\footnotesize(gnotobiotic)}},
   label-plural={Mice~(gnotobiotic)},total-group=mouse,
   housing-rate=\dfgMouseHousingGnotobiotic}
\DeclareAnimalType{rat}
  {label=Rat,label-plural=Rats,housing-rate=\dfgRatHousing}
\bool_if:NF \l_@@_class_documentation_bool
```

```
{
\RequirePackage{dfg-timeline}
\RequirePackage{dfg-distribution}
\RequirePackage{dfg-icons}
\file_if_exist:nTF {preamble/dfg-customization.tex}
  { \ExplSyntaxOff \input{preamble/dfg-customization.tex} \ExplSyntaxOn }
  { \msg_warning:nnn { dfg } { file-not-found } {preamble/dfg-customization.tex} }
}
\bool_if:NT \l_@@_class_fastcompile_project_bool
{
  \bool_set_false:N \l_@@_custom_thumbindex_bool
  \bool_set_false:N \l_@@_custom_emphasize_authors_bool
}
```

6.1.8 Colour binding at document start

The `\AtBeginDocument` hooks below transform the stored colour *names* from the `dfg/custom` key family into live `\colorlet` aliases that the rest of the document uses. Deferring this to `\AtBeginDocument` means the user's `\changeSettings` calls in `dfg-customization.tex` are already in force when the bindings run.

The second `\AtBeginDocument` block handles `final`-mode side effects: it resets all drafting flags (both fast modes, tags, marginalia, skip-pubs) to `false`, enables project publications, forces the colour model to `cmyk`, and switches the `color@final@white-or-green` alias from green to white so that any placeholder boxes are invisible in the submitted PDF.

Packages are loaded in an order that avoids common conflicts: xcolor is loaded first (with the `table` option forwarded beforehand) because almost every other package depends on it. tabularray and its siunitx library are set up before hyperref; reversing this order breaks tblr's PDF bookmark integration. hyperref and cleveref are always loaded last (standard LaTeX best practice).

The two-sided A4 layout uses a 20 mm inner margin plus the KOMA-Script `BCOR` binding correction (initially 5 mm), and a 20 mm outer margin. Geometry applies `BCOR` as its binding offset, leaving a 165 mm text block at the default setting. The outer margin accommodates a 13 mm note column and a 2 mm separation from the text, with 5 mm spare. On verso pages, the binding and outer margins, notes, and thumb index all switch sides. The top margin is 20 mm and the bottom margin 15 mm, including the footer. A fixed 12 mm distance from the last text baseline to the footer baseline leaves a 250 mm text block. Reserve 20 pt for two-line project running heads. The header remains outside the text block, so its height does not change the 20 mm top margin or the text height.

```
\RequirePackage{multicol}
% Defensive definition against lineno/multicol conflict
\AtBeginDocument{%
  \@ifpackageloaded{lineno}{%
   \providecommand*{\@LN@col}[1]{\relax}%
  }{}%
}
\RequirePackage{babel}
\RequirePackage{geometry}
\geometry{
  a4paper,
  includefoot,
  headheight     =20pt,
  footskip       =12mm,
  top            =20mm,
  bottom         =15mm,
  inner          =20mm,
  outer          =20mm,
  bindingoffset  =\ta@bcor,
  marginparsep   =2mm,
  marginparwidth =13mm,
  % showframe
}
```

We provide a color which is used during the writing process. Since there are several steps that are calculated on the fly we want to be able to see if they match any criteria or if there has been a wrongly

inserted number. The following colors can be overwritten in the dfg-customization.tex-file. Therefor we load them just before the document starts.

```
\AtBeginDocument{
  \selectcolormodel{\tl_use:N \l_@@_class_color_model_tl}
  \colorlet{color@item@i}{\l_@@_custom_color_item_i_tl}
  \colorlet{color@tags@font}{\l_@@_custom_colorTagsFont_tl}
  \colorlet{color@tags@line}{\l_@@_custom_colorTagsLine_tl}
  \colorlet{color@font@alternative}{\l_@@_custom_colorfontalternative_tl}
  \colorlet{color@reference@boldAuthor}{\l_@@_custom_referenceBoldAuthor_tl}
  \colorlet{tableHeadingsBG}{\l_@@_custom_tableHeadingsBG_tl}
  \colorlet{tableHeadingsBGalt}{\l_@@_custom_tableHeadingsBGalt_tl}
  \colorlet{tableHeadingsFont}{\l_@@_custom_tableHeadingsFont_tl}
  \colorlet{tableRows}{\l_@@_custom_tableRows_tl}
  \colorlet{tableLines}{\l_@@_custom_tableLines_tl}
  \colorlet{tableOuterLines}{\l_@@_custom_tableOuterLines_tl}
  \colorlet{tableNoValue}{\l_@@_custom_tableNoValue_tl}
  \colorlet{tableFirstColumn}{\l_@@_custom_tableFirstColumn_tl}
  \colorlet{tableLink}{\l_@@_custom_tableLink_tl}
  \colorlet{tableContFootHead}{\l_@@_custom_tableContFootHead_tl}
  \colorlet{tableCaption}{\l_@@_custom_tableCaption_tl}
  \colorlet{thumbIndexBG}{\l_@@_custom_thumbIndexBG_tl}
  \colorlet{thumbIndexFont}{\l_@@_custom_thumbIndexFont_tl}
  % all for the gantt chart
  \colorlet{color@gantt@default}{\l_@@_custom_gantt_default_tl}
  \colorlet{color@gantt@alternative}{\l_@@_custom_gantt_alternative_tl}
  \colorlet{color@gantt@frame}{\l_@@_custom_gantt_frame_tl}
  \colorlet{color@gantt@crosshatch}{\l_@@_custom_gantt_crosshatch_tl}
  \colorlet{color@gantt@important}{\l_@@_custom_gantt_important_tl}
  \colorlet{color@gantt@stripe-one}{\l_@@_custom_gantt_stripe_one_tl}
  \colorlet{color@gantt@stripe-two}{\l_@@_custom_gantt_stripe_two_tl}

  % NOTE: The aliases below shadow LaTeX/xcolor standard colour names
  % (black, red, green). Any subsequently loaded package relying on the
  % standard red=RGB(255,0,0) will receive bordeaux-100 instead.
  % Consider using dfg-prefixed aliases if you load additional packages.
  \colorlet{black}{black-100}
  \colorlet{blue}{blue-100}
  \colorlet{blueLight}{blue-50}
  \colorlet{green}{green-100}
  \colorlet{greenLight}{green-50}
  \colorlet{red}{bordeaux-100}
  \colorlet{redLight}{bordeaux-50}
  \colorlet{grey}{black-50}
  \colorlet{greyLight}{black-10}

  \colorlet{projectA}{blue}
  \colorlet{projectB}{green}
  \colorlet{projectQ}{grey}
  \colorlet{error}{red}
  % Inherited reference colors are resolved at the call site. Keep the
  % concrete alias available for PI tables and other fixed-color layouts.
  \tl_if_eq:NnTF \l_@@_custom_referencePI_tl {current}
    { \colorlet{referencePI}{black} }
    { \colorlet{referencePI}{\l_@@_custom_referencePI_tl} }
  \colorlet{referenceWP}{\l_@@_custom_referenceWP_tl}
  \colorlet{referenceAim}{\l_@@_custom_referenceAim_tl}
  % Now closing the AtBeginDocument-part:
}
```

Once you set the flag final the color (green) is replaced by white so it is ready for submission without indicating the doublechecking aspect. If it stays red you should not proceed to submit the proposal.

```
\AtBeginDocument{
  \bool_if:NTF \l_@@_class_final_bool
  {
   \colorlet{color@final@white-or-green}{white}
   \bool_set_false:N \l_@@_class_showmarginalia_bool
   \bool_set_false:N \l_@@_class_showtags_bool
    \bool_set_false:N \l_@@_class_fastcompile_bool
    \bool_set_false:N \l_@@_class_fastcompile_project_bool
    \bool_set_false:N \l_@@_class_fastcompile_project_show_images_bool
    \bool_set_true:N  \l_@@_class_fastcompile_project_show_funding_tables_bool
```

```
    \bool_set_false:N \l_@@_class_skipTENpublications_bool
    \bool_set_true:N \l_@@_class_fastcompile_project_show_publications_bool
   \selectcolormodel{cmyk}
  }
  {
   \colorlet{color@final@white-or-green}{green}
  }
}

\RequirePackage{xspace}
\RequirePackage{etoolbox}

\RequirePackage{ragged2e}
\raggedbottom
```

We are getting rid of having the chapter number added to the figure number, same goes for tables.

```
\counterwithout{figure}{chapter}
\counterwithout{table}{chapter}

\RequirePackage{qrcode}
\RequirePackage{graphicx}
\RequirePackage{mwe}% provides the default example-image-a/b logo placeholders
% Set the graphics mode after loading \pkg{graphicx}.  This explicitly clears
% a previously inherited draft setting when project images are requested and
% makes repeated false/true drafting builds deterministic.
\bool_if:NT \l_@@_class_fastcompile_project_bool
{
  \bool_if:NTF \l_@@_class_fastcompile_project_show_images_bool
    { \setkeys{Gin}{draft=false} }
    { \setkeys{Gin}{draft=true} }
}
\graphicspath{
  {figures/}
  {img/}
}
\RequirePackage{fontspec}
\AtBeginDocument{
  \setmainfont{\tl_use:N \l_@@_custom_font_tl}[
   \tl_use:N \l_@@_custom_fontspec_tl
  ]
  \setsansfont{\tl_use:N \l_@@_custom_sansfont_tl}[
   \tl_use:N \l_@@_custom_sansfontspec_tl
  ]
}

\RequirePackage{fontawesome5}
\RequirePackage{microtype}
\RequirePackage{enumitem}
% customizing bulletpoints
\providecommand{\dfgArrowHead}{\faCaretRight}
\providecommand{\dfgBulletPoint}{\faCaretRight}
\providecommand{\dfgTargetPoint}{\faBullseye}
\providecommand{\dfgDefaultPoint}{\faCaretRight}
\setlist[enumerate]{nosep}
\setlist[description]{
  %leftmargin=*,
  leftmargin=*
}
\setlist[itemize]{
  nosep,
  label={\textcolor{color@item@i}{\dfgDefaultPoint}},
}
\newlist{contractinformation}{itemize}{2}
\setlist[contractinformation,1]{
  nosep,
  leftmargin=*,
  label={\textcolor{color@item@i}{\dfgBulletPoint}},
}
\setlist[contractinformation,2]{
  nosep,
  leftmargin=*,
  label={\textcolor{color@item@i}{\dfgDefaultPoint}},
}
```

6.1.9 Project-body list environments

workpackages A custom enumitem list with `WP\,\arabic*:` labels at level 1 and `WP\,\meta{parent}\alph*:` at level 2. The `resume` option at level 1 means the work-package counter continues across multiple projects in the same document, giving each WP a globally unique number for cross-references. Labels are set via cleveref in `referenceWP` colour. Bold face is scoped to the prefix and label itself so range connectors remain at the surrounding font weight.

aims A special `enumerate` list that automatically wraps its contents in a `\dfgBoxEnv` frame (the blue highlighted aims box). The `before` hook also temporarily sets all reference colours to the table heading font colour so that PI/WP/Aim cross-references inside the aims box are visually consistent with the box style. The `after` hook closes the box.

```
\newlist{workpackages}{enumerate}{3}
\setlist[workpackages,1]{
  % wide=\parindent,
  leftmargin=0cm,
  labelindent=*,
  % leftmargin=*,
  % labelindent=-3em,
  % font=\normalfont,
  % first=\bfseries,
  topsep=3pt,
  font=\bfseries,
  % nosep,
  label={WP\,\arabic*:},
  ref = {\arabic*},
  resume
}

\setlist[workpackages,2]{
  ref={\theworkpackagesi\alph*},
  %wide=\parindent,
  leftmargin=0cm,
  labelindent=*,
  % font=\normalfont,
  % first=\bfseries,
  topsep=0pt,
  font=\bfseries,
  % nosep,
  label={WP\,\theworkpackagesi\alph*:}
}
```

bylaws A three-level enumitem list styled for the bylaws section of the CRC charter. Level 1 uses `§\arabic*` paragraph signs; level 2 uses `\thebylawsi.\arabic*` for sub-paragraphs. Both levels are set `nosep` to conserve vertical space.

```

\newlist{bylaws}{enumerate}{3}
\setlist[bylaws]{leftmargin=*}
\setlist[bylaws,1]{
  font=\bfseries,
  first=\bfseries,
  % after=\normalfont,
  label={§\arabic*},
  % itemsep=.5\baselineskip,
  nosep
}
\setlist[bylaws,2]{
  first=\normalfont,
  label={\thebylawsi.\arabic*},
  labelindent=0em,
}
```

A list for the aims within the projects

```
\newcommand{\addAim}[1]{\item\label{\l__tmp_current_project_tl-aim-#1}}
\newlist{aims}{enumerate}{1}
\setlist[aims,1]{
  before={\begin{dfgBoxEnv}%
    [%watermark text={Aims in }
                left=0mm,right=0pt,
         colupper=blue,
    ]
    \colorlet{referencePI}{tableHeadingsFont}
    \colorlet{referenceWP}{tableHeadingsFont}
    \colorlet{referenceAim}{tableHeadingsFont}},
  after={\end{dfgBoxEnv}},
  wide=\parindent,
  leftmargin=*,
  % font=\normalfont,
  % first=\bfseries,
  topsep=3pt,
  font=\bfseries,
  % nosep,
  label={Aim~ \arabic*:},
  ref = {\arabic*},
  %  resume
}
```

The public `label` option is a prefix, not enumitem's complete label format. Keep the original list and counter so existing list settings and numeric `\ref` values remain valid. A stable type per prefix prevents a later list from renaming earlier references. Store its name in the aux file so cleveref knows it before constructing formats and forward references on the next run. Other enumitem options pass through unchanged. Expand the label explicitly: older expl3 releases provide the hash function without its V variant.

```
\tl_new:N \l_@@_aim_label_tl
\tl_new:N \l_@@_aim_options_tl
\tl_new:N \l_@@_aim_type_tl
\keys_define:nn { dfg / aims }
{
  label .tl_set:N = \l_@@_aim_label_tl,
  label .value_required:n = true,
}
\NewCommandCopy\dfgOriginalAims\aims
\NewCommandCopy\dfgOriginalEndAims\endaims
\cs_new_protected:Npn \@@_aims_begin:n #1
  { \dfgOriginalAims[#1] }
\RenewDocumentEnvironment{aims}{ O{} }
{
  \tl_set:Nn \l_@@_aim_label_tl { \q_no_value }
  \keys_set_known:nnN { dfg / aims } {#1} \l_@@_aim_options_tl
  \quark_if_no_value:NF \l_@@_aim_label_tl
  {
    \tl_set:Ne \l_@@_aim_type_tl
      { dfg-aim-\exp_args:NV \str_mdfive_hash:n \l_@@_aim_label_tl }
    \exp_args:NnV \crefalias { aimsi } \l_@@_aim_type_tl
    \protected@write\@auxout{}
    {
      \string\dfgAimReferenceName
        {\l_@@_aim_type_tl}{\exp_not:V \l_@@_aim_label_tl}
    }
    \tl_put_left:Ne \l_@@_aim_options_tl
    {
      label={\exp_not:V \l_@@_aim_label_tl
        \exp_not:n {~\arabic*:}},
      \exp_not:n {ref={\arabic*},}
    }
  }
  \exp_args:NV \@@_aims_begin:n \l_@@_aim_options_tl
}
{ \dfgOriginalEndAims }
```

6.1.10 Page style (headers and footers)

The page style uses scrlayer-scrpage with a minimal layout: The outer footer shows the page number in bold sans-serif. The inner footer shows the CRC logo (`\crcLogo`) at 0.5 cm height — this places the logo on every page of the proposal for visual identification without cluttering the headers. Both header and footer use `\markcase=noupper` so section titles are not forced to uppercase in running heads. `\footheight` is set explicitly to suppress the scrlayer-scrpage warning about an undersized footer layer.

```
\RequirePackage[
  %headsepline=.5pt,
  markcase=noupper,
  %footsepline,
  autooneside=false, % use left and right marks with a onesided document
  %automark, % set \ leftmark and \ rightmark automatically by \ section and \ subsection
  draft=false,
]{scrlayer-scrpage}
```

First we clear any presettings so we can apply our own style.

```
\clearmainofpairofpagestyles
\pagestyle{scrheadings}
\setlength{\footheight}{17.5264pt}
\renewcommand{\chaptermarkformat}{}
\renewcommand{\sectionmarkformat}{}
\ofoot*{\pagemark}%Clear the outer foot
\ifoot*{\crcLogo[height=0.5cm]}%pagemark in the center only on plain pages
\addtokomafont{pagehead}{\normalfont\sffamily}
\addtokomafont{pagefoot}{\bfseries}
% Mark every shipped page of an aggressive project draft without adding a
% package-level watermark dependency.  The native background hook keeps the
% mark behind authored text and is registered only after final-mode precedence
% has been resolved.
\bool_if:NT \l_@@_class_fastcompile_project_bool
{
  \AddToHook{shipout/background}[dfg/fastcompile-project-watermark]
  {
    \put(0.5\paperwidth,-0.5\paperheight)
    {
      \makebox(0,0)
      {
        \rotatebox{45}
        {
          \textcolor{black!7}
          {
            \sffamily\bfseries\fontsize{100}{50}\selectfont
            FAST~COMPILE
          }
        }
      }
    }
  }
}
```

Remodelling the footnotes for more pleasant display

```
\deffootnote{0em}{0em}{\thefootnotemark\hskip .5em}
\renewcommand{\footnoterule}{%
  % \kern -4.5pt
  % \hrule width \textwidth height 0.5pt
  % \kern 4pt
}
```

6.1.11 Heading fonts (KOMA-Script customisation)

All heading sizes and weights are re-declared here to achieve a compact, dense layout that conserves space on the tightly page-budgeted DFG forms: `disposition` applies `\normalfont\sffamily\bfseries`, giving all heading levels a shared bold sansserif base before selecting their size. Chapter headings (section dividers) are set at 20 pt bold to stand out without the very large spacing of `\Huge`. Sections use 12 pt bold type; subsections and

subsubsections use 11 pt type for a compact hierarchy. Section, subsection, and subsubsection headings have one baseline of space above them. Body text starts on the next line with no additional after-skip or first-line indent; zero after-skip does not make a run-in heading. The first paragraph gap after a displayed heading is rigid. A paragraph hook cancels the inserted skip and replaces it with its natural dimension while KOMA's no-break flag still marks the heading context. This also covers starred headings and chapters without changing subsequent paragraph gaps or the paragraph settings inside table cells. The cancelling skip must retain the complete glue components; using only its natural dimension would leave the original stretch and shrink in place. Numbered section and subsection titles use the same 12 mm number column, so the title text begins at one horizontal position throughout the project information block. This also gives wrapped titles a matching hang indent. The TOC is configured to omit chapter page numbers (they would be meaningless given the DFG form structure) and to show section entries with a dash-style page separator. Project TOC entries deliberately use only their compact project number, so the fixed number column remains narrow and ordinary section titles are not pushed unnecessarily far to the right.

```
\setkomafont{title}{\Huge\bfseries}
% \setkomafont{disposition}{\normalfont}
\setkomafont{disposition}{\normalfont\sffamily\bfseries}
\setkomafont{descriptionlabel}{\normalfont\bfseries}
%\setkomafont{chapter}{\huge\bfseries}
%\setkomafont{section}{\normalsize\bfseries}
%\setkomafont{subsection}{\normalsize}
%\setkomafont{subsubsection}{\normalsize}
\setkomafont{chapter}{\fontsize{20}{10}\selectfont\bfseries}
\setkomafont{section}{\fontsize{12}{10}\selectfont\bfseries}
\setkomafont{subsection}{\fontsize{11}{11}\selectfont}
\setkomafont{subsubsection}{\fontsize{11}{11}\selectfont}
\renewcommand*{\chapterformat}{\makebox[12mm][l]{\thechapter\autodot}}
\renewcommand*{\sectionformat}{\makebox[12mm][l]{\thesection\autodot}}
\renewcommand*{\subsectionformat}{\makebox[12mm][l]{\thesubsection\autodot}}
\setkomafont{footnotenumber}{\normalfont\sffamily}
\setkomafont{pageheadfoot}{\normalfont\footnotesize\sffamily}
\skip_new:N \l_@@_heading_parskip_skip
\AddToHook{para/before}[dfg/fixed-heading-gap]
{
  \if@nobreak
    \skip_set:Nn \l_@@_heading_parskip_skip {\lastskip}
    \skip_vertical:n {-\l_@@_heading_parskip_skip}
    \skip_vertical:n {\dim_eval:n {\l_@@_heading_parskip_skip}}
  \fi
}
```

Adjusting the style for the table of contents. First we want to have the normalfont for the chapter entries

```
\addtokomafont{chapterentry}{\normalfont}

\RedeclareSectionCommands[
  font=\usekomafont{subsection},
  % beforeskip=1pt,
  % afterskip=.5pt
]{subsubsection}

\RedeclareSectionCommands[
  tocraggedpagenumber,
  toclinefill=\tocpageseparator,
  tocindent=0em,
  tocnumwidth=4em,
  tocpagenumberbox=\tocpagenumberbox,% <- added
  % tocpagenumberformat=\textsf,
  beforeskip= 1\baselineskip,
  afterskip= 0pt,
  runin=false,
  afterindent=false
]{section,subsection,subsubsection}

\RedeclareSectionCommands[
  tocbeforeskip=2ex,
```

```
  tocentryformat=\bfseries\large,
]{section}

\newcommand\tocgobble[1]{}% <- added
\newcommand\tocpageseparator{\normalsize\bfseries\,\mbox{\color{\l_@@_custom_tableLines_tl}---}\,}
\newcommand\tocpagenumberbox[1]{\mbox{#1}}% <- added
% no page number for chapters in TOC
\RedeclareSectionCommands[
  tocraggedpagenumber,
  toclinefill           =\tocgobble,
  tocindent             =0em,
  tocnumwidth           =4em,
  tocpagenumberbox      =\tocgobble,% <- added
  % tocpagenumberformat =\textsf,
  beforeskip            = 0ex,
  afterskip             =0.1ex,
  tocentryformat        =\bfseries\Large\sffamily,
]{chapter}
```

the depth of chapter is configurable, so using this is instead of a absolute number is recommended

```
\setcounter{secnumdepth}{\subsectiontocdepth}
\setcounter{tocdepth}{\subsectiontocdepth}
```

6.1.12 ORCiD display commands

Two commands render ORCiD identifiers:

`\ORCiD{`⟨***0000-0000-0000-0000***⟩**`}`** Inline use: renders the ORCiD icon followed by the ID as a hyperlink. Intended for manual insertion in text.

`\getORCiD[`⟨***db***⟩**`]{`**⟨***id***⟩**`}`** Database-driven use: looks up the `orcid` field from the `person` database for the given person ID and renders `\ORCiD` automatically. If the field is missing, a `missing-orcid` warning is raised instead of silently omitting the identifier. The warning is suppressed during the tabularray measuring pass (`\lTblrMeasuringBool`) to avoid duplicates.

The ORCiD brand green (`orcid` colour) is defined in the colour palette section above. The icon uses the academicons `\aiOrcid` glyph.

```
\RequirePackage{pifont}
\RequirePackage{academicons}
% ============================================================================
% ORCiD commands
% ============================================================================

% Store the ORCiD value pulled from the database.
\providecommand{\theORCiDValue}{}

% --- Icon ------------------------------------------------------------------
\NewDocumentCommand{\orcidIcon}{}
{{\sffamily\textcolor{orcid}{\aiOrcid}}}

% --- Pure value-only lookup (no immediate output) ---------------------------
% Fetch the ORCiD value from the database into \theORCiDValue.
% Useful when the value has already been loaded by a previous multi-fetch step,
% or when formatting is needed later.
\NewDocumentCommand{\getORCiDvalue}{O{person} m}
{%
  % #1: Database (default is person)
  % #2: Person id
  \bool_if:NTF \l_@@_class_fastcompile_project_bool
  { \cs_set:Npn \theORCiDValue { } }
  { \DTLgetvalueforkey{\theORCiDValue}{orcid}{#1}{id}{#2} }%
}

% --- Formatting a preloaded ORCiD value -------------------------------------
% Expects \theORCiDValue to be set (for example via \getORCiDvalue or
% per \getEntry*[...]{id}{\theORCiDValue=orcid, ...}).
\NewDocumentCommand{\formatORCiD}{O{person} m}
{%
  % #1: Database (for warnings / tag overlay)
```

```
  % #2: Person id (for warnings / tag overlay)
  \DTLifnulloremptyt{\theORCiDValue}
  {%
   \bool_if:NF \lTblrMeasuringBool
   { \msg_warning:nnee {dfg}{missing-orcid}{#1}{#2} }%
   \mbox{~} % if no orcid present
  }
  {%
   \orcidIcon\,%
   \dfgShowTag{#2}{orcid}
   {\href{https://orcid.org/\theORCiDValue}{\theORCiDValue}}[#1]%
  }%
}

% --- Convenience command: fetch + format in a single call -------------------
% Keep the same API as the original \getORCiD so existing calls continue
% to work.
\NewDocumentCommand{\getORCiD}{O{person} m}
{%
  % #1: Database (default is person)
  % #2: Person id
  \bool_if:NF \l_@@_class_fastcompile_project_bool
  {
    \getORCiDvalue[#1]{#2}%
    \formatORCiD[#1]{#2}%
  }
}

% --- Inline variant for literal ORCiD values --------------------------------
% For direct values without database lookup.
\NewDocumentCommand{\ORCiD}{m}
{(\raisebox{-1pt}{\orcidIcon}\,\href{https://orcid.org/#1}{#1})}
```

6.1.13 siunitx configuration

siunitx options must be forwarded with `\PassOptionsToPackage` *before* the package is implicitly loaded by `\UseTblrLibrary{siunitx}`, otherwise they arrive too late.

Key choices: `group-minimum-digits=4`: numbers with 4+ digits get a thousands separator (so `90600` formats as `90,600` EUR). `group-separator={,}`: European style comma separator. `table-auto-round=true`: silently rounds values to fit the `table-format` without requiring `\num` wrappers everywhere. `drop-zero-decimal=true`: suppresses redundant decimal zeros in numeric and EUR cells while retaining genuinely fractional values such as explicit animal-housing rates. `mode=match`: inherits the surrounding text font, so numbers in tables match the `\footnotesize` row font automatically. `text-family-to-math=true`, `text-series-to-math=true`: pass the current font family and series into math mode, keeping bold/italic numbers consistent with their surrounding text.

```
\PassOptionsToPackage{
  mode =  match,
  propagate-math-font = true,
  % reset-math-version  = false,
  % reset-text-family   = false,
  % reset-text-series   = false,
  % reset-text-shape    = false,
  text-family-to-math = true,
  text-series-to-math = true,
  tight-spacing       = true,
  group-minimum-digits  = 4, % --> 1.234 instead of 1234
  group-separator        = {,},% for "12.345" instead of "12 345" %
  table-format          = 6,
  table-alignment-mode  = format,
  table-auto-round      = true,
  drop-zero-decimal     = true,
  locale                = UK,
  input-decimal-markers = {.},
  output-decimal-marker = {.},
  input-ignore          = {,},
  parse-numbers         = true
}{siunitx}
```

This is the package for our tables and we are using quite a bunch of additional libraries.

```
\RequirePackage{tabularray}
\UseTblrLibrary{booktabs}
\UseTblrLibrary{diagbox}
\UseTblrLibrary{siunitx}
\UseTblrLibrary{counter}
\UseTblrLibrary{functional}
```

6.1.14 tabularray setup and table themes

tabularray renders each cell *twice*: once in a hidden measuring pass to determine column widths, and once for final output. This means every database query, numeric calculation or warning inside a cell body would be executed twice. The global boolean `\g_@@_tblr_inside_bool` (toggled via environment hooks) lets code detect the measuring pass so it can skip expensive side effects (e.g. the `missing-key` warning is suppressed when `\lTblrMeasuringBool` is `true`).

```
\bool_new:N \g_@@_tblr_inside_bool
% -- Hook into the beginning and ending of the tblr environment ---------------
\AddToHook{env/tblr/begin}{\bool_set_true:N \g_@@_tblr_inside_bool}
\AddToHook{env/tblr/end}{\bool_set_false:N \g_@@_tblr_inside_bool}
```

6.1.15 Custom table definition

Base Table Theme Defines the shared templates and outer settings used by all table themes. The table font size is established as an ambient declaration here instead of through a `rows={font=...}` property. A more specific cell property such as `font=\bfseries` replaces a row font property, but it inherits an ambient `\footnotesize`; an explicit size in the cell property can still override the default.

```
% Resolve the default after the final document fonts have been selected.
% Include a normal ascender when measuring the body line and a descender
% when measuring the subsection, matching their ordinary paragraph leading.
\AddToHook{begindocument/end}{
  \dim_compare:nNnT {\dfgTablePreSep} < {0pt}
  {
    \group_begin:
      \normalfont\normalsize
      \hbox_set:Nn \l_tmpa_box {Agl}
      \dim_set:Nn \l_tmpa_dim {\box_ht:N \l_tmpa_box}
      \hbox_set:Nn \l_tmpa_box
        {\usekomafont{disposition}\usekomafont{subsection}Ag}
      \skip_gset:Nn \dfgTablePreSep
        {\dim_max:nn {0pt}
          {\baselineskip + \parskip - \l_tmpa_dim - \box_dp:N \l_tmpa_box}}
    \group_end:
  }
}
% Long tables and short direct-cost blocks share one outer gap.
\SetTblrOuter[tblr]{label=none,entry=none,presep=\dfgTablePreSep,headsep=4pt}
\cs_new_protected:Npn \@@_table_start:
{
  \par
  % Commit a heading to the page without adding another baseline gap.
  \if@nobreak
    \hrule height 0pt width 0pt\relax\nobreak
  \fi
}
% Tabularray subtracts topskip after moving a table to a fresh page.  When
% a preceding heading moves with the table, that page already has content:
% subtracting topskip would shorten the heading-to-table gap by one line.
\cs_new_protected:Npn \@@_tblr_page_topskip:
{
  \dim_compare:nNnTF {\pagetotal} > {\topskip}
    {\kern-\lineskip}
    {\kern-\topskip}
  \nobreak
}
\msg_new:nnn {dfg} {table-spacing-compatibility}
  {Could~not~adjust~tabularray's~page-start~spacing;~its~internal~layout~has~changed.}
```

```
\tl_set:No \l_tmpa_tl {\__tblr_build_long_table:n {#1}}
\exp_args:NnV \regex_count:nnN
  {\c{kern} - \c{topskip} \c{nobreak}} \l_tmpa_tl \l_tmpa_int
\int_compare:nNnTF {\l_tmpa_int} = {3}
  {
    \regex_replace_all:nnN
      {\c{kern} - \c{topskip} \c{nobreak}}
      {\c{@@_tblr_page_topskip:}} \l_tmpa_tl
    \cs_set_protected:Npe \__tblr_build_long_table:n #1
      {\exp_not:V\l_tmpa_tl}
  }
  {\msg_warning:nn {dfg} {table-spacing-compatibility}}
% For long tables:
\cs_new_protected:Npn \mytblr_basecode: {
  \footnotesize
  % Continuous head/footer templates (use ~ for spaces)
  \DeclareTblrTemplate {conthead-text}{default}{%
   \normalfont\color{tableContFootHead}%
   \sffamily\footnotesize%
   \ldots~continuing~from~previous~page.%
  }
  \DeclareTblrTemplate {contfoot-text}{default}{%
   \normalfont\color{tableContFootHead}%
   \sffamily\footnotesize%
   Continue~on~the~following~page~\ldots%
  }
  % Caption continuation uses conthead
  \DeclareTblrTemplate {capcont}{default}{%
   \UseTblrTemplate{conthead-text}{default}%
  }
  % Keep all text rendered below a table at least at footnote size.
  \SetTblrStyle{note-tag}{font=\footnotesize}
  \SetTblrStyle{note-sep}{font=\footnotesize}
  \SetTblrStyle{note-text}{font=\footnotesize}
  \SetTblrStyle{remark-tag}{font=\footnotesize}
  \SetTblrStyle{remark-sep}{font=\footnotesize}
  \SetTblrStyle{remark-text}{font=\footnotesize}
  % Use native raggedright consistently for all left-aligned table cells.
  \RenewDocumentCommand \TblrAlignLeft {} {\raggedright}%
  % Common outer settings
}
```

Table themes Three named tblr themes are provided. All inherit the shared `\mytblr_basecode:` helper (continuous head/footer templates, left alignment) via a direct call at theme definition time.

plain: minimal two-rule + alternating-row look used for simple supplementary tables (e.g. the direct-costs breakdown).

```
\NewTblrTheme{plain}{
  \mytblr_basecode:
  % plain-only inner tweaks:
  \SetTblrInner{
    % Keep row metrics independent of descenders such as p, q, f.
    stretch   = 1,
    rowsep    = .667pt,
   row{even}={bg=tableRows},
   width=\linewidth,
   hline{1,Z}={1pt,fg=tableOuterLines},
  }
}
```

main: the full-featured style used by all DFG data tables. Adds a styled first-row header (blue background, bold sans-serif text), a midrule below row 1, caption fonts, and row continuation labels for long tables that span multiple pages. Header text uses `valign=m` (vertical centre), including multirow headings. Explicit row and cell options can override this default.

```
\NewTblrTheme{main}{
  \mytblr_basecode:
  % Keep wrapped remarks flush left, including printTable's appended notes.
  \SetTblrStyle{remark}{hang=0pt}
  % main-only styles & inner grid:
```

```
  \SetTblrStyle{caption-tag}{font=\bfseries\footnotesize\sffamily,tableCaption}
  \SetTblrStyle{caption-text}{
   tableCaption,
   font=\footnotesize,
   halign=l
  }
  \SetTblrStyle{caption}{halign=l}
  \SetTblrTemplate{caption}{simple}
  \SetTblrInner{%
   row{odd}      ={bg=tableRows},
   width         =\linewidth,
   hline{1,Z}    ={1pt,fg=tableOuterLines},
   rowhead       = 1,
   width         = \textwidth,
   hline{1,Z}    = {
    1pt,
    fg = tableOuterLines
   },
   hline{2} = {1pt, fg=tableOuterLines}, % midrule
    % Keep row metrics independent of descenders such as p, q, f.
    stretch   = .9,
    rowsep    = 1pt,
   row{1}       = {
    bg       = tableHeadingsBG,
    fg       = tableHeadingsFont,
        font     = \bfseries,
    halign   = {c},
        valign   = {m},
        abovesep = 3pt,
    guard
   },
  }%
  % \SetTblrInner{
  %   rows={ht=.5\baselineskip},
  %   rowsep       = 0pt,
  % }
}
```

requestedFundingStaff: caption styling for the staff roster without a table-wide row background. This lets the roster mark individual non-applicable cells with the `tableNoValue` background.

```
\NewTblrTheme{requestedFundingStaff}{
  \mytblr_basecode:
  \SetTblrStyle{caption-tag}{font=\bfseries\footnotesize\sffamily,tableCaption}
  \SetTblrStyle{caption-text}{tableCaption,\footnotesize}
}
```

A generic long-table environment. The leading optional argument supplies outer tabularray options, including notes and remarks. The optional argument after the column specification supplies inner options; both default to empty. Let tabularray measure the caption normally; negative skips can pull it into the preceding paragraph or the top rule of the table.

```
\NewDocumentEnvironment{TableEnv}{ O{} m O{} m m }
{
  % #1: Outer specs
  % #2: colspec
  % #3: further options
  % #4: caption
  % #5: label
  \@@_table_start:
  \begin{tblr}[%
   %  expand=\tblrbody,
    theme  =main,
    label  ={#5},
    entry  ={#4},
    caption={#4},
    long,
    #1
  ]{%
    % Set the body default first so explicit column alignments take precedence.
    row{2-Z}={halign=l},
    colspec ={#2},
   rowhead = 1, %<- first row is head
```

```
    row{1}={valign=m},
    #3 %<- in case we need further adjustments
  }
}
{\end{tblr}\par}
```

At the final part of projects the costs must be listed more granularly. Use a long table that may break between rows. Its optional unnumbered heading is the first caption, keeping it with the first row at page breaks. Measure the currency column at its natural width: a fixed 0.5cm column is too narrow for EUR in some document fonts. The X description column absorbs the width difference while the amount column stays rightmost.

```
\NewDocumentEnvironment{FundingDirectCostsTable}{O{}}
{
  \@@_table_start:
  \setlength{\parskip}{0pt}
  % Keep an unnumbered heading in the first table head, so it cannot be
  % stranded above a page break. Empty headings add no first-head space.
  \SetTblrTemplate{caption}{simple}
  \SetTblrStyle{caption}{halign=l}
  \SetTblrStyle{caption-text}{font=\footnotesize\bfseries\sffamily}
  \tl_if_blank:nT {#1}{\SetTblrTemplate{firsthead}{empty}}
  \begin{tblr}[%
    theme=plain, long, label=none, entry=none, caption={#1}, postsep=0pt]{
    colspec={
      X[t]
      Q[t,r]
      Q[t,si={table-format=9}]
    },
    rowhead=0,
  }
}
{\end{tblr}\par}


\RequirePackage{caption}
\captionsetup{%
  % format=llapx,
  hypcap=false,
  format=plain,
  singlelinecheck=off,
  labelsep={colon}, % saving space
  %justification=RaggedRight,
  font={footnotesize,sf},
  labelfont={
    sf,
    bf, % bold face
   }
}
% KOMA's caption name also applies to figures boxed by hvFloat.
\renewcaptionname{english}{\figurename}{Fig.}
\RequirePackage{pgfgantt}
\RequirePackage{placeins}
% hvfloat loads picture; its calc mode remains supported by picture v2.
\PassOptionsToPackage{calc}{picture}
\RequirePackage{hvfloat} % load after tabularray!!
% Built-in named plot style. Define it here so customization can select it
% without deferring a package command; selection is applied when printing.
\hvFloatSet{capPos=bottom,capVPos=top,floatPos=!hb}% this are the default values.
\RequirePackage{marginalia}
\marginaliasetup{
  xsep=0pt,
  width=13mm,
  style=\raggedleft\footnotesize,
  pos=auto,
}
\bool_if:NTF \l_@@_class_cv_bool
  {
    \tl_set_eq:NN \l_@@_custom_biblatexstyle_active_tl
      \l_@@_custom_biblatexstyle_cv_tl
    \tl_set_eq:NN \l_@@_custom_biblatexfeatures_active_tl
      \l_@@_custom_biblatexfeatures_cv_tl
  }
```

```
    {
      \tl_set_eq:NN \l_@@_custom_biblatexstyle_active_tl
        \l_@@_custom_biblatexstyle_proposal_tl
      \tl_set_eq:NN \l_@@_custom_biblatexfeatures_active_tl
        \l_@@_custom_biblatexfeatures_proposal_tl
    }
  \RequirePackage[
    backend=biber,
    % using the most common style and also saving space.
    % style=ext-numeric, % taken from biblatex-ext
    % just in case we want to switch the style.
    % style=ext-alphabetic,
    %style=ext-authornumber-ecomp,
    style=\l_@@_custom_biblatexstyle_active_tl,
    %introcite=label,
    autocite=inline,
    defernumbers=true, % reset numbered bibliography for each chapter
    giveninits=true, % abbreviate the first names
    maxcitenames=1,
    mincitenames=1,
    maxbibnames=99, % show up to 6 authors of an bib entry (et al. thereafter)
    %nohashothers=true,
    %uniquelist=true,
    %uniquename=allfull,
    %labeldatepartes=true
    \l_@@_custom_biblatexfeatures_active_tl
  ]{biblatex}
```

Select the title locally, after loading an entry. The standard field keeps Biber imports and external bibliography tools compatible. Both bibliography items and full citations through `\usedriver` need the same selection. Using starred `\savefield` avoids a global scratch assignment; restoring only the current entry preserves full titles for later lists and groups.

```
  \tl_new:N \l_@@_journal_short_title_tl
  \cs_new_protected:Npn \@@_select_journal_title:
    {
      \str_if_eq:VnT \l_@@_custom_journal_title_tl {shortjournal}
        {
          \iffieldundef{shortjournal}
            {}
            {
              \savefield*{shortjournal}{\l_@@_journal_short_title_tl}
              \restorefield{journaltitle}{\l_@@_journal_short_title_tl}
              \clearfield{journalsubtitle}
            }
        }
    }
  \AtEveryBibitem{\@@_select_journal_title:}
  \AtUsedriver{\@@_select_journal_title:}
```

In final documents, biblatex-ext-oa can mark open-access publications directly in the bibliography. Draft documents do not load the package, so they avoid DOI API checks and related warnings. The DOI API backend is useful, but biblatex-ext-oa-doiapi and the `doiapi` option can only be used with LuaLaTeX. With LuaTeX binaries from version 1.17.0 onwards, the LuaSocket module `socket.http` is exposed only when LuaTeX is started with the command-line option `--socket`. If we always passed `doiapi=true` in final mode, a normal final compile without `--socket` would abort while loading biblatex-ext-oa-doiapi.

After a user opts in with a contact address, the guard asks LuaTeX whether `require("socket.http")` succeeds. The result is written back into the temporary expl3 string `\l_tmpa_str` as the literal text `true` or `false`. The Lua code is written without TeX-relevant whitespace, because expl3 ignores spaces while tokenising this part of the class source; semicolons keep the Lua syntax unambiguous after docstrip has generated the `.cls` file.

Automatic lookup is enabled only when LuaSocket is available and the user has supplied a non-empty `doiAPIMail` → P. 83. The address is passed to `\SetDOIAPIMail`; the class never sends a placeholder or maintainer address on behalf of its users. If either prerequisite is missing, the class emits a specific warning and loads biblatex-ext-oa with `doiapi=false` so manual BibTeX

annotations such as `doi+an:default = {=openaccess}` continue to work.

API-based markers keep their linked symbols, but the additional “open access version at” text and URL are suppressed.

The TikZ symbol package draws the open-access symbols. The `oanet` symbol is the open-access symbol from open-access.net (https://open-access.net/), logo by Medien + Design, Center for Digital Systems, Competence Center for E-Learning and Multimedia, Freie Universität Berlin, CC BY 4.0 (https://creativecommons.org/licenses/by/4.0/).

```
\cs_new_protected:Npn \@@_biblatex_oa_load_without_api:
  {
    \RequirePackage[
      doiapi=false,
      symbolpackage=tikz,
      symbol=oanet]{biblatex-ext-oa}
  }

\bool_if:NT \l_@@_class_final_bool
  {
    \tl_if_blank:VTF \l_@@_custom_doi_api_mail_tl
      {
        \msg_info:nn { dfg } { biblatex-ext-oa-doiapi-email-missing }
        \@@_biblatex_oa_load_without_api:
      }
      {
        \str_set:Nx \l_tmpa_str
          {
            \directlua
              {if(pcall(require,"socket.http"))then;tex.sprint("true");else;tex.sprint("false");end}
          }
        \str_if_eq:VnTF \l_tmpa_str { true }
          {
            \RequirePackage[
              doiapi=true,
              symbolpackage=tikz,
              symbol=oanet]{biblatex-ext-oa}
            \ExecuteBibliographyOptions{openaccess=doiapi}
            \renewbibmacro*{api:bestoaurl}{}
            \exp_args:NV \SetDOIAPIMail \l_@@_custom_doi_api_mail_tl
          }
          {
            \msg_warning:nn { dfg } { biblatex-ext-oa-doiapi-unavailable }
            \@@_biblatex_oa_load_without_api:
          }
      }
  }
% A project-text build with publication processing disabled must not require a
% matching biber run merely to keep inline source references readable.  Replace
% the common single-citation commands with quiet key markers; enabling
% |fastcompile-project-show-publications| restores biblatex's normal commands unchanged.
\bool_if:nTF
  {
    \l_@@_class_fastcompile_project_bool
    && ! \l_@@_class_fastcompile_project_show_publications_bool
  }
  {
    % Do not register bibliography data sources or parse a stale full-build
    % .bbl.  Keep biblatex's ordinary initialisation and refsection setup, but
    % replace its data-file stage with the minimum empty-section state.
    \cs_set_protected:Npn \blx@bblfile
      {
        \blx@secinit
        \blx@generate@bbl@mdfivesum@notfound
        \global\togglefalse{blx@bbldone}
        \csnumgdef{blx@labelnumber@\the\c@refsection}{0}
      }
    \NewDocumentCommand{\dfgFastCitation}{m}
      { {\color{black-50}\scriptsize\ttfamily [#1]} }
    \RenewDocumentCommand{\autocite}{s o o m}
      { \dfgFastCitation{#4} }
    \RenewDocumentCommand{\cite}{s o o m}
      { \dfgFastCitation{#4} }
```

```
    \RenewDocumentCommand{\parencite}{s o o m}
      { \dfgFastCitation{#4} }
    \RenewDocumentCommand{\textcite}{s o o m}
      { \dfgFastCitation{#4} }
    \RenewDocumentCommand{\footcite}{s o o m}
      { \dfgFastCitation{#4} }
    \RenewDocumentCommand{\smartcite}{s o o m}
      { \dfgFastCitation{#4} }
    \RenewDocumentCommand{\nocite}{m} { }
    % Ignore citation requests restored from auxiliary files produced by a full
    % proposal build.  The fast source commands above do not write replacements.
    \cs_set_protected:Npn \abx@aux@cite   #1#2   { }
    \cs_set_protected:Npn \abx@aux@segm   #1#2#3 { }
    \cs_set_protected:Npn \abx@aux@nocite #1#2   { }
    % This mode deliberately has no bibliography work, so do not advertise a
    % biber rerun in the end-of-document logreq record.
    \AtEndDocument
    {
      \global\let\blx@rerun@biber\relax
      \global\togglefalse{blx@runbiber}
    }
  }
  {
    \bool_if:NF \l_@@_class_documentation_bool
    {
    \addbibresource{bib/dfg-base.bib}
    % The conversion workflow stores bibliography entries that still need
    % review separately.  Load that file when present without requiring it for
    % normal template installations.
    \IfFileExists{bib/conversion-missing.bib}
      {\addbibresource{bib/conversion-missing.bib}}
      {}
    \addbibresource{bib/dfg-strings.bib}
    }
  }
```

The `\AtEveryBibitem` hook strips fields that are irrelevant for a funding proposal (URL, month, note, ISSN/ISBN, language) from every entry, keeping the reference list compact. These fields are cleared during output only; the `.bib` source files are unchanged. A second part of the hook selects the full-entry bold face. The frame and project bibliography wrappers set a local keyword only while printing their list; biblatex groups each item, so the font change does not leak into the following entry. The hook runs after `\bibfont` and before the entry's fields are printed.

```
\bool_if:NTF \l_@@_class_documentation_bool
  {\newcommand\DFGBoldNamesFile{\jobname-boldAuthors.bib}}
  {\newcommand\DFGBoldNamesFile{bib/\jobname-boldAuthors.bib}}
\bool_if:NF \l_@@_class_fastcompile_project_show_publications_bool
  {\PassOptionsToPackage{noauthors}{dfg-bib-highlights}}
\RequirePackage{dfg-bib-highlights}
\RenewDocumentCommand \DFGBibIfAuthorsTF {mm}
  {\bool_if:NTF\l_@@_custom_emphasize_authors_bool{#1}{#2}}
\RenewDocumentCommand \DFGBibIfEntriesTF {mm}
  {\bool_if:NTF\l_@@_custom_emphasize_entries_bool{#1}{#2}}
\cs_set:Npn \DFGBibNameColor {color@reference@boldAuthor}
\keys_define:nn {dfgbib/setup}
  {emphasizeAuthors .meta:nn = {dfg/custom}{emphasizeAuthors=#1},
   emphasizeEntries .meta:nn = {dfg/custom}{emphasizeEntries=#1},
   color .code:n =
     {\changeSettings{color@reference@boldAuthor={#1}}
      \colorlet{color@reference@boldAuthor}{#1}}}
\AtEveryBibitem{
  \clearfield{url}
  \clearfield{month}
  \clearfield{note}
  \clearfield{issn}
  \clearfield{isbn}
  \clearlist{language}
}
```

6.1.16 Shared authorship annotations

The annote field in .bib entries supports two special values: equal (for equal-first-author contributions) and sharedlast (for shared last authorship). When present, \mkbibnamefamily appends an asterisk * after the family name via \addendumasterisk. The asterisk is only printed inside bibliography environments (\ifbibliography), not in inline citations.

Use in .bib: add addendum = equal or addendum = sharedlast (no {}) to the affected author's annotation field.

```
\newcommand{\addendumasterisk}{\ifbibliography{*}{}}
\newcommand{\addendumhashtag}{\ifbibliography{\textsuperscript{\#}{}}}
% There is also the possibility that authors share the last authorship.
% with the bib-string `lastShared` we can get it work.
\renewcommand*{\mkbibnamefamily}[1]{%
  \ifitemannotation{equal} % first check for equal contribution
  {#1\addendumasterisk}% add a * for those authors
  {
   % Then we check for "shared last authorship"
   \ifitemannotation{sharedlast}%
   {#1\addendumhashtag}% adding a symbol
   {#1}% do nothing for any one else.
  }}

% \subsection{datatool: database backend}
%
% \pkg{datatool} provides the |DTL*| commands that are the actual in-memory
% database engine behind the keyset-based metadata system.  \pkg{csquotes}
% is loaded just before it because \cs{blockcquote} is used in the
% documentation abstract and the class patches \cs{mkccitation} to suppress
% the extra parentheses that csquotes adds around \cs{autocite} results.
\RequirePackage{csquotes}
\renewcommand{\mkccitation}[1]{ (#1)}
\RequirePackage{datatool}
```

loading tikz at least for the thumb index.

```
\RequirePackage{tikz}
\ExplSyntaxOff
\usetikzlibrary{calc}
\usetikzlibrary{shapes.misc}
\usetikzlibrary{patterns,patterns.meta}
\ExplSyntaxOn
```

loading these two packages last

```
\RequirePackage{hyperref}
\RequirePackage{footnotehyper}
\RequirePackage{cleveref}
% enumitem creates a dedicated counter for each custom-list level but does not
% expose the parent relation to cleveref.  Register that relation so nested
% work-package references sort by parent first and ranges never cross parents.
\apptocmd{\cref@resetby}
  {\cref@ifstreq{#1}{workpackagesii}{\def#2{workpackagesi}}{}}
  {}
  {\PackageError{dfg}
    {Unable~to~register~the~nested~work-package~counter}
    {Nested~work-package~references~may~be~sorted~incorrectly.}}
% labelcref requires one reference type for mixed parent/child lists.
% Keep the parent-counter registration above for sorting and range boundaries.
\crefalias{workpackagesii}{workpackagesi}
\crefname{workpackagesi}{\color{referenceWP}\textbf{WP}}{\color{referenceWP}\textbf{WPs}}
\creflabelformat{workpackagesi}{\color{referenceWP}#2\textbf{#1}#3}
\crefname{workpackagesii}{\color{referenceWP}\textbf{WP}}{\color{referenceWP}\textbf{WPs}}
\creflabelformat{workpackagesii}{\color{referenceWP}#2\textbf{#1}#3}

\crefname{aimsi}{\bfseries\color{referenceAim}Aim}{\bfseries\color{referenceAim}Aims}
\creflabelformat{aimsi}{\color{referenceAim}#2\color{referenceAim}\bfseries#1\color{referenceAim}#3}
% Aux-file entry point: use the authored spelling for both reference forms.
\NewDocumentCommand{\dfgAimReferenceName}{m m}
{
  \crefname{#1}{\bfseries\color{referenceAim}#2}
    {\bfseries\color{referenceAim}#2}
```

```
1850    \Crefname{#1}{\bfseries\color{referenceAim}#2}
1851      {\bfseries\color{referenceAim}#2}
1852    \creflabelformat{#1}
1853      {\color{referenceAim}##2\bfseries##1##3}
1854    % The kernel reads aux files in a group, after cleveref's format setup.
1855    % Preserve only the names globally; cleveref's format builders already
1856    % make global definitions without leaking their temporary variables.
1857    \clist_map_inline:nn { cref,Cref }
1858    {
1859      \cs_gset_eq:cc {##1@#1@name} {##1@#1@name}
1860      \cs_gset_eq:cc {##1@#1@name@plural} {##1@#1@name@plural}
1861    }
1862    \@crefdefineallformats{#1}
1863  }
1864
1865
1866  % \subsection{Preamble end: global metadata extraction and hyperref}
1867  %
1868  % The \cs{AfterEndPreamble} hook fires after all user preamble code
1869  % (including |dfg-customization.tex| and all \cs{addEntry} calls) but
1870  % before \cs{begin}|{document}|.  This is the earliest point at which
1871  % the |meta| database is guaranteed to be fully populated.
1872  %
1873  % The block extracts the five core CRC fields into named macros
1874  % (\cs{theCRCname}, \cs{theCRCnumber}, \cs{theCRCaffiliation}, etc.)
1875  % that are used in headers, footers, and the hyperref PDF metadata.  It
1876  % treats |meta.ref-affiliation-id| as a comma-separated list: the public
1877  % affiliation macros contain human-readable name and location lists, while
1878  % \cs{theApplicantID} retains the normalized id list for database filters.  It
1879  % also derives \cs{theFundingPeriodNumeralPrevious} by subtracting 1 from
1880  % \cs{theFundingPeriodNumeral}, which is used in the gender equality tables
1881  % to reference the previous funding period.
1882  %
1883  % The \cs{hypersetup} call here (rather than in the preamble) avoids
1884  % needing the user to duplicate CRC metadata in a separate hypersetup block.
1885  \clist_new:N \l_@@_applicant_affiliation_id_clist
1886  \seq_new:N \l_@@_applicant_affiliation_name_seq
1887  \seq_new:N \l_@@_applicant_affiliation_location_seq
1888  \seq_new:N \l_@@_other_applicant_affiliation_name_seq
1889  \tl_new:N \l_@@_applicant_affiliation_name_tl
1890  \tl_new:N \l_@@_applicant_affiliation_location_tl
1891
1892  \cs_new_protected:Npn \@@_set_applicant_affiliation_metadata:
1893  {
1894    \DTLifnulloremptyf{\theApplicantID}
1895      { \clist_clear:N \l_@@_applicant_affiliation_id_clist }
1896      {
1897        \clist_set:Nx \l_@@_applicant_affiliation_id_clist
1898          { \theApplicantID }
1899        \clist_remove_duplicates:N \l_@@_applicant_affiliation_id_clist
1900      }
1901    \tl_set:Nx \l_tmpa_tl
1902      { \clist_use:Nn \l_@@_applicant_affiliation_id_clist {,} }
1903    \cs_set:Npx \theApplicantID { \exp_not:V \l_tmpa_tl }
1904    \cs_set_eq:NN \theAffiliationValue \theApplicantID
1905    \seq_clear:N \l_@@_applicant_affiliation_name_seq
1906    \seq_clear:N \l_@@_applicant_affiliation_location_seq
1907    \clist_map_inline:Nn \l_@@_applicant_affiliation_id_clist
1908    {
1909      \DTLifdbexists{affiliation}
1910      {
1911        \DTLgetvalueforkey{\l_@@_applicant_affiliation_name_tl}
1912          {name}{affiliation}{id}{##1}
1913        \DTLgetvalueforkey{\l_@@_applicant_affiliation_location_tl}
1914          {location}{affiliation}{id}{##1}
1915      }
1916      {
1917        \tl_set:Nn \l_@@_applicant_affiliation_name_tl {##1}
1918        \tl_clear:N \l_@@_applicant_affiliation_location_tl
1919      }
1920      \DTLifnulloremptyf{\l_@@_applicant_affiliation_name_tl}
1921        { \tl_set:Nn \l_@@_applicant_affiliation_name_tl {##1} }
1922        { }
1923      \tl_set:Ne \l_tmpb_tl
```

```
    {
      \exp_not:N \dfgShowTag{##1}{name}
        {\exp_not:V \l_@@_applicant_affiliation_name_tl}[affiliation]
    }
    \seq_put_right:NV \l_@@_applicant_affiliation_name_seq \l_tmpb_tl
    \DTLifnulloremptyl{\l_@@_applicant_affiliation_location_tl}
      { }
      {
        \seq_if_in:NVF \l_@@_applicant_affiliation_location_seq
          \l_@@_applicant_affiliation_location_tl
        {
          \tl_set:Ne \l_tmpb_tl
          {
            \exp_not:N \dfgShowTag{##1}{location}
              {\exp_not:V \l_@@_applicant_affiliation_location_tl}
              [affiliation]
          }
          \seq_put_right:NV \l_@@_applicant_affiliation_location_seq
            \l_tmpb_tl
        }
      }
  }
  \cs_set:Npn \theCRCaffiliation
  {
    \seq_use:Nnnn \l_@@_applicant_affiliation_name_seq
      {~and~} {,~} {,~and~}
  }
  \cs_set:Npn \theCRCaffiliationLocation
  {
    \seq_use:Nnnn \l_@@_applicant_affiliation_location_seq
      {~and~} {,~} {,~and~}
  }
  \seq_set_eq:NN \l_@@_other_applicant_affiliation_name_seq
    \l_@@_applicant_affiliation_name_seq
  \seq_pop_left:NNF \l_@@_other_applicant_affiliation_name_seq \l_tmpa_tl
    { \tl_clear:N \l_tmpa_tl }
  \cs_set:Npn \theCRCCoordinatingAffiliation
    { \seq_item:Nn \l_@@_applicant_affiliation_name_seq {1} }
  \cs_set:Npn \theCRCOtherApplicantAffiliations
  {
    \seq_use:Nnnn \l_@@_other_applicant_affiliation_name_seq
      {~and~} {,~} {,~and~}
  }
}

\NewExpandableDocumentCommand{\dfgApplicantAffiliationsTF}{m m}
{
  \int_compare:nNnTF
    { \clist_count:N \l_@@_applicant_affiliation_id_clist } > {1}
    {#2}
    {#1}
}

\NewExpandableDocumentCommand{\dfgOtherApplicantAffiliationsTF}{m m}
{
  \int_compare:nNnTF
    { \clist_count:N \l_@@_applicant_affiliation_id_clist } > {2}
    {#2}
    {#1}
}

\NewDocumentCommand{\dfgCRCName}{}
  { \dfgShowTag{crc}{name}{\theCRCname}[meta] }
\NewDocumentCommand{\dfgCRCNameAddon}{}
  { \dfgShowTag{crc}{nameAddon}{\theCRCnameAddon}[meta] }
\NewDocumentCommand{\dfgCRCNumber}{}
  { \dfgShowTag{crc}{number}{\theCRCnumber}[meta] }
\NewDocumentCommand{\dfgFundingPeriodText}{}
  { \dfgShowTag{crc}{fundingPeriodText}{\theFundingPeriodText}[meta] }
\NewDocumentCommand{\dfgFundingPeriodNumeral}{}
  { \dfgShowTag{crc}{fundingPeriodNumeral}{\theFundingPeriodNumeral}[meta] }
\NewDocumentCommand{\dfgFundingYear}{m}
{
  \dfgShowTag{crc}{fundingYear#1}
```

```
1998    {
1999      \int_case:nnF {#1}
2000      {
2001        {1}{\tmpYearOne}
2002        {2}{\tmpYearTwo}
2003        {3}{\tmpYearThree}
2004        {4}{\tmpYearFour}
2005        {5}{\tmpYearFive}
2006      }
2007      {#1}
2008    }[meta]
2009  }
2010  \NewDocumentCommand{\dfgFundingYearPrevious}{m}
2011  {
2012    \dfgShowTag{crc}{fundingYearPrevious#1}
2013    {
2014      \int_case:nnF {#1}
2015      {
2016        {1}{\tmpYearPreviousOne}
2017        {2}{\tmpYearPreviousTwo}
2018        {3}{\tmpYearPreviousThree}
2019        {4}{\tmpYearPreviousFour}
2020        {5}{\tmpYearPreviousFive}
2021      }
2022      {#1}
2023    }[meta]
2024  }
2025
2026  \AfterEndPreamble{
2027    \bool_if:NTF \l_@@_class_fastcompile_project_bool
2028    {
2029      \clist_clear:N \l_@@_applicant_affiliation_id_clist
2030      \cs_set:Npn \theApplicantID                   { }
2031      \cs_set:Npn \theCRCname                       { CRC~project~draft }
2032      \cs_set:Npn \theCRCnameAddon                  { }
2033      \cs_set:Npn \theCRCnumber                     { draft }
2034      \cs_set:Npn \theFundingPeriodNumeral          { 1 }
2035      \cs_set:Npn \theFundingPeriodText             { draft }
2036      \cs_set:Npn \theAffiliationValue              { }
2037      \cs_set:Npn \theCRCaffiliation                { }
2038      \cs_set:Npn \theCRCaffiliationLocation        { }
2039      \cs_set:Npn \theCRCCoordinatingAffiliation    { }
2040      \cs_set:Npn \theCRCOtherApplicantAffiliations{ }
2041      \cs_set:Npn \tmpYearOne                       { Year~1 }
2042      \cs_set:Npn \tmpYearTwo                       { Year~2 }
2043      \cs_set:Npn \tmpYearThree                     { Year~3 }
2044      \cs_set:Npn \tmpYearFour                      { Year~4 }
2045      \cs_set:Npn \tmpYearFive                      { Year~5 }
2046      \cs_set:Npn \tmpYearPreviousOne               { Previous~year~1 }
2047      \cs_set:Npn \tmpYearPreviousTwo               { Previous~year~2 }
2048      \cs_set:Npn \tmpYearPreviousThree             { Previous~year~3 }
2049      \cs_set:Npn \tmpYearPreviousFour              { Previous~year~4 }
2050      \cs_set:Npn \tmpYearPreviousFive              { Previous~year~5 }
2051    }
2052    {
2053    \DTLgetvalueforkey{\theApplicantID}{ref-affiliation-id}{meta}{id}{crc}
2054    \DTLgetvalueforkey{\theCRCname}{name}{meta}{id}{crc}% getting Title of CRC
2055    \DTLgetvalueforkey{\theCRCnameAddon}{nameAddon}{meta}{id}{crc}% getting name addon of CRC
2056    \DTLgetvalueforkey{\theCRCnumber}{number}{meta}{id}{crc}% getting number of CRC
2057    \DTLgetvalueforkey{\theFundingPeriodNumeral}{fundingPeriodNumeral}{meta}{id}{crc}% getting period of CR
2058    \DTLgetvalueforkey{\theFundingPeriodText}{fundingPeriodText}{meta}{id}{crc}% getting period of CRC
2059    \@@_set_applicant_affiliation_metadata:
2060    \DTLgetvalueforkey{\tmpYearOne}  {fundingYear1}{meta}{id}{crc}%
2061    \DTLgetvalueforkey{\tmpYearTwo}  {fundingYear2}{meta}{id}{crc}%
2062    \DTLgetvalueforkey{\tmpYearThree}{fundingYear3}{meta}{id}{crc}%
2063    \DTLgetvalueforkey{\tmpYearFour} {fundingYear4}{meta}{id}{crc}%
2064    \DTLgetvalueforkey{\tmpYearFive} {fundingYear5}{meta}{id}{crc}%
2065
2066    \DTLgetvalueforkey{\tmpYearPreviousOne}  {fundingYearPrevious1}{meta}{id}{crc}%
2067    \DTLgetvalueforkey{\tmpYearPreviousTwo}  {fundingYearPrevious2}{meta}{id}{crc}%
2068    \DTLgetvalueforkey{\tmpYearPreviousThree}{fundingYearPrevious3}{meta}{id}{crc}%
2069    \DTLgetvalueforkey{\tmpYearPreviousFour} {fundingYearPrevious4}{meta}{id}{crc}%
2070    \DTLgetvalueforkey{\tmpYearPreviousFive} {fundingYearPrevious5}{meta}{id}{crc}%
2071    }
```

```
2072
2073
2074    \providecommand{\thisCRC}
2075      {CRC\,\texorpdfstring
2076        {\dfgShowTag{crc}{number}{\theCRCnumber}[meta]}
2077        {\theCRCnumber}\xspace}
2078    % Shared implementation for the user-level \CRC and \TRR commands.
2079    % #1 is the star boolean, #2 the optional title, #3 the printed programme
2080    % type, and #4 the CRC/TRR number to print and compare with the current CRC.
2081    % Current CRCs use \thisCRC in the unstarred form; starred current references
2082    % include the CRC title from the metadata unless an explicit title is given.
2083    % External CRCs/TRRs always print the requested number and add the optional
2084    % title when one is supplied.
2085  \cs_new_protected:Npn \@@_crc_print:nnnn #1 #2 #3 #4
2086    {
2087      \tl_if_eq:VnTF \theCRCnumber {#4}
2088        {
2089          \IfBooleanTF{#1}
2090            {
2091              #3\,#4
2092              \IfValueTF{#2}
2093                { \ \textit{#2} }
2094                { \ \textit{\dfgShowTag{crc}{name}{\theCRCname}[meta]} }
2095            }
2096            {
2097              \thisCRC
2098              \IfValueT{#2}
2099                { \ \textit{#2} }
2100            }
2101        }
2102        {
2103          #3\,#4
2104          \IfValueT{#2}
2105            { \ \textit{#2} }
2106        }
2107    }
2108
2109    % User-level wrappers around \@@_crc_print:nnnn. They differ only in the
2110    % printed programme type.
2111  \NewDocumentCommand{\CRC}{s o m}
2112    {
2113      \@@_crc_print:nnnn {#1} {#2} {CRC} {#3}
2114    }
2115
2116  \NewDocumentCommand{\TRR}{s o m}
2117    {
2118      \@@_crc_print:nnnn {#1} {#2} {CRC/\allowbreak TRR} {#3}
2119    }
2120    % Bookmark text must consume the same stars/options without running the
2121    % protected typesetting commands or metadata tags.
2122  \cs_new:Npn \@@_crc_pdf:nnnn #1#2#3#4
2123    {
2124      \str_if_eq:eeTF {\theCRCnumber} {#4}
2125        {
2126          \IfBooleanTF{#1}
2127            {#3~#4~\IfValueTF{#2}{#2}{\theCRCname}}
2128            {CRC~\theCRCnumber\IfValueT{#2}{~#2}}
2129        }
2130        {#3~#4\IfValueT{#2}{~#2}}
2131    }
2132  \NewExpandableDocumentCommand{\@@_crc_pdf:}{s o m}
2133    { \@@_crc_pdf:nnnn {#1}{#2}{CRC}{#3} }
2134  \NewExpandableDocumentCommand{\@@_trr_pdf:}{s o m}
2135    { \@@_crc_pdf:nnnn {#1}{#2}{CRC/TRR}{#3} }
2136  \pdfstringdefDisableCommands
2137    {
2138      \let\CRC\@@_crc_pdf:
2139      \let\TRR\@@_trr_pdf:
2140      \def\thisCRC{CRC~\theCRCnumber}
2141    }
2142   %\DTLgetvalueforkey{\theNameSpokespersonPosition}{position}{VIP}{specialRole}{spokesperson}% getting Tit
2143    %\DTLgetvalueforkey{\theNameSpokespersonName}{name}{VIP}{specialRole}{spokesperson}% getting Title of C
2144    %\DTLgetvalueforkey{\theNameSpokespersonNameFirst}{nameFirst}{VIP}{specialRole}{spokesperson}% getting
2145    \newcommand{\theFundingPeriodNumeralPrevious}{%
```

```
2146     \number\numexpr\theFundingPeriodNumeral-1\relax%
2147    }
2148    % hyperref options
2149    \hypersetup{          % setup the hyperref-package options
2150     % unicode      = true,
2151     pdftitle     = {\theCRCname.\space\theCRCnameAddon},  %   - title (PDF meta)
2152     pdfsubject   = {\crc},%   - subject (PDF meta)
2153      pdfauthor    = {CRC~\theCRCnumber~\theCRCname},  %   - author (PDF meta)
2154     %   pdfauthortitle = {\theNameSpokespersonPosition},
2155     %   pdfcopyright = {Copyright (c) \thisCRC All rights reserved.},
2156     pdfhighlight = /N,
2157     pdfdisplaydoctitle = true,
2158     pdflang     = {en},
2159     %   pdfcaptionwriter = {\theNameSpokespersonNameFirst \theNameSpokespersonName},
2160     % pdfencoding = auto,
2161     pdfproducer = {LuaLaTeX},
2162     % pdflicenseurl = {http://creativecommons.org/licenses/by-nc-nd/4.0/},
2163     % plainpages  = false,      %   -
2164     colorlinks  = true, % -Colours links instead of ugly boxes
2165     urlcolor    = blue, %Colour for external hyperlinks
2166     linkcolor   = black,%rwthBlue, %Colour of internal links
2167     citecolor   = black, %Colour of citations
2168     % linkbordercolor=rwthRed,
2169     linktoc     = page,
2170      pdfborder   = {0~0~0},      % Explicit spaces are required under ExplSyntaxOn.
2171     breaklinks  = true,      %   - allow line break inside links
2172     bookmarksnumbered  = true,     %
2173     bookmarksopenlevel = 1,
2174     bookmarksopen      = true,     %
2175     bookmarksdepth     = 3,
2176     %  final       = true,  % = true, only for web documents.
2177     %  hypertexnames = false,
2178     %  pageanchor=false,
2179     %https://tex.stackexchange.com/questions/623377/how-to-increase-the-setting-dest-names-
     size-using-lualatex-on-tl-2021
2180    }
2181  }
```

6.1.17 \changeSettings

`\changeSettings{`⟨*key=value,...*⟩`}` is the public command used to customise the document class beyond its defaults. It delegates directly to `\keys_set:nn{dfg/custom}{\meta{key=value,...}}`.

It should be called inside `preamble/dfg-customization.tex` so that all customisations are centralised. Examples:

Typical changeSettings call

```
%   \changeSettings{
%     font                        = Arial,
%     crcLogoPath                 = img/logo-crc,
%     affiliationLogoPath         = img/logo-affiliation,
%     doiAPIMail                  = researcher@example.org,
%     projectPIOncePerSection     = true,
%     collaborationAreaColors     = {A=projectA,B=projectB,Q=projectQ},
%     collaborationAreaPalette    = {orange,violet,teal,brown},
%     salary@postDoc              = 90000,
%     animalHousing@mouse         = 0.80,
%     thumbindex                  = false,
%     biblatexstyleCV             = ext-numeric-comp,
%     biblatexstyleFeatureCV      = {sorting=none},
%     biblatexstyleProposal       = ext-authoryear-ecomp,
%     biblatexstyleFeatureProposal= {},
%     color@table@rows            = blue-10,
%   }
%
```

The command is defined before biblatex is loaded so bibliography package options from the

customization file take effect in time.

6.1.18 Thumb index implementation

The thumb index is a series of colour tabs printed on the outer margin of each page to help readers navigate between chapters or project sections. Each tab occupies one slot in a vertical grid that repeats with a period equal to `thumbindex@pattern` (default: 10).

Geometry calculation: `\thumb_compute_height:` calculates the slot height as `(\cs{paperheight} - topmargin - bottommargin) / pattern`. In the default `auto` mode, the margins are derived from the current text-block position and `\textheight`, so the slot height is `\textheight / pattern`. The calculation runs when the tab is drawn, allowing later layout changes to affect the thumb-index grid.

Placement: `\thumb_place_node:nnnn` builds the tab in the active running head, preserving its font and colour, and queues the finished zero-size box for `shipout/background`, beneath the page text and graphics (including the tab label). The frozen page-edge coordinates centre the tab at `topmargin + height*(index-1/2)`. Page offsets are compensated in the hook, so explicit `\hoffset` and `\voffset` keep the tab on the physical edge. No saved picture origin or second LaTeX pass is needed for tab placement. The rectangular tab has 7pt rounded corners and is shifted 7pt past the page boundary, clipping the outer corners while retaining the configured visible depth. Its label is rotated 90 degrees in opposite directions on facing pages so the tab stays within the marginal column. The default `thumbindex@orientation=outwards` points the tops of the letters towards the outer edge. Choosing `inwards` adds 180 degrees to the label rotation on both sides, without changing the tab geometry. The label is inset 2 mm towards the text block on either side; paired horizontal kerns leave the tab dimensions and placement unchanged.

Call pattern: `\printThumbIndex[`⟨*options*⟩`]{`⟨*label*⟩`}` resets the two active colour aliases from the configured defaults, then applies the call's `bg`/`fg` keys. A bare colour is shorthand for `bg`; a token-list expansion also accepts option lists or colours supplied by macros. The aliases and head assignments persist for following pages within the surrounding TeX scope; the configured defaults are never rewritten. Each next call starts from those defaults. The command increments the slot counter, wrapping at `pattern`, then installs the callbacks in the outer running heads via `\lehead`/`\lohead`, including their plain-page forms. The foreground callback is scheduled only when that page's head is built, including plain pages; empty page styles schedule no tab. The options allow project-specific hues (typically the `projectA`, `projectB`, `projectQ` aliases). With thumb indexing disabled, neither options nor colours are evaluated and the slot counter remains unchanged.

`\printThumbIndexOff` clears the outer running-head fields to suppress the tab on pages where no thumb index is desired (e.g. the bibliography). `\resetThumbIndex` resets the slot counter so that the next `\printThumbIndex` call starts at the first slot again. This is useful when a manually inserted section should begin a new thumb-index sequence.

```
2182  \RequirePackage{dfg-thumbindex}
```

6.1.19 Bold-author mechanism

The DFG requires that the names of all CRC project leaders are printed in bold in every bibliography list so reviewers can immediately identify the investigators' output. This is technically non-trivial because biblatex does not natively support singling out individual author names.

The implementation uses a hash-based approach:

1. For each PI, `\addboldnames` → P. 94 is called with their name as it appears in the `.bib` file (and all common aliases via `name-alias` → P. 67). Each name is written as a `\@misc dataonly` entry to an auxiliary `.bib` file.
2. During the `\AfterPreamble` pass, the cite command `\nhblx@getmethehash` processes

each entry and extracts its biblatex internal hash (a fingerprint stable across style changes) into the list \nhblx@boldhashes.

3. The name wrapper boldifhashinlist applies \mkboldifhashinlist to every printed author name; if the author's hash appears in the list, the name is wrapped in \mkbibbold and coloured with color@reference@boldAuthor.

The backend is initialized whenever publications are enabled, so a project can turn author emphasis on even if it was disabled in the customization file. The name wrapper checks emphasizeAuthors at rendering time. Fallback no-op definitions of \addboldnames → P. 94 and \resetboldnames → P. 94 are provided via \providecommand so that content files compile correctly when fast project mode disables publications entirely.

\addboldnames → P. 94 should be called in the preamble of both the proposal document and the standalone CV document, typically inside preamble/dfg-customization.tex. For displaying certain authors in bold letters, emphasizeAuthors → P. 90 (for the switch) and \addboldnames → P. 94 (for the addition of authors).

```
% Implemented by dfg-bib-highlights.sty.
```

6.1.20 Database infrastructure and key families

All structured data in the proposal (people, projects, institutions, funding entries, …) is stored in datatool databases at compile time. Each database is created lazily: \addEntry → P. 3 checks whether the named database already exists and creates it if not, eliminating the need for explicit initialisation calls.

The central mechanism relies on the L3 variable \l_@@_database_name_tl, which holds the name of the currently-active database while a \keys_set:nn call is in progress. Every .code:n handler in a keyset calls \DTLnewdbentry with that variable as the database name, so no explicit database name is needed inside the keyset definition itself.

The token list is reset in each call to \addEntry → P. 3 and is wrapped in a \group_begin:/end: pair to prevent it from leaking across independent \addEntry → P. 3 calls.

Input validation strategy Choice-valued keys (e.g. gender → P. 79, project-type → P. 71) use .choices:nn with an unknown .code:n handler wired to the dfg/invalid-value message. Free-text keys accept any input. Required keys are marked with .value_required:n = true so that omitting them produces an immediate error rather than a silent empty database field.

```
\tl_new:N \l_@@_database_name_tl
```

Keyset meta The meta database holds exactly one row with id=crc that describes the CRC itself. Its fields are read in \AfterEndPreamble to populate the global macros used in headers, footers, and PDF metadata (\theCRCname, \theCRCnumber, \theCRCaffiliation, etc.).

The fundingYears → P. 80 and fundingYearsPrevious → P. 80 keys accept a comma-separated list of calendar years (one per funding year) and expand them into individually named fields fundingYear1 …fundingYear5, which are used e.g. as column headers in the Gantt chart title row.

fundingPeriodNumeral → P. 80 (1, 2 or 3) drives all period-filtered queries: only personnel with a matching period entry are included in the project leader table and the gender equality analysis.

```
\keys_define:nn { meta }{
  id              .code:n     =  \DTLnewdbentry{\l_@@_database_name_tl}{id}{#1},
  id              .value_required:n = true,
  name      .code:n  = \DTLnewdbentry{\l_@@_database_name_tl}{name}{#1},
  nameAddon .code:n  = \DTLnewdbentry{\l_@@_database_name_tl}{nameAddon}{#1},
  number    .code:n  = \DTLnewdbentry{\l_@@_database_name_tl}{number}{#1},
  fundingPeriodNumeral .choices:nn = { 1 , 2 , 3 }
```

```
    {
     % store the numeral itself
     \DTLnewdbentry{\l_@@_database_name_tl}{fundingPeriodNumeral}{#1}
     % map numeral → text without a property list
     \int_case:nnF {#1}
     {
      { 1 } { \DTLnewdbentry{\l_@@_database_name_tl}{fundingPeriodText}{first} }
      { 2 } { \DTLnewdbentry{\l_@@_database_name_tl}{fundingPeriodText}{second} }
             { 3 } { \DTLnewdbentry{\l_@@_database_name_tl}{fundingPeriodText}{third} }
     }
     {
      % fallback (should not happen because of the .choices clause)
         \msg_warning:nnnn { dfg } { invalid-value }
      { #1 } { 1 , 2 , 3 }
     }
    } ,
   fundingPeriodNumeral / unknown .code:n =
    {
       \msg_warning:nnnn { dfg } { invalid-value }
     { #1 } { 1 , 2 , 3 }
    } ,
   fundedSince          .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{fundedSince}{#1},
   fundingYears .code:n =
    {
     \seq_set_from_clist:Nn \l_meta_funding_years_seq {#1}
     %--- create the individual entries -----------------
     \int_zero_new:N \l_tmpa_int
     \seq_map_inline:Nn \l_meta_funding_years_seq
     {
      \int_incr:N \l_tmpa_int
      \DTLnewdbentry
      {\l_@@_database_name_tl}
      {fundingYear\int_use:N \l_tmpa_int}
      {##1}
     }
    },
   fundingYearsPrevious .code:n =
    {
     \seq_set_from_clist:Nn \l_meta_funding_years_previous_seq {#1}

     %--- create the individual entries -----------------
     \int_zero_new:N \l_tmpa_int
     \seq_map_inline:Nn \l_meta_funding_years_previous_seq
     {
      \int_incr:N \l_tmpa_int
      \DTLnewdbentry
      {\l_@@_database_name_tl}
      {fundingYearPrevious\int_use:N \l_tmpa_int}
      {##1}
     }
    },
   ref-affiliation-id  .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{ref-affiliation-
  id}{#1},
  }
```

Keyset GenderEquality This keyset is used to populate the `\GenderEqualityStaffTable` and `\GenderEqualityProjectLeadersTable`. Each row stores one position-level target for the upcoming funding period alongside the previous period's objective for comparison.

The live counts (current numbers of female/male/diverse staff per position and period) are *computed* at render time from the `person` database — they are not entered manually. Only the percentage-female objective values need to be provided here.

```
\keys_define:nn { GenderEquality }{
  position                              .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{position}{#1},
  previous-objective-percentage-female .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{previous-
objective-percentage-female}{#1},
  status-quo-number-female             .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{status-
quo-number-female}{#1},
  status-quo-percentage-female         .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{status-
quo-percentage-female }{#1},
```

```
2250    future-objective-percentage-female   .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{future-
      objective-percentage-female}{#1},
2251  }
```

Multi-value helper: `\__dfg_set_filtered_clist:Nnn` Several keys (`role`, `period`) accept comma-separated lists rather than a single choice. The private helper `\__dfg_set_filtered_clist:Nnn{\meta{result}}{\meta{valid}}{\meta{input}}` iterates over the input list, drops any item that is not in the valid list (and emits an `invalid-value` warning for it), and stores the cleaned result in a clist variable. This is used instead of `.choices:nn` because the standard choices handler only accepts a single value.

```
2252  \clist_new:N \l_@@_person_tmp_period_clist
2253  \clist_new:N \l_@@_person_tmp_role_clist
2254  \clist_new:N \l_@@_keys_tmp_clist
2255  \cs_new_protected:Npn \_@@_set_filtered_clist:Nnn #1#2#3
2256  {
2257    % #1: clist variable in which valid values are stored
2258    % #2: clist of valid values
2259    % #3: clist of given values
2260    % function assumes none of the values contain braces or `#` tokens
2261    \clist_set:Nn \l_@@_keys_tmp_clist {#2}
2262    \clist_clear:N #1
2263    \clist_map_inline:nn {#3}
2264    {
2265     \clist_if_in:NnTF \l_@@_keys_tmp_clist {##1}
2266     { \clist_put_right:Nn #1 {##1} }
2267      { \msg_warning:nnne { dfg } { invalid-value } {##1}
2268        { \clist_use:Nn \l_@@_keys_tmp_clist {,~} } }
2269    }
2270  }
```

Keyset project One row per CRC sub-project. The `id` → P. 79 is the short project letter (e.g. `A01`); `number` → P. 80 is the DFG-assigned project number; `name` → P. 80 is the full project title; optional `short-title` supplies its concise alternative. `projectTitle` settings choose full or short separately for TOC, running head and project-start title, without altering stored `name` values. `project-type` → P. 71 and `project-status` → P. 71 control how the project appears in tables and are choice-validated.

The `research-area` → P. 72 key is a tick-list of DFG classification codes in the form `1.11-01` (see the property list in Section 6.1.24). Multiple codes are passed as a brace-grouped comma list.

The `ref-person-id` → P. 67 and `collaboration` → P. 72 values are comma lists. Whitespace surrounding individual IDs is ignored and the canonical, space-free list is stored in the database. Thus `{person-a,person-b,person-c}` and `{person-a, person-b, person-c}` are equivalent for every later consumer. The optional project `period={1,2,3}` list records funding-period membership independently of PI histories. Empty lists represent unfunded projects. The publication-network preprocessor uses these explicit memberships; current proposal periods may also describe projects proposed for the next phase. The optional `project-area` key controls the area row in collaboration plots. When omitted, the first character of the project ID is used as a fallback.

The `legal-issues` → P. 72 sub-keyset mirrors the questions from the DFG online portal's project-information form (`L1` → P. 72–`L7` → P. 73). Nested key-value parsing is triggered via a single `legal-issues={...}` block.

```
2271  \cs_new_protected:Npn \@@_new_clist_dbentry:nnn #1#2#3
2272  {
2273    \clist_set:Nn \l_tmpa_clist {#3}
2274    \exp_args:NnnV \DTLnewdbentry {#1} {#2} \l_tmpa_clist
2275  }
2276
2277  \bool_new:N \l_@@_project_consider_for_lists_bool
2278  \bool_new:N \l_@@_project_reference_only_bool
2279  \bool_new:N \g_@@_project_count_ready_bool
2280
2281  \keys_define:nn { project }{
```

```
2282    id                        .code:n           =   \DTLnewdbentry{\l_@@_database_name_tl}{id}{#1},
2283    id                        .value_required:n = true,
2284    number                    .code:n           = \DTLnewdbentry{\l_@@_database_name_tl}{number}{#1},
2285    number                    .value_required:n = true,
2286    name                      .code:n           = \DTLnewdbentry{\l_@@_database_name_tl}{name}{#1},
2287    short-title               .code:n           = \DTLnewdbentry{\l_@@_database_name_tl}{short-
      title}{#1},
2288    short-title               .value_required:n = true,
2289    project-type              .choices:nn       =  { research,service,mgk,admin} {\DTLnewdbentry{\l_@@_datab
      type}{#1}},
2290    project-type / unknown    .code:n           = {\msg_warning:nnnn { dfg } { invalid-
      value }{ #1 }{research,service,mgk,admin}},
2291    project-type              .value_required:n = true,
2292    project-status            .choices:nn       =  { N,E,C} {\DTLnewdbentry{\l_@@_database_name_tl}{project-
      status}{#1}},
2293    project-status / unknown .code:n           = {\msg_warning:nnnn { dfg } { invalid-
      value }{ #1 }{N,E,C}},
2294    project-status            .value_required:n = true,
2295    consider-for-lists            .choices:nn       = { true,false }
2296      { \str_if_eq:nnTF {#1} {true}
2297          { \bool_set_true:N \l_@@_project_consider_for_lists_bool }
2298          { \bool_set_false:N \l_@@_project_consider_for_lists_bool } },
2299    consider-for-lists / unknown .code:n            =
2300      { \msg_warning:nnnn { dfg } { invalid-value } {#1} {true,false} },
2301    consider-for-lists            .value_required:n = true,
2302    reference-only            .choices:nn       = { true,false }
2303      { \str_if_eq:nnTF {#1} {true}
2304          { \bool_set_true:N \l_@@_project_reference_only_bool }
2305          { \bool_set_false:N \l_@@_project_reference_only_bool } },
2306    reference-only / unknown .code:n           =
2307      { \msg_warning:nnnn { dfg } { invalid-value } {#1} {true,false} },
2308    reference-only            .value_required:n = true,
2309    research-area             .code:n           = \DTLnewdbentry{\l_@@_database_name_tl}{research-
      area}{#1},
2310    project-area              .code:n           = \DTLnewdbentry{\l_@@_database_name_tl}{project-
      area}{#1},
2311    period                    .code:n           =
2312      {
2313        \@@_set_filtered_clist:Nnn \l_tmpa_clist {1,2,3} {#1}
2314        \exp_args:NnnV \DTLnewdbentry{\l_@@_database_name_tl}{period}\l_tmpa_clist
2315      },
2316    period                    .value_required:n = true,
2317    ref-person-id             .code:n           =
2318    \@@_new_clist_dbentry:nnn {\l_@@_database_name_tl} {ref-person-id} {#1},
2319    collaboration             .code:n           =
2320    \@@_new_clist_dbentry:nnn {\l_@@_database_name_tl} {collaborations} {#1},
2321    collaborations            .meta:n           = {collaboration={#1}},
2322    legal-issues              .code:n           = { \keys_set:nn { project / legal-
      issues  } { #1 } }
2323  }
```

The `legal-issues` key in a `project` entry accepts a sub-keyset that maps each legal-issue question to a value. The questions fall into two groups, which are handled differently:

Main questions (L1→P.72, L2→P.72, L3→P.72, L4→P.72, L5→P.72, L6→P.73, L7→P.73) Each must be answered with exactly `yes` or `no`. Any other value triggers a warning via `\person_questions_invalid:n`, and no database entry is created.

Sub-questions (L1a→P.72, L2a→P.72, L5a→P.72, L7a→P.73) These are conditional follow-ups whose answer only matters when the corresponding main question was answered with `yes`. Sub-questions accept `yes`, `no`, or an empty value. An empty value records an empty cell in the database, which the typesetting code treats as “not answered” and consequently does not render in the legal-issues table.

The asymmetry exists because forcing every sub-question to be answered would require authors to fill in irrelevant follow-ups whenever the parent question is `no` – for example, providing an answer to “has legal authorization been obtained” for a project that does not involve human embryonic stem cells in the first place. Allowing an empty value lets the data file mirror the structure of the questionnaire: only the relevant cells need to be filled in.

Internally, the main questions use the l3keys CTAN .choices:nn property, which natively rejects values outside the allowed set. The sub-questions cannot use .choices:nn directly because that property does not accept the empty string as a choice; they instead dispatch through the helper \dfg_legal_subq:nn, which inspects the supplied value and creates a database entry when the value is yes, no, or empty, and warns otherwise.

Example of a complete legal-issues block in a project entry:

Example entries for legal-issues

```
% legal-issues = {
%   L1  = {yes},
%   L1a = {yes},       % L1 was true, follow-up answered
%   L2  = {no},
%   L2a = {},           % L2 was false, follow-up irrelevant
%   L3  = {yes},
%   L4  = {no},
%   L5  = {no},
%   L5a = {},
%   L6  = {yes},
%   L7  = {yes},
%   L7a = {yes}
% }
%
```

The empty values for L2a P. 72 and L5a P. 72 are valid: they correspond to follow-ups whose parent question was answered no, so no follow-up information is required or rendered.

```
\keys_define:nn { project / legal-issues }
{
  % main questions: must be yes/no
  L1  .choices:nn = { yes, no } { \DTLnewdbentry{\l_@@_database_name_tl}{L1} {#1} },
  L2  .choices:nn = { yes, no } { \DTLnewdbentry{\l_@@_database_name_tl}{L2} {#1} },
  L3  .choices:nn = { yes, no } { \DTLnewdbentry{\l_@@_database_name_tl}{L3} {#1} },
  L4  .choices:nn = { yes, no } { \DTLnewdbentry{\l_@@_database_name_tl}{L4} {#1} },
  L5  .choices:nn = { yes, no } { \DTLnewdbentry{\l_@@_database_name_tl}{L5} {#1} },
  L6  .choices:nn = { yes, no } { \DTLnewdbentry{\l_@@_database_name_tl}{L6} {#1} },
  L7  .choices:nn = { yes, no } { \DTLnewdbentry{\l_@@_database_name_tl}{L7} {#1} },
  %
  % sub-questions: yes / no / empty all allowed
  L1a .code:n = { \dfg_legal_subq:nn {L1a} {#1} },
  L2a .code:n = { \dfg_legal_subq:nn {L2a} {#1} },
  L5a .code:n = { \dfg_legal_subq:nn {L5a} {#1} },
  L7a .code:n = { \dfg_legal_subq:nn {L7a} {#1} },
  %
  % unknown handlers (only need them for the binary keys)
  L1  / unknown .code:n = { \person_questions_invalid:n {#1} },
  L2  / unknown .code:n = { \person_questions_invalid:n {#1} },
  L3  / unknown .code:n = { \person_questions_invalid:n {#1} },
  L4  / unknown .code:n = { \person_questions_invalid:n {#1} },
  L5  / unknown .code:n = { \person_questions_invalid:n {#1} },
  L6  / unknown .code:n = { \person_questions_invalid:n {#1} },
  L7  / unknown .code:n = { \person_questions_invalid:n {#1} },
}

% Sub-question handler: accepts yes, no, or empty.
\cs_new_protected:Npn \dfg_legal_subq:nn #1#2
{
  \tl_if_blank:nTF {#2}
  { \DTLnewdbentry{\l_@@_database_name_tl}{#1}{} }
  {
   \str_case:nnF {#2}
   {
    { yes  } { \DTLnewdbentry{\l_@@_database_name_tl}{#1}{yes}  }
    { no } { \DTLnewdbentry{\l_@@_database_name_tl}{#1}{no} }
   }
    { \msg_warning:nnnn { dfg } { invalid-value } {#2}
      { yes,~no,~or~an~empty~value } }
  }
```

```
2365  }
```

Keyset person The person database is the central personnel registry for the proposal. Every PI, manager, steering committee member and early-career researcher who appears in any table must have a row here.

Key semantics: role→P. 79: A filterable comma list of roles. The supported values (PI, spokesperson, manager, steering-committee-member, rector) are validated against a fixed list using the multi-value helper so that multiple roles per person are permitted. position→P. 80: A single choice describing the employment category (prof-W2, prof-W3, postDoc, PhD, etc.). Used in the gender equality and staff cost tables. period→P. 79: Comma list of funding periods (1, 2, 3) in which this person is active. All period-filtered queries (e.g. the project-leaders table) use this field. name-alias→P. 67: Brace-grouped list of name variants as the author name appears in .bib files. These are passed to \addboldnames so all spelling variants are highlighted consistently. contract-information→P. 66: Sub-keyset (C1→P. 66–C4a→P. 67) for the four employment-contract questions required in the DFG project header. Internally stored as fields Q1–Q4a.

```
2366  \keys_define:nn { person }{
2367    unknown .code:n = { \msg_warning:nnn  { dfg } { unknown-key } {#1}},
2368    unknown .default:V = \c_novalue_tl,
2369    id                .code:n =   \DTLnewdbentry{\l_@@_database_name_tl}{id}{#1},
2370    id                .value_required:n = true,
2371    firstname        .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{firstname}{#1},
2372    firstname .value_required:n = true,
2373    lastname         .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{lastname}{#1},
2374    lastname .value_required:n = true,
2375    academicdegree   .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{academicdegree}{#1},
2376    gender .choices:nn =  { m , f , d } {\DTLnewdbentry{\l_@@_database_name_tl}{gender}{#1}},
2377    gender / unknown .code:n = {\msg_warning:nnnn { dfg } { invalid-value }{ #1 }{ m,f,d }},
2378    gender .value_required:n = true,
2379    ref-affiliation-id   .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{ref-affiliation-
      id}{#1},
2380    ref-institution-id   .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{ref-institution-
      id}{#1},
2381    ref-project-id .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{ref-project-id}{#1},
```

With role→P. 79 we want to differentiate between various people so we easily can get the necessary person into the right table. Roles can be e.g. PI, service etc.

```
2382    role .code:n = {\_@@_set_filtered_clist:Nnn \l_@@_person_tmp_role_clist {
2383       PI,~ spokesperson,~ manager,~ steering-committee-member,~rector
2384      } {#1}
2385      \exp_args:Nnne \DTLnewdbentry{\l_@@_database_name_tl}{role}
2386                  { \clist_use:N  \l_@@_person_tmp_role_clist}},
```

position is also bound to a value list

```
2387    position .choices:nn =  {
2388      PhD, postDoc, groupLeader, research,
2389      nonResearch, student, prof,
2390      prof-W2, prof-W3 }
2391     {\DTLnewdbentry{\l_@@_database_name_tl}{position}{#1}},
2392    position / unknown .code:n = {\msg_warning:nnnn { dfg } { invalid-value }{ #1 }{
2393       PhD,~ postDoc,~ groupLeader,~ research,~
2394       nonResearch,~ student,~ prof,~ prof-W2,~ prof-W3 }},
2395    positionText .code:n =  \DTLnewdbentry{\l_@@_database_name_tl}{positionText}{#1},
```

we need to figure out in which funding period the person was active.

```
2396    period .code:n = {
2397      \_@@_set_filtered_clist:Nnn \l_@@_person_tmp_period_clist { 1, 2, 3 } {#1}
2398      \exp_args:Nnne \DTLnewdbentry{\l_@@_database_name_tl}{period}
2399                  { \clist_use:N  \l_@@_person_tmp_period_clist }
2400     },
```

The following keys are used for the CV section (additionally position). We start with name-alias which is used to get the author's name in bold letters into the publications list. Write all aliases of

the author according to their appearence in the .bib-file. Encapsulate each with one pair of {}.

```
    name-alias   .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{name-alias}{{#1}},
    orcid        .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{orcid}{#1},
    email        .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{email}{#1},
    phone        .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{phone}{#1},
    url          .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{url}{#1},
    doctorateYear .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{doctorateYear}{#1},
    doctorate    .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{doctorate}{#1},
    degree-programme   .code:n =
    \DTLnewdbentry{\l_@@_database_name_tl}{degree-programme}{#1},
```

Following part is for the early career researchers

```
    financed-by .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{financed-by}{#1},
    topic       .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{topic}{#1},
    category    .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{category}{#1},
    dateDefense .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{dateDefense}{#1},
    periodStart .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{periodStart}{#1},
    periodEnd .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{periodEnd}{#1},
```

For the PI we need to have information regarding their contract situation. Those questions are asked in the Header section of each project.

```
    contract-information .code:n = { \keys_set:nn { person / contract-information } { #1 } }
  }
```

Helper: `\person_questions_invalid:n` Small private helper used as the `unknown .code:n` handler for every boolean choice key in the `contract-information` and `project/legal-issues` key families. It fires `dfg/invalid-value` with the allowed set hard-coded to `yes,no`.

```
\cs_new_protected:Npn \person_questions_invalid:n #1
{ \msg_warning:nnnn { dfg } { invalid-value } {#1} { yes , no } }


\keys_define:nn { person / contract-information }
{
  %--- yes/no questions ------------------------------------------------
  C1 .choices:nn = { yes , no }
   { \DTLnewdbentry{\l_@@_database_name_tl}{C1}{#1} },
  C1 / unknown .code:n = { \person_questions_invalid:n {#1} },

  C2 .choices:nn = { yes , no  }
   { \DTLnewdbentry{\l_@@_database_name_tl}{C2}{#1} },
  C2 / unknown .code:n = { \person_questions_invalid:n {#1} },

  C3 .choices:nn = { yes , no  }
   { \DTLnewdbentry{\l_@@_database_name_tl}{C3}{#1} },
  C3 / unknown .code:n = { \person_questions_invalid:n {#1} },

  C4 .choices:nn = {  yes , no  }
   { \DTLnewdbentry{\l_@@_database_name_tl}{C4}{#1} },
  C4 / unknown .code:n = { \person_questions_invalid:n {#1} },

  %--- free-form follow-ups (may be empty) ----------------------------
  C2a .code:n = { \dfg_contract_date:nn {C2a} {#1} },
  C2b .code:n = { \dfg_contract_date:nn {C2b} {#1} },
  C3a .code:n = { \dfg_contract_date:nn {C3a} {#1} },
  C4a .code:n = { \dfg_contract_text:nn {C4a} {#1} },
}

% Date follow-up: allows empty or ISO-8601 (YYYY-MM-DD).
\cs_new_protected:Npn \dfg_contract_date:nn #1#2
{
  \tl_if_blank:nTF {#2}
  { \DTLnewdbentry{\l_@@_database_name_tl}{#1}{} }
  {
   \dfg_is_iso_date:nTF {#2}
   { \DTLnewdbentry{\l_@@_database_name_tl}{#1}{#2} }
   {
    \msg_warning:nnnn { dfg } { invalid-date } {#1} {#2}
```

```
2458      \DTLnewdbentry{\l_@@_database_name_tl}{#1}{#2}
2459     }
2460    }
2461  }
2462
2463  % Plain-text follow-up: allows empty or any string.
2464  \cs_new_protected:Npn \dfg_contract_text:nn #1#2
2465  {
2466    \DTLnewdbentry{\l_@@_database_name_tl}{#1}{#2}
2467  }
2468
2469  % Format check: YYYY-MM-DD where Y/M/D are digits.
2470  % Doesn't validate calendar correctness (e.g. Feb 30) -- just shape.
2471  \prg_new_protected_conditional:Npnn \dfg_is_iso_date:n #1 { TF , T , F }
2472  {
2473    \regex_match:nnTF { \A \d{4} - \d{2} - \d{2} \Z } {#1}
2474    { \prg_return_true: }
2475    { \prg_return_false: }
2476  }
```

Keyset cv The `cv` database holds supplementary career information for each PI beyond what is already stored in the `person` row. Multiple entries per person are permitted; each entry is identified by `ref-person-id` and a `cv-type` → P. 68 that governs where in the printed CV the item appears.

```
2477  \keys_define:nn { cv }{
2478    id           .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{id}{#1},
2479    ref-person-id.code:n = \DTLnewdbentry{\l_@@_database_name_tl}{ref-person-id}{#1},
2480    cv-type .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{type}{#1},
2481    cv-type .choices:nn =  {mandatory, supplement,
2482      activities, supervision,
2483      distinction, other }
2484     {\DTLnewdbentry{\l_@@_database_name_tl}{type}{#1}},
2485    % Backward-compatibility alias for the former misspelling.
2486    cv-type / distinction .code:n = {   \DTLnewdbentry{\l_@@_database_name_tl}{type}{distinction}},
2487    cv-type / unknown .code:n = {\msg_warning:nnnn { dfg } { invalid-value }{ #1 }{
2488       mandatory,~ supplement,~
2489       activities,~  supervision,~
2490       distinction,~ other }},
2491    positionText .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{positionText}{#1},
2492    position .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{position}{#1},
2493    ref-institution-id .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{ref-institution-
      id}{#1},
2494    description .code:n =
2495    \DTLnewdbentry{\l_@@_database_name_tl}{description}{#1},
2496    periodStart .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{periodStart}{#1},
2497    periodEnd .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{periodEnd}{#1},
2498  }
```

Keysets affiliation and institution The template distinguishes between two levels of organisational unit: affiliation: A *university* or equivalent top-level organisation, described by its full name, abbreviation, and postal address. Referenced from `person` rows via `ref-affiliation-id`. institution: A *department, institute or centre* within an affiliation (e.g. `IT Center RWTH Aachen`). Referenced from `person` rows via `ref-institution-id` and from `affiliation` via `ref-affiliation-id`.

This two-level model allows the same address block to be reused across multiple people without duplicating data, and the same university to appear under different institute names for different projects.

```
2499  \keys_define:nn { affiliation }
2500  {
2501    id               .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{id}{#1},
2502    id               .value_required:n = true,
2503    name             .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{name}{#1},
2504    abbreviation  .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{abbreviation}{#1},
2505    addressStreet    .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{addressStreet}{#1},
2506    addressZIP   .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{addressZIP}{#1},
2507    location         .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{location}{#1},
```

```
    country          .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{country}{#1},
  }

  \keys_define:nn { institution }
  {
    id        .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{id}{#1},
    id        .value_required:n = true,
    name      .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{name}{#1},
    abbreviation .code:n =
    \DTLnewdbentry{\l_@@_database_name_tl}{abbreviation}{#1},
    ref-affiliation-id  .code:n =
    \DTLnewdbentry{\l_@@_database_name_tl}{ref-affiliation-id}{#1},
  }

  % Resolve the compact reader-facing institution label once.  Older metadata
  % without an abbreviation remains usable by falling back to the full name.
  \tl_new:N \l_@@_institution_label_field_tl
  \cs_new_protected:Npn \@@_institution_abbreviation_or_name:nN #1#2
  {
    \tl_clear:N #2
    \tl_set:Nn \l_@@_institution_label_field_tl { abbreviation }
    \datatool_if_has_key:nnTF { institution } { abbreviation }
    {
      \DTLgetvalueforkey{#2}{abbreviation}{institution}{id}{#1}
    }
    { }
    \DTLifnulloremptyf{#2}
    {
      \tl_set:Nn \l_@@_institution_label_field_tl { name }
      \DTLgetvalueforkey{#2}{name}{institution}{id}{#1}
    }
    { }
  }
```

Keyset funding One `funding` row represents a single requested-funding line item, such as one FTE of PhD salary across five years, or a one-off equipment purchase. The same keyset is also used for*existing* and *previous* funding entries in the relevant tables.

`funding-type`: `staff`→P. 76: Personnel costs. Activates the restricted `category` validation (only staff-position names are accepted). `costs`→P. 76: Direct project costs (consumables, travel, etc.). `fellowships`→P. 76: Stipend payments. `globalfunds`→P. 76: Funds requested at the CRC level (coordination). `instrumentation`→P. 76: Equipment purchases.

`quantity`→P. 75 **and `sum`**→P. 75: both accept a `funding/year` sub-keyset `{year1={n},year2={n},...}`. The token-list variable `\l_funding_sum_quantity_tl` is set to the key name (`quantity` or `sum`) before the sub-parse so the `year\meta{n}` handlers can construct the correct database field name (`quantity-year1`, `sum-year2`, etc.) without extra parameters.

```
  \str_new:N \l_@@_funding_tmp_type_str
  \tl_new:N \l_funding_sum_quantity_tl
  \clist_const:Nn \c_@@_funding_staff_categories_clist
    { prof, groupLeader, postDoc, medDoc, PhD, research,
      nonResearch, student, assistant }
  \keys_define:nn { funding / year }
  {
    year1 .code:n =
     {\DTLnewdbentry{\l_@@_database_name_tl}{\tl_use:N \l_funding_sum_quantity_tl-year1}{#1}},
    year2 .code:n =
     {\DTLnewdbentry{\l_@@_database_name_tl}{\tl_use:N \l_funding_sum_quantity_tl-year2}{#1}},
    year3 .code:n =
     {\DTLnewdbentry{\l_@@_database_name_tl}{\tl_use:N \l_funding_sum_quantity_tl-year3}{#1}},
    year4 .code:n =
     {\DTLnewdbentry{\l_@@_database_name_tl}{\tl_use:N \l_funding_sum_quantity_tl-year4}{#1}},
    year5 .code:n =
     {\DTLnewdbentry{\l_@@_database_name_tl}{\tl_use:N \l_funding_sum_quantity_tl-year5}{#1}},
  }

  \keys_define:nn { funding }
  {
    id        .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{id}{#1},
```

```
    id        .value_required:n = true,
    ref-project-id .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{ref-project-id}{#1},
    ref-affiliation-id .code:n =
    \DTLnewdbentry{\l_@@_database_name_tl}{ref-affiliation-id}{#1},
    financed-by .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{financed-by}{#1},
    funding-type .choices:nn =  {
      staff,~ costs,~ fellowships,~ globalfunds,~ instrumentation }
     {
      \str_set:Nn \l_@@_funding_tmp_type_str {#1}
      \DTLnewdbentry{\l_@@_database_name_tl}{type}{#1}
     },
    funding-type / unknown .code:n = {\msg_warning:nnnn { dfg } { invalid-value }{ #1 }{
       staff,~ costs,~ fellowships,~ globalfunds,~ instrumentation }},
    funding-type        .value_required:n = true,
    percentage .code:n =
    \DTLnewdbentry{\l_@@_database_name_tl}{percentage}{#1},
    positionText .code:n =
    \DTLnewdbentry{\l_@@_database_name_tl}{positionText}{#1},
    quantity .code:n = {
      \tl_set:Nn \l_funding_sum_quantity_tl {quantity}
      \keys_set:nn { funding / year  } { #1 }
     },
    sum .code:n = {
      \tl_set:Nn \l_funding_sum_quantity_tl {sum}
      \keys_set:nn { funding / year  } { #1 }
     },
    category .code:n =
     {
      \str_if_eq:VnTF \l_@@_funding_tmp_type_str { staff }
      {% staff → restricted choices
          \clist_if_in:NnTF \c_@@_funding_staff_categories_clist {#1}
       {
        \DTLnewdbentry{\l_@@_database_name_tl}{category}{#1}
       }
       {
            \msg_warning:nnne { dfg } { invalid-value }{ #1 }
            { \clist_use:Nn \c_@@_funding_staff_categories_clist {,~} }
       }
      }
      {
       % non-staff → unrestricted
       \DTLnewdbentry{\l_@@_database_name_tl}{category}{#1}
      }
     },
    % following keys are especially for the previous fundings
    year            .code:n = {\DTLnewdbentry{\l_@@_database_name_tl}{year}{#1}},
    applicant       .code:n = {\DTLnewdbentry{\l_@@_database_name_tl}{applicant}{#1}},
    participant     .code:n = {\DTLnewdbentry{\l_@@_database_name_tl}{participant}{#1}},
    other-funds     .code:n = {\DTLnewdbentry{\l_@@_database_name_tl}{other-funds}{#1}},
    staff           .code:n = {\DTLnewdbentry{\l_@@_database_name_tl}{staff}{#1}},
    costs           .code:n = {\DTLnewdbentry{\l_@@_database_name_tl}{costs}{#1}},
    instrumentation .code:n = {\DTLnewdbentry{\l_@@_database_name_tl}{instrumentation}{#1}},
    fellowships     .code:n = {\DTLnewdbentry{\l_@@_database_name_tl}{fellowships}{#1}},
    globalfunds     .code:n = {\DTLnewdbentry{\l_@@_database_name_tl}{globalfunds}{#1}},
  }
```

A keyset for instrumentation. The flat `cost` field belongs to the informational `existingInstrumentation` list, is expressed in thousands of EUR, and is never included in funding totals. The nested `sum` fields are requested-funding amounts expressed in full EUR.

```
  \keys_define:nn { instrumentation }{
    ref-project-id  .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{ref-project-id}{#1},
    quantity        .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{quantity}{#1},
    instrument      .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{instrument}{#1},
    company         .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{company}{#1},
    year            .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{year}{#1},
    cost            .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{cost}{#1},
    financed-by     .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{financed-by}{#1},
    description     .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{description}{#1},
    sum .code:n = {
      \tl_set:Nn \l_funding_sum_quantity_tl {sum}
      \keys_set:nn { funding / year  } { #1 }
     },
  }
```

Keyset staff The staff key family serves two related personnel data shapes. Its year1–year5 subkeys store the headcount plan per position category for \OverviewOfFundsRequestedForStaffTable. The flat keys added below store the named and unnamed staff roster required by the DFG project template in the fixed RequestedFundingStaff database. All keys remain optional at the parser level so the older overview declarations continue to work unchanged; database-specific validation supplies useful warnings for roster entries.

The position→P. 80 sub-keyset holds named keys for each staff category (postDoc, PhD, research, etc.); each key's value is the number of FTEs for a specific year. \l_staff_year_tl is set to year1–year5 before each sub-parse so the handlers can construct the correct field name (e.g. postDoc-year2) without extra parameters.

```
\tl_new:N \l_staff_year_tl          % will hold "year1", "year2", …
\keys_define:nn { staff / position }{
  postDoc      .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{postDoc-\tl_use:N \l_staff_year_tl}{#1},
  PhD          .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{PhD-\tl_use:N \l_staff_year_tl}{#1},
  research     .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{research-\tl_use:N \l_staff_year_tl}{#1},
  nonResearch  .code:n = \DTLnewdbentry{\l_@@_database_name_tl}
  {nonResearch-\tl_use:N \l_staff_year_tl}{#1},
  student      .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{student-\tl_use:N \l_staff_year_tl}{#1},
}

% Category warnings list the currently registered keys, so the diagnostic
% stays in sync with the category-name property list, including extensions.
\seq_new:N \l_@@_diagnostic_keys_seq
\cs_new_protected:Npn \@@_collect_diagnostic_keys:N #1
{
  \seq_clear:N \l_@@_diagnostic_keys_seq
  \prop_map_inline:Nn #1
    { \seq_put_right:Nn \l_@@_diagnostic_keys_seq {##1} }
}
\cs_new_protected:Npn \@@_warn_unknown_name:nnN #1#2#3
{
  \@@_collect_diagnostic_keys:N #3
  \msg_warning:nneee { dfg } { unknown-name } {#1} {#2}
    { \seq_use:Nn \l_@@_diagnostic_keys_seq {,~} }
}
\cs_new_protected:Npn \@@_staff_set_category:n #1
{
  \prop_if_in:NnTF \g_@@_dfg_category_names_prop {#1}
  { \DTLnewdbentry{\l_@@_database_name_tl}{category}{#1} }
  {
    \@@_collect_diagnostic_keys:N \g_@@_dfg_category_names_prop
    \msg_warning:nnne { dfg } { invalid-value } {#1}
      { \seq_use:Nn \l_@@_diagnostic_keys_seq {,~} }
  }
}

\keys_define:nn { staff }{
  unknown .code:n = { \msg_warning:nnn { dfg } { unknown-key } {#1} },
  unknown .default:V = \c_novalue_tl,
  ref-project-id .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{ref-project-id}{#1},
  funding-status .choices:nn = { existing, requested }
  { \DTLnewdbentry{\l_@@_database_name_tl}{funding-status}{#1} },
  funding-status / unknown .code:n =
  { \msg_warning:nnnn { dfg } { invalid-value } {#1} { existing,~requested } },
  staff-type .choices:nn = { research, nonResearch }
  { \DTLnewdbentry{\l_@@_database_name_tl}{staff-type}{#1} },
  staff-type / unknown .code:n =
  { \msg_warning:nnnn { dfg } { invalid-value } {#1} { research,~nonResearch } },
  ref-person-id .code:n =
  \DTLnewdbentry{\l_@@_database_name_tl}{ref-person-id}{#1},
  firstname .code:n =
  \DTLnewdbentry{\l_@@_database_name_tl}{firstname}{#1},
  lastname .code:n =
  \DTLnewdbentry{\l_@@_database_name_tl}{lastname}{#1},
  academic-degree .code:n =
  \DTLnewdbentry{\l_@@_database_name_tl}{academic-degree}{#1},
  positionText .code:n =
  \DTLnewdbentry{\l_@@_database_name_tl}{positionText}{#1},
```

```
    position .code:n =
    \DTLnewdbentry{\l_@@_database_name_tl}{positionText}{#1},
    field-of-research .code:n =
    \DTLnewdbentry{\l_@@_database_name_tl}{field-of-research}{#1},
    ref-institution-id .code:n =
    \DTLnewdbentry{\l_@@_database_name_tl}{ref-institution-id}{#1},
    ref-affiliation-id .code:n =
    \DTLnewdbentry{\l_@@_database_name_tl}{ref-affiliation-id}{#1},
    department .code:n =
    \DTLnewdbentry{\l_@@_database_name_tl}{department}{#1},
    commitment .code:n =
    {
      \regex_match:nnTF { \A \d+ (?: \. \d+ )? \Z }
        {#1}
      { \DTLnewdbentry{\l_@@_database_name_tl}{commitment}{#1} }
      { \msg_warning:nnnn { dfg } { invalid-format } {#1}
        { a~non-negative~integer~or~decimal~using~a~decimal~point,
          ~for~example~0,~10,~or~10.5 } }
    },
    category .code:n = \@@_staff_set_category:n {#1},
    funding-source .code:n =
    \DTLnewdbentry{\l_@@_database_name_tl}{funding-source}{#1},
    description .code:n =
    \DTLnewdbentry{\l_@@_database_name_tl}{description}{#1},
    year1 .code:n = {
      \tl_set:Nn \l_staff_year_tl {year1}
      \keys_set:nn { staff / position  } { #1 }
     },
    year2 .code:n = {
      \tl_set:Nn \l_staff_year_tl {year2}
      \keys_set:nn { staff / position  } { #1 }
     },
    year3 .code:n = {
      \tl_set:Nn \l_staff_year_tl {year3}
      \keys_set:nn { staff / position  } { #1 }
     },
    year4 .code:n = {
      \tl_set:Nn \l_staff_year_tl {year4}
      \keys_set:nn { staff / position  } { #1 }
     },
    year5 .code:n = {
      \tl_set:Nn \l_staff_year_tl {year5}
      \keys_set:nn { staff / position  } { #1 }
    },
  }

  % Pre-create every roster column once.  Datatool can otherwise report an
  % unknown column when an optional key is omitted by every row in the database.
  \bool_new:N \g_@@_requested_funding_staff_schema_ready_bool
  \cs_new_protected:Npn \@@_requested_funding_staff_ensure_schema:
  {
    \bool_if:NF \g_@@_requested_funding_staff_schema_ready_bool
    {
      \clist_map_inline:nn
      {
        ref-project-id, funding-status, staff-type, ref-person-id,
        firstname, lastname, academic-degree, positionText, field-of-research,
        ref-institution-id, ref-affiliation-id, department, commitment, category,
        funding-source, description
      }
      {
        \DTLifhaskey { RequestedFundingStaff } {##1}
        { }
        { \DTLaddcolumn { RequestedFundingStaff } {##1} }
      }
      \bool_gset_true:N \g_@@_requested_funding_staff_schema_ready_bool
    }
  }

  \tl_new:N \l_@@_requested_funding_staff_validate_project_tl
  \tl_new:N \l_@@_requested_funding_staff_validate_status_tl
  \tl_new:N \l_@@_requested_funding_staff_validate_type_tl
  \tl_new:N \l_@@_requested_funding_staff_validate_person_tl
  \tl_new:N \l_@@_requested_funding_staff_validate_lastname_tl
```

```
\tl_new:N \l_@@_requested_funding_staff_validate_institution_tl
\keys_define:nn { dfg / requested-funding-staff-validation }
{
  ref-project-id .tl_set:N =
    \l_@@_requested_funding_staff_validate_project_tl,
  funding-status .tl_set:N =
    \l_@@_requested_funding_staff_validate_status_tl,
  staff-type .tl_set:N =
    \l_@@_requested_funding_staff_validate_type_tl,
  ref-person-id .tl_set:N =
    \l_@@_requested_funding_staff_validate_person_tl,
  lastname .tl_set:N =
    \l_@@_requested_funding_staff_validate_lastname_tl,
  ref-institution-id .tl_set:N =
    \l_@@_requested_funding_staff_validate_institution_tl,
  unknown .code:n = { }
}

\cs_new_protected:Npn
  \@@_requested_funding_staff_warn_missing_institution:
{
  \msg_warning:nne { dfg } { requested-staff-institution-required }
    { \l_@@_requested_funding_staff_validate_project_tl }
}

\cs_new_protected:Npn \@@_requested_funding_staff_validate:n #1
{
  \tl_clear:N \l_@@_requested_funding_staff_validate_project_tl
  \tl_clear:N \l_@@_requested_funding_staff_validate_status_tl
  \tl_clear:N \l_@@_requested_funding_staff_validate_type_tl
  \tl_clear:N \l_@@_requested_funding_staff_validate_person_tl
  \tl_clear:N \l_@@_requested_funding_staff_validate_lastname_tl
  \tl_clear:N \l_@@_requested_funding_staff_validate_institution_tl
  \keys_set:nn { dfg / requested-funding-staff-validation } {#1}
  \tl_if_blank:VT \l_@@_requested_funding_staff_validate_project_tl
  { \msg_warning:nnn { dfg } { requested-staff-required }
    { ref-project-id } }
  \tl_if_blank:VT \l_@@_requested_funding_staff_validate_status_tl
  { \msg_warning:nnn { dfg } { requested-staff-required }
    { funding-status } }
  \tl_if_blank:VT \l_@@_requested_funding_staff_validate_type_tl
  { \msg_warning:nnn { dfg } { requested-staff-required }
    { staff-type } }
  \bool_lazy_all:nT
  {
    { \tl_if_blank_p:V \l_@@_requested_funding_staff_validate_person_tl }
    { \tl_if_blank_p:V \l_@@_requested_funding_staff_validate_lastname_tl }
  }
  { \msg_warning:nnn { dfg } { requested-staff-required }
    { ref-person-id~or~lastname } }
  \bool_lazy_all:nT
  {
    { \tl_if_blank_p:V \l_@@_requested_funding_staff_validate_person_tl }
    { \tl_if_blank_p:V \l_@@_requested_funding_staff_validate_institution_tl }
  }
  { \@@_requested_funding_staff_warn_missing_institution: }
}
```

A keyset for the upkeep of laboratory animals.

```
\keys_define:nn { UpkeepLaboratoryAnimals }{
  ref-project-id .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{ref-project-id}{#1},
  species .code:n =
    {
      \tl_set:Ne \l_tmpa_tl {\tl_trim_spaces:n {#1}}
      \prop_if_in:NeTF \l_@@_animal_types_prop {\l_tmpa_tl/label}
        {
          \exp_args:NnnV \DTLnewdbentry
            {\l_@@_database_name_tl}{species}\l_tmpa_tl
        }
        {
          \msg_warning:nnne {dfg}{invalid-value}{#1}
            {\seq_use:Nn \l_@@_animal_type_ids_seq {,~}}
        }
    },
```

```
    species   .value_required:n = true,
    quantity .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{quantity}{#1},
    weeks-kept .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{weeks-kept}{#1},
    purchasing-costs   .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{purchasing-costs}{#1},
    requested-funds   .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{requested-funds}{#1},
    existing-funds .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{existing-funds}{#1},
  }
```

Keyset gantt Each row in a `gantt-\meta{project}` database describes one Gantt bar. The grouped public WP keys are normalized to this legacy schema by `\addWP`; these low-level keys and their validation remain available to direct `\addEntry` callers. Bars share their `id`→P. 79 with the corresponding work-package label, so `\addWP` automatically creates a matching Gantt entry when called.

`periodStart`→P. 68 and `periodEnd`→P. 68 are quarter numbers (1–16 for a standard 5-year CRC period). Setting both to the same value suppresses the bar, allowing a work-package item to exist in the list without occupying space in the chart.

`style`→P. 51 selects one of five visual styles for the bar. Unknown styles fall back to `default` with a warning, so the chart always compiles. Empty or whitespace-only styles select `default` without a warning.

```
  \keys_define:nn { gantt }{
    id          .code:n     =  \DTLnewdbentry{\l_@@_database_name_tl}{id}{#1},
    id          .value_required:n = true,
    name        .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{name}{#1},
    description .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{description}{#1},
    periodStart .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{periodStart}{#1},
    periodEnd   .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{periodEnd}{#1},
    style       .choices:nn =  { crosshatch,striped,important,alternative,default }
     {\DTLnewdbentry{\l_@@_database_name_tl}{style}{#1}},
    style / unknown .code:n = {
        \tl_if_blank:nF {#1}
          {
            \msg_warning:nnnnn { dfg } { invalid-value-fallback }{#1}
            {crosshatch,~striped,~important,~alternative,~default}{default}
          }
      \DTLnewdbentry{\l_@@_database_name_tl}{style}{default}
    },
  }
```

6.1.21 Core data-access commands

The following commands form the primary user-facing API for reading and writing the datatool databases. Together with the keyset definitions above they provide a strongly-typed, validated interface that prevents malformed data from silently entering the proposal.

`\dfgShowTag` and `\dfgShowCalculatedTag` Direct values use `db:id:field`; aggregates use the concise form `calc:command [db]`. Successive labels alternate between two vertical levels. The complete marker has zero width, height, and depth in both prose and tables, so annotations cannot change line spacing or table-row height. When `showtags-tables`→P. 82 is false, the wrapper returns its value unchanged while a `tblr` cell is being rendered. The begin-document specialisation keeps the normal `showtags=false` path as cheap as the unannotated output. In fast-project mode, skipped metadata prevents resolving the destination row of a reference chain; the annotation records its source row and full requested field path instead.

```
  \NewDocumentCommand{\dfgShowTag}{ m m m o }
  {%
    % #1: id
    % #2: field of database
    % #3: value from database field
    % #4: custom field (optional, e.g. database name)
    \bool_if:NTF \l_@@_class_showtags_bool
```

```
2867    { \texorpdfstring{\@@_show_tag_direct:nnnn {#1}{#2}{#3}{#4}}{#3} }
2868    {#3}%
2869  }
2870
2871  \NewDocumentCommand{\dfgShowCalculatedTag}{ m m +m }
2872  {%
2873    % #1: calculation command or label
2874    % #2: contributing database(s)
2875    % #3: calculated value
2876    \bool_if:NTF \l_@@_class_showtags_bool
2877    { \texorpdfstring{\@@_show_tag_value:nn { calc:#1~[#2] } {#3}}{#3} }
2878    {#3}%
2879  }
2880
2881  \cs_new_protected:Npn \@@_show_tag_direct:nnnn #1#2#3#4
2882  {
2883    \IfNoValueTF{#4}
2884      { \@@_show_tag_value:nn { #1:#2 } {#3} }
2885      { \@@_show_tag_value:nn { #4:#1:#2 } {#3} }
2886  }
2887
2888  \cs_new_protected:Npn \@@_show_tag_value:nn #1#2
2889  {
2890    \bool_if:nTF
2891      { \g_@@_tblr_inside_bool && ! \l_@@_class_showtags_tables_bool }
2892      {#2}
2893      { \@@_show_tag_overlay:nn {#1}{#2} }
2894  }
2895
2896  \bool_new:N \g_@@_show_tag_upper_bool
2897  \bool_new:N \l_@@_show_tag_leftward_bool
2898  \dim_new:N \l_@@_show_tag_raise_dim
2899
2900  \cs_new_protected:Npn \@@_show_tag_overlay:nn #1#2
2901  {
2902    % #1: preformatted provenance label
2903    % #2: displayed value
2904    \group_begin:
2905      \bool_if:NTF \g_@@_show_tag_upper_bool
2906        { \dim_set:Nn \l_@@_show_tag_raise_dim { 1.30em } }
2907        { \dim_set:Nn \l_@@_show_tag_raise_dim { .9em } }
2908      \bool_gset_inverse:N \g_@@_show_tag_upper_bool
2909      \leavevmode
2910      \smash{%
2911        \vbox to \z@ {%
2912     \vss
2913     \color{color@tags@line}%
2914        \bool_if:NTF \l_@@_show_tag_leftward_bool
2915        {%
2916          \llap{%
2917            \raise \l_@@_show_tag_raise_dim \hbox{%
2918              \fontsize{4}{0}\selectfont
2919              \ttfamily
2920              #1\,%
2921            }%
2922            \vrule
2923          }%
2924        }
2925        {%
2926          \rlap{%
2927            \vrule
2928            \raise \l_@@_show_tag_raise_dim \hbox{%
2929              \fontsize{4}{0}\selectfont
2930              \ttfamily
2931              \,%
2932              #1%
2933            }%
2934          }%
2935        }%
2936        }%
2937      }%
2938      \textcolor{color@tags@font}{#2}%
2939    \group_end:
2940  }
```

```
2941
2942  % Aggregated monetary tables use full euro amounts.  Guarded tagged cells must
2943  % invoke \cs{TblrNum} explicitly so they still use the current column's
2944  % |table-format| for a common SI field width; outside tables \cs{num} provides
2945  % ordinary inline output.  Marginalia temporarily clear the table-context
2946  % boolean and therefore remain unpadded.  The informational
2947  % existing-instrumentation cost and per-animal unit costs are formatted
2948  % separately because their source units and precision differ from aggregated
2949  % funding values.
2950  \cs_new_protected:Npn \@@_show_table_number:n #1
2951  {
2952    \bool_if:NTF \g_@@_tblr_inside_bool
2953      { \TblrNum{#1} }
2954      { \num{#1} }
2955  }
2956
2957  \cs_new_protected:Npn \@@_show_eur:n #1
2958  {
2959    \bool_if:NTF \g_@@_tblr_inside_bool
2960      { \TblrNum{#1} }
2961      {
2962        \num[
2963          round-mode = places,
2964          round-precision = 0
2965        ]{#1}
2966      }
2967  }
2968
2969  % Existing-instrumentation costs are supplied in thousands of EUR and are not
2970  % included in any funding aggregate.  Match the DFG table's one-decimal
2971  % precision while still suppressing a redundant trailing zero.  The literal
2972  % |n.a.| sentinel denotes an unavailable purchase cost and bypasses the number
2973  % parser in both table and inline contexts; it is never converted to zero.
2974  \cs_new_protected:Npn \@@_show_existing_instrumentation_cost:n #1
2975  {
2976    \str_if_eq:eeTF {#1} {n.a.}
2977      { \textnormal{n.a.} }
2978      {
2979        \bool_if:NTF \g_@@_tblr_inside_bool
2980          { \TblrNum{#1} }
2981          {
2982            \num[
2983              round-mode = places,
2984              round-precision = 1
2985            ]{#1}
2986          }
2987      }
2988  }
2989
2990  \cs_new_protected:Npn \@@_show_calculated_number:nnN #1#2#3
2991  {
2992    \dfgShowCalculatedTag{#1}{#2}
2993    { \exp_args:NV \@@_show_eur:n #3 }
2994  }
2995
2996  \AtBeginDocument{%
2997    \bool_if:NTF \l_@@_class_showtags_bool
2998    {%
2999      \RenewDocumentCommand{\dfgShowTag}{ m m m o }
3000      { \texorpdfstring{\@@_show_tag_direct:nnnn {#1}{#2}{#3}{#4}}{#3} }%
3001      \RenewDocumentCommand{\dfgShowCalculatedTag}{ m m +m }
3002      { \texorpdfstring{\@@_show_tag_value:nn { calc:#1~[#2] } {#3}}{#3} }%
3003    }
3004    {%
3005      \RenewDocumentCommand{\dfgShowTag}{ m m m o }
3006      {#3}%
3007      \RenewDocumentCommand{\dfgShowCalculatedTag}{ m m +m }
3008      {#3}%
3009    }%
3010  }
3011
```

\addEntry `\addEntry [⟨keys⟩] {⟨database⟩} {⟨key-values⟩}` Adds a new row to the database named

⟨*database*⟩, populated by setting the keys defined under the key-path ⟨*keys*⟩ from ⟨*key-values*⟩. If ⟨*keys*⟩ is omitted, it defaults to the database name (⟨*database*⟩).

The `cv` database receives special treatment: entries are only recorded when the boolean `\l_dfg_class_cv_bool` is true (i.e. when a CV is actually being produced). Otherwise the entry is skipped and a warning is issued, so that bibliography-style CV entries can be left in the source unconditionally without polluting non-CV builds.

The internal helper `\__dfg_add_entry:nnn` performs the actual insertion and is shared between both branches to avoid code duplication.

Funding declarations for `RequestedFunding` may occur in project files, after the proposal-wide overview tables have already been printed. Such entries are additionally written to the current LaTeX auxiliary file and restored on the following run into `RequestedFundingOverview`. Entries encountered before `\begin{document}` are copied into that overview database immediately. Consequently the declarations remain next to their project text, while overview tables have access to the complete data set after the usual additional LaTeX run. A separate database prevents the restored rows from duplicating the live rows used by the project tables. The same forward-data mechanism copies `RequestedFundingStaff` declarations to `RequestedFundingStaffOverview` and `RequestedAndExistingFundingDirectCosts` declarations to `RequestedAndExistingFundingDirectCostsOverview`. Chapter 2 can therefore aggregate the existing staff and institutional direct-cost support declared later in the individual project chapters without a second user-maintained database.

Funding aggregate indexes The funding databases remain the authoritative row store. In addition, every funding declaration updates two LaTeX3 property lists: one for monetary sums grouped by database, project, funding type, and year field; and one for staff quantities grouped by database, project, category, and year field. Each index also stores the corresponding all-project and all-type aggregate where applicable.

Both live declarations and rows restored from auxiliary files pass through the same registration function. The indexes therefore remain correct as later project files add entries; there is no one-shot cache to invalidate. Summary cells perform a property lookup instead of traversing the growing database. Detailed project tables still read their source rows, but collect all five funding types in one project-filtered traversal rather than five.

Complete-proposal benchmark The 149-page complete proposal was measured on 2026-07-17 with LuaHBTeX from TeX Live 2026. Times below are for one final LuaLaTeX pass and compare the same proposal data before and after the aggregate-index refactor. Absolute values depend on the machine and document contents; the important result is that lookup time no longer grows through repeated full database sums.

Operation	Before	After	Reduction
Staff overview	135.745 s	6.975 s	94.9 %
Instrumentation overview	5.239 s	0.636 s	87.9 %
21 requested-funding tables	90.444 s	28.831 s	68.1 %
19 existing-funding tables	23.277 s	6.605 s	71.6 %
Combined	254.705 s	43.047 s	83.1 %

This saves approximately 211.7 seconds per LuaLaTeX pass. The monitored three-pass `make complete-proposal` release build completed in 33 minutes 21 seconds, so the funding changes account for approximately 10 minutes 35 seconds of avoided work across that build.

```
3012  \tl_new:N \l_@@_add_entry_id_tl
3013  \tl_new:N \l_@@_add_entry_existing_row_tl
```

```
3014
3015  \keys_define:nn { dfg / add-entry-id-probe }
3016  {
3017    id      .tl_set:N = \l_@@_add_entry_id_tl,
3018    unknown .code:n   = { }
3019  }
3020
3021  \cs_new_protected:Npn \@@_add_entry_replace_duplicate_id:n #1
3022  {
3023    \tl_clear:N \l_@@_add_entry_id_tl
3024    \keys_set:nn { dfg / add-entry-id-probe } {#1}
3025    \tl_if_blank:VF \l_@@_add_entry_id_tl
3026    {
3027      \DTLifhaskey { \l_@@_database_name_tl } { id }
3028      {
3029        \DTLgetrowforkey
3030          { \l_@@_add_entry_existing_row_tl }
3031          { \l_@@_database_name_tl }
3032          { id }
3033          { \l_@@_add_entry_id_tl }
3034        \tl_if_blank:VF \l_@@_add_entry_existing_row_tl
3035        {
3036          \msg_warning:nnee { dfg } { duplicate-entry-id }
3037            { \l_@@_database_name_tl }
3038            { \l_@@_add_entry_id_tl }
3039          \DTLforeach { \l_@@_database_name_tl }
3040            { \l_tmpa_tl = id }
3041          {
3042            \str_if_eq:VVT \l_tmpa_tl \l_@@_add_entry_id_tl
3043              { \DTLremovecurrentrow }
3044          }
3045        }
3046      }
3047      { }
3048    }
3049  }
3050
3051  \cs_new_protected:Npn \@@_add_entry:nnn #1#2#3
3052  {
3053    % #1: keys     #2: database     #3: key-values
3054    \group_begin:
3055    \tl_set:Nn \l_@@_database_name_tl {#2}
3056    \DTLifdbexists {#2}
3057    { }
3058    { \DTLaction [ name = \l_@@_database_name_tl ] { new } }
3059    \@@_add_entry_replace_duplicate_id:n {#3}
3060    \bool_lazy_all:nT
3061    {
3062      { \str_if_eq_p:nn {#1} { staff } }
3063      { \str_if_eq_p:nn {#2} { RequestedFundingStaff } }
3064    }
3065    {
3066      \@@_requested_funding_staff_ensure_schema:
3067      \@@_requested_funding_staff_validate:n {#3}
3068    }
3069    \DTLaction [ name = \l_@@_database_name_tl ] { new~row }
3070    \str_if_eq:nnT {#1} { project }
3071    {
3072      \bool_set_true:N  \l_@@_project_consider_for_lists_bool
3073      \bool_set_false:N \l_@@_project_reference_only_bool
3074    }
3075    \exp_args:Ne \keys_set:nn {#1} {#3}
3076    \str_if_eq:nnT {#1} { project }
3077    {
3078      \bool_if:NTF \l_@@_project_consider_for_lists_bool
3079        { \DTLnewdbentry{\l_@@_database_name_tl}{consider-for-lists}{true} }
3080        { \DTLnewdbentry{\l_@@_database_name_tl}{consider-for-lists}{false} }
3081      \bool_if:NTF \l_@@_project_reference_only_bool
3082        { \DTLnewdbentry{\l_@@_database_name_tl}{reference-only}{true} }
3083        { \DTLnewdbentry{\l_@@_database_name_tl}{reference-only}{false} }
3084      \bool_gset_false:N \g_@@_project_count_ready_bool
3085    }
3086    \bool_lazy_all:nT
3087    {
```

```
3088      { \str_if_eq_p:nn {#1} { funding } }
3089      { \str_if_eq_p:Vn \l_@@_funding_tmp_type_str { staff } }
3090    }
3091    { \@@_funding_complete_staff_sums:n {#3} }
3092    \group_end:
3093  }
3094
3095  % Funding tables repeatedly ask for the same sums, sometimes hundreds of
3096  % times while tabularray measures a table.  Keep the datatool databases as
3097  % the row store, but maintain compact aggregate indexes alongside them.
3098  % The key layout is
3099  %
3100  %   database / project-or-__ALL__ / type-or-__ALL__ / field
3101  %
3102  % for monetary sums and
3103  %
3104  %   database / project-or-__ALL__ / category / quantity-field
3105  %
3106  % for requested staff quantities.  Values are added when an entry is
3107  % declared, so a lookup never has to traverse a datatool database and the
3108  % index cannot become stale when later project files add more rows.
3109  \prop_new:N \g_@@_funding_sum_prop
3110  \prop_new:N \g_@@_funding_staff_quantity_prop
3111  \fp_new:N   \l_@@_funding_cache_fp
3112  \tl_new:N   \l_@@_funding_cache_key_tl
3113  \tl_new:N   \l_@@_funding_cache_value_tl
3114  \tl_new:N   \l_@@_funding_cache_project_tl
3115  \tl_new:N   \l_@@_funding_cache_type_tl
3116  \tl_new:N   \l_@@_funding_cache_category_tl
3117  \tl_new:N   \l_@@_funding_cache_percentage_tl
3118  \tl_new:N   \l_@@_funding_salary_command_tl
3119  \tl_new:N   \l_@@_funding_salary_value_tl
3120  \tl_new:N   \l_@@_funding_cache_sum_one_tl
3121  \tl_new:N   \l_@@_funding_cache_sum_two_tl
3122  \tl_new:N   \l_@@_funding_cache_sum_three_tl
3123  \tl_new:N   \l_@@_funding_cache_sum_four_tl
3124  \tl_new:N   \l_@@_funding_cache_sum_five_tl
3125  \tl_new:N   \l_@@_funding_cache_quantity_one_tl
3126  \tl_new:N   \l_@@_funding_cache_quantity_two_tl
3127  \tl_new:N   \l_@@_funding_cache_quantity_three_tl
3128  \tl_new:N   \l_@@_funding_cache_quantity_four_tl
3129  \tl_new:N   \l_@@_funding_cache_quantity_five_tl
3130  \bool_new:N \l_@@_funding_calculation_store_bool
3131  \bool_new:N \l_@@_funding_calculation_ready_bool
3132  \bool_new:N \l_@@_funding_calculation_needed_bool
3133
3134  \prop_new:N \g_@@_funding_salary_commands_prop
3135  \prop_gset_from_keyval:Nn \g_@@_funding_salary_commands_prop
3136  {
3137    prof        = dfgSalaryProf,
3138    groupLeader = dfgSalaryGroupLeader,
3139    postDoc     = dfgSalaryPostDoc,
3140    medDoc      = dfgSalaryMedDoc,
3141    PhD         = dfgSalaryPhD,
3142    research    = dfgSalaryResearch,
3143    nonResearch = dfgSalaryNonResearch,
3144    student     = dfgSalaryStudent,
3145    assistant   = dfgSalaryAssistant,
3146    prof-W2     = dfgSalaryProf,
3147    prof-W3     = dfgSalaryProf
3148  }
3149
3150  \keys_define:nn { dfg / funding-cache / sum }
3151  {
3152    year1 .tl_set:N = \l_@@_funding_cache_sum_one_tl,
3153    year2 .tl_set:N = \l_@@_funding_cache_sum_two_tl,
3154    year3 .tl_set:N = \l_@@_funding_cache_sum_three_tl,
3155    year4 .tl_set:N = \l_@@_funding_cache_sum_four_tl,
3156    year5 .tl_set:N = \l_@@_funding_cache_sum_five_tl,
3157    unknown .code:n = { }
3158  }
3159
3160  \keys_define:nn { dfg / funding-cache / quantity }
3161  {
```

```
  year1 .tl_set:N = \l_@@_funding_cache_quantity_one_tl,
  year2 .tl_set:N = \l_@@_funding_cache_quantity_two_tl,
  year3 .tl_set:N = \l_@@_funding_cache_quantity_three_tl,
  year4 .tl_set:N = \l_@@_funding_cache_quantity_four_tl,
  year5 .tl_set:N = \l_@@_funding_cache_quantity_five_tl,
  unknown .code:n = { }
}

\keys_define:nn { dfg / funding-cache }
{
  ref-project-id .tl_set:N = \l_@@_funding_cache_project_tl,
  funding-type   .tl_set:N = \l_@@_funding_cache_type_tl,
  category       .tl_set:N = \l_@@_funding_cache_category_tl,
  percentage     .tl_set:N = \l_@@_funding_cache_percentage_tl,
  sum .code:n =
    { \keys_set:nn { dfg / funding-cache / sum } {#1} },
  quantity .code:n =
    { \keys_set:nn { dfg / funding-cache / quantity } {#1} },
  unknown .code:n = { }
}

\cs_new_protected:Npn \@@_funding_capture:n #1
{
  \tl_clear:N \l_@@_funding_cache_project_tl
  \tl_clear:N \l_@@_funding_cache_type_tl
  \tl_clear:N \l_@@_funding_cache_category_tl
  \tl_clear:N \l_@@_funding_cache_percentage_tl
  \tl_clear:N \l_@@_funding_cache_sum_one_tl
  \tl_clear:N \l_@@_funding_cache_sum_two_tl
  \tl_clear:N \l_@@_funding_cache_sum_three_tl
  \tl_clear:N \l_@@_funding_cache_sum_four_tl
  \tl_clear:N \l_@@_funding_cache_sum_five_tl
  \tl_clear:N \l_@@_funding_cache_quantity_one_tl
  \tl_clear:N \l_@@_funding_cache_quantity_two_tl
  \tl_clear:N \l_@@_funding_cache_quantity_three_tl
  \tl_clear:N \l_@@_funding_cache_quantity_four_tl
  \tl_clear:N \l_@@_funding_cache_quantity_five_tl
  \keys_set:nn { dfg / funding-cache } {#1}
}

\cs_new_protected:Npn \@@_funding_calculation_needed:NN #1#2
{
  \bool_lazy_all:nT
  {
    { \tl_if_blank_p:V #1 }
    { ! \tl_if_blank_p:V #2 }
  }
  { \bool_set_true:N \l_@@_funding_calculation_needed_bool }
}

\cs_new_protected:Npn \@@_funding_calculate_one:NNnn #1#2#3#4
{
  % #1 sum tl, #2 quantity tl, #3 database field, #4 period factor
  \bool_lazy_all:nT
  {
    { \tl_if_blank_p:V #1 }
    { ! \tl_if_blank_p:V #2 }
    { \bool_if_p:N \l_@@_funding_calculation_ready_bool }
  }
  {
    \exp_args:NnV \regex_match:nnTF
      { \A \d+ (?: \. \d+ )? \Z } #2
    {
      \tl_set:Nx #1
      {
        \fp_eval:n
        {
          round(
            \l_@@_funding_salary_value_tl
            * \l_@@_funding_cache_percentage_tl / 100
            * #2
            * #4,
            0
          )
```

```
        }
      }
      \bool_if:NT \l_@@_funding_calculation_store_bool
      {
        \exp_args:Nnne \DTLnewdbentry
          {\l_@@_database_name_tl}{#3}{\tl_use:N #1}
      }
    }
    {
      \bool_if:NT \l_@@_funding_calculation_store_bool
      {
        \msg_warning:nne { dfg } { funding-staff-cost-unavailable }
        { project~'\l_@@_funding_cache_project_tl',~#3:~invalid~quantity~'#2' }
      }
    }
  }
}

\cs_new_protected:Npn \@@_funding_calculate_staff_sums:
{
  \str_if_eq:VnT \l_@@_funding_cache_type_tl { staff }
  {
    \bool_set_false:N \l_@@_funding_calculation_needed_bool
    \@@_funding_calculation_needed:NN
      \l_@@_funding_cache_sum_one_tl \l_@@_funding_cache_quantity_one_tl
    \@@_funding_calculation_needed:NN
      \l_@@_funding_cache_sum_two_tl \l_@@_funding_cache_quantity_two_tl
    \@@_funding_calculation_needed:NN
      \l_@@_funding_cache_sum_three_tl \l_@@_funding_cache_quantity_three_tl
    \@@_funding_calculation_needed:NN
      \l_@@_funding_cache_sum_four_tl \l_@@_funding_cache_quantity_four_tl
    \@@_funding_calculation_needed:NN
      \l_@@_funding_cache_sum_five_tl \l_@@_funding_cache_quantity_five_tl
    \bool_if:NT \l_@@_funding_calculation_needed_bool
    {
      \bool_set_true:N \l_@@_funding_calculation_ready_bool
      \prop_get:NVNTF \g_@@_funding_salary_commands_prop
        \l_@@_funding_cache_category_tl \l_@@_funding_salary_command_tl
      {
        \cs_if_exist:cTF { \l_@@_funding_salary_command_tl }
        { \tl_set:Nx \l_@@_funding_salary_value_tl
          { \use:c { \l_@@_funding_salary_command_tl } } }
        { \bool_set_false:N \l_@@_funding_calculation_ready_bool }
      }
      { \bool_set_false:N \l_@@_funding_calculation_ready_bool }
      \exp_args:NnV \regex_match:nnF
        { \A \d+ (?: \. \d+ )? \Z }
        \l_@@_funding_cache_percentage_tl
      { \bool_set_false:N \l_@@_funding_calculation_ready_bool }
      \exp_args:NnV \regex_match:nnF
        { \A \d+ (?: \. \d+ )? \Z }
        \l_@@_funding_salary_value_tl
      { \bool_set_false:N \l_@@_funding_calculation_ready_bool }
      \bool_lazy_all:nT
      {
        { \bool_if_p:N \l_@@_funding_calculation_store_bool }
        { ! \bool_if_p:N \l_@@_funding_calculation_ready_bool }
      }
      {
        \msg_warning:nne { dfg } { funding-staff-cost-unavailable }
        {
          project~'\l_@@_funding_cache_project_tl',~category~
          '\l_@@_funding_cache_category_tl',~percentage~
          '\l_@@_funding_cache_percentage_tl'
        }
      }
      \@@_funding_calculate_one:NNnn
        \l_@@_funding_cache_sum_one_tl
        \l_@@_funding_cache_quantity_one_tl { sum-year1 } { 0.5 }
      \@@_funding_calculate_one:NNnn
        \l_@@_funding_cache_sum_two_tl
        \l_@@_funding_cache_quantity_two_tl { sum-year2 } { 1 }
      \@@_funding_calculate_one:NNnn
        \l_@@_funding_cache_sum_three_tl
```

```
3310          \l_@@_funding_cache_quantity_three_tl { sum-year3 } { 1 }
3311        \@@_funding_calculate_one:NNnn
3312          \l_@@_funding_cache_sum_four_tl
3313          \l_@@_funding_cache_quantity_four_tl { sum-year4 } { 1 }
3314        \@@_funding_calculate_one:NNnn
3315          \l_@@_funding_cache_sum_five_tl
3316          \l_@@_funding_cache_quantity_five_tl { sum-year5 } { 0.5 }
3317      }
3318    }
3319  }
3320
3321  \cs_new_protected:Npn \@@_funding_complete_staff_sums:n #1
3322  {
3323    \bool_set_true:N \l_@@_funding_calculation_store_bool
3324    \@@_funding_capture:n {#1}
3325    \@@_funding_calculate_staff_sums:
3326  }
3327
3328  \cs_new_protected:Npn \@@_funding_cache_add:Nnn #1#2#3
3329  {
3330    \tl_set:Nx \l_@@_funding_cache_key_tl {#2}
3331    \tl_set:Nx \l_@@_funding_cache_value_tl {#3}
3332    \tl_if_blank:VF \l_@@_funding_cache_value_tl
3333    {
3334      \prop_get:NVNTF #1
3335        \l_@@_funding_cache_key_tl \l_@@_funding_cache_value_tl
3336      {
3337        \fp_set:Nn \l_@@_funding_cache_fp
3338          { \l_@@_funding_cache_value_tl + (#3) }
3339      }
3340      { \fp_set:Nn \l_@@_funding_cache_fp {#3} }
3341      \prop_gput:NVx #1 \l_@@_funding_cache_key_tl
3342        { \fp_to_decimal:N \l_@@_funding_cache_fp }
3343    }
3344  }
3345
3346  \cs_new_protected:Npn \@@_funding_cache_sum_year:nnn #1#2#3
3347  {
3348    % #1 database, #2 field, #3 value
3349    \tl_if_blank:VF \l_@@_funding_cache_type_tl
3350    {
3351      \@@_funding_cache_add:Nnn \g_@@_funding_sum_prop
3352        {#1/\l_@@_funding_cache_project_tl/
3353         \l_@@_funding_cache_type_tl/#2} {#3}
3354      \@@_funding_cache_add:Nnn \g_@@_funding_sum_prop
3355        {#1/__ALL__/\l_@@_funding_cache_type_tl/#2} {#3}
3356    }
3357    \@@_funding_cache_add:Nnn \g_@@_funding_sum_prop
3358      {#1/\l_@@_funding_cache_project_tl/__ALL__/#2} {#3}
3359    \@@_funding_cache_add:Nnn \g_@@_funding_sum_prop
3360      {#1/__ALL__/__ALL__/#2} {#3}
3361  }
3362
3363  \cs_new_protected:Npn \@@_funding_cache_quantity_year:nnn #1#2#3
3364  {
3365    % #1 database, #2 field, #3 value
3366    \@@_funding_cache_add:Nnn \g_@@_funding_staff_quantity_prop
3367      {#1/\l_@@_funding_cache_project_tl/
3368       \l_@@_funding_cache_category_tl/#2} {#3}
3369    \@@_funding_cache_add:Nnn \g_@@_funding_staff_quantity_prop
3370      {#1/__ALL__/\l_@@_funding_cache_category_tl/#2} {#3}
3371  }
3372
3373  \cs_new_protected:Npn \@@_funding_cache_entry:nn #1#2
3374  {
3375    \group_begin:
3376    \bool_set_false:N \l_@@_funding_calculation_store_bool
3377    \@@_funding_capture:n {#2}
3378    \@@_funding_calculate_staff_sums:
3379    \tl_if_blank:VF \l_@@_funding_cache_project_tl
3380    {
3381      \@@_funding_cache_sum_year:nnn {#1} {sum-year1}
3382        {\l_@@_funding_cache_sum_one_tl}
3383      \@@_funding_cache_sum_year:nnn {#1} {sum-year2}
```

```
3384        {\l_@@_funding_cache_sum_two_tl}
3385      \@@_funding_cache_sum_year:nnn {#1} {sum-year3}
3386        {\l_@@_funding_cache_sum_three_tl}
3387      \@@_funding_cache_sum_year:nnn {#1} {sum-year4}
3388        {\l_@@_funding_cache_sum_four_tl}
3389      \@@_funding_cache_sum_year:nnn {#1} {sum-year5}
3390        {\l_@@_funding_cache_sum_five_tl}
3391      \str_if_eq:VnT \l_@@_funding_cache_type_tl {staff}
3392      {
3393        \tl_if_blank:VF \l_@@_funding_cache_category_tl
3394        {
3395          \@@_funding_cache_quantity_year:nnn {#1} {quantity-year1}
3396            {\l_@@_funding_cache_quantity_one_tl}
3397          \@@_funding_cache_quantity_year:nnn {#1} {quantity-year2}
3398            {\l_@@_funding_cache_quantity_two_tl}
3399          \@@_funding_cache_quantity_year:nnn {#1} {quantity-year3}
3400            {\l_@@_funding_cache_quantity_three_tl}
3401          \@@_funding_cache_quantity_year:nnn {#1} {quantity-year4}
3402            {\l_@@_funding_cache_quantity_four_tl}
3403          \@@_funding_cache_quantity_year:nnn {#1} {quantity-year5}
3404            {\l_@@_funding_cache_quantity_five_tl}
3405        }
3406      }
3407    }
3408    \group_end:
3409  }
3410
3411  \cs_new_protected:Npn \@@_funding_sum_set:Nnnnn #1#2#3#4#5
3412  {
3413    % #1 result, #2 database, #3 project, #4 type, #5 field list
3414    \fp_zero:N \l_@@_funding_cache_fp
3415    \clist_map_inline:nn {#5}
3416    {
3417      \tl_set:Nx \l_@@_funding_cache_key_tl {#2/#3/#4/##1}
3418      \prop_get:NVNT \g_@@_funding_sum_prop
3419        \l_@@_funding_cache_key_tl \l_@@_funding_cache_value_tl
3420      {
3421        \fp_add:Nn \l_@@_funding_cache_fp
3422          { \l_@@_funding_cache_value_tl }
3423      }
3424    }
3425    \tl_set:Nx #1 { \fp_to_decimal:N \l_@@_funding_cache_fp }
3426  }
3427
3428  \bool_new:N \g_@@_document_started_bool
3429
3430  \AtBeginDocument
3431    { \bool_gset_true:N \g_@@_document_started_bool }
3432
3433  % This command is deliberately public and free of expl3 punctuation because
3434  % it is written to, and subsequently read from, LaTeX .aux files.
3435  \NewDocumentCommand \dfgRestoreRequestedFunding { +m }
3436  {
3437    \bool_if:NF \l_@@_class_fastcompile_project_bool
3438    {
3439      \@@_add_entry:nnn { funding } { RequestedFundingOverview } {#1}
3440      \@@_funding_cache_entry:nn { RequestedFundingOverview } {#1}
3441    }
3442  }
3443
3444  % This public command is written to the auxiliary file.  Keep its name free of
3445  % expl3 punctuation so LaTeX can read it before the document body starts.
3446  \cs_new_protected:Npn \@@_requested_funding_staff_overview_ensure_schema:
3447  {
3448    \DTLifdbexists { RequestedFundingStaffOverview }
3449    { }
3450    { \DTLaction [ name = RequestedFundingStaffOverview ] { new } }
3451    \clist_map_inline:nn
3452    {
3453      ref-project-id, funding-status, staff-type, ref-person-id,
3454      firstname, lastname, academic-degree, positionText, field-of-research,
3455      ref-institution-id, ref-affiliation-id, department, commitment, category,
3456      funding-source, description
3457    }
```

```
3458    {
3459      \DTLifhaskey { RequestedFundingStaffOverview } {##1}
3460      { }
3461      { \DTLaddcolumn { RequestedFundingStaffOverview } {##1} }
3462    }
3463  }
3464
3465  \NewDocumentCommand \dfgRestoreRequestedFundingStaff { +m }
3466  {
3467    \bool_if:NF \l_@@_class_fastcompile_project_bool
3468    {
3469      \@@_requested_funding_staff_overview_ensure_schema:
3470      \@@_add_entry:nnn { staff } { RequestedFundingStaffOverview } {#1}
3471    }
3472  }
3473
3474  \bool_if:NF \l_@@_class_fastcompile_project_bool
3475  { \@@_requested_funding_staff_overview_ensure_schema: }
3476
3477  % Existing direct-cost rows are normally declared in the individual project
3478  % descriptions, after section 2.1.1 has already been typeset.  Mirror them to
3479  % a dedicated overview database so that the project table keeps using its live
3480  % rows without counting the restored rows twice.
3481  \cs_new_protected:Npn
3482    \@@_requested_and_existing_direct_costs_overview_ensure_schema:
3483  {
3484    \DTLifdbexists { RequestedAndExistingFundingDirectCostsOverview }
3485    { }
3486    { \DTLaction [ name = RequestedAndExistingFundingDirectCostsOverview ] { new } }
3487    \clist_map_inline:nn
3488    {
3489      ref-project-id, ref-affiliation-id, financed-by,
3490      sum-year1, sum-year2, sum-year3, sum-year4, sum-year5
3491    }
3492    {
3493      \DTLifhaskey { RequestedAndExistingFundingDirectCostsOverview } {##1}
3494      { }
3495      { \DTLaddcolumn { RequestedAndExistingFundingDirectCostsOverview } {##1} }
3496    }
3497  }
3498
3499  % This public command is written to the auxiliary file.  Its name deliberately
3500  % contains no expl3 punctuation so that LaTeX can read it at the start of the
3501  % following run.
3502  \NewDocumentCommand \dfgRestoreRequestedAndExistingFundingDirectCosts { +m }
3503  {
3504    \bool_if:NF \l_@@_class_fastcompile_project_bool
3505    {
3506      \@@_requested_and_existing_direct_costs_overview_ensure_schema:
3507      \@@_add_entry:nnn { funding }
3508        { RequestedAndExistingFundingDirectCostsOverview } {#1}
3509    }
3510  }
3511
3512  \bool_if:NF \l_@@_class_fastcompile_project_bool
3513  { \@@_requested_and_existing_direct_costs_overview_ensure_schema: }
3514
3515  % Keep the overview tables usable on the first run, before any project-local
3516  % entries have reached the auxiliary files.  A newly created database has no
3517  % columns, so establish the RequestedFunding schema explicitly: otherwise
3518  % sorting or filtering an empty overview raises ``No sort columns'' and
3519  % ``Unknown column key'' errors.  No placeholder row is required.
3520  \bool_if:NF \l_@@_class_fastcompile_project_bool
3521  {
3522    \DTLifdbexists { RequestedFundingOverview }
3523      { }
3524      {
3525        \DTLaction [ name = RequestedFundingOverview ] { new }
3526        \DTLaddcolumn { RequestedFundingOverview } { ref-project-id }
3527        \DTLaddcolumn { RequestedFundingOverview } { type }
3528        \DTLaddcolumn { RequestedFundingOverview } { category }
3529        \DTLaddcolumn { RequestedFundingOverview } { percentage }
3530        \DTLaddcolumn { RequestedFundingOverview } { quantity-year1 }
3531        \DTLaddcolumn { RequestedFundingOverview } { quantity-year2 }
```

```
      \DTLaddcolumn { RequestedFundingOverview } { quantity-year3 }
      \DTLaddcolumn { RequestedFundingOverview } { quantity-year4 }
      \DTLaddcolumn { RequestedFundingOverview } { quantity-year5 }
      \DTLaddcolumn { RequestedFundingOverview } { sum-year1 }
      \DTLaddcolumn { RequestedFundingOverview } { sum-year2 }
      \DTLaddcolumn { RequestedFundingOverview } { sum-year3 }
      \DTLaddcolumn { RequestedFundingOverview } { sum-year4 }
      \DTLaddcolumn { RequestedFundingOverview } { sum-year5 }
    }
}

\cs_new_protected:Npn \@@_cache_requested_funding:n #1
{
  \bool_if:NTF \g_@@_document_started_bool
  {
    \iow_now:Nx \@auxout
      {
        \token_to_str:N \dfgRestoreRequestedFunding
        { \exp_not:n {#1} }
      }
  }
  { \dfgRestoreRequestedFunding{#1} }
}

\cs_new_protected:Npn \@@_cache_requested_funding_staff:n #1
{
  \bool_if:NTF \g_@@_document_started_bool
  {
    \iow_now:Nx \@auxout
    {
      \token_to_str:N \dfgRestoreRequestedFundingStaff
      { \exp_not:n {#1} }
    }
  }
  { \dfgRestoreRequestedFundingStaff{#1} }
}

\cs_new_protected:Npn
  \@@_cache_requested_and_existing_direct_costs:n #1
{
  \bool_if:NTF \g_@@_document_started_bool
  {
    \iow_now:Nx \@auxout
    {
      \token_to_str:N \dfgRestoreRequestedAndExistingFundingDirectCosts
      { \exp_not:n {#1} }
    }
  }
  { \dfgRestoreRequestedAndExistingFundingDirectCosts{#1} }
}

% Focused project builds retain the project rows needed by generated plots when
% images are enabled, plus the rows needed by the three local funding tables.
% In particular, do not populate or restore any proposal-wide overview database
% through the auxiliary file.
\cs_new_protected:Npn \@@_fast_project_add_entry:nnn #1#2#3
{
  \bool_if:NT \l_@@_class_fastcompile_project_show_images_bool
  {
    \str_if_eq:nnT {#1/#2} {/project}
      { \@@_add_entry:nnn {project} {project} {#3} }
    \str_if_eq:nnT {#1} {gantt}
      { \@@_add_entry:nnn {#1} {#2} {#3} }
  }
  \bool_if:NT \l_@@_class_fastcompile_project_show_funding_tables_bool
  {
    \str_case:nn {#1/#2}
    {
      {funding/RequestedFunding}
      {
        \@@_add_entry:nnn {#1} {#2} {#3}
        \@@_funding_cache_entry:nn {#2} {#3}
      }
      {staff/RequestedFundingStaff}
```

```
3606          { \@@_add_entry:nnn {#1} {#2} {#3} }
3607        {funding/RequestedAndExistingFundingDirectCosts}
3608        {
3609          \@@_add_entry:nnn {#1} {#2} {#3}
3610          \@@_funding_cache_entry:nn {#2} {#3}
3611        }
3612      }
3613    }
3614  }
3615
3616  % Retain only the database-to-keyset mapping when focused builds skip rows.
3617  % The get parser needs the schema to consume reference paths without values.
3618  \prop_new:N \g_@@_database_keyset_prop
3619  \NewDocumentCommand \addEntry { O{} m m }
3620  {
3621    \tl_if_blank:nTF {#1}
3622      {\prop_gput:Nnn \g_@@_database_keyset_prop {#2}{#2}}
3623      {\prop_gput:Nnn \g_@@_database_keyset_prop {#2}{#1}}
3624    \bool_if:NTF \l_@@_class_fastcompile_project_bool
3625    { \@@_fast_project_add_entry:nnn {#1} {#2} {#3} }
3626    {
3627    \tl_if_eq:nnTF {#1} { cv }
3628    { \bool_if:NTF \l_@@_class_cv_bool
3629   { \@@_add_entry:nnn {#1} {#2} {#3} }
3630     { \msg_warning:nnn { dfg } { cv-entry-omitted } {#2} } }
3631    {% default behaviour: use #2 as family if #1 is empty
3632     \tl_if_empty:nTF {#1}
3633     { \@@_add_entry:nnn {#2} {#2} {#3} }
3634     {
3635        \@@_add_entry:nnn {#1} {#2} {#3}
3636        \str_if_eq:nnT {#1} { funding }
3637          { \@@_funding_cache_entry:nn {#2} {#3} }
3638        \bool_lazy_all:nT
3639          {
3640            { \str_if_eq_p:nn {#1} { funding } }
3641            { \str_if_eq_p:nn {#2} { RequestedFunding } }
3642          }
3643          { \@@_cache_requested_funding:n {#3} }
3644        \bool_lazy_all:nT
3645          {
3646            { \str_if_eq_p:nn {#1} { staff } }
3647            { \str_if_eq_p:nn {#2} { RequestedFundingStaff } }
3648          }
3649          { \@@_cache_requested_funding_staff:n {#3} }
3650        \bool_lazy_all:nT
3651          {
3652            { \str_if_eq_p:nn {#1} { funding } }
3653            { \str_if_eq_p:nn {#2} { RequestedAndExistingFundingDirectCosts } }
3654          }
3655          { \@@_cache_requested_and_existing_direct_costs:n {#3} }
3656      }
3657    }
3658    }
3659  }
```

Issued by `\addEntry` when an entry is targeted at the `cv` database but no CV is being produced (`\l_dfg_class_cv_bool` is false). The omitted entry's key-value data is included in the message to aid debugging.

```
3660  \msg_new:nnn { dfg } { cv-entry-omitted }
3661  {
3662    CV~entry~omitted:~no~CV~is~being~created.^^J
3663    Entry~data:~'#1'.
3664  }
```

There is a shortcut to define a database for e.g. a whole command to avoid all the time to write something like `\getEntry[⟨person⟩]{⟨MM⟩}{⟨lastname⟩}`. So you can define `\tmpLocalDB` with the database name.

```
3665  \str_set:Nn \tmpLocalDB {}
```

\getEntry →P. 4 The primary read command: \getEntry[⟨db⟩]{⟨id-value⟩}{⟨field⟩}[⟨id-field⟩].

1. #1: Database name (default: \tmpLocalDB).
2. #2: The value to look up in the id-field column.
3. #3: The field whose value is to be returned.
4. #4: The name of the ID column (default: id); change this to look up rows by a field other than the primary key.

The guard logic runs in order: If fastcompile-project →P. 82=true, replace the output with a literal identifier placeholder to skip the query entirely. If #1 is empty (\tmpLocalDB not set), warn and abort. If the database does not exist, warn and abort. Retrieve the value; if null/empty, warn (but only outside the tabularray measuring pass to avoid duplicate messages). Output via \dfgShowTag so that showtags →P. 82 annotations are applied automatically.

PDF-bookmark note (FIXME): When #3 contains LaTeX commands, the value may produce garbage in PDF bookmarks. Wrapping the output in \texorpdfstring would fix this but requires knowing at definition time what the field contains, which is not possible. A workaround is to use \texorpdfstring at the call site for fields that appear in section headings.

```
%\getEntry [<DB>]{<id-value>}{<field>}                [<id-column>]
%   single field, prints with \dfgShowTag wrapping
%
%\getEntry*[<DB>]{<id-value>}{<assignments>}           [<id-column>]
%   multi-field, assigns to macros, no printing
\NewDocumentCommand \dfgFastReference { m }
{ { \textcolor{error}{\texttt{<#1>}} } }

% Project IDs stay prominent when metadata lookups are skipped. Scope the
% style locally so following text and error diagnostics keep their colours.
\cs_new_protected:Npn \@@_fast_project_reference:n #1
{ \dfgFastReference{#1} }

\cs_new_protected:Npn \@@_fast_clear_assignment:w #1 = #2 \q_stop
{ \cs_set:Npn #1 { } }

\cs_new_protected:Npn \@@_fast_clear_assignments:n #1
{
  \clist_map_inline:nn {#1}
  { \@@_fast_clear_assignment:w ##1 \q_stop }
}

```

Indexed raw-row reads The private reader used by class-owned field lookups indexes each database by its literal id values. Each entry retains the first matching raw row and its traversal position, so duplicate IDs retain the original first-match behavior. The index stores tokens rather than expanded field values or formatted reference strings. The public \DTLgetvalueforkey is unchanged.

Before every indexed lookup, compare the raw database and header tokens with their saved snapshot. Any difference rebuilds that database's index, including direct Datatool edits, replacement records, sorting, and changes made locally inside a group. No explicit cache-reset command is required.

A database containing nonliteral IDs retains the original scan because an ID macro can change without changing the stored tokens. Other lookup columns and readers without the required Datatool map interface also use the original reader. Property keys stringify tokens, so a candidate match is checked for token equality before accepting it; unusual category codes fall back to the original comparison. Missing and null values use the original field extractor.

Datatool counters and hyperlink state The indexed reader reproduces the lookup's global result assignment, row counters, current index, and final row target at the appropriate nesting level. Inter-

mediate targets from the internal search walk are omitted; the terminal target and the surrounding output boundary remain available to labels and hyperlinks. Other Datatool loops keep their ordinary target creation.

```
\bool_new:N \l_@@_row_cache_enabled_bool
\bool_set_true:N \l_@@_row_cache_enabled_bool
\prop_new:N \g_@@_row_cache_databases_prop
\prop_new:N \g_@@_row_cache_snapshots_prop
\prop_new:N \g_@@_row_cache_literal_prop
\int_new:N \g_@@_row_cache_databases_int
\int_new:N \l_@@_row_cache_position_int
\tl_new:N \l_@@_row_cache_db_tl
\tl_new:N \l_@@_row_cache_index_tl
\tl_new:N \l_@@_row_cache_id_tl
\tl_new:N \l_@@_row_cache_record_tl
\tl_new:N \l_@@_row_cache_snapshot_tl
\tl_new:N \l_@@_row_cache_previous_tl
\tl_new:N \l_@@_row_cache_counter_tl

\cs_new_protected:Npn \@@_row_cache_build:nn #1#2
{
  \prop_gclear:c {g_@@_row_cache_#2_prop}
  \tl_gclear:c {g_@@_row_cache_last_#2_tl}
  \prop_gput:Nnn \g_@@_row_cache_literal_prop {#1}{false}
  \DTLifhaskey{#1}{id}
  {
    \prop_gput:Nnn \g_@@_row_cache_literal_prop {#1}{true}
    \group_begin:
    \int_zero:N \l_@@_row_cache_position_int
    \DTLmapdata[name={#1},read-only]
    {
      \int_incr:N \l_@@_row_cache_position_int
      \DTLmapget{key=id,return=\l_@@_row_cache_id_tl}
      \tl_gset_eq:cN {g_@@_row_cache_last_#2_tl}
        \l__datatool_map_data_row_tl
      \datatool_if_null:NF \l_@@_row_cache_id_tl
      {
        % Dynamic IDs could change first-match behavior without a DB edit.
        \tl_analysis_map_inline:Nn \l_@@_row_cache_id_tl
        {
          \str_case:nnF {##3} {{A}{} {B}{} {C}{}}
            { \prop_gput:Nnn \g_@@_row_cache_literal_prop {#1}{false} }
        }
        \exp_args:Nc \prop_if_in:NVF {g_@@_row_cache_#2_prop}
          \l_@@_row_cache_id_tl
        {
          \tl_set:Ne \l_@@_row_cache_record_tl
          {
            {\exp_not:V \l_@@_row_cache_id_tl}
            {\int_use:N \l_@@_row_cache_position_int}
            {\exp_not:V \l__datatool_map_data_row_tl}
          }
          \exp_args:Nc \prop_gput:NVV {g_@@_row_cache_#2_prop}
            \l_@@_row_cache_id_tl \l_@@_row_cache_record_tl
        }
      }
    }
    \group_end:
  }{}
}

\cs_new_protected:Npn \@@_row_cache_prepare:n #1
{
  \prop_get:NnNTF \g_@@_row_cache_databases_prop {#1}
    \l_@@_row_cache_index_tl
  {}{
    \int_gincr:N \g_@@_row_cache_databases_int
    \tl_set:Ne \l_@@_row_cache_index_tl
      {\int_use:N \g_@@_row_cache_databases_int}
    \prop_gput:NnV \g_@@_row_cache_databases_prop {#1}
      \l_@@_row_cache_index_tl
    \prop_new:c {g_@@_row_cache_\l_@@_row_cache_index_tl _prop}
    \tl_new:c {g_@@_row_cache_last_\l_@@_row_cache_index_tl _tl}
  }
```

```
3758    \@@_database_snapshot:nN {#1} \l_@@_row_cache_snapshot_tl
3759    \prop_get:NnNTF \g_@@_row_cache_snapshots_prop {#1}
3760      \l_@@_row_cache_previous_tl
3761      {}{\tl_clear:N \l_@@_row_cache_previous_tl}
3762    \tl_if_eq:NNF \l_@@_row_cache_snapshot_tl \l_@@_row_cache_previous_tl
3763    {
3764      \prop_gput:NnV \g_@@_row_cache_snapshots_prop {#1}
3765        \l_@@_row_cache_snapshot_tl
3766      \exp_args:NnV \@@_row_cache_build:nn {#1}
3767        \l_@@_row_cache_index_tl
3768    }
3769  }
3770
3771  \cs_new_protected:Npn \@@_row_cache_current:n #1
3772    {\dtlcurrentrow={#1}}
3773
3774  \cs_new_protected:Npn \@@_row_cache_use:Nnnnn #1#2#3#4#5
3775  {
3776    % Reproduce the reader's counter values and terminal link target. Intermediate
3777    % search-row targets are not needed: no user code executes inside this scan.
3778    \refstepcounter{DTLrow}
3779    \tl_gset:Ne \@dtl@dbname {#3}
3780    \int_compare:nNnT {#4} > {0}
3781    {
3782      \tl_set:Ne \l_@@_row_cache_counter_tl
3783        {DTLrow\int_to_roman:n {\dtlforeachlevel+1}}
3784      \int_gset:cn {c@\l_@@_row_cache_counter_tl} {#4-1}
3785      \exp_args:NV \refstepcounter \l_@@_row_cache_counter_tl
3786      \tl_set:Ne \DTLcurrentindex {#4}
3787      \dtlcurrentrow={#5}
3788    }
3789    % Datatool's xdef of a token register preserves the contained tokens.
3790    % Copy the raw row without expanding names, formatting or other metadata.
3791    \gdef\@dtl@row{#5}
3792    \@sdtl@getcolumnindex{\@dtl@col}{#3}{#2}
3793    {
3794      \dtlcurrentrow=\expandafter{\@dtl@row}
3795      \edef\@dtl@dogetval{\noexpand\dtlgetentryfromcurrentrow
3796        {\noexpand\@dtl@val}{\@dtl@col}}
3797      \@dtl@dogetval
3798      \global\let#1=\@dtl@val
3799    }
3800  }
3801
3802  \cs_new_protected:Npn \@@_row_cache_found:nnnNnnn #1#2#3#4#5#6#7
3803  {
3804    % Property keys stringify tokens; verify token equality for unusual catcodes.
3805    \tl_if_eq:NnTF \l_@@_row_cache_id_tl {#1}
3806      {\@@_row_cache_use:Nnnnn #4 {#5}{#6}{#2}{#3}}
3807      {\DTLgetvalueforkey #4 {#5}{#6}{id}{#7}}
3808  }
3809
3810  \cs_new_protected:Npn \@@_getvalueforkey:Nnnnn #1#2#3#4#5
3811  {
3812    \bool_lazy_all:nTF
3813    {
3814      {\bool_if_p:N \l_@@_row_cache_enabled_bool}
3815      {\str_if_eq_p:ee {#4}{id}}
3816      {\int_compare_p:n {\dtlforeachlevel<3}}
3817      {\cs_if_exist_p:N \DTLmapdata}
3818      {\cs_if_exist_p:N \l__datatool_map_data_row_tl}
3819    }
3820    {
3821      \DTLifdbexists{#3}
3822      {
3823        \tl_set:Ne \l_@@_row_cache_db_tl {#3}
3824        \exp_args:NV \@@_row_cache_prepare:n \l_@@_row_cache_db_tl
3825        \prop_get:NVN \g_@@_row_cache_literal_prop
3826          \l_@@_row_cache_db_tl \l_@@_row_cache_previous_tl
3827        \str_if_eq:VnTF \l_@@_row_cache_previous_tl {true}
3828        {
3829          \tl_set:Ne \l_@@_row_cache_id_tl {#5}
3830          \exp_args:Nc \prop_get:NVNTF
3831            {g_@@_row_cache_\l_@@_row_cache_index_tl _prop}
```

```
            \l_@@_row_cache_id_tl \l_@@_row_cache_record_tl
          {
            \exp_after:wN \@@_row_cache_found:nnnNnnn
              \l_@@_row_cache_record_tl #1 {#2}{#3}{#5}
          }
          {
            \@@_row_cache_use:Nnnnn #1 {#2}{#3}{\DTLrowcount{#3}}{}
            \int_compare:nNnT {\DTLrowcount{#3}} > {0}
            {
              \exp_args:Nv \@@_row_cache_current:n
                {g_@@_row_cache_last_\l_@@_row_cache_index_tl _tl}
            }
          }
        }
        {\DTLgetvalueforkey #1 {#2}{#3}{#4}{#5}}
      }
      {\DTLgetvalueforkey #1 {#2}{#3}{#4}{#5}}
    }
    {\DTLgetvalueforkey #1 {#2}{#3}{#4}{#5}}
  }

  \NewDocumentCommand{\getEntry}{s O{\tmpLocalDB} m m O{id}}
  {%
    \bool_if:NTF \l_@@_class_fastcompile_project_bool
    {
      \IfBooleanTF{#1}
      { \@@_fast_clear_assignments:n {#4} }
      {
        \dfgShowTag {#3}{#4}
          {
            \str_if_eq:eeTF {#2} {project}
              { \@@_fast_project_reference:n {#3} }
              { \dfgFastReference{#3} }
          }
          [#2]
      }
    }
    {
      \IfBooleanTF{#1}
      { \@@_get_entry_multi:nnnn  {#2}{#3}{#4}{#5} }
      { \@@_get_entry_single:nnnn {#2}{#3}{#4}{#5} }%
    }
  }

```

Reference-aware lookup (`\get`) Parse relation steps before rendering, so metadata containing braces cannot become part of the path. The walker carries its path in arguments rather than shared scratch variables; this also permits branching reference lists.

```
  \tl_new:N \l_@@_get_path_db_tl
  \tl_new:N \l_@@_get_path_id_tl
  \tl_new:N \l_@@_get_path_id_field_tl
  \tl_new:N \l_@@_get_path_scan_db_tl
  \tl_new:N \l_@@_get_path_field_tl
  \tl_new:N \l_@@_get_path_tl
  \tl_new:N \l_@@_get_path_keyset_tl
  \tl_new:N \l_@@_get_path_target_tl
  \tl_new:N \l_@@_get_path_value_tl
  \seq_new:N \l_@@_get_path_values_seq
  \seq_new:N \l_@@_get_path_annotation_seq
  \prop_new:N \l_@@_get_path_seen_prop

  \NewDocumentCommand{\get}{s O{\tmpLocalDB} m m O{id}}
  {
    \IfBooleanTF{#1}
      {\getEntry*[#2]{#3}{#4}[#5]}
      {
        \group_begin:
        \tl_set:Ne \l_@@_get_path_db_tl {#2}
        \tl_set:Ne \l_@@_get_path_id_tl {#3}
        \tl_set:Nn \l_@@_get_path_id_field_tl {#5}
        \tl_set_eq:NN \l_@@_get_path_scan_db_tl \l_@@_get_path_db_tl
```

```
      \tl_clear:N \l_@@_get_path_tl
      \seq_clear:N \l_@@_get_path_annotation_seq
      \@@_get_path_scan:n {#4}
    }
}

\prg_new_protected_conditional:Npnn \@@_get_path_if_has_key:nn #1#2 {TF}
{
  \datatool_if_has_key:nnTF {#1}{#2}
    {\prg_return_true:}
    {
      \prop_get:NnNF \g_@@_database_keyset_prop {#1}
        \l_@@_get_path_keyset_tl
        {\tl_set:Nn \l_@@_get_path_keyset_tl {#1}}
      \exp_args:NV \keys_if_exist:nnTF \l_@@_get_path_keyset_tl {#2}
        {\prg_return_true:}{\prg_return_false:}
    }
}
\prg_generate_conditional_variant:Nnn \@@_get_path_if_has_key:nn {Vn} {TF}

\cs_new_protected:Npn \@@_get_path_scan:n #1
{
  \tl_put_right:Nn \l_@@_get_path_tl {{#1}}
  \seq_put_right:Nn \l_@@_get_path_annotation_seq {#1}
  \tl_set:Nn \l_@@_get_path_field_tl {#1}
  \tl_set:Nn \l_@@_get_path_target_tl {#1}
  \regex_match:nnTF {\A ref-.+-id \Z} {#1}
    {
      \regex_replace_once:nnN {\A ref-(.+)-id \Z} {\1}
        \l_@@_get_path_target_tl
      \@@_get_path_next:
    }
    {
      % An actual scalar field takes precedence over a database shorthand.
      \@@_get_path_if_has_key:VnTF \l_@@_get_path_scan_db_tl {#1}
        {\@@_get_path_finish:}
        {
          \@@_get_path_if_has_key:VnTF \l_@@_get_path_scan_db_tl {ref-#1-id}
            {\@@_get_path_next:}
            {
              \DTLifdbexists{#1}
                {\@@_get_path_next:}
                {\@@_get_path_finish:}
            }
        }
    }
}
% xparse preserves following prose when no optional braced step is present.
\NewDocumentCommand{\@@_get_path_next:}{g}
{
  \IfNoValueTF{#1}
    {\@@_get_path_finish:}
    {
      \tl_set_eq:NN \l_@@_get_path_scan_db_tl \l_@@_get_path_target_tl
      \@@_get_path_scan:n {#1}
    }
}

\cs_new_protected:Npn \@@_get_path_missing:nnn #1#2#3
{
  \tl_clear:N \l_@@_get_path_value_tl
  \bool_if:NF \lTblrMeasuringBool
    {\msg_warning:nnnnn {dfg}{missing-key}{#1}{#2}{#3}}
}
\cs_new_protected:Npn \@@_get_path_read:nnnn #1#2#3#4
{
  \tl_clear:N \l_@@_get_path_value_tl
  \tl_if_blank:nTF {#1}
    {\msg_warning:nnn {dfg}{database-name-not-given}{#2-/-#3}}
    {
      \DTLifdbexists{#1}
        {
          \datatool_if_has_key:nnTF {#1}{#3}
            {
```

```
              \datatool_if_has_key:nnTF {#1}{#4}
                {
                  \@@_getvalueforkey:Nnnnn{\l_@@_get_path_value_tl}{#3}{#1}{#4}{#2}
                  \DTLifnullorempty{\l_@@_get_path_value_tl}
                    {\@@_get_path_missing:nnn {#1}{#2}{#3}} {}
                }
                {\@@_get_path_missing:nnn {#1}{#2}{#4}}
            }
            {\@@_get_path_missing:nnn {#1}{#2}{#3}}
        }
        {\msg_warning:nnn {dfg}{database-not-found}{#1}}
    }
}

\cs_new_protected:Npn \@@_get_path_walk:nnnw #1#2#3#4#5\q_stop
{
  \tl_if_eq:nnTF {#5}{\q_nil}
    {
      \prop_if_in:NnF \l_@@_get_path_seen_prop {{#1}{#2}{#4}}
        {
          \prop_put:Nnn \l_@@_get_path_seen_prop {{#1}{#2}{#4}} {}
          \@@_get_path_read:nnnn {#1}{#2}{#4}{#3}
          \tl_if_empty:NF \l_@@_get_path_value_tl
            {
              \seq_put_right:Ne \l_@@_get_path_values_seq
                {
                  \exp_not:N \dfgShowTag {#2}{#4}
                    {\exp_not:V \l_@@_get_path_value_tl}[#1]
                }
            }
        }
    }
    {
      \tl_set:Nn \l_@@_get_path_target_tl {#4}
      \regex_replace_once:nnN {\A ref-(.+)-id \Z} {\1}
        \l_@@_get_path_target_tl
      \use:e
        {
          \exp_not:N \@@_get_path_read:nnnn {#1}{#2}
            {ref-\l_@@_get_path_target_tl-id}{#3}
        }
      \tl_if_empty:NF \l_@@_get_path_value_tl
        {
          % Freeze both the destination database and the complete ID list
          % before recursion changes the local lookup variables.
          \use:e
            {
              \exp_not:N \@@_get_path_branch:nnn
                {\l_@@_get_path_target_tl}
                {\exp_not:V \l_@@_get_path_value_tl}
                {\exp_not:n {#5}}
            }
        }
    }
}
\cs_new_protected:Npn \@@_get_path_branch:nnn #1#2#3
{
  \clist_map_inline:nn {#2}
    {\@@_get_path_walk:nnnw {#1}{##1}{id}#3\q_stop}
}
\cs_new_protected:Npn \@@_get_path_finish:
{
  \bool_if:NTF \l_@@_class_fastcompile_project_bool
    {
      \tl_set:Ne \l_tmpa_tl
        {\seq_use:Nn \l_@@_get_path_annotation_seq {/}}
      \use:e
        {
          \exp_not:N \dfgShowTag
            {\exp_not:V \l_@@_get_path_id_tl}
            {\exp_not:V \l_tmpa_tl}
            {
              \exp_not:n
                {
```

```
                  \str_if_eq:VnTF \l_@@_get_path_db_tl {project}
                    {\@@_fast_project_reference:n {\l_@@_get_path_id_tl}}
                    {\dfgFastReference{\l_@@_get_path_id_tl}}
                }
            }
            [\exp_not:V \l_@@_get_path_db_tl]
        }
    }
    {
      \seq_clear:N \l_@@_get_path_values_seq
      \prop_clear:N \l_@@_get_path_seen_prop
      \use:e
        {
          \exp_not:N \@@_get_path_walk:nnnw
            {\l_@@_get_path_db_tl}{\l_@@_get_path_id_tl}
            {\l_@@_get_path_id_field_tl}
            \exp_not:V \l_@@_get_path_tl \exp_not:N \q_nil \exp_not:N \q_stop
        }
      \seq_use:Nn \l_@@_get_path_values_seq {,~}
    }
  \group_end:
}

% --- single-field (your existing behaviour, lightly cleaned) ----------------
\cs_new_protected:Nn \@@_get_entry_single:nnnn
{
  % #1 db, #2 id-value, #3 field, #4 id-column
  \tl_if_blank:nTF {#1}
  { \msg_warning:nne {dfg}{database-name-not-given}{#2-/-#3} }
  {%
   \DTLifdbexists{#1}
   {%
      \@@_getvalueforkey:Nnnnn{\thevalue}{#3}{#1}{#4}{#2}%
    \DTLifnullorempty{\thevalue}
    {%
     \bool_if:NF \lTblrMeasuringBool
     { \msg_warning:nneee {dfg}{missing-key}{#1}{#2}{#3} }%
    }
    { \dfgShowTag{#2}{#3}{\thevalue}[#1] }%
   }
   { \msg_warning:nne {dfg}{database-not-found}{#1} }%
  }%
}

% --- multi-field: hoists checks out of per-field loop -----------------------
\cs_new_protected:Nn \@@_get_entry_multi:nnnn
{
  \tl_if_blank:nTF {#1}
  { \msg_warning:nne {dfg}{database-name-not-given}{#2-/-multi} }
  {%
   \tl_set:Nx \l_tmpa_tl {#1}%
   \tl_set:Nx \l_tmpb_tl {#2}%
   \DTLifdbexists{\l_tmpa_tl}
   {%
    % \typeout{DEBUG:~about~to~assign~from~\l_tmpa_tl~for~id~\l_tmpb_tl}%
    \use:x
    {
     \exp_not:N \DTLassignfirstmatch
     { \exp_not:V \l_tmpa_tl }
     { \exp_not:n {#4} }
     { \exp_not:V \l_tmpb_tl }
     { \exp_not:n {#3} }
    }%
    % \typeout{DEBUG:~done.~theLastName~=~\theLastName}%
   }
   { \msg_warning:nne {dfg}{database-not-found}{\l_tmpa_tl} }%
  }%
}

\cs_new_protected:Npn \@@_check_empty:w #1 = #2 \q_stop #3#4
{
  % #1: target macro tokens, #2: field name, #3: db, #4: id
  \exp_args:NV \DTLifnullorempty #1
  { \msg_warning:nneee {dfg}{missing-key}{#3}{#4}{#2} }
```

```
4121    { }%
4122  }
4123
4124  \cs_new_protected:Nn \@@_check_empty:nnn
4125  {
4126    % #1 db, #2 id, #3 single "\macro = field" pair
4127    \@@_check_empty:w #3 \q_stop {#1}{#2}%
4128  }
4129
```

Sometimes you need to get the last name of a person in the text. Here is how to do it, `\getName` →P. 7.

```
4130  \NewDocumentCommand{\getName}{m}{\getEntry[person]{#1}{lastname}}
```

Sometimes you need to get the full name of a person in the text. Here is how to do it, `\getFullName` →P. 7.

```
4131  \NewDocumentCommand{\getFullName}{s m}
4132  {%
4133    \bool_if:NTF \l_@@_class_fastcompile_project_bool
4134    { \dfgFastReference{#2} }
4135    {
4136    % #1: starred -> include academic degree
4137    % #2: person id
4138    \getEntry*[person]{#2}{
4139     \theAcademicDegree = academicdegree,
4140     \theFirstName      = firstname,
4141     \theLastName       = lastname
4142    }%
4143    \IfBooleanT{#1}
4144    {
4145      \DTLifnulloremptyempty{\theAcademicDegree}{}
4146        {\dfgShowTag{#2}{academicdegree}{\theAcademicDegree}[person]\space}
4147    }%
4148    \dfgShowTag{#2}{firstname}{\theFirstName}[person]\space
4149    \dfgShowTag{#2}{lastname}{\theLastName}[person]
4150    }
4151  }
```

`\compareEntry` →P. 5 `\compareEntry` →P. 5 `[`⟨*db*⟩`]` {⟨*id*⟩} {⟨*field*⟩} {⟨*value*⟩} {⟨*true*⟩} {⟨*false*⟩} reads ⟨*field*⟩ from the row with the given ⟨*id*⟩ and executes ⟨*yes*⟩ if it matches ⟨*value*⟩, otherwise ⟨*no*⟩. It is used throughout the tables to branch on e.g. project type or status without repeating the full `\DTLgetvalueforkey`/`\if` pattern.

The internal implementation `\dfg_compare_entry:nnnnnn` runs the same three guard checks as `\getEntry` →P. 4 (empty DB name, non-existent DB), then uses `\exp_args:Nx` to fully expand `\thevalue` before the `\tl_if_eq:nnTF` test, ensuring that stored macro values are resolved correctly.

```
4152  \cs_new_protected:Npn \dfg_compare_entry:nnnnnn #1#2#3#4#5#6
4153  {
4154    \bool_if:NTF \l_@@_class_fastcompile_project_bool
4155    {#6}
4156    {
4157    \tl_if_blank:nTF {#1}
4158    { \msg_warning:nnn { dfg } { database-name-not-given } {#1} }
4159    {
4160     \DTLifdbexists{#1}
4161     {
4162        \@@_getvalueforkey:Nnnnn{\thevalue}{#3}{#1}{id}{#2}%
4163      \str_if_eq:eeTF { \thevalue } {#4}
4164       {#5}
4165       {#6}
4166     }
4167     { \msg_warning:nnn { dfg } { database-not-found } {#1} }
4168    }
4169    }
4170  }
4171
4172  \NewDocumentCommand \compareEntry { O{\tmpLocalDB} m m m m m }
4173  {
```

```
4174    \dfg_compare_entry:nnnnnn {#1}{#2}{#3}{#4}{#5}{#6}
4175  }
```

6.1.22 Table and list dispatch (`\printTable`, `\printList`)

Rather than requiring the user to call `\ProjectLeadersTable`, `\OverviewOfFundsRequestedForStaffT` etc. directly, two thin dispatchers are provided: `\printTable[⟨opts⟩]{⟨name⟩}` and `\printList[⟨opts⟩]{⟨name⟩}`.

They synthesise the command name by appending `Table` or `List` to the ⟨*name*⟩ argument (using `\cs:w...\cs_end:`), then pass the optional argument through if present. This pattern means new tables can be added to the class without any change to user-facing call sites.

All three commands check `fastcompile` first and emit a `\dfgItemSkipped` placeholder instead of running the real command when compilation speed is prioritised. Focused project mode makes narrow exceptions when `fastcompile-project-show-funding-tables=true`: the three project-local funding tables are rendered from their retained local rows; when `fastcompile-project-show-images=true`, plots are rendered from retained project metadata. During real rendering the commands also establish the compact former-project context: reference-only projects receive an asterisk, and a local legend is added only if at least one such project was encountered. A `\rowNumber` counter is reset before each table for use in zebra-stripe logic inside individual table implementations.

```
4176
4177  \tl_new:N \l_tblr_body_tl                % token list that will hold the rows
4178
4179  \bool_new:N \l_@@_former_project_compact_bool
4180  \bool_new:N \g_@@_former_project_seen_bool
4181
4182  \cs_new_protected:Npn \@@_former_project_note:
4183  {
4184    \smallskip
4185    \noindent
4186    {\normalfont\normalcolor\footnotesize
4187      \textsuperscript{*}\,Former~project}\par
4188  }
4189
4190  \cs_new_protected:Npn \@@_former_project_context:n #1
4191  {
4192    \bool_set_true:N \l_@@_former_project_compact_bool
4193    % Table cells and list implementations introduce their own groups, so the
4194    % occurrence flag must be latched globally for the duration of this context.
4195    \bool_gset_false:N \g_@@_former_project_seen_bool
4196    #1
4197    \bool_if:NT \g_@@_former_project_seen_bool
4198      { \@@_former_project_note: }
4199    \bool_set_false:N \l_@@_former_project_compact_bool
4200    \bool_gset_false:N \g_@@_former_project_seen_bool
4201  }
4202
4203  \cs_new_protected:Npn \@@_print_thing:nnnn #1#2#3#4 {
4204    \bool_if:NTF \l_@@_class_fastcompile_bool
4205    { \@@_print_thing_skipped:nn {#1} {#3} }
4206    {%
4207      \@@_former_project_context:n
4208      {
4209        #4%
4210        \StartTimer
4211        \@@_print_thing_call:nnn {#1} {#2} {#3}%
4212        \StopTimer { \@@_print_thing_label:n {#3} }%
4213      }
4214    }
4215  }
4216
4217  \cs_new_protected:Npn \@@_print_thing_call:nnn #1#2#3 {
4218    \tl_if_head_is_group:nTF {#3}
4219    { \@@_print_thing_split:nnw {#1} {#2} #3 \empty \q_stop }
4220    { \cs:w #3 #1 \cs_end: #2 }
4221  }
```

```
4222
4223  \cs_new_protected:Npn \@@_print_thing_split:nnw #1#2#3#4 \q_stop {
4224    \cs:w #3 #1 \cs_end: #2 #4
4225  }
4226
4227  \cs_new:Npn \@@_print_thing_label:n #1 {
4228    \tl_if_head_is_group:nTF {#1}
4229    { \@@_print_thing_label_aux:w #1 \empty \q_stop }
4230    { #1 }
4231  }
4232
4233  \cs_new:Npn \@@_print_thing_label_aux:w #1#2 \q_stop {
4234    #1 \tl_if_blank:nF {#2} { - \@@_print_thing_label_tail:n {#2} }
4235  }
4236
4237  \cs_new:Npn \@@_print_thing_label_tail:n #1 {
4238    \tl_if_head_eq_charcode:nNTF {#1} [
4239      { \@@_print_thing_label_skip_optional:w #1 \q_stop }
4240      { \tl_head:n {#1} }
4241  }
4242
4243  \cs_new:Npn \@@_print_thing_label_skip_optional:w [#1]#2 \q_stop {
4244    \tl_head:n {#2}
4245  }
4246
4247  \cs_new_protected:Npn \@@_print_thing_skipped:nn #1#2 {
4248    \dfgItemSkipped { \@@_print_thing_label:n {#2} #1 }
4249  }
4250
4251  \cs_new:Npn \@@_print_table_name:n #1
4252  {
4253    \tl_if_head_is_group:nTF {#1}
4254      { \@@_print_table_name_aux:w #1 \q_stop }
4255      {#1}
4256  }
4257
4258  \cs_new:Npn \@@_print_table_name_aux:w #1#2 \q_stop {#1}
4259
4260  \prg_new_protected_conditional:Npnn
4261    \@@_print_table_if_fast_project_funding:n #1 { TF }
4262  {
4263    \bool_lazy_all:nTF
4264    {
4265      { \l_@@_class_fastcompile_project_bool }
4266      { \l_@@_class_fastcompile_project_show_funding_tables_bool }
4267    }
4268    {
4269      \str_case_e:nnF { \@@_print_table_name:n {#1} }
4270      {
4271        {RequestedFunding} { \prg_return_true: }
4272        {RequestedFundingStaff} { \prg_return_true: }
4273        {RequestedAndExistingFundingDirectCosts} { \prg_return_true: }
4274      }
4275      { \prg_return_false: }
4276    }
4277    { \prg_return_false: }
4278  }
4279
4280  \cs_new_protected:Npn \@@_print_table_dispatch:nn #1#2
4281  {
4282    \@@_print_table_if_fast_project_funding:nTF {#2}
4283    {
4284      \@@_former_project_context:n
4285      {
4286        \setcounter{rowNumber}{0}
4287        \@@_print_thing_call:nnn {Table} {#1} {#2}
4288      }
4289    }
4290    { \@@_print_thing:nnnn {Table} {#1} {#2} {\setcounter{rowNumber}{0}} }
4291  }
4292
4293  % The dispatcher owns note; all other options retain the target's syntax.
4294  \tl_new:N \l_@@_print_table_note_tl
4295  \tl_new:N \l_@@_print_table_options_tl
```

```
\bool_new:N \l_@@_print_table_note_given_bool
\bool_new:N \l_@@_print_table_note_found_bool
\int_new:N \l_@@_print_table_note_level_int
\keys_define:nn { @@ / print-table }
{
  note .code:n =
  {
    \bool_set_true:N \l_@@_print_table_note_given_bool
    \tl_set:Nn \l_@@_print_table_note_tl {#1}
  },
  note .value_required:n = true,
}

\cs_new_protected:Npn \@@_print_table_remark_line:
{
  \hangindent = 0.7em
  \hangafter = 1
  \UseTblrHang {remark}
  \leavevmode
  \UseTblrTemplate {remark-tag} {default}
  \UseTblrTemplate {remark-sep} {default}
  \UseTblrTemplate {remark-text} {default}
  \par
}

% Use tabularray's normal remark layout and styles. Append to an existing
% Note remark; retain other remark tags and native lettered table notes.
% The level guard excludes tables nested in cells or note text.
\DeclareTblrTemplate {remark} {dfg-print-table-note}
{
  \UseTblrAlign {remark}
  \UseTblrIndent {remark}
  \bool_set_false:N \l_@@_print_table_note_found_bool
  \MapTblrRemarks
  {
    \tl_if_blank:VF \l_@@_print_table_note_tl
    {
      \int_compare:nNnT {\gTblrLevelInt}
        = {\l_@@_print_table_note_level_int}
      {
        \tl_if_eq:NnT \InsertTblrRemarkTag {Note}
        {
          \tl_put_right:Nn \InsertTblrRemarkText
            {\space\tl_use:N \l_@@_print_table_note_tl}
          \bool_set_true:N \l_@@_print_table_note_found_bool
        }
      }
    }
    \@@_print_table_remark_line:
  }
  \tl_if_blank:VF \l_@@_print_table_note_tl
  {
    \int_compare:nNnT {\gTblrLevelInt}
      = {\l_@@_print_table_note_level_int}
    {
      \bool_if:NF \l_@@_print_table_note_found_bool
      {
        \tl_set:Nn \InsertTblrRemarkTag {Note}
        \tl_set_eq:NN \InsertTblrRemarkText \l_@@_print_table_note_tl
        \@@_print_table_remark_line:
      }
    }
  }
}

\cs_new_protected:Npn \@@_print_table_with_options:nn #1#2
  { \@@_print_table_dispatch:nn { [#1] } {#2} }

\NewDocumentCommand{\printTable}{ +o +m }{%
  % Finish the paragraph and anchor a preceding heading before table layout.
  \@@_table_start:
  % Table footers are boxed; emit their saved page footnotes afterwards.
  \begin{savenotes}
  \group_begin:
```

```
  \tl_clear:N \l_@@_print_table_note_tl
  \bool_set_false:N \l_@@_print_table_note_given_bool
  \int_set:Nn \l_@@_print_table_note_level_int {\gTblrLevelInt + 1}
  \IfNoValueTF {#1}
    { \@@_print_table_dispatch:nn { } {#2} }
    {
      \keys_set_known:nnN { @@ / print-table } {#1}
        \l_@@_print_table_options_tl
      \bool_if:NTF \l_@@_print_table_note_given_bool
      {
        \tl_if_blank:VF \l_@@_print_table_note_tl
        {
          \SetTblrTemplate {remark} {dfg-print-table-note}
          % Short tblr tables do not render footers. Tall tables retain their
          % unbreakable body and render the note; explicit long still wins.
          \SetTblrOuter[tblr]{tall}
        }
        \tl_if_blank:VTF \l_@@_print_table_options_tl
          { \@@_print_table_dispatch:nn { } {#2} }
          {
            \exp_args:NV \@@_print_table_with_options:nn
              \l_@@_print_table_options_tl {#2}
          }
      }
      % Preserve the original optional argument, including an explicit [],
      % when the dispatcher has not consumed a note key.
      { \@@_print_table_dispatch:nn { [#1] } {#2} }
    }
  \par
  \group_end:
  \end{savenotes}
}

% Person-specific institution lists also run inside tables and PI cards.
% Call their formatter directly so a nested list does not reset the outer
% former-project context; this also preserves its focused-build output.
\cs_new_protected:Npn \@@_print_list_dispatch:nn #1#2
{
  \str_if_eq:eeTF { \@@_print_table_name:n {#2} } { Institutions }
    { \@@_print_thing_call:nnn { List } {#1} {#2} }
    { \@@_print_thing:nnnn { List } {#1} {#2} { } }
}

\NewDocumentCommand{\printList}{ o +m o }{%
  % Accept old trailing options, but let the leading options take precedence.
  \IfNoValueTF {#3}
  {
    \IfNoValueTF {#1}
      { \@@_print_list_dispatch:nn { } {#2} }
      { \@@_print_list_dispatch:nn { [#1] } {#2} }
  }
  {
    \IfNoValueTF {#1}
      { \@@_print_list_dispatch:nn { [#3] } {#2} }
      { \@@_print_list_dispatch:nn { [#3,#1] } {#2} }
  }
}

% Database-aware list commands share one leading option list. Bare existing
% database names remain valid for compatibility with the previous interface.
\tl_new:N \l_@@_list_database_tl
\tl_new:N \l_@@_list_options_tl
\keys_define:nn { @@ / list-options }
{
  database .tl_set:N = \l_@@_list_database_tl,
}
\cs_new_protected:Npn \@@_list_options:n #1
{
  \tl_set:Nn \l_@@_list_database_tl {person}
  \tl_clear:N \l_@@_list_options_tl
  \tl_if_blank:nF {#1}
  {
    \DTLifdbexists{#1}
      { \tl_set:Nn \l_@@_list_database_tl {#1} }
```

```
      {
        \keys_set_known:nnN { @@ / list-options } {#1}
          \l_@@_list_options_tl
      }
  }
}

\cs_new_protected:Npn \@@_print_plot_dispatch:nn #1#2
{
  \bool_lazy_all:nTF
  {
    { \l_@@_class_fastcompile_project_bool }
    { \l_@@_class_fastcompile_project_show_images_bool }
  }
  {
    \@@_former_project_context:n
    { \@@_print_thing_call:nnn {Plot} {#1} {#2} }
  }
  { \@@_print_thing:nnnn {Plot} {#1} {#2} { } }
}

% Plot-specific keys are consumed by each renderer; remaining keys belong to
% hvfloat. Keep their values unexpanded until the native optional argument.
\tl_new:N \l_@@_plot_float_options_tl
% #1: renderer key family, #2: type-specific defaults variable, #3: call options.
% Expand the stored lists once, preserving macros and braced comma values.
\cs_new_protected:Npn \@@_plot_options_set:nNn #1#2#3
  {
    \exp_args:Nne \keys_set_known:nnN { dfg / #1 }
      {
        \exp_not:V \l_@@_custom_plot_options_tl,
        \exp_not:V #2,
        \exp_not:n {#3}
      } \l_@@_plot_float_options_tl
  }
\cs_new_protected:Npn \@@_plot_float:
  {
    \par
    \use:e
      {
        \exp_not:N \hvFloat
          [floatPos=!hb,capPos=bottom,\exp_not:V \l_@@_plot_float_options_tl]
      }
  }

\NewDocumentCommand{\printPlot}{ o +m }{%
  \IfNoValueTF {#1}
  { \@@_print_plot_dispatch:nn { } {#2} }
  { \@@_print_plot_dispatch:nn { [#1] } {#2} }%
}

\newcounter{rowNumber}
```

6.1.23 Data tables

All tables follow the same three-phase pattern: **Body accumulation:** A `\DTLforeach*` loop iterates over the relevant database (filtered and sorted as required) and appends one tblr row to the token list `\l_tblr_body_tl` via `\tl_gput_right:Nx`. Using a global token list and `:Nx` (full expansion) ensures that database values are resolved at loop time rather than at tblr rendering time. **Table opening:** `\begin{tblr}` with the `main` theme, `expand=\l_tblr_body_tl`, `long` (for page-breaking), and a column spec tailored to the specific table. **Header row + body:** A literal first row provides column headings; `\l_tblr_body_tl` follows as the data rows.

ProjectLeadersTable Lists all PIs who are active in the current funding period (`\theFundingPeriodNumeral`), sorted by last name. The filter applies two conditions simultaneously: `period` → P. 79 must contain the current numeral and `role` → P. 79 must contain `PI`. The first cell of every row defines the hyperlink destination `pi:<id>` used by `\getPI`. The

compact gender column has no heading; its values remain in the body. The doctorate column uses a two-line heading and a dedicated 1.7 cm width. After sorting, prefetch raw rows from the four databases used by deferred cell commands. Tabularray may evaluate those commands repeatedly while measuring widths; the shared reader reuses the index while still checking for intervening database changes. Cell formatting and hyperlink creation remain at the output site. Older map interfaces skip the prefetch step.

```
4496
4497  % Use the same institution formatter as the CV section.  The public
4498  % \InstitutionsList maps institution ids through \_@@_one_institution:n
4499  % and uses \par\medskip between multiple institutions in the standard layout.
4500  % Keep the institution label in sync with the ProjectsTable display setting.
4501  \NewDocumentCommand{\dfgPLInstitutionList}{m}{%
4502    \bool_if:NTF \l_@@_custom_projects_table_institution_abbreviations_bool
4503      { \printList[abbreviation]{{Institutions}{#1}} }
4504      { \printList{{Institutions}{#1}} }
4505  }
4506
4507  \int_new:N \l_@@_pl_iter_int
4508
4509  % Keep the hyperref command protected while tabularray expands the assembled
4510  % table body.  It is executed only when the corresponding name cell is typeset.
4511  \cs_new_protected:Npn \@@_pi_target:n #1
4512    { \hypertarget{pi:#1}{} }
4513
4514  \NewDocumentCommand{\ProjectLeadersTable}{}{%
4515    \def\tblrbody{}%
4516
4517    \StartTimer
4518    \DTLsort*{lastname}{person}%
4519    \StopTimer{ProjectLeaderTable-sort}
4520
4521    \StartTimer
4522    \bool_lazy_and:nnT
4523      {\cs_if_exist_p:N \DTLmapdata}
4524      {\cs_if_exist_p:N \l__datatool_map_data_row_tl}
4525    {
4526      \clist_map_inline:nn {person,project,institution,affiliation}
4527        {\DTLifdbexists{##1}{\@@_row_cache_prepare:n {##1}}{}}
4528    }
4529    \StopTimer{PL-data}
4530
4531    \int_zero:N \l_@@_pl_iter_int
4532
4533    \StartTimer
4534    \DTLforeach*[
4535     \DTLisinlist{\theFundingPeriodNumeral}{\period}
4536     \and
4537     \DTLisinlist{PI}{\role}
4538    ]{person}{
4539     \id              = id,
4540     \role            = role,
4541     \lastname        = lastname,
4542     \firstname       = firstname,
4543     \academicdegree  = academicdegree,
4544     \period          = period,
4545     \refProjectId    = ref-project-id,
4546     \refInstitutionId = ref-institution-id,
4547     \doctorateYear   = doctorateYear,
4548     \gender          = gender
4549    }{%
4550     \int_incr:N \l_@@_pl_iter_int
4551     \protected@edef\tblrbody{\tblrbody
4552    {\noexpand\@@_pi_target:n{\id}%
4553     {\noexpand{\color{referencePI}\bfseries
4554          \noexpand\dfgShowTag{\id}{lastname}{\lastname}[person]},~
4555          \noexpand\dfgShowTag{\id}{firstname}{\firstname}[person]}
4556          \noexpand\\
4557          \noexpand\dfgShowTag{\id}{academicdegree}{\academicdegree}[person]}
4558        \noexpand& \noexpand\dfgShowTag{\id}{gender}{\gender}[person]
4559        \noexpand& \noexpand\dfgShowTag{\id}{doctorateYear}{\doctorateYear}[person]
4560      \noexpand& {\noexpand\dfgPLInstitutionList{\id}}
4561      \noexpand& {\noexpand\getProject*{\refProjectId}[\\]}
```

```
     \noexpand\\
    }%
   }
   \StopTimer{PL-loop}
   \iow_term:x { PL-iterations:~ \int_use:N \l_@@_pl_iter_int }

   \StartTimer
   \begin{tblr}[
     theme  = main,
     expand = \tblrbody,
     long
    ]{
   colspec   = {t{3.5cm}@{}t{.3cm}@{}t{1.7cm}X[1.2,t]t{1.3cm}},
     column{1} = { fg = referencePI, halign = l, valign = m },
     column{2} = { halign = c, valign = m },
     column{3} = { halign = c, valign = m },
     column{4} = { halign = l, valign = m },
     column{5} = { halign = c, valign = m },
     rowhead   = 1,
     row{1}    = {
                     valign = m,
                  bg     = tableHeadingsBG,
                  fg     = tableHeadingsFont,
                  font   = \bfseries,
                  guard
                 },
    }
    Project~ leader
   & % \mbox{Gender}
   & {Doctorate          \\ obtained~in}
     & {Home~ institution, \\ location}
     & Project(s)                          \\
    \tblrbody
   \end{tblr}
   \StopTimer{PL-render}
}
```

After the list of the PIs we need to have an aggregated list of the participating institutions.

```
\prop_new:N \l_@@_inst_to_aff_prop
\prop_new:N \l_@@_inst_name_prop
\prop_new:N \l_@@_inst_seen_prop
\prop_new:N \l_@@_aff_seen_prop
\prop_new:N \l_@@_aff_to_insts_prop  % values are seq names (tl)
\prop_new:N \l_@@_aff_name_prop
\seq_new:N  \l_@@_affiliations_seq
\seq_new:N  \l_@@_aff_sort_seq
\seq_new:N  \l_@@_inst_sort_seq
\tl_new:N   \l_@@_output_tl
\tl_new:N   \l_@@_aff_label_tl
\int_new:N  \l_@@_seq_counter_int
\cs_generate_variant:Nn \seq_set_from_clist:Nn { Ne , NV }

% Append an institution name to the per-affiliation seq.
% Lazily creates the seq on first use and stores its name in the prop.
\cs_new_protected:Npn \@@_append_inst:nn #1#2 {
  \prop_get:NnNTF \l_@@_aff_to_insts_prop {#1} \l_tmpd_tl
  {%
   % \l_tmpd_tl now holds the seq's csname; append to it
   \seq_put_right:cn { \l_tmpd_tl } {#2}%
  }
  {%
   \int_incr:N \l_@@_seq_counter_int
   \tl_set:Nx \l_tmpd_tl
   { l_@@_inst_seq_ \int_use:N \l_@@_seq_counter_int _seq }%
    \seq_clear_new:c { \l_tmpd_tl }%
   \seq_put_right:cn { \l_tmpd_tl } {#2}%
   \prop_put:NnV \l_@@_aff_to_insts_prop {#1} \l_tmpd_tl
  }
}
\cs_generate_variant:Nn \@@_append_inst:nn { VV }

\cs_new_protected:Npn \@@_collect_pi_institution:n #1
{
  \tl_if_blank:nF {#1}
```

```
4634    {
4635     \prop_if_in:NnF \l_@@_inst_seen_prop {#1}
4636     {%
4637      \prop_put:Nnn \l_@@_inst_seen_prop {#1} {1}%
4638      \prop_get:NnNT \l_@@_inst_to_aff_prop {#1} \l_tmpb_tl
4639      {%
4640       \prop_get:NnNT \l_@@_inst_name_prop {#1} \l_tmpc_tl
4641          {
4642            \tl_set:Ne \l_tmpe_tl
4643            {
4644              \exp_not:N \dfgShowTag {#1}{name}
4645                {\exp_not:V \l_tmpc_tl}[institution]
4646            }
4647            \@@_append_inst:VV \l_tmpb_tl \l_tmpe_tl
4648          }%
4649       \prop_if_in:NVF \l_@@_aff_seen_prop \l_tmpb_tl
4650       {%
4651        \prop_put:NVn \l_@@_aff_seen_prop \l_tmpb_tl {1}%
4652        \seq_put_right:NV \l_@@_affiliations_seq \l_tmpb_tl
4653       }%
4654      }%
4655     }%
4656    }
4657  }
4658
4659  \int_new:N \l_@@_participating_columns_int
4660  \dim_new:N \l_@@_participating_column_sep_dim
4661  \tl_new:N \l_@@_participating_order_tl
4662  \tl_new:N \l_@@_participating_raster_options_tl
4663  \keys_define:nn { @@ / participating-institutions }
4664  {
4665    columns .int_set:N = \l_@@_participating_columns_int,
4666    columns .value_required:n = true,
4667    column~sep .dim_set:N = \l_@@_participating_column_sep_dim,
4668    column~sep .value_required:n = true,
4669    order .choice:,
4670    order / alpha .code:n =
4671      { \tl_set:Nn \l_@@_participating_order_tl {alpha} },
4672    order / count .code:n =
4673      { \tl_set:Nn \l_@@_participating_order_tl {count} },
4674    order / unknown .code:n =
4675      {
4676        \msg_warning:nnn { dfg } { unknown-institution-order } {#1}
4677        \tl_set:Nn \l_@@_participating_order_tl {alpha}
4678      },
4679    alpha .meta:n = { order=alpha },
4680    count .meta:n = { order=count },
4681  }
4682
4683  \cs_new_protected:Npn \@@_participating_institutions_raster:n #1
4684  {
4685    \begin{tcbraster}[
4686      raster~ columns=1,
4687      raster~ equal~ height=rows,
4688      raster~ column~ skip=12pt,
4689      raster~ row~ skip=10pt,
4690      #1]
4691      \tl_use:N \l_@@_output_tl
4692    \end{tcbraster}
4693  }
4694
4695  % Flow whole affiliation boxes down balanced columns without equal-height rows.
4696  \cs_new_protected:Npn \@@_participating_institutions_columns:
4697  {
4698    \par\addvspace{\medskipamount}
4699    \setlength{\columnsep}{\l_@@_participating_column_sep_dim}
4700    \setlength{\multicolsep}{0pt}
4701    \int_compare:nNnTF {\l_@@_participating_columns_int} > {1}
4702    {
4703      \begin{multicols}{\int_use:N \l_@@_participating_columns_int}
4704        \raggedcolumns
4705        \tl_use:N \l_@@_output_tl
4706      \end{multicols}
4707    }
```

```
4708    { \tl_use:N \l_@@_output_tl }
4709  }
4710
4711  \NewDocumentCommand{\ParticipatingInstitutionsList}{ O{count} }
4712  {%
4713    \group_begin:
4714    % Zero selects the existing raster; columns=1,2,... selects flowing columns.
4715    \int_zero:N \l_@@_participating_columns_int
4716    \dim_set:Nn \l_@@_participating_column_sep_dim {12pt}
4717    % Accept the legacy alpha/count options as well as order and raster keys.
4718    \tl_set:Nn \l_@@_participating_order_tl {count}
4719    \keys_set_known:nnN { @@ / participating-institutions } {#1}
4720      \l_@@_participating_raster_options_tl
4721    \prop_clear:N \l_@@_inst_to_aff_prop
4722    \prop_clear:N \l_@@_inst_name_prop
4723    \prop_clear:N \l_@@_inst_seen_prop
4724    \prop_clear:N \l_@@_aff_seen_prop
4725    \prop_clear:N \l_@@_aff_to_insts_prop
4726    \seq_clear:N  \l_@@_affiliations_seq
4727    \tl_clear:N   \l_@@_output_tl
4728    \int_zero:N   \l_@@_seq_counter_int
4729
4730    % --- 1. One pass over institution: id -> aff-id, id -> name ---------
4731    \DTLforeach*{institution}{
4732     \l_tmpa_tl = id,
4733     \l_tmpb_tl = ref-affiliation-id,
4734     \l_tmpc_tl = name
4735    }{%
4736     \prop_put:NVV \l_@@_inst_to_aff_prop \l_tmpa_tl \l_tmpb_tl
4737     \prop_put:NVV \l_@@_inst_name_prop   \l_tmpa_tl \l_tmpc_tl
4738    }
4739
4740    % --- 2. One pass over person: collect active PI institutions --------
4741    \DTLforeach*[
4742     \DTLisinlist{\theFundingPeriodNumeral}{\pPeriod} \and
4743     \DTLisinlist{PI}{\pRole}
4744    ]{person}{ \l_tmpa_tl = ref-institution-id ,\pPeriod=period,\pRole=role}{%
4745     \seq_set_from_clist:NV \l_tmpa_seq \l_tmpa_tl
4746     \seq_map_inline:Nn \l_tmpa_seq
4747     { \@@_collect_pi_institution:n {##1} }%
4748    }
4749
4750    % --- 3a. Precompute affiliation display names -----------------------
4751    \prop_clear:N \l_@@_aff_name_prop
4752    \seq_map_inline:Nn \l_@@_affiliations_seq {%
4753     \getEntry*[affiliation]{##1}{ \l_tmpa_tl = name }%
4754     \prop_put:NnV \l_@@_aff_name_prop {##1} \l_tmpa_tl
4755    }
4756
4757    % --- 3b. Sort affiliations according to requested order ------------
4758    \str_case:VnF \l_@@_participating_order_tl
4759    {
4760     { alpha }
4761     {%
4762      \seq_sort:Nn \l_@@_affiliations_seq
4763      {%
4764       \prop_get:NnN \l_@@_aff_name_prop {##1} \l_tmpa_tl
4765       \prop_get:NnN \l_@@_aff_name_prop {##2} \l_tmpb_tl
4766       \str_compare:eNeTF { \l_tmpa_tl } < { \l_tmpb_tl }
4767        { \sort_return_same: }
4768        { \sort_return_swapped: }%
4769      }%
4770     }
4771     { count }
4772     {%
4773      \seq_sort:Nn \l_@@_affiliations_seq
4774      {%
4775       \prop_get:NnN \l_@@_aff_to_insts_prop {##1} \l_tmpc_tl
4776       \prop_get:NnN \l_@@_aff_to_insts_prop {##2} \l_tmpd_tl
4777       \int_compare:nNnTF
4778       { \seq_count:c { \l_tmpc_tl } } > { \seq_count:c { \l_tmpd_tl } }
4779        { \sort_return_same: }
4780        {%
4781         \int_compare:nNnTF
```

```
        { \seq_count:c { \l_tmpc_tl } } < { \seq_count:c { \l_tmpd_tl } }
         { \sort_return_swapped: }
         {%
          % equal counts → alphabetical tiebreak
          \prop_get:NnN \l_@@_aff_name_prop {##1} \l_tmpa_tl
          \prop_get:NnN \l_@@_aff_name_prop {##2} \l_tmpb_tl
          \str_compare:eNeTF { \l_tmpa_tl } < { \l_tmpb_tl }
           { \sort_return_same: }
           { \sort_return_swapped: }%
         }%
       }%
     }%
    }
   }
   {%
     \msg_warning:nne { dfg } { unknown-institution-order }
     { \l_@@_participating_order_tl }%
    \seq_sort:Nn \l_@@_affiliations_seq
    {%
     \prop_get:NnN \l_@@_aff_name_prop {##1} \l_tmpa_tl
     \prop_get:NnN \l_@@_aff_name_prop {##2} \l_tmpb_tl
     \str_compare:eNeTF { \l_tmpa_tl } < { \l_tmpb_tl }
      { \sort_return_same: }
      { \sort_return_swapped: }%
    }%
   }

   % --- 4. Emit output ------------------------------------------------
   \seq_map_inline:Nn \l_@@_affiliations_seq {%
     \int_compare:nNnTF {\l_@@_participating_columns_int} > {0}
     {
       \tl_put_right:Nn \l_@@_output_tl
       {
         \begin{tcolorbox}[blankest,before~upper=\RaggedRight,
           before={\par\noindent},after={\par\addvspace{10pt}}]
       }
     }
     {
       % Preserve the raster's own before/after hooks for row placement.
       \tl_put_right:Nn \l_@@_output_tl
         {\begin{tcolorbox}[blankest,before~upper=\RaggedRight]}
     }%
    \getEntry*[affiliation]{##1}{
     \theAffName     = name,
     \theAffLocation = location
    }%
    \prop_get:NnN \l_@@_aff_to_insts_prop {##1} \l_tmpd_tl
    \seq_set_eq:Nc \l_@@_inst_sort_seq { \l_tmpd_tl }%
    \seq_sort:Nn \l_@@_inst_sort_seq
    {%
     \str_compare:nNnTF {####1} < {####2}
      { \sort_return_same: }
      { \sort_return_swapped: }%
    }%
    \tl_set:Nx \l_@@_aff_label_tl { \seq_use:Nn \l_@@_inst_sort_seq {\\} }%
    \tl_put_right:Nx \l_@@_output_tl {%
     { \exp_not:N \usekomafont{subsubsection}
         \exp_not:N \textbf{%
           \exp_not:N \dfgShowTag {##1}{name}
             {\exp_not:V \theAffName}[affiliation]}
         \exp_not:n {\space()}
         \exp_not:N \dfgShowTag {##1}{location}
           {\exp_not:V \theAffLocation}[affiliation]
         \exp_not:n {)\\} }%
     \exp_not:V \l_@@_aff_label_tl
    }%
     \tl_put_right:Nn \l_@@_output_tl {\end{tcolorbox}}%
   }
   \seq_if_empty:NF \l_@@_affiliations_seq
   {
     \int_compare:nNnTF {\l_@@_participating_columns_int} > {0}
       { \@@_participating_institutions_columns: }
       {
         \exp_args:NV \@@_participating_institutions_raster:n
```

```
4856            \l_@@_participating_raster_options_tl
4857          }
4858    }
4859    \group_end:
4860  }
4861
```

Very similar to the table for the PIs we need one table for the projects. First we start with a helper command to get for each referenced person the required data. Use the same raster in both cardinality branches: a standalone tcolorbox and a top-aligned raster have different baseline placement after a heading. Selecting one or two columns inside the raster preserves a full-width single card and keeps its leading gap consistent with the established multi-PI layout.

```
4862  \NewDocumentCommand{\getPersonInformation}{O{person} m}
4863  {%
4864    % #1: database
4865    % #2: comma-separated list of person ids
4866    \def\tmpLocalDB{#1}%
4867    \seq_clear:N \l_tmpa_seq
4868    \seq_set_from_clist:Ne \l_tmpa_seq {#2}%
4869    \begin{tcbraster}[
4870      raster~valign=top,
4871      raster~columns=\bool_if:NTF \l_@@_project_one_PI_bool {1}{2},
4872      raster~equal~height=rows,
4873      raster~column~skip=12pt,
4874      raster~row~skip=10pt,
4875      PIbox
4876    ]
4877      \seq_map_inline:Nn \l_tmpa_seq
4878        {\__getperson_one:n {##1}}
4879    \end{tcbraster}
4880  }
4881
4882  \bool_new:N \l_@@_pi_academicdegree_below_bool
4883
4884  \cs_new_protected:Npn \__getperson_one:n #1
4885  {%
4886    \getEntry*[\tmpLocalDB]{#1}{
4887     \theFirstName      = firstname,
4888     \theLastName       = lastname,
4889     \theAcademicDegree = academicdegree,
4890     \thePhone          = phone,
4891     \theEmail          = email,
4892      \theInstitution    = ref-institution-id,
4893     \theORCiD         = orcid
4894    }%
4895    % Match the tallest title in this raster; equal-height groups settle over
4896    % successive LaTeX runs. Keep title text at the top of the reserved space.
4897    \begin{tcolorbox}[PIbox,title={
4898        \tcbox[blankest,tcbox~ width=forced~ left,
4899          equal~ height~ group={dfg-PI-titles-\thetcbraster}]{%
4900          \parbox[t]{\linewidth}{%
4901            \RaggedRight\bfseries
4902            \dfgShowTag{#1}{firstname}{\theFirstName}[\tmpLocalDB]\space
4903            \color{referencePI}
4904            \dfgShowTag{#1}{lastname}{\theLastName}[\tmpLocalDB]
4905            \normalfont\normalcolor
4906            \bool_if:NTF \l_@@_pi_academicdegree_below_bool
4907              {\newline}
4908              {,\space}
4909            \dfgShowTag{#1}{academicdegree}{\theAcademicDegree}[\tmpLocalDB]}}}]
4910     \ifdefempty{\theORCiD}{\mbox{~}\\[.75\baselineskip]}{\getORCiD{#1}\\}
4911      \ifdefempty{\theInstitution}{}{\printList{{Institutions}{#1}}\newline}
4912      \ifdefempty{\thePhone}{}
4913        {\str_case:Vn \l_@@_custom_pi_contact_style_tl
4914          {
4915            {icons}
4916              {\mbox{\faPhone\space
4917               \dfgShowTag{#1}{phone}{\thePhone}[\tmpLocalDB]}\quad}
4918            {text}
4919              {\mbox{Phone:\space
4920               \dfgShowTag{#1}{phone}{\thePhone}[\tmpLocalDB]}\quad}
4921            {none}
```

```
4922              {\mbox{\dfgShowTag{#1}{phone}{\thePhone}[\tmpLocalDB]}\quad}
4923          }}
4924      \ifdefempty{\theEmail}{}
4925        {\str_case:Vn \l_@@_custom_pi_contact_style_tl
4926          {
4927            {icons}
4928              {\mbox{\faEnvelope\space
4929                \dfgShowTag{#1}{email}{\theEmail}[\tmpLocalDB]}}
4930            {text}
4931              {\mbox{E-Mail:\space
4932                \dfgShowTag{#1}{email}{\theEmail}[\tmpLocalDB]}}
4933            {none}
4934              {\mbox{\dfgShowTag{#1}{email}{\theEmail}[\tmpLocalDB]}}
4935          }}
4936    \end{tcolorbox}
4937  }
4938
4939  % ============================================================
4940  %  Precompute compact project-table data per person
4941  % ============================================================
4942
4943  % --- Shared allocations outside each function ----------------------
4944  \prop_new:N \g_@@_proj_pi_prop
4945  \bool_new:N \g_@@_proj_pi_built_bool
4946  \prop_new:N \g_@@_aff_narrow_prop
4947  \prop_new:N \g_@@_inst_narrow_prop
4948  \prop_new:N \g_@@_proj_pi_institution_ids_prop
4949  \prop_new:N \g_@@_projects_table_institution_abbreviation_prop
4950  \prop_new:N \g_@@_projects_table_institution_name_prop
4951  \prop_new:N \g_@@_projects_table_abbreviation_owner_id_prop
4952  \prop_new:N \g_@@_projects_table_abbreviation_owner_name_prop
4953  \prop_new:N \g_@@_projects_table_abbreviation_warned_prop
4954  \tl_new:N \l_@@_projects_table_legend_tl
4955  \seq_new:N \l_@@_projects_table_institution_ids_seq
4956  \seq_new:N \l_@@_projects_table_sorted_institution_ids_seq
4957  \clist_new:N \l_@@_projects_table_institution_ids_clist
4958  \tl_new:N \l_@@_projects_table_institution_abbreviation_tl
4959
4960  \cs_new_protected:Npn \@@_projects_table_collect_person_institutions:n #1
4961  {
4962    \prop_get:NnNT \g_@@_proj_pi_institution_ids_prop {#1} \l_tmpa_tl
4963    {
4964      \clist_set:NV \l_@@_projects_table_institution_ids_clist \l_tmpa_tl
4965      \clist_map_inline:Nn \l_@@_projects_table_institution_ids_clist
4966      {
4967        \seq_if_in:NnF \l_@@_projects_table_institution_ids_seq {##1}
4968          { \seq_put_right:Nn \l_@@_projects_table_institution_ids_seq {##1} }
4969      }
4970    }
4971  }
4972
4973  \cs_new_protected:Npn \@@_projects_table_collect_institutions:n #1
4974  {
4975    \bool_if:NT \l_@@_custom_projects_table_institution_abbreviations_bool
4976    {
4977      \clist_map_function:nN {#1}
4978        \@@_projects_table_collect_person_institutions:n
4979    }
4980  }
4981
4982  \cs_new_protected:Npn \@@_projects_table_institution_legend:
4983  {
4984    \bool_if:NT \l_@@_custom_projects_table_institution_abbreviations_bool
4985    {
4986      \tl_clear:N \l_@@_projects_table_legend_tl
4987      \seq_set_eq:NN \l_@@_projects_table_sorted_institution_ids_seq
4988        \l_@@_projects_table_institution_ids_seq
4989      \seq_sort:Nn \l_@@_projects_table_sorted_institution_ids_seq
4990      {
4991        \prop_get:NnN \g_@@_projects_table_institution_abbreviation_prop
4992          {##1} \l_tmpa_tl
4993        \prop_get:NnN \g_@@_projects_table_institution_abbreviation_prop
4994          {##2} \l_tmpb_tl
4995        \str_compare:eNeTF
```

```
4996          { \str_casefold:V \l_tmpa_tl }
4997          >
4998          { \str_casefold:V \l_tmpb_tl }
4999          { \sort_return_swapped: }
5000          { \sort_return_same: }
5001      }
5002      \seq_map_inline:Nn \l_@@_projects_table_sorted_institution_ids_seq
5003      {
5004        \prop_get:NnN \g_@@_projects_table_institution_abbreviation_prop
5005          {##1} \l_tmpa_tl
5006        \prop_get:NnN \g_@@_projects_table_institution_name_prop
5007          {##1} \l_tmpb_tl
5008        \DTLifnulloremptyl{\l_tmpa_tl}{}
5009        {
5010          \tl_if_blank:VF \l_@@_projects_table_legend_tl
5011            { \tl_put_right:Nn \l_@@_projects_table_legend_tl { ;~ } }
5012          \tl_put_right:Nx \l_@@_projects_table_legend_tl
5013          {
5014            \exp_not:N \textbf { \exp_not:V \l_tmpa_tl }
5015            \c_space_tl = \c_space_tl
5016            \exp_not:V \l_tmpb_tl
5017          }
5018        }
5019      }
5020      \tl_if_blank:VF \l_@@_projects_table_legend_tl
5021      {
5022        \par\vspace{.15\baselineskip}
5023        {\tiny\RaggedRight\setlength{\parskip}{0pt}\noindent
5024          \textit{Institution~abbreviations:}\space
5025          \tl_use:N \l_@@_projects_table_legend_tl
5026          \par
5027        }
5028      }
5029    }
5030  }
5031
5032
5033  % Helper for render-time formatting
5034  \NewDocumentCommand{\dfgPIformat}{mmm}{%
5035    % #1 = person id, #2 = firstname, #3 = lastname
5036    \dfgShowTag{#1}{firstname}{#2}[person]\space
5037    {\color{referencePI}\bfseries
5038      \dfgShowTag{#1}{lastname}{#3}[person],}\space
5039  }
5040
5041  % Precompute once: store only the tokens, not \color & \bfseries directly
5042  \cs_new_protected:Npn \@@_proj_pi_build: {
5043    \bool_if:NF \g_@@_proj_pi_built_bool {
5044     \bool_gset_true:N \g_@@_proj_pi_built_bool
5045
5046     % Pass 1+2: precompute institution strings (as before)
5047     \prop_new:N \l_@@_aff_narrow_prop
5048     \DTLforeach*{affiliation}{
5049      \l_tmpa_tl = id,
5050      \l_tmpb_tl = name
5051     }{%
5052      \prop_put:NVV \l_@@_aff_narrow_prop \l_tmpa_tl \l_tmpb_tl
5053     }
5054
5055    \prop_new:N \l_@@_inst_narrow_prop
5056    \DTLforeach*{institution}{
5057      \l_tmpa_tl = id,
5058      \l_tmpb_tl = name,
5059    \l_tmpc_tl = ref-affiliation-id,
5060        \l_@@_projects_table_institution_abbreviation_tl = abbreviation
5061     }{%
5062    \prop_gput:NVV \g_@@_projects_table_institution_abbreviation_prop
5063        \l_tmpa_tl \l_@@_projects_table_institution_abbreviation_tl
5064    \prop_gput:NVV \g_@@_projects_table_institution_name_prop
5065        \l_tmpa_tl \l_tmpb_tl
5066    \DTLifnulloremptyl{\l_@@_projects_table_institution_abbreviation_tl}{}
5067      {
5068        \prop_get:NVNTF \g_@@_projects_table_abbreviation_owner_name_prop
5069          \l_@@_projects_table_institution_abbreviation_tl \l_tmpe_tl
```

```
      {
        \tl_if_eq:NNF \l_tmpe_tl \l_tmpb_tl
        {
          \prop_if_in:NVF \g_@@_projects_table_abbreviation_warned_prop
            \l_@@_projects_table_institution_abbreviation_tl
          {
            \prop_get:NVN \g_@@_projects_table_abbreviation_owner_id_prop
              \l_@@_projects_table_institution_abbreviation_tl \l_tmpf_tl
            \msg_warning:nneeee { dfg } { duplicate-institution-abbreviation }
              { \l_@@_projects_table_institution_abbreviation_tl }
              { \l_tmpe_tl }
              { \l_tmpb_tl }
              { \l_tmpf_tl,~\l_tmpa_tl }
            \prop_gput:NVn \g_@@_projects_table_abbreviation_warned_prop
              \l_@@_projects_table_institution_abbreviation_tl { 1 }
          }
        }
      }
      {
        \prop_gput:NVV \g_@@_projects_table_abbreviation_owner_id_prop
          \l_@@_projects_table_institution_abbreviation_tl \l_tmpa_tl
        \prop_gput:NVV \g_@@_projects_table_abbreviation_owner_name_prop
          \l_@@_projects_table_institution_abbreviation_tl \l_tmpb_tl
      }
    }
  \bool_if:NTF
    \l_@@_custom_projects_table_institution_abbreviations_bool
  {
    \@@_institution_abbreviation_or_name:nN
      { \l_tmpa_tl } \l_tmpf_tl
  }
  {
    \tl_set:Nn \l_@@_institution_label_field_tl { name }
      \@@_getvalueforkey:Nnnnn{\l_tmpf_tl}{name}{institution}{id}{\l_tmpa_tl}
  }
    \prop_get:NVNT \l_@@_aff_narrow_prop \l_tmpc_tl \l_tmpd_tl {
          \tl_if_blank:VTF \l_tmpf_tl
          {
            \tl_set:Nx \l_tmpe_tl
            {
              \exp_not:N \dfgShowTag
                {\exp_not:V \l_tmpc_tl}{name}
                {\exp_not:V \l_tmpd_tl}[affiliation]
            }
          }
          {
            \tl_set:Nx \l_tmpe_tl
            {
              \exp_not:N \dfgShowTag
                {\exp_not:V \l_tmpa_tl}
                {\exp_not:V \l_@@_institution_label_field_tl}
                {\exp_not:V \l_tmpf_tl}[institution]
              ,~
              \exp_not:N \dfgShowTag
                {\exp_not:V \l_tmpc_tl}{name}
                {\exp_not:V \l_tmpd_tl}[affiliation]
            }
          }
     \prop_put:NVV \l_@@_inst_narrow_prop \l_tmpa_tl \l_tmpe_tl
    }
   }

   % Pass 3: per Person die ganze Zelle vorberechnen, mit \dfgPIformat
   \DTLforeach*{person}{
    \l_tmpa_tl = id,
    \l_tmpb_tl = firstname,
    \l_tmpc_tl = lastname,
    \l_tmpd_tl = ref-institution-id
   }{%
  \prop_gput:NVV \g_@@_proj_pi_institution_ids_prop
      \l_tmpa_tl \l_tmpd_tl
    \tl_clear:N \l_tmpe_tl
    \tl_put_right:Nx \l_tmpe_tl {%
     \exp_not:N \dfgPIformat
```

```
         { \exp_not:V \l_tmpa_tl }
       { \exp_not:V \l_tmpb_tl }
       { \exp_not:V \l_tmpc_tl }%
      }%
      % Institutions, separator ";~"
      \seq_set_from_clist:NV \l_tmpa_seq \l_tmpd_tl
      \bool_set_true:N \l_tmpa_bool
      \seq_map_inline:Nn \l_tmpa_seq {%
       \bool_if:NTF \l_tmpa_bool
       { \bool_set_false:N \l_tmpa_bool }
       { \tl_put_right:Nn \l_tmpe_tl { ;~ } }%
       \prop_get:NnNT \l_@@_inst_narrow_prop {##1} \l_tmpf_tl
       { \tl_put_right:NV \l_tmpe_tl \l_tmpf_tl }%
      }
      \prop_gput:NVV \g_@@_proj_pi_prop \l_tmpa_tl \l_tmpe_tl
     }
   }
}

% Schneller Drop-in
\NewDocumentCommand{\dfgFastPIinProjectsTable}{m}{%
   \@@_proj_pi_build:
   \seq_set_from_clist:Nn \l_tmpa_seq {#1}%
   \bool_set_true:N \l_tmpa_bool
   \seq_map_inline:Nn \l_tmpa_seq {%
    \bool_if:NTF \l_tmpa_bool
    { \bool_set_false:N \l_tmpa_bool }
    { \newline }%
    \prop_get:NnNT \g_@@_proj_pi_prop {##1} \l_tmpb_tl
    { \tl_use:N \l_tmpb_tl }%
   }
}

\NewDocumentCommand{\dfgPIinProjectsTable}{O{person} m}
{%
   % #1: database
   % #2: comma-separated list of person ids
   \def\tmpLocalDB{#1}%
   \seq_clear:N \l_tmpa_seq
   \seq_set_from_clist:Nn \l_tmpa_seq {#2}%
   \bool_set_true:N \l_tmpa_bool
   \seq_map_inline:Nn \l_tmpa_seq
   {%
    \bool_if:NTF \l_tmpa_bool
    { \bool_set_false:N \l_tmpa_bool }
    { \newline }%
    \__pi_in_projects_one:n {##1}%
   }%
}

\cs_new_protected:Npn \__pi_in_projects_one:n #1
{%
   \getEntry*[\tmpLocalDB]{#1}{
    \theAcademicDegree = academicdegree,
    \theFirstName = firstname,
    \theLastName  = lastname
   }%
   \group_begin:
   %%\theAcademicDegree\space%
   \dfgShowTag{#1}{firstname}{\theFirstName}[\tmpLocalDB]\space
   \color{referencePI}\bfseries
   \dfgShowTag{#1}{lastname}{\theLastName}[\tmpLocalDB],\space
   \normalfont\normalcolor
   \printList[abbreviation,noaddress,nolocation,nozip,narrow]{{Institutions}{#1}}%
   \group_end:
}
\NewDocumentCommand{\ProjectsTable}{mm}
{%
   \def\tblrbody{}%
   \clist_clear:N \l_@@_research_area_clist
   \tl_clear:N    \l_tmpa_tl
   \clist_clear:N \l_tmpa_clist
   \seq_clear:N   \l_tmpb_seq
   \seq_clear:N   \l_tmpa_seq
```

```
5218    \seq_clear:N   \l_@@_projects_table_institution_ids_seq
5219    \@@_proj_pi_build:
5220
5221    \StartTimer
5222    \DTLsort{number}{project}%
5223    \StopTimer{Proj-#1-sort}
5224
5225    \int_zero:N \l_tmpa_int
5226
5227    \StartTimer
5228    \DTLforeach*[
5229     \DTLisPrefix{\pNumber}{#1}
5230      \and
5231      \not\DTLiseq{\pConsiderForLists}{false}
5232    ]{project}{
5233     \pID          = id,
5234     \pNumber      = number,
5235     \pName        = name,
5236     \pStatus      = project-status,
5237     \pType        = project-type,
5238      \pConsiderForLists = consider-for-lists,
5239     \l_tmpa_clist = research-area,
5240     \pRefPersonId = ref-person-id
5241    }{%
5242     \int_incr:N \l_tmpa_int
5243      \exp_args:NV \@@_projects_table_collect_institutions:n \pRefPersonId
5244     % --- reset ALL flags each iteration ---------------------------------
5245     \bool_set_false:N \l_@@_project_type_research_bool
5246     \bool_set_false:N \l_@@_project_type_service_bool
5247     \bool_set_false:N \l_@@_project_type_mgk_bool
5248     \bool_set_false:N \l_@@_project_type_admin_bool
5249
5250     \bool_set_false:N \l_@@_project_status_N_bool
5251     \bool_set_false:N \l_@@_project_status_E_bool
5252     \bool_set_false:N \l_@@_project_status_C_bool
5253
5254
5255     \str_case:Vn {\pStatus}
5256     {
5257      {N}{ \bool_set_true:N \l_@@_project_status_N_bool }
5258      {E}{ \bool_set_true:N \l_@@_project_status_E_bool }
5259      {C}{ \bool_set_true:N \l_@@_project_status_C_bool }
5260     }
5261
5262     \str_case:Vn {\pType}{
5263      {research}{ \bool_set_true:N \l_@@_project_type_research_bool }
5264      {service} { \bool_set_true:N \l_@@_project_type_service_bool  }
5265      {mgk}     { \bool_set_true:N \l_@@_project_type_mgk_bool      }
5266      {admin}   { \bool_set_true:N \l_@@_project_type_admin_bool    }
5267     }
5268
5269     \bool_if:nT
5270     { ( \l_@@_project_type_research_bool || \l_@@_project_type_service_bool ) && ! \l_@@_project_status_E_
5271     {%
5272      \clist_set:NV \l_tmpa_clist \l_tmpa_clist
5273      \clist_sort:Nn \l_tmpa_clist
5274      { \fp_compare:nTF {##1 < ##2} {\sort_return_swapped:} {\sort_return_same:} }%
5275      \seq_set_from_clist:NN \l_tmpa_seq \l_tmpa_clist
5276      \seq_set_map:NNn \l_tmpb_seq \l_tmpa_seq
5277      {%
5278       \prop_if_in:NnTF \g_@@_dfg_research_areas_prop {##1}
5279       { ##1 }
5280       { \textcolor{error}{\textbf{##1}} }%
5281      }%
5282     }
5283
5284     \protected@edef\tblrbody{\tblrbody
5285        \noexpand\getProject{\pID}
5286        & \bool_if:NF \l_@@_project_status_C_bool
5287            { {\noexpand\getProjectColor{\pID}%
5288                \noexpand\dfgShowTag{\pID}{project-status}{\pStatus}[project]} }
5289        & \noexpand\dfgShowTag{\pID}{name}{\pName}[project]
5290      &
5291      \bool_if:nT
```

```
    { ( \l_@@_project_type_research_bool || \l_@@_project_type_service_bool ) && ! \l_@@_project_status_E
      {{\noexpand\dfgShowTag{\pID}{research-area}
          {\seq_use:Nn \l_tmpb_seq {\\}}[project]}}
    & \dfgFastPIinProjectsTable{\pRefPersonId}
    \\
   }%
  }
  \StopTimer{Proj-#1-loop}
  \iow_term:x { Proj-#1-iterations:~ \int_use:N \l_tmpa_int }

  \StartTimer
  \begin{tblr}[
    theme   = main,
    expand  = \tblrbody,
    caption = {Project~area~#1~--~#2},
    long
   ]{
      % The unbroken Research heading needs 15 mm at the default table size.
      % The N status marker also needs slightly more than 2 mm.
      colspec     = {m{1.1cm}@{}m{0.25cm}X[m]m{1.5cm}X[1.3,m]},
    rowhead     = 1,
      % Alignment is controlled by halign, not by font declarations:
      % a row-level raggedright would override centered columns.
        rows        = {halign=l},
        column{2}   = {halign=c},
        column{4}   = {halign=c,guard},
  % column{1}   = {fg=tableFirstColumn},
    row{1}      = {
                          valign = m,
                   bg     = tableHeadingsBG,
                   fg     = tableHeadingsFont,
                   font   = \bfseries,
                   % halign = c,
                   guard
                  },
   }
   Project
    & %{Status}
    & Title
    & {\mbox{Research}                                                    \\area}
    & Project\space leader(s),\space institute(s),\space location(s)         \\
 \tblrbody
  \end{tblr}
  \@@_projects_table_institution_legend:
  \StopTimer{Proj-#1-render}
}
```

Project overview table `\projectOverviewTable` produces the compact project list used on the proposal's final page. Current and new projects remain in project-number order; ending projects (status `E`) are moved to the end. The status marker is omitted for current projects and printed after the project number for all other statuses. Status markers use the same project colour as the identifier. The table is boxed once and shrunk proportionally only when it exceeds the space below the logo. The cap uses the smaller of the page goal and the text block plus the unused footer area, preserving the physical bottom margin. A final zero kern makes the box depth zero; vertical output avoids extra paragraph or baseline glue. Fewer projects retain their natural type size.

Project-leader names are resolved while the table body is assembled. This avoids repeating database lookups during tabularray's measuring and rendering passes. All three headings use the canonical dark blue at a larger size; the cell-specific rule ensures that the first heading ("Project") is not overridden by the first-column styling. The final-page source can therefore remain deliberately small: `\pagestyle{empty}` followed by `\printTable{projectOverview}`.

```
\tl_new:N  \l_@@_project_overview_body_tl
\tl_new:N  \l_@@_project_overview_ending_body_tl
\tl_new:N  \l_@@_project_overview_id_tl
\tl_new:N  \l_@@_project_overview_number_tl
\tl_new:N  \l_@@_project_overview_name_tl
\tl_new:N  \l_@@_project_overview_status_tl
```

```
\tl_new:N  \l_@@_project_overview_consider_for_lists_tl
\tl_new:N  \l_@@_project_overview_person_ids_tl
\tl_new:N  \l_@@_project_overview_leaders_tl
\tl_new:N  \l_@@_project_overview_project_cell_tl
\seq_new:N \l_@@_project_overview_person_seq

\cs_new_protected:Npn \@@_project_overview_set_leaders:n #1
{
  \tl_clear:N \l_@@_project_overview_leaders_tl
  \seq_set_from_clist:Nn \l_@@_project_overview_person_seq {#1}
  \seq_map_indexed_inline:Nn \l_@@_project_overview_person_seq
  {
    \@@_getvalueforkey:Nnnnn{\l_tmpa_tl}{firstname}{person}{id}{##2}
    \@@_getvalueforkey:Nnnnn{\l_tmpb_tl}{lastname}{person}{id}{##2}
    \int_compare:nNnT {##1} > {1}
      { \tl_put_right:Nn \l_@@_project_overview_leaders_tl { \newline } }
    \tl_if_blank:VF \l_tmpa_tl
    {
      \tl_put_right:Ne \l_@@_project_overview_leaders_tl
      {
        \exp_not:N \dfgShowTag {##2}{firstname}
          {\exp_not:V \l_tmpa_tl}[person]
        \exp_not:N \space
      }
    }
    \tl_put_right:Ne \l_@@_project_overview_leaders_tl
    {
      \exp_not:N \hyperlink { pi:\exp_not:n {##2} }
      {
        \exp_not:N \textbf
        {
          \exp_not:N \color { referencePI }
          \exp_not:N \dfgShowTag {##2}{lastname}
            {\exp_not:V \l_tmpb_tl}[person]
        }
      }
    }
  }
}

\cs_new_protected:Npn \@@_project_overview_append_row:N #1
{
  \exp_args:NV \@@_project_overview_set_leaders:n
    \l_@@_project_overview_person_ids_tl
  \tl_set:Ne \l_@@_project_overview_project_cell_tl
  {
    \exp_not:N \getProject
      { \exp_not:V \l_@@_project_overview_id_tl }
  }
  \str_if_eq:VnF \l_@@_project_overview_status_tl { C }
  {
    \tl_if_blank:VF \l_@@_project_overview_status_tl
    {
      \tl_put_right:Ne \l_@@_project_overview_project_cell_tl
      {
        \exp_not:N \,
        \exp_not:N \getProjectColor
          {\exp_not:V \l_@@_project_overview_id_tl}
        \exp_not:N \dfgShowTag
          {\exp_not:V \l_@@_project_overview_id_tl}{project-status}
          {\exp_not:V \l_@@_project_overview_status_tl}[project]
      }
    }
  }
  \tl_put_right:Ne #1
  {
    { \exp_not:V \l_@@_project_overview_project_cell_tl }
    & {
      \exp_not:N \dfgShowTag
        {\exp_not:V \l_@@_project_overview_id_tl}{name}
        {\exp_not:V \l_@@_project_overview_name_tl}[project]
    }
    & { \exp_not:V \l_@@_project_overview_leaders_tl }
    \exp_not:N \\
```

```
  }
}

\cs_new_protected:Npn \@@_project_overview_collect:
{
  \DTLsort{number}{project}
  \DTLforeach*{project}
  {
    \l_@@_project_overview_id_tl         = id,
    \l_@@_project_overview_number_tl     = number,
    \l_@@_project_overview_name_tl       = name,
    \l_@@_project_overview_status_tl     = project-status,
    \l_@@_project_overview_consider_for_lists_tl = consider-for-lists,
    \l_@@_project_overview_person_ids_tl = ref-person-id
  }
  {
    \str_if_eq:VnF \l_@@_project_overview_consider_for_lists_tl { false }
    {
      \str_if_eq:VnTF \l_@@_project_overview_status_tl { E }
        { \@@_project_overview_append_row:N \l_@@_project_overview_ending_body_tl }
        { \@@_project_overview_append_row:N \l_@@_project_overview_body_tl }
    }
  }
  \tl_put_right:NV \l_@@_project_overview_body_tl
    \l_@@_project_overview_ending_body_tl
}

\box_new:N \l_@@_project_overview_box
\cs_new_protected:Npn \@@_project_overview_typeset:
{
 % \par\vspace*{-5\baselineskip}
  \begin{center}
    \crcLogo[height=1cm]
  \end{center}
  \enlargethispage{3\baselineskip}
  \vbox_set:Nn \l_@@_project_overview_box
  {
  \hbox:n
  {
  \begin{tblr}[
    theme  = main,
    expand = \l_@@_project_overview_body_tl
  ]{
    vspan       = even,
    rowsep      = 1pt,
    rows        = {ht=2.4\baselineskip,valign=m},
    colspec     = {m{1.5cm}X[m]m{4cm}},
    rowhead     = 1,
 column{1}   = {font=\Large\bfseries,valign=m,fg=tableFirstColumn},
    column{2,3} = {halign=l},
    row{1}      = {font=\large\bfseries,fg=tableHeadingsFont,halign=c,valign=m},
  }
    Project
    & Title
    & Project\space leader(s) \\
    \l_@@_project_overview_body_tl
  \end{tblr}
  }
  \kern0pt
  }
  \dim_set:Nn \l_tmpa_dim
    { \dim_min:nn {\pagegoal} {\textheight+\footskip} - \pagetotal - 1pt }
  \dim_compare:nNnT {\box_ht:N \l_@@_project_overview_box} > {\l_tmpa_dim}
    { \box_resize_to_ht_plus_dp:Nn \l_@@_project_overview_box {\l_tmpa_dim} }
  \par\nointerlineskip
  \hbox_to_wd:nn {\linewidth}
    { \hfil\box_use_drop:N \l_@@_project_overview_box\hfil }
}

\NewDocumentCommand{\projectOverviewTable}{}
{
  \group_begin:
  \DTLifdbexists{project}
  {
```

```
    \tl_clear:N \l_@@_project_overview_body_tl
    \tl_clear:N \l_@@_project_overview_ending_body_tl
    \@@_project_overview_collect:
    \@@_project_overview_typeset:
  }
  { \msg_warning:nnn { dfg } { database-not-found } { project } }
  \group_end:
}
```

Aggregate the codes displayed by the project tables: non-ending research and service projects that are considered for lists. Explicit exclusions remain available. Clear both the raw and formatted lists on every call.

```
\clist_new:N \l_@@_research_area_clist   % new clist name
\clist_new:N \l_@@_research_area_final_clist   % new clist name
\NewDocumentCommand{\ResearchAreasFromProjectsList}{o}{
  % #1: IDs of project to be excluded
  \clist_clear:N \l_@@_research_area_clist
  \clist_clear:N \l_@@_research_area_final_clist
  \tl_clear:N \l_tmpa_tl

  \DTLforeach[
   % exclude mentioned projects (for whatsoever reason)
   \not\DTLisinlist{\pNumber}{#1}% 1st condition
    \and
    \not\DTLiseq{\pConsiderForLists}{false}
    \and
    \not\DTLiseq{\pStatus}{E}
  ]
  {project}{%
   \pNumber       =number,
   \pType         =project-type,
    \pStatus       =project-status,
    \pConsiderForLists=consider-for-lists,
   \l_tmpa_tl     =research-area%
  }{%
    % Match the types whose research-area cells are shown in ProjectsTable.
   \bool_set_false:N \l_@@_project_type_research_bool
   \bool_set_false:N \l_@@_project_type_service_bool
   \bool_set_false:N \l_@@_project_type_mgk_bool
   \bool_set_false:N \l_@@_project_type_admin_bool

   \str_case:Vn {\pType}{
    {research}{ \bool_set_true:N \l_@@_project_type_research_bool }
    {service} { \bool_set_true:N \l_@@_project_type_service_bool  }
    {mgk}     { \bool_set_true:N \l_@@_project_type_mgk_bool      }
    {admin}   { \bool_set_true:N \l_@@_project_type_admin_bool    }
   }
    \bool_lazy_any:nT
      {{\l_@@_project_type_research_bool}{\l_@@_project_type_service_bool}}
   {\clist_put_right:NV \l_@@_research_area_clist { \l_tmpa_tl }}%
  }
  \clist_remove_duplicates:N \l_@@_research_area_clist
  % Sort the fixed-width classification code numerically after removing
  % punctuation; treating `2.21-02` as an fp expression would parse the
  % hyphen as subtraction.
  \clist_sort:Nn \l_@@_research_area_clist
  {
    \tl_set:Nn \l_tmpa_tl {##1}
    \tl_set:Nn \l_tmpb_tl {##2}
    \regex_replace_all:nnN { [-.] } {} \l_tmpa_tl
    \regex_replace_all:nnN { [-.] } {} \l_tmpb_tl
    \exp_args:NnV \regex_match:nnTF { \A \d+ \Z } \l_tmpa_tl
      {
        \exp_args:NnV \regex_match:nnTF { \A \d+ \Z } \l_tmpb_tl
          {
            \int_compare:nNnTF { \l_tmpa_tl } < { \l_tmpb_tl }
              { \sort_return_same: }
              { \sort_return_swapped: }
          }
          { \sort_return_same: }
      }
      {
        \exp_args:NnV \regex_match:nnTF { \A \d+ \Z } \l_tmpb_tl
```

```
            { \sort_return_swapped: }
            { \sort_return_same: }
        }
    }

    \clist_map_inline:Nn \l_@@_research_area_clist {
     \clist_put_right:NV \l_@@_research_area_final_clist { \dfgResearchAreasList{##1}}
    }

    \dfgShowCalculatedTag{ResearchAreasFromProjectsList}{project}
    {
      \clist_use:Nnnn \l_@@_research_area_final_clist {,~}{,~}{,~and~}%
      .%final dot.
    }
  }
```

6.1.24 DFG research area classification

The DFG publishes an official hierarchical subject classification list; a project must declare which areas its work belongs to. The global property list `\g_@@_dfg_research_areas_prop` maps every classification code (e.g. `2.11-01`) to its English label.

Usage: supply one or more codes as a comma-separated value in the `research-area` key of an `\addEntry` → P. 3 `{project}` block. `\printResearchAreas` then looks up and formats them as a natural-language list.

Sorting note: the codes are numeric strings with a hyphen (`2.11-01`), which cannot be compared as plain integers. The sort in `\printResearchAreas` uses `\fp_compare:nTF` after stripping the hyphen suffix — a known workaround for the absence of a lexicographic sort in expl3 for this mixed format.

```
\prop_new:N \g_@@_dfg_research_areas_prop
\prop_gset_from_keyval:Nn \g_@@_dfg_research_areas_prop
{
  1.11-01 = {Prehistory~and~World~Archaeology},
  1.11-02 = {Greek~and~Latin~Philology},
  1.11-03 = {Ancient~History},
  1.11-04 = {Classical,~Roman,~Christian~and~Islamic~Archaeology},
  1.11-05 = {Egyptology~and~Ancient~Near~Eastern~Studies},

  1.12-01 = {Medieval~History},
  1.12-02 = {Early~Modern~History},
  1.12-03 = {Modern~and~Contemporary~History},
  1.12-04 = {History~of~Science},

  1.13-01 = {Art~History},
  1.13-02 = {Musicology},
  1.13-03 = {Theatre~and~Media~Studies},

  1.14-01 = {General~and~Comparative~Linguistics,~Experimental~Linguistics,~Typology,~Non-
European~Languages},
  1.14-02 = {Individual~Linguistics,~Historical~Linguistics},
  1.14-03 = {Applied~Linguistics,~Computational~Linguistics},

  1.15-01 = {German~Medieval~Studies~(Medieval~German~Literature)},
  1.15-02 = {German~Literary~and~Cultural~Studies~(Modern~German~Literature)},
  1.15-03 = {European~and~American~Literary~and~Cultural~Studies},
  1.15-04 = {General~and~Comparative~Literary~Studies;~Cultural~Studies},

  1.16-01 = {Social~and~Cultural~Anthropology~and~Ethnology},
  1.16-02 = {Asian~Studies},
  1.16-03 = {African,~American~and~Oceania~Studies},
  1.16-04 = {Islamic~Studies,~Arabian~Studies,~Semitic~Studies},
  1.16-05 = {Religious~Studies~and~Jewish~Studies},

  1.17-01 = {Protestant~Theology},
  1.17-02 = {Roman~Catholic~Theology},

  1.18-01 = {History~of~Philosophy},
  1.18-02 = {Theoretical~Philosophy},
  1.18-03 = {Practical~Philosophy},
```

```
5615
5616    1.21-01 = {General~Education~and~History~of~Education},
5617    1.21-02 = {General~and~Domain-Specific~Teaching~and~Learning},
5618    1.21-03 = {Education~Systems~and~Educational~Institutions},
5619    1.21-04 = {Educational~Research~on~Socialisation,~Welfare~and~Professionalism},
5620
5621    1.22-01 = {General,~Cognitive~and~Mathematical~Psychology},
5622    1.22-02 = {Biological~Psychology~and~Cognitive~Neuroscience},
5623    1.22-03 = {Developmental~and~Educational~Psychology},
5624    1.22-04 = {Social~Psychology,~Industrial~and~Organisational~Psychology},
5625    1.22-05 = {Personality~Psychology,~Clinical~and~Medical~Psychology,~Methodology},
5626
5627    1.23-01 = {Sociological~Theory},
5628    1.23-02 = {Empirical~Social~Research},
5629    1.23-03 = {Communication~Sciences},
5630    1.23-04 = {Political~Science},
5631
5632    1.24-01 = {Economic~Theory},
5633    1.24-02 = {Economic~Policy,~Applied~Economics},
5634    1.24-03 = {Accounting~and~Finance},
5635    1.24-04 = {Management~and~Marketing},
5636    1.24-05 = {Operations~Management~and~Computer~Science~for~Business~Administration},
5637    1.24-06 = {Statistics~and~Econometrics},
5638    1.24-07 = {Economic~and~Social~History},
5639
5640    1.25-01 = {Principles~of~Law~and~Jurisprudence},
5641    1.25-02 = {Private~Law},
5642    1.25-03 = {Public~Law},
5643    1.25-04 = {Criminal~Law},
5644    1.25-05 = {Criminology},
5645
5646    2.11-01 = {Biochemistry},
5647    2.11-02 = {Biophysics},
5648    2.11-03 = {Cell~Biology},
5649    2.11-04 = {Structural~Biology},
5650    2.11-05 = {General~Genetics~and~Functional~Genome~Biology},
5651    2.11-06 = {Developmental~Biology},
5652    2.11-07 = {Bioinformatics~and~Theoretical~Biology},
5653
5654    2.12-01 = {Evolution~and~Systematics~of~Plants~and~Fungi},
5655    2.12-02 = {Ecology~and~Biodiversity~of~Plants~and~Ecosystems},
5656    2.12-03 = {Organismic~Interactions,~Chemical~Ecology~and~Microbiomes~of~Plant~Systems},
5657    2.12-04 = {Plant~Physiology},
5658    2.12-05 = {Plant~Biochemistry~and~Biophysics},
5659    2.12-06 = {Plant~Cell~and~Developmental~Biology},
5660    2.12-07 = {Plant~Genetics~and~Genomics},
5661
5662    2.13-01 = {Systematics~and~Morphology~(Zoology)},
5663    2.13-02 = {Evolution,~Anthropology},
5664    2.13-03 = {Ecology~and~Biodiversity~of~Animals~and~Ecosystems,~Organismic~Interactions},
5665    2.13-04 = {Sensory~and~Behavioural~Biology},
5666    2.13-05 = {Animal~Physiology~and~Biochemistry},
5667    2.13-06 = {Evolutionary~Cell~and~Developmental~Biology~(Zoology)},
5668
5669    2.21-01 = {Metabolism,~Biochemistry~and~Genetics~of~Microorganisms},
5670    2.21-02 = {Microbial~Ecology~and~Applied~Microbiology},
5671    2.21-03 = {Medical~Microbiology~and~Mycology,~Hygiene,~Molecular~Infection~Biology},
5672    2.21-04 = {Virology},
5673    2.21-05 = {Immunology},
5674    2.21-06 = {Parasitology~and~Biology~of~Tropical~Infectious~Disease~Pathogens},
5675
5676    2.22-01 = {Epidemiology~and~Medical~Biometry~/~Statistics},
5677    2.22-02 = {Public~Health,~Healthcare~Research,~Social~and~Occupational~Medicine},
5678    2.22-03 = {Human~Genetics},
5679    2.22-04 = {Anatomy~and~Physiology},
5680    2.22-05 = {Nutritional~Sciences},
5681    2.22-06 = {Pathology},
5682    2.22-07 = {Medical~Informatics~and~Medical~Bioinformatics},
5683    2.22-08 = {Pharmacy},
5684    2.22-09 = {Pharmacology},
5685    2.22-10 = {Toxicology,~Laboratory~Medicine},
5686    2.22-11 = {Anaesthesiology},
5687    2.22-12 = {Cardiology,~Angiology},
5688    2.22-13 = {Pneumology,~Thoracic~Surgery},
```

```
5689    2.22-14 = {Hematology,~Oncology},
5690    2.22-15 = {Gastroenterology},
5691    2.22-16 = {Nephrology},
5692    2.22-17 = {Endocrinology,~Diabetology,~Metabolism},
5693    2.22-18 = {Rheumatology},
5694    2.22-19 = {Dermatology},
5695    2.22-20 = {Pediatric~and~Adolescent~Medicine},
5696    2.22-21 = {Gynaecology~and~Obstetrics},
5697    2.22-22 = {Clinical~Immunology~and~Allergology},
5698    2.22-23 = {Reproductive~Medicine,~Urology},
5699    2.22-24 = {Biogerontology~and~Geriatric~Medicine},
5700    2.22-25 = {General~and~Visceral~Surgery},
5701    2.22-26 = {Cardiac~and~Vascular~Surgery},
5702    2.22-27 = {Orthopaedics,~Traumatology,~Reconstructive~Surgery},
5703    2.22-28 = {Dentistry,~Oral~Surgery},
5704    2.22-29 = {Otolaryngology,~Phoniatrics~and~Audiology},
5705    2.22-30 = {Radiology},
5706    2.22-31 = {Clinical~Infectiology~and~Tropical~Medicine},
5707    2.22-32 = {Medical~Physics,~Biomedical~Technology},
5708    2.22-33 = {Nuclear~Medicine,~Radiotherapy,~Radiobiology},
5709
5710    2.23-01 = {Developmental~Neurobiology},
5711    2.23-02 = {Molecular~Biology~and~Physiology~of~Neurons~and~Glial~Cells},
5712    2.23-03 = {Experimental~and~Theoretical~Network~Neuroscience},
5713    2.23-04 = {Cognitive,~Systems~and~Behavioural~Neurobiology},
5714    2.23-05 = {Experimental~Models~for~the~Understanding~of~Nervous~System~Diseases},
5715    2.23-06 = {Molecular~and~Cellular~Neurology~and~Neuropathology},
5716    2.23-07 = {Clinical~Neurology;~Neurosurgery~and~Neuroradiology},
5717    2.23-08 = {Human~Cognitive~and~Systems~Neuroscience},
5718    2.23-09 = {Biological~Psychiatry},
5719    2.23-10 = {Clinical~Psychiatry,~Psychotherapy,~Child~and~Adolescent~Psychiatry},
5720    2.23-11 = {Ophthalmology},
5721
5722    2.31-01 = {Soil~Sciences},
5723    2.31-02 = {Plant~Breeding~and~Plant~Pathology},
5724    2.31-03 = {Plant~Cultivation,~Plant~Nutrition,~Agricultural~Technology},
5725    2.31-04 = {Ecology~of~Land~Use},
5726    2.31-05 = {Agricultural~Economics,~Agricultural~Policy,~Agricultural~Sociology},
5727    2.31-06 = {Forestry},
5728    2.31-07 = {Animal~Breeding,~Animal~Nutrition,~Animal~Husbandry},
5729
5730    3.11-01 = {Inorganic~Molecular~Chemistry~-~Synthesis~and~Characterisation},
5731    3.11-02 = {Organic~Molecular~Chemistry~-~Synthesis~and~Characterisation},
5732
5733    3.12-01 = {Solid~State~and~Surface~Chemistry,~Material~Synthesis},
5734    3.12-02 = {Physical~Chemistry~of~Solids~and~Surfaces,~Material~Characterisation},
5735
5736    3.13-01 = {Physical~Chemistry~of~Molecules,~Liquids~and~Interfaces,~Biophysical~Chemistry},
5737
5738    3.14-01 = {Analytical~Chemistry},
5739
5740    3.15-01 = {Biological~and~Biomimetic~Chemistry},
5741    3.15-02 = {Food~Chemistry},
5742
5743    3.16-01 = {Preparatory~and~Physical~Chemistry~of~Polymers},
5744    3.16-02 = {Experimental~and~Theoretical~Physics~of~Polymers},
5745    3.16-03 = {Polymer~Materials},
5746
5747    3.17-01 = {Theoretical~Chemistry:~Electron~Structure,~Dynamics,~Simulation},
5748    3.17-02 = {Theoretical~Chemistry:~Molecules,~Materials,~Surfaces},
5749
5750    3.21-01 = {Experimental~Condensed~Matter~Physics},
5751    3.21-02 = {Theoretical~Condensed~Matter~Physics},
5752
5753    3.22-01 = {Statistical~Physics,~Nonlinear~Dynamics,~Complex~Systems,~Soft~and~Fluid~Matter,~Biological~
5754
5755    3.23-01 = {Optics,~Quantum~Optics~and~Physics~of~Atoms,~Molecules~and~Plasmas},
5756
5757    3.24-01 = {Nuclear~and~Elementary~Particle~Physics,~Quantum~Mechanics,~Relativity,~Fields},
5758
5759    3.25-01 = {Astrophysics~and~Astronomy},
5760
5761    3.31-01 = {Mathematics},
5762
```

```
5763    3.41-01 = {Atmospheric~Science},
5764    3.41-02 = {Oceanography},
5765
5766    3.42-01 = {Geology},
5767    3.42-02 = {Palaeontology},
5768
5769    3.43-01 = {Geophysics},
5770    3.43-02 = {Geodesy,~Photogrammetry,~Remote~Sensing,~Geoinformatics,~Cartography},
5771
5772    3.44-01 = {Mineralogy,~Petrology~and~Geochemistry},
5773
5774    3.45-01 = {Physical~Geography},
5775    3.45-02 = {Human~Geography},
5776
5777    3.46-01 = {Hydrogeology,~Hydrology,~Limnology,~Urban~Water~Management,~Water~Chemistry,~Integrated~Wate
5778
5779    4.11-01 = {Metal-Cutting~and~Abrasive~Manufacturing~Engineering},
5780    4.11-02 = {Primary~Shaping~and~Reshaping~Technology,~Additive~Manufacturing},
5781    4.11-03 = {Joining~and~Separation~Technology},
5782    4.11-04 = {Plastics~Engineering},
5783    4.11-05 = {Production~Systems,~Operations~Management,~Quality~Management~and~Factory~Planning},
5784    4.11-06 = {Production~Automation~and~Assembly~Technology},
5785
5786    4.12-01 = {Engineering~Design,~Machine~Elements,~Product~Development},
5787    4.12-02 = {Mechanics},
5788    4.12-03 = {Lightweight~Construction,~Textile~Technology},
5789    4.12-04 = {Acoustics},
5790
5791    4.21-01 = {Chemical~and~Thermal~Process~Engineering},
5792    4.21-02 = {Technical~Chemistry},
5793    4.21-03 = {Mechanical~Process~Engineering},
5794    4.21-04 = {Biological~Process~Engineering},
5795    4.21-05 = {Systems~Process~Engineering},
5796
5797    4.22-01 = {Energy~Process~Engineering},
5798    4.22-02 = {Technical~Thermodynamics},
5799    4.22-03 = {Fluid~Mechanics},
5800    4.22-04 = {Hydraulic~and~Turbo~Engines~and~Piston~Engines},
5801
5802    4.31-01 = {Metallurgical,~Thermal~and~Thermomechanical~Treatment~of~Materials},
5803    4.31-02 = {Materials~in~Sintering~Processes~and~Generative~Manufacturing~Processes},
5804    4.31-03 = {Coating~and~Surface~Technology},
5805    4.31-04 = {Mechanical~Properties~of~Metallic~Materials~and~their~Microstructural~Origins},
5806    4.31-05 = {Glass,~Ceramics~and~Derived~Composites},
5807    4.31-06 = {Polymeric~and~Biogenic~Materials~and~Derived~Composites},
5808
5809    4.32-01 = {Synthesis~and~Properties~of~Functional~Materials},
5810    4.32-02 = {Biomaterials},
5811    4.32-03 = {Thermodynamics~and~Kinetics~as~well~as~Properties~of~Phases~and~Microstructure~of~Materials}
5812    4.32-04 = {Computer-Aided~Design~of~Materials~and~Simulation~of~Materials~Behaviour~from~Atomic~to~Micr
5813
5814    4.41-01 = {Automation,~Mechatronics,~Control~Systems,~Intelligent~Technical~Systems,~Robotics},
5815    4.41-02 = {Measurement~Systems},
5816    4.41-03 = {Microsystems},
5817    4.41-04 = {Traffic~and~Transport~Systems,~Intelligent~and~Automated~Traffic},
5818    4.41-05 = {Human~Factors,~Ergonomics,~Human-Machine~Systems},
5819    4.41-06 = {Biomedical~Systems~Technology},
5820
5821    4.42-01 = {Electronic~Semiconductors,~Components~and~Circuits,~Integrated~Systems,~Sensor~Technology,~T
5822    4.42-02 = {Communication~Technology~and~Networks,~High-Frequency~Technology~and~Photonic~Systems,~Signa
5823    4.42-03 = {Electrical~Energy~Systems,~Power~Management,~Power~Electronics,~Electrical~Machines~and~Driv
5824    4.42-04 = {Hardware~Systems~and~Architectures~for~Information~Technology~and~Artificial~Intelligence,~Q
5825
5826    4.43-01 = {Theoretical~Computer~Science},
5827    4.43-02 = {Software~Engineering~and~Programming~Languages},
5828    4.43-03 = {Security~and~Dependability,~Operating,~Communication~and~Distributed~Systems},
5829    4.43-04 = {Artificial~Intelligence~and~Machine~Learning~Methods},
5830    4.43-05 = {Image~and~Language~Processing,~Computer~Graphics~and~Visualisation,~Human~Computer~Interacti
5831    4.43-06 = {Data~Management,~Data-Intensive~Systems,~Computer~Science~Methods~in~Business~Informatics},
5832    4.43-07 = {Computer~Architecture,~Embedded~and~Massively~Parallel~Systems},
5833
5834    4.51-01 = {Architecture,~Building~and~Construction~History,~Construction~Research,~Sustainable~Buildinq
5835    4.51-02 = {Urbanism,~Spatial~Planning,~Transportation~and~Infrastructure~Planning,~Landscape~Planning},
5836    4.51-03 = {Construction~Material~Sciences,~Chemistry,~Building~Physics},
```

```
  4.51-04 = {Structural~Engineering,~Building~Informatics~and~Construction~Operation},
  4.51-05 = {Applied~Mechanics,~Statics~and~Dynamics},
  4.51-06 = {Geotechnics,~Hydraulic~Engineering},

}

\NewDocumentCommand{\dfgResearchAreasList}{m}{
  \exp_args:Ne \@@_research_area_print:n { \tl_trim_spaces:n {#1} }
}
\cs_new_protected:Npn \@@_research_area_print:n #1
{
  % #1: a single code, with surrounding spaces removed
  \prop_if_in:NnTF \g_@@_dfg_research_areas_prop {#1}
  {
   % key exists → fetch the description and typeset it
   \prop_get:NnN \g_@@_dfg_research_areas_prop {#1} \l_tmpa_tl
   \textbf{#1}:~\l_tmpa_tl
  }
  {
   % key missing → same fallback as your original macro
   \textcolor{error}{\textbf{#1}:~ research~ area~ not~ found}
   \msg_warning:nne { dfg } { research-area-not-found }{#1}
  }
}
```

We turn to the early career phases

```
\str_new:N \l_@@_row_color_str
\tl_new:N \l_@@_early_career_name_style_tl
\NewDocumentCommand{\EarlyCareerResearchersTable}{ O{EarlyCareerResearcher} }{%
  \group_begin:
  % Training histories may refer to former projects without annotating them.
  \cs_set_protected:Npn \@@_project_reference_only_indicator: { }
  \def\dfgLocalDB{#1}
  \DTLifdbexists{\dfgLocalDB}{%
    % Older rosters may have no defence-date column at all.
    \DTLifhaskey{\dfgLocalDB}{dateDefense}{}
      {\DTLaddcolumn{\dfgLocalDB}{dateDefense}}
   \DTLsort*{ref-project-id,lastname}{\dfgLocalDB}%
   \def\tblrbody{}%
   \DTLforeach*{\dfgLocalDB}{%
    \pRefProjectID=ref-project-id,%
    \pLastname=lastname,%
    \pFirstname=firstname,%
    \pFinancedBy=financed-by,%
    \pTopic=topic,%
    \pCategory=category,%
    \pPeriodStart=periodStart,%
      \pPeriodEnd=periodEnd,%
    \pDateDefense=dateDefense%
   }{
    \str_case:en {\pCategory}{
     {MD}{\str_set:Nn \l_@@_row_color_str {green!10} }
     {PhD}{\str_set:Nn \l_@@_row_color_str {blue!10} }
    }
    % Highlight only the name cell for completed doctoral candidates.
    \tl_clear:N \l_@@_early_career_name_style_tl
    \DTLifnullorempty{\pDateDefense}{}
    {
      \tl_if_blank:VF \pDateDefense
        {\tl_set:Nn \l_@@_early_career_name_style_tl {font=\bfseries}}
    }
      \@@_getvalueforkey:Nnnnn{\theProjectNumber}{number}{project}{id}{\pRefProjectID}
    \protected@edef\tblrbody{\tblrbody
        \SetRow{\l_@@_row_color_str}
           \datatool_if_null:NTF {\theProjectNumber}{\pRefProjectID}{\getProject{\pRefProjectID}}
      & \SetCell{\l_@@_early_career_name_style_tl}
        \noexpand\dfgShowTag{\pRefProjectID/\pLastname}{lastname}
          {\pLastname}[\dfgLocalDB],~
        \noexpand\dfgShowTag{\pRefProjectID/\pLastname}{firstname}
          {\pFirstname}[\dfgLocalDB]
      & \noexpand\dfgShowTag{\pRefProjectID/\pLastname}{financed-by}
          {\pFinancedBy}[\dfgLocalDB]
      & \noexpand\dfgShowTag{\pRefProjectID/\pLastname}{topic}
          {\pTopic}[\dfgLocalDB]
```

```
      &
      {
       \ifdefempty{\pPeriodEnd}{since~}{}
           \noexpand\dfgShowTag{\pRefProjectID/\pLastname}{periodStart}
             {\pPeriodStart}[\dfgLocalDB]
           \ifdefempty{\pPeriodEnd}{}{--            \noexpand\dfgShowTag{\pRefProjectID/\pLastname}{perioc
               {\pPeriodEnd}[\dfgLocalDB]}}
      \\
     }}%
    \begin{tblr}[%
      theme=main,
      expand=\tblrbody,
      long
     ]{
         colspec = {t{1cm}t{3cm}t{1.2cm}X[t]t{2.5cm}},
      rowhead = 1,
      column{1} = {
                       font=\bfseries,halign=l,
                  fg = {tableFirstColumn}
                },
         % Names must not stretch interword spaces when a line wraps.
         column{2} = {halign=l},
      % row{even}={bg=tableRows},
         column{4} = {font={\footnotesize\itshape},halign=l},
      row{1}       = {
                      bg       = tableHeadingsBG,
                      fg       = tableHeadingsFont,
                      font     = \footnotesize\bfseries,
                      halign   = {c},
                               valign   = {m},
                      guard
                     },
     }
     Project %
      & Surname,~ first~ name             %
      & {Type~ of~            \\ funding} %
      & Topic                             %
      & Duration                          \\
     \tblrbody
    \end{tblr}}
   {
    Database~ \texttt{#1}~ missing.
    \msg_warning:nne { dfg } { database-not-found }{ #1 }
   }
   \group_end:
}
```

Following now the section about diversity and equity. Before that there is a command to get proper position names based on a property list.

```

\prop_new:N \g_@@_dfg_position_names_prop
\prop_gset_from_keyval:Nn \g_@@_dfg_position_names_prop
{
  PhD         = {Doctoral~researchers},
  postDoc     = {Postdoctoral~researchers},
  groupLeader = {Research~ group~ leaders,~
    junior~ research~ group~ leaders,~
    junior~ professors},
  research    = {Other~ research~ staff},
  nonResearch = {Non-research~ staff},
  student     = {Student~ and~ graduate~ assistants},
  prof        = {Professors},
  prof-W2     = {Professors~ W2/C3},
  prof-W3     = {Professors~ W3/C4}
}
\prop_new:N \g_@@_dfg_category_names_prop
\prop_gset_from_keyval:Nn \g_@@_dfg_category_names_prop
{
  PhD         = {Doctoral~researcher},
  postDoc     = {Postdoctoral~researcher},
  medDoc      = {Medical~doctoral~researcher},
  groupLeader = {(Jr.)~ Research~ group~ leader},
  research    = {Other~ research~ staff},
```

```
    nonResearch = {Non-research~ staff},
    student     = {Student/graduate~ assistant},
    assistant   = {Research~assistant},
    prof        = {Professor},
    prof-W2     = {Professor~ (W2/C3)},
    prof-W3     = {Professor~ (W3/C4)},
  }
  \prop_new:N \g_@@_dfg_category_abbreviations_prop
  \prop_gset_from_keyval:Nn \g_@@_dfg_category_abbreviations_prop
  {
    PhD         = {Doct.~cand.},
    postDoc     = {Postdoc},
    medDoc      = {Med.~doc.},
    groupLeader = {Group~leader},
    research    = {Other~res.},
    nonResearch = {Non-res.},
    student     = {Stud./grad.~asst.},
    assistant   = {Res.~asst.},
    prof        = {Prof.},
    prof-W2     = {Prof.~(W2/C3)},
    prof-W3     = {Prof.~(W3/C4)},
  }
  \cs_generate_variant:Nn \prop_if_in:NnTF { NeTF }
  % Keep canonical names available for validation and custom-category fallbacks.
  % Both public labels and staff-roster cells use this resolver.
  \prg_new_protected_conditional:Npnn \@@_category_name_get:nN #1#2 { TF }
  {
    \prop_if_in:NeTF \g_@@_dfg_category_names_prop {#1}
    {
      \bool_if:NTF \l_@@_custom_category_abbreviations_bool
      {
        \prop_if_in:NeTF \g_@@_dfg_category_abbreviations_prop {#1}
          {\prop_get:NeN \g_@@_dfg_category_abbreviations_prop {#1} #2}
          {\prop_get:NeN \g_@@_dfg_category_names_prop {#1} #2}
      }
      {\prop_get:NeN \g_@@_dfg_category_names_prop {#1} #2}
      \prg_return_true:
    }
    {\prg_return_false:}
  }

  \NewDocumentCommand{\dfgPositionName}{m}{%
    \prop_if_in:NeTF \g_@@_dfg_position_names_prop {#1}
    {
     \prop_get:NeN \g_@@_dfg_position_names_prop {#1} \l_tmpa_tl
     \l_tmpa_tl
    }
    {
     \textcolor{error}{mismatch:~#1}
      \@@_warn_unknown_name:nnN {position~in~\string\dfgPositionName} {#1}
        \g_@@_dfg_position_names_prop
    }
  }
  \NewDocumentCommand{\dfgCategoryName}{m}{
    \@@_category_name_get:nNTF {#1} \l_tmpa_tl
      {\tl_use:N \l_tmpa_tl}
    {
     \textcolor{error}{mismatch:~#1}
      \@@_warn_unknown_name:nnN {category~in~\string\dfgCategoryName} {#1}
        \g_@@_dfg_category_names_prop
    }
  }

  \NewDocumentCommand{\GenderEqualityStaffTable}{ O{GenderEqualityStaff} }{%
    \def\dfgLocalDB{#1}
    \DTLifdbexists{\dfgLocalDB}{%
     \tl_clear:N \l_tblr_body_tl
     \DTLforeach*[
      \DTLiseq{PhD}{\pPosition}
      \OR
      \DTLiseq{postDoc}{\pPosition}
     ]{\dfgLocalDB}{%
      \pPosition=position,%
      \pPrevObjPctFemale=previous-objective-percentage-female,%
```

```
6052      \pStatusQuoNumFemale=status-quo-number-female,%
6053      \pStatusQuoPctFemale=status-quo-percentage-female,%
6054      \pFutureObjPctFemale=future-objective-percentage-female%
6055     }{
6056      \tl_gput_right:Nx \l_tblr_body_tl
6057      {
6058        \dfgShowTag{\pPosition}{position}
6059          {\dfgPositionName{\pPosition}}[\dfgLocalDB] &
6060        \dfgShowTag{\pPosition}{previous-objective-percentage-female}
6061          {\pPrevObjPctFemale}[\dfgLocalDB] &
6062        \dfgShowTag{\pPosition}{status-quo-number-female}
6063          {\pStatusQuoNumFemale}[\dfgLocalDB] &
6064        \dfgShowTag{\pPosition}{status-quo-percentage-female}
6065          {\pStatusQuoPctFemale}[\dfgLocalDB] &
6066        \dfgShowTag{\pPosition}{future-objective-percentage-female}
6067          {\pFutureObjPctFemale}[\dfgLocalDB] \\
6068      }
6069     }
6070     \begin{tblr}[%
6071       theme=main,
6072     note{a}={Reference~ date:~ proposal~ for~ \dfgFundingPeriodText\space~ funding~ period},
6073       expand=\l_tblr_body_tl,
6074       long
6075      ]{
6076       vspan=even,
6077       %row{Z}= {font={\footnotesize\bfseries}},
6078       colspec = {
6079         X[m] % position
6080         m{2cm} % proportion
6081         m{2cm} % number
6082         m{2cm} % female
6083         m{3cm}
6084        },
6085       hspan=minimal, % !!!!! https://tex.stackexchange.com/a/637391/98739
6086       vline{3} = {3-3}{1pt,solid,fg={tableLines}},
6087       vline{5} = {1-3}{1pt,solid,fg={tableLines}},
6088       hline{4} = {1pt,solid,fg={tableLines}},
6089       % hline{Y} = {1pt,solid,fg={tableOuterLines}},
6090       hline{2} = {wd=0pt},
6091       rowhead = 3,
6092       column{2-5}={halign={c}},
6093       %  column{1} = {font={\bfseries},
6094       %    fg = {rwthBlue}},
6095       row{2-3} ={
6096                  guard,
6097                            valign={m},
6098                  font={\footnotesize\bfseries},
6099                  fg={tableHeadingsFont},
6100                  bg={white}},
6101          row{1}={valign=m},
6102      }
6103      \SetCell[r=3]{c} % empty
6104       & \SetCell[c=3]{c} Second~ funding~ period  %
6105       &                                          %
6106       &                                          %
6107       & Third~ funding~ period                   \\
6108      % empty
6109       & {Objective~ [\unit{\percent}]}
6110       & \SetCell[c=2]{c}{Status~ Quo\TblrNote{a}}
6111       &
6112       & {Objective~ [\unit{\percent}]}           \\
6113      % empty
6114       &                                          % empty
6115       & Number
6116       & [\unit{\percent}]
6117       & f                                        \\
6118      \tl_use:N \l_tblr_body_tl
6119      % Total
6120      %  &                                          % objective
6121      %  &                                          % number
6122      %  &                                          % percentage
6123      %  &                                          % objective \\
6124     \end{tblr}}
6125    {
```

```
    Database~ \texttt{#1}~ missing.
    \msg_warning:nne { dfg } { database-not-found }{ #1 }
   }
 }

 \int_new:N \l_@@_count_int
 \int_new:N \l_@@_total_int
 \int_new:N \l_@@_tmp_int
 \int_new:N \l_@@_tmp_total_int
 \int_new:N \l_@@_tmp_position_int
 \int_new:N \l_@@_tmp_gender_int
 \int_new:N \l_@@_percent_int
```

Cached counting infrastructure: Count each requested funding phase once, then retain its position/gender counts across later phase switches. Compare unexpanded database and header tokens before reuse so edits, sorts and scoped changes invalidate the cache. Preserve the horizontal microtype boundary when restoring cached counts. The cached counts and active phase selector remain global across groups. Restoring saved counts in horizontal mode inserts cancelling nonzero kerns of `1sp` and `-1sp` to retain the original scan's microtype boundary. Omitting this boundary can shift the optical centering of numerals in table cells.

```
 \prop_new:N \g_@@_counts_prop
 \prop_new:N \g_@@_counts_by_phase_prop
 \prop_new:N \g_@@_count_snapshots_prop
 \tl_new:N   \l_@@_count_snapshot_tl
 \tl_new:N   \l_@@_count_previous_snapshot_tl
 \tl_new:N   \l_@@_count_cache_key_tl
 \tl_new:N   \l_@@_count_cached_values_tl
 \tl_new:N   \l_@@_count_key_tl
 \tl_new:N   \g_@@_count_phase_tl
 \tl_new:N   \l_@@_count_db_tl
 % Compare the stored tokens, without expanding metadata. This also detects
 % direct Datatool edits and locally scoped changes, not only \addEntry calls.
 \cs_new_protected:Npn \@@_database_snapshot:nN #1#2
 {
   \tl_set:Ne #2
   {
     { \exp_not:v {dtldb@#1} }
     { \exp_not:v {dtlkeys@#1} }
   }
 }
```

Keep both the active phase and saved phase counts global, so nested groups cannot restore a stale phase selector after switching periods. Compute counts for ALL (position, gender) combinations in one pass. Stores them in `\g_@@_counts_prop`, keyed by position and gender. `\dfg_compute_counts:nn {<db>} {<phase>}`.

```
 \cs_new_protected:Npn \dfg_compute_counts:nn #1#2
 {
   \@@_database_snapshot:nN {#1} \l_@@_count_snapshot_tl
   \prop_get:NeNTF \g_@@_count_snapshots_prop {#1}
     \l_@@_count_previous_snapshot_tl
     { }
     { \tl_clear:N \l_@@_count_previous_snapshot_tl }
   \tl_if_eq:NNF \l_@@_count_snapshot_tl \l_@@_count_previous_snapshot_tl
   {
     \prop_gclear:N \g_@@_counts_by_phase_prop
     \tl_gclear:N \g_@@_count_phase_tl
     \prop_gput:NeV \g_@@_count_snapshots_prop {#1}
       \l_@@_count_snapshot_tl
   }
   \tl_set:Nx \l_@@_count_cache_key_tl { #1 | #2 }
   \tl_if_eq:NNF \l_@@_count_cache_key_tl \g_@@_count_phase_tl
   {
     \tl_gset_eq:NN \g_@@_count_phase_tl \l_@@_count_cache_key_tl
     \prop_get:NVNTF \g_@@_counts_by_phase_prop \l_@@_count_cache_key_tl
       \l_@@_count_cached_values_tl
     {
       \exp_args:NNV \prop_gset_from_keyval:Nn \g_@@_counts_prop
         \l_@@_count_cached_values_tl
       % Two cancelling kerns retain the original scan's boundary for
```

```
6181        % microtype, preserving the centering of digits without PDF anchors.
6182        \mode_if_horizontal:T { \tex_kern:D 1sp \tex_kern:D -1sp }
6183      }
6184      {
6185     \prop_gclear:N \g_@@_counts_prop
6186     \DTLforeach*[
6187      \DTLisinlist{#2}{\pPeriod}
6188      \and
6189      \DTLisinlist{PI}{\pRole}
6190     ]{#1}{
6191      \pPosition = position,
6192      \pGender   = gender,
6193      \pPeriod   = period,
6194      \pRole     = role
6195     }{
6196      \tl_set:Nx \l_@@_count_key_tl { \pPosition | \pGender }
6197      \prop_get:NVNTF \g_@@_counts_prop \l_@@_count_key_tl \l_tmpb_tl
6198      {
6199       \int_set:Nn \l_@@_count_int { \l_tmpb_tl + 1 }
6200       \prop_gput:NVx \g_@@_counts_prop \l_@@_count_key_tl
6201       { \int_use:N \l_@@_count_int }
6202      }
6203      {
6204       \prop_gput:NVn \g_@@_counts_prop \l_@@_count_key_tl { 1 }
6205      }
6206     }
6207        \prop_gput:NVx \g_@@_counts_by_phase_prop \l_@@_count_cache_key_tl
6208          { \prop_to_keyval:N \g_@@_counts_prop }
6209      }
6210    }
6211  }
6212  % O(1) lookup. Returns 0 for unknown keys.
6213  % \dfg_count_lookup:nn {<position>} {<gender>}  -> integer literal
6214  \cs_new:Npn \dfg_count_lookup:nn #1#2
6215  {
6216    \prop_if_in:NnTF \g_@@_counts_prop { #1 | #2 }
6217    { \prop_item:Nn \g_@@_counts_prop { #1 | #2 } }
6218    { 0 }
6219  }
6220
6221  % Set <int> to count for (position, gender) - uses cache.
6222  % \dfg_count_position_set:Nnnnn <int> {<db>} {<position>} {<gender>} {<phase>}
6223  \cs_new_protected:Npn \dfg_count_position_set:Nnnnn #1#2#3#4#5
6224  {
6225    \prop_if_in:NnTF \g_@@_dfg_position_names_prop {#3}
6226    {
6227     \dfg_compute_counts:nn {#2} {#5}
6228     \int_set:Nn #1 { \dfg_count_lookup:nn {#3} {#4} }
6229    }
6230    {
6231     \textcolor{error}{mismatch:~#3}
6232      \@@_warn_unknown_name:nnN {staff~position~for~counts} {#3}
6233        \g_@@_dfg_position_names_prop
6234    }
6235  }
6236
6237  % Sum across all genders for one position.
6238  % \dfg_total_position_set:Nnnn <int> {<db>} {<position>} {<phase>}
6239  \cs_new_protected:Npn \dfg_total_position_set:Nnnn #1#2#3#4
6240  {
6241    \dfg_compute_counts:nn {#2} {#4}
6242    \int_set:Nn #1
6243    {
6244     \dfg_count_lookup:nn {#3} {f}
6245     + \dfg_count_lookup:nn {#3} {m}
6246     + \dfg_count_lookup:nn {#3} {d}
6247    }
6248  }
6249
6250  % Sum across all positions for one gender.
6251  % \dfg_total_gender_set:Nnnn <int> {<db>} {<gender>} {<phase>}
6252  \cs_new_protected:Npn \dfg_total_gender_set:Nnnn #1#2#3#4
6253  {
6254    \dfg_compute_counts:nn {#2} {#4}
```

```
    \int_set:Nn #1
    {
     \dfg_count_lookup:nn {postDoc}     {#3}
     + \dfg_count_lookup:nn {groupLeader} {#3}
     + \dfg_count_lookup:nn {prof-W2}    {#3}
     + \dfg_count_lookup:nn {prof-W3}    {#3}
    }
  }

  % Grand total across all positions and genders.
  % \dfg_total_position_gender_set:Nnn <int> {<db>} {<phase>}
  \cs_new_protected:Npn \dfg_total_position_gender_set:Nnn #1#2#3
  {
    \dfg_compute_counts:nn {#2} {#3}
    \int_zero:N #1
    \clist_map_inline:nn {postDoc, groupLeader, prof-W2, prof-W3}
    {
     \clist_map_inline:nn { f , m , d }
     {
      \int_add:Nn #1 { \dfg_count_lookup:nn {##1} {####1} }
     }
    }
  }
```

You can get the count of PIs of a certain position, gender and funding phase.

```
  \NewDocumentCommand{\getPositionGenderPhaseAmount}{ O{person} m m m }
  {
    % #1: database
    % #2: position
    % #3: gender
    % #4: phase
    \dfg_count_position_set:Nnnnn \l_@@_tmp_int {#1} {#2} {#3} {#4}
    \dfgShowCalculatedTag{getPositionGenderPhaseAmount}{#1}
      { \int_use:N \l_@@_tmp_int }
  }
```

This command sums up a certain gender column based on a funding phase.

```
  \NewDocumentCommand{\getPositionPhaseTotal}{ O{person} m m }
  {
    % #1: database
    % #2: position
    % #3: phase

    \dfg_total_position_set:Nnnn \l_@@_total_int {#1} {#2} {#3}

    % no macro supplied → print the total
    \dfgShowCalculatedTag{getPositionPhaseTotal}{#1}
      { \int_use:N \l_@@_total_int }
  }
```

This command sums up a certain gender column based on a funding phase.

```
  \NewDocumentCommand{\getGenderPhaseTotal}{ O{person} m m  }
  {
    % #1: database
    % #2: gender
    % #3: phase
    \dfg_total_gender_set:Nnnn \l_@@_total_int {#1} {#2} {#3}

    % % no macro supplied → print the total
    \dfgShowCalculatedTag{getGenderPhaseTotal}{#1}
      { \int_use:N \l_@@_total_int }
  }
```

This will get you the percentage of a certain position, gender and phase. Mainly for the table below, but can be used anywhere.

```
  \NewDocumentCommand{\getPositionGenderPhasePercentage}{ O{person} m m m}
  {
    % #1: database
    % #2: position
    % #3: gender
    % #4: phase
```

```
6317
6318    \dfg_total_position_set:Nnnn \l_@@_total_int {#1} {#2} {#4}
6319
6320    % --- number of the requested gender ----------------------------
6321    \dfg_count_position_set:Nnnnn \l_@@_tmp_int {#1}{#2}{#3}{#4}
6322
6323    % --- avoid division by zero -----------------------------------
6324    \dfgShowCalculatedTag{getPositionGenderPhasePercentage}{#1}
6325    {
6326      \int_compare:nNnTF { \l_@@_total_int } = { 0 }
6327      { 0 }
6328      {
6329        % --- integer percentage (rounded) ------------------------
6330        \int_set:Nn \l_@@_percent_int
6331        { \fp_eval:n { round( 100 * \l_@@_tmp_int / \l_@@_total_int ) } }
6332
6333        % print the integer together with the percent sign
6334        \int_use:N \l_@@_percent_int
6335      }
6336    }
6337  }
```

The following command is meant to get the overall percentage of a certain gender. It goes into the final total row of the table, but it also can be used elsewhere with any funding phase you want.

```
6338  \NewDocumentCommand{\getGenderPhasePercentage}{ O{person} m m  }
6339  {
6340    % #1: database
6341    % #2: gender
6342    % #3: phase
6343
6344    \int_zero:N \l_@@_percent_int
6345    \int_zero:N \l_@@_tmp_int
6346    \int_zero:N \l_@@_tmp_total_int
6347
6348    \dfg_total_position_gender_set:Nnn \l_@@_tmp_total_int {#1} {#3}
6349
6350
6351    % % --- number of the requested gender ----------------------------
6352    \dfg_total_gender_set:Nnnn \l_@@_tmp_gender_int {#1}{#2}{#3}
6353
6354    % --- avoid division by zero -----------------------------------
6355    \dfgShowCalculatedTag{getGenderPhasePercentage}{#1}
6356    {
6357      \int_compare:nNnTF { \l_@@_tmp_total_int } = { 0 }
6358      { 0 }
6359      {
6360        % --- integer percentage (rounded) ------------------------
6361        \int_set:Nn \l_@@_percent_int
6362        { \fp_eval:n { round( 100 * \l_@@_tmp_gender_int / \l_@@_tmp_total_int ) } }
6363
6364        % print the integer together with the percent sign
6365        \int_use:N \l_@@_percent_int
6366      }
6367    }
6368    % \par Gender: #2--
6369    % Phase: #3--
6370    % Count: \int_use:N \l_@@_tmp_gender_int --
6371    % Count Total:\int_use:N \l_@@_tmp_total_int\par------------
6372  }
```

Finally the table which is mostly calculated automatically based on the person-database.

```
6373  \bool_new:N \l_@@_gender_leaders_all_sexes_bool
6374  \tl_new:N \l_@@_gender_leaders_database_tl
6375  \tl_new:N \l_@@_gender_leaders_unknown_options_tl
6376  \clist_new:N \l_@@_gender_leaders_unknown_options_clist
6377  \keys_define:nn {dfg/gender-leaders}
6378  {
6379    all-sexes .bool_set:N = \l_@@_gender_leaders_all_sexes_bool,
6380    all-sexes .default:n = true,
6381    database .tl_set:N = \l_@@_gender_leaders_database_tl,
6382  }
6383  \NewDocumentCommand{\GenderEqualityProjectLeadersTable}{ O{} }
6384  {
```

```
6385    \group_begin:
6386    \bool_set_false:N \l_@@_gender_leaders_all_sexes_bool
6387    \tl_set:Nn \l_@@_gender_leaders_database_tl {GenderEqualityProjectLeaders}
6388    \keys_set_known:nnN {dfg/gender-leaders} {#1}
6389      \l_@@_gender_leaders_unknown_options_tl
6390    \tl_if_blank:VF \l_@@_gender_leaders_unknown_options_tl
6391    {
6392      % Preserve the old bare database argument, including when combined with
6393      % a new display flag. Unknown key=value pairs still receive key errors.
6394      \clist_set:NV \l_@@_gender_leaders_unknown_options_clist
6395        \l_@@_gender_leaders_unknown_options_tl
6396      \int_compare:nNnTF
6397        {\clist_count:N \l_@@_gender_leaders_unknown_options_clist} = {1}
6398      {
6399        \exp_args:NV \tl_if_in:nnTF \l_@@_gender_leaders_unknown_options_tl {=}
6400        {
6401          \exp_args:NnV \keys_set:nn {dfg/gender-leaders}
6402            \l_@@_gender_leaders_unknown_options_tl
6403        }
6404        {
6405          \tl_set:Ne \l_@@_gender_leaders_database_tl
6406            {\clist_item:Nn \l_@@_gender_leaders_unknown_options_clist {1}}
6407        }
6408      }
6409      {
6410        \exp_args:NnV \keys_set:nn {dfg/gender-leaders}
6411          \l_@@_gender_leaders_unknown_options_tl
6412      }
6413    }
6414    \bool_if:NTF \l_@@_gender_leaders_all_sexes_bool
6415      { \exp_args:NV \@@_gender_leaders_all:n \l_@@_gender_leaders_database_tl }
6416      { \exp_args:NV \@@_gender_leaders_female:n \l_@@_gender_leaders_database_tl }
6417    \group_end:
6418  }
6419  \cs_new_protected:Npn \@@_gender_leaders_all:n #1
6420  {%
6421    \def\dfgLocalDB{#1}
6422    \DTLifdbexists{\dfgLocalDB}{%
6423      % Invalidate once per table. Both counts and their phase are global, so
6424      % cell groups and prose commands always agree on the cached period.
6425      \tl_gclear:N \g_@@_count_phase_tl
6426     \tl_clear:N \l_tblr_body_tl
6427     \DTLforeach*[
6428      % just making absolutely sure we only have the data sets we need.
6429      \DTLiseq{postDoc}{\pPosition}
6430      \OR
6431      \DTLiseq{groupLeader}{\pPosition}
6432      \OR
6433      \DTLiseq{prof-W2}{\pPosition}
6434      \OR
6435      \DTLiseq{prof-W3}{\pPosition}
6436     ]{\dfgLocalDB}{%
6437      \pPosition=position,%
6438      \pPrevObjPctFemale=previous-objective-percentage-female,%
6439      \pFutureObjPctFemale=future-objective-percentage-female%
6440     }{
6441
6442      \tl_gput_right:Nx \l_tblr_body_tl
6443      {
6444        \dfgShowTag{\pPosition}{position}
6445          {\dfgPositionName{\pPosition}}[\dfgLocalDB] % position
6446        \int_compare:nNnT {\theFundingPeriodNumeral} = {3}
6447        {
6448        & \getPositionGenderPhaseAmount{\pPosition}{f}{1}
6449        & \getPositionGenderPhaseAmount{\pPosition}{m}{1}
6450        & \getPositionGenderPhaseAmount{\pPosition}{d}{1}
6451        & \getPositionGenderPhasePercentage{\pPosition}{f}{1}
6452        & \getPositionGenderPhasePercentage{\pPosition}{m}{1}
6453        & \getPositionGenderPhasePercentage{\pPosition}{d}{1}
6454        }
6455        & \dfgShowTag{\pPosition}{previous-objective-percentage-female}
6456            {\pPrevObjPctFemale}[\dfgLocalDB] % objective
6457       & \getPositionGenderPhaseAmount{\pPosition}{f}{\theFundingPeriodNumeralPrevious} % f number
6458       & \getPositionGenderPhaseAmount{\pPosition}{m}{\theFundingPeriodNumeralPrevious} % m number
```

```
      & \getPositionGenderPhaseAmount{\pPosition}{d}{\theFundingPeriodNumeralPrevious}% d number
      &  \getPositionGenderPhasePercentage{\pPosition}{f}{\theFundingPeriodNumeralPrevious}% f percentage
      &  \getPositionGenderPhasePercentage{\pPosition}{m}{\theFundingPeriodNumeralPrevious}% m percentage
      &  \getPositionGenderPhasePercentage{\pPosition}{d}{\theFundingPeriodNumeralPrevious}% d percentage
       & \dfgShowTag{\pPosition}{future-objective-percentage-female}
           {\pFutureObjPctFemale}[\dfgLocalDB] % f objective
      \int_compare:nNnT {\theFundingPeriodNumeral} = {3}
      {
        & \getPositionGenderPhaseAmount{\pPosition}{f}{3}
        & \getPositionGenderPhaseAmount{\pPosition}{m}{3}
        & \getPositionGenderPhaseAmount{\pPosition}{d}{3}
        & \getPositionGenderPhasePercentage{\pPosition}{f}{3}
        & \getPositionGenderPhasePercentage{\pPosition}{m}{3}
        & \getPositionGenderPhasePercentage{\pPosition}{d}{3}
      }
      \\
     }
    }
     \tl_gput_right:Nx \l_tblr_body_tl
     {
       \exp_not:n {Total\printMarginalia{
           Total~ no.:~
           \dfg_total_position_gender_set:Nnn \l_@@_tmp_total_int
           {person} % database
           {\theFundingPeriodNumeralPrevious} % phase
              \num{\int_use:N \l_@@_tmp_total_int}

       }}
       \int_compare:nNnT {\theFundingPeriodNumeral} = {3}
       {
       & \getGenderPhaseTotal{f}{1}
       & \getGenderPhaseTotal{m}{1}
       & \getGenderPhaseTotal{d}{1}
       & \getGenderPhasePercentage{f}{1}
       & \getGenderPhasePercentage{m}{1}
       & \getGenderPhasePercentage{d}{1}
       }
      &                                                                  % objective
      & \getGenderPhaseTotal{f}{\theFundingPeriodNumeralPrevious}      % number f
      & \getGenderPhaseTotal{m}{\theFundingPeriodNumeralPrevious}      % number m
      & \getGenderPhaseTotal{d}{\theFundingPeriodNumeralPrevious}      % number d
      & \getGenderPhasePercentage{f}{\theFundingPeriodNumeralPrevious} % percentage f
      & \getGenderPhasePercentage{m}{\theFundingPeriodNumeralPrevious} % percentage m
      & \getGenderPhasePercentage{d}{\theFundingPeriodNumeralPrevious} % percentage d
       & % current-period objective
       \int_compare:nNnT {\theFundingPeriodNumeral} = {3}
       {
         & \getGenderPhaseTotal{f}{3}
         & \getGenderPhaseTotal{m}{3}
         & \getGenderPhaseTotal{d}{3}
         & \getGenderPhasePercentage{f}{3}
         & \getGenderPhasePercentage{m}{3}
         & \getGenderPhasePercentage{d}{3}
       }
       \\
     }
     \int_compare:nNnTF {\theFundingPeriodNumeral} = {3}
     {
       \@@_gender_leaders_render:nn
       {
         vline{2,8,15}={1-4}{1pt,solid,tableLines},
         vline{5,12,19}={3-4}{1pt,solid,tableLines},
         vline{9,16}={3-4}{1pt,solid,tableLines},
         colspec={X[m] *{6}{m{0.5cm}} m{1.3cm}
                          *{6}{m{0.5cm}} m{1.3cm} *{6}{m{0.5cm}}},
         colsep=1pt,
         column{1}={halign=l},
         column{2-21}={halign=c},
         cell{2}{8,15}={font=\scriptsize\bfseries},
       }
       {
         \SetCell[r=4]{l} Position
         & \SetCell[c=6]{c} First~ funding~ period & & & & &
         & \SetCell[c=7]{c} Second~ funding~ period & & & & & &
```

```
          & \SetCell[c=7]{c} Third~ funding~ period & & & & & & \\
          & \SetCell[c=6]{c} Status~ Quo & & & & &
          & {Objective~ [\unit{\percent}]}
          & \SetCell[c=6]{c} Status~ Quo\TblrNote{a} & & & & &
          & {Objective~ [\unit{\percent}]}
          & \SetCell[c=6]{c} Status~ Quo\TblrNote{a} & & & & & \\
          & \SetCell[c=3]{c} Number & &
          & \SetCell[c=3]{c} [\unit{\percent}] & &
          &
          & \SetCell[c=3]{c} Number & &
          & \SetCell[c=3]{c} [\unit{\percent}] & &
          &
          & \SetCell[c=3]{c} Number & &
          & \SetCell[c=3]{c} [\unit{\percent}] & & \\
          & f & m & d & f & m & d
          &
          & f & m & d & f & m & d
          & f
          & f & m & d & f & m & d \\
        }
      }
      {
        \@@_gender_leaders_render:nn
        {
          vline{3}={3-4}{1pt,solid,tableLines},
          vline{6}={4-4}{1pt,solid,tableLines},
          vline{9}={1-4}{1pt,solid,tableLines},
          colspec={X[m] m{2cm} *{6}{m{0.5cm}} m{3cm}},
          column{2-9}={halign=c},
        }
        {
          \SetCell[r=4]{l} Position
          & \SetCell[c=7]{c}
            \int_case:nnF {\theFundingPeriodNumeralPrevious}
              {{1}{First}{2}{Second}} {Previous}~ funding~ period & & & & & &
          & \dfgFundingPeriodText\space funding~ period \\
          & {Objective~ [\unit{\percent}]}
          & \SetCell[c=6]{c} Status~ Quo\TblrNote{a} & & & & &
          & {Objective~ [\unit{\percent}]} \\
          &
          & \SetCell[c=3]{c} Number & &
          & \SetCell[c=3]{c} [\unit{\percent}] & &
          & \\
          & & f & m & d & f & m & d & f \\
        }
      }
    }
    {
      Database~ \texttt{#1}~ missing.
      \msg_warning:nne { dfg } { database-not-found }{ #1 }
    }
  }
```

Female-only view: the third-period layout follows DFG form 60.200, including the current period's number/percentage next to its original target. The existing future-objective field supplies that target, preserving metadata.

```
\cs_new:Npn \@@_gender_leaders_female_cells:nn #1#2
{
  & \getPositionGenderPhaseAmount{#1}{f}{#2}
  & \getPositionGenderPhasePercentage{#1}{f}{#2}
}
\cs_new_protected:Npn \@@_gender_leaders_female:n #1
{
  \def\dfgLocalDB{#1}
  \DTLifdbexists{\dfgLocalDB}
  {
    \tl_gclear:N \g_@@_count_phase_tl
    \tl_clear:N \l_tblr_body_tl
    \DTLforeach*[
      \DTLiseq{postDoc}{\pPosition}\OR
      \DTLiseq{groupLeader}{\pPosition}\OR
      \DTLiseq{prof-W2}{\pPosition}\OR
      \DTLiseq{prof-W3}{\pPosition}
```

```
    ]{\dfgLocalDB}{
      \pPosition=position,
      \pPrevObjPctFemale=previous-objective-percentage-female,
      \pFutureObjPctFemale=future-objective-percentage-female
    }
    {
      \tl_gput_right:Nx \l_tblr_body_tl
      {
        \dfgShowTag{\pPosition}{position}
          {\dfgPositionName{\pPosition}}[\dfgLocalDB]
        \int_compare:nNnTF {\theFundingPeriodNumeral} = {3}
        {
          \@@_gender_leaders_female_cells:nn {\pPosition}{1}
          \@@_gender_leaders_female_cells:nn {\pPosition}{2}
          & \dfgShowTag{\pPosition}{future-objective-percentage-female}
              {\pFutureObjPctFemale}[\dfgLocalDB]
          \@@_gender_leaders_female_cells:nn {\pPosition}{3}
        }
        {
          & \dfgShowTag{\pPosition}{previous-objective-percentage-female}
              {\pPrevObjPctFemale}[\dfgLocalDB]
          \@@_gender_leaders_female_cells:nn
            {\pPosition}{\theFundingPeriodNumeralPrevious}
          & \dfgShowTag{\pPosition}{future-objective-percentage-female}
              {\pFutureObjPctFemale}[\dfgLocalDB]
        }
        \\
      }
    }
    \tl_gput_right:Nx \l_tblr_body_tl
    {
      Total
      \int_compare:nNnTF {\theFundingPeriodNumeral} = {3}
      {
        & \getGenderPhaseTotal{f}{1} & \getGenderPhasePercentage{f}{1}
        & \getGenderPhaseTotal{f}{2} & \getGenderPhasePercentage{f}{2}
        &
        & \getGenderPhaseTotal{f}{3} & \getGenderPhasePercentage{f}{3}
      }
      {
        &
        & \getGenderPhaseTotal{f}{\theFundingPeriodNumeralPrevious}
        & \getGenderPhasePercentage{f}{\theFundingPeriodNumeralPrevious}
        &
      }
      \\
    }
    \int_compare:nNnTF {\theFundingPeriodNumeral} = {3}
    {
      \@@_gender_leaders_render:nnnn
      {
        colspec={X[m] m{1.2cm} m{.8cm} m{1.2cm} m{.8cm}
                 m{2cm} m{1.2cm} m{.8cm}},
        vline{2,4,6}={1-2}{1pt,solid,tableLines},
        column{2-8}={halign=c},
      }
      {
        \SetCell[r=2]{l} Position~(female)
        & \SetCell[c=2]{c} First~ funding~ period &
        & \SetCell[c=2]{c} Second~ funding~ period &
        & \SetCell[c=3]{c} {Status~ Quo\TblrNote{a}\\Third~ funding~ period} & & \\
        & Number & [\unit{\percent}]
        & Number & [\unit{\percent}]
        & {Original~ objective~[\unit{\percent}]} & Number & [\unit{\percent}] \\
      }
      {2}{3}
    }
    {
      \@@_gender_leaders_render:nnnn
      {
        colspec={X[m] m{2cm} m{1.5cm} m{1.5cm} m{3cm}},
        vline{3}={2-2}{1pt,solid,tableLines},
        vline{5}={1-2}{1pt,solid,tableLines},
        column{2-5}={halign=c},
```

```
      }
      {
        \SetCell[r=2]{l} Position~(female)
        & \SetCell[c=3]{c}
          \int_case:nnF {\theFundingPeriodNumeralPrevious}
            {{1}{First}{2}{Second}} {Previous}~ funding~ period & &
        & \dfgFundingPeriodText\space funding~ period \\
        & {Original~ objective~[\unit{\percent}]}
        & {Number\TblrNote{a}} & [\unit{\percent}]
        & {Objective~[\unit{\percent}]} \\
      }
      {2}{3}
    }
  }
  {
    Database~ \texttt{#1}~ missing.
    \msg_warning:nne {dfg}{database-not-found}{#1}
  }
}

```

Share the table styling between the two-period and three-period layouts. The complete four-row header repeats if the table crosses a page boundary.

```
\cs_new_protected:Npn \@@_gender_leaders_render:nn #1#2
  { \@@_gender_leaders_render:nnnn {#1}{#2}{4}{5} }
\cs_new_protected:Npn \@@_gender_leaders_render:nnnn #1#2#3#4
{
  \begin{tblr}[
    theme=main,
    note{a}={Reference~ date:~ proposal~ for~ \dfgFundingPeriodText\space funding~ period},
    expand=\l_tblr_body_tl,
    long
  ]{
    vspan=even,
    hspan=minimal,
    row{Z}={font={\footnotesize\bfseries}},
    hline{#4}={1pt,solid,tableLines},
    hline{Y}={1pt,solid,fg={tableOuterLines}},
    hline{2}={wd=0pt},
    row{odd}={bg=white},
    row{even}={bg=tableRows},
    row{1-#3}={bg=tableHeadingsBG},
    rowhead=#3,
    row{2-#3}={guard,font={\footnotesize\bfseries},
               fg={tableHeadingsFont},bg=white},
    #1,
    row{1-#3}={valign=m},
  }
    #2
    \l_tblr_body_tl
  \end{tblr}
}

```

We continue with the list of existing instrumentation. Quantities are printed in text cells, so their multiplication sign uses `\texttimes`; a math-only `\times` would fail for a nonempty quantity. Left-aligned columns use the standard `\raggedright` command through the shared theme setup. The description column selects this with `l`.

```
\NewDocumentCommand{\ExistingInstrumentationTable}{ O{existingInstrumentation} }{%
  \def\dfgLocalDB{#1}
  \def\tblrbody{}
  \DTLifdbexists{\dfgLocalDB}{%
    \DTLsort{ref-project-id}{\dfgLocalDB}%
   \DTLforeach*{\dfgLocalDB}{%
    \instProject=ref-project-id,%
    \instInstrument=instrument,%
    \instCompany=company,%
    \instQuantity=quantity,%
    \instYear=year,%
    \instCost=cost,%
    \instSource=financed-by%
   }{%
```

```
  \protected@edef\tblrbody{\tblrbody
     \getProject{\instProject}
      & \ifdefempty{\instQuantity}{}{
          \noexpand\dfgShowTag{\instProject/\instInstrument}{quantity}
            {\instQuantity}[\dfgLocalDB]\,\texttimes\,}
        \noexpand\dfgShowTag{\instProject/\instInstrument}{instrument}
          {\instInstrument}[\dfgLocalDB]
      \ifdefempty{\instCompany}{}{\space(
        \noexpand\dfgShowTag{\instProject/\instInstrument}{company}
          {\instCompany}[\dfgLocalDB])}
      & \noexpand\dfgShowTag{\instProject/\instInstrument}{year}
          {\instYear}[\dfgLocalDB]
      & \noexpand\dfgShowTag{\instProject/\instInstrument}{cost}
          {\noexpand\@@_show_existing_instrumentation_cost:n{\instCost}}[\dfgLocalDB]
      & \noexpand\dfgShowTag{\instProject/\instInstrument}{financed-by}
          {\instSource}[\dfgLocalDB]
      \\
     }}%
    \begin{tblr}[%
      theme=main,
      expand=\tblrbody,
      long,
    note{a}={Figures~ in~ thousands},
     ]{%
      %rowsep=1pt,
      vspan=even,
    colspec = {X[-1,m]X[4.5,l,m]X[m]X[-1,c,si={table-format=4.1}]X[1.7,m]},
      rowhead = 1,

      column{3}={halign={c}},
    column{4}={halign={r},guard},
      column{5}={halign={l}},
      % cell{1}{4}={valign={m}},
      cell{1}{1-5} = {cmd={\hypersetup{linkcolor=tableLink}}},
             row{1}={valign=m, halign={c},guard},
      % row{1} = {font={\bfseries},fg={white}}
     }
     Project %
      & Description~ of~ instrumentation                          %
      & {Year~ of~                      \\ purchase}
      & \SetCell{c}{{{Cost~ of~          \\purchase}}}\TblrNote{a}
      & {Source~ of~                     \\ funding}              \\
     \tblrbody
    \end{tblr}
   }
   {
    Database~ \texttt{#1}~ missing.
    \msg_warning:nne { dfg } { database-not-found }{ #1 }
    a }
}
```

Laboratory-animal tables and queries resolve types through the registry. Tables prepare every data row and aggregate exactly once, before tabularray measures cells. Temporary totals are local to this call. Blank/invalid numbers remain unavailable, while explicit zero is a supplied value. Financial totals sum the declared funding columns; no inferred purchase/housing bill is substituted.

```
\tl_new:N \l_@@_animal_database_tl
\tl_new:N \l_@@_animal_totals_by_tl
\tl_new:N \l_@@_animal_assignments_tl
\tl_new:N \l_@@_animal_body_tl
\tl_new:N \l_@@_animal_type_tl
\tl_new:N \l_@@_animal_quantity_tl
\tl_new:N \l_@@_animal_weeks_tl
\tl_new:N \l_@@_animal_purchase_tl
\tl_new:N \l_@@_animal_requested_tl
\tl_new:N \l_@@_animal_existing_tl
\tl_new:N \l_@@_animal_number_tl
\prop_new:N \l_@@_animal_totals_prop
\prop_new:N \l_@@_animal_missing_prop
\prop_new:N \l_@@_animal_known_prop
\bool_new:N \l_@@_animal_incomplete_bool
\keys_define:nn { dfg / animal-table }
  {
```

```
    database .tl_set:N = \l_@@_animal_database_tl,
    database .value_required:n = true,
    totals-by .choices:nn = {group,type}
      { \tl_set:NV \l_@@_animal_totals_by_tl \l_keys_choice_tl },
    totals-by .value_required:n = true,
    totals-by / unknown .code:n =
      { \msg_warning:nnnn {dfg}{invalid-value}{#1}{group,~type} },
    unknown .code:n =
      { \msg_warning:nnee {dfg}{unknown-key}{\l_keys_path_str}{#1} }
  }
\cs_new_protected:Npn \@@_animal_column:Nn #1#2
  {
    \cs_set:Npn #1 {}
    \DTLifhaskey{\l_@@_animal_database_tl}{#2}
      { \tl_put_right:Nn \l_@@_animal_assignments_tl {#1=#2,} } {}
  }
\cs_new_protected:Npn \@@_animal_number:nNN #1#2#3
  {
    \tl_clear:N #3
    \DTLifnullorempty{#2} {}
      {
        \tl_set:Ne \l_@@_animal_number_tl {#2}
        \tl_trim_spaces:N \l_@@_animal_number_tl
        \str_if_eq:nnTF {#1}{quantity}
          {
            \exp_args:NnV \regex_match:nnTF
              {\A \d+ \Z} \l_@@_animal_number_tl
              { \tl_set:Ne #3 {\fp_eval:n {\l_@@_animal_number_tl}} }
              { \@@_animal_bad_number:n {#1} }
          }
          {
            \exp_args:NnV \regex_match:nnTF
              {\A \d+ (?: \. \d+ )? \Z} \l_@@_animal_number_tl
              { \tl_set:Ne #3 {\fp_eval:n {\l_@@_animal_number_tl}} }
              { \@@_animal_bad_number:n {#1} }
          }
      }
  }
\cs_new_protected:Npn \@@_animal_bad_number:n #1
  {
    \msg_warning:nneee {dfg}{animal-row-invalid}
      {\l_@@_animal_database_tl}{\pProject}
      {invalid~'#1=\l_@@_animal_number_tl';~
       use~a~non-negative~\str_if_eq:nnTF {#1}{quantity}{integer}{number}}
  }
\cs_new_protected:Npn \@@_animal_add:nN #1#2
  {
    \prop_if_in:NeF \l_@@_animal_totals_prop {#1}
      { \prop_put:Nen \l_@@_animal_totals_prop {#1}{0} }
    \tl_if_blank:VTF #2
      {
        \prop_put:Nen \l_@@_animal_missing_prop {#1}{true}
        \bool_set_true:N \l_@@_animal_incomplete_bool
      }
      {
        \prop_get:NeN \l_@@_animal_totals_prop {#1} \l_tmpa_tl
        \prop_put:Nee \l_@@_animal_totals_prop {#1}
          {\fp_eval:n {\l_tmpa_tl + #2}}
        \prop_put:Nen \l_@@_animal_known_prop {#1}{true}
      }
  }
\cs_new_protected:Npn \@@_animal_project:n #1
  { \tl_if_blank:nTF {#1}{\textemdash}{\getProject{#1}} }
\cs_new_protected:Npn \@@_animal_number_print:nn #1#2
  {
    \tl_if_blank:nTF {#2}
      { \textemdash }
      {
        \str_case:nnF {#1}
          {
            {funds}{\@@_show_eur:n {#2}}
            {costs}
              {\num[round-mode=places,round-precision=2,round-pad=false]{#2}}
          }
```

```
            {\@@_show_table_number:n {#2}}
        }
    }
  \cs_new_protected:Npn \@@_animal_total_print:nn #1#2
    {
      \prop_get:NnN \l_@@_animal_totals_prop {#2} \l_tmpa_tl
      \prop_if_in:NnTF \l_@@_animal_missing_prop {#2}
        {
          \prop_if_in:NnTF \l_@@_animal_known_prop {#2}
            { \exp_args:NnV \@@_animal_number_print:nn {#1} \l_tmpa_tl }
            { \textemdash }
          \textsuperscript{*}
        }
        { \exp_args:NnV \@@_animal_number_print:nn {#1} \l_tmpa_tl }
    }
  \cs_new_protected:Npn \@@_animal_prepare_row:
    {
      \DTLifnullorempty{\pProject}{\cs_set:Npn \pProject {}}{}
      \tl_clear:N \l_@@_animal_type_tl
      \DTLifnullorempty{\pSpecies}{}
        {
          \tl_set:Ne \l_@@_animal_type_tl {\pSpecies}
          \tl_trim_spaces:N \l_@@_animal_type_tl
        }
      \@@_animal_type_get:nnN {\l_@@_animal_type_tl}{label}
        \l_@@_animal_label_tl
      \tl_if_blank:VTF \l_@@_animal_label_tl
        {
          \tl_set:Nn \l_@@_animal_label_tl {Missing~type}
          \tl_set:Nn \l_@@_animal_group_tl {!unclassified}
          \tl_clear:N \l_@@_animal_rate_tl
          \msg_warning:nneee {dfg}{animal-row-invalid}
            {\l_@@_animal_database_tl}{\pProject}
            {a~registered~'species'~is~required}
        }
        {
          \@@_animal_type_get:nnN {\l_@@_animal_type_tl}{housing-rate}
            \l_@@_animal_rate_tl
          \str_if_eq:VnTF \l_@@_animal_totals_by_tl {type}
            { \tl_set_eq:NN \l_@@_animal_group_tl \l_@@_animal_type_tl }
            {
              \@@_animal_type_get:nnN {\l_@@_animal_type_tl}{total-group}
                \l_@@_animal_group_tl
            }
        }
      \@@_animal_number:nNN {quantity} \pQuantity \l_@@_animal_quantity_tl
      \@@_animal_number:nNN {weeks-kept} \pWeeksKept \l_@@_animal_weeks_tl
      \@@_animal_number:nNN {housing-rate}
        \l_@@_animal_rate_tl \l_@@_animal_rate_value_tl
      \@@_animal_number:nNN {purchasing-costs}
        \pPurchasingCosts \l_@@_animal_purchase_tl
      \@@_animal_number:nNN {requested-funds}
        \pRequestedFunds \l_@@_animal_requested_tl
      \@@_animal_number:nNN {existing-funds}
        \pExistingFunds \l_@@_animal_existing_tl
      \@@_animal_add:nN {group/\l_@@_animal_group_tl/quantity}
        \l_@@_animal_quantity_tl
      \@@_animal_add:nN {all/quantity} \l_@@_animal_quantity_tl
      \@@_animal_add:nN {all/requested-funds} \l_@@_animal_requested_tl
      \@@_animal_add:nN {all/existing-funds} \l_@@_animal_existing_tl
      \tl_put_right:Ne \l_@@_animal_body_tl
        {
          \exp_not:N \@@_animal_project:n {\exp_not:V \pProject}
          & \exp_not:N \dfgShowTag
              {\exp_not:V \pProject/\exp_not:V \l_@@_animal_type_tl}{species}
              {\exp_not:V \l_@@_animal_label_tl}[\exp_not:V \l_@@_animal_database_tl]
          & \exp_not:N \@@_animal_data_cell:nnnn {quantity}
              {\exp_not:V \l_@@_animal_quantity_tl}{number}
              {\exp_not:V \pProject/\exp_not:V \l_@@_animal_type_tl}
          & \exp_not:N \@@_animal_data_cell:nnnn {weeks-kept}
              {\exp_not:V \l_@@_animal_weeks_tl}{number}
              {\exp_not:V \pProject/\exp_not:V \l_@@_animal_type_tl}
          & \exp_not:N \dfgShowCalculatedTag {animalHousingRate}
              {settings,\exp_not:V \l_@@_animal_database_tl}
```

```
              {\exp_not:N \@@_animal_number_print:nn {number}
                {\exp_not:V \l_@@_animal_rate_value_tl}}
          & \exp_not:N \@@_animal_data_cell:nnnn {purchasing-costs}
              {\exp_not:V \l_@@_animal_purchase_tl}{number}
              {\exp_not:V \pProject/\exp_not:V \l_@@_animal_type_tl}
          & \exp_not:N \@@_animal_data_cell:nnnn {requested-funds}
              {\exp_not:V \l_@@_animal_requested_tl}{funds}
              {\exp_not:V \pProject/\exp_not:V \l_@@_animal_type_tl}
          & \exp_not:N \@@_animal_data_cell:nnnn {existing-funds}
              {\exp_not:V \l_@@_animal_existing_tl}{funds}
              {\exp_not:V \pProject/\exp_not:V \l_@@_animal_type_tl}
          \exp_not:N \\
        }
    }
  \cs_new_protected:Npn \@@_animal_data_cell:nnnn #1#2#3#4
    {
      \dfgShowTag{#4}{#1}
        {\@@_animal_number_print:nn {#3}{#2}}[\l_@@_animal_database_tl]
    }
  \cs_new_protected:Npn \@@_animal_foreach:n #1
    { \DTLforeach*{\l_@@_animal_database_tl}{#1}{\@@_animal_prepare_row:} }
  \cs_new_protected:Npn \@@_animal_subtotal:n #1
    {
      \prop_if_in:NnT \l_@@_animal_totals_prop {group/#1/quantity}
        {
          \str_if_eq:nnTF {#1}{!unclassified}
            { \tl_set:Nn \l_@@_animal_plural_tl {Unclassified} }
            {
              \@@_animal_type_get:nnN {#1}{label-plural}
                \l_@@_animal_plural_tl
            }
          \tl_put_right:Ne \l_@@_animal_body_tl
            {
              & \exp_not:N \SetCell{font=\exp_not:N \bfseries}
                  \exp_not:V \l_@@_animal_plural_tl
              & \exp_not:N \SetCell{font=\exp_not:N \bfseries}
                  \exp_not:N \@@_animal_total_print:nn {number}{group/#1/quantity}
              & \exp_not:N \SetCell{tableNoValue}
              & \exp_not:N \SetCell{tableNoValue}
              & \exp_not:N \SetCell{tableNoValue}
              & \exp_not:N \SetCell{tableNoValue}
              & \exp_not:N \SetCell{tableNoValue}
              \exp_not:N \\
            }
        }
    }
  \cs_new_protected:Npn \@@_animal_prepare:
    {
      \tl_clear:N \l_@@_animal_body_tl
      \tl_clear:N \l_@@_animal_assignments_tl
      \prop_clear:N \l_@@_animal_totals_prop
      \prop_clear:N \l_@@_animal_missing_prop
      \prop_clear:N \l_@@_animal_known_prop
      \bool_set_false:N \l_@@_animal_incomplete_bool
      \clist_map_inline:nn {quantity,requested-funds,existing-funds}
        { \prop_put:Nnn \l_@@_animal_totals_prop {all/##1}{0} }
      \DTLifhaskey{\l_@@_animal_database_tl}{ref-project-id}
        { \DTLsort{ref-project-id}{\l_@@_animal_database_tl} }{}
      \@@_animal_column:Nn \pProject {ref-project-id}
      \@@_animal_column:Nn \pSpecies {species}
      \@@_animal_column:Nn \pQuantity {quantity}
      \@@_animal_column:Nn \pWeeksKept {weeks-kept}
      \@@_animal_column:Nn \pPurchasingCosts {purchasing-costs}
      \@@_animal_column:Nn \pRequestedFunds {requested-funds}
      \@@_animal_column:Nn \pExistingFunds {existing-funds}
      \exp_args:NV \@@_animal_foreach:n \l_@@_animal_assignments_tl
      \tl_put_right:Nn \l_@@_animal_body_tl
        {\SetHline{-}{tableLines,0.5pt}}
      \seq_map_function:NN \l_@@_animal_type_ids_seq \@@_animal_subtotal:n
      \@@_animal_subtotal:n {!unclassified}
      \tl_put_right:Nn \l_@@_animal_body_tl
        {
          Total & All~animals
          & \@@_animal_total_print:nn {number}{all/quantity}
```

```
7028          & \SetCell{tableNoValue}
7029          & \SetCell{tableNoValue}
7030          & \SetCell{tableNoValue}
7031          & \@@_animal_total_print:nn {funds}{all/requested-funds}
7032          & \@@_animal_total_print:nn {funds}{all/existing-funds}
7033        }
7034      \clist_map_inline:nn {quantity,requested-funds,existing-funds}
7035        {
7036          \prop_if_in:NnT \l_@@_animal_missing_prop {all/##1}
7037            {
7038              \msg_warning:nnee {dfg}{animal-total-incomplete}
7039                {\l_@@_animal_database_tl}{##1}
7040            }
7041        }
7042    }
7043  % Inline queries share the table's validation, summation and missing-value
7044  % display. They scan the selected rows without sorting the database or
7045  % constructing a table body. Each call is local and reads current data/rates.
7046  \msg_new:nnn {dfg}{animal-query-invalid}
7047    { Invalid~animal~query:~#1.~The~result~is~unavailable. }
7048  \msg_new:nnn {dfg}{animal-query-incomplete}
7049    { Animal~query~in~'#1'~(#2):~'#3'~is~incomplete.~
7050      Only~supplied,~valid~amounts~are~included;~the~result~is~marked~*. }
7051  \tl_new:N \l_@@_animal_query_scope_tl
7052  \tl_new:N \l_@@_animal_query_id_tl
7053  \tl_new:N \l_@@_animal_query_cost_tl
7054  \tl_new:N \l_@@_animal_query_value_tl
7055  \tl_new:N \l_@@_animal_query_format_tl
7056  \bool_new:N \l_@@_animal_query_valid_bool
7057  \bool_new:N \l_@@_animal_query_match_bool
7058  \bool_new:N \l_@@_animal_query_product_valid_bool
7059  \cs_new_protected:Npn \@@_animal_query_reject:n #1
7060    {
7061      \msg_warning:nne {dfg}{animal-query-invalid}{#1}
7062      \bool_set_false:N \l_@@_animal_query_valid_bool
7063    }
7064  \cs_new_protected:Npn \@@_animal_query_select:nn #1#2
7065    {
7066      \str_if_eq:VnF \l_@@_animal_query_scope_tl {all}
7067        {
7068          \str_if_eq:VnF \l_@@_animal_query_scope_tl {#1}
7069            { \@@_animal_query_reject:n {use~either~'type'~or~'group'} }
7070        }
7071      \tl_set:Nn \l_@@_animal_query_scope_tl {#1}
7072      \tl_set:Ne \l_@@_animal_query_id_tl {#2}
7073      \tl_trim_spaces:N \l_@@_animal_query_id_tl
7074      \prop_if_in:NeF \l_@@_animal_types_prop
7075        {\l_@@_animal_query_id_tl/label}
7076        { \@@_animal_query_reject:n
7077            {'#1'~must~name~a~registered~animal~type,~got~'\l_@@_animal_query_id_tl'} }
7078    }
7079  \keys_define:nn {dfg/animal-query}
7080    {
7081      database .tl_set:N = \l_@@_animal_database_tl,
7082      database .value_required:n = true,
7083      group .code:n = {\@@_animal_query_select:nn {group}{#1}},
7084      group .value_required:n = true,
7085      type .code:n = {\@@_animal_query_select:nn {type}{#1}},
7086      type .value_required:n = true,
7087      unknown .code:n =
7088        {\@@_animal_query_reject:n {unknown~key~'\l_keys_path_str'}}
7089    }
7090  \keys_define:nn {dfg}
7091    {animal-cost-query .inherit:n = {dfg/animal-query}}
7092  \keys_define:nn {dfg/animal-cost-query}
7093    {
7094      cost .choices:nn = {requested,existing,purchase,housing,total}
7095        {\tl_set:NV \l_@@_animal_query_cost_tl \l_keys_choice_tl},
7096      cost .value_required:n = true,
7097      cost / unknown .code:n =
7098        {\@@_animal_query_reject:n
7099          {unknown~cost~'#1';~use~requested,~existing,~purchase,~housing,~or~total}},
7100      unknown .code:n =
7101        {\@@_animal_query_reject:n {unknown~key~'\l_keys_path_str'}}
```

```
  }
\cs_new_protected:Npn \@@_animal_query_product:nn #1#2
  {
    \tl_clear:N \l_@@_animal_query_value_tl
    \bool_set_true:N \l_@@_animal_query_product_valid_bool
    \tl_map_inline:nn {#2}
      {
        \tl_if_blank:VT ##1
          {\bool_set_false:N \l_@@_animal_query_product_valid_bool}
      }
    \bool_if:NT \l_@@_animal_query_product_valid_bool
      {\tl_set:Ne \l_@@_animal_query_value_tl {\fp_eval:n {#1}}}
    \@@_animal_add:nN {query/selected}\l_@@_animal_query_value_tl
  }
\cs_new_protected:Npn \@@_animal_query_calculated:
  {
    \@@_animal_number:nNN {quantity}\pQuantity\l_@@_animal_quantity_tl
    \str_if_eq:VnF \l_@@_animal_query_cost_tl {housing}
      {
        \@@_animal_number:nNN {purchasing-costs}
          \pPurchasingCosts\l_@@_animal_purchase_tl
        \@@_animal_query_product:nn
          {\l_@@_animal_quantity_tl * \l_@@_animal_purchase_tl}
          {\l_@@_animal_quantity_tl \l_@@_animal_purchase_tl}
      }
    \str_if_eq:VnF \l_@@_animal_query_cost_tl {purchase}
      {
        \@@_animal_number:nNN {weeks-kept}\pWeeksKept\l_@@_animal_weeks_tl
        \@@_animal_type_get:nnN {\l_@@_animal_type_tl}{housing-rate}
          \l_@@_animal_rate_tl
        \@@_animal_number:nNN {housing-rate}
          \l_@@_animal_rate_tl\l_@@_animal_rate_value_tl
        \@@_animal_query_product:nn
          {\l_@@_animal_quantity_tl * \l_@@_animal_weeks_tl
            * \l_@@_animal_rate_value_tl}
          {\l_@@_animal_quantity_tl \l_@@_animal_weeks_tl
            \l_@@_animal_rate_value_tl}
      }
  }
\cs_new_protected:Npn \@@_animal_query_row:
  {
    \DTLifnulloremptyf{\pProject}{\cs_set:Npn \pProject {}}{}
    \tl_clear:N \l_@@_animal_type_tl
    \DTLifnulloremptyf{\pSpecies}{}
      {
        \tl_set:Ne \l_@@_animal_type_tl {\pSpecies}
        \tl_trim_spaces:N \l_@@_animal_type_tl
      }
    \bool_set_true:N \l_@@_animal_query_match_bool
    \str_case:Vn \l_@@_animal_query_scope_tl
      {
        {type}
          {
            \str_if_eq:VVF \l_@@_animal_type_tl \l_@@_animal_query_id_tl
              {\bool_set_false:N \l_@@_animal_query_match_bool}
          }
        {group}
          {
            \@@_animal_type_get:nnN {\l_@@_animal_type_tl}{total-group}
              \l_@@_animal_group_tl
            \str_if_eq:VVF \l_@@_animal_group_tl \l_@@_animal_query_id_tl
              {\bool_set_false:N \l_@@_animal_query_match_bool}
          }
      }
    \bool_if:NT \l_@@_animal_query_match_bool
      {
        \str_case:VnF \l_@@_animal_query_cost_tl
          {
            {quantity}
              {
                \@@_animal_number:nNN {quantity}
                  \pQuantity\l_@@_animal_query_value_tl
                \@@_animal_add:nN {query/selected}\l_@@_animal_query_value_tl
              }
```

```
7176              {requested}
7177                {
7178                  \@@_animal_number:nNN {requested-funds}
7179                    \pRequestedFunds\l_@@_animal_query_value_tl
7180                  \@@_animal_add:nN {query/selected}\l_@@_animal_query_value_tl
7181                }
7182              {existing}
7183                {
7184                  \@@_animal_number:nNN {existing-funds}
7185                    \pExistingFunds\l_@@_animal_query_value_tl
7186                  \@@_animal_add:nN {query/selected}\l_@@_animal_query_value_tl
7187                }
7188            }
7189            {\@@_animal_query_calculated:}
7190        }
7191    }
7192  \cs_new_protected:Npn \@@_animal_query_foreach:n #1
7193    {\DTLforeach*{\l_@@_animal_database_tl}{#1}{\@@_animal_query_row:}}
7194  \cs_new_protected:Npn \@@_animal_query:nn #1#2
7195    {
7196      \group_begin:
7197      \tl_set:Nn \l_@@_animal_database_tl {UpkeepLaboratoryAnimals}
7198      \tl_set:Nn \l_@@_animal_query_scope_tl {all}
7199      \tl_clear:N \l_@@_animal_query_id_tl
7200      \tl_set:Nn \l_@@_animal_query_cost_tl {requested}
7201      \tl_set:Nn \l_@@_animal_query_format_tl {funds}
7202      \bool_set_true:N \l_@@_animal_query_valid_bool
7203      \str_if_eq:nnTF {#1}{count}
7204        {
7205          \keys_set:nn {dfg/animal-query}{#2}
7206          \tl_set:Nn \l_@@_animal_query_cost_tl {quantity}
7207          \tl_set:Nn \l_@@_animal_query_format_tl {number}
7208        }
7209        {
7210          \keys_set:nn {dfg/animal-cost-query}{#2}
7211          \clist_if_in:nVT {purchase,housing,total}\l_@@_animal_query_cost_tl
7212            {\tl_set:Nn \l_@@_animal_query_format_tl {costs}}
7213        }
7214      \tl_trim_spaces:N \l_@@_animal_database_tl
7215      \bool_if:NTF \l_@@_animal_query_valid_bool
7216        {
7217          \DTLifdbexists{\l_@@_animal_database_tl}
7218            {
7219              \tl_clear:N \l_@@_animal_assignments_tl
7220              \prop_clear:N \l_@@_animal_totals_prop
7221              \prop_clear:N \l_@@_animal_missing_prop
7222              \prop_clear:N \l_@@_animal_known_prop
7223              \prop_put:Nnn \l_@@_animal_totals_prop {query/selected}{0}
7224              \@@_animal_column:Nn \pProject {ref-project-id}
7225              \@@_animal_column:Nn \pSpecies {species}
7226              \@@_animal_column:Nn \pQuantity {quantity}
7227              \@@_animal_column:Nn \pWeeksKept {weeks-kept}
7228              \@@_animal_column:Nn \pPurchasingCosts {purchasing-costs}
7229              \@@_animal_column:Nn \pRequestedFunds {requested-funds}
7230              \@@_animal_column:Nn \pExistingFunds {existing-funds}
7231              \exp_args:NV \@@_animal_query_foreach:n \l_@@_animal_assignments_tl
7232              \prop_if_in:NnT \l_@@_animal_missing_prop {query/selected}
7233                {
7234                  \msg_warning:nneee {dfg}{animal-query-incomplete}
7235                    {\l_@@_animal_database_tl}
7236                    {\l_@@_animal_query_scope_tl
7237                      \tl_if_blank:VF \l_@@_animal_query_id_tl
7238                        {=\l_@@_animal_query_id_tl}}
7239                    {\l_@@_animal_query_cost_tl}
7240                }
7241              \exp_args:NV \@@_animal_total_print:nn
7242                \l_@@_animal_query_format_tl {query/selected}
7243            }
7244            {
7245              \msg_warning:nne {dfg}{database-not-found}{\l_@@_animal_database_tl}
7246              \textemdash
7247            }
7248        }
7249        {\textemdash}
```

```
    \group_end:
  }
\NewDocumentCommand \getAnimalCount {O{}}
  {\@@_animal_query:nn {count}{#1}}
\NewDocumentCommand \getAnimalCosts {O{}}
  {\@@_animal_query:nn {cost}{#1}}
\NewDocumentCommand{\UpkeepLaboratoryAnimalsTable}{ O{} }
  {
    \group_begin:
    \tl_set:Nn \l_@@_animal_database_tl {UpkeepLaboratoryAnimals}
    \tl_set:Nn \l_@@_animal_totals_by_tl {group}
    \tl_if_blank:nF {#1}
      {
        % The former optional argument was a bare database name.
        \tl_if_in:nnTF {#1}{=}
          { \keys_set:nn {dfg/animal-table}{#1} }
          { \tl_set:Nn \l_@@_animal_database_tl {#1} }
      }
    \tl_trim_spaces:N \l_@@_animal_database_tl
    \DTLifdbexists{\l_@@_animal_database_tl}
      {
        \@@_animal_prepare:
        \begin{tblr}[
          theme=main,
          expand=\l_@@_animal_body_tl,
          long,
          note{a}={Figures~in~EUR.},
        ]{
          vspan=even,
          colspec={Q[l] X[2,l]
            X[1.1,c,si={table-format=6}]
            X[1.3,c,si={table-format=3.2,table-auto-round=false}]
            X[-1,c,si={table-format=2.2,table-auto-round=false}]
            X[-1,c,si={table-format=5.2,table-auto-round=false}]
            Q[c,si={table-format=6}]
            X[-1,c,si={table-format=6}]},
          rowhead=1,
          column{3-8}={guard},
          hline{Y}={wd=1pt,tableLines},
          row{Z}={bg=white,fg=black,font=\footnotesize\bfseries,
            halign=c,valign=t},
          row{1}={guard,halign=c,valign=m,cmd={\hypersetup{linkcolor=tableLink}}},
        }
          Project & Species & Quantity
          & {Average\\number~of\\weeks~kept}
          & {Housing~costs\\per~animal\\per~week\TblrNote{a}}
          & {\mbox{Purchase}\\costs\\per~animal\TblrNote{a}}
          & {\mbox{Requested}\\funds\TblrNote{a}}
          & {Existing\\funds\TblrNote{a}} \\
          \l_@@_animal_body_tl
        \end{tblr}
        \bool_if:NT \l_@@_animal_incomplete_bool
          {
            \par\smallskip
            {\normalfont\footnotesize
              \textsuperscript{*}~Incomplete~total:~only~supplied,~valid~
              values~are~included.~A~dash~means~no~valid~value~was~supplied.}
          }
      }
      {
        Database~\texttt{\tl_use:N \l_@@_animal_database_tl}~missing.
        \msg_warning:nne {dfg}{database-not-found}{\l_@@_animal_database_tl}
      }
    \group_end:
  }

\newcommand{\dfgRotate}[1]{\rotatebox{90}{\dfgPositionName{#1}}}
```

`\getCountRequestedStaff` → P. 327 **with aggregate indexing** Funding declarations update a property-list index when they are read. Consequently this command only performs one property lookup; it never traverses a datatool database. This matters especially for tabularray, which evaluates table cells more than once while measuring and typesetting them. Missing tuples and

explicit zero values both print the faded multiplication sign used elsewhere in funding tables, preserving the display of the former database sum.

\getCountRequestedStaff[⟨*project*⟩]{⟨*year*⟩}{⟨*category*⟩}

Sum of the requested staff `quantity-year`⟨*year*⟩ values in the currently selected requested-funding database, normally `RequestedFunding`, filtered by ⟨*category*⟩ and (when ⟨*project*⟩ is given) by ⟨*project*⟩. Display follows the usual table conventions: an absent or zero sum prints a faded `\texttimes`, and any other value prints verbatim.

```
\tl_new:N \l_@@_requested_staff_database_tl
\tl_set:Nn \l_@@_requested_staff_database_tl { RequestedFunding }

\NewDocumentCommand{\getCountRequestedStaff}{omm}{%
  \tl_set:Nx \l_@@_funding_cache_key_tl
  {
    \IfNoValueTF{#1}
      {\tl_use:N \l_@@_requested_staff_database_tl/
       __ALL__/#3/quantity-year#2}
      {\tl_use:N \l_@@_requested_staff_database_tl/
       #1/#3/quantity-year#2}
  }
  \dfgShowCalculatedTag{getCountRequestedStaff}
    {\l_@@_requested_staff_database_tl}
  {
    \prop_get:NVNTF \g_@@_funding_staff_quantity_prop
      \l_@@_funding_cache_key_tl \l_@@_funding_cache_value_tl
    {
      \fp_compare:nNnTF {\l_@@_funding_cache_value_tl} = {0}
        {\textcolor{tableNoValue!60!black}{\texttimes}}
        {\l_@@_funding_cache_value_tl}
    }
    {\textcolor{tableNoValue!60!black}{\texttimes}}
  }
}
```

\OverviewExistingStaffTable The chapter-2 overview reuses the project-level staff roster instead of maintaining a second set of totals. Only records with `funding-status=existing` are counted. Each record contributes one person to every distinct parent affiliation reached through its `ref-institution-id` list; when that field is absent, both organisation and category are inherited through `ref-person-id` from the central `person` row. Multiple institutions at the same affiliation are counted once. The comma-separated applicant affiliations come from `meta` and occupy the first numeric columns. The heading is singular for one applicant affiliation and plural for several. Other affiliations are added in first-use order.

Because project declarations normally occur after chapter 2, the default database is `RequestedFundingStaffOverview`, restored from the preceding LaTeX run's auxiliary file. Passing `RequestedFundingStaff` explicitly is useful in focused tests or documents that load all rows before the table.

The DFG overview has seven fixed category rows. The more detailed roster categories `medDoc` and `assistant` are folded into enquoteOther research staff and enquoteStudent and graduate assistants, respectively.

\OverviewExistingStaffTable[⟨*database*⟩]

Print the DFG enquoteOverview of existing staff. The optional database defaults to `RequestedFundingStaffOverview`. Use the public call `\printTable`→P. 12`{OverviewExistingSt` in chapter 2. Direct calls also emit the standard skipped-item notice instead of querying unavailable metadata when either fast-compilation mode is active.

```
\seq_new:N  \l_@@_oes_affiliation_seq
\prop_new:N \l_@@_oes_affiliation_name_prop
\prop_new:N \l_@@_oes_affiliation_abbreviation_prop
\prop_new:N \l_@@_oes_count_prop
\prop_new:N \l_@@_oes_row_affiliation_seen_prop
```

```
\tl_new:N   \l_@@_oes_applicant_affiliation_tl
\tl_new:N   \l_@@_oes_person_tl
\tl_new:N   \l_@@_oes_category_tl
\tl_new:N   \l_@@_oes_institutions_tl
\tl_new:N   \l_@@_oes_affiliation_tl
\tl_new:N   \l_@@_oes_candidate_affiliation_tl
\tl_new:N   \l_@@_oes_registered_affiliation_tl
\tl_new:N   \l_@@_oes_affiliation_name_tl
\tl_new:N   \l_@@_oes_affiliation_abbreviation_tl
\tl_new:N   \l_@@_oes_lookup_key_tl
\tl_new:N   \l_@@_oes_database_tl
\tl_new:N   \l_@@_oes_table_body_tl
\tl_new:N   \l_@@_oes_colspec_tl
\int_new:N  \l_@@_oes_affiliation_count_int
\int_new:N  \l_@@_oes_applicant_affiliation_count_int
\int_new:N  \l_@@_oes_other_affiliation_count_int
\int_new:N  \l_@@_oes_record_count_int
\clist_new:N \l_@@_oes_applicant_affiliation_clist

\cs_new_protected:Npn \@@_oes_resolve_person_fallbacks:
{
  \tl_if_blank:VF \l_@@_oes_person_tl
  {
    \DTLifdbexists{person}
    {
      \@@_getvalueforkey:Nnnnn{\l_tmpa_tl}{id}{person}{id}
        {\l_@@_oes_person_tl}
      \DTLifnullorempty{\l_tmpa_tl}
      {
        \msg_warning:nnee { dfg } { requested-staff-unresolved-person }
          { \pOESProject } { \l_@@_oes_person_tl }
      }
      {
        \tl_if_blank:VT \l_@@_oes_category_tl
        {
          \@@_getvalueforkey:Nnnnn{\l_tmpa_tl}{position}{person}{id}
            {\l_@@_oes_person_tl}
          \DTLifnullorempty{\l_tmpa_tl}
            { }
            { \tl_set:NV \l_@@_oes_category_tl \l_tmpa_tl }
        }
        \bool_lazy_all:nT
        {
          { \tl_if_blank_p:V \l_@@_oes_institutions_tl }
          { \tl_if_blank_p:V \l_@@_oes_affiliation_tl }
        }
        {
          \@@_getvalueforkey:Nnnnn{\l_tmpa_tl}{ref-institution-id}{person}{id}
            {\l_@@_oes_person_tl}
          \DTLifnullorempty{\l_tmpa_tl}
            { }
            { \tl_set:NV \l_@@_oes_institutions_tl \l_tmpa_tl }
          \tl_if_blank:VT \l_@@_oes_institutions_tl
          {
            \@@_getvalueforkey:Nnnnn{\l_tmpa_tl}{ref-affiliation-id}{person}{id}
              {\l_@@_oes_person_tl}
            \DTLifnullorempty{\l_tmpa_tl}
              { }
              { \tl_set:NV \l_@@_oes_affiliation_tl \l_tmpa_tl }
          }
        }
      }
    }
    {
      \msg_warning:nnee { dfg } { requested-staff-unresolved-person }
        { \pOESProject } { \l_@@_oes_person_tl }
    }
  }
}

\cs_new_protected:Npn \@@_oes_register_affiliation:n #1
{
  \tl_set:Ne \l_@@_oes_registered_affiliation_tl {#1}
  \tl_trim_spaces:N \l_@@_oes_registered_affiliation_tl
```

```
  \tl_if_blank:VF \l_@@_oes_registered_affiliation_tl
  {
    \seq_if_in:NVF \l_@@_oes_affiliation_seq
      \l_@@_oes_registered_affiliation_tl
    {
      \tl_clear:N \l_@@_oes_affiliation_name_tl
      \tl_clear:N \l_@@_oes_affiliation_abbreviation_tl
      \DTLifdbexists{affiliation}
      {
        \@@_getvalueforkey:Nnnnn{\l_@@_oes_affiliation_name_tl}
          {name}{affiliation}{id}{\l_@@_oes_registered_affiliation_tl}
        \DTLifnullorempty{\l_@@_oes_affiliation_name_tl}
        {
          \msg_warning:nnee { dfg } { requested-staff-unresolved-affiliation }
            { OverviewExistingStaff }
            { \l_@@_oes_registered_affiliation_tl }
          \tl_set:NV \l_@@_oes_affiliation_name_tl
            \l_@@_oes_registered_affiliation_tl
          \tl_set:NV \l_@@_oes_affiliation_abbreviation_tl
            \l_@@_oes_registered_affiliation_tl
        }
        {
          \@@_getvalueforkey:Nnnnn{\l_@@_oes_affiliation_abbreviation_tl}
            {abbreviation}{affiliation}{id}
            {\l_@@_oes_registered_affiliation_tl}
          \DTLifnullorempty{\l_@@_oes_affiliation_abbreviation_tl}
          {
            \msg_warning:nne { dfg } { requested-staff-missing-abbreviation }
              { \l_@@_oes_registered_affiliation_tl }
            \tl_set:NV \l_@@_oes_affiliation_abbreviation_tl
              \l_@@_oes_affiliation_name_tl
          }
          { }
        }
      }
      {
        \msg_warning:nnee { dfg } { requested-staff-unresolved-affiliation }
          { OverviewExistingStaff }
          { \l_@@_oes_registered_affiliation_tl }
        \tl_set:NV \l_@@_oes_affiliation_name_tl
          \l_@@_oes_registered_affiliation_tl
        \tl_set:NV \l_@@_oes_affiliation_abbreviation_tl
          \l_@@_oes_registered_affiliation_tl
      }
      \seq_put_right:NV \l_@@_oes_affiliation_seq
        \l_@@_oes_registered_affiliation_tl
      \prop_put:NVV \l_@@_oes_affiliation_name_prop
        \l_@@_oes_registered_affiliation_tl \l_@@_oes_affiliation_name_tl
      \prop_put:NVV \l_@@_oes_affiliation_abbreviation_prop
        \l_@@_oes_registered_affiliation_tl
        \l_@@_oes_affiliation_abbreviation_tl
    }
  }
}

\cs_new_protected:Npn \@@_oes_count_affiliation:n #1
{
  \tl_set:Ne \l_@@_oes_candidate_affiliation_tl {#1}
  \tl_trim_spaces:N \l_@@_oes_candidate_affiliation_tl
  \tl_if_blank:VF \l_@@_oes_candidate_affiliation_tl
  {
    \prop_if_in:NVF \l_@@_oes_row_affiliation_seen_prop
      \l_@@_oes_candidate_affiliation_tl
    {
      \prop_put:NVn \l_@@_oes_row_affiliation_seen_prop
        \l_@@_oes_candidate_affiliation_tl {1}
      \@@_oes_register_affiliation:n
        { \l_@@_oes_candidate_affiliation_tl }
      \tl_set:Nx \l_tmpb_tl
        { \l_@@_oes_category_tl / \l_@@_oes_candidate_affiliation_tl }
      \prop_get:NVNTF \l_@@_oes_count_prop \l_tmpb_tl \l_tmpc_tl
      { \int_set:Nn \l_tmpa_int { \l_tmpc_tl + 1 } }
      { \int_set:Nn \l_tmpa_int { 1 } }
      \prop_put:NVx \l_@@_oes_count_prop \l_tmpb_tl
```

```
        { \int_use:N \l_tmpa_int }
    }
  }
}

\cs_new_protected:Npn \@@_oes_collect_current:
{
  \DTLifnullorempty{\pOESPerson}
    { \tl_clear:N \l_@@_oes_person_tl }
    { \tl_set:Ne \l_@@_oes_person_tl {\pOESPerson} }
  \DTLifnullorempty{\pOESCategory}
    { \tl_clear:N \l_@@_oes_category_tl }
    { \tl_set:Ne \l_@@_oes_category_tl {\pOESCategory} }
  \DTLifnullorempty{\pOESInstitutions}
    { \tl_clear:N \l_@@_oes_institutions_tl }
    { \tl_set:Ne \l_@@_oes_institutions_tl {\pOESInstitutions} }
  \DTLifnullorempty{\pOESAffiliation}
    { \tl_clear:N \l_@@_oes_affiliation_tl }
    { \tl_set:Ne \l_@@_oes_affiliation_tl {\pOESAffiliation} }
  \@@_oes_resolve_person_fallbacks:
  \str_case:VnF \l_@@_oes_category_tl
  {
    { prof }        { \tl_set:Nn \l_@@_oes_category_tl { prof } }
    { prof-W2 }     { \tl_set:Nn \l_@@_oes_category_tl { prof } }
    { prof-W3 }     { \tl_set:Nn \l_@@_oes_category_tl { prof } }
    { groupLeader } { \tl_set:Nn \l_@@_oes_category_tl { groupLeader } }
    { postDoc }     { \tl_set:Nn \l_@@_oes_category_tl { postDoc } }
    { PhD }         { \tl_set:Nn \l_@@_oes_category_tl { PhD } }
    { medDoc }      { \tl_set:Nn \l_@@_oes_category_tl { research } }
    { research }    { \tl_set:Nn \l_@@_oes_category_tl { research } }
    { nonResearch } { \tl_set:Nn \l_@@_oes_category_tl { nonResearch } }
    { student }     { \tl_set:Nn \l_@@_oes_category_tl { student } }
    { assistant }   { \tl_set:Nn \l_@@_oes_category_tl { student } }
  }
  { \tl_clear:N \l_@@_oes_category_tl }
  \tl_if_blank:VF \l_@@_oes_category_tl
  {
    \int_incr:N \l_@@_oes_record_count_int
    \prop_clear:N \l_@@_oes_row_affiliation_seen_prop
    \tl_if_blank:VTF \l_@@_oes_institutions_tl
    {
      \tl_if_blank:VTF \l_@@_oes_affiliation_tl
      {
        \msg_warning:nne { dfg } { existing-staff-no-organisation }
          { \pOESProject / \pOESLastname }
      }
      { \@@_oes_count_affiliation:n { \l_@@_oes_affiliation_tl } }
    }
    {
      \clist_set:NV \l_tmpa_clist \l_@@_oes_institutions_tl
      \clist_map_inline:Nn \l_tmpa_clist
      {
        \tl_clear:N \l_tmpa_tl
        \DTLifdbexists{institution}
        {
          \@@_getvalueforkey:Nnnnn{\l_tmpa_tl}
            {ref-affiliation-id}{institution}{id}{##1}
        }
        { }
        \DTLifnullorempty{\l_tmpa_tl}
        {
          \msg_warning:nnee { dfg } { requested-staff-unresolved-institution }
            { OverviewExistingStaff } {##1}
        }
        { \@@_oes_count_affiliation:n { \l_tmpa_tl } }
      }
    }
  }
}

\cs_new_protected:Npn \@@_oes_append_empty_cells:n #1
{
  \int_step_inline:nn {#1}
    { \tl_put_right:Nn \l_@@_oes_table_body_tl { & } }
```

```
}

\cs_new_protected:Npn \@@_oes_append_category:nn #1#2
{
  \tl_put_right:Nn \l_@@_oes_table_body_tl {#2}
  \seq_map_inline:Nn \l_@@_oes_affiliation_seq
  {
    \tl_set:Ne \l_@@_oes_lookup_key_tl { #1 / ##1 }
    \prop_get:NVNTF \l_@@_oes_count_prop
      \l_@@_oes_lookup_key_tl \l_tmpc_tl
    {
      \tl_put_right:Ne \l_@@_oes_table_body_tl
      {
        & \exp_not:N \dfgShowCalculatedTag{OverviewExistingStaffTable}
          {\exp_not:V \l_@@_oes_database_tl,person,institution,affiliation}
          {\exp_not:V \l_tmpc_tl}
      }
    }
    {
      \tl_put_right:Ne \l_@@_oes_table_body_tl
      {
        & \exp_not:N \dfgShowCalculatedTag{OverviewExistingStaffTable}
          {\exp_not:V \l_@@_oes_database_tl,person,institution,affiliation}{0}
      }
    }
  }
  \tl_put_right:Nn \l_@@_oes_table_body_tl { \\ }
}

\cs_new_protected:Npn \@@_oes_build_table_body:
{
  \int_set:Nn \l_@@_oes_affiliation_count_int
    { \seq_count:N \l_@@_oes_affiliation_seq }
  \int_set:Nn \l_@@_oes_other_affiliation_count_int
    {
      \l_@@_oes_affiliation_count_int
      - \l_@@_oes_applicant_affiliation_count_int
    }
  \tl_set:Nx \l_@@_oes_colspec_tl
    {
      X[l]~*{\int_use:N \l_@@_oes_affiliation_count_int}{Q[c]}
    }
  \tl_clear:N \l_@@_oes_table_body_tl
  \tl_put_right:Nx \l_@@_oes_table_body_tl
  {
    \exp_not:N \SetCell [r=3] {c} Category
    & \exp_not:N \SetCell
      [c=\int_use:N \l_@@_oes_affiliation_count_int] {c}
      {Number~of~persons}
  }
  \@@_oes_append_empty_cells:n
    { \l_@@_oes_affiliation_count_int - 1 }
  \tl_put_right:Nn \l_@@_oes_table_body_tl { \\ & }
  \int_compare:nNnTF
    { \l_@@_oes_applicant_affiliation_count_int } = {1}
  {
    \tl_put_right:Nn \l_@@_oes_table_body_tl
      { \SetCell{c} {at~the~applicant\\university} }
  }
  {
    \tl_put_right:Nx \l_@@_oes_table_body_tl
    {
      \exp_not:N \SetCell
        [c=\int_use:N \l_@@_oes_applicant_affiliation_count_int] {c}
        {at~the~applicant\\universities}
    }
    \@@_oes_append_empty_cells:n
      { \l_@@_oes_applicant_affiliation_count_int - 1 }
  }
  \int_compare:nNnT { \l_@@_oes_other_affiliation_count_int } > {0}
  {
    \tl_put_right:Nx \l_@@_oes_table_body_tl
    {
      & \exp_not:N \SetCell
```

```
7642          [c=\int_use:N \l_@@_oes_other_affiliation_count_int] {c}
7643          {at~other~participating\\institutions}
7644      }
7645      \@@_oes_append_empty_cells:n
7646        { \l_@@_oes_other_affiliation_count_int - 1 }
7647    }
7648    \tl_put_right:Nn \l_@@_oes_table_body_tl { \\ }
7649    \tl_put_right:Nn \l_@@_oes_table_body_tl { & }
7650    \seq_map_indexed_inline:Nn \l_@@_oes_affiliation_seq
7651    {
7652      \int_compare:nNnF {##1} = {1}
7653        { \tl_put_right:Nn \l_@@_oes_table_body_tl { & } }
7654      \tl_set:Nn \l_tmpa_tl {##2}
7655      \prop_get:NVN \l_@@_oes_affiliation_abbreviation_prop
7656        \l_tmpa_tl \l_tmpb_tl
7657      \tl_put_right:Ne \l_@@_oes_table_body_tl
7658      {
7659        \exp_not:N \dfgShowCalculatedTag{affiliationLabel}{affiliation}
7660          {\exp_not:V \l_tmpb_tl}
7661      }
7662    }
7663    \tl_put_right:Nn \l_@@_oes_table_body_tl { \\ }
7664    \@@_oes_append_category:nn { prof } { Professors }
7665    \@@_oes_append_category:nn { groupLeader }
7666      { {Junior~research~group\\leaders} }
7667    \@@_oes_append_category:nn { postDoc } { Postdoctoral~researchers }
7668    \@@_oes_append_category:nn { PhD } { Doctoral~researchers }
7669    \@@_oes_append_category:nn { research } { Other~research~staff }
7670    \@@_oes_append_category:nn { nonResearch } { Non-research~staff }
7671    \@@_oes_append_category:nn { student }
7672      { Student~and~graduate~assistants }
7673  }
7674
7675  \cs_new_protected:Npn \@@_staff_abbreviation_note:n #1
7676  {
7677    \par\smallskip\noindent
7678    \group_begin:
7679    \normalfont\footnotesize
7680    Abbreviations:\space #1.\par
7681    \group_end:
7682  }
7683
7684  \cs_new_protected:Npn \@@_oes_print_legend:
7685  {
7686    \@@_staff_abbreviation_note:n
7687    {
7688    \seq_map_indexed_inline:Nn \l_@@_oes_affiliation_seq
7689    {
7690      \int_compare:nNnF {##1} = {1} {;\space}
7691      \tl_set:Nn \l_tmpa_tl {##2}
7692      \prop_get:NVN \l_@@_oes_affiliation_abbreviation_prop
7693        \l_tmpa_tl \l_tmpb_tl
7694      \prop_get:NVN \l_@@_oes_affiliation_name_prop
7695        \l_tmpa_tl \l_tmpc_tl
7696      \dfgShowCalculatedTag{affiliationLabel}{affiliation}
7697        {\l_tmpb_tl}:~
7698      \dfgShowTag{##2}{name}{\l_tmpc_tl}[affiliation]
7699    }
7700    }
7701  }
7702
7703  \cs_new_protected:Npn \@@_oes_typeset:n #1
7704  {
7705    \begin{tblr}[
7706      theme=main,
7707      long,
7708      postsep=0pt,
7709      expand=\l_@@_oes_table_body_tl
7710    ]{
7711      colspec={#1},
7712      rowhead=3,
7713      row{4-Z}={valign=m},
7714      column{2-Z}={halign=c},
7715      row{1-3}={valign=m,font=\footnotesize\bfseries,
```

```
      fg=tableHeadingsFont,bg=tableHeadingsBG},
    hline{4}={wd=1pt,tableLines},
    vline{2}={wd=.75pt,tableLines}
  }
    \l_@@_oes_table_body_tl
  \end{tblr}
}

\cs_new_protected:Npn \@@_overview_existing_staff:n #1
{
  \group_begin:
  \tl_set:Nn \l_@@_oes_database_tl {#1}
  \seq_clear:N \l_@@_oes_affiliation_seq
  \prop_clear:N \l_@@_oes_affiliation_name_prop
  \prop_clear:N \l_@@_oes_affiliation_abbreviation_prop
  \prop_clear:N \l_@@_oes_count_prop
  \int_zero:N \l_@@_oes_record_count_int
  \tl_clear:N \l_@@_oes_applicant_affiliation_tl
  \DTLifdbexists{meta}
  {
    \@@_getvalueforkey:Nnnnn{\l_@@_oes_applicant_affiliation_tl}
      {ref-affiliation-id}{meta}{id}{crc}
  }
  { }
  \DTLifnulloremptyl{\l_@@_oes_applicant_affiliation_tl}
    { \tl_set:Nn \l_@@_oes_applicant_affiliation_tl { applicant } }
    { }
  \clist_set:NV \l_@@_oes_applicant_affiliation_clist
    \l_@@_oes_applicant_affiliation_tl
  \clist_map_inline:Nn \l_@@_oes_applicant_affiliation_clist
    { \@@_oes_register_affiliation:n {##1} }
  \int_set:Nn \l_@@_oes_applicant_affiliation_count_int
    { \seq_count:N \l_@@_oes_affiliation_seq }
  \DTLifdbexists{#1}
  {
    \DTLforeach*{#1}
    {
      \pOESProject=ref-project-id,
      \pOESStatus=funding-status,
      \pOESLastname=lastname,
      \pOESPerson=ref-person-id,
      \pOESCategory=category,
      \pOESInstitutions=ref-institution-id,
      \pOESAffiliation=ref-affiliation-id
    }
    {
      \DTLifnulloremptyl{\pOESStatus}
      { }
      {
        \tl_set:Ne \l_tmpa_tl { \pOESStatus }
        \str_if_eq:VnT \l_tmpa_tl { existing }
          { \@@_oes_collect_current: }
      }
    }
  }
  { \msg_warning:nnn { dfg } { database-not-found } {#1} }
  \int_compare:nNnT { \l_@@_oes_record_count_int } = {0}
    { \msg_warning:nnn { dfg } { existing-staff-no-data } {#1} }
  \@@_oes_build_table_body:
  \exp_args:NV \@@_oes_typeset:n \l_@@_oes_colspec_tl
  \@@_oes_print_legend:
  \group_end:
}

\NewDocumentCommand{\OverviewExistingStaffTable}
  { O{RequestedFundingStaffOverview} }
{
  \bool_if:NTF \l_@@_class_fastcompile_bool
    { \dfgItemSkipped{OverviewExistingStaffTable} }
    { \@@_overview_existing_staff:n {#1} }
}
```

\OverviewOfFundsRequestedForStaffTable → P. 334 Each body row is assembled by \tl_put_right:Nx into \l_tblr_body_tl and contains twenty-five \getCountRequestedStaff → P. 327 calls (five years × five categories) plus the leading \getProject{⟨*project*⟩}; the foot row issues another twenty-five calls for the column totals.

No indexing logic appears here: \addEntry → P. 3 maintains the aggregate property list and \getCountRequestedStaff → P. 327 encapsulates its lookup. The speed-up therefore applies transparently to every other consumer of the macro as well (marginalia, individual project tables, etc.).

\OverviewOfFundsRequestedForStaffTable[⟨*database*⟩]

Emit the overview of requested staff funding. ⟨*database*⟩ defaults to RequestedFundingOverview, which combines funding declared before the document with project-local declarations restored from the preceding run's auxiliary files. The table contains five year bands of five category columns (postDoc, PhD, research, nonResearch, student), one body row per project, and a "Total" foot row.

```
\NewDocumentCommand{\OverviewOfFundsRequestedForStaffTable}{ O{RequestedFundingOverview} }{%
 \def\tmpLocalDB{#1}
  \tl_set:Nn \l_@@_requested_staff_database_tl {#1}
  \DTLifdbexists{\tmpLocalDB}{%
 \tl_clear:N \l_tblr_body_tl
 \DTLsort{number}{project}
    \DTLforeach*[
      \not\DTLiseq{\tmpProjectStatus}{E}
      \and
      \not\DTLiseq{\tmpProjectConsiderForLists}{false}
    ]{project}{%
  \pProject               = number,
     \tmpProjectStatus       = project-status,
     \tmpProjectType         = project-type,
      \tmpProjectConsiderForLists = consider-for-lists,
 }{%
 \tl_put_right:Nx \l_tblr_body_tl
  {
   \getProject{\pProject}
   & \getCountRequestedStaff[\pProject]{1}{postDoc}
   & \getCountRequestedStaff[\pProject]{1}{PhD}
   & \getCountRequestedStaff[\pProject]{1}{research}
   & \getCountRequestedStaff[\pProject]{1}{nonResearch}
   & \getCountRequestedStaff[\pProject]{1}{student}

   & \getCountRequestedStaff[\pProject]{2}{postDoc}
   & \getCountRequestedStaff[\pProject]{2}{PhD}
   & \getCountRequestedStaff[\pProject]{2}{research}
   & \getCountRequestedStaff[\pProject]{2}{nonResearch}
   & \getCountRequestedStaff[\pProject]{2}{student}

   & \getCountRequestedStaff[\pProject]{3}{postDoc}
   & \getCountRequestedStaff[\pProject]{3}{PhD}
   & \getCountRequestedStaff[\pProject]{3}{research}
   & \getCountRequestedStaff[\pProject]{3}{nonResearch}
   & \getCountRequestedStaff[\pProject]{3}{student}

   & \getCountRequestedStaff[\pProject]{4}{postDoc}
   & \getCountRequestedStaff[\pProject]{4}{PhD}
   & \getCountRequestedStaff[\pProject]{4}{research}
   & \getCountRequestedStaff[\pProject]{4}{nonResearch}
   & \getCountRequestedStaff[\pProject]{4}{student}

   & \getCountRequestedStaff[\pProject]{5}{postDoc}
   & \getCountRequestedStaff[\pProject]{5}{PhD}
   & \getCountRequestedStaff[\pProject]{5}{research}
   & \getCountRequestedStaff[\pProject]{5}{nonResearch}
   & \getCountRequestedStaff[\pProject]{5}{student} \\
  }
     }

 \begin{tblr}[%
   theme=main,
```

```
7840     expand=\l_tblr_body_tl,
7841     long,
7842    ]{%
7843     vspan=even,
7844     colspec = {*{1}{X[2,m]}
7845        *{24}{Q[c]}
7846      },
7847     rowhead = 2,
7848              row{1-2}={valign=m},
7849     colsep=4.5pt,
7850     vline{2,7,12,17,22}={tableLines,solid,wd=.75pt},
7851     vline{2,7,12,17,22}={3-Z}{tableLines,solid,wd=.75pt},
7852     hline{2}={wd=0pt},
7853     hline{3}={wd=1pt,tableLines},
7854     hline{Y}={wd=1pt,tableOuterLines},
7855     row{2} = {
7856               fg={tableHeadingsFont},
7857               bg={tableHeadingsBG},
7858               halign={c}
7859              },
7860     row{Z}= {font={\footnotesize\bfseries}}
7861    }
7862     &
7863    \SetCell[c=5]{c} \dfgFundingYear{1}
7864     & & & & &
7865    \SetCell[c=5]{c} \dfgFundingYear{2}
7866     & & & & &
7867    \SetCell[c=5]{c} \dfgFundingYear{3}
7868     & & & & &
7869    \SetCell[c=5]{c} \dfgFundingYear{4}
7870     & & & & &
7871    \SetCell[c=5]{c} \dfgFundingYear{5}
7872     & & & &
7873    \\
7874    \rotatebox{90}{Project} %
7875     & \dfgRotate{postDoc}
7876     & \dfgRotate{PhD}
7877     & \dfgRotate{research}
7878     & \dfgRotate{nonResearch}
7879     & \dfgRotate{student}
7880     & \dfgRotate{postDoc}
7881     & \dfgRotate{PhD}
7882     & \dfgRotate{research}
7883     & \dfgRotate{nonResearch}
7884     & \dfgRotate{student}
7885     & \dfgRotate{postDoc}
7886     & \dfgRotate{PhD}
7887     & \dfgRotate{research}
7888     & \dfgRotate{nonResearch}
7889     & \dfgRotate{student}
7890     & \dfgRotate{postDoc}
7891     & \dfgRotate{PhD}
7892     & \dfgRotate{research}
7893     & \dfgRotate{nonResearch}
7894     & \dfgRotate{student}
7895     & \dfgRotate{postDoc}
7896     & \dfgRotate{PhD}
7897     & \dfgRotate{research}
7898     & \dfgRotate{nonResearch}
7899     & \dfgRotate{student}
7900    \\
7901    \l_tblr_body_tl
7902    Total
7903     & \getCountRequestedStaff{1}{postDoc}
7904     & \getCountRequestedStaff{1}{PhD}
7905     & \getCountRequestedStaff{1}{research}
7906     & \getCountRequestedStaff{1}{nonResearch}
7907     & \getCountRequestedStaff{1}{student}
7908     & \getCountRequestedStaff{2}{postDoc}
7909     & \getCountRequestedStaff{2}{PhD}
7910     & \getCountRequestedStaff{2}{research}
7911     & \getCountRequestedStaff{2}{nonResearch}
7912     & \getCountRequestedStaff{2}{student}
7913     & \getCountRequestedStaff{3}{postDoc}
```

```
    & \getCountRequestedStaff{3}{PhD}
    & \getCountRequestedStaff{3}{research}
    & \getCountRequestedStaff{3}{nonResearch}
    & \getCountRequestedStaff{3}{student}
    & \getCountRequestedStaff{4}{postDoc}
    & \getCountRequestedStaff{4}{PhD}
    & \getCountRequestedStaff{4}{research}
    & \getCountRequestedStaff{4}{nonResearch}
    & \getCountRequestedStaff{4}{student}
    & \getCountRequestedStaff{5}{postDoc}
    & \getCountRequestedStaff{5}{PhD}
    & \getCountRequestedStaff{5}{research}
    & \getCountRequestedStaff{5}{nonResearch}
    & \getCountRequestedStaff{5}{student}
  \end{tblr}

 }
   {
  Database~ \texttt{#1}~ missing.
  \msg_warning:nne { dfg } { database-not-found }{ #1 }
   }
   \tl_set:Nn \l_@@_requested_staff_database_tl { RequestedFunding }
 }

 \NewDocumentCommand{\getSumRequestedFundsInstrumentation}{som}{
   % #2: project
   % #3: year
   \IfNoValueTF{#2}
     { \@@_funding_sum_set:Nnnnn \SumFundsRequestedInstrumentation
         {RequestedFundingOverview}{__ALL__}{instrumentation}{#3} }
     { \@@_funding_sum_set:Nnnnn \SumFundsRequestedInstrumentation
         {RequestedFundingOverview}{#2}{instrumentation}{#3} }
   \@@_show_calculated_number:nnN
     {getSumRequestedFundsInstrumentation}
     {RequestedFundingOverview}
     \SumFundsRequestedInstrumentation
 }
```

Requested instrumentation overview The overview filters its database for `funding-type=instrumentation`. When the filter yields no rows, the table is suppressed and a sentence names the proposed funding-period number instead. This also covers a freshly created overview database on the first compilation pass. As in the existing-instrumentation list, body descriptions use native `\raggedright`; the two header rows retain their alignment.

\OverviewFundsRequestedInstrumentationTable [⟨*database*⟩]

Print the requested-instrumentation overview from ⟨*database*⟩, or state that no instrumentation funds are requested for the current funding period. The database defaults to `RequestedFundingOverview`.

```
 \NewDocumentCommand{\OverviewFundsRequestedInstrumentationTable} { O{RequestedFundingOverview} }{%
 \def\tmpLocalDB{#1}
   \DTLifdbexists{\tmpLocalDB}{%
  \tl_clear:N \l_tblr_body_tl
  \DTLsort{ref-project-id}{\tmpLocalDB}
  \DTLforeach*[\DTLiseq{\pFundingType}{instrumentation}]{\tmpLocalDB}{%
   \pProject=ref-project-id,
         \pFundingType=type,
   \pDescription=category,
   \pSumYearOne=sum-year1,
   \pSumYearTwo=sum-year2,
   \pSumYearThree=sum-year3,
   \pSumYearFour=sum-year4,
   \pSumYearFive=sum-year5
  }{%
  \tl_put_right:Nx \l_tblr_body_tl
   {
    \getProject{\pProject}
    \printMarginalia{
     \getSumRequestedFundsInstrumentation[\pProject]{%
      sum-year1,
```

```
      sum-year2,
      sum-year3,
      sum-year4,
      sum-year5
     }
    }
       & \dfgShowTag{\pProject}{category}{\pDescription}[\tmpLocalDB]
       & \dfgShowTag{\pProject}{sum-year1}
           {\exp_not:N \@@_show_eur:n {\pSumYearOne}}[\tmpLocalDB]
       & \dfgShowTag{\pProject}{sum-year2}
           {\exp_not:N \@@_show_eur:n {\pSumYearTwo}}[\tmpLocalDB]
       & \dfgShowTag{\pProject}{sum-year3}
           {\exp_not:N \@@_show_eur:n {\pSumYearThree}}[\tmpLocalDB]
       & \dfgShowTag{\pProject}{sum-year4}
           {\exp_not:N \@@_show_eur:n {\pSumYearFour}}[\tmpLocalDB]
       & \dfgShowTag{\pProject}{sum-year5}
           {\exp_not:N \@@_show_eur:n {\pSumYearFive}}[\tmpLocalDB] \\
   }
      }
\tl_if_empty:VTF \l_tblr_body_tl
{
 \par\noindent
 No~funds~for~instrumentation~are~requested~for~funding~period~
 \dfgFundingPeriodNumeral.
 \par
}
{
\begin{tblr}[%
   theme=main,
   expand=\l_tblr_body_tl,
   long,
   remark{Note} = {Figures~ in~ EUR.}
  ]{%
   vspan=even,
   row{Z} = {guard,font={\footnotesize\bfseries}},
   colspec = {
     *{1}{X[-1,t]}
      *{1}{X[2,l,t]}
      *{5}{X[-1,c,si={table-format=8}]}
    },
   rowhead = 2,
            row{1-2}={valign=m},

   column{3-7}={guard},
   %colsep=4.5pt,
   hline{2}={wd=0pt},
   hline{3}={wd=1pt,tableOuterLines},
   hline{Y}={wd=1pt,tableOuterLines},
   row{2} = {
             fg={tableHeadingsFont},
             bg={tableHeadingsBG},
             halign={c},
             guard,
            },
  }
  Project
   & {Description~of                                    \\ instrumentation}
   & \SetCell[c=5]{c,guard} Funds~ requested~ for
   &                                                                        % year 2
   &                                                                        % year 3
   &                                                                        % year 4
   &                                                                        % year 5
  \\
   &
   & \dfgFundingYear{1}
   & \dfgFundingYear{2}
   & \dfgFundingYear{3}
   & \dfgFundingYear{4}
   & \dfgFundingYear{5}   \\

  \l_tblr_body_tl
  \SetCell[c=2]{l}Total
  \printMarginalia{
   \getSumRequestedFundsInstrumentation{%
```

```
     sum-year1,
     sum-year2,
     sum-year3,
     sum-year4,
     sum-year5
    }
   }
    &
    & \getSumRequestedFundsInstrumentation{sum-year1}
    & \getSumRequestedFundsInstrumentation{sum-year2}
    & \getSumRequestedFundsInstrumentation{sum-year3}
    & \getSumRequestedFundsInstrumentation{sum-year4}
    & \getSumRequestedFundsInstrumentation{sum-year5}   \\
  \end{tblr}
 }
 }
   {
  Database~ \texttt{#1}~ missing.
  \msg_warning:nne { dfg } { database-not-found }{ #1 }
   }
 }

```

Generic memoized `\DTLsumforkeys`

```
\prop_new:N \g_@@_dtlsum_cache_prop
```

Memoized form WITH filter: `\@@_dtlsum_filtered:nnnnN {db}{filter-key}{filter-value}{cols}{result-cs}` This computes `\DTLsumforkeys[\DTLiseq{\pTmp}{value}][\pTmp=k`

```

\cs_new_protected:Npn \@@_dtlsum_filtered:nnnnN #1#2#3#4#5 {
  \tl_set:Nx \l_tmpa_tl
  { #1 || \tl_to_str:n {#2} || \tl_to_str:n {#3} || \tl_to_str:n {#4} }
  \prop_get:NVNTF \g_@@_dtlsum_cache_prop \l_tmpa_tl \l_tmpb_tl
  { \cs_set_eq:NN #5 \l_tmpb_tl }
  {%
   \DTLsumforkeys[\DTLiseq{\pCacheKey}{#3}][\pCacheKey=#2]{#1}{#4}{#5}%
   \prop_gput:NVV \g_@@_dtlsum_cache_prop \l_tmpa_tl #5
  }
}

% Memoized form WITHOUT filter:
%   \@@_dtlsum_all:nnN {db}{cols}{result-cs}
\cs_new_protected:Npn \@@_dtlsum_all:nnN #1#2#3 {
  \tl_set:Nx \l_tmpa_tl
  { #1 || NOFILTER || \tl_to_str:n {#2} }
  \prop_get:NVNTF \g_@@_dtlsum_cache_prop \l_tmpa_tl \l_tmpb_tl
  { \cs_set_eq:NN #3 \l_tmpb_tl }
  {%
   \DTLsumforkeys{#1}{#2}{#3}%
   \prop_gput:NVV \g_@@_dtlsum_cache_prop \l_tmpa_tl #3
  }
}

% ============================================================
%  Drop-in replacements
% ============================================================

\providecommand{\SumPreviousRequestedFunding}{0}
\providecommand{\SumRequestedFunding}{0}

\NewDocumentCommand{\getSumPreviousRequestedFunding}{O{PreviousRequestedFunding}mm}{%
  \DTLifdbexists{#1}{%
   \str_if_eq:nnTF {#2} {all}
   { \@@_dtlsum_all:nnN {#1} {#3} \SumPreviousRequestedFunding }
   { \@@_dtlsum_filtered:nnnnN {#1} {year} {#2} {#3} \SumPreviousRequestedFunding }%
    \@@_show_calculated_number:nnN
      {getSumPreviousRequestedFunding}{#1}
      \SumPreviousRequestedFunding
  }{%
   \texttt{\color{error}XXX}%
   \msg_warning:nne { dfg } { database-not-found } { #1 }%
  }%
```

```
}

\NewDocumentCommand{\getSumRequestedFunding}{O{RequestedFundingOverview}mm}{%
  \DTLifdbexists{#1}{%
   \str_if_eq:nnTF {#2} {all}
    { \@@_funding_sum_set:Nnnnn \SumRequestedFunding {#1}
      {__ALL__}{#3}{sum-year1,sum-year2,sum-year3,sum-year4,sum-year5} }
    { \@@_funding_sum_set:Nnnnn \SumRequestedFunding {#1}
      {__ALL__}{#3}{sum-year#2} }%
    \@@_show_calculated_number:nnN
      {getSumRequestedFunding}{#1}
      \SumRequestedFunding
  }{%
   \texttt{\color{error}XXX}%
   \msg_warning:nne { dfg } { database-not-found } { #1 }%
  }%
}

\NewDocumentCommand{\getTotalSumRequestedFunding}{O{RequestedFundingOverview}mm}{%
  \DTLifdbexists{#1}{%
    \tl_set:Nn \l_tmpa_tl {#3}
    \str_if_eq:nnT {#3} {all} { \tl_set:Nn \l_tmpa_tl {__ALL__} }
    \str_if_eq:nnTF {#2} {all}
      { \@@_funding_sum_set:Nnnnn \SumRequestedFunding {#1}
          {__ALL__}{\l_tmpa_tl}
          {sum-year1,sum-year2,sum-year3,sum-year4,sum-year5} }
      { \@@_funding_sum_set:Nnnnn \SumRequestedFunding {#1}
          {__ALL__}{\l_tmpa_tl}{sum-year#2} }%
    \@@_show_calculated_number:nnN
      {getTotalSumRequestedFunding}{#1}
      \SumRequestedFunding
  }{%
   \texttt{\color{error}XXX}%
   \msg_warning:nne { dfg } { database-not-found } { #1 }%
  }%
}

\NewDocumentCommand{\PreviousAndCurrentRequestedFundingTable}{O{PreviousRequestedFunding}}
{
  \def\tmpLocalDB{#1}
  \begin{tblr}[%
    theme=main,
    expand=\l_tblr_body_tl,
    long,
  remark{Note} = {Figures~ in~ EUR.}
   ]{%
    row{8,Z} = {guard,font={\footnotesize\bfseries}},
    colspec = {
        *{1}{t{3.5cm}}@{}
        *{6}{X[-1,c,si={table-format=8}]}
      },
    rowhead = 2,
  column{2-7}={guard},
    %colsep=4.5pt,
    hline{2}={wd=0pt},
    hline{3}={wd=1pt,tableOuterLines},
    % hline{Y}={wd=1pt,tableOuterLines},
    row{1,2} = {
                fg={tableHeadingsFont},
                bg={tableHeadingsBG},
                halign={c},
                         valign={m},
                guard,
               },
   }
    \SetCell[r=2]{m}{Financial~year/                          \\funding~period}
    & \SetCell[c=5]{c} Funding~ for                           % staff
    &                                                        % costs
    &                                                        % instrumentation
    &                                                        % fellowships
    &                                                        % globalfunds
     & \SetCell[r=2]{m} Total                                 \\
    &
   Staff
```

```
8186      & Direct~ costs
8187      & Instrumentation
8188      & Fellowships
8189      & Globalfunds
8190      &                                                    \\
8191    \dfgFundingYearPrevious{1}
8192      \printMarginalia{%
8193        \getSumPreviousRequestedFunding{1}{%
8194          staff,costs,instrumentation,fellowships,globalfunds}%
8195      }
8196      & \getSumPreviousRequestedFunding{1}{staff}             % staff
8197      & \getSumPreviousRequestedFunding{1}{costs}             % costs
8198      & \getSumPreviousRequestedFunding{1}{instrumentation}   % instrumentation
8199      & \getSumPreviousRequestedFunding{1}{fellowships}       % fellowships
8200      & \getSumPreviousRequestedFunding{1}{globalfunds}       % globalfunds
8201      &
8202     \getSumPreviousRequestedFunding{1}{staff,costs,instrumentation,
8203      fellowships,globalfunds}
8204     \\ % Total
8205
8206    \dfgFundingYearPrevious{2}
8207      \printMarginalia{%
8208        \getSumPreviousRequestedFunding{2}{%
8209          staff,costs,instrumentation,fellowships,globalfunds}%
8210      }
8211      & \getSumPreviousRequestedFunding{2}{staff}             % staff
8212      & \getSumPreviousRequestedFunding{2}{costs}             % costs
8213      & \getSumPreviousRequestedFunding{2}{instrumentation}   % instrumentation
8214      & \getSumPreviousRequestedFunding{2}{fellowships}       % fellowships
8215      & \getSumPreviousRequestedFunding{2}{globalfunds}       % globalfunds
8216      &
8217     \getSumPreviousRequestedFunding{2}{staff,costs,instrumentation,
8218      fellowships,globalfunds}
8219     \\ % Total
8220    \dfgFundingYearPrevious{3}
8221      \printMarginalia{%
8222        \getSumPreviousRequestedFunding{3}{%
8223          staff,costs,instrumentation,fellowships,globalfunds}%
8224      }
8225      & \getSumPreviousRequestedFunding{3}{staff}             % staff
8226      & \getSumPreviousRequestedFunding{3}{costs}             % costs
8227      & \getSumPreviousRequestedFunding{3}{instrumentation}   % instrumentation
8228      & \getSumPreviousRequestedFunding{3}{fellowships}       % fellowships
8229      & \getSumPreviousRequestedFunding{3}{globalfunds}       % globalfunds
8230      &
8231     \getSumPreviousRequestedFunding{3}{staff,costs,instrumentation,
8232      fellowships,globalfunds}
8233     \\ % Total
8234
8235    \dfgFundingYearPrevious{4}
8236      \printMarginalia{%
8237        \getSumPreviousRequestedFunding{4}{%
8238          staff,costs,instrumentation,fellowships,globalfunds}%
8239      }
8240      & \getSumPreviousRequestedFunding{4}{staff}             % staff
8241      & \getSumPreviousRequestedFunding{4}{costs}             % costs
8242      & \getSumPreviousRequestedFunding{4}{instrumentation}   % instrumentation
8243      & \getSumPreviousRequestedFunding{4}{fellowships}       % fellowships
8244      & \getSumPreviousRequestedFunding{4}{globalfunds}       % globalfunds
8245      &
8246     \getSumPreviousRequestedFunding{4}{staff,costs,instrumentation,
8247      fellowships,globalfunds}
8248     \\ % Total
8249
8250    \dfgFundingYearPrevious{5}
8251      \printMarginalia{%
8252        \getSumPreviousRequestedFunding{5}{%
8253          staff,costs,instrumentation,fellowships,globalfunds}%
8254      }
8255      & \getSumPreviousRequestedFunding{5}{staff}             % staff
8256      & \getSumPreviousRequestedFunding{5}{costs}             % costs
8257      & \getSumPreviousRequestedFunding{5}{instrumentation}   % instrumentation
8258      & \getSumPreviousRequestedFunding{5}{fellowships}       % fellowships
8259      & \getSumPreviousRequestedFunding{5}{globalfunds}       % globalfunds
```

```
8260      &
8261     \getSumPreviousRequestedFunding{5}{staff,costs,instrumentation,
8262      fellowships,globalfunds}
8263     \\ % Total
8264     \SetHline{-}{tableOuterLines,0.5pt}
8265     \SetRow{belowsep=5pt}
8266      Ending~Funding~period
8267      \printMarginalia{%
8268        \getSumPreviousRequestedFunding{all}{%
8269          staff,costs,instrumentation,fellowships,globalfunds}%
8270      }
8271      & \getSumPreviousRequestedFunding{all}{staff}           % staff
8272      & \getSumPreviousRequestedFunding{all}{costs}           % costs
8273      & \getSumPreviousRequestedFunding{all}{instrumentation} % instrumentation
8274      & \getSumPreviousRequestedFunding{all}{fellowships}     % fellowships
8275      & \getSumPreviousRequestedFunding{all}{globalfunds}     % globalfunds
8276      &
8277     \getSumPreviousRequestedFunding{all}{staff,costs,instrumentation,
8278      fellowships,globalfunds}
8279     \\ % Total
8280
8281     \SetHline{-}{tableOuterLines,1pt}
8282   \dfgFundingYear{1}
8283      \printMarginalia{\getTotalSumRequestedFunding{1}{all}}
8284      & \getSumRequestedFunding{1}{staff}
8285      & \getSumRequestedFunding{1}{costs}
8286      & \getSumRequestedFunding{1}{instrumentation}
8287      & \getSumRequestedFunding{1}{fellowships}
8288      & \getSumRequestedFunding{1}{globalfunds}
8289      & \getTotalSumRequestedFunding{1}{all}
8290     \\
8291   \dfgFundingYear{2}
8292      \printMarginalia{\getTotalSumRequestedFunding{2}{all}}
8293      & \getSumRequestedFunding{2}{staff}
8294      & \getSumRequestedFunding{2}{costs}
8295      & \getSumRequestedFunding{2}{instrumentation}
8296      & \getSumRequestedFunding{2}{fellowships}
8297      & \getSumRequestedFunding{2}{globalfunds}
8298      & \getTotalSumRequestedFunding{2}{all}
8299     \\
8300
8301   \dfgFundingYear{3}
8302      \printMarginalia{\getTotalSumRequestedFunding{3}{all}}
8303      & \getSumRequestedFunding{3}{staff}
8304      & \getSumRequestedFunding{3}{costs}
8305      & \getSumRequestedFunding{3}{instrumentation}
8306      & \getSumRequestedFunding{3}{fellowships}
8307      & \getSumRequestedFunding{3}{globalfunds}
8308      & \getTotalSumRequestedFunding{3}{all}
8309     \\
8310   \dfgFundingYear{4}
8311      \printMarginalia{\getTotalSumRequestedFunding{4}{all}}
8312      & \getSumRequestedFunding{4}{staff}
8313      & \getSumRequestedFunding{4}{costs}
8314      & \getSumRequestedFunding{4}{instrumentation}
8315      & \getSumRequestedFunding{4}{fellowships}
8316      & \getSumRequestedFunding{4}{globalfunds}
8317      & \getTotalSumRequestedFunding{4}{all}
8318     \\
8319   \dfgFundingYear{5}
8320      \printMarginalia{\getTotalSumRequestedFunding{5}{all}}
8321      & \getSumRequestedFunding{5}{staff}
8322      & \getSumRequestedFunding{5}{costs}
8323      & \getSumRequestedFunding{5}{instrumentation}
8324      & \getSumRequestedFunding{5}{fellowships}
8325      & \getSumRequestedFunding{5}{globalfunds}
8326      & \getTotalSumRequestedFunding{5}{all}
8327     \\
8328
8329     \SetHline{-}{tableOuterLines,0.5pt}
8330     New~ Funding~period
8331      \printMarginalia{\getTotalSumRequestedFunding{all}{all}}
8332      & \getTotalSumRequestedFunding{all}{staff}              % staff
8333      & \getTotalSumRequestedFunding{all}{costs}              % costs
```

```
      & \getTotalSumRequestedFunding{all}{instrumentation}    % instrumentation
      & \getTotalSumRequestedFunding{all}{fellowships}        % fellowships
      & \getTotalSumRequestedFunding{all}{globalfunds}        % globalfunds
      &
     \getTotalSumRequestedFunding{all}{all}
     \\ % Total
    \end{tblr}
  }
```

Section 2.1.1 reuses the project-level existing-funds declarations. Both the stored values and the overview display use full euros. The shared euro formatter adds thousands separators and rounds display values to whole euros (for example, `5000` is printed as `5,000`).

`ref-affiliation-id` determines the column: every id listed in `meta/crc.ref-affiliation-id` is applicant core support, the sentinel `other-funds` selects other funding sources, and every other affiliation id is treated as another participating institution. The descriptive `financed-by` value does not perform this classification.

```
  \cs_new_protected:Npn
    \@@_get_sum_previous_requested_funding_eur:nnn #1#2#3
  {
    \DTLifdbexists{#1}
    {
      \str_if_eq:nnTF {#2} {all}
        { \@@_dtlsum_all:nnN {#1} {#3} \SumPreviousRequestedFunding }
        { \@@_dtlsum_filtered:nnnnN
            {#1} {year} {#2} {#3} \SumPreviousRequestedFunding }
      \@@_show_calculated_number:nnN
        {getSumPreviousRequestedFunding}{#1}
        \SumPreviousRequestedFunding
    }
    {
      \texttt{\color{error}XXX}
      \msg_warning:nne { dfg } { database-not-found } {#1}
    }
  }

  \NewDocumentCommand{\getSumRequestedFundingDirectCosts}{
    O{RequestedAndExistingFundingDirectCostsOverview}
    m m }
  {
    % #1: database
    % #2: year
    % #3: affiliation

    \str_if_eq:nnTF {#2}{all}
    {
     \str_case:nn {#3}
     {
    {applicant} {\DTLsumforkeys[\DTLisinlist{\pAffiliation}{\theApplicantID}]
       [\pAffiliation=ref-affiliation-id]{#1}
       {sum-year1,sum-year2,sum-year3,sum-year4,sum-year5}
       {\SumRequestedFundingDirectCosts}}

      {participant}{
       \DTLsumforkeys[
      \not\DTLisinlist{\pAffiliation}{\theApplicantID}
        \and
        \not\DTLiseq{\pAffiliation}{other-funds}
       ]
       [\pAffiliation=ref-affiliation-id]{#1}
       {sum-year1,sum-year2,sum-year3,sum-year4,sum-year5}
       {\SumRequestedFundingDirectCosts}}

      {other-funds}{\DTLsumforkeys[\DTLiseq{\pAffiliation}{other-funds}]
       [\pAffiliation=ref-affiliation-id]{#1}
       {sum-year1,sum-year2,sum-year3,sum-year4,sum-year5}
       {\SumRequestedFundingDirectCosts}}

      {all}{\DTLsumforkeys{#1}
       {sum-year1,sum-year2,sum-year3,sum-year4,sum-year5}
       {\SumRequestedFundingDirectCosts}}
     }}
```

```
8397    {
8398     \str_case:nn {#3}
8399     {
8400    {applicant} {\DTLsumforkeys[\DTLisinlist{\pAffiliation}{\theApplicantID}]
8401       [\pAffiliation=ref-affiliation-id]{#1}
8402       {sum-year#2}
8403       {\SumRequestedFundingDirectCosts}}
8404
8405      {participant}{
8406       \DTLsumforkeys[
8407      \not\DTLisinlist{\pAffiliation}{\theApplicantID}
8408        \and
8409        \not\DTLiseq{\pAffiliation}{other-funds}
8410       ]
8411       [\pAffiliation=ref-affiliation-id]{#1}
8412       {sum-year#2}
8413       {\SumRequestedFundingDirectCosts}}
8414
8415      {other-funds}{\DTLsumforkeys[\DTLiseq{\pAffiliation}{other-funds}]
8416       [\pAffiliation=ref-affiliation-id]{#1}
8417       {sum-year#2}
8418       {\SumRequestedFundingDirectCosts}}
8419
8420      {all}{\DTLsumforkeys{#1}
8421       {sum-year#2}
8422       {\SumRequestedFundingDirectCosts}}
8423     }}
8424
8425
8426    \@@_show_calculated_number:nnN
8427      {getSumRequestedFundingDirectCosts}{#1}
8428      \SumRequestedFundingDirectCosts
8429  }
8430
8431  \NewDocumentCommand{\ExistingFundsDirectCostsTable}
8432    {O{RequestedAndExistingFundingDirectCostsOverview}}
8433  {
8434    \DTLifdbexists{#1}{
8435     \begin{tblr}[%
8436       theme=main,
8437       % expand=\l_tblr_body_tl,
8438       long,
8439     remark{Note} = {Figures~ in~ EUR.}
8440      ]{%
8441       row{7,Z} = {guard,font={\footnotesize\bfseries}},
8442     colspec = {
8443          *{1}{t{3.5cm}}
8444          *{4}{X[-1,c,si={table-format=9}]}
8445        },
8446       % rowhead = 1,
8447     column{2-5}={guard},
8448       %colsep=4.5pt,
8449       % hline{3}={wd=1pt,tableOuterLines},
8450       % hline{Y}={wd=1pt,tableOuterLines},
8451       row{1} = {
8452                  fg={tableHeadingsFont},
8453                  bg={tableHeadingsBG},
8454                  halign={c},
8455                            valign={m},
8456                  guard,
8457                 },
8458      }
8459     {Financial~year/                                                                    \\funding~per
8460     & {Core~ support~ provided~                                                        \\by~ applicar
8461       \dfgApplicantAffiliationsTF{university}{universities}}
8462
8463       & {Core~ support~ provided~                                                         \\by~
8464          other~ participating~ institutions}
8465       & Other~ funds
8466       & Total
8467
8468    \dfgFundingYearPrevious{1}
8469        \printMarginalia{%
8470          \@@_get_sum_previous_requested_funding_eur:nnn
```

```
8471            {PreviousExistingFundsDirectCosts}{1}{%
8472            applicant,participant,other-funds}%
8473        }
8474     & {\@@_get_sum_previous_requested_funding_eur:nnn
8475          {PreviousExistingFundsDirectCosts}{1}{applicant}}
8476     & {\@@_get_sum_previous_requested_funding_eur:nnn
8477          {PreviousExistingFundsDirectCosts}{1}{participant}}
8478     & {\@@_get_sum_previous_requested_funding_eur:nnn
8479          {PreviousExistingFundsDirectCosts}{1}{other-funds}}
8480     &
8481    {\@@_get_sum_previous_requested_funding_eur:nnn
8482        {PreviousExistingFundsDirectCosts}{1}{
8483      applicant,
8484      participant,
8485      other-funds}}                                                  \\
8486
8487    \dfgFundingYearPrevious{2}
8488        \printMarginalia{%
8489          \@@_get_sum_previous_requested_funding_eur:nnn
8490            {PreviousExistingFundsDirectCosts}{2}{%
8491            applicant,participant,other-funds}%
8492        }
8493     & {\@@_get_sum_previous_requested_funding_eur:nnn
8494          {PreviousExistingFundsDirectCosts}{2}{applicant}}
8495     & {\@@_get_sum_previous_requested_funding_eur:nnn
8496          {PreviousExistingFundsDirectCosts}{2}{participant}}
8497     & {\@@_get_sum_previous_requested_funding_eur:nnn
8498          {PreviousExistingFundsDirectCosts}{2}{other-funds}}
8499     & {\@@_get_sum_previous_requested_funding_eur:nnn
8500          {PreviousExistingFundsDirectCosts}{2}{
8501         applicant,
8502         participant,
8503         other-funds}}                                              \\
8504
8505    \dfgFundingYearPrevious{3}
8506        \printMarginalia{%
8507          \@@_get_sum_previous_requested_funding_eur:nnn
8508            {PreviousExistingFundsDirectCosts}{3}{%
8509            applicant,participant,other-funds}%
8510        }
8511     & {\@@_get_sum_previous_requested_funding_eur:nnn
8512          {PreviousExistingFundsDirectCosts}{3}{applicant}}
8513     & {\@@_get_sum_previous_requested_funding_eur:nnn
8514          {PreviousExistingFundsDirectCosts}{3}{participant}}
8515     & {\@@_get_sum_previous_requested_funding_eur:nnn
8516          {PreviousExistingFundsDirectCosts}{3}{other-funds}}
8517     & {\@@_get_sum_previous_requested_funding_eur:nnn
8518          {PreviousExistingFundsDirectCosts}{3}{
8519         applicant,
8520         participant,
8521         other-funds}}                                              \\
8522
8523    \dfgFundingYearPrevious{4}
8524        \printMarginalia{%
8525          \@@_get_sum_previous_requested_funding_eur:nnn
8526            {PreviousExistingFundsDirectCosts}{4}{%
8527            applicant,participant,other-funds}%
8528        }
8529     & {\@@_get_sum_previous_requested_funding_eur:nnn
8530          {PreviousExistingFundsDirectCosts}{4}{applicant}}
8531     & {\@@_get_sum_previous_requested_funding_eur:nnn
8532          {PreviousExistingFundsDirectCosts}{4}{participant}}
8533     & {\@@_get_sum_previous_requested_funding_eur:nnn
8534          {PreviousExistingFundsDirectCosts}{4}{other-funds}}
8535     & {\@@_get_sum_previous_requested_funding_eur:nnn
8536          {PreviousExistingFundsDirectCosts}{4}{
8537         applicant,
8538         participant,
8539         other-funds}}                                              \\
8540
8541    \dfgFundingYearPrevious{5}
8542        \printMarginalia{%
8543          \@@_get_sum_previous_requested_funding_eur:nnn
8544            {PreviousExistingFundsDirectCosts}{5}{%
```

```
8545            applicant,participant,other-funds}%
8546          }
8547       & {\@@_get_sum_previous_requested_funding_eur:nnn
8548            {PreviousExistingFundsDirectCosts}{5}{applicant}}
8549       & {\@@_get_sum_previous_requested_funding_eur:nnn
8550            {PreviousExistingFundsDirectCosts}{5}{participant}}
8551       & {\@@_get_sum_previous_requested_funding_eur:nnn
8552            {PreviousExistingFundsDirectCosts}{5}{other-funds}}
8553       & {\@@_get_sum_previous_requested_funding_eur:nnn
8554            {PreviousExistingFundsDirectCosts}{5}{
8555           applicant,
8556           participant,
8557           other-funds}}                                          \\
8558
8559        \SetHline{-}{tableOuterLines,0.5pt}
8560        \SetRow{belowsep=5pt}
8561          Ending~Funding~period
8562          \printMarginalia{%
8563            \@@_get_sum_previous_requested_funding_eur:nnn
8564              {PreviousExistingFundsDirectCosts}{all}{%
8565              applicant,participant,other-funds}%
8566          }
8567       & {\@@_get_sum_previous_requested_funding_eur:nnn
8568            {PreviousExistingFundsDirectCosts}{all}{applicant}}
8569       & {\@@_get_sum_previous_requested_funding_eur:nnn
8570            {PreviousExistingFundsDirectCosts}{all}{participant}}
8571       & {\@@_get_sum_previous_requested_funding_eur:nnn
8572            {PreviousExistingFundsDirectCosts}{all}{other-funds}}
8573       & {\@@_get_sum_previous_requested_funding_eur:nnn
8574            {PreviousExistingFundsDirectCosts}{all}{
8575           applicant,
8576           participant,
8577           other-funds}}                                        \\
8578
8579        \SetHline{-}{tableOuterLines,1pt}
8580      \dfgFundingYear{1}
8581          \printMarginalia{\getSumRequestedFundingDirectCosts[#1]{1}{all}}
8582       & \getSumRequestedFundingDirectCosts[#1]{1}{applicant}
8583       & \getSumRequestedFundingDirectCosts[#1]{1}{participant}
8584       & \getSumRequestedFundingDirectCosts[#1]{1}{other-funds}
8585       & \getSumRequestedFundingDirectCosts[#1]{1}{all}
8586      \dfgFundingYear{2}
8587          \printMarginalia{\getSumRequestedFundingDirectCosts[#1]{2}{all}}
8588       & \getSumRequestedFundingDirectCosts[#1]{2}{applicant}
8589       & \getSumRequestedFundingDirectCosts[#1]{2}{participant}
8590       & \getSumRequestedFundingDirectCosts[#1]{2}{other-funds}
8591       & \getSumRequestedFundingDirectCosts[#1]{2}{all}
8592      \dfgFundingYear{3}
8593          \printMarginalia{\getSumRequestedFundingDirectCosts[#1]{3}{all}}
8594       & \getSumRequestedFundingDirectCosts[#1]{3}{applicant}
8595       & \getSumRequestedFundingDirectCosts[#1]{3}{participant}
8596       & \getSumRequestedFundingDirectCosts[#1]{3}{other-funds}
8597       & \getSumRequestedFundingDirectCosts[#1]{3}{all}
8598      \dfgFundingYear{4}
8599          \printMarginalia{\getSumRequestedFundingDirectCosts[#1]{4}{all}}
8600       & \getSumRequestedFundingDirectCosts[#1]{4}{applicant}
8601       & \getSumRequestedFundingDirectCosts[#1]{4}{participant}
8602       & \getSumRequestedFundingDirectCosts[#1]{4}{other-funds}
8603       & \getSumRequestedFundingDirectCosts[#1]{4}{all}
8604      \dfgFundingYear{5}
8605          \printMarginalia{\getSumRequestedFundingDirectCosts[#1]{5}{all}}
8606       & \getSumRequestedFundingDirectCosts[#1]{5}{applicant}
8607       & \getSumRequestedFundingDirectCosts[#1]{5}{participant}
8608       & \getSumRequestedFundingDirectCosts[#1]{5}{other-funds}
8609       & \getSumRequestedFundingDirectCosts[#1]{5}{all}
8610
8611
8612        \SetHline{-}{tableOuterLines,0.5pt}
8613      New~ Funding~period
8614          \printMarginalia{\getSumRequestedFundingDirectCosts[#1]{all}{all}}
8615       & \getSumRequestedFundingDirectCosts[#1]{all}{applicant}
8616       & \getSumRequestedFundingDirectCosts[#1]{all}{participant}
8617       & \getSumRequestedFundingDirectCosts[#1]{all}{other-funds}
8618       & \getSumRequestedFundingDirectCosts[#1]{all}{all}
```

```
    \end{tblr}
   }{
    \msg_warning:nne { dfg } { database-not-found }{ #1 }
   }
}
```

The core part is definitely all about the projects.

```
\clist_new:N \l_tmp_research_area_clist
\bool_new:N  \l_@@_project_one_PI_bool
\bool_new:N  \g_@@_fast_project_started_bool
\bool_new:N  \l_@@_project_setup_scope_bool
\bool_new:N  \l_@@_project_setup_ending_bool
\tl_new:N    \l_@@_project_setup_status_tl
\tl_new:N    \l_@@_project_setup_pi_ids_tl
\tl_new:N    \l_@@_project_setup_aliases_tl

\cs_new_protected:Npn \@@_project_register_boldnames:n #1
{
  \bool_if:NT \l_@@_custom_emphasize_authors_bool
  {
    \DTLifdbexists{project}
    {
      \DTLifhaskey{project}{ref-person-id}
      {
        \@@_getvalueforkey:Nnnnn{\l_@@_project_setup_pi_ids_tl}
          {ref-person-id}{project}{id}{#1}
        \DTLifnullorempty{\l_@@_project_setup_pi_ids_tl}{}
        {
          \datatool_if_has_key:nnT {person} {name-alias}
          {
            \exp_args:NV \clist_map_inline:nn \l_@@_project_setup_pi_ids_tl
            {
              \@@_getvalueforkey:Nnnnn{\l_@@_project_setup_aliases_tl}
                {name-alias}{person}{id}{##1}
              \DTLifnullorempty{\l_@@_project_setup_aliases_tl}{}
                {\exp_args:NV \addboldnames \l_@@_project_setup_aliases_tl}
            }
          }
        }
      }{}
    }{}
  }
}

```

Recorded project-header space. Normal rendering remains unboxed. At the first natural paragraph end after the header, a save-position node and delayed auxiliary write record the physical page span and final occupied height. The tuple also stores page depth, previous depth, trailing glue, section/subsection counters and text width/height. Removing and restoring trailing glue keeps KOMA's following heading spacing unchanged; delaying capture avoids forcing an extra paragraph. The shipout counter, rather than the printed page number, handles numbering resets. These records contain no metadata fields or formatted header strings.

Focused mode emits fixed-height boxes and restores the recorded tail state. It writes the same record back so repeated fast builds retain it. Page width and height are the only automatic validity checks: data/font changes require a normal build. A marked fallback reserving half of `\textheight` keeps an unprimed build usable. The auxiliary no-op declaration lets an older class safely read new records. Both writers respect `\nofiles`; nothing is recorded when auxiliary output is disabled. Existing project-row loading for enabled plots is independent.

```
\prop_new:N \g_@@_project_header_geometry_prop
\int_new:N \g_@@_project_header_start_int
\box_new:N \l_@@_project_header_placeholder_box
\skip_new:N \l_@@_project_header_last_skip
\cs_new_protected:Npn \dfgRestoreProjectHeader #1#2
  {\exp_args:NNx \prop_gput:Nnn \g_@@_project_header_geometry_prop {#1}{#2}}
\cs_new_protected:Npn \@@_project_header_write:nn #1#2
  {\if@filesw
```

```
8669      \iow_now:Nx \@auxout
8670        {\token_to_str:N \providecommand\token_to_str:N \dfgRestoreProjectHeader [2]{}
8671         \token_to_str:N \dfgRestoreProjectHeader {#1}{\exp_not:n {#2}}}
8672     \fi}
8673   \cs_new_protected:Npn \@@_project_header_record_start:
8674     {\int_gset:Nn \g_@@_project_header_start_int {\ReadonlyShipoutCounter}}
8675   \cs_new_protected:Npn \@@_project_header_record:n #1
8676     {
8677       \mode_if_horizontal:TF
8678         {\AddToHookNext{para/after}{\@@_project_header_capture:n {#1}}}
8679         {\@@_project_header_capture:n {#1}}
8680     }
8681   \cs_new_protected:Npn \@@_project_header_capture:n #1
8682     {
8683       \if@filesw
8684       \skip_set:Nn \l_@@_project_header_last_skip {\lastskip}
8685       \use:x
8686       {
8687         \skip_if_eq:nnF {\l_@@_project_header_last_skip}{0pt}
8688           {\skip_vertical:n {-\l_@@_project_header_last_skip}}
8689         \savepos
8690         \tex_write:D \exp_not:N \@auxout
8691         {
8692           \token_to_str:N \providecommand\token_to_str:N \dfgRestoreProjectHeader [2]{}
8693           \token_to_str:N \dfgRestoreProjectHeader {#1}
8694           {
8695             {\exp_not:N\int_eval:n
8696               {\exp_not:N\ReadonlyShipoutCounter-\int_use:N\g_@@_project_header_start_int-1}}
8697             {\exp_not:N\dim_eval:n
8698               {\dim_eval:n {\paperheight-1in-\voffset-\topmargin-\headheight-\headsep-
   \pagedepth+\l_@@_project_header_last_skip}
8699                -\exp_not:N\the\exp_not:N\lastypos sp}}
8700             {\dim_use:N \pagedepth}{\dim_use:N \prevdepth}{\skip_use:N \l_@@_project_header_last_skip}
8701             {\int_eval:n {\value{section}}}{\int_eval:n {\value{subsection}}}
8702             {\dim_use:N \textwidth}{\dim_use:N \textheight}
8703           }
8704         }
8705         \skip_if_eq:nnF {\l_@@_project_header_last_skip}{0pt}
8706           {\nobreak\skip_vertical:N \l_@@_project_header_last_skip}
8707       }
8708       \fi
8709     }
8710   \cs_new_protected:Npn \@@_project_header_placeholder:nnn #1#2#3
8711     {
8712       \vbox_set_to_ht:Nnn \l_@@_project_header_placeholder_box {#2}
8713         {\hbox:n {\normalfont\dfgFastReference{#1}}\vss}
8714       \box_set_dp:Nn \l_@@_project_header_placeholder_box {#3}
8715       \nointerlineskip
8716       \box_use_drop:N \l_@@_project_header_placeholder_box
8717     }
8718   \cs_new_protected:Npn \@@_project_header_replay:n #1
8719     {
8720       \exp_args:NNx \prop_get:NnNTF \g_@@_project_header_geometry_prop {#1} \l_tmpa_tl
8721         {
8722           \cs_set_protected:Npn \@@_project_header_replay_aux:nnnnnnnnn
8723             ##1##2##3##4##5##6##7##8##9
8724             {
8725               \@@_project_header_write:nn {#1}
8726                 {{##1}{##2}{##3}{##4}{##5}{##6}{##7}{##8}{##9}}
8727               \bool_lazy_and:nnTF
8728                 {\dim_compare_p:nNn {##8}={\textwidth}}
8729                 {\dim_compare_p:nNn {##9}={\textheight}}
8730                 {
8731                   \int_step_inline:nn {##1}
8732                     {\@@_project_header_placeholder:nnn {#1-header}{\textheight}{0pt}\clearpage}
8733                   \skip_set:Nn \l_@@_project_header_last_skip {##5}
8734                   \@@_project_header_placeholder:nnn {#1-header}
8735                     {\dim_eval:n {##2-\l_@@_project_header_last_skip}}{##3}
8736                   \skip_if_eq:nnF {\l_@@_project_header_last_skip}{0pt}
8737                     {\skip_vertical:N \l_@@_project_header_last_skip}
8738                   \tex_prevdepth:D=##4\scan_stop:
8739                   \setcounter{section}{##6}\setcounter{subsection}{##7}
8740                 }
8741                 {\@@_project_header_fallback:n {#1}}
```

```
8742            }
8743          \exp_after:wN \@@_project_header_replay_aux:nnnnnnnnn \l_tmpa_tl
8744        }
8745        {\@@_project_header_fallback:n {#1}}
8746    }
8747  \cs_new_protected:Npn \@@_project_header_fallback:n #1
8748    {
8749      \PackageWarning{dfg-crc}{No~matching~normal~header~geometry~for~#1;~using~approximate~half~text~heigh
8750      \@@_project_header_placeholder:nnn {#1-header~(approximate~half~text~height)}{0.5\textheight}{0pt}
8751      \setcounter{section}{1}\setcounter{subsection}{0}
8752    }
8753
8754  \tl_new:N \l_@@_project_short_title_tl
8755  % These selectors are expandable so a TOC write freezes this project's
8756  % title and metadata field, rather than deferring the choice until TOC input.
8757  \cs_new:Npn \@@_project_title_select:nnn #1#2#3
8758  {
8759    \str_if_eq:eeTF
8760      {\tl_use:c {l_@@_custom_project_title_#1_tl}} {short}
8761      { \tl_if_empty:NTF \l_@@_project_short_title_tl {#3} {#2} }
8762      {#3}
8763  }
8764  \cs_new:Npn \@@_project_title_field:n #1
8765    { \@@_project_title_select:nnn {#1} {short-title} {name} }
8766  \cs_new:Npn \@@_project_title:n #1
8767    { \@@_project_title_select:nnn {#1}
8768        {\l_@@_project_short_title_tl} {\tmpProjectTitle} }
8769
8770  % Read raw surnames once before the TOC write. Do not run formatted PI
8771  % references (links, disambiguation or first-name preferences) in a PDF string.
8772  % Hyperref supplies the project number through the existing numberline.
8773  \tl_new:N \l_@@_project_bookmark_pis_tl
8774  \tl_new:N \l_@@_project_bookmark_lastname_tl
8775  \clist_new:N \l_@@_project_bookmark_ids_clist
8776  \cs_new_protected:Npn \@@_project_bookmark_prepare:
8777    {
8778      \tl_clear:N \l_@@_project_bookmark_pis_tl
8779      \DTLifnullorempty{\tmpProjectPIids}{}
8780        {
8781          \clist_set:NV \l_@@_project_bookmark_ids_clist \tmpProjectPIids
8782          \clist_map_inline:Nn \l_@@_project_bookmark_ids_clist
8783            {
8784              \@@_getvalueforkey:Nnnnn \l_@@_project_bookmark_lastname_tl
8785                {lastname}{person}{id}{##1}
8786              \DTLifnullorempty{\l_@@_project_bookmark_lastname_tl}{}
8787                {
8788                  \tl_if_blank:VF \l_@@_project_bookmark_lastname_tl
8789                    {
8790                      \tl_if_empty:NTF \l_@@_project_bookmark_pis_tl
8791                        {\tl_put_right:Nn \l_@@_project_bookmark_pis_tl {|~}}
8792                        {\tl_put_right:Nn \l_@@_project_bookmark_pis_tl {~-~}}
8793                      \tl_put_right:NV \l_@@_project_bookmark_pis_tl
8794                        \l_@@_project_bookmark_lastname_tl
8795                    }
8796                }
8797            }
8798        }
8799    }
8800
8801  \cs_new_protected:Npn \@@_print_project_head:n #1
8802  {%
8803    \bool_if:NTF \l_@@_class_fastcompile_project_bool
8804    {
8805      \cleardoublepage
8806      \bool_if:NF \g_@@_fast_project_started_bool
8807      {
8808        \setcounter{page}{1}% Ignore page checkpoints restored by excluded files.
8809        \bool_gset_true:N \g_@@_fast_project_started_bool
8810      }
8811      \def\tmpLocalDB{project}%
8812      \setcounter{section}{0}%
8813      \setcounter{figure}{0}%
8814      \setcounter{table}{0}%
8815      \setcounter{secnumdepth}{2}%
```

```
8816      \restartlist{workpackages}%
8817      \tl_set:Nn \l__tmp_current_project_tl {#1}%
8818      \cs_set:Npn \tmpProjectNumber       {#1}%
8819      \cs_set:Npn \tmpProjectTitle        { }%
8820      \cs_set:Npn \tmpProjectStatus       { }%
8821      \cs_set:Npn \tmpProjectType         { }%
8822      \cs_set:Npn \tmpProjectResearchArea { }%
8823      \cs_set:Npn \tmpProjectPIids        { }%
8824      \bool_set_true:N \l_@@_project_one_PI_bool
8825      \renewcommand*{\theHpart}        {\thepart.#1}%
8826      \renewcommand*{\theHchapter}     {\thechapter.#1}%
8827      \renewcommand*{\theHsection}     {\thesection.#1}%
8828      \renewcommand*{\theHsubsection}  {\thesubsection.#1}%
8829      \renewcommand*{\theHsubsubsection}{\thesubsubsection.#1}%
8830      \renewcommand*{\theHfigure}      {\thefigure.#1}%
8831      \renewcommand*{\theHtable}       {\thetable.#1}%
8832      \renewcommand*{\theHfootnote}    {\thefootnote.#1}%
8833      \chead*{\textbf{Project~#1}\enspace|\enspace FAST~COMPILE~-~DRAFT}%
8834      \printThumbIndexOff
8835      \bool_if:NT \l_@@_class_fastcompile_project_show_publications_bool
8836      {
8837        \@@_project_results_prepare:n {#1}%
8838        \citereset
8839        \begin{refsection}
8840      }
8841      \@@_project_header_replay:n {#1}
8842    }
8843    {
8844    % #1: project id
8845    \cleardoublepage
8846    \@@_project_header_record_start:
8847  \phantomsection
8848    \def\tmpLocalDB{project}%
8849    \setcounter{section}{0}%
8850    \setcounter{figure}{0}%
8851    \setcounter{table}{0}%
8852    \setcounter{tocdepth}{0}%
8853    \restartlist{workpackages}%
8854    \tl_set:Nn \l__tmp_current_project_tl {#1}%
8855    \@@_project_results_prepare:n {#1}%
8856
8857    \renewcommand*{\theHpart}        {\thepart.#1}%
8858    \renewcommand*{\theHchapter}     {\thechapter.#1}%
8859    \renewcommand*{\theHsection}     {\thesection.#1}%
8860    \renewcommand*{\theHsubsection}  {\thesubsection.#1}%
8861    \renewcommand*{\theHsubsubsection}{\thesubsubsection.#1}%
8862    \renewcommand*{\theHfigure}      {\thefigure.#1}%
8863    \renewcommand*{\theHtable}       {\thetable.#1}%
8864    \renewcommand*{\theHfootnote}    {\thefootnote.#1}%
8865
8866    % --- single row scan for all project columns we need ---------------------
8867    \getEntry*[\tmpLocalDB]{#1}{
8868     \tmpProjectNumber       = number,
8869     \tmpProjectTitle        = name,
8870     \tmpProjectStatus       = project-status,
8871     \tmpProjectType         = project-type,
8872     \tmpProjectResearchArea = research-area,
8873     \tmpProjectPIids        = ref-person-id
8874    }%
8875
8876    % Optional column: old metadata need not define short-title at all.
8877    % Keep raw tokens; do not cache context-dependent formatted titles.
8878    \tl_clear:N \l_@@_project_short_title_tl
8879    \DTLifhaskey{project}{short-title}
8880    {
8881      \@@_getvalueforkey:Nnnnn \l_@@_project_short_title_tl
8882        {short-title}{project}{id}{#1}
8883      \DTLifnullorempty{\l_@@_project_short_title_tl}
8884        {\tl_clear:N \l_@@_project_short_title_tl}
8885        {\tl_if_blank:VT \l_@@_project_short_title_tl
8886          {\tl_clear:N \l_@@_project_short_title_tl}}
8887    }{}
8888
8889    % --- precompute the few derived booleans we actually use ----------------
```

```
  \int_compare:nNnTF { \clist_count:N \tmpProjectPIids } > {1}
   { \bool_set_false:N \l_@@_project_one_PI_bool }
   { \bool_set_true:N  \l_@@_project_one_PI_bool }%

  \citereset
  \hypertarget{project:#1}{}%

  \use:x
  {
   \exp_not:N \printThumbIndex
   [ project \tl_head:n {#1} ]
   { \exp_not:n {#1} }
  }%

  \chead{\getPIofProject{#1}[\space\cdot\space]%
    \space|\space
    \dfgShowTag{#1}{\@@_project_title_field:n {runningHead}}
      {\@@_project_title:n {runningHead}}[project]}%



 % --- toc entry ------------------------------------------------------------
  \@@_project_bookmark_prepare:
  \addtocentrydefault{section}{
    \texorpdfstring
      { \dfgShowTag{#1}{number}{\tmpProjectNumber}[project] }
      { \tmpProjectNumber }
    \str_if_eq:eeF {\tmpProjectStatus} {C}
      {
        \texorpdfstring
          {\space\dfgShowTag{#1}{project-status}{\tmpProjectStatus}[project]}
          {}
      }%
  }
  {
    \texorpdfstring{\dfgShowTag{#1}{\@@_project_title_field:n {toc}}
      {\@@_project_title:n {toc}}[project]}{\l_@@_project_bookmark_pis_tl}%
  }%
  \setcounter{secnumdepth}{2}%
  \addtocontents{toc}{\protect\setcounter{tocdepth}{0}}%
  \hypersetup{bookmarksdepth=0}%
  \begin{refsection}

  \section{%
    General~information~about~Project~%
    \texorpdfstring
    {
      \getProject{#1}%
      \str_if_eq:eeF {\tmpProjectStatus} {C}
        { \c_space_tl
          \dfgShowTag{#1}{project-status}{\tmpProjectStatus}[project] }%
    }
    {\tmpProjectNumber}%
   }
 \subsection{Project~title:~
   \texorpdfstring
     {\dfgShowTag{#1}{\@@_project_title_field:n {projectStart}}
       {\@@_project_title:n {projectStart}}[project]}
     {\@@_project_title:n {projectStart}}}

  % --- research areas (for active research and service projects) ----------
  \str_if_eq:eeF {\tmpProjectStatus} {E}
  {
   \bool_lazy_or:nnT
   { \str_if_eq_p:ee {\tmpProjectType} {research} }
   { \str_if_eq_p:ee {\tmpProjectType} {service}  }
   {%
   \clist_clear:N \l_tmp_research_area_clist
    \clist_set:NV \tmpProjectResearchArea \tmpProjectResearchArea
   \clist_sort:Nn \tmpProjectResearchArea
   { \fp_compare:nTF {##1 < ##2} {\sort_return_swapped:} {\sort_return_same:} }%
   \clist_map_inline:Nn \tmpProjectResearchArea
   { \clist_put_right:Nn \l_tmp_research_area_clist { \dfgResearchAreasList{##1} } }%
    \subsection{Research~area
```

```
      \int_compare:nNnT { \clist_count:N \tmpProjectResearchArea } > {1}
        {s}
      :~
      \texorpdfstring
        {\dfgShowTag{#1}{research-area}
          {\clist_use:Nn \l_tmp_research_area_clist {,~}}[project]}
        {\clist_use:Nn \l_tmp_research_area_clist {,~}}}%
   }
  }

  \bool_if:NTF \l_@@_project_one_PI_bool
  { \subsection{Project~leader}  }
  { \subsection{Project~leaders} }

  \getPersonInformation{\tmpProjectPIids}\par
  \vspace*{1em}

  % --- contract information (skip for admin / ending) ---------------------
  \bool_lazy_or:nnF
  { \str_if_eq_p:ee {\tmpProjectType}   {admin} }
  { \str_if_eq_p:ee {\tmpProjectStatus} {E}     }
  {%
   \begin{contractinformation}
    \clist_map_inline:nn {C1,C2,C3,C4}
    { \dfgPIcontractInformation{##1} }%
   \end{contractinformation}
  }

  % --- legal issues (skip for admin / mgk / ending) -----------------------
  % Use footnote-sized text, no extra row gap, and left-aligned numbers.
  % Keep follow-up answers on separate rows under their parent question.
  \bool_lazy_any:nF
  {
   { \str_if_eq_p:ee {\tmpProjectType}   {admin} }
   { \str_if_eq_p:ee {\tmpProjectType}   {mgk}   }
   { \str_if_eq_p:ee {\tmpProjectStatus} {E}     }
  }
  {%
   \subsection{Legal~issues}%
   \def\tmpLocalDB{project}%
  {\footnotesize This~project~includes}\\

   \tl_clear:N \l_mytblr_body_tl
   \tl_put_right:Ne \l_mytblr_body_tl
  { 1. & research~requiring~compliance~with~discipline-specific~research~ethics~guidelines. & \checkYesNo{
   \compareEntry{#1}{L1}{yes}
   {
    \tl_put_right:Ne \l_mytblr_body_tl
  { & A~statement~from~the~responsible~ethics~committee~is~required~and~will~be~obtained~before~funding~st
   }
   {}%
   \tl_put_right:Ne \l_mytblr_body_tl
   { 2. & clinical~trials & \checkYesNo{L2} \\ }%
   \compareEntry{#1}{L2}{yes}
   {
    \tl_put_right:Ne \l_mytblr_body_tl
    { & A~copy~of~the~studies'~registration~is~included~with~the~proposal. & \checkYesNo{L2a} \\ }%
   }
   {}%
   \tl_put_right:Ne \l_mytblr_body_tl
   {
    3. & experiments~involving~vertebrates. & \checkYesNo{L3} \\
    4. & experiments~involving~recombinant~DNA. & \checkYesNo{L4} \\
    5. & research~involving~human~embryonic~stem~cells. & \checkYesNo{L5} \\
   }
   \compareEntry{#1}{L5}{yes}
   {
    \tl_put_right:Ne \l_mytblr_body_tl
    { & Legal~authorization~has~been~obtained. & \checkYesNo{L5a} \\ }%
   }
   {}%
   \tl_put_right:Ne \l_mytblr_body_tl
   {
  6. & research~concerning~the~Convention~on~Biological~Diversity. & \checkYesNo{L6} \\
```

```
     7. & investigations~involving~dual~use~research~of~concern. & \checkYesNo{L7} \\
    }
    \compareEntry{#1}{L7}{yes}
    {
     \tl_put_right:Ne \l_mytblr_body_tl
     { & A~copy~of~the~statement~by~the~institution's~research~ethics~committee~is~included~with~the~propo
    }
    {}%
    \begin{tblr}[
      theme  = plain,
      expand = \l_mytblr_body_tl,
     ]{
    rowhead   = {0},
    rowsep    = {0pt},
      hline{2}  = {0pt},
    rows      = {bg=white, halign=l, font=\footnotesize},
    cells     = {font=\footnotesize},
    column{1} = {halign=l},
    colspec   = {t{.3cm}@{}X[t]t{.85cm}}
     }
     \tl_use:N \l_mytblr_body_tl
    \end{tblr}%
   }
     \@@_project_header_record:n {#1}
   }
}

\NewDocumentCommand{\checkYesNo}{O{\tmpProjectNumber} m}
{%
  \compareEntry{#1}%        current project ID
  {#2}%                    which cell
  {yes}%                  if cell value is 'yes'
  {\dfgShowTag{#1}{#2}{{\bfseries\color{green}\faCheck}\,yes}[project]}%
  {\dfgShowTag{#1}{#2}{{\bfseries\color{red}\faTimes}\space no}[project]}%
}
```

Another helper command retrieves the PI contract information. The complete list, including conditional dates and funding sources, uses `\footnotesize`; the surrounding list environment scopes the font change.

```
% ----------------------------------------------------------------------------
% PI contract information
% ----------------------------------------------------------------------------

\seq_new:N   \l_@@_contract_pi_ids_seq
\seq_new:N   \l_@@_contract_true_pi_ids_seq
\seq_new:N   \l_@@_contract_false_pi_ids_seq
\clist_new:N \l_@@_contract_answers_clist
\tl_new:N    \l_@@_contract_answer_tl
\tl_new:N    \l_@@_contract_field_list_tl

\NewDocumentCommand{\dfgPIcontractInformation}{ o m }
 {
  % #1: optional comma-separated PI ids
  %     If omitted, use the current value of \tmpProjectPIids.
  % #2: question id, e.g. C1 / C2 / C3 / C4
  \IfNoValueTF {#1}
   {
    \@@_pi_contract_information:Vn \tmpProjectPIids {#2}
   }
   {
    \@@_pi_contract_information:nn {#1} {#2}
   }
 }

\cs_new_protected:Npn \@@_pi_contract_information:nn #1#2
 {
  % #1: comma-separated PI ids
  % #2: question id, e.g. C1 / C2 / C3 / C4
  \footnotesize
  \def\tmpLocalDB{person}%
  \seq_set_from_clist:Nn \l_@@_contract_pi_ids_seq {#1}

  \str_case:nn {#2}
```

```
9106     {
9107      {C1}
9108       {
9109        \item
9110        Is~the~employment~of~the~
9111        \bool_if:NTF \l_@@_project_one_PI_bool
9112         { project~leader~at~the~institution~ }
9113         { project~leaders~at~the~institutions~ }%
9114        indicated~contractually~secured~for~the~duration~of~
9115        the~proposed~funding~period?\space
9116        \@@_pi_contract_yes_no:n {#2}%
9117       }
9118
9119      {C2}
9120       {
9121        \item
9122        \bool_if:NTF \l_@@_project_one_PI_bool
9123         { Does~the~above~mentioned~person~hold~a~fixed-term~position? }
9124         { Do~any~of~the~above~mentioned~persons~hold~fixed-term~positions? }%
9125        \space
9126        \@@_pi_contract_yes_no:n {#2}%
9127
9128        \clist_if_in:NnT \l_@@_contract_answers_clist {yes}
9129         {
9130          \begin{contractinformation}
9131            \item End~date~of~fixed-term~contract:\space
9132            \@@_pi_contract_field_list:nN {C2a} \l_@@_contract_true_pi_ids_seq
9133
9134            \item Further~employment~is~planned~until:\space
9135            \@@_pi_contract_field_list:nN {C2b} \l_@@_contract_true_pi_ids_seq
9136          \end{contractinformation}
9137         }
9138       }
9139
9140      {C3}
9141       {
9142        \item
9143        \bool_if:NTF \l_@@_project_one_PI_bool
9144         { Will~the~above~mentioned~person~ }
9145         { Will~one~or~more~of~the~above-mentioned~persons~ }%
9146        retire~during~the~proposed~funding~period?\space
9147        \@@_pi_contract_yes_no:n {#2}%
9148
9149        \clist_if_in:NnT \l_@@_contract_answers_clist {yes}
9150         {
9151          \begin{contractinformation}
9152            \item Anticipated~retirement~date:\space
9153            \@@_pi_contract_field_list:nN {C3a} \l_@@_contract_true_pi_ids_seq
9154          \end{contractinformation}
9155         }
9156       }
9157
9158      {C4}
9159       {
9160        \item
9161        Funding~for~the~position~of~the~
9162        \bool_if:NTF \l_@@_project_one_PI_bool
9163         { project~leader~at~the~institution~ }
9164         { project~leaders~at~the~institutions~ }%
9165        indicated~is~covered~by~core~support~(state~funds~or~similar):\space
9166        \@@_pi_contract_yes_no:n {#2}%
9167
9168        \clist_if_in:NnT \l_@@_contract_answers_clist {no}
9169         {
9170          \begin{contractinformation}
9171            \item Type~and~source~of~funding:\space
9172            \@@_pi_contract_field_list:nN {C4a} \l_@@_contract_false_pi_ids_seq
9173          \end{contractinformation}
9174         }
9175       }
9176     }
9177   }
9178
9179  \cs_generate_variant:Nn \@@_pi_contract_information:nn { Vn }
```

```
\cs_new_protected:Npn \@@_pi_contract_yes_no:n #1
 {
  % #1: question id, e.g. C1 / C2 / C3 / C4

  \clist_clear:N \l_@@_contract_answers_clist
  \seq_clear:N   \l_@@_contract_true_pi_ids_seq
  \seq_clear:N   \l_@@_contract_false_pi_ids_seq
  \tl_clear:N    \l_@@_contract_answer_tl

  \bool_set_true:N \l_tmpa_bool

  \seq_map_inline:Nn \l_@@_contract_pi_ids_seq
   {
    \bool_if:NTF \l_tmpa_bool
     { \bool_set_false:N \l_tmpa_bool }
     { \tl_put_right:Nn \l_@@_contract_answer_tl {,~} }%

    \@@_getvalueforkey:Nnnnn{\theLastName}{lastname}{person}{id}{##1}%

    \compareEntry{##1}{#1}{yes}
     {
      \tl_put_right:Nn \l_@@_contract_answer_tl
        { \dfgShowTag{##1}{#1}{\textbf{yes}}[person] }%
      \clist_put_right:Nn \l_@@_contract_answers_clist {yes}%
      \seq_put_right:Nn   \l_@@_contract_true_pi_ids_seq {##1}%
     }
     {
      \tl_put_right:Nn \l_@@_contract_answer_tl
        { \dfgShowTag{##1}{#1}{\textbf{no}}[person] }%
      \clist_put_right:Nn \l_@@_contract_answers_clist {no}%
      \seq_put_right:Nn   \l_@@_contract_false_pi_ids_seq {##1}%
     }

    \bool_if:NF \l_@@_project_one_PI_bool
     {
      \tl_put_right:Nx \l_@@_contract_answer_tl
       {
        \exp_not:n {~(}
        \exp_not:N \dfgShowTag{##1}{lastname}
          {\exp_not:V \theLastName}[person]
        \exp_not:n {)}
       }%
     }
   }

  \tl_use:N \l_@@_contract_answer_tl
 }


\cs_new_protected:Npn \@@_pi_contract_field_list:nN #1#2
 {
  % #1: field id, e.g. C2a / C2b / C3a / C4a
  % #2: sequence variable containing the PI ids for which the field is relevant

  \tl_clear:N \l_@@_contract_field_list_tl
  \bool_set_true:N \l_tmpa_bool

  \seq_map_inline:Nn #2
   {
    \bool_if:NTF \l_tmpa_bool
     { \bool_set_false:N \l_tmpa_bool }
     { \tl_put_right:Nn \l_@@_contract_field_list_tl {,~} }%

    \getEntry*[person]{##1}
     {
      \theFieldValue = #1,
      \theLastName   = lastname
     }%

    \tl_put_right:Nx \l_@@_contract_field_list_tl
     {
      \exp_not:N \textbf
```

```
      {
        \exp_not:N \dfgShowTag{##1}{#1}
          {\exp_not:V \theFieldValue}[person]
      }
      \int_compare:nNnT { \seq_count:N #2 } > {1}
       {
        \exp_not:n {~(}
        \exp_not:N \dfgShowTag{##1}{lastname}
          {\exp_not:V \theLastName}[person]
        \exp_not:n {)}
       }
     }%
   }

  \tl_use:N \l_@@_contract_field_list_tl
 }


\cs_new_protected:Npn \__pi_question_field_list:nn #1#2
{%
  \tl_clear:N \l_tmpa_tl
  \bool_set_true:N \l_tmpa_bool   % first-iteration flag
  \seq_map_inline:Nn #2
  {%
   \bool_if:NTF \l_tmpa_bool
   { \bool_set_false:N \l_tmpa_bool }
   { \tl_put_right:Nn \l_tmpa_tl {,~} }%
   \getEntry*[person]{##1}{
    \theFieldValue = #1,
    \theLastName   = lastname
   }%
   \tl_put_right:Nx \l_tmpa_tl
   {
  \exp_not:N \textbf
    {
      \exp_not:N \dfgShowTag{##1}{#1}
        {\exp_not:V \theFieldValue}[person]
    }
    \int_compare:nNnT { \seq_count:N #2 } > {1}
      {
        \exp_not:n {\space(}
        \exp_not:N \dfgShowTag{##1}{lastname}
          {\exp_not:V \theLastName}[person]
        \exp_not:n {)}
      }
   }%
  }%
  \tl_use:N \l_tmpa_tl
}

\tl_new:N \l_@@_yes_names_tl
\tl_new:N \l_@@_no_names_tl

\cs_new_protected:Npn \tmp_person_question_yes_no:n #1
{%
  \clist_clear:N \l_tmpc_clist
  \seq_clear:N   \l_tmpd_seq
  \seq_clear:N   \l_tmpe_seq
  \tl_clear:N    \l_tmpa_tl
  \bool_set_true:N \l_tmpa_bool   % first-iteration flag
  \seq_map_inline:Nn \l_tmpa_seq
  {%
   \bool_if:NTF \l_tmpa_bool
   { \bool_set_false:N \l_tmpa_bool }
   { \tl_put_right:Nn \l_tmpa_tl {,~} }%
    \@@_getvalueforkey:Nnnnn{\theLastName}{lastname}{person}{id}{##1}%
   \compareEntry{##1}{#1}{yes}
   {%
    \tl_put_right:Nn \l_tmpa_tl
      { \dfgShowTag{##1}{#1}{\textbf{yes}}[person] }%
    \clist_put_right:Nn \l_tmpc_clist {yes}%
    \seq_put_right:Nn   \l_tmpd_seq   {##1}%
   }
   {%
```

```
      \tl_put_right:Nn \l_tmpa_tl
        { \dfgShowTag{##1}{#1}{\textbf{no}}[person] }%
      \clist_put_right:Nn \l_tmpc_clist {false}%
      \seq_put_right:Nn   \l_tmpe_seq   {##1}%
     }%
     \bool_if:NF \l_@@_project_one_PI_bool
     {%
      \tl_put_right:Nx \l_tmpa_tl
      {
        \exp_not:n {\space(}
        \exp_not:N \dfgShowTag{##1}{lastname}
          {\exp_not:V \theLastName}[person]
        \exp_not:n {)}
      }%
     }%
   }%
   \tl_use:N \l_tmpa_tl
 }
```

Ending projects report three distinct kinds of published results. Each populated list is cited in its own reference segment. The combined list is persisted in the auxiliary file so a preceding project-report bibliography can omit entries that are printed again in the result lists.

```
 \clist_new:N \l_@@_project_results_quality_assured_clist
 \clist_new:N \l_@@_project_results_other_clist
 \clist_new:N \l_@@_project_results_patents_clist
 \clist_new:N \l_@@_project_results_all_clist
 \clist_new:N \l_@@_project_results_excluded_clist
 \prop_new:N  \g_@@_project_results_aux_prop

 \NewDocumentCommand{\dfgProjectResultsAux}{mm}
 {
   \prop_gput:Nnn \g_@@_project_results_aux_prop {#1} {#2}
 }

 \cs_new_protected:Npn \@@_project_results_prepare:n #1
 {
   \clist_clear:N \l_@@_project_results_excluded_clist
   \prop_get:NnNT \g_@@_project_results_aux_prop {#1} \l_tmpa_tl
   {
     \clist_set:NV \l_@@_project_results_excluded_clist \l_tmpa_tl
   }
 }

 \cs_new_protected:Npn \@@_project_results_collect:N #1
 {
   \clist_map_inline:Nn #1
   {
     \str_if_eq:nnF {##1} {none}
     { \clist_put_right:Nn \l_@@_project_results_all_clist {##1} }
   }
 }

 \cs_new_protected:Npn \@@_project_results_register:
 {
   \clist_clear:N \l_@@_project_results_all_clist
   \@@_project_results_collect:N \l_@@_project_results_quality_assured_clist
   \@@_project_results_collect:N \l_@@_project_results_other_clist
   \@@_project_results_collect:N \l_@@_project_results_patents_clist
   \clist_remove_duplicates:N \l_@@_project_results_all_clist
   \clist_set_eq:NN
     \l_@@_project_results_excluded_clist
     \l_@@_project_results_all_clist
   \iow_now:Ne \@auxout
   {
     \exp_not:N \dfgProjectResultsAux
     { \exp_not:V \l__tmp_current_project_tl }
     { \exp_not:V \l_@@_project_results_all_clist }
   }
 }

 \cs_new_protected:Npn \@@_project_results_skip_if_listed:
 {
   \clist_map_inline:Nn \l_@@_project_results_excluded_clist
```

```
    {
      \str_if_eq:eeT {##1} { \strfield{entrykey} }
      {
        \skipentry
        \clist_map_break:
      }
    }
  }

  \defbibcheck{dfg-project-report}
  { \@@_project_results_skip_if_listed: }

  \defbibheading{dfg-project-report-references}
  { \subsubsection{References} }

  \NewDocumentCommand{\projectPublicationsHeading}{}
  {
    \bool_if:NT \l_@@_class_fastcompile_project_show_publications_bool
    { \subsection{Project-~and~subject-related~list~of~publications} }
  }

  \NewDocumentCommand{\projectNocite}{m}
  {
    \bool_if:NT \l_@@_class_fastcompile_project_show_publications_bool
    { \nocite{#1} }
  }

  % The frame wrapper retains the configured bibliography font. Clear the
  % local selector first so disabled emphasis cannot inherit an outer selector.
  \NewDocumentCommand{\printFrameBibliography}{o}
  {
    \bool_if:NT \l_@@_class_fastcompile_project_show_publications_bool
    {
      \group_begin:
      \tl_clear:N \l_@@_bibentry_highlight_keyword_tl
      \bool_if:NT \l_@@_custom_emphasize_entries_bool
        { \tl_set:Nn \l_@@_bibentry_highlight_keyword_tl {frametext-highlight} }
      \IfNoValueTF{#1}
      { \printbibliography }
      { \printbibliography[#1] }
      \group_end:
    }
  }

  \NewDocumentCommand{\printProjectBibliography}{o}
  {
    \bool_if:NT \l_@@_class_fastcompile_project_show_publications_bool
    {
      \group_begin:
      % biblatex applies \bibfont when it starts the bibliography list.
      \renewcommand*{\bibfont}{\normalfont\footnotesize}%
      \bool_if:NT \l_@@_custom_emphasize_entries_bool
      {
        \tl_if_blank:VF \l__tmp_current_project_tl
        {
          \tl_set:Ne \l_@@_bibentry_highlight_keyword_tl
            {\l__tmp_current_project_tl-highlight}
        }
      }
      \IfNoValueTF{#1}
      { \printbibliography }
      { \printbibliography[#1] }
      \group_end:
    }
  }

  \NewDocumentEnvironment{projectReport}{}
  {
    \bool_if:NT \l_@@_class_fastcompile_project_show_publications_bool
    { \begin{refsegment} }
  }
  {
    \bool_if:NT \l_@@_class_fastcompile_project_show_publications_bool
    {
```

```
9471      \printProjectBibliography[
9472        segment = \therefsegment,
9473        check   = dfg-project-report,
9474        heading = dfg-project-report-references
9475      ]
9476      \end{refsegment}
9477    }
9478  }
9479
9480  \keys_define:nn { dfg / project-results }
9481  {
9482    quality-assured .clist_set:N = \l_@@_project_results_quality_assured_clist,
9483    quality-assured .value_required:n = true,
9484    other .clist_set:N = \l_@@_project_results_other_clist,
9485    other .value_required:n = true,
9486    patents .clist_set:N = \l_@@_project_results_patents_clist,
9487    patents .value_required:n = true,
9488    unknown .code:n = { \msg_warning:nnn { dfg } { unknown-key } {#1} }
9489  }
9490
9491  \cs_new_protected:Npn \@@_project_results_print:Nn #1#2
9492  {
9493    \clist_if_empty:NTF #1
9494    {#2}
9495    {
9496      \str_if_eq:eeTF { \clist_use:Nn #1 {,} } { none }
9497      { None. }
9498      {
9499        \begin{refsegment}
9500          \exp_args:Ne \nocite { \clist_use:Nn #1 {,} }
9501          \printProjectBibliography[segment=\therefsegment, heading=none]
9502        \end{refsegment}
9503      }
9504    }
9505  }
9506
9507  \NewDocumentCommand{\printProjectResults}{m}
9508  {
9509    \bool_if:NT \l_@@_class_fastcompile_project_show_publications_bool
9510    {
9511    \FloatBarrier
9512    \group_begin:
9513      \clist_clear:N \l_@@_project_results_quality_assured_clist
9514      \clist_clear:N \l_@@_project_results_other_clist
9515      \clist_clear:N \l_@@_project_results_patents_clist
9516      \keys_set:nn { dfg / project-results } {#1}
9517      \@@_project_results_register:
9518      \setbibpreamble{}
9519
9520      \subsubsection{Publications~with~scientific~quality~assurance}
9521      \@@_project_results_print:Nn
9522        \l_@@_project_results_quality_assured_clist
9523        { List~publications~with~scientific~quality~assurance. }
9524
9525      \subsubsection{Other~publications~and~published~results}
9526      \@@_project_results_print:Nn
9527        \l_@@_project_results_other_clist
9528        { List~datasets,~software,~preprints,~protocols,~or~other~relevant~
9529          published~results~that~are~not~included~above. }
9530
9531      \subsubsection{Patents}
9532      \@@_project_results_print:Nn
9533        \l_@@_project_results_patents_clist
9534        { List~patents~and~patent~applications,~or~state~that~none~resulted~
9535          from~the~project. }
9536    \group_end:
9537    }
9538  }

9539  \NewDocumentCommand{\printProjectTail}{}{
9540    \bool_if:NTF \l_@@_class_fastcompile_project_bool
9541    {
9542      \bool_if:NT \l_@@_class_fastcompile_project_show_publications_bool
9543      {
```

```
      \end{refsection}
      \resetboldnames
    }
  }
  {
    \end{refsection}
    \resetboldnames%
    \clearpage
    \addtocontents{toc}{\protect\setcounter{tocdepth}{1}}%
    \hypersetup{bookmarksdepth = 3}
    \colorlet{thumbIndexBG}{\l_@@_custom_thumbIndexBG_tl}
  }
  % Close the refsection and ship the project's last page before restoring
  % setup assignments. Fast project mode normally leaves that page pending.
  \bool_if:NT \l_@@_project_setup_scope_bool
  {
    \bool_if:NT \l_@@_class_fastcompile_project_bool { \clearpage }
    % Keep the next thumb-index slot across the setup group, just as with an
    % ordinary head. Customization values themselves remain group-local.
    \use:x
    {
      \exp_not:N \group_end:
      \exp_not:N \int_set:Nn \exp_not:N \l_thumb_index_int
        {\int_use:N \l_thumb_index_int}
    }
  }
}

\cs_new_protected:Npn \@@_project_setup_begin:
{
  \clearpage
  \group_begin:
  \bool_set_true:N \l_@@_project_setup_scope_bool
}

\cs_new_protected:Npn \@@_print_project_head_setup:nn #1#2
{
  \bool_if:NTF \l_@@_project_setup_scope_bool
  {
    \PackageError{dfg-crc}
      {A~project~setup~scope~is~already~open}
      {Finish~the~current~project~with~\string\printProject{{Tail}}~before~starting~another.}
  }
  {
    \bool_set_false:N \l_@@_project_setup_ending_bool
    \DTLifdbexists{project}
    {
      \DTLifhaskey{project}{project-status}
      {
        \@@_getvalueforkey:Nnnnn{\l_@@_project_setup_status_tl}
          {project-status}{project}{id}{#2}
        \DTLifnullorempty{\l_@@_project_setup_status_tl}{}
        {
          \str_if_eq:eeT {\l_@@_project_setup_status_tl} {E}
            {\bool_set_true:N \l_@@_project_setup_ending_bool}
        }
      }{}
    }{}
    \IfNoValueTF{#1}
      {\bool_if:NT \l_@@_project_setup_ending_bool {\@@_project_setup_begin:}}
      {\@@_project_setup_begin:}
    \bool_if:NT \l_@@_project_setup_ending_bool
    {
      \changeSettings{emphasizeAuthors=true,emphasizeEntries=false}
    }
    \IfNoValueF{#1}{#1}
    \@@_project_register_boldnames:n {#2}
    \@@_print_project_head:n {#2}
  }
}

\NewDocumentCommand{\printProjectHead}{+o m}
{
  \tl_if_blank:nTF {#2}
```

```
    {\@@_print_project_error:n {Head}}
    {\@@_print_project_head_setup:nn {#1}{#2}}
}

\cs_new_protected:Npn \@@_print_project_error:n #1
{
  \PackageError{dfg-crc}
    {Invalid~project~part~'#1'}
    {Use~\string\printProject{{Head}{project-id}}~or~\string\printProject{{Tail}}.}
}

\cs_new_protected:Npn \@@_print_project_dispatch:nnw #1#2#3 \q_stop
{
  \str_case:nnF {#2}
  {
    {Head}
    {
      \tl_if_blank:nTF {#3}
        { \@@_print_project_error:n {Head} }
        {
          \IfNoValueTF{#1}
            {\printProjectHead{#3}}
            {\printProjectHead[#1]{#3}}
        }
    }
    {Tail}
    {
      \tl_if_blank:nTF {#3}
        {
          \IfNoValueTF{#1}
            { \printProjectTail }
            {
              \PackageError{dfg-crc}
                {Optional~project~setup~code~is~only~valid~for~Head}
                {Put~setup~code~on~the~project's~Head;~use~\string\printProject{{Tail}}~to~finish~it.}
            }
        }
        { \@@_print_project_error:n {Tail} }
    }
  }
  { \@@_print_project_error:n {#2} }
}

\NewDocumentCommand{\printProject}{+o m}
{ \@@_print_project_dispatch:nnw {#1} #2 \q_stop }
```

To get the interim sum printed in the margin area we use a custom command. Table rows are denser than the package's default collision distance, so these notes use fixed placement with no collision padding. This keeps every total on its row anchor instead of accumulating a downward displacement. The leader is placed before the value in the right margin and after the value in the left margin, keeping it adjacent to the table on both page sides. You can switch the notes off using the customization section.

```
\NewDocumentCommand{\printMarginalia}{O{\hrulefill}m}
{
  \bool_if:NT \l_@@_class_showmarginalia_bool
  {\bool_set_false:N \g_@@_tblr_inside_bool
 \bool_set_true:N \l_@@_show_tag_leftward_bool
    \marginalia[type=fixed,ysep=0pt]
    {
      \int_if_odd:nTF { \marginaliapage }
        { #1#2 }
        { #2#1 }
    }
 \bool_set_false:N \l_@@_show_tag_leftward_bool
   \bool_set_true:N \g_@@_tblr_inside_bool
  }
}

\tl_new:N \l__tmp_body_staff_tl
\tl_new:N \l__tmp_body_costs_tl
\tl_new:N \l__tmp_body_fellowships_tl
```

```
\tl_new:N \l__tmp_body_globalfunds_tl
\tl_new:N \l__tmp_body_instrumentation_tl
\cs_new_protected:Npn \@@_requested_funding_append_nonstaff:N #1
{
  \DTLaddall{\tmpHorizontalSum}{
    \pSumYearOne,
    \pSumYearTwo,
    \pSumYearThree,
    \pSumYearFour,
    \pSumYearFive
  }
  \tl_put_right:Ne #1
  {
    \dfgShowTag{\pProject/\pCategory}{category}{\pCategory}[\tmpLocalDB]
    \printMarginalia{\dfgShowCalculatedTag{RequestedFundingTable}{\tmpLocalDB}
      {\@@_show_eur:n{\tmpHorizontalSum}}}
    & & \dfgShowTag{\pProject/\pCategory}{sum-year1}
          {\@@_show_eur:n{\pSumYearOne}}[\tmpLocalDB]
    & & \dfgShowTag{\pProject/\pCategory}{sum-year2}
          {\@@_show_eur:n{\pSumYearTwo}}[\tmpLocalDB]
    & & \dfgShowTag{\pProject/\pCategory}{sum-year3}
          {\@@_show_eur:n{\pSumYearThree}}[\tmpLocalDB]
    & & \dfgShowTag{\pProject/\pCategory}{sum-year4}
          {\@@_show_eur:n{\pSumYearFour}}[\tmpLocalDB]
    & & \dfgShowTag{\pProject/\pCategory}{sum-year5}
          {\@@_show_eur:n{\pSumYearFive}}[\tmpLocalDB] \\
  }
}
\NewDocumentCommand{\RequestedFundingTable}{m}
{
  \group_begin:
  \sisetup{drop-zero-decimal=true}
  % #1: project
  \def\tmpLocalDB{RequestedFunding}%
  \DTLifdbexists{\tmpLocalDB}{%
  % Older funding entries may omit positionText; keep it an optional column.
  \DTLifhaskey{\tmpLocalDB}{positionText}{}{\DTLaddcolumn{\tmpLocalDB}{positionText}}
   \tl_clear:N \l__tmp_body_staff_tl
   \tl_clear:N \l__tmp_body_costs_tl
   \tl_clear:N \l__tmp_body_fellowships_tl
   \tl_clear:N \l__tmp_body_globalfunds_tl
   \tl_clear:N \l__tmp_body_instrumentation_tl
   \tl_put_right:Nn \l__tmp_body_staff_tl {

    \SetRow{tableHeadingsBGalt}
    \SetCell{font=\footnotesize\bfseries,halign=l}
  Staff
  & Qty & \SetCell{c} Sum
  & Qty & \SetCell{c} Sum
  & Qty & \SetCell{c} Sum
  & Qty & \SetCell{c} Sum
  & Qty & \SetCell{c} Sum \\
   }

   \tl_put_right:Nn \l__tmp_body_costs_tl {
    \SetHline{-}{tableOuterLines,0.5pt}
    \SetRow{tableHeadingsBGalt}
    \SetCell{font=\footnotesize\bfseries,halign=l}
  Direct~ Costs
  & & \SetCell{c} Sum
  & & \SetCell{c} Sum
  & & \SetCell{c} Sum
  & & \SetCell{c} Sum
  & & \SetCell{c} Sum  \\
   }
   \tl_put_right:Nn \l__tmp_body_fellowships_tl {
    \SetHline{-}{tableOuterLines,0.5pt}
    \SetRow{tableHeadingsBGalt}
    \SetCell{font=\footnotesize\bfseries,halign=l}
  Fellowships
  & & \SetCell{c} Sum
  & & \SetCell{c} Sum
  & & \SetCell{c} Sum
  & & \SetCell{c} Sum
```

```
   & & \SetCell{c} Sum \\
    }
    \tl_put_right:Nn \l__tmp_body_globalfunds_tl {
     \SetHline{-}{tableOuterLines,0.5pt}
     \SetRow{tableHeadingsBGalt}
     \SetCell{font=\footnotesize\bfseries,halign=l}
   Globalfunds
   & & \SetCell{c} Sum
   & & \SetCell{c} Sum
   & & \SetCell{c} Sum
   & & \SetCell{c} Sum
   & & \SetCell{c} Sum  \\
    }
    \tl_put_right:Nn \l__tmp_body_instrumentation_tl {
     \SetHline{-}{tableOuterLines,0.5pt}
     \SetRow{tableHeadingsBGalt}
     \SetCell{font=\footnotesize\bfseries,halign=l}
   Instrumentation
   & & \SetCell{c} Sum
   & & \SetCell{c} Sum
   & & \SetCell{c} Sum
   & & \SetCell{c} Sum
   & & \SetCell{c} Sum  \\
    }


  % One filtered traversal is enough: dispatch each matching row to the
  % token list for its funding type.  The previous implementation traversed
  % the complete, growing database once for every type.
  \DTLforeach[\DTLiseq{#1}{\pProject}]{\tmpLocalDB}{
      \pProject           =ref-project-id,
      \pType              =type,
      \pCategory          =category,
      \pPercentage        =percentage,
      \pPositionText      =positionText,
      \pQuantityYearOne   =quantity-year1,
      \pQuantityYearTwo   =quantity-year2,
      \pQuantityYearThree =quantity-year3,
      \pQuantityYearFour  =quantity-year4,
      \pQuantityYearFive  =quantity-year5,
      \pSumYearOne        =sum-year1,
      \pSumYearTwo        =sum-year2,
      \pSumYearThree      =sum-year3,
      \pSumYearFour       =sum-year4,
      \pSumYearFive       =sum-year5
     }{

      \str_case:enF {\pType}
      {
     {staff} {
           % Use the category only when no custom position label is supplied.
           \DTLifnullorempty{\pPositionText}
             {
               \tl_set:Ne \l_tmpa_tl
                 { \dfgShowTag{\pProject/\pCategory}{category}
                     {\dfgCategoryName{\pCategory}}[\tmpLocalDB] }
             }
             {
               \tl_set:Ne \l_tmpa_tl
                 { \dfgShowTag{\pProject/\pCategory}{positionText}
                     {\exp_not:V \pPositionText}[\tmpLocalDB] }
             }
      \DTLaddall{\tmpHorizontalSum}{
         \pSumYearOne,
         \pSumYearTwo,
         \pSumYearThree,
         \pSumYearFour,
         \pSumYearFive
        }
        \tl_put_right:Ne \l__tmp_body_staff_tl
        {

             \exp_not:V \l_tmpa_tl
             ,~
```

```
            \dfgShowTag{\pProject/\pCategory}{percentage}
              {\qty{\pPercentage}{\percent}}[\tmpLocalDB]
      \printMarginalia{\dfgShowCalculatedTag{RequestedFundingTable}
              {\tmpLocalDB}{\@@_show_eur:n{\tmpHorizontalSum}}}
      & \dfgShowTag{\pProject/\pCategory}{quantity-year1}
                {\@@_show_table_number:n{\pQuantityYearOne}}[\tmpLocalDB]
      & \dfgShowTag{\pProject/\pCategory}{sum-year1}
                {\@@_show_eur:n{\pSumYearOne}}[\tmpLocalDB]
      & \dfgShowTag{\pProject/\pCategory}{quantity-year2}
                {\@@_show_table_number:n{\pQuantityYearTwo}}[\tmpLocalDB] % year2
      & \dfgShowTag{\pProject/\pCategory}{sum-year2}
                {\@@_show_eur:n{\pSumYearTwo}}[\tmpLocalDB]
      & \dfgShowTag{\pProject/\pCategory}{quantity-year3}
                {\@@_show_table_number:n{\pQuantityYearThree}}[\tmpLocalDB] % year3
      & \dfgShowTag{\pProject/\pCategory}{sum-year3}
                {\@@_show_eur:n{\pSumYearThree}}[\tmpLocalDB]
      & \dfgShowTag{\pProject/\pCategory}{quantity-year4}
                {\@@_show_table_number:n{\pQuantityYearFour}}[\tmpLocalDB] % year4
      & \dfgShowTag{\pProject/\pCategory}{sum-year4}
                {\@@_show_eur:n{\pSumYearFour}}[\tmpLocalDB]
      & \dfgShowTag{\pProject/\pCategory}{quantity-year5}
                {\@@_show_table_number:n{\pQuantityYearFive}}[\tmpLocalDB] % year5
      & \dfgShowTag{\pProject/\pCategory}{sum-year5}
                {\@@_show_eur:n{\pSumYearFive}}[\tmpLocalDB]
        \\
       }
    }
        {costs}
          {\@@_requested_funding_append_nonstaff:N \l__tmp_body_costs_tl}
        {fellowships}
          {\@@_requested_funding_append_nonstaff:N \l__tmp_body_fellowships_tl}
        {globalfunds}
          {\@@_requested_funding_append_nonstaff:N \l__tmp_body_globalfunds_tl}
        {instrumentation}
          {\@@_requested_funding_append_nonstaff:N \l__tmp_body_instrumentation_tl}
  }
     { }
}
  \tl_put_right:Ne \l__tmp_body_staff_tl
  {
   \SetRow{belowsep=5pt}
   \SetHline{-}{tableOuterLines,0.5pt}
   Total~
   \printMarginalia{%
    \getSumRequestedFunds{#1}{staff}
    {sum-year1,sum-year2,sum-year3,sum-year4,sum-year5}
   }
   & \SetCell{bg=tableNoValue}
   & \getSumRequestedFunds{#1}{staff}{sum-year1}
   & \SetCell{bg=tableNoValue}
   & \getSumRequestedFunds{#1}{staff}{sum-year2}
   & \SetCell{bg=tableNoValue}
   & \getSumRequestedFunds{#1}{staff}{sum-year3}
   & \SetCell{bg=tableNoValue}
   & \getSumRequestedFunds{#1}{staff}{sum-year4}
   & \SetCell{bg=tableNoValue}
   & \getSumRequestedFunds{#1}{staff}{sum-year5}
   \\
  }

  \clist_map_inline:nn {
   costs,fellowships,globalfunds,instrumentation
  }{

   \tl_put_right:ce { l__tmp_body_##1_tl }
   {
    \SetRow{belowsep=5pt}
    \SetHline{-}{tableLines,0.5pt}
    Total
    \printMarginalia{%
     \getSumRequestedFunds{#1}{##1}
     {sum-year1,sum-year2,sum-year3,sum-year4,sum-year5}
    }
    & &
```

```
      \getSumRequestedFunds{#1}{##1}{sum-year1}
      & &
      \getSumRequestedFunds{#1}{##1}{sum-year2}
      & &
      \getSumRequestedFunds{#1}{##1}{sum-year3}
      & &
      \getSumRequestedFunds{#1}{##1}{sum-year4}
      & &
      \getSumRequestedFunds{#1}{##1}{sum-year5}
      \\
     }}

    % delete when zero
    \dfgCheckIfZeroShowCategory{#1}{staff}
    \dfgCheckIfZeroShowCategory{#1}{costs}
    \dfgCheckIfZeroShowCategory{#1}{fellowships}
    \dfgCheckIfZeroShowCategory{#1}{globalfunds}
    \dfgCheckIfZeroShowCategory{#1}{instrumentation}

    \begin{tblr}[
      theme=main,
      long,
      expand=
      \l__tmp_body_staff_tl
      \l__tmp_body_costs_tl
      \l__tmp_body_fellowships_tl
      \l__tmp_body_globalfunds_tl
      \l__tmp_body_instrumentation_tl,
    remark{Note}={Figures~ in~ EUR.},
     ]{
      colsep=3pt,
    colspec = {
      *{1}{X[3.1,l,t]}
      *{5}{
       @{}X[0.75,c,si={table-format=1}]
       @{}X[1.2,c,si={table-format=7}]
      }
        % *{1}{X[2,t]}
        % *{10}{@{}X[c, si={table-format=4}]}
       },
      rows = {bg=white},
    column{2-Z}={guard},
         row{1}= {valign=m,bg=tableHeadingsBG},
      row{1,2}= {guard},
     }
   Funding~for
    & \SetCell[c=2]{c} \dfgFundingYear{1}
      &
    & \SetCell[c=2]{c} \dfgFundingYear{2}
      &
    & \SetCell[c=2]{c} \dfgFundingYear{3}
      &
    & \SetCell[c=2]{c} \dfgFundingYear{4}
      &
    & \SetCell[c=2]{c} \dfgFundingYear{5}
      &                                          \\

     \l__tmp_body_staff_tl
     \l__tmp_body_costs_tl
     \l__tmp_body_fellowships_tl
     \l__tmp_body_globalfunds_tl
     \l__tmp_body_instrumentation_tl

     \SetHline{-}{tableOuterLines,.75pt}
     \SetCell{font=\bfseries\footnotesize}
     Total
     \printMarginalia{%
      \getTotalSumRequestedFunds{#1}
      {sum-year1,sum-year2,sum-year3,sum-year4,sum-year5}
     }
      &
      & \getTotalSumRequestedFunds{#1}{sum-year1}
      &
      & \getTotalSumRequestedFunds{#1}{sum-year2}
```

```
      &
      & \getTotalSumRequestedFunds{#1}{sum-year3}
      &
      & \getTotalSumRequestedFunds{#1}{sum-year4}
      &
      & \getTotalSumRequestedFunds{#1}{sum-year5} \\
    \end{tblr}
   }{
    Database~ \texttt{#1}~ missing.
    \msg_warning:nne { dfg } { database-not-found }{ #1 }
   }
   \group_end:
 }
```

\RequestedFundingStaffTable The DFG staff roster uses one database and one project-filtered traversal. Rows are first dispatched, in declaration order, to four sequences. The sequences are then rendered in the official order (existing research, existing non-research, requested research, requested non-research), which also assigns the continuous sequence numbers used by the descriptions. When both staff types occur within a funding-status block, a horizontal rule separates the research and non-research groups without repeating their row-spanning labels. Category values and the emphasized job-description headings are left aligned for easier scanning. Person, institution, and affiliation references are resolved during this assembly phase, before tabularray measures any cells. Thus neither measuring passes nor page breaks repeat Datatool queries. The roster uses the shared `presep`, like the other long tables. No heading-specific spacing override is needed.

\RequestedFundingStaffTable{⟨*project*⟩}

Print the official DFG requested-funding staff roster, the institution and parent-affiliation legend, and both applicable job-description blocks for ⟨*project*⟩. The data source is always `RequestedFundingStaff`. For an ending project (`project-status=E`), rows declared with `funding-status=requested` are automatically labelled as staff funded with approved grant money; this matches the terminology of the ending-project report while retaining the same two-value data model.

```
 \seq_new:N \l_@@_rfs_existing_research_seq
 \seq_new:N \l_@@_rfs_existing_nonresearch_seq
 \seq_new:N \l_@@_rfs_requested_research_seq
 \seq_new:N \l_@@_rfs_requested_nonresearch_seq
 \seq_new:N \l_@@_rfs_institution_seq
 % Cache all resolved affiliations for the final abbreviation list.
 \seq_new:N \l_@@_rfs_affiliation_seq
 \prop_new:N \l_@@_rfs_duplicate_prop
 \prop_new:N \l_@@_rfs_institution_name_prop
 \prop_new:N \l_@@_rfs_institution_abbreviation_prop
 \prop_new:N \l_@@_rfs_institution_affiliation_id_prop
 \prop_new:N \l_@@_rfs_affiliation_abbreviation_prop
 \prop_new:N \l_@@_rfs_affiliation_name_prop
 \tl_new:N \l_@@_rfs_table_body_tl
 \tl_new:N \l_@@_rfs_existing_descriptions_tl
 \tl_new:N \l_@@_rfs_requested_descriptions_tl
 \tl_new:N \l_@@_rfs_project_tl
 \tl_new:N \l_@@_rfs_project_status_tl
 \tl_new:N \l_@@_rfs_existing_group_label_tl
 \tl_new:N \l_@@_rfs_requested_group_label_tl
 \tl_new:N \l_@@_rfs_existing_description_heading_tl
 \tl_new:N \l_@@_rfs_requested_description_heading_tl
 \tl_new:N \l_@@_rfs_ref_person_tl
 \tl_new:N \l_@@_rfs_firstname_tl
 \tl_new:N \l_@@_rfs_lastname_tl
 \tl_new:N \l_@@_rfs_degree_tl
 \tl_new:N \l_@@_rfs_position_tl
 \tl_new:N \l_@@_rfs_field_tl
 \tl_new:N \l_@@_rfs_ref_institution_tl
 \tl_new:N \l_@@_rfs_ref_affiliation_tl
 \tl_new:N \l_@@_rfs_department_tl
 \tl_new:N \l_@@_rfs_funding_status_tl
```

```
\tl_new:N \l_@@_rfs_staff_type_tl
\tl_new:N \l_@@_rfs_commitment_tl
\tl_new:N \l_@@_rfs_category_tl
\tl_new:N \l_@@_rfs_funding_source_tl
\tl_new:N \l_@@_rfs_description_tl
\tl_new:N \l_@@_rfs_name_cell_tl
\tl_new:N \l_@@_rfs_plain_name_tl
\tl_new:N \l_@@_rfs_description_name_tl
\tl_new:N \l_@@_rfs_field_cell_tl
\tl_new:N \l_@@_rfs_department_cell_tl
\tl_new:N \l_@@_rfs_commitment_cell_tl
\tl_new:N \l_@@_rfs_category_cell_tl
\tl_new:N \l_@@_rfs_funding_source_cell_tl
\tl_new:N \l_@@_rfs_group_cell_tl
\tl_new:N \l_@@_rfs_institution_name_tl
\tl_new:N \l_@@_rfs_institution_abbreviation_tl
\tl_new:N \l_@@_rfs_institution_affiliation_tl
\tl_new:N \l_@@_rfs_affiliation_name_tl
\tl_new:N \l_@@_rfs_affiliation_abbreviation_tl
\int_new:N \l_@@_rfs_display_number_int
\int_new:N \l_@@_rfs_record_count_int
\bool_new:N \l_@@_rfs_person_resolved_bool
\bool_new:N \l_@@_rfs_name_incomplete_bool

\keys_define:nn { dfg / requested-funding-staff-row }
{
  ref-person-id .tl_set:N = \l_@@_rfs_ref_person_tl,
  firstname .tl_set:N = \l_@@_rfs_firstname_tl,
  lastname .tl_set:N = \l_@@_rfs_lastname_tl,
  academic-degree .tl_set:N = \l_@@_rfs_degree_tl,
  positionText .tl_set:N = \l_@@_rfs_position_tl,
  position .tl_set:N = \l_@@_rfs_position_tl,
  field-of-research .tl_set:N = \l_@@_rfs_field_tl,
  ref-institution-id .tl_set:N = \l_@@_rfs_ref_institution_tl,
  ref-affiliation-id .tl_set:N = \l_@@_rfs_ref_affiliation_tl,
  department .tl_set:N = \l_@@_rfs_department_tl,
  funding-status .tl_set:N = \l_@@_rfs_funding_status_tl,
  staff-type .tl_set:N = \l_@@_rfs_staff_type_tl,
  commitment .tl_set:N = \l_@@_rfs_commitment_tl,
  category .tl_set:N = \l_@@_rfs_category_tl,
  funding-source .tl_set:N = \l_@@_rfs_funding_source_tl,
  description .tl_set:N = \l_@@_rfs_description_tl,
  unknown .code:n = { }
}

\cs_new:Npn \@@_rfs_missing_text:n #1
{
  \bool_if:NTF \l_@@_class_fastcompile_bool
    { \@@_rfs_error_text:n {#1} }
    { \textcolor{tableNoValue!55!black}{\emph{not~provided}} }
}

\cs_new:Npn \@@_rfs_error_text:n #1
{ \textcolor{error}{\texttt{<#1>}} }


\cs_new_protected:Npn \@@_rfs_warn_missing:n #1
{
  \str_if_eq:nnTF {#1} { commitment }
  {
    \msg_warning:nnee { dfg } { existing-staff-missing-commitment }
      { \l_@@_rfs_project_tl }
      { \int_use:N \l_@@_rfs_display_number_int }
  }
  {
    \msg_warning:nneeee { dfg } { requested-staff-missing-field }
      { \l_@@_rfs_project_tl }
      { \int_use:N \l_@@_rfs_display_number_int }
      { \l_@@_rfs_funding_status_tl } {#1}
  }
}

\cs_new_protected:Npn \@@_rfs_row_clear:
{
```

```
10095   \tl_clear:N \l_@@_rfs_ref_person_tl
10096   \tl_clear:N \l_@@_rfs_firstname_tl
10097   \tl_clear:N \l_@@_rfs_lastname_tl
10098   \tl_clear:N \l_@@_rfs_degree_tl
10099   \tl_clear:N \l_@@_rfs_position_tl
10100   \tl_clear:N \l_@@_rfs_field_tl
10101   \tl_clear:N \l_@@_rfs_ref_institution_tl
10102   \tl_clear:N \l_@@_rfs_ref_affiliation_tl
10103   \tl_clear:N \l_@@_rfs_department_tl
10104   \tl_clear:N \l_@@_rfs_funding_status_tl
10105   \tl_clear:N \l_@@_rfs_staff_type_tl
10106   \tl_clear:N \l_@@_rfs_commitment_tl
10107   \tl_clear:N \l_@@_rfs_category_tl
10108   \tl_clear:N \l_@@_rfs_funding_source_tl
10109   \tl_clear:N \l_@@_rfs_description_tl
10110 }
10111
10112 \cs_new_protected:Npn \@@_rfs_store:N #1
10113 {
10114   \seq_put_right:Ne #1
10115   {
10116     ref-person-id = { \exp_not:V \pRFSRefPerson },
10117     firstname = { \exp_not:V \pRFSFirstname },
10118     lastname = { \exp_not:V \pRFSLastname },
10119     academic-degree = { \exp_not:V \pRFSDegree },
10120     positionText = { \exp_not:V \pRFSPosition },
10121     field-of-research = { \exp_not:V \pRFSField },
10122     ref-institution-id = { \exp_not:V \pRFSRefInstitution },
10123     ref-affiliation-id = { \exp_not:V \pRFSRefAffiliation },
10124     department = { \exp_not:V \pRFSDepartment },
10125     funding-status = { \exp_not:V \pRFSFundingStatus },
10126     staff-type = { \exp_not:V \pRFSStaffType },
10127     commitment = { \exp_not:V \pRFSCommitment },
10128     category = { \exp_not:V \pRFSCategory },
10129     funding-source = { \exp_not:V \pRFSFundingSource },
10130     description = { \exp_not:V \pRFSDescription }
10131   }
10132 }
10133
10134 \cs_new_protected:Npn \@@_rfs_collect_current:
10135 {
10136   % Preserve the null marker for an omitted position until person lookup.
10137   \clist_map_inline:nn
10138   {
10139     \pRFSRefPerson, \pRFSFirstname, \pRFSLastname, \pRFSDegree,
10140     \pRFSField, \pRFSRefInstitution,
10141     \pRFSRefAffiliation, \pRFSDepartment, \pRFSCommitment,
10142     \pRFSCategory, \pRFSFundingSource, \pRFSDescription
10143   }
10144   { \DTLifnulloremptyf{##1}{\cs_set:Npn ##1 {}}{} }
10145   \tl_if_blank:VTF \pRFSRefPerson
10146   {
10147     \str_if_eq:VnTF \pRFSLastname { TBA }
10148     {
10149       \tl_set:Ne \l_tmpa_tl
10150       {
10151         \exp_not:V \pRFSProject / \exp_not:V \pRFSFundingStatus /
10152         \exp_not:V \pRFSStaffType / vacancy /
10153         \exp_not:V \pRFSCategory / \exp_not:V \pRFSPosition /
10154         \exp_not:V \pRFSField / \exp_not:V \pRFSRefInstitution /
10155         \exp_not:V \pRFSDepartment
10156       }
10157     }
10158     {
10159       \tl_set:Ne \l_tmpa_tl
10160       {
10161         \exp_not:V \pRFSProject / \exp_not:V \pRFSFundingStatus /
10162         \exp_not:V \pRFSStaffType / name /
10163         \exp_not:V \pRFSLastname / \exp_not:V \pRFSFirstname
10164       }
10165     }
10166   }
10167   {
10168     \tl_set:Ne \l_tmpa_tl
```

```
10169       {
10170         \exp_not:V \pRFSProject / \exp_not:V \pRFSFundingStatus /
10171         \exp_not:V \pRFSStaffType / person / \exp_not:V \pRFSRefPerson
10172       }
10173     }
10174     \prop_get:NVNTF \l_@@_rfs_duplicate_prop \l_tmpa_tl \l_tmpb_tl
10175     { \msg_warning:nne { dfg } { requested-staff-duplicate } { \l_tmpa_tl } }
10176     { \prop_put:NVn \l_@@_rfs_duplicate_prop \l_tmpa_tl { 1 } }
10177     \tl_set:Ne \l_tmpa_tl
10178       { \pRFSFundingStatus / \pRFSStaffType }
10179     \str_case:VnF \l_tmpa_tl
10180     {
10181       { existing/research }
10182         { \@@_rfs_store:N \l_@@_rfs_existing_research_seq }
10183       { existing/nonResearch }
10184         { \@@_rfs_store:N \l_@@_rfs_existing_nonresearch_seq }
10185       { requested/research }
10186         { \@@_rfs_store:N \l_@@_rfs_requested_research_seq }
10187       { requested/nonResearch }
10188         { \@@_rfs_store:N \l_@@_rfs_requested_nonresearch_seq }
10189     }
10190     { }
10191   }
10192
10193   \cs_new_protected:Npn \@@_rfs_use_fallback:NN #1#2
10194   {
10195     \tl_if_blank:VT #1
10196     { \DTLifnullorempty{#2}{ }{ \tl_set:NV #1 #2 } }
10197   }
10198
10199   \cs_new_protected:Npn \@@_rfs_resolve_person:
10200   {
10201     \bool_set_false:N \l_@@_rfs_person_resolved_bool
10202     \tl_if_blank:VF \l_@@_rfs_ref_person_tl
10203     {
10204       \DTLifdbexists{person}
10205       {
10206         \@@_getvalueforkey:Nnnnn{\l_tmpa_tl}{lastname}{person}{id}
10207           {\l_@@_rfs_ref_person_tl}
10208         \DTLifnullorempty{\l_tmpa_tl}
10209         {
10210           \msg_warning:nnee { dfg } { requested-staff-unresolved-person }
10211             { \l_@@_rfs_project_tl } { \l_@@_rfs_ref_person_tl }
10212         }
10213         {
10214           \bool_set_true:N \l_@@_rfs_person_resolved_bool
10215           \@@_rfs_use_fallback:NN \l_@@_rfs_lastname_tl \l_tmpa_tl
10216           \@@_getvalueforkey:Nnnnn{\l_tmpa_tl}{firstname}{person}{id}
10217             {\l_@@_rfs_ref_person_tl}
10218           \@@_rfs_use_fallback:NN \l_@@_rfs_firstname_tl \l_tmpa_tl
10219           \@@_getvalueforkey:Nnnnn{\l_tmpa_tl}{academicdegree}{person}{id}
10220             {\l_@@_rfs_ref_person_tl}
10221           \@@_rfs_use_fallback:NN \l_@@_rfs_degree_tl \l_tmpa_tl
10222           % Only a missing database value inherits; an explicit empty value wins.
10223           \DTLifnull{\l_@@_rfs_position_tl}
10224           {
10225             \@@_getvalueforkey:Nnnnn{\l_tmpa_tl}{positionText}{person}{id}
10226               {\l_@@_rfs_ref_person_tl}
10227             % An empty inherited position has no custom text to override the
10228             % category; an explicitly empty roster value never enters here.
10229             \DTLifnullorempty{\l_tmpa_tl}
10230               { \tl_set_eq:NN \l_@@_rfs_position_tl \DTLstringnull }
10231               { \tl_set:NV \l_@@_rfs_position_tl \l_tmpa_tl }
10232           }
10233           { }
10234           \@@_getvalueforkey:Nnnnn{\l_tmpa_tl}{position}{person}{id}
10235             {\l_@@_rfs_ref_person_tl}
10236           \@@_rfs_use_fallback:NN \l_@@_rfs_category_tl \l_tmpa_tl
10237           \bool_lazy_all:nT
10238           {
10239             { \tl_if_blank_p:V \l_@@_rfs_department_tl }
10240             { \tl_if_blank_p:V \l_@@_rfs_ref_institution_tl }
10241             { \tl_if_blank_p:V \l_@@_rfs_ref_affiliation_tl }
10242           }
```

```
10243         {
10244           \@@_getvalueforkey:Nnnnn{\l_tmpa_tl}{ref-institution-id}{person}{id}
10245             {\l_@@_rfs_ref_person_tl}
10246           \@@_rfs_use_fallback:NN \l_@@_rfs_ref_institution_tl \l_tmpa_tl
10247           \tl_if_blank:VT \l_@@_rfs_ref_institution_tl
10248           {
10249             \@@_getvalueforkey:Nnnnn{\l_tmpa_tl}{ref-affiliation-id}{person}{id}
10250               {\l_@@_rfs_ref_person_tl}
10251             \@@_rfs_use_fallback:NN \l_@@_rfs_ref_affiliation_tl \l_tmpa_tl
10252           }
10253         }
10254       }
10255     }
10256     {
10257       \msg_warning:nnee { dfg } { requested-staff-unresolved-person }
10258         { \l_@@_rfs_project_tl } { \l_@@_rfs_ref_person_tl }
10259     }
10260   }
10261   \DTLifnull{\l_@@_rfs_position_tl}
10262   {
10263     % Resolve only the omitted position at rendering time. Custom text and
10264     % explicit empty overrides keep their original meaning in either mode.
10265     \@@_category_name_get:nNTF {\l_@@_rfs_category_tl}
10266       \l_@@_rfs_position_tl
10267       { }
10268       { \tl_clear:N \l_@@_rfs_position_tl }
10269   }
10270   { }
10271 }
10272
10273 \cs_new_protected:Npn \@@_rfs_register_affiliation:n #1
10274 {
10275   \tl_set:Ne \l_tmpa_tl {#1}
10276   \tl_clear:N \l_@@_rfs_affiliation_name_tl
10277   \tl_clear:N \l_@@_rfs_affiliation_abbreviation_tl
10278   \DTLifdbexists{affiliation}
10279   {
10280     \@@_getvalueforkey:Nnnnn{\l_@@_rfs_affiliation_name_tl}
10281       {name}{affiliation}{id}{\l_tmpa_tl}
10282     \DTLifnullorempty{\l_@@_rfs_affiliation_name_tl}
10283     {
10284       \msg_warning:nnee { dfg } { requested-staff-unresolved-affiliation }
10285         { \l_@@_rfs_project_tl } { \l_tmpa_tl }
10286       \tl_clear:N \l_@@_rfs_affiliation_name_tl
10287     }
10288     {
10289       \@@_getvalueforkey:Nnnnn{\l_@@_rfs_affiliation_abbreviation_tl}
10290         {abbreviation}{affiliation}{id}{\l_tmpa_tl}
10291       \DTLifnullorempty{\l_@@_rfs_affiliation_abbreviation_tl}
10292       {
10293         \msg_warning:nne { dfg } { requested-staff-missing-abbreviation }
10294           { \l_tmpa_tl }
10295         \tl_set:NV \l_@@_rfs_affiliation_abbreviation_tl
10296           \l_@@_rfs_affiliation_name_tl
10297       }
10298       { }
10299       \seq_if_in:NVF \l_@@_rfs_affiliation_seq \l_tmpa_tl
10300       {
10301         \seq_put_right:NV \l_@@_rfs_affiliation_seq \l_tmpa_tl
10302         \prop_put:NVV \l_@@_rfs_affiliation_abbreviation_prop
10303           \l_tmpa_tl \l_@@_rfs_affiliation_abbreviation_tl
10304         \prop_put:NVV \l_@@_rfs_affiliation_name_prop
10305           \l_tmpa_tl \l_@@_rfs_affiliation_name_tl
10306       }
10307     }
10308   }
10309   {
10310     \msg_warning:nnee { dfg } { requested-staff-unresolved-affiliation }
10311       { \l_@@_rfs_project_tl } { \l_tmpa_tl }
10312   }
10313 }
10314
10315 \cs_new_protected:Npn \@@_rfs_resolve_organisation:
10316 {
```

```
10317   \tl_if_blank:VT \l_@@_rfs_department_tl
10318   {
10319     \tl_if_blank:VTF \l_@@_rfs_ref_institution_tl
10320     {
10321       % Compatibility fallback for roster declarations written before the
10322       % institution-level key was introduced.
10323       \tl_if_blank:VTF \l_@@_rfs_ref_affiliation_tl
10324       {
10325         \@@_rfs_warn_missing:n { department~or~ref-institution-id }
10326         \tl_set:Nn \l_@@_rfs_department_tl
10327           { \SetCell{bg=tableNoValue}\@@_rfs_missing_text:n {department} }
10328       }
10329       {
10330         \@@_rfs_register_affiliation:n { \l_@@_rfs_ref_affiliation_tl }
10331         \tl_if_blank:VTF \l_@@_rfs_affiliation_name_tl
10332         {
10333           \tl_set:Ne \l_@@_rfs_department_tl
10334           {
10335             \exp_not:N \SetCell { bg=tableNoValue }
10336             \exp_not:N \@@_rfs_error_text:n
10337               { \exp_not:V \l_@@_rfs_ref_affiliation_tl }
10338           }
10339         }
10340         {
10341           \tl_set:NV \l_@@_rfs_department_tl
10342             \l_@@_rfs_affiliation_abbreviation_tl
10343         }
10344       }
10345     }
10346     {
10347       \tl_clear:N \l_@@_rfs_department_tl
10348       \DTLifdbexists{institution}
10349       {
10350         \clist_set:NV \l_tmpa_clist \l_@@_rfs_ref_institution_tl
10351         \bool_set_true:N \l_tmpa_bool
10352         \clist_map_inline:Nn \l_tmpa_clist
10353         {
10354           \bool_if:NTF \l_tmpa_bool
10355             { \bool_set_false:N \l_tmpa_bool }
10356             { \tl_put_right:Nn \l_@@_rfs_department_tl {,~} }
10357           \@@_getvalueforkey:Nnnnn{\l_@@_rfs_institution_affiliation_tl}
10358             {ref-affiliation-id}{institution}{id}{##1}
10359           \DTLifnullorempty{\l_@@_rfs_institution_affiliation_tl}
10360           {
10361             \msg_warning:nnee { dfg } { requested-staff-unresolved-institution }
10362               { \l_@@_rfs_project_tl } {##1}
10363             \tl_put_right:Ne \l_@@_rfs_department_tl
10364               { \exp_not:N \@@_rfs_error_text:n { \exp_not:n {##1} } }
10365           }
10366           {
10367             \@@_getvalueforkey:Nnnnn{\l_@@_rfs_institution_name_tl}
10368               {name}{institution}{id}{##1}
10369             \@@_institution_abbreviation_or_name:nN
10370               {##1} \l_@@_rfs_institution_abbreviation_tl
10371             \@@_rfs_register_affiliation:n
10372               { \l_@@_rfs_institution_affiliation_tl }
10373             \DTLifnullorempty{\l_@@_rfs_institution_name_tl}
10374             {
10375               \tl_set:NV \l_@@_rfs_institution_name_tl
10376                 \l_@@_rfs_affiliation_name_tl
10377             }
10378             { }
10379             \DTLifnullorempty{\l_@@_rfs_institution_abbreviation_tl}
10380             {
10381               \tl_set:NV \l_@@_rfs_institution_abbreviation_tl
10382                 \l_@@_rfs_affiliation_abbreviation_tl
10383             }
10384             { }
10385             \tl_put_right:NV \l_@@_rfs_department_tl
10386               \l_@@_rfs_institution_abbreviation_tl
10387             \tl_set:Nn \l_tmpa_tl {##1}
10388             \seq_if_in:NVF \l_@@_rfs_institution_seq \l_tmpa_tl
10389             {
10390               \seq_put_right:NV \l_@@_rfs_institution_seq \l_tmpa_tl
```

```
10391                \prop_put:NVV \l_@@_rfs_institution_name_prop
10392                  \l_tmpa_tl \l_@@_rfs_institution_name_tl
10393                \prop_put:NVV \l_@@_rfs_institution_abbreviation_prop
10394                  \l_tmpa_tl \l_@@_rfs_institution_abbreviation_tl
10395                \prop_put:NVV
10396                  \l_@@_rfs_institution_affiliation_id_prop
10397                  \l_tmpa_tl \l_@@_rfs_institution_affiliation_tl
10398              }
10399            }
10400          }
10401        }
10402        {
10403          \msg_warning:nnee { dfg } { requested-staff-unresolved-institution }
10404            { \l_@@_rfs_project_tl } { \l_@@_rfs_ref_institution_tl }
10405          \tl_set:Ne \l_@@_rfs_department_tl
10406          {
10407            \exp_not:N \SetCell { bg=tableNoValue }
10408            \exp_not:N \@@_rfs_error_text:n
10409              { \exp_not:V \l_@@_rfs_ref_institution_tl }
10410          }
10411        }
10412      }
10413    }
10414  }
10415
10416  \cs_new_protected:Npn \@@_rfs_make_cell:NnN #1#2#3
10417  {
10418    \tl_if_blank:VTF #1
10419    {
10420      \@@_rfs_warn_missing:n {#2}
10421      \tl_set:Nn #3 { \SetCell{bg=tableNoValue}\@@_rfs_missing_text:n {#2} }
10422    }
10423    { \tl_set:NV #3 #1 }
10424  }
10425
10426  \cs_new_protected:Npn \@@_rfs_make_field_cell:
10427  {
10428    \bool_lazy_all:nTF
10429    {
10430      { \str_if_eq_p:Vn \l_@@_rfs_staff_type_tl { nonResearch } }
10431      { \tl_if_blank_p:V \l_@@_rfs_field_tl }
10432    }
10433    { \tl_set:Nn \l_@@_rfs_field_cell_tl { \SetCell{bg=tableNoValue} } }
10434    {
10435      \@@_rfs_make_cell:NnN \l_@@_rfs_field_tl
10436        { field-of-research } \l_@@_rfs_field_cell_tl
10437    }
10438  }
10439
10440  \cs_new_protected:Npn \@@_rfs_make_name_cell:
10441  {
10442    \bool_set_false:N \l_@@_rfs_name_incomplete_bool
10443    \str_if_eq:VnTF \l_@@_rfs_lastname_tl { TBA }
10444    {
10445      \tl_set:Nn \l_@@_rfs_plain_name_tl { TBA }
10446      \tl_set:Nn \l_@@_rfs_description_name_tl { TBA }
10447      \tl_set:Nn \l_tmpa_tl { TBA }
10448    }
10449    {
10450      \tl_if_blank:VT \l_@@_rfs_lastname_tl
10451      {
10452        \@@_rfs_warn_missing:n { lastname~or~resolvable~ref-person-id }
10453        \tl_set:Nn \l_@@_rfs_lastname_tl
10454        {
10455          \bool_if:NTF \l_@@_class_fastcompile_bool
10456            { \@@_rfs_error_text:n {lastname} }
10457            { \@@_rfs_error_text:n {name} }
10458        }
10459        \bool_set_true:N \l_@@_rfs_name_incomplete_bool
10460      }
10461      \tl_if_blank:VT \l_@@_rfs_firstname_tl
10462      {
10463        \@@_rfs_warn_missing:n { firstname }
10464        \tl_set:Nn \l_@@_rfs_firstname_tl { \@@_rfs_missing_text:n {firstname} }
```

```
10465       \bool_set_true:N \l_@@_rfs_name_incomplete_bool
10466     }
10467     \tl_set:Ne \l_@@_rfs_plain_name_tl
10468       {
10469         \exp_not:V \l_@@_rfs_lastname_tl,\exp_not:N \space
10470         \exp_not:V \l_@@_rfs_firstname_tl
10471       }
10472     \tl_set:Ne \l_@@_rfs_description_name_tl
10473     {
10474       \exp_not:V \l_@@_rfs_firstname_tl \exp_not:N \space
10475       \exp_not:V \l_@@_rfs_lastname_tl
10476     }
10477     \tl_set:NV \l_tmpa_tl \l_@@_rfs_plain_name_tl
10478     \tl_if_blank:VF \l_@@_rfs_degree_tl
10479     {
10480       \tl_put_right:Ne \l_tmpa_tl
10481         { ,\exp_not:N \space \exp_not:V \l_@@_rfs_degree_tl }
10482     }
10483     \bool_if:NT \l_@@_rfs_person_resolved_bool
10484     {
10485       \str_if_eq:VnT \l_@@_rfs_funding_status_tl { existing }
10486       {
10487         \tl_set:Ne \l_tmpa_tl
10488         {
10489           \exp_not:N \textbf { \exp_not:V \l_@@_rfs_lastname_tl },
10490           \exp_not:N \space \exp_not:V \l_@@_rfs_firstname_tl
10491         }
10492         \tl_if_blank:VF \l_@@_rfs_degree_tl
10493         {
10494           \tl_put_right:Ne \l_tmpa_tl
10495             { ,\exp_not:N \space \exp_not:V \l_@@_rfs_degree_tl }
10496         }
10497       }
10498     }
10499   }
10500   \tl_if_blank:VF \l_@@_rfs_position_tl
10501   {
10502     \tl_put_right:Ne \l_tmpa_tl
10503     {
10504       \exp_not:N \newline
10505       (\exp_not:V \l_@@_rfs_position_tl)
10506     }
10507   }
10508   \bool_if:NF \l_@@_rfs_person_resolved_bool
10509   {
10510     \tl_if_blank:VF \l_@@_rfs_ref_person_tl
10511     {
10512       \bool_set_true:N \l_@@_rfs_name_incomplete_bool
10513       \tl_put_right:Ne \l_tmpa_tl
10514       {
10515         \exp_not:N \space
10516         \exp_not:N \@@_rfs_error_text:n
10517           { \exp_not:V \l_@@_rfs_ref_person_tl }
10518       }
10519     }
10520   }
10521   \tl_clear:N \l_@@_rfs_name_cell_tl
10522   \bool_if:NT \l_@@_rfs_name_incomplete_bool
10523   { \tl_put_right:Nn \l_@@_rfs_name_cell_tl { \SetCell{bg=tableNoValue} } }
10524   \bool_if:NTF \l_@@_rfs_person_resolved_bool
10525   {
10526     \tl_put_right:Ne \l_@@_rfs_name_cell_tl
10527     {
10528       \exp_not:N \hyperlink { pi:\exp_not:V \l_@@_rfs_ref_person_tl }
10529       {
10530         \exp_not:N \textcolor { referencePI }
10531         {
10532           \exp_not:N \dfgShowCalculatedTag{RequestedFundingStaffTable}
10533             {RequestedFundingStaff,person}
10534             {\exp_not:V \l_tmpa_tl}
10535         }
10536       }
10537     }
10538   }
```

```
10539   {
10540     \tl_put_right:Ne \l_@@_rfs_name_cell_tl
10541     {
10542       \exp_not:N \dfgShowCalculatedTag{RequestedFundingStaffTable}
10543         {RequestedFundingStaff,person}
10544         {\exp_not:V \l_tmpa_tl}
10545     }
10546   }
10547 }
10548
10549 \cs_new_protected:Npn \@@_rfs_render_row:nnnN #1#2#3#4
10550 {
10551   \int_incr:N \l_@@_rfs_display_number_int
10552   \@@_rfs_resolve_person:
10553   \@@_rfs_resolve_organisation:
10554   \@@_rfs_make_name_cell:
10555   \@@_rfs_make_field_cell:
10556   \tl_if_blank:VF \l_@@_rfs_field_tl
10557   {
10558     \tl_set:Ne \l_@@_rfs_field_cell_tl
10559     {
10560       \exp_not:N \dfgShowTag
10561         {\exp_not:V \l_@@_rfs_project_tl/
10562          \int_use:N \l_@@_rfs_display_number_int}
10563         {field-of-research}{\exp_not:V \l_@@_rfs_field_cell_tl}
10564         [RequestedFundingStaff]
10565     }
10566   }
10567   \tl_set:NV \l_@@_rfs_department_cell_tl \l_@@_rfs_department_tl
10568   \tl_if_in:VnF \l_@@_rfs_department_cell_tl { \SetCell }
10569   {
10570     \tl_set:Ne \l_@@_rfs_department_cell_tl
10571     {
10572       \exp_not:N \dfgShowCalculatedTag{RequestedFundingStaffTable}
10573         {RequestedFundingStaff,person,institution,affiliation}
10574         {\exp_not:V \l_@@_rfs_department_cell_tl}
10575     }
10576   }
10577   \str_if_eq:VnTF \l_@@_rfs_funding_status_tl { requested }
10578   {
10579     \tl_set:Nn \l_@@_rfs_commitment_cell_tl
10580       { \SetCell{bg=tableNoValue} }
10581     \tl_set:Nn \l_@@_rfs_funding_source_cell_tl
10582       { \SetCell{bg=tableNoValue} }
10583   }
10584   {
10585     \@@_rfs_make_cell:NnN \l_@@_rfs_commitment_tl
10586       { commitment } \l_@@_rfs_commitment_cell_tl
10587     \@@_rfs_make_cell:NnN \l_@@_rfs_funding_source_tl
10588       { funding-source } \l_@@_rfs_funding_source_cell_tl
10589     \tl_if_blank:VF \l_@@_rfs_commitment_tl
10590     {
10591       \tl_set:Ne \l_@@_rfs_commitment_cell_tl
10592       {
10593         \exp_not:N \dfgShowTag
10594           {\exp_not:V \l_@@_rfs_project_tl/
10595            \int_use:N \l_@@_rfs_display_number_int}
10596           {commitment}{\exp_not:V \l_@@_rfs_commitment_cell_tl}
10597           [RequestedFundingStaff]
10598       }
10599     }
10600     \tl_if_blank:VF \l_@@_rfs_funding_source_tl
10601     {
10602       \tl_set:Ne \l_@@_rfs_funding_source_cell_tl
10603       {
10604         \exp_not:N \dfgShowTag
10605           {\exp_not:V \l_@@_rfs_project_tl/
10606            \int_use:N \l_@@_rfs_display_number_int}
10607           {funding-source}{\exp_not:V \l_@@_rfs_funding_source_cell_tl}
10608           [RequestedFundingStaff]
10609       }
10610     }
10611   }
10612   \str_if_eq:VnTF \l_@@_rfs_funding_status_tl { existing }
```

```
10613   {
10614     \tl_set:Nn \l_@@_rfs_category_cell_tl
10615       { \SetCell{bg=tableNoValue} }
10616   }
10617   {
10618     \tl_if_blank:VTF \l_@@_rfs_category_tl
10619     {
10620       \@@_rfs_warn_missing:n { category }
10621       \tl_set:Nn \l_@@_rfs_category_cell_tl
10622         { \SetCell{bg=tableNoValue}\@@_rfs_missing_text:n {category} }
10623     }
10624     {
10625       \@@_category_name_get:nNTF
10626         {\l_@@_rfs_category_tl} \l_@@_rfs_category_cell_tl
10627       { }
10628       {
10629         \tl_set:Ne \l_@@_rfs_category_cell_tl
10630           { \exp_not:N \@@_rfs_error_text:n { \exp_not:V \l_@@_rfs_category_tl } }
10631       }
10632     }
10633   }
10634   \tl_if_in:VnF \l_@@_rfs_category_cell_tl { \SetCell }
10635   {
10636     \tl_set:Ne \l_@@_rfs_category_cell_tl
10637     {
10638       \exp_not:N \dfgShowCalculatedTag{RequestedFundingStaffTable}
10639         {RequestedFundingStaff,person}
10640         {\exp_not:V \l_@@_rfs_category_cell_tl}
10641     }
10642   }
10643   \int_compare:nNnTF {#1} = {1}
10644   {
10645     \tl_set:Ne \l_@@_rfs_group_cell_tl
10646     {
10647       \exp_not:N \SetCell [ r=#2 ] { l }
10648       { \exp_not:n {#3} } &
10649     }
10650   }
10651   { \tl_set:Nn \l_@@_rfs_group_cell_tl { & } }
10652   \tl_put_right:Ne \l_@@_rfs_table_body_tl
10653   {
10654     \exp_not:V \l_@@_rfs_group_cell_tl
10655     \int_use:N \l_@@_rfs_display_number_int .
10656     & \exp_not:V \l_@@_rfs_name_cell_tl
10657     & \exp_not:V \l_@@_rfs_field_cell_tl
10658     & \exp_not:V \l_@@_rfs_department_cell_tl
10659     & \exp_not:V \l_@@_rfs_commitment_cell_tl
10660     & \exp_not:V \l_@@_rfs_category_cell_tl
10661     & \exp_not:V \l_@@_rfs_funding_source_cell_tl
10662     \\
10663   }
10664   \tl_if_blank:VT \l_@@_rfs_description_tl
10665   {
10666     \@@_rfs_warn_missing:n { description }
10667     \tl_set:Nn \l_@@_rfs_description_tl
10668       { \textcolor{error}{Description~not~provided.} }
10669   }
10670   \tl_put_right:Ne #4
10671   {
10672     \exp_not:N \item
10673       [\exp_not:N \textbf
10674         { \int_use:N \l_@@_rfs_display_number_int. }]
10675     \exp_not:N \textbf
10676       { \exp_not:N \dfgShowCalculatedTag{RequestedFundingStaffTable}
10677           {RequestedFundingStaff,person}
10678           {\exp_not:V \l_@@_rfs_description_name_tl} }
10679     \space
10680     \exp_not:N \dfgShowTag
10681       {\exp_not:V \l_@@_rfs_project_tl/
10682        \int_use:N \l_@@_rfs_display_number_int}
10683       {description}{\exp_not:V \l_@@_rfs_description_tl}
10684       [RequestedFundingStaff]
10685   }
10686 }
```

```
10687
10688 \cs_new_protected:Npn \@@_rfs_render_group:NnN #1#2#3
10689 {
10690   \seq_map_indexed_inline:Nn #1
10691   {
10692     \@@_rfs_row_clear:
10693     \keys_set:nn { dfg / requested-funding-staff-row } {##2}
10694     \@@_rfs_render_row:nnnN {##1} { \seq_count:N #1 } {#2} #3
10695   }
10696 }
10697
10698 \cs_new_protected:Npn \@@_rfs_render_status:NNnN #1#2#3#4
10699 {
10700   \int_compare:nNnT { \seq_count:N #1 + \seq_count:N #2 } > {0}
10701   {
10702     \tl_put_right:Nn \l_@@_rfs_table_body_tl
10703     {
10704       \SetRow{bg=tableHeadingsBGalt,font=\footnotesize\bfseries}
10705       \SetCell[c=8]{l} #3 & & & & & & \\*
10706     }
10707     \@@_rfs_render_group:NnN #1 { Research~staff } #4
10708     \seq_if_empty:NF #1
10709     {
10710       \seq_if_empty:NF #2
10711       {
10712         \tl_put_right:Nn \l_@@_rfs_table_body_tl
10713           { \SetHline{-}{tableOuterLines,0.5pt} }
10714       }
10715     }
10716     \@@_rfs_render_group:NnN #2 { Non-research~staff } #4
10717   }
10718 }
10719
10720 \cs_new_protected:Npn \@@_rfs_print_legend:
10721 {
10722   \bool_lazy_or:nnT
10723     { ! \seq_if_empty_p:N \l_@@_rfs_institution_seq }
10724     { ! \seq_if_empty_p:N \l_@@_rfs_affiliation_seq }
10725   {
10726     \@@_staff_abbreviation_note:n
10727     {
10728     \seq_map_indexed_inline:Nn \l_@@_rfs_institution_seq
10729     {
10730       \int_compare:nNnF {##1} = {1} {;\space}
10731       \prop_get:NnN \l_@@_rfs_institution_name_prop
10732         {##2} \l_@@_rfs_institution_name_tl
10733       \prop_get:NnN \l_@@_rfs_institution_abbreviation_prop
10734         {##2} \l_@@_rfs_institution_abbreviation_tl
10735       \prop_get:NnN \l_@@_rfs_institution_affiliation_id_prop
10736         {##2} \l_@@_rfs_institution_affiliation_tl
10737       \prop_get:NVNF \l_@@_rfs_affiliation_abbreviation_prop
10738         \l_@@_rfs_institution_affiliation_tl
10739         \l_@@_rfs_affiliation_abbreviation_tl
10740       {
10741         \tl_set:Ne \l_@@_rfs_affiliation_abbreviation_tl
10742         {
10743           \exp_not:N \@@_rfs_error_text:n
10744             { \exp_not:V \l_@@_rfs_institution_affiliation_tl }
10745         }
10746       }
10747       \dfgShowCalculatedTag{institutionLabel}{institution}
10748         {\l_@@_rfs_institution_abbreviation_tl}:~
10749       \dfgShowTag{##2}{name}{\l_@@_rfs_institution_name_tl}[institution]
10750       \space
10751       (\dfgShowCalculatedTag{affiliationLabel}{affiliation}
10752         {\l_@@_rfs_affiliation_abbreviation_tl})
10753     }
10754     \seq_if_empty:NF \l_@@_rfs_institution_seq
10755     {
10756       \seq_if_empty:NF \l_@@_rfs_affiliation_seq {;\space}
10757     }
10758     \seq_map_indexed_inline:Nn \l_@@_rfs_affiliation_seq
10759     {
10760       \int_compare:nNnF {##1} = {1} {;\space}
```

```
      \prop_get:NnN \l_@@_rfs_affiliation_abbreviation_prop
        {##2} \l_@@_rfs_affiliation_abbreviation_tl
      \prop_get:NnN \l_@@_rfs_affiliation_name_prop
        {##2} \l_@@_rfs_affiliation_name_tl
      \dfgShowCalculatedTag{affiliationLabel}{affiliation}
        {\l_@@_rfs_affiliation_abbreviation_tl}:~
      \dfgShowTag{##2}{name}{\l_@@_rfs_affiliation_name_tl}[affiliation]
    }
    }
  }
}

\cs_new_protected:Npn \@@_rfs_no_data:n #1
{
  \msg_warning:nnn { dfg } { requested-staff-no-data } {#1}
  \par\noindent
  \textcolor{tableNoValue!55!black}
    {No~staff~data~have~been~provided~for~this~project.}
  \par
}

\NewDocumentCommand{\RequestedFundingStaffTable}{m}
{
  \group_begin:
  \tl_set:Nn \l_@@_rfs_project_tl {#1}
  \tl_clear:N \l_@@_rfs_project_status_tl
  \DTLifdbexists{project}
  {
    \@@_getvalueforkey:Nnnnn{\l_@@_rfs_project_status_tl}
      {project-status}{project}{id}{#1}
  }
  { }
  \str_if_eq:VnTF \l_@@_rfs_project_status_tl { E }
  {
    \tl_set:Nn \l_@@_rfs_existing_group_label_tl {Existing~staff}
    \tl_set:Nn \l_@@_rfs_requested_group_label_tl
      {Staff~funded~with~approved~grant~money}
    \tl_set:Nn \l_@@_rfs_existing_description_heading_tl
      {Job~descriptions~of~staff~(supported~through~existing~funds):}
    \tl_set:Nn \l_@@_rfs_requested_description_heading_tl
      {Job~descriptions~of~staff~(funded~with~approved~grant~money):}
  }
  {
    \tl_set:Nn \l_@@_rfs_existing_group_label_tl {Existing~staff}
    \tl_set:Nn \l_@@_rfs_requested_group_label_tl {Requested~staff}
    \tl_set:Nn \l_@@_rfs_existing_description_heading_tl
      {Job~descriptions~of~staff~for~the~proposed~funding~period~
        (supported~through~existing~funds):}
    \tl_set:Nn \l_@@_rfs_requested_description_heading_tl
      {Job~descriptions~of~staff~for~the~proposed~funding~period~
        (requested~funds):}
  }
  \seq_clear:N \l_@@_rfs_existing_research_seq
  \seq_clear:N \l_@@_rfs_existing_nonresearch_seq
  \seq_clear:N \l_@@_rfs_requested_research_seq
  \seq_clear:N \l_@@_rfs_requested_nonresearch_seq
  \seq_clear:N \l_@@_rfs_institution_seq
  \seq_clear:N \l_@@_rfs_affiliation_seq
  \prop_clear:N \l_@@_rfs_duplicate_prop
  \prop_clear:N \l_@@_rfs_institution_name_prop
  \prop_clear:N \l_@@_rfs_institution_abbreviation_prop
  \prop_clear:N \l_@@_rfs_institution_affiliation_id_prop
  \prop_clear:N \l_@@_rfs_affiliation_abbreviation_prop
  \prop_clear:N \l_@@_rfs_affiliation_name_prop
  \tl_clear:N \l_@@_rfs_table_body_tl
  \tl_clear:N \l_@@_rfs_existing_descriptions_tl
  \tl_clear:N \l_@@_rfs_requested_descriptions_tl
  \DTLifdbexists{RequestedFundingStaff}
  {
    \DTLforeach[\DTLiseq{#1}{\pRFSProject}]
      {RequestedFundingStaff}
    {
      \pRFSProject=ref-project-id,
      \pRFSFundingStatus=funding-status,
```

```
10835         \pRFSStaffType=staff-type,
10836         \pRFSRefPerson=ref-person-id,
10837         \pRFSFirstname=firstname,
10838         \pRFSLastname=lastname,
10839         \pRFSDegree=academic-degree,
10840         \pRFSPosition=positionText,
10841         \pRFSField=field-of-research,
10842         \pRFSRefInstitution=ref-institution-id,
10843         \pRFSRefAffiliation=ref-affiliation-id,
10844         \pRFSDepartment=department,
10845         \pRFSCommitment=commitment,
10846         \pRFSCategory=category,
10847         \pRFSFundingSource=funding-source,
10848         \pRFSDescription=description
10849       }
10850       { \@@_rfs_collect_current: }
10851       \int_set:Nn \l_@@_rfs_record_count_int
10852       {
10853         \seq_count:N \l_@@_rfs_existing_research_seq
10854         + \seq_count:N \l_@@_rfs_existing_nonresearch_seq
10855         + \seq_count:N \l_@@_rfs_requested_research_seq
10856         + \seq_count:N \l_@@_rfs_requested_nonresearch_seq
10857       }
10858       \int_compare:nNnTF { \l_@@_rfs_record_count_int } = {0}
10859       { \@@_rfs_no_data:n {#1} }
10860       {
10861         \int_zero:N \l_@@_rfs_display_number_int
10862         \@@_rfs_render_status:NNnN
10863           \l_@@_rfs_existing_research_seq
10864           \l_@@_rfs_existing_nonresearch_seq
10865           {\tl_use:N \l_@@_rfs_existing_group_label_tl}
10866           \l_@@_rfs_existing_descriptions_tl
10867         \@@_rfs_render_status:NNnN
10868           \l_@@_rfs_requested_research_seq
10869           \l_@@_rfs_requested_nonresearch_seq
10870           {\tl_use:N \l_@@_rfs_requested_group_label_tl}
10871           \l_@@_rfs_requested_descriptions_tl
10872         \begin{tblr}[
10873           theme=requestedFundingStaff,
10874           long,
10875           postsep=0pt,
10876           expand=\l_@@_rfs_table_body_tl
10877         ]{
10878           colsep=2pt,
10879           width=\textwidth,
10880           hline{1,Z}={1pt,fg=tableOuterLines},
10881           hline{2}={1pt,fg=tableOuterLines},
10882           stretch=.8,
10883           rowsep=.500pt,
10884           colspec={X[1.1,l]
10885                    X[.42,c] % no
10886                    X[2.18,l] % Name
10887                    X[1.4,l] % field
10888                    X[1.5,c] % department
10889                    X[1.05,c] % proj com.
10890                    X[1.1,c] % category
10891                    X[.95,c] % funding
10892                    },
10893           column{1}={font=\footnotesize\bfseries,valign=m},
10894           column{2}={halign=c},
10895           rows={font=\footnotesize,valign=t},
10896           rowhead=1,
10897           row{1}={bg=tableHeadingsBG,fg=tableHeadingsFont,
10898             font=\scriptsize\bfseries,guard},
10899           cell{1}{1-8}={halign=c,valign=m}
10900         }
10901           & {No.}
10902           & {Name,~academic\\degree,~position}
10903           & {Field~of\\research}
10904           & {Departm.~of\\(non-)univers.\\institution}
10905           & {Project\\commitm.~(h/wk)}
10906           & Category
10907           & {Funding\\source} \\
10908           \l_@@_rfs_table_body_tl
```

```
      \end{tblr}
      \@@_rfs_print_legend:
      \tl_if_empty:NF \l_@@_rfs_existing_descriptions_tl
      {
        \par\medskip\noindent
        {\tl_use:N \l_@@_rfs_existing_description_heading_tl}\par\nobreak
        {\normalfont\normalsize\setlength{\parskip}{0pt}
          \begin{itemize}[
            label={},
            labelindent=0pt,
            labelwidth=1.5em,
            labelsep=.5em,
            leftmargin=2em,
            align=left,
            beginpenalty=10000]
            \tl_use:N \l_@@_rfs_existing_descriptions_tl
          \end{itemize}}
      }
      \tl_if_empty:NF \l_@@_rfs_requested_descriptions_tl
      {
        %\par\medskip\noindent
        {\tl_use:N \l_@@_rfs_requested_description_heading_tl}\par\nobreak
        {\normalfont\normalsize\setlength{\parskip}{0pt}
          \begin{itemize}[
            label={},
            labelindent=0pt,
            labelwidth=1.5em,
            labelsep=.5em,
            leftmargin=2em,
            align=left,
            beginpenalty=10000]
            \tl_use:N \l_@@_rfs_requested_descriptions_tl
          \end{itemize}}
      }
    }
  }
  { \@@_rfs_no_data:n {#1} }
  \group_end:
}

\NewDocumentCommand{\getTotalSumRequestedFunds}{O{RequestedFunding}mm}{
  % #1: database
  % #2: project
  % #3: year
  \def\tmpLocalDB{#1}%
  \DTLifdbexists{\tmpLocalDB}{%
    \@@_funding_sum_set:Nnnnn \TotalSumRequestedFunds
      {#1}{#2}{__ALL__}{#3}
    \@@_show_calculated_number:nnN
      {getTotalSumRequestedFunds}{#1}
      \TotalSumRequestedFunds
  }{
   \texttt{\color{error}XXX}
   \msg_warning:nne { dfg } { database-not-found }{ #1 }
  }
}


\NewDocumentCommand{\getSumExistingFunds}{O{RequestedAndExistingFundingDirectCosts}mm}{
  % #1: database
  % #2: project
  % #3: year
  \def\tmpLocalDB{#1}%
  \DTLifdbexists{\tmpLocalDB}{
    \@@_funding_sum_set:Nnnnn \SumExistingFunds
      {#1}{#2}{__ALL__}{#3}

    \@@_show_calculated_number:nnN
      {getSumExistingFunds}{#1}
      \SumExistingFunds
  }{
   \texttt{\color{error}XXX}
   \msg_warning:nne { dfg } { database-not-found }{ #1 }
```

```
  }
}


\providecommand{\SumRequestedFunds}{0}

\NewDocumentCommand{\getSumRequestedFunds}{ O{RequestedFunding} m m m }{%
  \DTLifdbexists{#1}{%
    \@@_funding_sum_set:Nnnnn \SumRequestedFunds {#1}{#2}{#3}{#4}%
    \@@_show_calculated_number:nnN
      {getSumRequestedFunds}{#1}
      \SumRequestedFunds
  }{%
   \texttt{\color{error}XXX}%
   \msg_warning:nne { dfg } { database-not-found } { #1 }%
  }%
}
\NewDocumentCommand{\dfgCheckIfZeroShowCategory}{ O{RequestedFunding} m m }
{
  % #1: database
  % #2: project
  % #3: category/type
  \def\tmpLocalDB{#1}
  \DTLifdbexists{\tmpLocalDB}{
    \@@_funding_sum_set:Nnnnn \SumRequestedFunds {#1}{#2}{#3}
      {sum-year1,sum-year2,sum-year3,sum-year4,sum-year5}
   \fp_compare:nNnT { \SumRequestedFunds } = {0}
   { \tl_clear:c {l__tmp_body_#3_tl }}
  }
  {
   \msg_warning:nne { dfg } { database-not-found }{ #1 }
  }
}
```

This is for `Requested funding for direct costs fo the new funding period` and is partially data from new key-values and partially it has to be reused.

```
\NewDocumentCommand{\RequestedAndExistingFundingDirectCostsTable}{m}
{
  % #1: project
  \def\tmpLocalDB{RequestedAndExistingFundingDirectCosts}%
  \DTLifdbexists{\tmpLocalDB}{%
   \tl_clear:N \l__tmp_body_costs_tl
   \DTLforeach[\DTLiseq{\pProject}{#1}]{\tmpLocalDB}{
    \pProject=ref-project-id,
    \pAffiliation=ref-affiliation-id,
    \pFinancedBy=financed-by,
    \pSumYearOne=sum-year1,
    \pSumYearTwo=sum-year2,
    \pSumYearThree=sum-year3,
    \pSumYearFour=sum-year4,
    \pSumYearFive=sum-year5
   }{
  \DTLaddall{\tmpHorizontalSum}{
     \pSumYearOne,
     \pSumYearTwo,
     \pSumYearThree,
     \pSumYearFour,
     \pSumYearFive
    }

    \tl_put_right:Ne \l__tmp_body_costs_tl
    {
     \str_if_eq:VnTF { \pAffiliation }  { other-funds }
     { Other }
      { \getEntry[affiliation]{\pAffiliation}{abbreviation} : } ~
      existing~ funds~ from~
      % Freeze the database value without expanding commands such as \RWTH,
      % whose trailing \xspace must only run when the completed cell is typeset.
      \dfgShowTag{\pProject/\pAffiliation}{financed-by}
        {\exp_not:V \pFinancedBy}[\tmpLocalDB]
      \printMarginalia{\dfgShowCalculatedTag
        {RequestedAndExistingFundingDirectCostsTable}{\tmpLocalDB}
        {\@@_show_eur:n{\tmpHorizontalSum}}}
```

```
11052       & \dfgShowTag{\pProject/\pAffiliation}{sum-year1}
11053           {\@@_show_eur:n{\pSumYearOne}}[\tmpLocalDB]
11054       & \dfgShowTag{\pProject/\pAffiliation}{sum-year2}
11055           {\@@_show_eur:n{\pSumYearTwo}}[\tmpLocalDB]
11056       & \dfgShowTag{\pProject/\pAffiliation}{sum-year3}
11057           {\@@_show_eur:n{\pSumYearThree}}[\tmpLocalDB]
11058       & \dfgShowTag{\pProject/\pAffiliation}{sum-year4}
11059           {\@@_show_eur:n{\pSumYearFour}}[\tmpLocalDB]
11060       & \dfgShowTag{\pProject/\pAffiliation}{sum-year5}
11061           {\@@_show_eur:n{\pSumYearFive}}[\tmpLocalDB] \\
11062     }
11063    }
11064    \tl_put_right:Ne \l__tmp_body_costs_tl
11065    {
11066     \SetHline{-}{tableOuterLines,0.5pt}
11067     \SetRow{belowsep=5pt}
11068     Sum~ of~ existing~ funds
11069     \printMarginalia{%
11070      \getSumExistingFunds{#1}
11071      {sum-year1,sum-year2,sum-year3,sum-year4,sum-year5}
11072     }
11073     & \getSumExistingFunds{#1}{sum-year1}
11074     & \getSumExistingFunds{#1}{sum-year2}
11075     & \getSumExistingFunds{#1}{sum-year3}
11076     & \getSumExistingFunds{#1}{sum-year4}
11077     & \getSumExistingFunds{#1}{sum-year5} \\
11078    }
11079
11080    \begin{tblr}[
11081      theme=main,
11082      long,
11083      expand=
11084      \l__tmp_body_costs_tl,
11085    remark{Note}={Figures~ in~ EUR.},
11086     ]{
11087      % colsep=3pt,
11088      colspec = {
11089        *{1}{X[4,t]}
11090         *{5}{
11091        @{}X[c,si={table-format=8}]
11092         }},
11093      rows = {bg=white},
11094    column{2-6}={guard},
11095         row{1}= {valign=m,guard,bg=tableHeadingsBG},
11096      row{Y,Z}= {
11097                 %bg=tableHeadingsBGalt,
11098                 font={\footnotesize\bfseries}},
11099     }
11100
11101    & \dfgFundingYear{1}
11102    & \dfgFundingYear{2}
11103    & \dfgFundingYear{3}
11104    & \dfgFundingYear{4}
11105    & \dfgFundingYear{5}                                  \\
11106
11107     \l__tmp_body_costs_tl
11108
11109     \SetHline{-}{tableOuterLines,.75pt}
11110     %\SetCell{font=\bfseries\footnotesize}
11111     Sum~ of~ requested~ funds
11112     \printMarginalia{%
11113      \getSumRequestedFunds{#1}{costs}
11114      {sum-year1,sum-year2,sum-year3,sum-year4,sum-year5}
11115     }
11116      & \getSumRequestedFunds{#1}{costs}{sum-year1}
11117      & \getSumRequestedFunds{#1}{costs}{sum-year2}
11118      & \getSumRequestedFunds{#1}{costs}{sum-year3}
11119      & \getSumRequestedFunds{#1}{costs}{sum-year4}
11120      & \getSumRequestedFunds{#1}{costs}{sum-year5} \\
11121    \end{tblr}
11122   }{
11123    Database~ \texttt{#1}~ missing.
11124    \msg_warning:nne { dfg } { database-not-found }{ #1 }
11125   }
```

```
}
```

6.1.25 Boxes

```
\RequirePackage[breakable,fitting,skins,most]{tcolorbox}

\tcbset{
  PIbox/.style={
    %enhanced, breakable,
    colback=white, colframe=white,
    coltitle=black,
    boxrule=0pt, %arc=2pt,
    before~ skip=0pt, after~ skip=7pt,
  before~ title=\raggedright,
  before~ upper=\raggedright,
    boxsep=0pt,
    left=0pt, right=0pt, top=7pt, bottom=0pt,
   },
}

\bool_if:NTF \l_@@_class_final_bool
{\newcommand{\dfgcomment}[2][]{}}
{\NewTotalTColorBox{\dfgcomment}{ O{} m }
  {%
   nobeforeafter,
   colupper=black!50!white,
   coltitle=black!75!white,
   fonttitle=\fontsize{7}{9}\selectfont\bfseries,
   colback=black!5!white,
   colframe=black!15!white,
   width=\linewidth,
   %  text height=4cm,
   breakable,
   enhanced,
   left=0pt,right=0pt,
   top=0pt,bottom=0pt,
   % text width=\linewidth,
   fontupper=\fontsize{7}{9}\selectfont,
   title={Anmerkung~der~DFG},
   #1
  }{#2}}
```

defining standard for boxes

```
\tcbset{
  dfgStyle/.style={%
    enhanced~ jigsaw,
    colback       =white,
    colbacktitle  =tableHeadingsBG,
    coltitle      =tableHeadingsFont,
    colframe      =tableOuterLines,
    %colupper      =tableHeadingsFont,
    fontupper     =\sffamily,
    fonttitle     =\bfseries,
    % after skip   =1em,
    before        ={\pagebreak[0]},
    after         ={\nopagebreak},
    % fonttitle    =\bfseries,
    %boxrule      =0.5pt,
    sharp~ corners,
    toprule      =1pt,
    rightrule    =0mm,
    leftrule     =0mm,
    % drop shadow =rwthGrey,
    %drop large lifted shadow,
    width         =\linewidth,
    bottomrule    =1pt,
    % draft,
    left          =2mm,
    bottom        =0mm,
    top           =0mm,
    capture       =minipage,
   }}
\NewTotalTColorBox{\dfgBox}{ O{} +m }
```

```
{%
  dfgStyle,
  nobeforeafter,
  left=0pt,right=0pt,
  top=0pt,bottom=0pt,
  #1
}{#2}
```

A handy box to aggregate important points, dfgSummaryBox→ P. 23.

```
\newtcolorbox{dfgSummaryBox}[1][]{
  dfgStyle,
  top=1mm,
  left=1mm,
  bottom=1mm,
  before={\par},
  after={\par},
  before~ upper={\begin{itemize}[leftmargin=.5cm]%
    \renewcommand{\labelitemi}{\dfgTargetPoint}%
    \hypersetup{linkcolor=tableHeadingsFont}%
    \colorlet{referencePI}{tableHeadingsFont}
    \colorlet{referenceWP}{tableHeadingsFont}
    \colorlet{referenceAim}{tableHeadingsFont}
   },
  after~ upper={\end{itemize}},
  %  height=2.5cm,
  fontupper=\rmfamily,
  % ------ title below.
  width=\linewidth,
  rounded~ corners,
  toprule=1pt,
  rightrule=1pt,
  leftrule=1pt,
  bottomrule=1pt,
  % attach boxed title to bottom center,
  boxed~ title~ style={empty,boxrule=1pt},
  varwidth~ boxed~ title=0.5\linewidth,
  #1
}
```

Box for anything like the aims section.

```
\newtcolorbox{dfgBoxEnv}[1][]{
  dfgStyle,
  % top=-1.5mm,
  % left=1mm,
  before={\par},
  #1
}
```

6.1.26 New Commands

Providing further commands that can and will be used throughout the document

```
\providecommand{\crc}{Collaborative~ Research~ Centre\xspace}

% getting the main logo of the CRC
% the filename needs to be adjusted or make this more generic.
\providecommand{\crcLogoPath}{\tl_use:N \l_@@_custom_crc_logo_path_tl}
\providecommand{\affiliationLogoPath}
  {\tl_use:N \l_@@_custom_affiliation_logo_path_tl}

\NewDocumentCommand{\crcLogo}{O{1cm}}{%
  \includegraphics[#1]{\crcLogoPath}}

% same for the affiliation.
\NewDocumentCommand{\affiliationLogo}{O{1cm}}{%
  \includegraphics[#1]{\affiliationLogoPath}}

\keys_define:nn { hrule }
{
  color     .tl_set:N   = \l__hrule_color_tl,
  color     .initial:n  = color@tags@line,
  above     .dim_set:N  = \l__hrule_above_dim,
  above     .initial:n  = 0pt,
```

```
11258   below     .dim_set:N  = \l__hrule_below_dim,
11259   below     .initial:n  = 0pt,
11260   thickness .dim_set:N  = \l__hrule_thickness_dim,
11261   thickness .initial:n  = 0.4pt,
11262 }
11263
11264 \ProvideDocumentCommand{\Hrule}{O{}}
11265 {%
11266   \group_begin:
11267   \keys_set:nn { hrule } {#1}%
11268   \par
11269   \addvspace{ \l__hrule_above_dim }%
11270   {\color{ \l__hrule_color_tl }\hrule height \l__hrule_thickness_dim}%
11271   \addvspace{ \l__hrule_below_dim }%
11272   \group_end:
11273 }
11274
11275 % remodeling for the titlepage where we use some center-environments
11276 \AtBeginEnvironment{center}{
11277   % \vspace*{-1em}
11278 }

11279 \seq_new:N \l_@@_sig_pairs_seq
11280 \tl_new:N  \l_@@_sig_id_tl
11281 \tl_new:N  \l_@@_sig_desc_tl
```

printSignature `\printSignature[<db>]{ {<id>}{<desc>} {<id>}{<desc>} ... }` – one signature block per `{id}{desc}` pair. `<db>` defaults to `person`. Inside `<desc>` you may use `\theAffiliationOfRoleID`, which is set to the person's `ref-institution-id` before the description is typeset.

```
11282 \NewDocumentCommand{\printSignature}{ O{person} m }
11283 {
11284   \bool_if:NF \l_@@_class_fastcompile_project_bool
11285   {
11286     \par
11287     \seq_set_split:Nnn \l_@@_sig_pairs_seq { } {#2}
11288     \int_compare:nNnT { \seq_count:N \l_@@_sig_pairs_seq } > { 0 }
11289     { \@@_signature_consume_pairs:n {#1} }
11290   }
11291 }
11292
11293 \tl_new:N \l_@@_signature_role_id_tl
11294 \tl_new:N \l_@@_signature_role_tl
11295 \tl_new:N \l_@@_signature_role_period_tl
11296
11297 \NewDocumentCommand{\printSignaturesWithRole}{ O{person} m m }
11298 {
11299   \bool_if:NF \l_@@_class_fastcompile_project_bool
11300   {
11301     \DTLifdbexists{#1}
11302     {
11303       \DTLforeach*[
11304         \DTLisinlist{\theFundingPeriodNumeral}{\l_@@_signature_role_period_tl}
11305         \and
11306         \DTLisinlist{#2}{\l_@@_signature_role_tl}
11307       ]{#1}{
11308         \l_@@_signature_role_id_tl     = id,
11309         \l_@@_signature_role_tl        = role,
11310         \l_@@_signature_role_period_tl = period
11311       }{
11312         \@@_signature_block:nnn
11313           {#1}{\l_@@_signature_role_id_tl}{#3}
11314       }
11315     }
11316     { \msg_warning:nne { dfg } { database-not-found } {#1} }
11317   }
11318 }
```

Pops `{id}{desc}` pairs off `\l_@@_sig_pairs_seq` until empty, typesetting one block per pair.

```
11319 \cs_new_protected:Npn \@@_signature_consume_pairs:n #1
```

```
{
  \seq_pop_left:NN \l_@@_sig_pairs_seq \l_@@_sig_id_tl
  \seq_pop_left:NNTF \l_@@_sig_pairs_seq \l_@@_sig_desc_tl
  {
   \@@_signature_block:nVV {#1} \l_@@_sig_id_tl \l_@@_sig_desc_tl
   \seq_if_empty:NF \l_@@_sig_pairs_seq
   { \@@_signature_consume_pairs:n {#1} }
  }
  {
   \msg_warning:nnn { crc-proposal } { signature-odd-args } {#1}
  }
}
\msg_new:nnn { crc-proposal } { signature-odd-args }
{ \printSignature\ in\ db\ '#1':\ odd\ number\ of\ tokens,\ %
  expected\ {id}{desc}\ pairs. }
```

Typesets a single signature block for person `#2` in db `#1` with description `#3`. Sets `\theAffiliationOfRoleID` from the row's `ref-institution-id` before expanding `#3`.

```
\cs_new_protected:Npn \@@_signature_block:nnn #1 #2 #3
{
  \@@_getvalueforkey:Nnnnn{\theAffiliationOfRoleID}{ref-affiliation-id}{#1}{id}{#2}
  \@@_getvalueforkey:Nnnnn{\@@tmpDegree}   {academicdegree}{#1}{id}{#2}
  \@@_getvalueforkey:Nnnnn{\@@tmpFirst}    {firstname}     {#1}{id}{#2}
  \@@_getvalueforkey:Nnnnn{\@@tmpLast}     {lastname}      {#1}{id}{#2}
  \begin{tblr}{
               width=\linewidth,
               colspec={@{}b{3cm}b{1cm}X[b]@{}},
              }
              {\theCRCaffiliationLocation \\ \dfgDate} &  & \faFileSignature
              \SetHline{3-3}{tableOuterLines,1pt}
                                                      &  & {
                                                           \dfgShowTag{#2}{academicdegree}{\@@tmpDegree}
                                                             \textcolor{referencePI}{
                                                             \dfgShowTag{#2}{firstname}{\@@tmpFirst}[#1]
                                                             \dfgShowTag{#2}{lastname}{\@@tmpLast}[#1]}
                                                            #3 } \\
  \end{tblr}
  \par\bigskip
}
\cs_generate_variant:Nn \@@_signature_block:nnn { nVV }
```

If there are multiple institutions mentioned we want to have a list of all of them with their affiliation. We are getting the possible list of institutions into one command Loop over your list and build the sequence.1

```
\bool_new:N \l_@@_narrow_bool
\bool_new:N \l_@@_institution_abbreviation_bool
\bool_new:N \l_@@_noaddr_bool
\bool_new:N \l_@@_nozip_bool
\bool_new:N \l_@@_noloc_bool
\bool_new:N \l_@@_has_country_bool
\seq_new:N  \l_@@_inst_ids_seq
\tl_new:N   \l_@@_sep_tl
\tl_new:N   \l_@@_inst_sep_tl

\cs_generate_variant:Nn \seq_set_from_clist:Nn { NV }

\keys_define:nn { @@ / institution-list }
{
  abbreviation .bool_set:N = \l_@@_institution_abbreviation_bool,
  narrow .bool_set:N = \l_@@_narrow_bool,
  noaddress .bool_set:N = \l_@@_noaddr_bool,
  nozip .bool_set:N = \l_@@_nozip_bool,
  nolocation .bool_set:N = \l_@@_noloc_bool,
}

\NewDocumentCommand{\InstitutionsList}{O{} m O{}}
{
  \group_begin:
    \@@_list_options:n {#1}
    \tl_put_left:Nn \l_@@_list_options_tl {#3,}
```

```
11383      \exp_args:NVnV \@@_institutions_list:nnn
11384        \l_@@_list_database_tl {#2} \l_@@_list_options_tl
11385    \group_end:
11386  }
11387
11388  \cs_new_protected:Npn \@@_institutions_list:nnn #1#2#3
11389  {
11390   \bool_if:NTF \l_@@_class_fastcompile_project_bool
11391   { \dfgFastReference{#2} }
11392   {
11393   \DTLifdbexists{#1}{
11394    % Parse key names rather than comparing tokens: options forwarded by
11395    % keys_set_known may have string catcodes. Boolean values also allow a
11396    % leading setting to override an older trailing flag.
11397    \bool_set_false:N \l_@@_institution_abbreviation_bool
11398    \bool_set_false:N \l_@@_narrow_bool
11399    \bool_set_false:N \l_@@_noaddr_bool
11400    \bool_set_false:N \l_@@_nozip_bool
11401    \bool_set_false:N \l_@@_noloc_bool
11402    \keys_set:nn { @@ / institution-list } {#3}
11403    \bool_if:NTF \l_@@_narrow_bool
11404    {
11405      \tl_set:Nn \l_@@_sep_tl {,~}
11406      \tl_set:Nn \l_@@_inst_sep_tl {;~}
11407    }
11408    {
11409      \tl_set:Nn \l_@@_sep_tl {\newline}
11410      \tl_set:Nn \l_@@_inst_sep_tl {\par\medskip}
11411    }
11412    \datatool_if_has_key:nnTF {affiliation}{country}
11413    { \bool_set_true:N \l_@@_has_country_bool }
11414    { \bool_set_false:N \l_@@_has_country_bool }
11415
11416    % --- get list of institution ids for this person --------------------
11417    \@@_getvalueforkey:Nnnnn{\theInstitutionListValue}{ref-institution-id}{#1}{id}{#2}
11418    \seq_set_from_clist:NV \l_@@_inst_ids_seq \theInstitutionListValue
11419
11420    % --- iterate -------------------------------------------------------
11421    \bool_set_true:N \l_tmpa_bool
11422    \seq_map_inline:Nn \l_@@_inst_ids_seq
11423    {
11424     \bool_if:NTF \l_tmpa_bool
11425     { \bool_set_false:N \l_tmpa_bool }
11426     { \tl_use:N \l_@@_inst_sep_tl }
11427     \_@@_one_institution:n {##1}
11428    }
11429  }
11430     {
11431       Database~ \texttt{#1}~ missing.
11432       \msg_warning:nne { dfg } { database-not-found }{ #1 }
11433     }
11434   }
11435  }
11436
11437  % Compatibility spelling for older proposal sources.
11438  \cs_new_eq:NN \dfgInstitutionList \InstitutionsList
11439
11440  \cs_new_protected:Npn \_@@_one_institution:n #1
11441  {
11442   \DTLifdbexists{institution}{ \@@_getvalueforkey:Nnnnn{\theAffiliationIDValue}{ref-
     affiliation-id}{institution}{id}{#1}
11443
11444    \bool_if:NTF \l_@@_institution_abbreviation_bool
11445    {
11446      \@@_institution_abbreviation_or_name:nN
11447        {#1} \l_tmpa_tl
11448      \cs_set:Npx \theInstitutionNameValue { \exp_not:V \l_tmpa_tl }
11449    }
11450    { \@@_getvalueforkey:Nnnnn{\theInstitutionNameValue}{name}{institution}{id}{#1} }
11451    \DTLifnullorempty{\theInstitutionNameValue}{}
11452    {
11453      \dfgShowTag{#1}{\l_@@_institution_label_field_tl}
11454        {\theInstitutionNameValue}[institution]
11455     \tl_use:N \l_@@_sep_tl
```

```
11456    }
11457
11458    \@@_getvalueforkey:Nnnnn{\theAffiliationNameValue}{name}{affiliation}{id}{\theAffiliationIDValue}
11459    \dfgShowTag{\theAffiliationIDValue}{name}
11460      {\theAffiliationNameValue}[affiliation]
11461
11462    \bool_if:NF \l_@@_noaddr_bool
11463    {
11464     \tl_use:N \l_@@_sep_tl
11465      \@@_getvalueforkey:Nnnnn{\theAffiliationStreetValue}{addressStreet}{affiliation}{id}{\theAffiliationI
11466      \dfgShowTag{\theAffiliationIDValue}{addressStreet}
11467        {\theAffiliationStreetValue}[affiliation]
11468    }
11469
11470    \bool_if:NF \l_@@_nozip_bool
11471    {
11472     ,~
11473      \@@_getvalueforkey:Nnnnn{\theAffiliationZIPValue}{addressZIP}{affiliation}{id}{\theAffiliationIDValue
11474      \dfgShowTag{\theAffiliationIDValue}{addressZIP}
11475        {\theAffiliationZIPValue}[affiliation]
11476     \bool_if:NF \l_@@_noloc_bool { ~ }
11477    }
11478
11479    \bool_if:NF \l_@@_noloc_bool
11480    {
11481     \bool_if:NT \l_@@_nozip_bool { ,~ }
11482      \@@_getvalueforkey:Nnnnn{\theAffiliationLocationValue}{location}{affiliation}{id}{\theAffiliationIDVa
11483      \dfgShowTag{\theAffiliationIDValue}{location}
11484        {\theAffiliationLocationValue}[affiliation]
11485     \bool_if:NT \l_@@_has_country_bool
11486     {
11487        \@@_getvalueforkey:Nnnnn{\theAffiliationCountryValue}{country}{affiliation}{id}{\theAffiliationIDVa
11488      \DTLifnulloremptyf{\theAffiliationCountryValue}{}
11489        { ~(\dfgShowTag{\theAffiliationIDValue}{country}
11490            {\theAffiliationCountryValue}[affiliation]) }
11491     }
11492    }
11493  }
11494     {
11495       Database~ \texttt{institution}~ missing.
11496       \msg_warning:nne { dfg } { database-not-found }{ institution }
11497     }
11498  }
```

get all the PIs who have a certain role in the crc this can be e.g. 'spokesperson', 'steering-committee-member'. The leading options include database (person by default) and raster settings. Trailing raster options remain supported for older documents.

```
11499  \keys_define:nn { @@ / pi-role-list }
11500  {
11501    academicdegree-below .bool_set:N = \l_@@_pi_academicdegree_below_bool,
11502  }
11503
11504  \NewDocumentCommand{\getPIsWithRole}{O{} m O{}}
11505  {
11506    \group_begin:
11507      \bool_set_false:N \l_@@_pi_academicdegree_below_bool
11508      \@@_list_options:n {#1}
11509      \tl_put_left:Nn \l_@@_list_options_tl {#3,}
11510      \exp_args:NnV \keys_set_known:nnN { @@ / pi-role-list }
11511        \l_@@_list_options_tl \l_@@_list_options_tl
11512      \exp_args:NVnV \@@_get_pis_with_role:nnn
11513        \l_@@_list_database_tl {#2} \l_@@_list_options_tl
11514    \group_end:
11515  }
11516
11517  \cs_new_protected:Npn \@@_get_pis_with_role:nnn #1#2#3
11518  {%
11519    \bool_if:NTF \l_@@_class_fastcompile_bool
11520    { \dfgItemSkipped{dfgPIsWithRole:~#2} }
11521    {%
11522      \DTLifdbexists{#1}
11523      {
11524        \def\tmpLocalDB{#1}%
```

```
      \DTLsort*{lastname}{#1}%
      \begin{tcbraster}[
          raster~ valign=top,
          raster~ columns=3,
          raster~ equal~ height=rows,
          raster~ column~ skip=12pt,
          raster~ row~ skip=20pt,
          raster~ after~ skip=20pt,
          PIbox,
          #3
        ]
        \DTLforeach*[
          \DTLisinlist{\theFundingPeriodNumeral}{\period}
          \and
          \DTLisinlist{#2}{\role}
        ]{#1}{
          \id     = id,
          \role   = role,
          \period = period
        }{%
          \__getperson_one:n {\id}%
        }%
      \end{tcbraster}
    }
    {
      Database~ \texttt{#1}~ missing.
      \msg_warning:nne { dfg } { database-not-found }{ #1 }
    }
  }
}
```

In the text you can reference to a PI with the following command. The name is highlighted and referenced.

```
\cs_new_protected:Npn \@@_pi_reference_seq_use:N #1
{
  \bool_if:NTF \g_@@_tblr_inside_bool
    { \seq_use:Nn #1 {\addnbthinspace/\addthinspace} }
    { \seq_use:Nnnn #1 {~and~} {,~} {,~and~} }
}

\NewDocumentCommand{\getPI}{s m o} {
  % #1: starred version -> firstname
  % #2: id of PI / person
  % #3: optional text, but reference linked to PI
  \bool_if:NTF \l_@@_class_fastcompile_project_bool
  { \IfNoValueTF{#3}{\dfgFastReference{#2}}{#3} }
  {
  \seq_clear:N \l_tmpa_seq
  \seq_set_from_clist:Nn \l_tmpa_seq {#2}%
  \seq_set_map:NNn \l_tmpb_seq \l_tmpa_seq {
   \exp_not:n {
    \group_begin:
      \@@_getvalueforkey:Nnnnn{\thePersonName}{lastname}{person}{id}{##1}
      \@@_getvalueforkey:Nnnnn{\thePersonFirstName}{firstname}{person}{id}{##1}
    \datatool_if_null:NTF {\thePersonName}
    { \getEntry[person]{##1}{lastname} %<- just to get the error message
     \textcolor{error}{\texttt{<##1>}}
    }
    {
          \tl_if_eq:NnF \l_@@_custom_referencePI_tl {current}
            { \color{referencePI} }
          \bfseries
     \IfNoValueTF{#3}%

               {\hyperlink{pi:##1}{\@@_pi_reference_name:nn {#1}{##1}}}
     {\hyperlink{pi:##1}{#3}}
    \group_end:
   }}
  \@@_pi_reference_seq_use:N \l_tmpb_seq
  }
}
```

Unstarred PI references disambiguate shared surnames across all PI records with the first given-

name initial, for example K. Schneider and C. Schneider. If that initial is shared as well, use the full given name. Starred references and explicit display text retain their existing behavior, as do unique names. Project-first references inherit this formatting through `\getPI`. Reuse surname and initial indexes while the raw metadata is unchanged. Macro-valued names and roles retain the original scan so redefinitions are reflected immediately; formatting and hyperlinks are never cached. The snapshot covers the raw person database and its header definitions, so additions, direct edits, sorting, and scoped changes rebuild both frequency lists. PI and Co-PI roles are included. The reference formatter still chooses the surname, initial, or full given name separately for each output context.

```
\tl_new:N \l_@@_pi_lastname_tl
\tl_new:N \l_@@_pi_firstname_tl
\tl_new:N \l_@@_pi_initial_tl
\tl_new:N \l_@@_pi_candidate_lastname_tl
\tl_new:N \l_@@_pi_candidate_firstname_tl
\tl_new:N \l_@@_pi_candidate_initial_tl
\clist_new:N \l_@@_pi_candidate_roles_clist
\bool_new:N \l_@@_pi_candidate_is_pi_bool
\int_new:N \l_@@_pi_same_lastname_int
\int_new:N \l_@@_pi_same_initial_int

% Count matching PI surnames and first initials across the current metadata.
\prop_new:N \g_@@_pi_lastname_counts_prop
\prop_new:N \g_@@_pi_initial_counts_prop
\tl_new:N \g_@@_pi_index_snapshot_tl
\tl_new:N \l_@@_pi_index_snapshot_tl
\tl_new:N \l_@@_pi_index_key_tl
\tl_new:N \l_@@_pi_index_value_tl
\tl_new:N \l_@@_pi_index_source_tl
\bool_new:N \g_@@_pi_index_literal_bool

\cs_new_protected:Npn \@@_pi_index_increment:NN #1#2
{
  \prop_get:NVNTF #1 #2 \l_@@_pi_index_value_tl
    { \prop_gput:NVx #1 #2 { \int_eval:n {\l_@@_pi_index_value_tl + 1} } }
    { \prop_gput:NVn #1 #2 {1} }
}

\cs_new_protected:Npn \@@_pi_index_check_literal:N #1
{
  \DTLifnulloremptyf{#1}{}
  {
    \tl_set:No \l_@@_pi_index_source_tl {#1}
    \tl_set:Ne \l_@@_pi_index_source_tl
      { \tl_to_str:V \l_@@_pi_index_source_tl }
    \exp_args:NnV \regex_match:nnT {\\} \l_@@_pi_index_source_tl
      { \bool_gset_false:N \g_@@_pi_index_literal_bool }
  }
}

\cs_new_protected:Npn \@@_pi_index_build:
{
  \prop_gclear:N \g_@@_pi_lastname_counts_prop
  \prop_gclear:N \g_@@_pi_initial_counts_prop
  \bool_gset_true:N \g_@@_pi_index_literal_bool
  \DTLforeach*{person}
  {
    \dfgDisambiguationName=lastname,
    \dfgDisambiguationFirstname=firstname,
    \dfgDisambiguationRoles=role
  }
  {
    % Macro-valued names/roles may change without a database edit. Keep the
    % original scan for those datasets; literal names can use the index.
    \@@_pi_index_check_literal:N \dfgDisambiguationName
    \@@_pi_index_check_literal:N \dfgDisambiguationFirstname
    \@@_pi_index_check_literal:N \dfgDisambiguationRoles
    \clist_set:Nx \l_@@_pi_candidate_roles_clist {\dfgDisambiguationRoles}
    \bool_set_false:N \l_@@_pi_candidate_is_pi_bool
    \clist_if_in:NnT \l_@@_pi_candidate_roles_clist {PI}
      {\bool_set_true:N \l_@@_pi_candidate_is_pi_bool}
```

```
    \clist_if_in:NnT \l_@@_pi_candidate_roles_clist {Co-PI}
      {\bool_set_true:N \l_@@_pi_candidate_is_pi_bool}
    \bool_if:NT \l_@@_pi_candidate_is_pi_bool
    {
      \tl_set:Nx \l_@@_pi_candidate_lastname_tl {\dfgDisambiguationName}
      \tl_set:Nx \l_@@_pi_candidate_firstname_tl {\dfgDisambiguationFirstname}
      \tl_trim_spaces:N \l_@@_pi_candidate_firstname_tl
      \tl_set:Nx \l_@@_pi_candidate_initial_tl
        {\tl_head:V \l_@@_pi_candidate_firstname_tl}
      \@@_pi_index_increment:NN \g_@@_pi_lastname_counts_prop
        \l_@@_pi_candidate_lastname_tl
      \tl_set:Ne \l_@@_pi_index_key_tl
      {
        {\exp_not:V \l_@@_pi_candidate_lastname_tl}
        {\exp_not:V \l_@@_pi_candidate_initial_tl}
      }
      \@@_pi_index_increment:NN \g_@@_pi_initial_counts_prop
        \l_@@_pi_index_key_tl
    }
  }
}

\cs_new_protected:Npn \@@_pi_count_name_matches:
{
  \@@_database_snapshot:nN {person} \l_@@_pi_index_snapshot_tl
  \tl_if_eq:NNF \l_@@_pi_index_snapshot_tl \g_@@_pi_index_snapshot_tl
  {
    \@@_pi_index_build:
    \tl_gset_eq:NN \g_@@_pi_index_snapshot_tl \l_@@_pi_index_snapshot_tl
  }
  \bool_if:NTF \g_@@_pi_index_literal_bool
  {
    \int_zero:N \l_@@_pi_same_lastname_int
    \int_zero:N \l_@@_pi_same_initial_int
    \prop_get:NVNT \g_@@_pi_lastname_counts_prop \l_@@_pi_lastname_tl
      \l_@@_pi_index_value_tl
      { \int_set:Nn \l_@@_pi_same_lastname_int {\l_@@_pi_index_value_tl} }
    \tl_set:Ne \l_@@_pi_index_key_tl
    {
      {\exp_not:V \l_@@_pi_lastname_tl}
      {\exp_not:V \l_@@_pi_initial_tl}
    }
    \prop_get:NVNT \g_@@_pi_initial_counts_prop \l_@@_pi_index_key_tl
      \l_@@_pi_index_value_tl
      { \int_set:Nn \l_@@_pi_same_initial_int {\l_@@_pi_index_value_tl} }
  }
  { \@@_pi_count_name_matches_uncached: }
}

\cs_new_protected:Npn \@@_pi_count_name_matches_uncached:
  {
    \int_zero:N \l_@@_pi_same_lastname_int
    \int_zero:N \l_@@_pi_same_initial_int
    \DTLforeach*{person}
      {
        \dfgDisambiguationName=lastname,
        \dfgDisambiguationFirstname=firstname,
        \dfgDisambiguationRoles=role
      }
      {
        \clist_set:Nx \l_@@_pi_candidate_roles_clist {\dfgDisambiguationRoles}
        \bool_set_false:N \l_@@_pi_candidate_is_pi_bool
        \clist_if_in:NnT \l_@@_pi_candidate_roles_clist {PI}
          {\bool_set_true:N \l_@@_pi_candidate_is_pi_bool}
        \clist_if_in:NnT \l_@@_pi_candidate_roles_clist {Co-PI}
          {\bool_set_true:N \l_@@_pi_candidate_is_pi_bool}
        \bool_if:NT \l_@@_pi_candidate_is_pi_bool
          {
            \tl_set:Nx \l_@@_pi_candidate_lastname_tl {\dfgDisambiguationName}
            \tl_if_eq:NNT \l_@@_pi_lastname_tl \l_@@_pi_candidate_lastname_tl
              {
                \int_incr:N \l_@@_pi_same_lastname_int
                \tl_set:Nx \l_@@_pi_candidate_firstname_tl {\dfgDisambiguationFirstname}
                \tl_trim_spaces:N \l_@@_pi_candidate_firstname_tl
```

```
                \tl_set:Nx \l_@@_pi_candidate_initial_tl
                  {\tl_head:V \l_@@_pi_candidate_firstname_tl}
                \tl_if_eq:NNT \l_@@_pi_initial_tl \l_@@_pi_candidate_initial_tl
                  {\int_incr:N \l_@@_pi_same_initial_int}
              }
          }
      }
  }

% Render the name inside the PI hyperlink. #1 is the star, #2 the person ID.
% The caller has already fetched and validated the name fields.
\cs_new_protected:Npn \@@_pi_reference_name:nn #1#2
  {
    \group_begin:
    \IfBooleanTF{#1}
      {\dfgShowTag{#2}{firstname}{\thePersonFirstName}[person]\space}
      {
        \tl_set:Nx \l_@@_pi_lastname_tl {\thePersonName}
        \tl_set:Nx \l_@@_pi_firstname_tl {\thePersonFirstName}
        \tl_trim_spaces:N \l_@@_pi_firstname_tl
        \tl_set:Nx \l_@@_pi_initial_tl {\tl_head:V \l_@@_pi_firstname_tl}
        \@@_pi_count_name_matches:
        \int_compare:nNnTF {\l_@@_pi_same_lastname_int} > {1}
          {
            \int_compare:nNnTF {\l_@@_pi_same_initial_int} > {1}
              {\dfgShowTag{#2}{firstname}{\thePersonFirstName}[person]}
              {\tl_use:N \l_@@_pi_initial_tl.}
            \nobreakspace
          }
          {
            \bool_if:NT \l_@@_custom_pi_reference_firstname_bool
              {\dfgShowTag{#2}{firstname}{\thePersonFirstName}[person]\space}
          }
      }
    \dfgShowTag{#2}{lastname}{\thePersonName}[person]
    \group_end:
  }
```

Very similarly, we want to get a list of the projects.

```
\NewDocumentCommand \getProjectColor { m }
{
  \exp_args:Nx \color { project \tl_head:n { #1 } }
}
\tl_new:N \l_@@_project_reference_only_tl

\prg_new_protected_conditional:Npnn \@@_project_if_reference_only:n #1
  { T,F,TF }
{
  \@@_getvalueforkey:Nnnnn{\l_@@_project_reference_only_tl}
    {reference-only}{project}{id}{#1}
  \str_if_eq:VnTF \l_@@_project_reference_only_tl { true }
    { \prg_return_true: }
    { \prg_return_false: }
}

\cs_new_protected:Npn \@@_project_reference_only_indicator:
{
  \bool_if:NTF \l_@@_former_project_compact_bool
  {
    \bool_gset_true:N \g_@@_former_project_seen_bool
    {\normalfont\normalcolor\textsuperscript{*}}
  }
  {
    \nobreakspace
    {\normalfont\normalcolor(former~project)}
  }
}

% Project references read naturally in prose but need a compact delimiter in
% narrow table cells.  Keep the two container variants centralized so
% \cs{getProject}, \cs{getProjectPI}, and focused-project fallbacks cannot
% diverge.
\bool_new:N \l_@@_project_newline_separator_bool
\bool_new:N \l_@@_project_custom_text_bool
```

```
\cs_new_protected:Npn \@@_project_reference_seq_use:N #1
{
  \bool_if:NTF \l_@@_project_newline_separator_bool
    { \seq_use:Nn #1 {\\} }
    {
      \bool_if:NTF \g_@@_tblr_inside_bool
        { \seq_use:Nn #1 {\addnbthinspace/\addthinspace} }
        { \seq_use:Nnnn #1 {~and~} {,~} {,~and~} }
    }
}

\cs_new_protected:Npn \@@_project_reference_clist_use:N #1
{
  \bool_if:NTF \g_@@_tblr_inside_bool
    { \clist_use:Nn #1 {\addnbthinspace/\addthinspace} }
    { \clist_use:Nnnn #1 {~and~} {,~} {,~and~} }
}

\cs_new_protected:Npn \@@_get_project_compact:nn #1#2 {
  % #1: id of project
  % #2: optional text, or \newline/\\ for a stacked project list
  \bool_set_false:N \l_@@_project_newline_separator_bool
  \bool_set_false:N \l_@@_project_custom_text_bool
  \IfNoValueF{#2}
    {
      \bool_set_true:N \l_@@_project_custom_text_bool
      \tl_if_eq:nnT {#2} {\newline}
        { \bool_set_false:N \l_@@_project_custom_text_bool
          \bool_set_true:N \l_@@_project_newline_separator_bool }
      \tl_if_eq:nnT {#2} {\\}
        { \bool_set_false:N \l_@@_project_custom_text_bool
          \bool_set_true:N \l_@@_project_newline_separator_bool }
    }
  \bool_if:NTF \l_@@_class_fastcompile_project_bool
  {
    \seq_set_from_clist:Nn \l_tmpa_seq {#1}
    \seq_set_map:NNn \l_tmpb_seq \l_tmpa_seq
    {
      \exp_not:n
      {
        \bool_if:NTF \l_@@_project_custom_text_bool
          {#2}
          {
            \dfgShowTag {##1}{number}
              {\@@_fast_project_reference:n {##1}}[project]
          }
      }
    }
    \@@_project_reference_seq_use:N \l_tmpb_seq
  }
  {
  \seq_clear:N \l_tmpa_seq
  \seq_set_from_clist:Nn \l_tmpa_seq {#1}%
  \seq_set_map:NNn \l_tmpb_seq \l_tmpa_seq {
   \exp_not:n {
    \group_begin:
      \@@_getvalueforkey:Nnnnn{\theProjectNumber}{number}{project}{id}{##1}
    \datatool_if_null:NTF {\theProjectNumber}
    { \getEntry[project]{##1}{number} %<- just to get the error message
     \textcolor{error}{\texttt{<##1>}}
    }{
     \bfseries%
     \getProjectColor{##1}%
        \@@_project_if_reference_only:nTF {##1}
        {
          \bool_if:NTF \l_@@_project_custom_text_bool
            {#2}
            {\dfgShowTag{##1}{number}{\theProjectNumber}[project]}%
          \@@_project_reference_only_indicator:
        }
        {
          \bool_if:NTF \l_@@_project_custom_text_bool
          {
            \bool_if:NTF \l_@@_class_cv_bool
```

```
                { #2 }
                { \hyperlink{project:##1}{#2} }
            }
            {
              \bool_if:NTF \l_@@_class_cv_bool
                { \dfgShowTag{##1}{number}{\theProjectNumber}[project] }
                { \hyperlink{project:##1}
                    {\dfgShowTag{##1}{number}{\theProjectNumber}[project]} }
            }
          }
      }
      \group_end:
     }}%
    \@@_project_reference_seq_use:N \l_tmpb_seq
    }
}

\NewDocumentCommand{\getProject}{s m o}
{
  \IfBooleanTF{#1}
    { \@@_get_project_compact:nn {#2} {#3} }
    {
      \bool_if:NTF \l_@@_custom_project_pi_once_per_section_bool
        { \@@_get_project_with_people:nnn {\BooleanFalse} {#2} {#3} }
        { \@@_get_project_compact:nn {#2} {#3} }
    }
}

\int_new:N \g_@@_project_count_all_int
\prop_new:N \g_@@_project_count_area_prop
\tl_new:N  \l_@@_project_count_id_tl
\tl_new:N  \l_@@_project_count_area_tl
\tl_new:N  \l_@@_project_count_status_tl
\tl_new:N  \l_@@_project_count_consider_for_lists_tl
\tl_new:N  \l_@@_project_count_reference_only_tl

\cs_new_protected:Npn \@@_project_count_increment:n #1
{
  \int_gincr:N \g_@@_project_count_all_int
  \tl_set:Nx \l_tmpa_tl { \tl_upper_case:n {#1} }
  \prop_get:NVNTF \g_@@_project_count_area_prop
    \l_tmpa_tl \l_tmpb_tl
    {
      \prop_gput:NVx \g_@@_project_count_area_prop \l_tmpa_tl
        { \int_eval:n { \l_tmpb_tl + 1 } }
    }
    { \prop_gput:NVn \g_@@_project_count_area_prop \l_tmpa_tl { 1 } }
}

\cs_new_protected:Npn \@@_project_count_build:
{
  \int_gzero:N \g_@@_project_count_all_int
  \prop_gclear:N \g_@@_project_count_area_prop
  \DTLifdbexists{project}
  {
    \DTLifhaskey { project } { project-area }
      { }
      { \DTLaddcolumn { project } { project-area } }
    \DTLforeach*{project}
    {
      \l_@@_project_count_id_tl                = id,
      \l_@@_project_count_area_tl              = project-area,
      \l_@@_project_count_status_tl            = project-status,
      \l_@@_project_count_consider_for_lists_tl = consider-for-lists,
      \l_@@_project_count_reference_only_tl     = reference-only
    }
    {
      \bool_lazy_all:nT
      {
        { \str_if_eq_p:Vn \l_@@_project_count_consider_for_lists_tl { true } }
        { \str_if_eq_p:Vn \l_@@_project_count_reference_only_tl { false } }
        {
          \bool_lazy_or_p:nn
            { \str_if_eq_p:Vn \l_@@_project_count_status_tl { C } }
```

```
11948               { \str_if_eq_p:Vn \l_@@_project_count_status_tl { N } }
11949           }
11950         }
11951         {
11952           \DTLifnullorempty{\l_@@_project_count_area_tl}
11953             {
11954               \tl_set:Nx \l_@@_project_count_area_tl
11955                 { \tl_head:V \l_@@_project_count_id_tl }
11956             }
11957             { }
11958           \tl_trim_spaces:N \l_@@_project_count_area_tl
11959           \exp_args:NV \@@_project_count_increment:n
11960             \l_@@_project_count_area_tl
11961         }
11962       }
11963     }
11964     { \msg_warning:nnn { dfg } { database-not-found } { project } }
11965     \bool_gset_true:N \g_@@_project_count_ready_bool
11966   }
11967
11968   \NewDocumentCommand{\getProjectCount}{o}
11969   {
11970     \bool_if:NF \g_@@_project_count_ready_bool
11971       { \@@_project_count_build: }
11972     \dfgShowCalculatedTag{getProjectCount}{project}
11973     {
11974       \IfNoValueTF{#1}
11975         { \int_use:N \g_@@_project_count_all_int }
11976         {
11977           \tl_set:Nx \l_tmpa_tl { \tl_upper_case:n {#1} }
11978           \prop_get:NVNTF \g_@@_project_count_area_prop
11979             \l_tmpa_tl \l_tmpb_tl
11980             { \tl_use:N \l_tmpb_tl }
11981           {
11982             \msg_warning:nnn { dfg } { invalid-project-count-area } {#1}
11983             0
11984           }
11985         }
11986     }
11987   }
11988   \clist_new:N \l_@@_person_project_clist
11989   \clist_new:N \l_@@_project_id_clist
11990   \clist_new:N \l_@@_project_number_clist
11991   \bool_new:N \l_@@_suppress_deprecated_project_pi_warning_bool
11992   % Global flags keep repeated calls and table measurement groups quiet.
11993   \bool_new:N \g_@@_warned_get_pi_project_bool
11994   \bool_new:N \g_@@_warned_get_project_pi_bool
11995   \seq_new:N \l_@@_project_pi_with_project_seq
11996   \msg_new:nnn {dfg} {deprecated-get-pi-project}
11997     {Command~\token_to_str:N \getPIProject \c_space_tl is~deprecated;~use~\token_to_str:N \getPIWithProject
11998   \msg_new:nnn {dfg} {deprecated-get-project-pi}
11999     {Command~\token_to_str:N \getProjectPI \c_space_tl is~deprecated;~use~\token_to_str:N \getProjectWithPI
12000
12001   \NewDocumentCommand{\getPIProject}{s m}{
12002     \bool_if:NF \l_@@_suppress_deprecated_project_pi_warning_bool
12003       {
12004         \bool_if:NF \g_@@_warned_get_pi_project_bool
12005           {
12006             \bool_gset_true:N \g_@@_warned_get_pi_project_bool
12007             \msg_warning:nn {dfg}{deprecated-get-pi-project}
12008           }
12009       }
12010     \bool_if:NTF \l_@@_class_fastcompile_project_bool
12011     { \dfgFastReference{#2} }
12012     {
12013     %
12014     %  • Argument #1  (optional *-star)
12015     %      - if present, the PI's *first name* is printed before the last name;
12016     %        if the star is omitted only the last name is printed.
12017     %
12018     %  • Argument #2  (mandatory)
12019     %      - a comma-separated list of *person-IDs* (the field "id" in your
12020     %        "person" datatool table).
12021     %        Example:  `\getPIProject*{per1,per2}`.
```

```
12022   %
12023   %  What the macro does (high-level description)
12024   %  ------------------------------------------------------------
12025   %  1. Turns the comma list #2 into a clist:   \l_@@_person_id_clist
12026   %  2. For **each** person-ID in that clist it builds an
12027   %     "author block" consisting of
12028   %        • a coloured, bold hyperlink to the PI's entry, and
12029   %        • the list of projects (formatted by \getProject*) that are
12030   %          attached to that PI.
12031   %  3. All author blocks are collected in a second clist
12032   %     \l_@@_person_project_clist.
12033   %  4. Finally the blocks are printed in an *Oxford-comma* style
12034   %     using \clist_use:Nnnn.
12035   %
12036   %  Internal containers (all declared elsewhere with \clist_new:N)
12037   %  ------------------------------------------------------------
12038   %    \l_@@_person_id_clist          - list of the IDs passed in #2
12039   %    \l_@@_person_project_clist     - the final list of "author blocks"
12040   %    \l_@@_project_id_clist         - temporary clist that stores the raw
12041   %                                     CSV string returned by the DB field
12042   %                                     `ref-project-id` for the current PI.
12043   %    \l_@@_project_number_clist      - coloured project numbers for the
12044   %                                     current PI (built by the inner loop).
12045   %    \l_@@_project_id_clist (re-used) - holds the CSV string before it is
12046   %                                     split into \l_@@_project_id_clist.
12047   %    \l_tmpa_clist                  - loop variable used by
12048   %                                     \clist_map_variable:NNn (holds a *single*
12049   %                                     project-ID during the inner loop).
12050   %
12051   %---------------------------------------------------------------------
12052   %  Detailed walk-through of the code
12053   %---------------------------------------------------------------------
12054   %-------------------------------------------------------------
12055   %   0.  Initialise the containers
12056   %-------------------------------------------------------------
12057   % #2 is a comma-separated list of person IDs → turn it into a clist
12058   \clist_set:Nn \l_@@_person_id_clist {#2}
12059   % containers that will be filled later
12060   \clist_clear:N \l_@@_person_project_clist
12061   \clist_clear:N \l_@@_project_id_clist   % (used as a *scratch* clist)
12062
12063   %-------------------------------------------------------------
12064   %   1.  Outer loop - one iteration per PI
12065   %-------------------------------------------------------------
12066   \clist_map_inline:Nn \l_@@_person_id_clist
12067   {               % ##1 = the current person ID
12068    %-----------------------------------------------------------
12069    %   a)  Build the *author name* (hyperlinked, coloured,
12070    %       bold).  We wrap everything in \exp_not:n so that the
12071    %       whole fragment is **not expanded now** - it will be
12072    %       expanded later when the final clist is printed.
12073    %-----------------------------------------------------------
12074    \clist_put_right:Nn \l_@@_person_project_clist {
12075     \clist_clear:N   \l_@@_project_number_clist
12076     \IfBooleanTF{#1}
12077     {\getPI*{##1}}
12078     {\getPI{##1}}
12079     %-----------------------------------------------------------
12080     %   b)  Pull the raw CSV string that contains *all* project
12081     %       IDs belonging to this PI.
12082     %-----------------------------------------------------------
12083       \@@_getvalueforkey:Nnnnn{\l_@@_project_id_clist}
12084     {ref-project-id}
12085     {person}{id}{##1}
12086
12087     %-----------------------------------------------------------
12088     %   c)  Print the project list inside parentheses.
12089     %       The raw CSV string is *still* a token list; we turn it
12090     %       into a clist by using the special "variable" version of
12091     %       \clist_map_… which gives us a temporary clist variable
12092     %       (\l_tmpa_clist) that holds *one* project ID at a time.
12093     %-----------------------------------------------------------
12094     \space(
12095     \clist_map_variable:NNn \l_@@_project_id_clist \l_tmpa_clist {
```

```
      % ##1 (here called \l_tmpa_clist) is a single project ID.
         % Keep project references compact: the PI name is already printed.
      \clist_put_right:Ne \l_@@_project_number_clist {
           \getProject*{\l_tmpa_clist}
      }
     }
     % finally print the list of coloured project numbers, separated
     % by a thin space + comma
     \clist_use:Nn \l_@@_project_number_clist  {\addnbthinspace/\addthinspace}
     )
    }   % end of \clist_put_right:Nn  (one author block)
   } % end of outer \clist_map_inline:Nn

   %-----------------------------------------------------------------
   %   2.  Typeset the collected author blocks.
   %       \clist_use:Nnnn joins the items with
   %          "~and~"   for the *last* separator,
   %          ",~"      for the *middle* separators,
   %          ",~and~"  for the *penultimate* separator
   %-----------------------------------------------------------------
   \clist_use:Nnnn \l_@@_person_project_clist {~and~} {,~} {,~and~}%
   }
}

\clist_new:N \l_@@_person_clist

% Track which projects have already had their PI names expanded by either
% \cs{getProject} or \cs{getProjectPI} in the current section. Chapter
% boundaries also clear the state so references before the first section of a
% new chapter cannot inherit the preceding section's state.
\prop_new:N \g_@@_project_pi_seen_prop
\cs_new_protected:Npn \@@_project_pi_seen_clear:
  { \prop_gclear:N \g_@@_project_pi_seen_prop }
\AddToHook{cmd/chapter/before}[dfg/project-pi-once-per-section]
  { \@@_project_pi_seen_clear: }
\AddToHook{cmd/section/before}[dfg/project-pi-once-per-section]
  { \@@_project_pi_seen_clear: }

% PI details are never appended to reference-only projects, the project
% currently being typeset, or references inside generated tables and lists.
% Otherwise the customization setting selects either the former always-expanded
% \cs{getProjectPI} behaviour or one shared expansion per project and section.
\prg_new_protected_conditional:Npnn \@@_project_pi_if_show_people:n #1
  { T,F,TF }
{
  \@@_project_if_reference_only:nTF {#1}
    { \prg_return_false: }
    {
      \tl_if_eq:VnTF \l__tmp_current_project_tl {#1}
        { \prg_return_false: }
        {
          \bool_if:nTF
            {
              \g_@@_tblr_inside_bool
              || \l_@@_former_project_compact_bool
            }
            { \prg_return_false: }
            {
              \bool_if:NTF \l_@@_custom_project_pi_once_per_section_bool
              {
                \prop_if_in:NnTF \g_@@_project_pi_seen_prop {#1}
                  { \prg_return_false: }
                  {
                    \prop_gput:Nnn \g_@@_project_pi_seen_prop {#1} { }
                    \prg_return_true:
                  }
              }
              { \prg_return_true: }
            }
        }
    }
}

\cs_new_protected:Npn \@@_get_project_with_people:nnn #1#2#3
```

```
{
  \bool_if:NTF \l_@@_class_fastcompile_project_bool
  { \@@_get_project_compact:nn {#2} {#3} }
  {
  \group_begin:
  % Project-first references use lastnames by default regardless of the
  % global PIReferenceFirstName setting. The explicit star still selects full
  % names through the starred \getPI call below.
  \bool_set_false:N \l_@@_custom_pi_reference_firstname_bool
  %-------------------------------------------------------------
  % 0.  Initialise the containers we are going to use.
  %-------------------------------------------------------------
  %   #2 is a comma-separated list of *project* IDs → turn it into a clist.
  \clist_set:Nn \l_@@_project_id_clist {#2}
  %   These three clists will be filled during the loops.
  \clist_clear:N \l_@@_person_project_clist   % final result: "project → PI list"
  \clist_clear:N \l_@@_person_id_clist        % temporary list of PIs for one project
  \clist_clear:N \l_@@_person_clist           % temporary list of formatted PI names

  %-------------------------------------------------------------
  % 1.  Outer loop - one iteration per *project* ID.
  %-------------------------------------------------------------
  \clist_map_inline:Nn \l_@@_project_id_clist
  {
   % ##1 = the current project ID
   %-----------------------------------------------------------
   %   a)  Put the *project number* (coloured) at the beginning
   %       of the block that will be stored in
   %       \l_@@_person_project_clist.
   %-----------------------------------------------------------
   \clist_put_right:Nn \l_@@_person_project_clist
   {%
    % Reset the per-project temporaries before we start filling them.
    \clist_clear:N \l_@@_person_clist
    \clist_clear:N \l_@@_person_id_clist

  % The coloured project number (e.g. "\color{blue}{12}")
  \@@_get_project_compact:nn {##1} {#3}

  % Reference-only projects and the current project remain compact. For
  % other projects, the customization setting determines whether PI names
  % are always shown or only on the first reference in this section.
    \@@_project_pi_if_show_people:nT {##1}
    {
  %-----------------------------------------------------------
  %   b)  Retrieve the *raw* CSV string that contains all
    %       person IDs attached to this project.
    %-----------------------------------------------------------
      \@@_getvalueforkey:Nnnnn
    {\l_@@_person_id_clist}      % ← will receive something like "per1,per3"
    {ref-person-id}              % field name in the "project" table
    {project}{id}{##1}           % look it up for the current project

    %-----------------------------------------------------------
    %   c)  Build the *list of PI names* for this project.
    %       We use the "variable" version of \clist_map which
    %       gives us a temporary clist variable (\l_tmpa_clist)
    %       that holds a *single* person ID at each iteration.
    %-----------------------------------------------------------
    \space(%
    \clist_map_variable:NNn \l_@@_person_id_clist \l_tmpa_clist
    {
     % \l_tmpa_clist now expands to one person ID.
     % We format it with \getPI (or \getPI* if the star was given).
     \clist_put_right:Ne \l_@@_person_clist
     {
      \IfBooleanTF{#1}
      {\getPI*{\l_tmpa_clist}}
      {\getPI{\l_tmpa_clist}}
     }
    }
    %-----------------------------------------------------------
    %   d)  Print the formatted PI list, separating consecutive
    %       names with a thin slash (the macro \addnbthinspace and
```

```
12244      %       \addthinspace are assumed to be defined elsewhere).
12245      %-----------------------------------------------------------
12246    \clist_use:Nn \l_@@_person_clist {\addnbthinspace/\addthinspace}
12247      ) % end of the parentheses that surround the PI list
12248    }
12249   }   % end of \clist_put_right:Nn   (one *project block*)
12250    } % end of outer \clist_map_inline:Nn
12251
12252    %-------------------------------------------------------------------
12253    % 2.  Typeset the collected project blocks.
12254    %     \clist_use:Nnnn joins the items with
12255    %        "~and~"   for the *last* separator,
12256    %        ",~"      for the *middle* separators,
12257    %        ",~and~"  for the *penultimate* separator.
12258    %-------------------------------------------------------------------
12259    \@@_project_reference_clist_use:N \l_@@_person_project_clist
12260    \group_end:
12261    }
12262  }
12263
12264  \NewDocumentCommand{\getPIWithProject}{s m}
12265  {
12266    \group_begin:
12267    \bool_set_true:N \l_@@_suppress_deprecated_project_pi_warning_bool
12268    \IfBooleanTF{#1}{\getPIProject*{#2}}{\getPIProject{#2}}
12269    \group_end:
12270  }
12271
12272  \NewDocumentCommand{\getProjectPI}{s m}
12273    {
12274      \bool_if:NF \l_@@_suppress_deprecated_project_pi_warning_bool
12275        {
12276          \bool_if:NF \g_@@_warned_get_project_pi_bool
12277            {
12278              \bool_gset_true:N \g_@@_warned_get_project_pi_bool
12279              \msg_warning:nn {dfg}{deprecated-get-project-pi}
12280            }
12281        }
12282      \exp_args:NnnV \@@_get_project_with_people:nnn
12283        {#1} {#2} \c_novalue_tl
12284    }
12285  \NewDocumentCommand{\getProjectWithPI}{s m}
12286  {
12287    \group_begin:
12288    \bool_set_true:N \l_@@_suppress_deprecated_project_pi_warning_bool
12289    \IfBooleanTF{#1}{\getProjectPI*{#2}}{\getProjectPI{#2}}
12290    \group_end:
12291  }
12292
12293  \NewDocumentCommand{\getPIOfProjectWithProject}{s m}
12294  {
12295    \seq_clear:N \l_@@_project_pi_with_project_seq
12296    \clist_map_inline:nn {#2}
12297    {
12298      \seq_put_right:Nn \l_@@_project_pi_with_project_seq
12299      {
12300        \IfBooleanTF{#1}
12301          {\getPIofProject*{##1}}
12302          {\getPIofProject{##1}}
12303        \space(\getProject*{##1})
12304      }
12305    }
12306    \@@_project_reference_seq_use:N \l_@@_project_pi_with_project_seq
12307  }
```

We also need a way to extract all PIs of a project.

```
12308  % The star defaults to full names and a prose list; explicit properties still
12309  % override the default. A starred delimiter overrides only the final join.
12310  \clist_new:N \l_@@_project_pi_properties_clist
12311  \tl_new:N \l_@@_project_pi_name_tl
12312  \NewDocumentCommand{\getPIofProject}{s o m o}
12313  {
12314    \group_begin:
12315    \IfNoValueTF{#2}
```

```
    {
      \bool_if:NTF \l_@@_custom_pi_reference_firstname_bool
        {\clist_set:Nn \l_@@_project_pi_properties_clist {firstname,lastname}}
        {
          \IfBooleanTF{#1}
            {\clist_set:Nn \l_@@_project_pi_properties_clist {firstname,lastname}}
            {\clist_set:Nn \l_@@_project_pi_properties_clist {lastname}}
        }
    }
    {\clist_set:Nn \l_@@_project_pi_properties_clist {#2}}
  \bool_if:NTF \l_@@_class_fastcompile_project_bool
    {\@@_fast_project_reference:n {#3}}
    {
      \clist_clear:N \l_@@_person_clist
      \@@_getvalueforkey:Nnnnn{\l_@@_person_id_clist}
        {ref-person-id}{project}{id}{#3}
      \DTLifnullorempty{\l_@@_person_id_clist}
        {\clist_clear:N \l_@@_person_id_clist}{}
      \clist_map_variable:NNn \l_@@_person_id_clist \l_tmpa_clist
        {
          \@@_getvalueforkey:Nnnnn{\tmpPIacademicdegree}{academicdegree}{person}{id}{\l_tmpa_clist}
          \@@_getvalueforkey:Nnnnn{\tmpPIfirstname}{firstname}{person}{id}{\l_tmpa_clist}
          \@@_getvalueforkey:Nnnnn{\tmpPIlastname}{lastname}{person}{id}{\l_tmpa_clist}
          \tl_clear:N \l_@@_project_pi_name_tl
          \clist_if_in:NnT \l_@@_project_pi_properties_clist {academicdegree}
            {
              \tl_put_right:Ne \l_@@_project_pi_name_tl
                {\dfgShowTag{\l_tmpa_clist}{academicdegree}{\tmpPIacademicdegree}[person]\addnbthinspace}
            }
          \clist_if_in:NnT \l_@@_project_pi_properties_clist {firstname}
            {
              \tl_put_right:Ne \l_@@_project_pi_name_tl
                {\dfgShowTag{\l_tmpa_clist}{firstname}{\tmpPIfirstname}[person]\space}
            }
          \clist_if_in:NnT \l_@@_project_pi_properties_clist {lastname}
            {
              \tl_put_right:Ne \l_@@_project_pi_name_tl
                {\dfgShowTag{\l_tmpa_clist}{lastname}{\tmpPIlastname}[person]}
            }
          % Reuse getPI's target, reference styling, and missing-person handling.
          % Freeze the ID and selected fields before advancing the metadata loop.
          \tl_if_empty:NF \l_@@_project_pi_name_tl
            {
              \clist_put_right:Ne \l_@@_person_clist
                {
                  \exp_not:N \getPI {\exp_not:V \l_tmpa_clist}
                    [\exp_not:V \l_@@_project_pi_name_tl]
                }
            }
        }
      \IfBooleanTF{#1}
        {
          \IfNoValueTF{#4}
            {\clist_use:Nnnn \l_@@_person_clist {~and~} {,~} {~and~}}
            {\clist_use:Nnnn \l_@@_person_clist {#4} {,~} {#4}}
        }
        {
          \IfNoValueTF{#4}
            {\clist_use:Nn \l_@@_person_clist {\,/\,}}
            {\clist_use:Nn \l_@@_person_clist {#4}}
        }
    }
  \group_end:
}
```

PI and project references also accept an all-lowercase command spelling. Copy the complete command so stars, optional arguments, and legacy warnings follow the canonical implementation without a separate argument parser.

```
\clist_map_inline:nn
  {
    getPI, getPIsWithRole, getProject, getProjectColor, getProjectCount,
    getPIWithProject, getProjectWithPI, getPIOfProjectWithProject,
    getPIofProject, getPIProject, getProjectPI
```

```
12385    }
12386    { \cs_new_eq:cc { \str_lowercase:n {#1} } {#1} }
12387  % Common mixed-case spellings retained alongside the lowercase aliases.
12388  \cs_new_eq:NN \getPIwithProject \getPIWithProject
12389  \cs_new_eq:NN \getProjectwithPI \getProjectWithPI
12390  \cs_new_eq:NN \getPIOfProject \getPIofProject
```

For referencing Aims we need to define a new macro.

```
12391  \clist_new:N \l_@@_aim_refs_clist
12392  \NewDocumentCommand{\getAim}{O{\l__tmp_current_project_tl} m}
12393  {
12394    % #1: current project
12395    % #2: id of aim(s)
12396    \clist_clear:N \l_@@_aim_refs_clist
12397    \clist_map_inline:nn { #2 }
12398    { \clist_put_right:Nn \l_@@_aim_refs_clist { #1-aim-##1 } }
12399    \exp_args:NV \cref \l_@@_aim_refs_clist
12400  }
```

For work-package references, `\labelcref` keeps cleveref's sorting and ranges while we provide a narrow, unbreakable space after `WP` or `WPs`.

```
12401  \tl_new:N \l__tmp_current_project_tl
12402  \clist_new:N \l_@@_wp_refs_clist
12403  \NewDocumentCommand{\getWP}{O{\l__tmp_current_project_tl} m}
12404  {
12405    % #1: current project
12406    % #2: id of workpackage(s)
12407    \clist_clear:N \l_@@_wp_refs_clist
12408    \clist_map_inline:nn { #2 }
12409    { \clist_put_right:Nn \l_@@_wp_refs_clist { #1-wp-##1 } }
12410    \textcolor{referenceWP}
12411      {\textbf{WP\int_compare:nNnF
12412        { \clist_count:N \l_@@_wp_refs_clist } = { 1 } { s }}}
12413    \addnbthinspace
12414    \exp_args:NV \labelcref \l_@@_wp_refs_clist
12415  }
```

Work-package metadata normalization The public WP keys separate narrative titles from chart-specific options. Collect legacy and new values separately, without expanding their contents; merge only after parsing so new keys win regardless of their source order. Property membership distinguishes omission from an explicitly empty value. Legacy-only declarations pass through verbatim, preserving absent fields, validation, database column order and existing output. New declarations are normalized into the same Gantt fields; direct `\addEntry` callers and all downstream readers therefore keep the established database schema. Unknown outer keys are forwarded to the original Gantt parser, including its diagnostics and the focused-mode behaviour when no database is requested.

```
12416  \RequirePackage{dfg-gantt}
12417  % Direct package commands and class dispatch share the same live defaults,
12418  % including settings changed locally through either public setup command.
12419  \cs_set:Npn \__dfgplots_defaults:n #1
12420    {
12421      \exp_not:V \l_@@_custom_plot_options_tl,
12422      \str_if_eq:nnTF {#1}{gantt}
12423        {\exp_not:V \l_@@_custom_gantt_plot_options_tl}
12424        {\exp_not:V \l_@@_custom_collaboration_plot_options_tl}
12425    }
12426  \keys_define:nn {dfgplots/setup}
12427    {plotOptions .meta:nn = {dfg/custom}{plotOptions={#1}},
12428     ganttPlotOptions .meta:nn = {dfg/custom}{ganttPlotOptions={#1}},
12429     collaborationPlotOptions .meta:nn = {dfg/custom}{collaborationPlotOptions={#1}}}
12430  \RenewDocumentCommand \DFGGanttLabel {mm}{\getWP[#1]{#2}}
12431  \RenewDocumentCommand \DFGGanttTag {mmmm}{\dfgShowTag{#1}{#2}{#3}[#4]}
12432  \RenewDocumentCommand{\dfgGanttShowQs}{mm}{%
12433    \bool_if:NTF \l__dfg_class_showtags_bool
12434    {\leavevmode\vbox to\z@{{%
12435          \vss\color{color@tags@line}
12436          \rlap{\vrule\raise .9em%
```

```
            \hbox{{%
                \fontsize{4}{0}\selectfont%
                \ttfamily\,#1:#2}}}}}
      \textcolor{color@tags@font}{#1}}
    {#1}
  }
  \cs_new_protected:Npn \@@_workpackage_store:nn #1#2
    { \addEntry[gantt]{gantt-\l__tmp_current_project_tl}{id=#1,#2} }
```

\addWP must be called within workpackages. Its focused-mode heading parser reads the same normalized keys even when images are disabled and no Gantt database is loaded. It retains the existing blank-title ID fallback.

```
  \tl_new:N \l_@@_fast_workpackage_name_tl
  \keys_define:nn { dfg / fast-workpackage }
  {
    name .tl_set:N = \l_@@_fast_workpackage_name_tl,
    unknown .code:n = { }
  }

  % A nested workpackage starts directly with its authored body; its list label
  % already supplies the required separation.  Remove only the immediately
  % following spaces and paragraph tokens, without adding interword space.  Later
  % paragraph breaks in the authored body remain untouched.
  \cs_new_protected:Npn \@@_start_subworkpackage_body:
  {
    \peek_meaning_remove_ignore_spaces:NTF \par
      { \@@_start_subworkpackage_body: }
      { \ignorespaces }
  }

  % The visible sub-workpackage label contains its parent number, but enumitem's
  % child counter restarts for every parent.  Cleveref otherwise sees, for
  % example, both WP 1b and WP 2b as child counter 2 and can discard the latter
  % while sorting or compress a range across two parents.  Store the parent
  % counter as Cleveref's numeric prefix so sorting and range detection respect
  % the work-package hierarchy.
  \RenewDocumentCommand{\addWP}{ m m }{
    % #1: workpackage-id
    % #2: key-set
    \@@_workpackage_normalize:n {#2}
    \bool_if:NTF \l_@@_class_fastcompile_project_bool
    {
      \tl_clear:N \l_@@_fast_workpackage_name_tl
      \exp_args:NnV \keys_set:nn { dfg / fast-workpackage }
        \l_@@_wp_normalized_tl
      \bool_if:NT \l_@@_class_fastcompile_project_show_images_bool
        {
          \exp_args:NnV \@@_workpackage_store:nn {#1}
            \l_@@_wp_normalized_tl
        }
    }
    {
      \exp_args:NnV \@@_workpackage_store:nn {#1}
        \l_@@_wp_normalized_tl
    }
    \str_if_eq:eeTF { \@enumctr } { workpackagesi }
    {
      \bool_if:NTF \l_@@_class_fastcompile_project_bool
      {
        \item \textbf{
          \tl_if_blank:VTF \l_@@_fast_workpackage_name_tl
          { WP~#1 }
          { \tl_use:N \l_@@_fast_workpackage_name_tl }
        }%
      }
      {
        \item \textbf{\getEntry[gantt-\l__tmp_current_project_tl]{#1}{name}}%
      }
    }
    { \item }
    \label{\l__tmp_current_project_tl-wp-#1}%
    \str_if_eq:eeF { \@enumctr } { workpackagesi }
      { \@@_start_subworkpackage_body: }
```

```
}
```

Project collaborations are stored with each project as an undirected list. The default plot is a compact focus heatmap containing every active project; the focus and its direct collaborators are highlighted. An arc layout uses the same ordered nodes, draws only the focus project's edges, and gives every edge the same peak height. It prints identifiers inside uniformly sized nodes and places unlabelled project-area rules directly below them. Heatmap rows and colors are generated dynamically from `project-area` (with the project-ID prefix as fallback); a rotating palette supports any number of areas. Boxes use a shared dynamic column width determined by the widest project area, so the grid fills the complete text block after its area labels. Both layouts are deterministic, are generated entirely with TikZ, and omit ending, reference-only, and list-excluded projects. The built-in area palette cycles when more areas are present than palette entries; existing A, B, and Q projects retain their familiar colors.

```
\RequirePackage{dfg-collaboration}
\keys_define:nn {dfgcollab/setup}
  {area-colors .code:n =
    {\tl_set:Nn\l__dfgcollab_colors_tl{#1}
     \changeSettings{collaborationAreaColors={#1}}},
   area-palette .code:n =
    {\clist_if_empty:nF{#1}
      {\tl_set:Nn\l__dfgcollab_palette_tl{#1}
       \changeSettings{collaborationAreaPalette={#1}}}}}
\cs_new_protected:Npn \__dfg_collaboration_plot_collect_nodes:
{
  \seq_clear:N  \l__dfg_collaboration_plot_nodes_seq
  \prop_clear:N \l__dfg_collaboration_plot_all_status_prop
  \prop_clear:N \l__dfg_collaboration_plot_status_prop
  \prop_clear:N \l__dfg_collaboration_plot_lists_prop
  \prop_clear:N \l__dfg_collaboration_plot_edges_prop
  \prop_clear:N \l__dfg_collaboration_plot_area_prop
  % DATATOOL requires an iterated key to exist as a database column.  Older
  % proposals do not have project-area yet, so create the optional column and
  % let the ID-prefix fallback below handle its empty values.
  \DTLifhaskey { project } { project-area }
    { }
    { \DTLaddcolumn { project } { project-area } }
  \DTLifhaskey { project } { collaborations }
    { }
    { \DTLaddcolumn { project } { collaborations } }
  \DTLforeach*{project}
  {
    \l__dfg_collaboration_plot_id_tl = id,
    \l__dfg_collaboration_plot_status_tl = project-status,
    \l__dfg_collaboration_plot_consider_tl = consider-for-lists,
    \l__dfg_collaboration_plot_reference_only_tl = reference-only,
    \l__dfg_collaboration_plot_area_tl = project-area,
    \l__dfg_collaboration_plot_collaborations_tl = collaborations
  }
  {
    \prop_put:NVV \l__dfg_collaboration_plot_all_status_prop
      \l__dfg_collaboration_plot_id_tl
      \l__dfg_collaboration_plot_status_tl
    \bool_lazy_all:nT
    {
      { \str_if_eq_p:Vn \l__dfg_collaboration_plot_consider_tl { true } }
      { \str_if_eq_p:Vn \l__dfg_collaboration_plot_reference_only_tl { false } }
      {
        \bool_lazy_or_p:nn
          { \str_if_eq_p:Vn \l__dfg_collaboration_plot_status_tl { C } }
          { \str_if_eq_p:Vn \l__dfg_collaboration_plot_status_tl { N } }
      }
    }
    {
      \DTLifnullorempty{\l__dfg_collaboration_plot_collaborations_tl}
        { \tl_clear:N \l__dfg_collaboration_plot_collaborations_tl }
        { }
      \seq_put_right:NV \l__dfg_collaboration_plot_nodes_seq
        \l__dfg_collaboration_plot_id_tl
      \DTLifnullorempty{\l__dfg_collaboration_plot_area_tl}
```

```
        { \tl_set:Nx \l__dfg_collaboration_plot_area_tl
            { \tl_head:V \l__dfg_collaboration_plot_id_tl } }
        { }
      \tl_trim_spaces:N \l__dfg_collaboration_plot_area_tl
      \prop_put:NVV \l__dfg_collaboration_plot_area_prop
        \l__dfg_collaboration_plot_id_tl \l__dfg_collaboration_plot_area_tl
      \prop_put:NVV \l__dfg_collaboration_plot_status_prop
        \l__dfg_collaboration_plot_id_tl
        \l__dfg_collaboration_plot_status_tl
      \prop_put:NVV \l__dfg_collaboration_plot_lists_prop
        \l__dfg_collaboration_plot_id_tl
        \l__dfg_collaboration_plot_collaborations_tl
    }
  }
  \seq_sort:Nn \l__dfg_collaboration_plot_nodes_seq
  {
    \prop_get:NnN \l__dfg_collaboration_plot_area_prop {##1} \l_tmpa_tl
    \prop_get:NnN \l__dfg_collaboration_plot_area_prop {##2} \l_tmpb_tl
    \str_compare:eNeTF
      { \tl_use:N \l_tmpa_tl / ##1 }
      <
      { \tl_use:N \l_tmpb_tl / ##2 }
      { \sort_return_same: }
      { \sort_return_swapped: }
  }
}

\NewDocumentCommand{\ProjectCollaborationPlot}{ O{} m o }
{%
  \group_begin:
  % Capture the normal body width before hvfloat builds the caption.
  \dim_set:Nn \l_@@_collaboration_plot_width_dim { \textwidth }
  \exp_args:NNV \prop_set_from_keyval:Nn
    \l_@@_collaboration_plot_area_color_override_prop
    \l_@@_custom_collaboration_area_colors_tl
  \exp_args:NNV \seq_set_from_clist:Nn
    \l_@@_collaboration_plot_area_palette_seq
    \l_@@_custom_collaboration_area_palette_tl
  \tl_clear:N \l_@@_collaboration_plot_caption_tl
  \__dfgcollab_reset:
  \@@_plot_options_set:nNn { project-collaboration-plot }
    \l_@@_custom_collaboration_plot_options_tl {#1}
  \IfNoValueF{#3}
    { \tl_set:Nn \l_@@_collaboration_plot_caption_tl {#3} }
  \tl_set:Nn \l_@@_collaboration_plot_focus_tl {#2}
  \tl_trim_spaces:N \l_@@_collaboration_plot_focus_tl
  \DTLifdbexists{project}
  {
    \@@_collaboration_plot_collect_nodes:
    \__dfgcollab_select:
    \prop_if_in:NVTF \l_@@_collaboration_plot_status_prop
      \l_@@_collaboration_plot_focus_tl
    {
      \@@_collaboration_plot_collect_edges:
      \@@_collaboration_plot_prepare:
      \tl_if_blank:VTF \l_@@_collaboration_plot_caption_tl
      {%
        \@@_plot_float:
        {figure}
        {\@@_collaboration_plot_full_width_picture:}
        {Collaborations~of~\getProject{#2}.}
        {fig:project-collaboration-#2-
          \tl_use:N \l_@@_collaboration_plot_layout_tl}%
      }
      {%
        \@@_plot_float:
        {figure}
        {\@@_collaboration_plot_full_width_picture:}
        {Collaborations~of~\getProject{#2}.~
          \tl_use:N \l_@@_collaboration_plot_caption_tl}
        {fig:project-collaboration-#2-
          \tl_use:N \l_@@_collaboration_plot_layout_tl}%
      }
    }
```

```
12637       {
12638         \msg_warning:nne { dfg } { collaboration-focus-not-found }
12639           { \l_@@_collaboration_plot_focus_tl }
12640         \textcolor{error}
12641           {Project~collaboration~plot:~unknown~project~'#2'.}
12642       }
12643     }
12644     { \msg_warning:nnn { dfg } { database-not-found } { project } }
12645     \group_end:
12646   }
12647
12648   % Since the workpackage is closely related to the Gantt chart we continue with
12649   % that.  \cs{GanttPlot} is the plot dispatcher's target.  The old
12650   % \cs{printGantt} spelling remains as a compatibility wrapper.
12651   \tl_new:N \l_@@_gantt_plot_caption_tl
12652   \keys_define:nn { dfg / gantt-plot }
12653   {
12654     slots .meta:nn = {dfggantt/chart}{slots=#1},
12655     first-quarter .meta:nn = {dfggantt/chart}{first-quarter=#1},
12656     year-labels .meta:nn = {dfggantt/chart}{year-labels={#1}},
12657     caption .tl_set:N = \l_@@_gantt_plot_caption_tl,
12658   }
12659
12660   \NewDocumentCommand{\GanttPlot}{ O{} m o }
12661   {
12662     \group_begin:
12663     \tl_clear:N \l_@@_gantt_plot_caption_tl
12664     \@@_plot_options_set:nNn { gantt-plot }
12665       \l_@@_custom_gantt_plot_options_tl {#1}
12666     \IfNoValueF{#3}
12667       { \tl_set:Nn \l_@@_gantt_plot_caption_tl {#3} }
12668     \DTLifdbexists{gantt-#2}
12669     {
12670       \tl_if_blank:VTF \l_@@_gantt_plot_caption_tl
12671       {%
12672         \@@_plot_float:
12673         {figure}
12674         {\dfgGanttEnvironment{#2}}
12675         {Gantt~chart~of~\getProject{#2}.}
12676         {fig:gantt-#2}%
12677       }
12678       {%
12679         \@@_plot_float:
12680         {figure}
12681         {\dfgGanttEnvironment{#2}}
12682         {Gantt~chart~of~\getProject{#2}.~
12683           \tl_use:N \l_@@_gantt_plot_caption_tl}
12684         {fig:gantt-#2}%
12685       }
12686     }
12687     {
12688       Database~ \texttt{gantt-#2}~ missing.
12689       \msg_warning:nne { dfg } { database-not-found }{ gantt-#2 }
12690     }
12691     \group_end:
12692   }
12693
12694   % Lowercase plot names accept either an explicit project ID or the active
12695   % project.  An explicit ID may carry a trailing caption; the current-project
12696   % form uses the caption key instead.
12697   \cs_new_protected:Npn \@@_typed_plot:nnnn #1#2#3#4
12698   {
12699     \IfNoValueTF{#4}
12700       { #1[#2]{#3} }
12701       { #1[#2]{#3}[#4] }
12702   }
12703   \cs_new_protected:Npn \@@_typed_plot_current:nnnn #1#2#3#4
12704     { \@@_typed_plot:nnnn {#2}{#3}{#1}{#4} }
12705
12706   \NewDocumentCommand{\ganttPlot}{ O{} g o }
12707   {
12708     \IfNoValueTF{#2}
12709       {
12710         \tl_if_blank:VTF \l__tmp_current_project_tl
```

```
          { \msg_warning:nnn { dfg } { plot-current-project-missing } { gantt } }
          { \exp_args:NV \@@_typed_plot_current:nnnn
              \l__tmp_current_project_tl {\GanttPlot}{#1}{#3} }
      }
      { \@@_typed_plot:nnnn {\GanttPlot}{#1}{#2}{#3} }
  }
  \NewDocumentCommand{\collaborationPlot}{ O{} g o }
  {
    \IfNoValueTF{#2}
      {
        \tl_if_blank:VTF \l__tmp_current_project_tl
          { \msg_warning:nnn { dfg } { plot-current-project-missing }
              { collaboration } }
          { \exp_args:NV \@@_typed_plot_current:nnnn
              \l__tmp_current_project_tl {\ProjectCollaborationPlot}{#1}{#3} }
      }
      { \@@_typed_plot:nnnn {\ProjectCollaborationPlot}{#1}{#2}{#3} }
  }
  % Preserve the plural current-project shorthand for existing documents.
  \cs_new_eq:NN \collaborationsPlot \collaborationPlot

  \NewDocumentCommand{\printGantt}{ m o }
  {
    \IfNoValueTF{#2}
      { \printPlot{{Gantt}{#1}} }
      { \printPlot[caption={#2}]{{Gantt}{#1}} }
  }
```

6.1.27 Gantt chart rendering

The Gantt chart for each project is assembled in two steps:

1. `\dfgGanttContent{⟨project⟩}`: iterates over the `gantt-\meta{project}` database and generates one `\ganttbar` call per row. Rows where `periodStart = periodEnd` are silently skipped. Row breaks precede each visible bar after the first, so skipped rows and the last bar add no blank bottom row. The bar style is dispatched via `\str_case:VnF`: `crosshatch` uses a pgfgantt pattern fill; `striped` overlays two colours at 45° with `\postaction`, using an explicitly coloured PDF pattern for consistent viewer rendering; `alternative` and `important` use flat fills; the default is a solid `color@gantt@default` bar.
2. `\dfgGanttEnvironment{⟨project⟩}`: wraps the content in a `pgfgantt ganttchart` environment spanning 16 columns (quarters Q3 of year 0 through Q2 of year 5, matching the standard DFG 5-year period). The chart is scaled with `\resizebox` to fill the full text width. A 0.9-row bar with no top shift leaves a narrow gap between the final bar and the bottom rule.

`\printPlot{{Gantt}{⟨project⟩}}` is the preferred user-facing command; `\printGantt` remains a compatibility alias. The dispatcher calls `\GanttPlot`, which wraps the chart in an `hvfloat` figure with an appropriate caption, optionally followed by extra text. Both variants use the label `fig:gantt-<project>`, for example `fig:gantt-A02`. The shared float helper defaults to `floatPos=!hb, capPos=bottom`; native hvfloat options may override these defaults for the current plot. The following `\FloatBarrier` closes the project-plan block.

Quarter numbering: columns 1–2 correspond to Q3–Q4 of the calendar year preceding the funding start; columns 3–16 are Q1–Q4 of years 1–4; the final 16th column is Q1–Q2 of year 5. Bar start/end values in the Gantt database should use these numbers directly.

```
  % Store the stripe colour inside the PDF pattern. Some renderers paint
  % stroked, uncoloured patterns black even when their fill colour is set.
  % Include the resolved model and components in the pattern cache key, so
  % per-chart colour changes produce a new pattern instead of reusing one.
  % The shared renderer and configurable quarter grid are in dfg-gantt.sty.
```

6.1.28 TOC entry and work-package helpers

`\dfgTOCprojectPart{⟨letter⟩}{⟨title⟩}` adds a bold chapter-level entry to the table of contents coloured in the project colour (`projectA` for letter A, etc.). Call it immediately before the project's `\chapter` command.

```
\NewDocumentCommand{\dfgTOCprojectPart}{m O{Project~area} m}{
  % #1: project       (kann leer sein)
  % #2: pre-freetext  (default: "Project area")
  % #3: free text     (kann leer sein)
  \bool_if:NF \l_@@_class_fastcompile_project_bool
  {
    \addtocentrydefault{chapter}
      { \tl_if_blank:nF {#1} { \texorpdfstring{\getProjectColor{#1}#1}{} } }
    {
      #2\c_space_tl
      \tl_if_blank:nF {#1} { \texorpdfstring{\getProjectColor{#1}#1}{#1} ~---~ #3 }
    }
  }
}
```

6.1.29 CV / Curriculum Vitae

The CV section produces structured curricula vitae in the DFG-prescribed format for each project leader. The same document class is used for both the integrated CV pages inside the main proposal and the standalone `crc-cv.tex` document (identified by `cv=true`).

Every section is a breakable `tcolorbox` with a colored title bar. Entry bodies use ordinary paragraphs and lists, so a single career description, optional entry, publication, or privacy paragraph may span pages. Labels use one quarter of the row width; date-free entries use the full width. The existing command signatures and metadata schema are unchanged. `cvTableAfterSkip` → P. 84 adjusts spacing after each box; its new default is zero because the boxes supply their own normal spacing. Standard after-box spacing preserves page breaks between adjacent sections; the configured adjustment is appended once after the final box part.

The shared `dfgCVSection` tcolorbox style controls fonts, colors and padding. Section bodies use the normal document font at `\normalsize`, including its italic and bold faces; title bars use the sans-serif bold face. Customize it from `preamble/dfg-customization.tex` after class loading: `\AddToHook{class/dfg-crc/after}{\tcbset{dfgCVSection/.append style={top=3pt}}}`. Long entry bodies are never wrapped in an unbreakable table row. Optional sections with no matching records, empty publication categories, and skipped publication lists create no empty title boxes or additional spacing.

Structure per PI:

1. `\dfgCVheader{⟨id⟩}` — chapter heading with name, academic title and (if present) a QR code linking to the PI's homepage.
2. `\dfgCVmandatory{⟨id⟩}` — qualification and career section built from all `cv` entries with `cv-type=mandatory`.
3. `\dfgCVoptional{⟨id⟩}` — the five supplementary sections (supplement, activities, supervision, distinction, other), each rendered only when at least one matching entry exists.
4. `\dfgCVpublications{⟨id⟩}` — the ten most important publications printed via biblatex; skippable with `skip10pub=true`.
5. `\dfgCVdataprivacy` — the mandatory GDPR data-privacy statement.

`\dfgCV{⟨id⟩}` is a convenience wrapper that calls all five steps in order and manages the bold-author activations around the publications.

Creating a boolean for detecting optional content (used to conditionally include the privacy statement when optional sections exist).

```
\bool_new:N \l_@@_cvoptional_bool
```

CV commands

\dfgCVheader Renders the standardised CV heading for one PI. The chapter title uses a two-line format: the word “Curriculum Vitae” in the alternative font colour, followed by the PI’s full name with academic title in bold. If the PI has a URL in the `person` database, a QR code linking to it is placed in the top-right margin on the first CV page via `\AddToHookNext{shipout/background}`. The QR code is omitted when the URL field is empty to avoid rendering an empty code.

```
\bool_if:NT  \l_@@_class_cv_bool {
% multicols for TOC
% https://tex.stackexchange.com/a/314046/98739
\BeforeStartingTOC[toc]{\begin{multicols}{2}}%
\AfterStartingTOC[toc]{\end{multicols}}

% no page number for chapters in TOC
\RedeclareSectionCommands[
  tocraggedpagenumber,
  toclinefill=\tocpageseparator,
  tocindent=0em,
  tocnumwidth=0em,
  tocpagenumberbox=\tocpagenumberbox,%\tocgobble,% <- added
  tocpagenumberformat=\textsf,
]{chapter}
}

\newcommand\dfgReduceSpace{%
  \dim_compare:nNnF {\l_@@_custom_cv_table_after_skip_tl} = {0pt}
    {\vspace*{\dim_eval:n {\l_@@_custom_cv_table_after_skip_tl}}}%
}

% One breakable box per section; body text remains ordinary paragraphs.
\tcbset{dfgCVSection/.style={
  enhanced~jigsaw,breakable,sharp~corners,frame~hidden,
  boxrule=0pt,boxsep=0pt,width=\linewidth,
  colback=white,colbacktitle=tableHeadingsBG,coltitle=tableHeadingsFont,
  fonttitle=\normalsize\sffamily\bfseries,
  % Use the document body family, including its italic and bold faces.
  fontupper=\normalfont\normalsize,
  left=4pt,right=4pt,top=4pt,bottom=4pt,
  toptitle=4pt,bottomtitle=4pt,
  before~skip=.5\baselineskip,
  % Retain a legal break between boxes before applying the configured gap.
  after~skip=0pt,
  after~app={\dfgReduceSpace},
  lines~before~break=3
}}
\newtcolorbox{dfgCVSectionBox}[1]{
  dfgCVSection,title={#1},
  %title~after~break={#1~(continued)}
}
% The left column takes one quarter of the available row width. Labels align
% with the first text baseline but do not deepen that line: a tall label must
% not push the description's second line downward. Build the body once, then
% unpack its vertical list so all ordinary paragraph/page breaks remain live.
% Only short bodies receive trailing padding to reserve the label's full height.
\box_new:N \l_@@_cv_label_box
\box_new:N \l_@@_cv_body_box
\dim_new:N \l_@@_cv_column_dim
\dim_new:N \l_@@_cv_label_gap_dim
\cs_new_protected:Npn \@@_cv_labeled:nnn #1#2#3
  {
    \par\group_begin:
    \dim_set:Nn \l_@@_cv_column_dim {#1}
    \hbox_set:Nn \l_@@_cv_label_box
      {\parbox[t]{\dim_eval:n {\l_@@_cv_column_dim-6pt}}
        {\RaggedRight\strut #2\strut\par}}
    \vbox_set:Nn \l_@@_cv_body_box
      {
        \begin{list}{}{
          \setlength{\leftmargin}{\l_@@_cv_column_dim}
          \setlength{\labelsep}{6pt}
          \setlength{\labelwidth}{\dimexpr\leftmargin-\labelsep\relax}
          \setlength{\rightmargin}{0pt}
```

```
          \setlength{\itemindent}{0pt}
          \setlength{\listparindent}{0pt}
          \setlength{\topsep}{0pt}
          \setlength{\partopsep}{0pt}
          \setlength{\itemsep}{0pt}
          \setlength{\parsep}{2pt}
          \renewcommand\makelabel[1]{\smash[b]{##1}}
        }
        \item[{\box_use:N \l_@@_cv_label_box}]\leavevmode #3\par
        \end{list}
      }
    \dim_set:Nn \l_@@_cv_label_gap_dim
      {\box_ht:N \l_@@_cv_label_box+\box_dp:N \l_@@_cv_label_box
       -\box_ht:N \l_@@_cv_body_box-\box_dp:N \l_@@_cv_body_box}
    \vbox_unpack_drop:N \l_@@_cv_body_box
    \dim_compare:nNnT {\l_@@_cv_label_gap_dim}>{0pt}
      {\nobreak\vspace*{\l_@@_cv_label_gap_dim}}
    \group_end:
    \par\vspace{2pt}
  }
\cs_new_protected:Npn \@@_cv_field:nn #1#2
  {\@@_cv_labeled:nnn {.25\linewidth}{#1}{#2}}
\cs_new_protected:Npn \@@_cv_entry:nn #1#2
  {\@@_cv_labeled:nnn {.25\linewidth}{#1}{#2}}
\cs_new_protected:Npn \@@_cv_text:n #1
  {\par\noindent #1\par\vspace{2pt}}
\cs_new_protected:Npn \@@_cv_period:nnn #1#2#3
  {
    \tl_if_blank:eTF {#2}
      {\tl_if_blank:eF {#3}{\dfgShowTag{#1}{periodEnd}{#3}[cv-#1]}}
      {
        \tl_if_blank:eTF {#3}
          {since\space\dfgShowTag{#1}{periodStart}{#2}[cv-#1]}
          {\dfgShowTag{#1}{periodStart}{#2}[cv-#1]
           \str_if_eq:eeF {#2}{#3}
             {--\allowbreak\dfgShowTag{#1}{periodEnd}{#3}[cv-#1]}}
      }
  }
\NewDocumentCommand{\dfgCVheader}{ m }{%
  % #1: person-id
  \bool_set_false:N \l_@@_cvoptional_bool

  % Single scan: pull all needed fields at once
  \getEntry*[person]{#1}{
    \theAcademicDegree = academicdegree,
    \theURLValue       = url,
    \theNameValue      = lastname,
    \theFirstNameValue = firstname,
    \CurrentPosition   = position,
    \CurrentPositionText   = positionText
  }%
  \addchap[{
      head={CV
        \texorpdfstring{\dfgShowTag{#1}{academicdegree}{\theAcademicDegree}[person]}
          {\theAcademicDegree}\space
        \texorpdfstring{\dfgShowTag{#1}{firstname}{\theFirstNameValue}[person]}
          {\theFirstNameValue}\space
        \texorpdfstring{\dfgShowTag{#1}{lastname}{\theNameValue}[person]}
          {\theNameValue}},
      tocentry={
        \texorpdfstring{\dfgShowTag{#1}{lastname}{\theNameValue}[person]}
          {\theNameValue},\space
        \texorpdfstring{\dfgShowTag{#1}{firstname}{\theFirstNameValue}[person]}
          {\theFirstNameValue}}}]{%
        {\normalsize\textcolor{color@font@alternative}{Curriculum \space Vitae}\\[.5\baselineskip]
 \dfgShowTag{#1}{academicdegree}{\theAcademicDegree}[person]\\[.25\baselineskip]}
 \bfseries
        \dfgShowTag{#1}{firstname}{\theFirstNameValue}[person]\space
        \dfgShowTag{#1}{lastname}{\theNameValue}[person]
  }%
  %\pdfbookmark{CV~\theNameValue, ~~ \theFirstNameValue}{cv-#1}

  % Printing the QR code only on one page next to the headline.
  \AddToHookNext{shipout/background}{%
```

```
12897       \DTLifnullorempty{\theURLValue}
12898       {}
12899       {\put(\pagewidth-\marginparwidth,-.05\paperheight){%
12900      \dfgShowTag{#1}{url}{\qrcode[link,height=1.5cm]{\theURLValue}}[person]]}%
12901     }
12902
12903     \begin{dfgCVSectionBox}{Personal~Data}
12904       \@@_cv_field:nn {Title}
12905         {\dfgShowTag{#1}{academicdegree}{\theAcademicDegree}[person]}
12906       \@@_cv_field:nn {First~name}
12907         {\dfgShowTag{#1}{firstname}{\theFirstNameValue}[person]}
12908       \@@_cv_field:nn {Name}
12909         {\dfgShowTag{#1}{lastname}{\theNameValue}[person]}
12910       \@@_cv_field:nn {Current~position}
12911         {\ifdefempty{\CurrentPositionText}
12912           {\dfgShowTag{#1}{position}{\dfgCategoryName{\CurrentPosition}}[person]}
12913           {\dfgShowTag{#1}{positionText}{\CurrentPositionText}[person]}}
12914       \@@_cv_field:nn {Current~institution(s)/\\site(s),~country}
12915         {\printList{{Institutions}{#1}}}
12916       \@@_cv_field:nn {ORCiD}{\getORCiD{#1}}
12917     \end{dfgCVSectionBox}
12918   }
```

The next section is about `Qualifications and Career`.

```
12919   \NewDocumentCommand{\dfgCVmandatory}{ m }{%
12920     \DTLsortdata{cv-#1}
12921       {periodStart={descending=true},periodEnd={descending=true},position={ascending=true}}
12922     \group_begin:
12923     \@@_proj_pi_build:
12924     \getEntry*[person]{#1}{
12925       \theDegreeProgramme=degree-programme,
12926       \theDoctorateYear=doctorateYear,
12927       \theDoctorate=doctorate
12928     }
12929     \begin{dfgCVSectionBox}{Qualifications~and~Career}
12930       \@@_cv_entry:nn {\bfseries Stages}{\bfseries Periods~and~Details}
12931       \@@_cv_entry:nn {Degree~programme}
12932         {\dfgShowTag{#1}{degree-programme}{\theDegreeProgramme}[person]}
12933       \@@_cv_entry:nn {Doctorate}
12934         {\dfgShowTag{#1}{doctorateYear}{\theDoctorateYear}[person]\space
12935          \dfgShowTag{#1}{doctorate}{\theDoctorate}[person]}
12936       \DTLforeach*[
12937         \DTLiseq{\dfgrefpersonid}{#1}\and\DTLiseq{\dfgtype}{mandatory}
12938       ]{cv-#1}{
12939         \dfgrefpersonid=ref-person-id,\dfgtype=type,
12940         \dfgyearstart=periodStart,\dfgyearend=periodEnd,
12941         \dfgpositionText=positionText,\dfgposition=position,
12942         \dfgrefinstitutionid=ref-institution-id,\dfgdescription=description
12943       }{
12944         \DTLifnullorempty{\dfgyearstart}{\def\dfgyearstart{}}{}
12945         \DTLifnullorempty{\dfgyearend}{\def\dfgyearend{}}{}
12946         \prop_get:NVNTF \g_@@_inst_narrow_prop \dfgrefinstitutionid \theInstAffName
12947           {}{\tl_clear:N \theInstAffName}
12948         \@@_cv_entry:nn
12949           {\@@_cv_period:nnn {#1}{\dfgyearstart}{\dfgyearend}
12950            \ifdefempty{\dfgposition}{}{:\space\dfgShowTag{#1}{position}{\dfgposition}[cv-#1]}}
12951           {\dfgShowTag{#1}{positionText}{\dfgpositionText}[cv-#1]
12952            \ifdefempty{\theInstAffName}{}{,\space\theInstAffName}
12953            \ifdefempty{\dfgdescription}{}
12954              {\par\textit{\dfgShowTag{#1}{description}{\dfgdescription}[cv-#1]}}}
12955       }
12956     \end{dfgCVSectionBox}
12957     \group_end:
12958   }
```

The next section is about `Supplementary Career Information`, or `Activities in the Research S` or `Supervision of Researchers in Early Career Phases` since they all are technically the same.

```
12959   \NewDocumentCommand{\dfgCVoptional}{ m m m }{%
12960     \group_begin:
12961     \def\tblrbody{}
12962     \DTLforeach*[
```

```
      \DTLiseq{\dfgrefpersonid}{#1}\and\DTLiseq{\dfgtype}{#2}
    ]{cv-#1}{
      \dfgrefpersonid=ref-person-id,\dfgtype=type,
      \dfgyearstart=periodStart,\dfgyearend=periodEnd,
      \dfgpositionText=positionText,\dfgposition=position,
      \dfgrefinstitutionid=ref-institution-id,\dfgdescription=description
    }{
      \DTLifnullorempty{\dfgyearstart}{\def\dfgyearstart{}}{}
      \DTLifnullorempty{\dfgyearend}{\def\dfgyearend{}}{}
      \bool_lazy_and:nnTF
        {\tl_if_empty_p:V \dfgyearstart}{\tl_if_empty_p:V \dfgyearend}
        {\protected@edef\tblrbody{\tblrbody
          \@@_cv_text:n {\dfgShowTag{#1}{description}{\dfgdescription}[cv-#1]}}}
        {\protected@edef\tblrbody{\tblrbody
          \@@_cv_entry:nn
            {\@@_cv_period:nnn {#1}{\dfgyearstart}{\dfgyearend}}
            {\dfgShowTag{#1}{description}{\dfgdescription}[cv-#1]}}}
    }
    \ifdefempty{\tblrbody}{}
      {\begin{dfgCVSectionBox}{#3}\tblrbody\end{dfgCVSectionBox}}
    % Keep the optional-content flag visible after the local rendering group.
    \ifdefempty{\tblrbody}
      {\group_end:}
      {\group_end:\bool_set_true:N \l_@@_cvoptional_bool}
  }
```

For the publications we define a custom bibliography template that is enumerating the items as required.

```
  \newlist{DFGlist}{enumerate}{1}
  \setlist[DFGlist]{leftmargin=*}
  \setlist[DFGlist,1]{
    % font=\bfseries,
    % first=\bfseries,
    % after=\normalfont,
    % itemsep=.5\baselineskip,
    % wide,
    label={\bfseries\arabic*.},
    nosep
  }
```

Further on we apply this to the bibliography environment.

```
  \tl_new:N \g_@@_cv_publication_title_tl
  \tl_gset:Nn \g_@@_cv_publication_title_tl {Scientific~results}
  \tl_new:N \g_@@_cv_publication_description_tl
  \cs_new_protected:Npn \@@_cv_publication_begin:
    {
      \begin{dfgCVSectionBox}{\tl_use:N \g_@@_cv_publication_title_tl}
      \tl_use:N \g_@@_cv_publication_description_tl\par\nobreak\smallskip
      \begin{DFGlist}\RaggedRight
    }
  \cs_new_protected:Npn \@@_cv_publication_end:
    {
      \end{DFGlist}\end{dfgCVSectionBox}
      \tl_gset:Nn \g_@@_cv_publication_title_tl {Scientific~results}
      \tl_gclear:N \g_@@_cv_publication_description_tl
    }
  \defbibenvironment{DFGlist}
  {\@@_cv_publication_begin:}
  {\@@_cv_publication_end:}
  {\item}
```

The next section combines everything and wraps it. To have a reference listed in this section you have to write into the

```
  \defbibheading{categoryA}{%
    \tl_gset:Nn \g_@@_cv_publication_title_tl {Scientific~results~---~Category~A}
    \tl_gset:Nn \g_@@_cv_publication_description_tl
      {Articles~in~peer-reviewed~journals,~contributions~to~peer-reviewed~conferences~or~to~anthology~volum
  }
  \defbibheading{categoryB}{%
    \tl_gset:Nn \g_@@_cv_publication_title_tl {Scientific~results~---~Category~B}
    \tl_gset:Nn \g_@@_cv_publication_description_tl
```

```
13026      {Any~other~form~of~published~results}
13027  }
13028
13029  \NewDocumentCommand{\dfgCVpublications}{ m }{%
13030    % #1: person-id
13031    \bool_if:NTF \l_@@_class_skipTENpublications_bool
13032    {%
13033      \par
13034      \group_begin: \ttfamily
13035      Publication~ section~ for~ \getFullName{#1}~ omitted~
13036      for~ faster~ compilation.\\
13037      To~ enable~ the~ 10~ most~ important~ publications,~
13038      go~ to~ the~ documentclass~ options\\ and~ state~
13039      '\textbf{skip10pub=false}'.
13040      \group_end:
13041    }{%
13042      \tl_gset:Nn \g_@@_current_pi_tl {#1}
13043      \newrefcontext[sorting=ydnt]
13044      \nocite{*}%
13045      \datatool_if_has_key:nnT { person } { name-alias }
13046      {
13047        \@@_getvalueforkey:Nnnnn { \theAliases } { name-alias } { person } { id } { #1 }
13048        \DTLifnulloremptyt { \theAliases }
13049        { }
13050        { \exp_args:No \addboldnames { \theAliases } }
13051      }
13052
13053      \renewcommand*{\bibfont}{\normalfont\normalsize}%
13054
13055      \printbibliography[
13056        env          = DFGlist,
13057        resetnumbers,
13058        keyword      = {#1-A},
13059        heading      = categoryA
13060      ]
13061      \printbibliography[
13062        env          = DFGlist,
13063        resetnumbers,
13064        keyword      = {#1-B},
13065        heading      = categoryB
13066      ]
13067
13068      \endrefcontext
13069      \resetboldnames
13070      \tl_gclear:N \g_@@_current_pi_tl
13071    }%
13072  }
13073
13074  \tl_new:N \g_@@_current_pi_tl
```

\ifIDequal Conditional macro for use inside `.bib` files. Inside an `addendum` field, write `\ifIDequal{pi-id}{text}`; the text is only emitted when the bibliography is being rendered for that PI.

The current PI is held in `\g_@@_current_pi_tl`, which is set by `\dfgCVpublications` before each `\printbibliography` call.

The protected public command is defined with expl3 syntax. Its stored tokens remain valid when biblatex calls it with `\ExplSyntaxOff` active; callers do not need to change their syntax mode.

Only literally empty text is skipped, without expanding it. Both IDs are fully expanded before their tokens and category codes are compared, preserving the former `\edef`/`\ifx` semantics. Matching text starts a paragraph in the alternative font colour, outside the comparison's scope.

```
13075  \DeclareFieldFormat{addendum}{\mkbibitalic{#1}}
13076  \cs_new_protected:Npn \ifIDequal #1#2
13077    {
13078      \tl_if_empty:nF {#2}
13079        {
13080          \tl_if_eq:eeT {#1} {\g_@@_current_pi_tl}
13081            {
13082              \par
13083              \textcolor{color@font@alternative}{#2}
13084            }
```

```
13085       }
13086   }
```

After each section - especially when any content was written for the optional parts, a data privacy is needed. We only need this section if there has been optional text before. We find this out by checking the bool.

```
13087 \ExplSyntaxOff
13088 \NewDocumentCommand{\dfgCVdataprivacy}{ m }{%
13089   \begin{dfgCVSectionBox}{Data protection and consent to the processing of optional data}
13090   \normalsize
13091   \noindent{\large\ding{55}}\enspace I (\getFullName*{#1}) expressly consent
13092         to the processing of the voluntary
13093     (optional) information, including "special categories of personal data" in
13094     connection with the DFG's review and decision-making process regarding my
13095     proposal. This also includes forwarding my data to the external reviewers,
13096     committee members and, where applicable, foreign partner organisations who
13097     are involved in the decision-making process. To the extent that these
13098     recipients are located in a third country (outside the European Economic
13099     Area), I additionally consent to them being granted access to my data for
13100     the above-mentioned purposes, even though a level of data protection
13101     comparable to EU law may not be guaranteed. For this reason, compliance with
13102     the data protection principles of EU law is not guaranteed in such cases. In
13103     this respect, there may be a violation of my fundamental rights and freedoms
13104     and resulting damages. This may make it more difficult for me to assert my
13105     rights under the General Data Protection Regulation (e.g.\ information,
13106     rectification, erasure, compensation) and, if necessary, to enforce these
13107     rights with the help of authorities or in court.
13108
13109 I may \emph{revoke} my consent in whole or in part at any time - with effect for the
13110     future, freely and without giving reasons - vis-à-vis the DFG
13111     (\href{mailto:postmaster@dfg.de}{postmaster@dfg.de}). The lawfulness of the
13112     processing carried out up to that point remains unaffected. Insofar as I
13113     transmit \enquote{special categories of personal data} relating to third
13114     parties, I confirm that the necessary legitimation under data protection law
13115     exists (e.g.\ based on consent).
13116
13117 I have taken note of the DFG's Data Protection Notice relating to research
13118     funding, which I can access at \url{www.dfg.de/privacy_policy} and I will forward it
13119     to such persons whose data the DFG processes as a result of being mentioned in
13120     this CV.
13121   \end{dfgCVSectionBox}
13122 }
13123 \ExplSyntaxOn
```

We wrap everything into one command.

```
13124 \NewDocumentCommand{\dfgCV}{ m }{%
13125   % #1: person-id
13126  \bool_if:NF \l_@@_class_fastcompile_project_bool
13127  {
13128   \DTLifdbexists{cv-#1}{
13129   \StartTimer\dfgCVheader{#1}\StopTimer{#1:dfgCVheader}
13130   \StartTimer\dfgCVmandatory{#1}\StopTimer{#1:dfgCVmandatory}
13131   \StartTimer\dfgCVoptional{#1}{supplement}{Supplementary~ Career~ Information}\StopTimer{#1:dfgCVoptiona
13132   \StartTimer\dfgCVoptional{#1}{activities}{Activities~ in~ the~ Research~ System}\StopTimer{#1:dfgCVo
13133   \StartTimer\dfgCVoptional{#1}{supervision}{Supervision~ of~ Researchers~ in~ Early~ Career~ Phase
13134   \StartTimer \dfgCVpublications{#1}\StopTimer{#1: dfgCVpublications}
13135   \StartTimer\dfgCVoptional{#1}{distinction}{Academic~ Distinctions}\StopTimer{#1:dfgCVoptional|distinct
13136   \StartTimer\dfgCVoptional{#1}{other}{Other~ Information}\StopTimer{#1:dfgCVoptional|other}
13137
13138   % We check for the bool at this place because we dont have to enable
13139   % \LaTeX3-Syntax within the command which would require to put |~| at each space.
13140   \bool_if:NT \l_@@_cvoptional_bool  {
13141     \StartTimer \dfgCVdataprivacy{#1} \StopTimer{#1:dfgCVdataprivacy}
13142   }
13143 }
13144 {\msg_warning:nne { dfg } { database-not-found }{ cv-#1 }}
13145  }
13146 }
```

The CV should be printed automatically for all persons with the role `PI`.

```
13147 \NewDocumentCommand{\dfgCVsection}{ O{person} }{%
```

```
13148   \bool_if:NF \l_@@_class_fastcompile_project_bool
13149   {
13150   \DTLifdbexists{#1}{%
13151     \DTLsort*{lastname,firstname}{#1}%
13152     \DTLforeach*[%start of conditions
13153       \DTLisinlist{\theFundingPeriodNumeral}{\period}% 1st condition
13154       \and%
13155       \DTLisinlist{PI}{\role}% 2nd condition
13156     ]{#1}{%
13157       \id             =id,
13158       \period         =period,
13159       \role           =role%
13160     }{%
13161  \exp_args:Ne \dfgCV { \id }
13162     }
13163 }{
13164    Database \texttt{#1} missing.
13165     \msg_warning:nne { dfg } { database-not-found }{ #1 }
13166   }%
13167   }
13168 }
```

Finally we load the metadata and customization provided by the user. In case a file is missing a message will be displayed to inform the user.

```
13169 \NewDocumentCommand{\checkFile}{m}{%
13170     \StartTimer
13171   \file_if_exist:nTF {#1}
13172   {\ExplSyntaxOff\input{#1}\ExplSyntaxOn}
13173   {\msg_warning:nne { dfg } { file-not-found }{#1}}%
13174     \StopTimer{checkFile:#1}
13175 }
```

There are at least some file we need or should consider checking.

```
13176 \bool_if:NF \l_@@_class_documentation_bool
13177 {
13178 \bool_if:NTF \l_@@_class_fastcompile_project_bool
13179 {
13180   \bool_if:NT \l_@@_class_fastcompile_project_show_images_bool
13181     { \checkFile{metadata/dfg-metadata.tex} }
13182 }
13183 {
13184   \checkFile{metadata/dfg-metadata.tex}
13185   \bool_if:NTF \l_@@_class_cv_bool
13186   { \checkFile{metadata/dfg-metadata-cv.tex} }
13187   { \msg_warning:nnn { dfg } { cv-entry-omitted }
13188     {metadata/dfg-metadata-cv.tex} }
13189   \bool_if:NF \l_@@_class_cv_bool
13190   { \checkFile{metadata/dfg-metadata-tables.tex} }
13191 }
13192 }
```

This is a gimmick but quite fun to experiment with. This is taken from https://tex.stackexchange.com/a/732406/98739. Note that the message is written into the `.log`-file, not in the terminal.

```
13193 \def\dfgFinalComment{Well~ done~ coding!~ Happy~ TeXing.}
13194 \directlua{
13195   luatexbase.add_to_callback('wrapup_run',
13196   function ()
13197   f=io.open("\jobname.log", "a")
13198   f:write("\dfgFinalComment")
13199   f:close()
13200   end,
13201   "final message"
13202   )
13203 }
```

6.1.30 Reusable package: dfg-plots.sty

Independent package code shared by the class and standard documents.

```
%% Copyright 2026 Lukas C. Bossert. LPPL 1.3c or later.
%% Generated from dfg-crc.dtx.
\NeedsTeXFormat{LaTeX2e}[2022-06-01]
\ProvidesExplPackage{dfg-plots}{2026-11-24}{0.4.0}{Reusable proposal plot infrastructure}
% hvfloat loads picture; its calc mode remains supported by picture v2.
\PassOptionsToPackage{calc}{picture}
\RequirePackage{hvfloat}
\ExplSyntaxOn
\tl_new:N \l__dfgplots_options_tl
\tl_new:N \l__dfgplots_gantt_options_tl
\tl_new:N \l__dfgplots_collaboration_options_tl
\tl_new:N \l__dfgplots_float_options_tl
\tl_new:N \l__dfgplots_project_tl
\prop_new:N \g__dfgplots_renderers_prop
\keys_define:nn {dfgplots/setup}
  {
    plotOptions .tl_set:N = \l__dfgplots_options_tl,
    ganttPlotOptions .tl_set:N = \l__dfgplots_gantt_options_tl,
    collaborationPlotOptions .tl_set:N = \l__dfgplots_collaboration_options_tl,
  }
\NewDocumentCommand \dfgPlotSetup {m}
  {\keys_set:nn {dfgplots/setup}{#1}}
\ProvideDocumentCommand \changeSettings {m} {\dfgPlotSetup{#1}}
\NewDocumentCommand \dfgPlotProject {m} {\tl_set:Nn \l__dfgplots_project_tl {#1}}
\NewDocumentCommand \dfgDeclarePlotType {mm}
  {\prop_gput:Nnn \g__dfgplots_renderers_prop {#1}{#2}}
\cs_new_protected:Npn \__dfgplots_dispatch:nn #1#2
  {\__dfgplots_spec:nnnw {#1} #2 {} \q_stop}
\cs_new_protected:Npn \__dfgplots_spec:nnnw #1#2#3#4\q_stop
  {
    \group_begin:
    \tl_if_blank:nF {#3}{\tl_set:Nn \l__dfgplots_project_tl {#3}}
    \prop_get:NnNTF \g__dfgplots_renderers_prop {#2} \l_tmpa_tl
      {
        \tl_if_blank:VTF \l__dfgplots_project_tl
          {\msg_error:nn {dfg-plots}{missing-project}}
          {\use:e {\exp_not:V \l_tmpa_tl [\exp_not:n {#1}]
            {\exp_not:V \l__dfgplots_project_tl}}}
      }
      {\msg_error:nnn {dfg-plots}{unknown-type}{#2}}
    \group_end:
  }
\msg_new:nnn {dfg-plots}{missing-project}
  {Give~a~project~ID~or~set~one~with~\string\dfgPlotProject.}
\msg_new:nnn {dfg-plots}{unknown-type}
  {Unknown~plot~type~'#1'.~Load~dfg-collaboration~or~dfg-gantt.}
\ProvideDocumentCommand \printPlot {O{} +m}{\__dfgplots_dispatch:nn {#1}{#2}}
% The host adapter overrides this accessor, rather than copying settings.
\cs_new:Npn \__dfgplots_defaults:n #1
  {
    \exp_not:V \l__dfgplots_options_tl,
    \str_if_eq:nnTF {#1}{gantt}
      {\exp_not:V \l__dfgplots_gantt_options_tl}
      {\exp_not:V \l__dfgplots_collaboration_options_tl}
  }
\cs_new_protected:Npn \__dfgplots_options:nnn #1#2#3
  {
    \exp_args:Nne \keys_set_known:nnN {#1}
      {\__dfgplots_defaults:n {#2},\exp_not:n {#3}}
      \l__dfgplots_float_options_tl
  }
\cs_new_protected:Npn \__dfgplots_float:
  {\par\use:e {\exp_not:N \hvFloat
    [floatPos=!hb,capPos=bottom,\exp_not:V \l__dfgplots_float_options_tl]}}
\hvDefFloatStyle{proposalPlots}{floatPos=!t,capPos=top,floatCapSep=8pt}
\ExplSyntaxOff
```

6.1.31 Reusable package: dfg-collaboration.sty

Independent package code shared by the class and standard documents.

```
%% Copyright 2026 Lukas C. Bossert. LPPL 1.3c or later.
%% Generated from dfg-crc.dtx.
\NeedsTeXFormat{LaTeX2e}[2022-06-01]
```

```
\ProvidesExplPackage{dfg-collaboration}{2026-11-24}{0.4.0}{Independent collaboration plots}
\ExplSyntaxOff
\RequirePackage{dfg-plots}
\RequirePackage{tikz}
\usetikzlibrary{calc}
\providecolor{grey}{gray}{.5}
\ExplSyntaxOn
\dim_new:N  \l__dfg_collaboration_plot_x_dim
\dim_new:N  \l__dfg_collaboration_plot_y_dim
\dim_new:N  \l__dfg_collaboration_plot_x_step_dim
\dim_new:N  \l__dfg_collaboration_plot_box_width_dim
\dim_new:N  \l__dfg_collaboration_plot_box_gap_dim
\dim_new:N  \l__dfg_collaboration_plot_area_label_width_dim
\dim_new:N  \l__dfg_collaboration_plot_content_start_dim
\dim_new:N  \l__dfg_collaboration_plot_width_dim
\dim_new:N  \l__dfg_collaboration_plot_arc_height_dim
\box_new:N  \l__dfg_collaboration_plot_area_label_box
\seq_new:N  \l__dfg_collaboration_plot_nodes_seq
\seq_new:N  \l__dfg_collaboration_plot_areas_seq
\seq_new:N  \l__dfg_collaboration_plot_area_palette_seq
\seq_new:N  \l__dfg_collaboration_plot_edges_seq
\prop_new:N \l__dfg_collaboration_plot_all_status_prop
\prop_new:N \l__dfg_collaboration_plot_status_prop
\prop_new:N \l__dfg_collaboration_plot_lists_prop
\prop_new:N \l__dfg_collaboration_plot_edges_prop
\prop_new:N \l__dfg_collaboration_plot_visible_prop
\prop_new:N \l__dfg_collaboration_plot_area_prop
\prop_new:N \l__dfg_collaboration_plot_area_nodes_prop
\prop_new:N \l__dfg_collaboration_plot_area_color_prop
\prop_new:N \l__dfg_collaboration_plot_area_color_override_prop
\tl_new:N   \l__dfg_collaboration_plot_focus_tl
\tl_new:N   \l__dfg_collaboration_plot_layout_tl
\tl_new:N   \l__dfg_collaboration_plot_id_tl
\tl_new:N   \l__dfg_collaboration_plot_status_tl
\tl_new:N   \l__dfg_collaboration_plot_consider_tl
\tl_new:N   \l__dfg_collaboration_plot_reference_only_tl
\tl_new:N   \l__dfg_collaboration_plot_collaborations_tl
\tl_new:N   \l__dfg_collaboration_plot_area_tl
\tl_new:N   \l__dfg_collaboration_plot_source_tl
\tl_new:N   \l__dfg_collaboration_plot_target_tl
\tl_new:N   \l__dfg_collaboration_plot_edge_tl
\tl_new:N   \l__dfg_collaboration_plot_edge_left_tl
\tl_new:N   \l__dfg_collaboration_plot_edge_right_tl
\tl_new:N   \l__dfg_collaboration_plot_label_tl
\tl_new:N   \l__dfg_collaboration_plot_color_tl
\tl_new:N   \l__dfg_collaboration_plot_caption_tl
\int_new:N  \l__dfg_collaboration_plot_group_index_int
\int_new:N  \l__dfg_collaboration_plot_row_index_int
\int_new:N  \l__dfg_collaboration_plot_node_count_int
\int_new:N  \l__dfg_collaboration_plot_area_index_int
\bool_new:N \l__dfg_collaboration_plot_arcs_bool

\cs_new_protected:Npn \__dfg_collaboration_plot_merge_area_colors:n #1
{
  \prop_set_from_keyval:Nn \l_tmpa_prop {#1}
  \prop_map_inline:Nn \l_tmpa_prop
    { \prop_put:Nnn \l__dfg_collaboration_plot_area_color_override_prop
        {##1} {##2} }
}

\keys_define:nn { dfg / project-collaboration-plot }
{
  layout .choice:,
  layout / heatmap .code:n =
    { \tl_set:Nn \l__dfg_collaboration_plot_layout_tl { heatmap } },
  layout / arc .code:n =
    { \tl_set:Nn \l__dfg_collaboration_plot_layout_tl { arc } },
  layout / arc-diagram .meta:n = { layout = arc },
  heatmap .meta:n = { layout = heatmap },
  arc .meta:n = { layout = arc },
  arc-diagram .meta:n = { layout = arc },
  arcs .bool_set:N = \l__dfg_collaboration_plot_arcs_bool,
  arcs .default:n = true,
  no-arcs .meta:n = { arcs = false },
```

```
13347   area-colors .code:n =
13348     { \__dfg_collaboration_plot_merge_area_colors:n {#1} },
13349   area-colours .meta:n = { area-colors = {#1} },
13350   area-palette .code:n =
13351     {
13352       \clist_if_empty:nF {#1}
13353         { \seq_set_from_clist:Nn \l__dfg_collaboration_plot_area_palette_seq {#1} }
13354     },
13355   caption .tl_set:N = \l__dfg_collaboration_plot_caption_tl,
13356 }
13357
13358 \cs_new_protected:Npn \__dfg_collaboration_plot_collect_edge:nn #1#2
13359 {
13360   \tl_set:Nn \l__dfg_collaboration_plot_source_tl {#1}
13361   \tl_set:Nn \l__dfg_collaboration_plot_target_tl {#2}
13362   \tl_trim_spaces:N \l__dfg_collaboration_plot_source_tl
13363   \tl_trim_spaces:N \l__dfg_collaboration_plot_target_tl
13364   \tl_if_blank:VF \l__dfg_collaboration_plot_target_tl
13365   {
13366     \prop_if_in:NVTF \l__dfg_collaboration_plot_status_prop
13367       \l__dfg_collaboration_plot_target_tl
13368     {
13369       \str_if_eq:VVF
13370         \l__dfg_collaboration_plot_source_tl
13371         \l__dfg_collaboration_plot_target_tl
13372       {
13373         \str_compare:eNeTF
13374           { \tl_use:N \l__dfg_collaboration_plot_source_tl }
13375           <
13376           { \tl_use:N \l__dfg_collaboration_plot_target_tl }
13377           {
13378             \tl_set:Nx \l__dfg_collaboration_plot_edge_tl
13379               {
13380                 \tl_use:N \l__dfg_collaboration_plot_source_tl
13381                 /\tl_use:N \l__dfg_collaboration_plot_target_tl
13382               }
13383           }
13384           {
13385             \tl_set:Nx \l__dfg_collaboration_plot_edge_tl
13386               {
13387                 \tl_use:N \l__dfg_collaboration_plot_target_tl
13388                 /\tl_use:N \l__dfg_collaboration_plot_source_tl
13389               }
13390           }
13391         \prop_put:NVn \l__dfg_collaboration_plot_edges_prop
13392           \l__dfg_collaboration_plot_edge_tl { 1 }
13393       }
13394     }
13395     {
13396       \prop_if_in:NVF \l__dfg_collaboration_plot_all_status_prop
13397         \l__dfg_collaboration_plot_target_tl
13398       {
13399         \msg_warning:nnee { dfg-collaboration } { target-not-found }
13400           { \l__dfg_collaboration_plot_source_tl }
13401           { \l__dfg_collaboration_plot_target_tl }
13402       }
13403     }
13404   }
13405 }
13406
13407 \cs_new_protected:Npn \__dfg_collaboration_plot_collect_edges:
13408 {
13409   \seq_clear:N \l__dfg_collaboration_plot_edges_seq
13410   \prop_map_inline:Nn \l__dfg_collaboration_plot_lists_prop
13411   {
13412     \clist_map_inline:nn {##2}
13413       { \__dfg_collaboration_plot_collect_edge:nn {##1} {####1} }
13414   }
13415   \__dfgcollab_override_edges:
13416   \prop_map_inline:Nn \l__dfg_collaboration_plot_edges_prop
13417     { \seq_put_right:Nn \l__dfg_collaboration_plot_edges_seq {##1} }
13418   \seq_sort:Nn \l__dfg_collaboration_plot_edges_seq
13419     {
13420       \str_compare:eNeTF {##1} < {##2}
```

```
13421         { \sort_return_same: }
13422         { \sort_return_swapped: }
13423     }
13424 }
13425
13426 \cs_new_protected:Npn \__dfg_collaboration_plot_unpack_edge:n #1
13427 {
13428   \seq_set_split:Nnn \l_tmpa_seq {/} {#1}
13429   \seq_pop_left:NN \l_tmpa_seq \l__dfg_collaboration_plot_edge_left_tl
13430   \seq_pop_left:NN \l_tmpa_seq \l__dfg_collaboration_plot_edge_right_tl
13431 }
13432
13433 \cs_new_protected:Npn \__dfg_collaboration_plot_prepare:
13434 {
13435   \prop_clear:N \l__dfg_collaboration_plot_visible_prop
13436   \seq_clear:N \l__dfg_collaboration_plot_areas_seq
13437   \prop_clear:N \l__dfg_collaboration_plot_area_nodes_prop
13438   \prop_clear:N \l__dfg_collaboration_plot_area_color_prop
13439   \int_zero:N \l__dfg_collaboration_plot_area_index_int
13440   \prop_put:NVn \l__dfg_collaboration_plot_visible_prop
13441     \l__dfg_collaboration_plot_focus_tl { 1 }
13442   \seq_map_inline:Nn \l__dfg_collaboration_plot_edges_seq
13443   {
13444     \__dfg_collaboration_plot_unpack_edge:n {##1}
13445     \bool_lazy_or:nnT
13446     {
13447       \str_if_eq_p:VV
13448         \l__dfg_collaboration_plot_edge_left_tl
13449         \l__dfg_collaboration_plot_focus_tl
13450     }
13451     {
13452       \str_if_eq_p:VV
13453         \l__dfg_collaboration_plot_edge_right_tl
13454         \l__dfg_collaboration_plot_focus_tl
13455     }
13456     {
13457       \prop_put:NVn \l__dfg_collaboration_plot_visible_prop
13458         \l__dfg_collaboration_plot_edge_left_tl { 1 }
13459       \prop_put:NVn \l__dfg_collaboration_plot_visible_prop
13460         \l__dfg_collaboration_plot_edge_right_tl { 1 }
13461     }
13462   }
13463   \seq_map_inline:Nn \l__dfg_collaboration_plot_nodes_seq
13464   {
13465     \prop_get:NnN \l__dfg_collaboration_plot_area_prop {##1}
13466       \l__dfg_collaboration_plot_area_tl
13467     \prop_if_in:NVF \l__dfg_collaboration_plot_area_nodes_prop
13468       \l__dfg_collaboration_plot_area_tl
13469     {
13470       \seq_put_right:NV \l__dfg_collaboration_plot_areas_seq
13471         \l__dfg_collaboration_plot_area_tl
13472       \prop_get:NVNTF \l__dfg_collaboration_plot_area_color_override_prop
13473         \l__dfg_collaboration_plot_area_tl
13474         \l__dfg_collaboration_plot_color_tl
13475       {
13476         \prop_put:NVV \l__dfg_collaboration_plot_area_color_prop
13477           \l__dfg_collaboration_plot_area_tl
13478           \l__dfg_collaboration_plot_color_tl
13479       }
13480       {
13481         \int_incr:N \l__dfg_collaboration_plot_area_index_int
13482         \int_set:Nn \l_tmpa_int
13483           {
13484             1 + \int_mod:nn
13485               { \l__dfg_collaboration_plot_area_index_int - 1 }
13486               { \seq_count:N \l__dfg_collaboration_plot_area_palette_seq }
13487           }
13488         \prop_put:NVx \l__dfg_collaboration_plot_area_color_prop
13489           \l__dfg_collaboration_plot_area_tl
13490           {
13491             \seq_item:Nn \l__dfg_collaboration_plot_area_palette_seq
13492               { \l_tmpa_int }
13493           }
13494       }
```

```
      \prop_put:NVn \l__dfg_collaboration_plot_area_nodes_prop
        \l__dfg_collaboration_plot_area_tl { }
    }
    \prop_get:NVN \l__dfg_collaboration_plot_area_nodes_prop
      \l__dfg_collaboration_plot_area_tl \l_tmpa_tl
    \tl_if_blank:VTF \l_tmpa_tl
      { \tl_set:Nn \l_tmpa_tl {##1} }
      { \tl_put_right:Nn \l_tmpa_tl { , ##1 } }
    \prop_put:NVV \l__dfg_collaboration_plot_area_nodes_prop
      \l__dfg_collaboration_plot_area_tl \l_tmpa_tl
  }
}

\cs_new_protected:Npn \__dfg_collaboration_plot_set_color:n #1
{
  \tl_set:Nx \l__dfg_collaboration_plot_label_tl {#1}
  \prop_get:NnNTF \l__dfg_collaboration_plot_area_prop
    {#1} \l__dfg_collaboration_plot_area_tl
    { \prop_get:NVN \l__dfg_collaboration_plot_area_color_prop
        \l__dfg_collaboration_plot_area_tl
        \l__dfg_collaboration_plot_color_tl }
    { \tl_set:Nn \l__dfg_collaboration_plot_color_tl { grey } }
}

\cs_new_protected:Npn \__dfg_collaboration_plot_heatmap_cell:n #1
{
  \__dfg_collaboration_plot_set_color:n {#1}
  \str_if_eq:VVTF
    \l__dfg_collaboration_plot_focus_tl
    \l__dfg_collaboration_plot_label_tl
  {
    \node[
      anchor=center,
      minimum~width=\dim_use:N \l__dfg_collaboration_plot_box_width_dim,
      minimum~height=5.2mm,
      inner~sep=0pt,
      rounded~corners=1.4pt,
      draw=\tl_use:N \l__dfg_collaboration_plot_color_tl!78!black,
      fill=\tl_use:N \l__dfg_collaboration_plot_color_tl,
      text=white,
      font=\footnotesize\bfseries
    ] at
      (\dim_use:N \l__dfg_collaboration_plot_x_dim,
       \dim_use:N \l__dfg_collaboration_plot_y_dim)
      { \strut\tl_use:N \l__dfg_collaboration_plot_label_tl };
  }
  {
    \prop_if_in:NVTF \l__dfg_collaboration_plot_visible_prop
      \l__dfg_collaboration_plot_label_tl
    {
      \node[
        anchor=center,
        minimum~width=\dim_use:N \l__dfg_collaboration_plot_box_width_dim,
        minimum~height=5.2mm,
        inner~sep=0pt,
        rounded~corners=1.4pt,
        draw=\tl_use:N \l__dfg_collaboration_plot_color_tl!48,
        fill=\tl_use:N \l__dfg_collaboration_plot_color_tl!14,
        text=\tl_use:N \l__dfg_collaboration_plot_color_tl,
        font=\footnotesize\bfseries
      ] at
        (\dim_use:N \l__dfg_collaboration_plot_x_dim,
         \dim_use:N \l__dfg_collaboration_plot_y_dim)
        { \strut\tl_use:N \l__dfg_collaboration_plot_label_tl };
    }
    {
      \node[
        anchor=center,
        minimum~width=\dim_use:N \l__dfg_collaboration_plot_box_width_dim,
        minimum~height=5.2mm,
        inner~sep=0pt,
        rounded~corners=1.4pt,
        draw=grey!22,
        fill=white,
```

```
13569         text=grey!70!black,
13570         font=\footnotesize
13571       ] at
13572         (\dim_use:N \l__dfg_collaboration_plot_x_dim,
13573          \dim_use:N \l__dfg_collaboration_plot_y_dim)
13574         { \strut\tl_use:N \l__dfg_collaboration_plot_label_tl };
13575     }
13576   }
13577 }
13578
13579 \cs_new_protected:Npn \__dfg_collaboration_plot_heatmap_row:nnn #1#2#3
13580 {
13581   \clist_if_empty:nF {#1}
13582   {
13583     \int_incr:N \l__dfg_collaboration_plot_row_index_int
13584     \dim_set:Nn \l__dfg_collaboration_plot_y_dim
13585     {
13586       -7mm *
13587       \int_eval:n { \l__dfg_collaboration_plot_row_index_int - 1 }
13588     }
13589     \node[
13590       anchor=east,
13591       inner~sep=0pt,
13592       font=\scriptsize\bfseries
13593     ] at
13594       (\dim_use:N \l__dfg_collaboration_plot_area_label_width_dim,
13595        \dim_use:N \l__dfg_collaboration_plot_y_dim)
13596       {Project~area~#3};
13597     \draw[draw=#2,line~width=.75pt,line~cap=round]
13598       (\dim_eval:n
13599          { \l__dfg_collaboration_plot_area_label_width_dim + .8mm },
13600        \dim_use:N \l__dfg_collaboration_plot_y_dim)
13601       --
13602       (\dim_eval:n
13603          { \l__dfg_collaboration_plot_area_label_width_dim + 2.8mm },
13604        \dim_use:N \l__dfg_collaboration_plot_y_dim);
13605     \int_zero:N \l__dfg_collaboration_plot_group_index_int
13606     \clist_map_inline:nn {#1}
13607     {
13608       \int_incr:N \l__dfg_collaboration_plot_group_index_int
13609       \dim_set:Nn \l__dfg_collaboration_plot_x_dim
13610       {
13611         \l__dfg_collaboration_plot_content_start_dim
13612         + \l__dfg_collaboration_plot_box_width_dim / 2
13613         + \l__dfg_collaboration_plot_x_step_dim *
13614         \int_eval:n { \l__dfg_collaboration_plot_group_index_int - 1 }
13615       }
13616       \__dfg_collaboration_plot_heatmap_cell:n {##1}
13617     }
13618   }
13619 }
13620 \cs_generate_variant:Nn \__dfg_collaboration_plot_heatmap_row:nnn { V V n }
13621
13622 \cs_new_protected:Npn \__dfg_collaboration_plot_heatmap_picture:
13623 {
13624     % Use the widest project area as the shared column grid.  Each column gets
13625     % a dynamic box width, and the final cell reaches the right edge of the
13626     % text block instead of leaving a large unused strip before the caption.
13627     \dim_zero:N \l__dfg_collaboration_plot_area_label_width_dim
13628     \seq_map_inline:Nn \l__dfg_collaboration_plot_areas_seq
13629       {
13630         \hbox_set:Nn \l__dfg_collaboration_plot_area_label_box
13631           { \scriptsize\bfseries Project~area~##1 }
13632         \dim_compare:nNnT
13633           { \box_wd:N \l__dfg_collaboration_plot_area_label_box }
13634           >
13635           { \l__dfg_collaboration_plot_area_label_width_dim }
13636           {
13637             \dim_set:Nn \l__dfg_collaboration_plot_area_label_width_dim
13638               { \box_wd:N \l__dfg_collaboration_plot_area_label_box }
13639           }
13640       }
13641     \dim_set:Nn \l__dfg_collaboration_plot_content_start_dim
13642       { \l__dfg_collaboration_plot_area_label_width_dim + 4mm }
```

```
13643   \begin{tikzpicture}
13644     \int_zero:N \l__dfg_collaboration_plot_node_count_int
13645     \seq_map_inline:Nn \l__dfg_collaboration_plot_areas_seq
13646       {
13647         \prop_get:NnN \l__dfg_collaboration_plot_area_nodes_prop {##1}
13648           \l_tmpa_tl
13649         \clist_set:NV \l_tmpa_clist \l_tmpa_tl
13650         \int_set:Nn \l_tmpa_int { \clist_count:N \l_tmpa_clist }
13651         \int_set:Nn \l__dfg_collaboration_plot_node_count_int
13652           { \int_max:nn { \l__dfg_collaboration_plot_node_count_int }
13653             { \l_tmpa_int } }
13654       }
13655     \dim_set:Nn \l__dfg_collaboration_plot_box_gap_dim { 1mm }
13656     \int_compare:nNnTF
13657       { \l__dfg_collaboration_plot_node_count_int } > { 0 }
13658       {
13659         \dim_set:Nn \l__dfg_collaboration_plot_box_width_dim
13660         {
13661           ( \l__dfg_collaboration_plot_width_dim
13662             - \l__dfg_collaboration_plot_content_start_dim
13663             - \l__dfg_collaboration_plot_box_gap_dim *
13664               \int_eval:n
13665                 { \l__dfg_collaboration_plot_node_count_int - 1 }
13666           ) / \l__dfg_collaboration_plot_node_count_int
13667         }
13668         \dim_set:Nn \l__dfg_collaboration_plot_x_step_dim
13669         {
13670           \l__dfg_collaboration_plot_box_width_dim
13671           + \l__dfg_collaboration_plot_box_gap_dim
13672         }
13673       }
13674       {
13675         \dim_zero:N \l__dfg_collaboration_plot_box_width_dim
13676         \dim_zero:N \l__dfg_collaboration_plot_x_step_dim
13677       }
13678     \int_zero:N \l__dfg_collaboration_plot_row_index_int
13679     \seq_map_inline:Nn \l__dfg_collaboration_plot_areas_seq
13680       {
13681         \prop_get:NnN \l__dfg_collaboration_plot_area_nodes_prop {##1}
13682           \l_tmpa_tl
13683         \prop_get:NnN \l__dfg_collaboration_plot_area_color_prop {##1}
13684           \l__dfg_collaboration_plot_color_tl
13685         \__dfg_collaboration_plot_heatmap_row:VVn
13686           \l_tmpa_tl \l__dfg_collaboration_plot_color_tl {##1}
13687       }
13688   \end{tikzpicture}
13689 }
13690
13691 \cs_new_protected:Npn \__dfg_collaboration_plot_arc_place_nodes:
13692 {
13693   \int_set:Nn \l__dfg_collaboration_plot_node_count_int
13694     { \seq_count:N \l__dfg_collaboration_plot_nodes_seq }
13695   \int_compare:nNnTF
13696     { \l__dfg_collaboration_plot_node_count_int } > { 1 }
13697     {
13698       \dim_set:Nn \l__dfg_collaboration_plot_x_step_dim
13699       {
13700         ( \l__dfg_collaboration_plot_width_dim - 6mm ) /
13701         \int_eval:n { \l__dfg_collaboration_plot_node_count_int - 1 }
13702       }
13703     }
13704     { \dim_zero:N \l__dfg_collaboration_plot_x_step_dim }
13705   \int_zero:N \l__dfg_collaboration_plot_group_index_int
13706   \seq_map_inline:Nn \l__dfg_collaboration_plot_nodes_seq
13707   {
13708     \dim_set:Nn \l__dfg_collaboration_plot_x_dim
13709     {
13710       3mm + \l__dfg_collaboration_plot_x_step_dim
13711       * \l__dfg_collaboration_plot_group_index_int
13712     }
13713     \coordinate (dfg-collaboration-arc-##1) at
13714       (\dim_use:N \l__dfg_collaboration_plot_x_dim,0);
13715     \int_incr:N \l__dfg_collaboration_plot_group_index_int
13716   }
```

```
}

\cs_new_protected:Npn \__dfg_collaboration_plot_draw_focus_arc:n #1
{
  \__dfg_collaboration_plot_unpack_edge:n {#1}
  \tl_clear:N \l__dfg_collaboration_plot_target_tl
  \str_if_eq:VVTF
    \l__dfg_collaboration_plot_edge_left_tl
    \l__dfg_collaboration_plot_focus_tl
    {
      \tl_set_eq:NN \l__dfg_collaboration_plot_target_tl
        \l__dfg_collaboration_plot_edge_right_tl
    }
    {
      \str_if_eq:VVT
        \l__dfg_collaboration_plot_edge_right_tl
        \l__dfg_collaboration_plot_focus_tl
      {
        \tl_set_eq:NN \l__dfg_collaboration_plot_target_tl
          \l__dfg_collaboration_plot_edge_left_tl
      }
  }
  \tl_if_blank:VF \l__dfg_collaboration_plot_target_tl
  {
    \exp_args:NV \__dfg_collaboration_plot_set_color:n
      \l__dfg_collaboration_plot_target_tl
    \draw[
      draw=\tl_use:N \l__dfg_collaboration_plot_color_tl,
      line~width=.75pt,
      opacity=.78,
      line~cap=round
    ]
      (dfg-collaboration-arc-\l__dfg_collaboration_plot_focus_tl)
      .. controls % chktex 12
      ($ (dfg-collaboration-arc-\l__dfg_collaboration_plot_focus_tl) % chktex 25
         + (0,\dim_use:N \l__dfg_collaboration_plot_arc_height_dim) $) % chktex 25 chktex 35
      and
      ($ (dfg-collaboration-arc-\l__dfg_collaboration_plot_target_tl) % chktex 25
         + (0,\dim_use:N \l__dfg_collaboration_plot_arc_height_dim) $) % chktex 25 chktex 35
      ..
      (dfg-collaboration-arc-\l__dfg_collaboration_plot_target_tl);
  }
}

\cs_new_protected:Npn \__dfg_collaboration_plot_arc_node:n #1
{
  \__dfg_collaboration_plot_set_color:n {#1}
  \str_if_eq:VVTF
    \l__dfg_collaboration_plot_focus_tl
    \l__dfg_collaboration_plot_label_tl
  {
    \node[
      anchor=center,
      minimum~width=6mm,
      minimum~height=5mm,
      inner~sep=0pt,
      rounded~corners=1pt,
      draw=\tl_use:N \l__dfg_collaboration_plot_color_tl!78!black,
      fill=\tl_use:N \l__dfg_collaboration_plot_color_tl,
      text=white,
      font=\scriptsize\bfseries
    ] at (dfg-collaboration-arc-#1) {#1};
  }
  {
    \prop_if_in:NVTF \l__dfg_collaboration_plot_visible_prop
      \l__dfg_collaboration_plot_label_tl
    {
      \node[
        anchor=center,
        minimum~width=6mm,
        minimum~height=5mm,
        inner~sep=0pt,
        rounded~corners=.8pt,
        draw=\tl_use:N \l__dfg_collaboration_plot_color_tl!48,
```

```
13791         fill=\tl_use:N \l__dfg_collaboration_plot_color_tl!14,
13792         text=\tl_use:N \l__dfg_collaboration_plot_color_tl,
13793         font=\scriptsize\bfseries
13794       ] at (dfg-collaboration-arc-#1) {#1};
13795     }
13796     {
13797       \node[
13798         anchor=center,
13799         minimum~width=6mm,
13800         minimum~height=5mm,
13801         inner~sep=0pt,
13802         rounded~corners=.8pt,
13803         draw=grey!22,
13804         fill=white,
13805         text=grey!70!black,
13806         font=\scriptsize
13807       ] at (dfg-collaboration-arc-#1) {#1};
13808     }
13809   }
13810 }
13811
13812 \cs_new_protected:Npn \__dfg_collaboration_plot_arc_group:nn #1#2
13813 {
13814   \clist_if_empty:nF {#1}
13815   {
13816     \tl_set:Nx \l_tmpa_tl { \clist_item:nn {#1} { 1 } }
13817     \tl_set:Nx \l_tmpb_tl { \clist_item:nn {#1} { -1 } }
13818     \draw[draw=#2,line~width=.75pt,line~cap=round]
13819       ($ (dfg-collaboration-arc-\l_tmpa_tl) + (-3mm,-3.5mm) $) % chktex 25
13820       --
13821       ($ (dfg-collaboration-arc-\l_tmpb_tl) + (3mm,-3.5mm) $); % chktex 25
13822   }
13823 }
13824 \cs_generate_variant:Nn \__dfg_collaboration_plot_arc_group:nn { V V }
13825
13826 \cs_new_protected:Npn \__dfg_collaboration_plot_arc_picture:
13827 {
13828   \begin{tikzpicture}
13829     \__dfg_collaboration_plot_arc_place_nodes:
13830     % Equal control-point heights give every symmetric cubic arc the same peak.
13831     \dim_set:Nn \l__dfg_collaboration_plot_arc_height_dim { 12mm }
13832     \bool_if:NT \l__dfg_collaboration_plot_arcs_bool
13833     {
13834       \seq_map_inline:Nn \l__dfg_collaboration_plot_edges_seq
13835         { \__dfg_collaboration_plot_draw_focus_arc:n {##1} }
13836     }
13837     \seq_map_inline:Nn \l__dfg_collaboration_plot_nodes_seq
13838       { \__dfg_collaboration_plot_arc_node:n {##1} }
13839     \seq_map_inline:Nn \l__dfg_collaboration_plot_areas_seq
13840       {
13841         \prop_get:NnN \l__dfg_collaboration_plot_area_nodes_prop {##1}
13842           \l_tmpa_tl
13843         \prop_get:NnN \l__dfg_collaboration_plot_area_color_prop {##1}
13844           \l__dfg_collaboration_plot_color_tl
13845         \__dfg_collaboration_plot_arc_group:VV
13846           \l_tmpa_tl \l__dfg_collaboration_plot_color_tl
13847       }
13848   \end{tikzpicture}
13849 }
13850
13851 \cs_new_protected:Npn \__dfg_collaboration_plot_picture:
13852 {
13853   \str_case:VnF \l__dfg_collaboration_plot_layout_tl
13854   {
13855     { heatmap } { \__dfg_collaboration_plot_heatmap_picture: }
13856     { arc }     { \__dfg_collaboration_plot_arc_picture: }
13857   }
13858   { \__dfg_collaboration_plot_arc_picture: }
13859 }
13860
13861 % Both plot families explicitly allow here-or-bottom placement. A lone |h|
13862 % is promoted to |ht| by LaTeX when here placement fails, which can put a plot
13863 % at the top of the same page above its source section. Including |b| prevents
13864 % that promotion while retaining ordinary floating, captions and hyperlinks.
```

```
% The bang retains the class default's relaxed float-fraction limits, so a
% moderately tall plot need not wait for a forced float page. This policy is
% local to generated plots; other figure placement is unchanged.
% Keep both caption variants at the captured body-text width without scaling
% the TikZ plot, even when the surrounding \linewidth is temporarily narrower.
\cs_new_protected:Npn \__dfg_collaboration_plot_full_width_picture:
{
  \makebox[\dim_use:N \l__dfg_collaboration_plot_width_dim][l]
    {\__dfg_collaboration_plot_picture:}
}


\prop_new:N \l__dfgcollab_projects_prop
\tl_new:N \l__dfgcollab_area_tl
\tl_new:N \l__dfgcollab_links_tl
\bool_new:N \l__dfgcollab_active_bool
\clist_new:N \l__dfgcollab_selection_clist
\clist_new:N \l__dfgcollab_override_clist
\prop_new:N \l__dfgcollab_selection_prop
\bool_new:N \l__dfgcollab_selection_bool
\bool_new:N \l__dfgcollab_override_bool
\tl_new:N \l__dfgcollab_colors_tl
\tl_new:N \l__dfgcollab_palette_tl
\keys_define:nn {dfgcollab/project}
  {
    area .tl_set:N = \l__dfgcollab_area_tl,
    collaboration .tl_set:N = \l__dfgcollab_links_tl,
    collaborations .meta:n = {collaboration={#1}},
    active .bool_set:N = \l__dfgcollab_active_bool,
  }
\keys_define:nn {dfgcollab/setup}
  {
    area-colors .tl_set:N = \l__dfgcollab_colors_tl,
    area-palette .tl_set:N = \l__dfgcollab_palette_tl,
    area-palette .initial:n = {blue!70!black,teal!80!black,orange!85!black,violet,brown},
  }
\NewDocumentCommand \CollaborationSetup {m}{\keys_set:nn {dfgcollab/setup}{#1}}
\NewDocumentCommand \clearCollaborationProjects {}{\prop_clear:N \l__dfgcollab_projects_prop}
\NewDocumentCommand \DeclareCollaborationProject {m m}
  {
    \regex_match:nnTF {\A[A-Za-z0-9][A-Za-z0-9-]*\Z}{#1}
      {
        \group_begin:
        \tl_set:Nn \l__dfgcollab_area_tl {#1}
        \tl_set:Ne \l__dfgcollab_area_tl {\tl_head:V \l__dfgcollab_area_tl}
        \tl_clear:N \l__dfgcollab_links_tl
        \bool_set_true:N \l__dfgcollab_active_bool
        \keys_set:nn {dfgcollab/project}{#2}
        \use:e {\group_end:
          \prop_put:Nnn \exp_not:N \l__dfgcollab_projects_prop {#1}
            {area={\exp_not:V \l__dfgcollab_area_tl},
             collaboration={\exp_not:V \l__dfgcollab_links_tl},
             active=\bool_if:NTF \l__dfgcollab_active_bool {true}{false}}}
      }
      {\msg_error:nnn {dfg-collaboration}{bad-id}{#1}}
  }
\msg_new:nnn {dfg-collaboration}{bad-id}{Invalid~project~ID~'#1'.~Use~letters,~digits,~and~hyphens.}
\msg_new:nnn {dfg-collaboration}{target-not-found}
  {Project~'#1'~references~unknown~collaboration~target~'#2'.}
\msg_new:nnn {dfg-collaboration}{focus-not-found}{Unknown~or~inactive~focus~project~'#1'.}
\msg_new:nnn {dfg-collaboration}{empty-palette}{The~area~palette~must~not~be~empty.}
\keys_define:nn {dfg / project-collaboration-plot}
  {
    collaboration .code:n =
      {\bool_set_true:N \l__dfgcollab_override_bool
       \clist_set:Nn \l__dfgcollab_override_clist {#1}},
    collaboration .value_required:n = true,
    collaborations .meta:n = {collaboration={#1}},
    show-projects .code:n =
      {\bool_set_true:N \l__dfgcollab_selection_bool
       \clist_set:Nn \l__dfgcollab_selection_clist {#1}},
    show-projects .value_required:n = true,
    projects .meta:n = {show-projects={#1}},
    projects .value_required:n = true,
```

```
13939       width .dim_set:N = \l__dfg_collaboration_plot_width_dim,
13940     }
13941   \cs_new_protected:Npn \__dfgcollab_reset:
13942     {
13943       \bool_set_false:N \l__dfgcollab_selection_bool
13944       \bool_set_false:N \l__dfgcollab_override_bool
13945       \clist_clear:N \l__dfgcollab_selection_clist
13946       \clist_clear:N \l__dfgcollab_override_clist
13947       \keys_set:nn {dfg / project-collaboration-plot}{layout=arc,arcs=false}
13948     }
13949   \cs_new_protected:Npn \__dfgcollab_select:
13950     {
13951       \bool_if:NT \l__dfgcollab_selection_bool
13952         {
13953           \prop_clear:N \l__dfgcollab_selection_prop
13954           \clist_map_inline:Nn \l__dfgcollab_selection_clist
13955             {\prop_put:Nnn \l__dfgcollab_selection_prop {##1}{1}}
13956           \prop_put:NVn \l__dfgcollab_selection_prop \l__dfg_collaboration_plot_focus_tl {1}
13957           \seq_map_inline:Nn \l__dfg_collaboration_plot_nodes_seq
13958             {\prop_if_in:NnF \l__dfgcollab_selection_prop {##1}
13959               {\seq_remove_all:Nn \l__dfg_collaboration_plot_nodes_seq {##1}
13960                \prop_remove:Nn \l__dfg_collaboration_plot_status_prop {##1}
13961                \prop_remove:Nn \l__dfg_collaboration_plot_lists_prop {##1}}}
13962         }
13963     }
13964   \cs_new_protected:Npn \__dfgcollab_override_edges:
13965     {
13966       \bool_if:NT \l__dfgcollab_override_bool
13967         {
13968           \prop_map_inline:Nn \l__dfg_collaboration_plot_edges_prop
13969             {
13970               \__dfg_collaboration_plot_unpack_edge:n {##1}
13971               \bool_lazy_or:nnT
13972                 {\str_if_eq_p:VV \l__dfg_collaboration_plot_edge_left_tl \l__dfg_collaboration_plot_focus_t
13973                 {\str_if_eq_p:VV \l__dfg_collaboration_plot_edge_right_tl \l__dfg_collaboration_plot_focus_
13974                 {\prop_remove:Nn \l__dfg_collaboration_plot_edges_prop {##1}}
13975             }
13976           \clist_map_inline:Nn \l__dfgcollab_override_clist
13977             {\exp_args:NV \__dfg_collaboration_plot_collect_edge:nn
13978               \l__dfg_collaboration_plot_focus_tl {##1}}
13979         }
13980     }
13981   \cs_new_protected:Npn \__dfgcollab_collect:
13982     {
13983       \seq_clear:N \l__dfg_collaboration_plot_nodes_seq
13984       \prop_clear:N \l__dfg_collaboration_plot_status_prop
13985       \prop_clear:N \l__dfg_collaboration_plot_all_status_prop
13986       \prop_clear:N \l__dfg_collaboration_plot_lists_prop
13987       \prop_clear:N \l__dfg_collaboration_plot_area_prop
13988       \prop_clear:N \l__dfg_collaboration_plot_edges_prop
13989       \prop_map_inline:Nn \l__dfgcollab_projects_prop
13990         {
13991           \keys_set:nn {dfgcollab/project}{##2}
13992           \prop_put:Nnn \l__dfg_collaboration_plot_all_status_prop {##1}{C}
13993           \bool_if:NT \l__dfgcollab_active_bool
13994             {\seq_put_right:Nn \l__dfg_collaboration_plot_nodes_seq {##1}
13995              \prop_put:Nnn \l__dfg_collaboration_plot_status_prop {##1}{C}
13996              \prop_put:NnV \l__dfg_collaboration_plot_area_prop {##1}\l__dfgcollab_area_tl
13997              \prop_put:NnV \l__dfg_collaboration_plot_lists_prop {##1}\l__dfgcollab_links_tl}
13998         }
13999       \seq_sort:Nn \l__dfg_collaboration_plot_nodes_seq
14000         {\str_compare:eNeTF
14001           {\prop_item:Nn \l__dfg_collaboration_plot_area_prop {##1}/##1}<
14002           {\prop_item:Nn \l__dfg_collaboration_plot_area_prop {##2}/##2}
14003           {\sort_return_same:}{\sort_return_swapped:}}
14004       \__dfgcollab_select:
14005     }
14006   \NewDocumentCommand \CollaborationPlot {O{} m}
14007     {
14008       \group_begin:
14009       \__dfgcollab_reset:
14010       \dim_set:Nn \l__dfg_collaboration_plot_width_dim {\linewidth}
14011       \exp_args:NNV \prop_set_from_keyval:Nn \l__dfg_collaboration_plot_area_color_override_prop
14012         \l__dfgcollab_colors_tl
```

```
    \exp_args:NNV \seq_set_from_clist:Nn \l__dfg_collaboration_plot_area_palette_seq
      \l__dfgcollab_palette_tl
    \tl_clear:N \l__dfg_collaboration_plot_caption_tl
    \__dfgplots_options:nnn {dfg / project-collaboration-plot}{collaboration}{#1}
    \seq_if_empty:NT \l__dfg_collaboration_plot_area_palette_seq
      {\msg_error:nn {dfg-collaboration}{empty-palette}
       \seq_put_right:Nn \l__dfg_collaboration_plot_area_palette_seq {blue}}
    \tl_set:Nn \l__dfg_collaboration_plot_focus_tl {#2}
    % An explicit one-off link list is a complete ID-only dataset when none exists.
    \prop_if_empty:NT \l__dfgcollab_projects_prop
      {\bool_if:NT \l__dfgcollab_override_bool
        {\DeclareCollaborationProject{#2}{}
         \clist_map_inline:Nn \l__dfgcollab_override_clist
           {\DeclareCollaborationProject{##1}{}}}}
    \__dfgcollab_collect:
    \prop_if_in:NnTF \l__dfg_collaboration_plot_status_prop {#2}
      {
        \__dfg_collaboration_plot_collect_edges:
        \__dfg_collaboration_plot_prepare:
        \__dfgplots_float: {figure}{\__dfg_collaboration_plot_full_width_picture:}
          {Collaborations~of~#2.\tl_if_blank:VF \l__dfg_collaboration_plot_caption_tl
            {~\tl_use:N \l__dfg_collaboration_plot_caption_tl}}
          {fig:project-collaboration-#2-\tl_use:N \l__dfg_collaboration_plot_layout_tl}
      }
      {\msg_error:nnn {dfg-collaboration}{focus-not-found}{#2}}
    \group_end:
  }
\dfgDeclarePlotType{collaboration}{\CollaborationPlot}
\dfgDeclarePlotType{collaborations}{\CollaborationPlot}
\dfgDeclarePlotType{ProjectCollaboration}{\CollaborationPlot}
\ExplSyntaxOff
```

6.1.32 Reusable package: dfg-gantt.sty

Independent package code shared by the class and standard documents.

```
%% Copyright 2026 Lukas C. Bossert. LPPL 1.3c or later.
%% Generated from dfg-crc.dtx.
\NeedsTeXFormat{LaTeX2e}[2022-06-01]
\ProvidesExplPackage{dfg-gantt}{2026-11-24}{0.4.0}{Workpackages and independent Gantt charts}
\ExplSyntaxOff
\RequirePackage{dfg-plots}
\RequirePackage{pgfgantt}
\RequirePackage{datatool}
\RequirePackage{enumitem}
\RequirePackage{etoolbox}
\usetikzlibrary{patterns,patterns.meta}
\providecolor{tableHeadingsBG}{rgb}{.80,.88,.95}
\providecolor{tableOuterLines}{gray}{.15}
\providecolor{tableHeadingsFont}{gray}{.1}
\providecolor{color@gantt@frame}{gray}{.2}
\providecolor{color@gantt@default}{rgb}{.7,.82,.95}
\providecolor{color@gantt@alternative}{rgb}{.7,.9,.75}
\providecolor{color@gantt@important}{rgb}{.95,.7,.6}
\providecolor{color@gantt@crosshatch}{gray}{.4}
\providecolor{color@gantt@stripe-one}{rgb}{.7,.82,.95}
\providecolor{color@gantt@stripe-two}{rgb}{.5,.75,.6}
\ExplSyntaxOn
\prop_new:N \l__dfg_wp_legacy_prop
\prop_new:N \l__dfg_wp_new_prop
\prop_new:N \l__dfg_wp_fields_prop
\bool_new:N \l__dfg_wp_new_syntax_bool
\tl_new:N \l__dfg_wp_normalized_tl
\tl_new:N \l__dfg_wp_unknown_tl
\keys_define:nn { dfg / workpackage }
{
  title .code:n =
    {
      \bool_set_true:N \l__dfg_wp_new_syntax_bool
      \prop_put:Nnn \l__dfg_wp_new_prop {name} {#1}
    },
  title .value_required:n = true,
  gantt .code:n =
    {
```

```
14082       \bool_set_true:N \l__dfg_wp_new_syntax_bool
14083       \keys_set:nn { dfg / workpackage / gantt } {#1}
14084     },
14085   gantt .value_required:n = true,
14086   id .code:n = \prop_put:Nnn \l__dfg_wp_legacy_prop {id} {#1},
14087   name .code:n = \prop_put:Nnn \l__dfg_wp_legacy_prop {name} {#1},
14088   description .code:n =
14089     \prop_put:Nnn \l__dfg_wp_legacy_prop {description} {#1},
14090   periodStart .code:n =
14091     \prop_put:Nnn \l__dfg_wp_legacy_prop {periodStart} {#1},
14092   periodEnd .code:n =
14093     \prop_put:Nnn \l__dfg_wp_legacy_prop {periodEnd} {#1},
14094   style .code:n = \prop_put:Nnn \l__dfg_wp_legacy_prop {style} {#1},
14095 }
14096 \keys_define:nn { dfg / workpackage / gantt }
14097 {
14098   label .code:n = \prop_put:Nnn \l__dfg_wp_new_prop {description} {#1},
14099   start .code:n = \prop_put:Nnn \l__dfg_wp_new_prop {periodStart} {#1},
14100   end .code:n = \prop_put:Nnn \l__dfg_wp_new_prop {periodEnd} {#1},
14101   style .code:n = \prop_put:Nnn \l__dfg_wp_new_prop {style} {#1},
14102   label .value_required:n = true,
14103   start .value_required:n = true,
14104   end .value_required:n = true,
14105   style .value_required:n = true,
14106 }
14107 \cs_new_protected:Npn \__dfg_workpackage_normalize:n #1
14108 {
14109   \prop_clear:N \l__dfg_wp_legacy_prop
14110   \prop_clear:N \l__dfg_wp_new_prop
14111   \bool_set_false:N \l__dfg_wp_new_syntax_bool
14112   \keys_set_known:nnN { dfg / workpackage } {#1} \l__dfg_wp_unknown_tl
14113   \bool_if:NTF \l__dfg_wp_new_syntax_bool
14114     {
14115       \prop_set_eq:NN \l__dfg_wp_fields_prop \l__dfg_wp_legacy_prop
14116       \prop_map_inline:Nn \l__dfg_wp_new_prop
14117         { \prop_put:Nnn \l__dfg_wp_fields_prop {##1} {##2} }
14118       \prop_if_in:NnF \l__dfg_wp_fields_prop {description}
14119         {
14120           \prop_get:NnNT \l__dfg_wp_fields_prop {name} \l_tmpa_tl
14121             { \prop_put:NnV \l__dfg_wp_fields_prop {description} \l_tmpa_tl }
14122         }
14123       \prop_if_in:NnF \l__dfg_wp_fields_prop {style}
14124         { \prop_put:Nnn \l__dfg_wp_fields_prop {style} {default} }
14125       \tl_clear:N \l__dfg_wp_normalized_tl
14126       \prop_map_inline:Nn \l__dfg_wp_fields_prop
14127         { \tl_put_right:Nn \l__dfg_wp_normalized_tl {##1={##2},} }
14128       \tl_put_right:NV \l__dfg_wp_normalized_tl \l__dfg_wp_unknown_tl
14129     }
14130     { \tl_set:Nn \l__dfg_wp_normalized_tl {#1} }
14131 }
14132
14133 \int_new:N \l__dfggantt_slots_int
14134 \int_new:N \l__dfggantt_first_quarter_int
14135 \int_new:N \l__dfggantt_remaining_int
14136 \int_new:N \l__dfggantt_group_int
14137 \int_new:N \l__dfggantt_year_int
14138 \int_new:N \l__dfggantt_quarter_int
14139 \clist_new:N \l__dfggantt_year_labels_clist
14140 \tl_new:N \l__dfggantt_project_tl
14141 \tl_new:N \l__dfggantt_name_tl
14142 \tl_new:N \l__dfggantt_description_tl
14143 \tl_new:N \l__dfggantt_start_tl
14144 \tl_new:N \l__dfggantt_end_tl
14145 \tl_new:N \l__dfggantt_style_tl
14146 \tl_new:N \l__dfggantt_caption_tl
14147 \bool_new:N \l__dfggantt_valid_bool
14148 \msg_new:nnn {dfg-gantt}{bad-range}{Invalid~period~range~'#1'.~Use~nonnegative~integers~with~start~<=~enc
14149 \msg_new:nnn {dfg-gantt}{missing-project}{Set~a~project~with~\string\GanttProject~before~adding~workpacka
14150 \msg_new:nnn {dfg-gantt}{missing-data}{No~workpackages~declared~for~project~'#1'.}
14151 \msg_new:nnn {dfg-gantt}{bad-grid}{Use~positive~slots~and~first-quarter~between~1~and~4.}
14152 \cs_new_protected:Npn \__dfggantt_validate_grid:
14153   {
14154     \bool_lazy_or:nnT
14155       {\int_compare_p:n {\l__dfggantt_slots_int < 1}}
```

```
14156       {\bool_lazy_or_p:nn
14157         {\int_compare_p:n {\l__dfggantt_first_quarter_int < 1}}
14158         {\int_compare_p:n {\l__dfggantt_first_quarter_int > 4}}}
14159       {\msg_error:nn {dfg-gantt}{bad-grid}
14160        \int_set:Nn \l__dfggantt_slots_int {16}
14161        \int_set:Nn \l__dfggantt_first_quarter_int {3}}
14162   }
14163 \keys_define:nn {dfggantt/chart}
14164   {
14165     slots .int_set:N = \l__dfggantt_slots_int,
14166     slots .initial:n = 16,
14167     first-quarter .int_set:N = \l__dfggantt_first_quarter_int,
14168     first-quarter .initial:n = 3,
14169     year-labels .clist_set:N = \l__dfggantt_year_labels_clist,
14170   }
14171 \keys_define:nn {dfggantt/plot}
14172   {
14173     slots .meta:nn = {dfggantt/chart}{slots=#1},
14174     first-quarter .meta:nn = {dfggantt/chart}{first-quarter=#1},
14175     year-labels .meta:nn = {dfggantt/chart}{year-labels={#1}},
14176     caption .tl_set:N = \l__dfggantt_caption_tl,
14177   }
14178 \NewDocumentCommand \GanttSetup {m}
14179   {\keys_set:nn {dfggantt/chart}{#1}\__dfggantt_validate_grid:}
14180 \ProvideDocumentCommand \dfgFundingYear {m}{Year~#1}
14181 \ProvideDocumentCommand \DFGGanttTag {mmmm}{#3}
14182 \ProvideDocumentCommand \DFGGanttLabel {mm}
14183   {WP~\cs_if_exist:cTF {r@#1-wp-#2}{\ref{#1-wp-#2}}{#2}}
14184 \NewDocumentCommand \DFGGanttTitles {}
14185   {
14186     \__dfggantt_validate_grid:
14187     \int_set_eq:NN \l__dfggantt_remaining_int \l__dfggantt_slots_int
14188     \int_set:Nn \l__dfggantt_group_int {5-\l__dfggantt_first_quarter_int}
14189     \int_set:Nn \l__dfggantt_year_int {1}
14190     \int_while_do:nn {\l__dfggantt_remaining_int > 0}
14191       {
14192         \int_set:Nn \l__dfggantt_group_int
14193           {\int_min:nn {\l__dfggantt_group_int}{\l__dfggantt_remaining_int}}
14194         \gantttitle[dfgTitleTopRule]
14195           {\int_compare:nNnTF {\clist_count:N \l__dfggantt_year_labels_clist}
14196             < {\l__dfggantt_year_int}
14197             {\dfgFundingYear{\int_use:N\l__dfggantt_year_int}}
14198             {\clist_item:Nn \l__dfggantt_year_labels_clist {\l__dfggantt_year_int}}}
14199           {\int_use:N\l__dfggantt_group_int}
14200         \int_sub:Nn \l__dfggantt_remaining_int {\l__dfggantt_group_int}
14201         \int_set:Nn \l__dfggantt_group_int {4}
14202         \int_incr:N \l__dfggantt_year_int
14203       }
14204     \ganttnewline
14205     \int_step_inline:nn {\l__dfggantt_slots_int}
14206       {
14207         \int_set:Nn \l__dfggantt_quarter_int
14208           {1+\int_mod:nn {\l__dfggantt_first_quarter_int+##1-2}{4}}
14209         \int_compare:nNnTF {\l__dfggantt_quarter_int}={4}
14210           {\gantttitle[dfgTitleBottomRightRule]
14211             {\dfgGanttShowQs{Q\int_use:N\l__dfggantt_quarter_int}{##1}}{1}}
14212           {\gantttitle[dfgTitleBottomRule]
14213             {\dfgGanttShowQs{Q\int_use:N\l__dfggantt_quarter_int}{##1}}{1}}
14214       }
14215     \ganttnewline
14216   }
14217 \cs_if_exist:NF \workpackages
14218   {
14219     \newlist{workpackages}{enumerate}{3}
14220     \setlist[workpackages,1]{leftmargin=*,font=\bfseries,label={WP\,\arabic*:},ref={\arabic*}}
14221     \setlist[workpackages,2]{leftmargin=*,font=\bfseries,label={WP\,\theworkpackagesi\alph*:},ref={\thewo
14222     \setlist[workpackages,3]{leftmargin=*,label={WP\,\theworkpackagesii.\roman*:}}
14223   }
14224 \NewDocumentCommand \GanttProject {m}
14225   {\tl_set:Nn \l__dfggantt_project_tl {#1}\dfgPlotProject{#1}}
14226 \keys_define:nn {dfggantt/record}
14227   {
14228     id .code:n = {},
14229     name .tl_set:N = \l__dfggantt_name_tl,
```

```
    description .tl_set:N = \l__dfggantt_description_tl,
    periodStart .tl_set:N = \l__dfggantt_start_tl,
    periodEnd .tl_set:N = \l__dfggantt_end_tl,
    style .tl_set:N = \l__dfggantt_style_tl,
  }
\cs_new_protected:Npn \__dfggantt_store:nnn #1#2#3
  {
    \__dfg_workpackage_normalize:n {#3}
    \keys_set:nn {dfggantt/record}{name={},description={},periodStart=1,periodEnd=1,style=default}
    \exp_args:NnV \keys_set:nn {dfggantt/record}\l__dfg_wp_normalized_tl
    \bool_set_true:N \l__dfggantt_valid_bool
    \exp_args:NnV \regex_match:nnF {\A\d+\Z}\l__dfggantt_start_tl
      {\bool_set_false:N \l__dfggantt_valid_bool}
    \exp_args:NnV \regex_match:nnF {\A\d+\Z}\l__dfggantt_end_tl
      {\bool_set_false:N \l__dfggantt_valid_bool}
    \bool_if:NT \l__dfggantt_valid_bool
      {\int_compare:nNnT {\l__dfggantt_start_tl}>{\l__dfggantt_end_tl}
        {\bool_set_false:N \l__dfggantt_valid_bool}}
    \bool_if:NTF \l__dfggantt_valid_bool
      {
        \DTLifdbexists{gantt-#1}{}{\DTLnewdb{gantt-#1}}
        \DTLnewrow{gantt-#1}
        \DTLnewdbentry{gantt-#1}{id}{#2}
        \clist_map_inline:nn {name,description,periodStart,periodEnd,style}
          {
            \str_case:nn {##1}
              {{name}{\tl_set_eq:NN \l_tmpa_tl \l__dfggantt_name_tl}
               {description}{\tl_set_eq:NN \l_tmpa_tl \l__dfggantt_description_tl}
               {periodStart}{\tl_set_eq:NN \l_tmpa_tl \l__dfggantt_start_tl}
               {periodEnd}{\tl_set_eq:NN \l_tmpa_tl \l__dfggantt_end_tl}
               {style}{\tl_set_eq:NN \l_tmpa_tl \l__dfggantt_style_tl}}
            \use:e {\exp_not:N\DTLnewdbentry{gantt-#1}{##1}{\exp_not:V\l_tmpa_tl}}
          }
      }
      {\msg_error:nne {dfg-gantt}{bad-range}{\l__dfggantt_start_tl--\l__dfggantt_end_tl}}
  }
\NewDocumentCommand \DeclareWorkPackage {mmm}{\__dfggantt_store:nnn {#1}{#2}{#3}}
\ProvideDocumentCommand \addWP {mm}
  {
    \tl_if_blank:VTF \l__dfggantt_project_tl
      {\msg_error:nn {dfg-gantt}{missing-project}}
      {
        \exp_args:NV \__dfggantt_store:nnn \l__dfggantt_project_tl {#1}{#2}
        \item \str_if_eq:eeT {\@enumctr}{workpackagesi}
          {\textbf{\tl_use:N \l__dfggantt_name_tl}\space}
        \label{\l__dfggantt_project_tl-wp-#1}\ignorespaces
      }
  }
\ProvideDocumentCommand \getWP {O{} m}
  {
    \group_begin:
    \tl_if_blank:nF {#1}{\tl_set:Nn \l__dfggantt_project_tl {#1}}
    \clist_set:Nn \l_tmpa_clist {#2}
    \int_zero:N \l_tmpa_int
    \clist_map_inline:Nn \l_tmpa_clist
      {\int_incr:N \l_tmpa_int
       \int_compare:nNnT {\l_tmpa_int}>{1}{,~}
       \DFGGanttLabel{\l__dfggantt_project_tl}{##1}}
    \group_end:
  }
\NewDocumentCommand \GanttChart {O{} m}{\dfgGanttEnvironment[#1]{#2}}
\NewDocumentCommand \GanttPlotFigure {O{} m}
  {
    \group_begin:
    \tl_clear:N \l__dfggantt_caption_tl
    \__dfgplots_options:nnn {dfggantt/plot}{gantt}{#1}
    \DTLifdbexists{gantt-#2}
      {\__dfgplots_float: {figure}{\dfgGanttEnvironment{#2}}
        {Gantt~chart~of~#2.\tl_if_blank:VF \l__dfggantt_caption_tl
          {~\tl_use:N\l__dfggantt_caption_tl}}{fig:gantt-#2}}
      {\msg_error:nnn {dfg-gantt}{missing-data}{#2}}
    \group_end:
  }
\dfgDeclarePlotType{gantt}{\GanttPlotFigure}
```

```
\dfgDeclarePlotType{Gantt}{\GanttPlotFigure}
\tl_new:N \l__dfg_gantt_stripe_color_model_tl
\tl_new:N \l__dfg_gantt_stripe_color_spec_tl
\pgfdeclarepattern{
  name = dfg~gantt~stripes,
  type = colored,
  parameters = {
    \l__dfg_gantt_stripe_color_model_tl,
    \l__dfg_gantt_stripe_color_spec_tl
  },
  bottom~left = {\pgfpoint{-6pt}{-6pt}},
  top~right = {\pgfpoint{6pt}{6pt}},
  tile~size = {\pgfpoint{12pt}{12pt}},
  tile~transformation = {\pgftransformrotate{45}},
  code = {
    \pgfsetstrokecolor{dfgGanttStripeColor}
    \pgfsetlinewidth{6pt}
    \pgfpathmoveto{\pgfpoint{-6pt}{0pt}}
    \pgfpathlineto{\pgfpoint{6pt}{0pt}}
    \pgfusepath{stroke}
  },
}
\bool_new:N \l__dfg_gantt_first_bar_bool
\NewDocumentCommand{\dfgGanttContent}{m}{%
  % Resolve the active colour model before extracting the cache parameters.
  \colorlet{dfgGanttStripeColor}{color@gantt@stripe-two}
  \extractcolorspecs{dfgGanttStripeColor}
    {\l__dfg_gantt_stripe_color_model_tl}{\l__dfg_gantt_stripe_color_spec_tl}
  \bool_set_true:N \l__dfg_gantt_first_bar_bool
  \DTLforeach*{gantt-#1}{%
    \ganttWP=id,%
    \ganttName=name,%
    \ganttDescription=description,%
    \ganttPeriodStart=periodStart,%
    \ganttPeriodEnd=periodEnd,%
    \ganttPatternbar=style%
  }{%
    % If we want to omit a bar in the plot,
    % you need to set periodStart and periodEnd
    % the same value.
    \ifdefstrequal{\ganttPeriodStart}{\ganttPeriodEnd}{}{%
      % if the values are different then there will be a bar.
    \bool_if:NTF \l__dfg_gantt_first_bar_bool
      { \bool_set_false:N \l__dfg_gantt_first_bar_bool }
      { \ganttnewline }
    \def\ganttBarPlot{
      \sffamily
      \DFGGanttTag{\ganttWP}{id}{\DFGGanttLabel{#1}{\ganttWP}}{gantt-#1}
      \ifdefempty{\ganttDescription}{}
        {:~\DFGGanttTag{\ganttWP}{description}{\ganttDescription}{gantt-#1}}}

      \str_case:VnF {\ganttPatternbar}
      {%
        {crosshatch}{\ganttbar[bar/.append~ style = {%
                pattern       = {crosshatch},
                pattern~ color = {color@gantt@crosshatch},
                draw           = {color@gantt@frame}
              }]{\ganttBarPlot}{\ganttPeriodStart}{\ganttPeriodEnd}}%

        {striped}{\ganttbar[bar/.append~ style = {%
                fill          = {color@gantt@stripe-one},
                % the pattern needs to be applied after the filled color
             postaction    ={pattern={dfg~gantt~stripes}},
                postaction    = {draw, semithick},
                draw          = {color@gantt@frame}
              }]{\ganttBarPlot}{\ganttPeriodStart}{\ganttPeriodEnd}}%

        {alternative}{\ganttbar[bar/.append~ style = {%
                fill          = {color@gantt@alternative},
                draw          = {color@gantt@frame}
              }]{\ganttBarPlot}{\ganttPeriodStart}{\ganttPeriodEnd}}%

        {important}{\ganttbar[bar/.append~ style = {%
                fill          = {color@gantt@important},
```

```
                draw          = {color@gantt@frame}
              }]{\ganttBarPlot}{\ganttPeriodStart}{\ganttPeriodEnd}}%
      }
      { % default
        {}{\ganttbar[bar/.append~ style = {%
                fill          = {color@gantt@default},
                draw          = {color@gantt@frame}
              }]{\ganttBarPlot}{\ganttPeriodStart}{\ganttPeriodEnd}}%
      }
    }%
    }
}
% The following macro makes it easier to debug the position of the bars.
\ProvideDocumentCommand\dfgGanttShowQs{mm}{#1}
\NewDocumentCommand{\dfgGanttEnvironment}{O{} m}{
  \group_begin:
  \keys_set:nn {dfggantt/chart}{#1}
  \__dfggantt_validate_grid:
  % #2 : Project ID
  \resizebox{\linewidth}{!}{
    \begin{ganttchart}[
        title~ height=.8,
        title/.append~ style={draw=none, fill=tableHeadingsBG},
        dfgTitleTopRule/.style={
          title/.append~ style={
            path~ picture={
              \draw[draw=tableOuterLines,line~ width=2pt]
                (path~ picture~ bounding~ box.north~ west) --
                (path~ picture~ bounding~ box.north~ east);
            }}},
        dfgTitleBottomRule/.style={
          title/.append~ style={
            path~ picture={
              \draw[draw=tableOuterLines,line~ width=2pt]
                (path~ picture~ bounding~ box.south~ west) --
                (path~ picture~ bounding~ box.south~ east);
            }}},
        dfgTitleBottomRightRule/.style={
          title/.append~ style={
            path~ picture={
              \draw[draw=tableOuterLines,line~ width=2pt]
                (path~ picture~ bounding~ box.south~ west) --
                (path~ picture~ bounding~ box.south~ east);
              \draw[draw=tableOuterLines,line~ width=2pt]
                (path~ picture~ bounding~ box.north~ east) --
                (path~ picture~ bounding~ box.south~ east);
            }}},
        title~ label~ font={\bfseries\footnotesize\color{tableHeadingsFont}},
        canvas/.style={
            shape=rectangle,
            draw=none,
            fill=white,
            path~ picture={
              \draw[draw=tableOuterLines,line~ width=2pt]
                (path~ picture~ bounding~ box.north~ west) --
                (path~ picture~ bounding~ box.north~ east);
              \draw[draw=tableOuterLines,line~ width=2pt]
                (path~ picture~ bounding~ box.south~ west) --
                (path~ picture~ bounding~ box.south~ east);
            }},
        x~ unit = \linewidth/\int_use:N\l__dfggantt_slots_int,
        y~ unit~ title=0.5cm,
        y~ unit~ chart=.5cm,
      vgrid={*1{tableOuterLines,dashed}},
        %hgrid,
        %   group label font=\bfseries\footnotesize,
        %   milestone label font=\scriptsize,
        bar~ inline~ label~ node/.style={anchor=west},
        bar~ inline~ label~ anchor=west,
        bar~ label~ font={\scriptsize\color{tableHeadingsFont}},
        %  title label font=\bfseries\scriptsize\color{white},
        % bar/.style={rounded~ corners=1mm},
      bar~ top~ shift=0,
      bar~ height=.9,
```

```
14452         inline
14453       ]{1}{\int_use:N\l__dfggantt_slots_int}
14454     \DFGGanttTitles
14455   \dfgGanttContent{#2}
14456     \end{ganttchart}%
14457   }
14458   \group_end:
14459 }
14460 \ExplSyntaxOff
```

6.1.33 Reusable package: dfg-timeline.sty

Independent package code shared by the class and standard documents.

```
14461 %% Copyright 2026 Lukas C. Bossert. LPPL 1.3c or later.
14462 %% Generated from dfg-crc.dtx.
14463 \NeedsTeXFormat{LaTeX2e}[2022-06-01]
14464 % ============================================================================
14465 % EVENT TIMELINES -- quick reference and visual overview
14466 % ============================================================================
14467 % Complete guide, copyable examples and option tables are included below.
14468 % Documentation is maintained in this file.
14469 %
14470 % LOAD ONCE IN THE PREAMBLE
14471 %   This proposal loads the module through dfg-customization.tex.
14472 %   Other projects: copy this file, then use \usepackage{dfg-timeline}.
14473 %   TikZ, FontAwesome5 and enumitem are loaded automatically. No DFG class,
14474 %   proposal metadata or other preamble files are needed. Repeated input is safe.
14475 %   Existing definitions of the Event* colours are preserved.
14476 %
14477 % VISUAL OVERVIEW (positive rotation; schematic, not to scale)
14478 %
14479 %                                      Event label
14480 %                                     /
14481 %                              [icon] /   rotation
14482 %                                   A    label BEGINS here
14483 %                                   |
14484 %               connector width --> |    label distance + lane * lane spacing
14485 %                                   |
14486 %    ------------------------------o=============|-------------------
14487 %    |<------------------------ width ------------------------------>|
14488 %                                   |             ^ end of a range
14489 %         date connector width --> |    date distance
14490 %                                   B    date ENDS here
14491 %                                  /
14492 %                     ISO date(s) /      date rotation
14493 %
14494 %    o    start point; dot radius sets its size
14495 %    ===  optional event span; range width sets span/end-tick thickness
14496 %    ---  main axis; line width sets its thickness
14497 %    A/B  label/date anchors; xshift and yshift move text relative to its point
14498 %    The date connector stays vertical, stopping 1pt above the selected digit.
14499 %    date direction=left (default) connects to the last digit; right to the first.
14500 %
14501 %    lane=0 is closest above the axis; lane=1,2,... move labels further up.
14502 %    date lane=0 is closest below; higher date lanes move dates further down.
14503 %    Identical starts share a black point. Identical start/end pairs also share
14504 %    one date label, whose formatting comes from the first event.
14505 %
14506 % MAIN COMMANDS
14507 %   \clearEvents                start a fresh event collection
14508 %   \addEvent[formatting]{data}   store one event (see the two sections below)
14509 %   \printEventTimeline[options]  draw the selected events
14510 %   \printEventDetails[options]   print full titles and descriptions
14511 %
14512 % COPYABLE CALLS (all braces balanced on each comment line)
14513 %   \addEvent{date=2025-01,category=retreat,title={Annual retreat}}
14514 %   \addEvent[lane=1]{date=2025-01,category=progress,title={Progress day}}
14515 %   \addEvent[date direction=right]{date=2025-01,category=progress,title={Progress day}}
14516 %   \addEvent{date=2026-06-28,end date=2026-06-30,category=retreat,title={Retreat}}
14517 %   \printEventTimeline[width=.9\linewidth,rotation=45,year=2025]
14518 %   \printEventTimeline[labels=abbreviation,legend=false]
14519 %   \printEventTimeline[show dates=false,show labels=false,icons=false,legend=false]
14520 %   \printEventTimeline[line width=1pt,connector width=.7pt,date connector width=.7pt]
```

```
%   \printEventDetails[format=prose,year=2025]
%   \printEventDetails[format=prose,nodate,aggregated]
%   \printEventDetails[format=prose,show dates=false,aggregated]
%
% EVENT DATA -- mandatory argument of \addEvent
%   date / start date  required ISO start; two names for the same field
%   end date           optional inclusive end; default = start
%   category           required declared category (presets below)
%   title              required full title; default heading in printed details
%   id                 unique identifier; default = event-N
%   label              short chart label; default = title
%   abbreviation       shortest chart label; fallback = label, then title
%   summary            optional extra chart line, shown with summary=true
%   description        full account for list/prose details
%   icon               replacement in the chart and individual-event details
%
%   ISO syntax: YYYY-MM or YYYY-MM-DD; calendar dates and range order are checked.
%   Months sit at their centre; exact days sit at their day centre within the
%   month. Months have equal widths on the calendar scale. Sorting follows
%   these positions; ties preserve source order.
%   Ranges draw a coloured span from start to end. A year filter includes any
%   overlapping range, clipping its span with continuation arrows as needed.
%   Date labels and details retain the original, complete range when shown.
%
% CHART OPTIONS -- \printEventTimeline[...]
%   option                default            meaning
%   width                 \linewidth         total graphic width
%   year                  all                all events, or one four-digit year
%   rotation              30                 upper-label angle in degrees
%   date rotation         auto               follow each label's effective angle
%   labels                label              title | label | abbreviation
%   show labels           true               show upper text and its connectors
%   show dates            true               show lower dates and their connectors
%   summary               false              show each event's summary
%   icons                 true               show category/event icons
%   legend                true               show categories present in the plot
%   label width           0pt                natural width; >0 wraps label text
%   label distance        1.8mm              gap from axis to lowest label edge
%   lane                  auto               automatic, or a nonnegative integer
%   lane spacing          auto               text height + gap, or a positive dim.
%   date lane             auto               automatic, or a nonnegative integer
%   date distance         1.8mm              gap from axis to highest date edge
%   date lane spacing     auto               date height + gap, or a positive dim.
%   gap                   .8mm               collision clearance
%   font                  sans 7.4pt / 9pt   font used for chart labels
%   date font             sans 6.5pt / 8pt   font used for dates
%   line color            EventMuted!40      axis colour
%   line width            .6pt               axis thickness
%   connector width       .35pt              upper leader thickness
%   date connector width  .3pt               lower leader thickness
%   range width           1.2pt              event span/end-tick thickness
%   dot radius            .9mm               start-point radius
%   events                empty              temporary per-ID formatting overrides
%
% PER-EVENT FORMATTING -- optional argument of \addEvent, or events={id={...}}
%   lane, rotation, date rotation, label width, font, date lane
%     inherit their corresponding chart-wide defaults.
%   xshift, yshift, date xshift, date yshift
%     default to 0pt; positive x = right, positive y = up.
%   date direction
%     left (default): date extends left of its last digit; right: from its first.
%   label, icon
%     replace chart text/icon only; full details keep their stored content.
%   node options
%     default empty; advanced TikZ appearance options for the upper label.
%   Example: \printEventTimeline[events={event-1={lane=1,xshift=2mm}}]
%
%   Precedence: chart defaults -> stored event formatting -> events overrides.
%   Each print call is local. Explicit lanes are reserved before automatic
%   placement and can overlap; auto avoids collisions. Same-date automatic
%   labels follow source order from the axis upwards, regardless of length.
%
% DETAILS OPTIONS -- \printEventDetails[...]
%   format  list (default) | prose   list uses footnotesize; prose inherits font
```

```
14595  %   year    all (default) | YYYY     same overlap rule as the chart
14596  %   icons   true (default) | false   coloured icons in both formats
14597  %   nodate  false (default) | true   omit generated dates/ranges and punctuation
14598  %   show dates true (default)       inverse of nodate; last supplied key wins
14599  %   aggregated false (default)      one block per category, deduplicating content
14600  %   categories {} (default)         per-category title/description overrides
14601  %   Bare nodate/aggregated mean true. All settings are local to this print call.
14602  %   Set year explicitly on BOTH print commands when showing a filtered figure.
14603  %   Different texts are retained; categories={retreat={description={Summary.}}}
14604  %   replaces that category's subentries only when aggregated=true.
14605  %
14606  % CATEGORY PRESETS -- key / legend / colour / FontAwesome5 icon
14607  %   retreat     / Annual retreat  / EventRetreat     (violet)   / \faUsers
14608  %   progress    / Progress day    / EventProgress    (petrol)   / \faComments
14609  %   networking  / Networking      / EventNetworking  (orange)   / \faHandshake
14610  %   graduate    / Graduate school retreat / EventGraduate (magenta) / \faGraduationCap
14611  %   symposium   / International symposium / EventSymposium (bordeaux) / \faGlobe
14612  %   Add/change: \DeclareEventCategory{conference}{Conference}{EventSymposium}{\faGlobe}
14613  %
14614  % VALIDATION AND MAINTENANCE
14615  %   Duplicate event IDs warn and skip the later entry; the first is retained.
14616  %   Width must be positive. Lane spacings must be auto or positive dimensions;
14617  %   gap, distances, text width, stroke widths and radius cannot be negative.
14618  %   Invalid spacing reports an error and recovers to auto if compilation
14619  %   continues. Automatic placement stops with an error after 1000 attempts.
14620  %   Full examples cover hvFloat captions and narrow/crowded charts in the guide.
14621  %   Regression tests: python3 __admin/scripts/test_event_timeline.py -q
14622  % ============================================================================
14623  % BEGIN FULL EVENT TIMELINE GUIDE
14624  % Full guide maintained in this comment block.
14625  % # Event timelines
14626  %
14627  % The timeline module stores event content once and renders a horizontal chart,
14628  % a description list, or continuous prose. It supports month and day precision,
14629  % multi-day ranges, year filters, category icons, and automatic or manual layout.
14630  %
14631  % The implementation is [dfg-event-timeline.tex](../preamble/dfg-event-timeline.tex).
14632  % Its comment header includes an ASCII diagram, a compact option reference, and
14633  % this complete guide as comments.
14634  %
14635  % ## Use in another project
14636  %
14637  % Copy **only** `dfg-timeline.sty` into the new project and load it
14638  % in the preamble. The file loads TikZ, FontAwesome5, and enumitem automatically.
14639  % It needs no DFG class, proposal metadata, fonts, or other proposal files.
14640  % The packages must be installed in the target TeX distribution.
14641  %
14642  % The module is tested with LuaLaTeX and pdfLaTeX. This proposal continues to use
14643  % LuaLaTeX as required by its document class. Repeated input is safe and preserves
14644  % events already declared. Existing `Event*` colour definitions are preserved.
14645  %
14646  % This is a complete document using the standard `figure` environment:
14647  %
14648  % ```latex
14649  % \documentclass{article}
14650  % \usepackage{dfg-timeline}
14651  %
14652  % \begin{document}
14653  % \clearEvents
14654  %
14655  % \addEvent{
14656  %   id           = graduate-2025,
14657  %   date         = 2025-01,
14658  %   category     = graduate,
14659  %   title        = {Graduate School retreat},
14660  %   label        = {Graduate retreat},
14661  %   abbreviation = {GSR},
14662  %   description  = {A dedicated meeting for doctoral researchers.}
14663  % }
14664  % \addEvent{
14665  %   id           = progress-2025-01,
14666  %   date         = 2025-01,
14667  %   category     = progress,
14668  %   title        = {Progress day},
```

```
%   abbreviation = {PD},
%   description  = {Project presentations and discussion.}
% }
% \addEvent{
%   id           = symposium-2026,
%   start date   = 2026-06-28,
%   end date     = 2026-06-30,
%   category     = symposium,
%   title        = {International Symposium},
%   label        = {Int. Symposium},
%   abbreviation = {IS},
%   summary      = {Invited talks and posters},
%   description  = {Research presentations and discussion with invited speakers.}
% }
%
% \begin{figure}[htbp]
%   \centering
%   \printEventTimeline[width=\linewidth,rotation=45]
%   \caption[Retreats, progress days and symposia.]{%
%     Retreats, progress days and symposia.\\
%     \printEventDetails[format=prose]}
%   \label{fig:event-timeline}
% \end{figure}
% \end{document}
% ```
%
% The first two events share a black point. Their labels follow declaration order:
% the graduate retreat is closer to the line and the progress day is above it.
% The symposium has a date range and a coloured span.
%
% The module defines `\clearEvents`, `\addEvent`, `\printEventTimeline`,
% `\printEventDetails`, and `\DeclareEventCategory`; these names must be available
% in the target project.
%
% ## Use in this proposal and with `hvFloat`
%
% This proposal already loads the module through
% [dfg-customization.tex](../preamble/dfg-customization.tex). Keep declarations in
% the project content file, next to their figure. Use `\clearEvents` before a new
% collection. The declarations are shared by both rendering commands.
%
% With the quick-start events above, this is the corresponding proposal figure:
%
% ```latex
% \hvFloat
%   {figure}
%   {\printEventTimeline[width=\linewidth,rotation=45]}
%   [Retreats, progress days and symposia.]
%   {Retreats, progress days and symposia.\\
%    \printEventDetails[format=prose]}
%   {fig:event-timeline}
% ```
%
% In another project, load `\usepackage{hvfloat}` yourself if using this wrapper.
% The timeline module itself does not require `hvFloat`. The optional short
% caption is useful when a list of figures is generated: it keeps the detailed
% prose out of that list. For `hvFloat`, put it **between the graphic argument and
% the long caption**, as shown above.
%
% To print a separate list, use `\printEventDetails` after the figure instead of
% putting it in the caption. Add `format=prose` for a paragraph.
%
% ## Event content: `\addEvent[formatting]{content}`
%
% Content belongs in the mandatory argument. The optional argument controls chart
% formatting and is documented separately below. Both `\addEvent{...}` and
% `\addEvent[]{...}` use the chart defaults.
%
% | Field          | Default                                | Meaning
% |----------------|----------------------------------------|-----------------------------------------------
|
% | `date`         | Required, unless `start date` is used | ISO start date: `YYYY-
MM` or `YYYY-MM-DD`.                                |
% | `start date`   | Alias of `date`                        | An explicit name for the same start field; u
```

```
% | `end date`     | Start date                          | Inclusive end date, in either supported ISO
% | `category`     | Required                            | A declared category key; see the presets bel
% | `title`        | Required                            | Full event title, used in both details forma
% | `id`           | `event-N`                           | Unique ID in the current collection. Use exp
% | `label`        | `title`                             | Short chart name when `labels=label`.
% | `abbreviation` | Falls back to `label`, then `title` | Shortest chart name when `labels=abbreviatic
% | `summary`      | Empty                               | Additional chart text when `summary=true`.
% | `description`  | Empty                               | Full account printed by `\printEventDetails`
% | `icon`         | Category icon                       | Replacement in the chart and individual-
event details; aggregation uses the category icon. |
%
% Use braces around text containing commas. A description may contain ordinary
% LaTeX commands such as `\emph`, citations, or project references defined by the
% surrounding document. The module itself does not define those commands.
%
% The distinctions between the three names are deliberate:
%
% - `title`: full text in the list or prose, unless replaced by a category summary.
% - `label`: a shorter chart heading, for example `Int. Symposium`.
% - `abbreviation`: a compact chart heading, for example `IS`.
%
% Choosing short chart text does not shorten the printed details.
%
% ## Dates, ranges, and ordering
%
% Use zero-padded ISO dates, for example `2025-01` or `2025-01-12`. Calendar dates
% are validated, including leap years. An end date must not precede its start.
% Omitting `end date`, or making it equal to the start, creates a point event.
%
% The horizontal scale uses equal-width calendar months. Month-only dates lie at
% the month centre; exact days lie at their day centre within that month.
% Consequently, `2025-01-01` sorts before `2025-01`, and `2025-01-20` after it.
% Events at equal positions retain declaration order when sorted. Automatic
% labels with the same stored start date stack in declaration order.
%
% A range shows its complete start and end dates below the line. Its coloured
% span starts at the event point and ends at a tick. Very short ranges can occupy
% little horizontal space on a chart covering several years.
%
% Events with an identical stored start date share a black point. Different end
% dates still receive separate date labels. Identical start/end pairs share one
% date label, using the first event's date formatting.
%
% ### Show a single year
%
% ```latex
% \printEventTimeline[year=2025]
% \printEventDetails[year=2025,format=prose]
% ```
%
% The same overlap rule is used by both commands. A retreat from `2024-12-30` to
% `2025-01-03` appears in both years. The chart clips its span at the selected
% year's boundary and uses continuation arrows. A range that began earlier has
% an arrow at the left boundary instead of an invented January start point.
% Date labels and details retain the full original range.
%
% Set `year` on both commands when both should be filtered. Options are local to
% each call; the details do not inherit the preceding chart's filter.
%
% ## Chart options: `\printEventTimeline[...]`
%
% Dimensions accept TeX units or expressions such as `150mm` and `.9\textwidth`.
% Angles are in degrees. Boolean options accept `true` or `false`.
%
% | Option | Default | Effect |
% | --- | --- | --- |
% | `width` | `\linewidth` | Total graphic width. Must be positive and large enough for its labels. |
% | `year` | `all` | All events, or events overlapping a four-digit year. |
% | `rotation` | `30` | Angle of the upper labels. |
% | `date rotation` | `auto` | Follows each event's effective label rotation; an explicit angle overrides
% | `labels` | `label` | Select `title`, `label`, or `abbreviation`. |
% | `show labels` | `true` | Show upper label text, summaries, and their connectors. When false, event ic
% | `show dates` | `true` | Show dates below the axis and their connectors. |
% | `summary` | `false` | Add each nonempty summary below its chart heading. |
```

```
% | `icons` | `true` | Show event/category icons in the chart. |
% | `legend` | `true` | Show the categories present in the selected events. |
% | `label width` | `0pt` | Natural text width; a positive dimension wraps the text to that width. |
% | `label distance` | `1.8mm` | Distance from the axis to the lowest edge of a label in lane 0. |
% | `lane` | `auto` | Default upper-label lane: automatic or a nonnegative integer. |
% | `lane spacing` | `auto` | Maximum unrotated label height plus `gap`, or a positive dimension. |
% | `date lane` | `auto` | Default date lane: automatic or a nonnegative integer. |
% | `date distance` | `1.8mm` | Distance from the axis to the highest edge of a date in date lane 0. |
% | `date lane spacing` | `auto` | Maximum unrotated date height plus `gap`, or a positive dimension. |
% | `gap` | `.8mm` | Clearance used when checking text collisions. |
% | `font` | `\sffamily\fontsize{7.4}{9}\selectfont` | Font for chart headings and summaries. |
% | `date font` | `\sffamily\fontsize{6.5}{8}\selectfont` | Font for dates below the line. |
% | `line color` | `EventMuted!40` | Main axis colour. |
% | `line width` | `.6pt` | Main axis thickness. |
% | `connector width` | `.35pt` | Thickness of leaders from points to upper labels. |
% | `date connector width` | `.3pt` | Thickness of leaders from points to dates. |
% | `range width` | `1.2pt` | Thickness of event spans and their end ticks. |
% | `dot radius` | `.9mm` | Radius of start points. |
% | `events` | Empty | Temporary formatting overrides keyed by event ID. |
%
% The main line spans the requested width. Event positions are fitted inside it
% with space for the measured text. Shortening a label increases spacing when
% that label limits the fit; another label can still determine the available
% space. Text is not automatically reduced to fit a narrow chart.
%
% ### Hide dates, labels, icons, or the legend
%
% Each part can be switched off independently:
%
% ```latex
% \printEventTimeline[show dates=false]  % hide lower dates and their connectors
% \printEventTimeline[show labels=false] % hide upper text; keep event icons
% \printEventTimeline[icons=false]       % hide event icons
% \printEventTimeline[legend=false]      % hide the category legend
% ```
%
% To show only the axis, event points, and range spans:
%
% ```latex
% \printEventTimeline[
%   show dates=false,
%   show labels=false,
%   icons=false,
%   legend=false
% ]
% ```
%
% Hidden dates and upper text do not reserve layout space. When only event icons
% remain above the axis, their measured size determines the layout. Each call
% resets these options to `true`; `\printEventDetails` still prints full event
% content, including dates.
%
% ### Width, angles, and strokes
%
% ```latex
% \printEventTimeline[
%   width=.9\textwidth,
%   rotation=45,
%   date rotation=30,
%   line width=1pt,
%   connector width=.7pt,
%   date connector width=.7pt,
%   range width=1.5pt,
%   dot radius=1mm
% ]
% ```
%
% Upper labels begin near their point and extend up-right at positive angles.
% By default, dates end near their point and extend down-left. Set an event's
% `date direction=right` to extend its date from the first digit instead. Negative
% and zero angles are also supported. Date labels shift slightly so their
% connectors remain vertical and stop 1pt before the selected digit's top centre,
% following the effective date font and rotation. For a date range, `right`
% connects to the first digit of the start date; `left` connects to the final digit
```

```
% of the end date. The legend uses a sans-serif `\scriptsize` font.
%
% ## Per-event formatting
%
% Store persistent chart formatting in the optional argument:
%
% ```latex
% \addEvent[lane=1,xshift=2mm,rotation=35,date direction=right]{
%   id          = retreat-2024,
%   date        = 2024-10,
%   category    = retreat,
%   title       = {Annual retreat},
%   description = {A meeting of the CRC.}
% }
% ```
%
% Use `events` for a change applying only to one rendering:
%
% ```latex
% \printEventTimeline[
%   rotation=45,
%   events={
%     graduate-2025={lane=0},
%     progress-2025-01={lane=4,xshift=1mm,date direction=right}
%   }
% ]
% ```
%
% | Option | Default | Effect |
% | --- | --- | --- |
% | `lane` | Chart default | Upper-label lane, `auto` or a nonnegative integer. |
% | `xshift` | `0pt` | Move the upper label right; negative values move left. |
% | `yshift` | `0pt` | Move the upper label up; negative values move down. |
% | `rotation` | Chart default | Upper-label angle. |
% | `date rotation` | Chart default | Explicit date angle, or `auto` to follow this event's effective rot
% | `date direction` | `left` | `left`: connect above the last digit; `right`: connect above the first di
% | `label width` | Chart default | Natural width at `0pt`, otherwise a positive wrapping width. |
% | `label` | Selected content title/label/abbreviation | Override this chart's text. |
% | `icon` | Content/category icon | Override this chart's icon. |
% | `font` | Chart default | Override this chart heading's font. |
% | `date lane` | Chart default | Date lane, `auto` or a nonnegative integer. |
% | `date xshift` | `0pt` | Move the date right; negative values move left. |
% | `date yshift` | `0pt` | Move the date up; negative values move down. |
% | `node options` | Empty | Additional TikZ appearance keys for the upper text node. |
%
% The precedence is **chart options, then stored event formatting, then the
% print-time `events` override**. An event-level `label` therefore also overrides
% text selected through `labels=abbreviation`. Event formatting does not change
% the stored full title, description, or the appearance of printed details.
%
% Shifts offset text relative to its date position. The date values remain fixed;
% the overall fitted scale may change to keep the shifted text inside the width.
%
% ### Lanes and crowded events
%
% `lane=0` is the level closest above the axis. Higher numbers move text further
% up. Date lanes work in the opposite direction: higher numbers move dates further
% down. These are vertical levels, so adjacent numbers do not guarantee separation
% of rotated text.
%
% Automatic placement reserves explicit lanes first, then fits the remaining
% labels. For a shared date, earlier declarations take lower automatic lanes.
% Explicit lanes override automatic ordering and may overlap; review the result
% when assigning them manually.
%
% ```latex
% \printEventTimeline[
%   label distance=2mm,
%   date distance=2mm,
%   lane spacing=4mm,
%   date lane spacing=3mm,
%   gap=1mm
% ]
% ```
```

```
14962 %
14963 % For a dense chart, shorten `label`, select `labels=abbreviation`, adjust the
14964 % angle or font, or give selected events different lanes and shifts. For example,
14965 % `font={\sffamily\fontsize{8}{10}\selectfont}` changes heading size and line height.
14966 %
14967 % Use `node options` for appearance, such as `draw=EventRetreat`. Geometry changes
14968 % through raw TikZ keys, including `anchor`, `scale`, or `rotate`, are not included
14969 % in the collision measurements; use the named layout options for placement.
14970 %
14971 % ## Details options: `\printEventDetails[...]`
14972 %
14973 % | Option | Default | Effect |
14974 % | --- | --- | --- |
14975 % | `format` | `list` | `list` gives a description list; `prose` gives continuous inline text. |
14976 % | `year` | `all` | Same year-overlap filter as the chart. |
14977 % | `icons` | `true` | Keep coloured icons in either format; use `false` to omit them. |
14978 % | `nodate` | `false` | Omit generated dates/ranges and their surrounding punctuation in either format.
14979 % | `show dates` | `true` | Inverse of `nodate`; use `show dates=false` to hide generated dates/ranges. |
14980 % | `aggregated` | `false` | Produce one details block per category in the selected events. |
14981 % | `categories` | Empty | Supply per-category title and description overrides for this aggregated print
14982 %
14983 % By default, both formats print full titles, ISO dates or complete ranges, and
14984 % descriptions. `nodate` and `aggregated` change this as described below.
14985 % The list uses `\footnotesize`; prose inherits the surrounding font, including
14986 % the caption font when used inside a caption. Prose adds no forced paragraph
14987 % break, so it can appear inline. An empty selection produces no details output.
14988 %
14989 % ```latex
14990 % \printEventDetails
14991 % \printEventDetails[format=prose]
14992 % \printEventDetails[format=prose,year=2025,icons=false]
14993 % \printEventDetails[format=prose,nodate,aggregated]
14994 % \printEventDetails[format=prose,show dates=false,aggregated]
14995 % ```
14996 %
14997 % ### Dates and aggregation
14998 %
14999 % Bare `nodate` and `aggregated` mean `true`; the explicit forms
15000 % `nodate=true` and `aggregated=true` are equivalent. Every print call starts
15001 % from the defaults. `nodate` and `show dates` control the same setting in
15002 % opposite directions; the last supplied key wins. Thus `nodate,show dates=true`
15003 % prints dates, whereas `show dates=true,nodate` hides them.
15004 %
15005 % Selection and grouping follow these rules:
15006 %
15007 % 1. Apply `year` first, using the existing date-range overlap rule. Dates remain
15008 %    available for selection and sorting when `nodate` is enabled.
15009 % 2. Group the selected events by category. Order category blocks, their titles,
15010 %    and text variants by first occurrence in the chronologically sorted
15011 %    selection; equal dates retain source order.
15012 % 3. Print the category heading and, when `icons=true`, its category icon once.
15013 %    In `format=list` this is one description-list item per category. In
15014 %    `format=prose` keep the content inline, without forced paragraph breaks.
15015 % 4. Within each category, print each identical title/description combination
15016 %    once. Equality compares stored TeX content, rather than semantic similarity.
15017 %    A shared title introduces its distinct descriptions only once; differing
15018 %    titles retain their associated descriptions as subentries. A title equal to
15019 %    the category heading is not repeated.
15020 % 5. When dates are shown, collect the distinct original dates/ranges for each
15021 %    text variant in chronological order. Do not turn separate dates into an
15022 %    invented continuous interval. `nodate` suppresses these generated labels;
15023 %    dates written explicitly in an authored description are ordinary text.
15024 %
15025 % This automatically collapses repeated progress days with identical content.
15026 % Retreats with different accounts retain their distinct descriptions in one
15027 % category block.
15028 %
15029 % For a shorter category-level account, supply an explicit editorial summary:
15030 %
15031 % ```latex
15032 % \printEventDetails[
15033 %   nodate,
15034 %   aggregated,
15035 %   categories={
```

```
15036 %     retreat={
15037 %       title={Annual retreats},
15038 %       description={
15039 %         Annual meetings for scientific exchange,
15040 %         doctoral projects and strategic planning.
15041 %       }
15042 %     }
15043 %   }
15044 % ]
15045 % ```
15046 %
15047 % A category's `title` overrides its aggregated heading. When `description` is
15048 % supplied, it replaces that category's event-title/description subentries.
15049 % Categories without a description override use the lossless grouping rules
15050 % above. If dates are enabled, a category with an editorial summary lists the
15051 % selected category's distinct dates/ranges together. An explicitly empty
15052 % `description={}` suppresses all subentries, leaving the heading and, if enabled,
15053 % the dates. Omitting `description` preserves the original content.
15054 %
15055 % Overrides apply to this aggregated details call only. The summary should match
15056 % the selected year window and is printed only if that category has selected
15057 % events. Individual event records, category declarations, and timeline drawing
15058 % keep their existing roles. `categories` has no rendering effect when
15059 % `aggregated=false`. An empty selection prints no details.
15060 %
15061 % ## Categories, icons, and colours
15062 %
15063 % | Key | Legend text | Colour name | Palette default | Icon command |
15064 % | --- | --- | --- | --- | --- |
15065 % | `retreat` | Annual retreat | `EventRetreat` | Violet | `\faUsers` |
15066 % | `progress` | Progress day | `EventProgress` | Petrol | `\faComments` |
15067 % | `networking` | Networking | `EventNetworking` | Orange | `\faHandshake` |
15068 % | `graduate` | Graduate school retreat | `EventGraduate` | Magenta tint | `\faGraduationCap` |
15069 % | `symposium` | International symposium | `EventSymposium` | Bordeaux | `\faGlobe` |
15070 %
15071 % The module uses the host's matching RWTH colours when available, with CMYK,
15072 % RGB, and HTML fallbacks for standalone use. The graduate category uses the
15073 % 50-percent magenta tint. Existing `Event*` colour definitions in the host
15074 % document are retained. To change one
15075 % after loading the module, use an ordinary xcolor command, for example:
15076 %
15077 % ```latex
15078 % \colorlet{EventRetreat}{blue!60!black}
15079 % ```
15080 %
15081 % Declare a category before adding events that use it:
15082 %
15083 % ```latex
15084 % \DeclareEventCategory{conference}{Conference}{EventSymposium}{\faGlobe}
15085 % ```
15086 %
15087 % The four arguments are the key, legend text, an existing colour name, and an
15088 % icon command. Redeclaring a key changes that category's configuration. To change
15089 % only one event's icon, set its `icon` content field; aggregated details always
15090 % use the category icon. A formatting-only `icon` override affects the chart.
15091 %
15092 % The proposal registers five additional science-communication categories in
15093 % `preamble/dfg-customization.tex`: `social`, `science-night`, `speed-date`,
15094 % `cross-talk`, and `outreach-networking`. Chapter 1 and Q04 use the same timeline
15095 % commands; each starts its event collection with `\clearEvents`.
15096 %
15097 % ## Validation and regression tests
15098 %
15099 % IDs must be unique. A duplicate ID produces a warning, keeps the first event,
15100 % and skips the later event, including its formatting. It does not stop a build
15101 % using `-halt-on-error`. `\clearEvents` resets the collection, so IDs can be
15102 % reused in a new collection. This also applies to collisions with automatically
15103 % generated IDs.
15104 %
15105 % Categories must exist, and full titles and valid start dates are required.
15106 % Reversed ranges and impossible calendar dates report errors.
15107 % Width must be positive. Lane spacings must be `auto` or positive dimensions;
15108 % gap, distances, wrapping width, stroke widths, and radius must be nonnegative.
15109 %
```

```
% If compilation continues after a spacing error, invalid lane spacing recovers
% to `auto`. Automatic placement stops with an error after 1000 attempts rather
% than retrying indefinitely. Increase spacing, shorten text, or set suitable
% lanes if this limit is reached.
%
% Run the tracked regression suite from the repository root:
%
% ```sh
% python3 __admin/scripts/test_event_timeline.py -q
% ```
%
% The suite covers mixed date precision and validation, duplicate-ID warnings
% with preservation of the first event, ranges and year clipping,
% source order and manual lanes, date direction and temporary overrides, width,
% spacing recovery, the retry limit, both details formats, date switches,
% category aggregation, text deduplication without macro expansion, editorial
% overrides, option locality, caption auxiliary-file reads, and isolated copies in plain
% projects. The suite is available for manual local use; CI/CD does not run it.
% END FULL EVENT TIMELINE GUIDE

\ExplSyntaxOn
\cs_if_exist:NT \crc_event_module_loaded: {\ExplSyntaxOff\endinput}
\cs_new:Npn \crc_event_module_loaded: {}
\ExplSyntaxOff
\ProvidesPackage{dfg-timeline}[2026/11/24 v0.4.0 Independent event timelines]
\RequirePackage{tikz}
\RequirePackage{fontawesome5}
\RequirePackage{enumitem}

% Prefer the host's RWTH palette; keep the single-file module usable without it.
% Existing Event* definitions take precedence over these defaults.
\ExplSyntaxOn
\cs_new_protected:Npn \crc_event_color:nnn #1#2#3
  {
    \cs_if_exist:cF {\c_backslash_str color@#1}
      {
        \cs_if_exist:cTF {\c_backslash_str color@#2}
          {\colorlet{#1}{#2}}
          {\definecolor{#1}{cmyk/RGB/HTML}{#3}}
      }
  }
\crc_event_color:nnn {EventRetreat}{rwth-violet-100}{.70,1,.35,.15/97,33,88/612158}
\crc_event_color:nnn {EventProgress}{rwth-petrol-100}{1,.3,.5,.3/0,97,101/006165}
\crc_event_color:nnn {EventNetworking}{rwth-orange-100}{0,.4,1,0/246,168,0/F6A800}
\crc_event_color:nnn {EventGraduate}{rwth-magenta-50}{0,.5,.13,0/241,158,177/F19EB1}
\crc_event_color:nnn {EventSymposium}{rwth-bordeaux-100}{.25,1,.70,.20/161,16,53/A11035}
\crc_event_color:nnn {EventInk}{rwth-black-100}{0,0,0,1/0,0,0/000000}
\crc_event_color:nnn {EventMuted}{rwth-black-50}{0,0,0,.5/156,158,159/9C9E9F}
\crc_event_color:nnn {EventTalk}{rwth-black-50}{0,0,0,.5/156,158,159/9C9E9F}
\crc_event_color:nnn {EventMisc}{rwth-green-100}{.7,0,1,0/87,171,39/57AB27}
\ExplSyntaxOff

\ExplSyntaxOn
\seq_new:N \l__crc_events_seq
\seq_new:N \l__crc_event_sorted_seq
\seq_new:N \l__crc_event_years_seq
\seq_new:N \g__crc_event_categories_seq
\prop_new:N \l__crc_event_records_prop
\prop_new:N \l__crc_event_formatting_prop
\prop_new:N \l__crc_event_dates_prop
\prop_new:N \l__crc_event_start_positions_prop
\prop_new:N \l__crc_event_end_positions_prop
\prop_new:N \l__crc_event_ids_prop
\prop_new:N \g__crc_event_category_labels_prop
\prop_new:N \g__crc_event_category_colors_prop
\prop_new:N \g__crc_event_category_icons_prop
\tl_new:N \l__crc_event_record_tl
\tl_new:N \l__crc_event_formatting_tl
\tl_new:N \l__crc_event_id_tl
\tl_new:N \l__crc_event_date_tl
\tl_new:N \l__crc_event_end_date_tl
\tl_new:N \l__crc_event_date_label_tl
\tl_new:N \l__crc_event_year_tl
\tl_new:N \l__crc_event_current_year_tl
```

```
\tl_new:N \l__crc_event_category_tl
\tl_new:N \l__crc_event_title_tl
\tl_new:N \l__crc_event_label_tl
\tl_new:N \l__crc_event_abbreviation_tl
\tl_new:N \l__crc_event_summary_tl
\tl_new:N \l__crc_event_description_tl
\tl_new:N \l__crc_event_icon_tl
\tl_new:N \l__crc_event_color_tl
\int_new:N \l__crc_event_index_int
\int_new:N \l__crc_event_date_year_int
\int_new:N \l__crc_event_date_month_int
\int_new:N \l__crc_event_date_day_int
\int_new:N \l__crc_event_month_days_int
\bool_new:N \l__crc_event_valid_bool
\fp_new:N \l__crc_event_start_position_fp
\fp_new:N \l__crc_event_end_position_fp
\cs_generate_variant:Nn \prop_put:Nnn {NxV,Nxx}
\cs_generate_variant:Nn \prop_item:Nn {Ne}
\cs_generate_variant:Nn \str_compare:nNnTF {VNV}

\msg_new:nnn {crc-events}{bad-input}{#1}
\msg_new:nnn {crc-events}{duplicate-id}
  {Event~ID~'#1'~is~already~in~use.~
   The~later~event~is~ignored;~the~first~entry~is~kept.}
\cs_new_protected:Npn \crc_event_error:n #1
  {\bool_set_false:N \l__crc_event_valid_bool
   \msg_error:nnn {crc-events}{bad-input}{#1}}

% Parse a date whose ISO syntax has already been checked. Day zero means
% month-only precision; February follows the Gregorian leap-year rules.
\cs_new_protected:Npn \crc_event_date_parts:N #1
  {
    \int_set:Nn \l__crc_event_date_year_int
      {\tl_range:Nnn #1 {1}{4}}
    \int_set:Nn \l__crc_event_date_month_int
      {\tl_range:Nnn #1 {6}{7}}
    \int_set:Nn \l__crc_event_month_days_int
      {\int_case:nnF {\l__crc_event_date_month_int}
        {{2}{28}{4}{30}{6}{30}{9}{30}{11}{30}} {31}}
    \int_compare:nNnT {\l__crc_event_date_month_int} = {2}
      {
        \int_compare:nNnTF {\int_mod:nn {\l__crc_event_date_year_int}{400}} = {0}
          {\int_set:Nn \l__crc_event_month_days_int {29}}
          {
            \int_compare:nNnT {\int_mod:nn {\l__crc_event_date_year_int}{4}} = {0}
              {\int_compare:nNnF {\int_mod:nn {\l__crc_event_date_year_int}{100}} = {0}
                {\int_set:Nn \l__crc_event_month_days_int {29}}}
          }
      }
    \int_zero:N \l__crc_event_date_day_int
    \int_compare:nNnT {\tl_count:N #1} = {10}
      {\int_set:Nn \l__crc_event_date_day_int
        {\tl_range:Nnn #1 {9}{10}}}
  }
\cs_new_protected:Npn \crc_event_date_parts:
  {\crc_event_date_parts:N \l__crc_event_date_tl}
\cs_new_protected:Npn \crc_event_date_position:NN #1#2
  {
    \fp_zero:N #2
    \exp_args:NnV \regex_match:nnTF
      {\A[0-9]{4}-(0[1-9]|1[0-2])(-(0[1-9]|[12][0-9]|3[01]))?\Z} #1
      {
        \crc_event_date_parts:N #1
        \int_compare:nNnTF {\l__crc_event_date_day_int}>{\l__crc_event_month_days_int}
          {\crc_event_error:n {The~day~does~not~exist~in~the~given~month~and~year.}}
          {\fp_set:Nn #2 {12*\l__crc_event_date_year_int+\l__crc_event_date_month_int-1+
            \int_compare:nNnTF {\l__crc_event_date_day_int}={0}
              {.5}{(\l__crc_event_date_day_int-.5)/\l__crc_event_month_days_int}}}
      }
      {\crc_event_error:n {Use~an~ISO~date:~YYYY-MM~or~YYYY-MM-DD.}}
  }

\keys_define:nn {crc/event}
  {
```

```
15258       id .tl_set:N = \l__crc_event_id_tl,
15259       date .tl_set:N = \l__crc_event_date_tl,
15260       start~date .tl_set:N = \l__crc_event_date_tl,
15261       end~date .tl_set:N = \l__crc_event_end_date_tl,
15262       category .tl_set:N = \l__crc_event_category_tl,
15263       title .tl_set:N = \l__crc_event_title_tl,
15264       label .tl_set:N = \l__crc_event_label_tl,
15265       abbreviation .tl_set:N = \l__crc_event_abbreviation_tl,
15266       summary .tl_set:N = \l__crc_event_summary_tl,
15267       description .tl_set:N = \l__crc_event_description_tl,
15268       icon .tl_set:N = \l__crc_event_icon_tl,
15269
15270     }
15271   \cs_new_protected:Npn \crc_event_read:n #1
15272     {
15273       \keys_set:nn {crc/event}
15274         {id={},date={},end~date={},category={},title={},label={},abbreviation={},summary={},description={},
15275          icon={}}
15276       \keys_set:nn {crc/event}{#1}
15277       \tl_trim_spaces:N \l__crc_event_date_tl
15278       \tl_trim_spaces:N \l__crc_event_end_date_tl
15279       \tl_if_blank:VT \l__crc_event_end_date_tl
15280         {\tl_set_eq:NN \l__crc_event_end_date_tl \l__crc_event_date_tl}
15281       \tl_trim_spaces:N \l__crc_event_category_tl
15282       \tl_trim_spaces:N \l__crc_event_id_tl
15283     }
15284   \NewDocumentCommand \DeclareEventCategory {mmmm}
15285     {
15286       \seq_if_in:NnF \g__crc_event_categories_seq {#1}
15287         {\seq_gput_right:Nn \g__crc_event_categories_seq {#1}}
15288       \prop_gput:Nnn \g__crc_event_category_labels_prop {#1}{#2}
15289       \prop_gput:Nnn \g__crc_event_category_colors_prop {#1}{#3}
15290       \prop_gput:Nnn \g__crc_event_category_icons_prop {#1}{#4}
15291     }
15292   \NewDocumentCommand{\EventCategoryIcon}{m}
15293     {
15294       \group_begin:
15295         \color{\prop_item:Nn \g__crc_event_category_colors_prop {#1}}
15296         \prop_item:Nn \g__crc_event_category_icons_prop {#1}
15297       \group_end:
15298     }
15299   \NewDocumentCommand \clearEvents {}
15300     {
15301       \seq_clear:N \l__crc_events_seq
15302       \prop_clear:N \l__crc_event_records_prop
15303       \prop_clear:N \l__crc_event_formatting_prop
15304       \prop_clear:N \l__crc_event_dates_prop
15305       \prop_clear:N \l__crc_event_start_positions_prop
15306       \prop_clear:N \l__crc_event_end_positions_prop
15307       \prop_clear:N \l__crc_event_ids_prop
15308     }
15309   \NewDocumentCommand \addEvent {O{} m}
15310     {
15311       \crc_event_read:n {#2}
15312       \bool_set_true:N \l__crc_event_valid_bool
15313       \crc_event_date_position:NN \l__crc_event_date_tl \l__crc_event_start_position_fp
15314       \tl_if_eq:NNTF \l__crc_event_date_tl \l__crc_event_end_date_tl
15315         {\fp_set_eq:NN \l__crc_event_end_position_fp \l__crc_event_start_position_fp}
15316         {\crc_event_date_position:NN \l__crc_event_end_date_tl \l__crc_event_end_position_fp}
15317       \bool_if:NT \l__crc_event_valid_bool
15318         {\fp_compare:nT {\l__crc_event_end_position_fp<\l__crc_event_start_position_fp}
15319           {\crc_event_error:n {The~end~date~must~not~precede~the~start~date.}}}
15320       \tl_if_blank:VT \l__crc_event_title_tl
15321         {\crc_event_error:n {Every~event~needs~a~title.}}
15322       \prop_if_in:NVF \g__crc_event_category_labels_prop \l__crc_event_category_tl
15323         {\crc_event_error:n {Unknown~event~category.}}
15324       \int_set:Nn \l__crc_event_index_int {\seq_count:N \l__crc_events_seq+1}
15325       \tl_if_blank:VT \l__crc_event_id_tl
15326         {\tl_set:Nx \l__crc_event_id_tl {event-\int_use:N \l__crc_event_index_int}}
15327       \prop_if_in:NVT \l__crc_event_ids_prop \l__crc_event_id_tl
15328         {
15329           \bool_set_false:N \l__crc_event_valid_bool
15330           \msg_warning:nnx {crc-events}{duplicate-id}{\l__crc_event_id_tl}
15331         }
```

```
15332     \bool_if:NT \l__crc_event_valid_bool
15333       {
15334         \seq_put_right:Nx \l__crc_events_seq {\int_use:N \l__crc_event_index_int}
15335         \tl_set:Nn \l__crc_event_record_tl {#2}
15336         \tl_set:Nn \l__crc_event_formatting_tl {#1}
15337         \prop_put:NxV \l__crc_event_records_prop
15338           {\int_use:N \l__crc_event_index_int} \l__crc_event_record_tl
15339         \prop_put:NxV \l__crc_event_formatting_prop
15340           {\int_use:N \l__crc_event_index_int} \l__crc_event_formatting_tl
15341         \prop_put:NxV \l__crc_event_dates_prop
15342           {\int_use:N \l__crc_event_index_int} \l__crc_event_date_tl
15343         \prop_put:Nxx \l__crc_event_start_positions_prop
15344           {\int_use:N \l__crc_event_index_int}{\fp_use:N \l__crc_event_start_position_fp}
15345         \prop_put:Nxx \l__crc_event_end_positions_prop
15346           {\int_use:N \l__crc_event_index_int}{\fp_use:N \l__crc_event_end_position_fp}
15347         \prop_put:NVn \l__crc_event_ids_prop \l__crc_event_id_tl {used}
15348       }
15349   }
15350 \cs_new_protected:Npn \crc_event_prepare:
15351   {
15352     \seq_set_eq:NN \l__crc_event_sorted_seq \l__crc_events_seq
15353     \seq_sort:Nn \l__crc_event_sorted_seq
15354       {
15355         \fp_compare:nTF
15356           {\prop_item:Nn \l__crc_event_start_positions_prop {##1}>
15357            \prop_item:Nn \l__crc_event_start_positions_prop {##2}}
15358           {\sort_return_swapped:}{\sort_return_same:}
15359       }
15360     \seq_clear:N \l__crc_event_years_seq
15361     \seq_map_inline:Nn \l__crc_event_sorted_seq
15362       {
15363         \prop_get:NnN \l__crc_event_dates_prop {##1}\l__crc_event_date_tl
15364         \tl_set:Nx \l__crc_event_year_tl {\tl_range:Nnn \l__crc_event_date_tl {1}{4}}
15365         \seq_if_in:NVF \l__crc_event_years_seq \l__crc_event_year_tl
15366           {\seq_put_right:NV \l__crc_event_years_seq \l__crc_event_year_tl}
15367       }
15368   }
15369 % The same overlap test serves both renderers, including cross-year ranges.
15370 \cs_new_protected:Npn \crc_event_set_year:Nn #1#2
15371   {
15372     \tl_set:Nn #1 {#2}
15373     \tl_trim_spaces:N #1
15374     \str_if_eq:VnF #1 {all}
15375       {\exp_args:NnV \regex_match:nnF {\A[0-9]{4}\Z} #1
15376         {\msg_error:nnn {crc-events}{bad-input}{Use~year=all~or~a~four-digit~year.}
15377          \tl_set:Nn #1 {all}}}
15378   }
15379 \cs_new_protected:Npn \crc_event_select_year:NN #1#2
15380   {
15381     \crc_event_prepare:
15382     \seq_clear:N #1
15383     \str_if_eq:VnTF #2 {all}
15384       {\seq_set_eq:NN #1 \l__crc_event_sorted_seq}
15385       {\seq_map_inline:Nn \l__crc_event_sorted_seq
15386         {\fp_compare:nT
15387           {\prop_item:Nn \l__crc_event_start_positions_prop {##1}<12*(#2+1) &&
15388            \prop_item:Nn \l__crc_event_end_positions_prop {##1}>=12*#2}
15389           {\seq_put_right:Nn #1 {##1}}}}
15390   }
15391 \cs_new_protected:Npn \crc_event_load:n #1
15392   {
15393     \prop_get:NnN \l__crc_event_records_prop {#1}\l__crc_event_record_tl
15394     \exp_args:NV \crc_event_read:n \l__crc_event_record_tl
15395     \tl_set_eq:NN \l__crc_event_date_label_tl \l__crc_event_date_tl
15396     \tl_if_eq:NNF \l__crc_event_date_tl \l__crc_event_end_date_tl
15397       {\tl_put_right:Nn \l__crc_event_date_label_tl {\,--\,}
15398        \tl_put_right:NV \l__crc_event_date_label_tl \l__crc_event_end_date_tl}
15399     \prop_get:NVN \g__crc_event_category_colors_prop \l__crc_event_category_tl \l__crc_event_color_tl
15400     \tl_if_blank:VT \l__crc_event_icon_tl
15401       {\prop_get:NVN \g__crc_event_category_icons_prop \l__crc_event_category_tl \l__crc_event_icon_tl}
15402     \tl_if_blank:VT \l__crc_event_label_tl
15403       {\tl_set_eq:NN \l__crc_event_label_tl \l__crc_event_title_tl}
15404     \cs_set:Npx \crcEventIndex {#1}
15405     \crc_event_date_parts:
```

```
15406       \cs_set:Npx \crcEventMonthPosition
15407         {
15408           \fp_eval:n
15409             {\l__crc_event_date_month_int-1+
15410               \int_compare:nNnTF {\l__crc_event_date_day_int} = {0}
15411                 {.5}{(\l__crc_event_date_day_int-.5)/\l__crc_event_month_days_int}}
15412         }
15413       \cs_set_eq:NN \crcEventDate \l__crc_event_date_label_tl
15414       \cs_set_eq:NN \crcEventIcon \l__crc_event_icon_tl
15415       \cs_set_eq:NN \crcEventColor \l__crc_event_color_tl
15416     }
15417   % Per-call rendering options. No plot option changes the stored event data.
15418   \seq_new:N \l__crc_plot_events_seq
15419   \seq_new:N \l__crc_plot_categories_seq
15420   \prop_new:N \l__crc_plot_overrides_prop
15421   \prop_new:N \l__crc_plot_geometry_prop
15422   \prop_new:N \l__crc_plot_dates_prop
15423   \prop_new:N \l__crc_plot_date_labels_prop
15424   \tl_new:N \l__crc_plot_year_tl
15425   \tl_new:N \l__crc_plot_labels_tl
15426   \tl_new:N \l__crc_plot_lane_spacing_tl
15427   \tl_new:N \l__crc_plot_lane_tl
15428   \tl_new:N \l__crc_plot_date_lane_tl
15429   \tl_new:N \l__crc_plot_default_lane_tl
15430   \tl_new:N \l__crc_plot_default_date_lane_tl
15431   \tl_new:N \l__crc_plot_request_tl
15432   \tl_new:N \l__crc_plot_options_tl
15433   \tl_new:N \l__crc_plot_font_tl
15434   \tl_new:N \l__crc_plot_date_font_tl
15435   \tl_new:N \l__crc_plot_date_rotation_tl
15436   \tl_new:N \l__crc_plot_event_date_rotation_tl
15437   \tl_new:N \l__crc_plot_date_direction_tl
15438   \tl_new:N \l__crc_plot_date_spacing_tl
15439   \tl_new:N \l__crc_plot_event_font_tl
15440   \tl_new:N \l__crc_plot_line_color_tl
15441   \dim_new:N \l__crc_plot_width_dim
15442   \dim_new:N \l__crc_plot_label_width_dim
15443   \dim_new:N \l__crc_plot_event_width_dim
15444   \dim_new:N \l__crc_plot_distance_dim
15445   \dim_new:N \l__crc_plot_date_distance_dim
15446   \dim_new:N \l__crc_plot_date_step_dim
15447   \dim_new:N \l__crc_plot_gap_dim
15448   \dim_new:N \l__crc_plot_step_dim
15449   \dim_new:N \l__crc_plot_xshift_dim
15450   \dim_new:N \l__crc_plot_yshift_dim
15451   \dim_new:N \l__crc_plot_date_xshift_dim
15452   \dim_new:N \l__crc_plot_date_yshift_dim
15453   \dim_new:N \l__crc_plot_left_dim
15454   \dim_new:N \l__crc_plot_axis_span_dim
15455   \seq_new:N \l__crc_plot_fit_seq
15456   \seq_new:N \l__crc_plot_label_order_seq
15457   \fp_new:N \l__crc_plot_fit_span_fp
15458   \dim_new:N \l__crc_plot_height_dim
15459   \dim_new:N \l__crc_plot_date_height_dim
15460   \box_new:N \l__crc_plot_date_digit_box
15461   \dim_new:N \l__crc_plot_date_anchor_offset_dim
15462   \dim_new:N \l__crc_plot_bottom_dim
15463   \dim_new:N \l__crc_plot_x_dim
15464   \dim_new:N \l__crc_plot_y_dim
15465   \dim_new:N \l__crc_plot_min_x_dim
15466   \dim_new:N \l__crc_plot_max_x_dim
15467   \dim_new:N \l__crc_plot_min_y_dim
15468   \dim_new:N \l__crc_plot_max_y_dim
15469   \dim_new:N \l__crc_plot_line_width_dim
15470   \dim_new:N \l__crc_plot_connector_width_dim
15471   \dim_new:N \l__crc_plot_date_connector_width_dim
15472   \dim_new:N \l__crc_plot_range_width_dim
15473   \tl_new:N \l__crc_plot_range_arrows_tl
15474   \dim_new:N \l__crc_plot_dot_dim
15475   \fp_new:N \l__crc_plot_rotation_fp
15476   \fp_new:N \l__crc_plot_event_rotation_fp
15477   \fp_new:N \l__crc_plot_event_date_rotation_fp
15478   \fp_new:N \l__crc_plot_start_fp
15479   \fp_new:N \l__crc_plot_span_fp
```

```
\fp_new:N \l__crc_plot_a_fp
\fp_new:N \l__crc_plot_b_fp
\fp_new:N \l__crc_plot_c_fp
\fp_new:N \l__crc_plot_d_fp
\int_new:N \l__crc_plot_candidate_int
\int_new:N \l__crc_plot_attempts_int
\bool_new:N \l__crc_plot_conflict_bool
\bool_new:N \l__crc_plot_summary_bool
\bool_new:N \l__crc_plot_icons_bool
\bool_new:N \l__crc_plot_legend_bool
\bool_new:N \l__crc_plot_show_labels_bool
\bool_new:N \l__crc_plot_show_dates_bool

\cs_new_protected:Npn \crc_plot_missing_override:n #1
  {\msg_error:nnn {crc-events}{bad-input}{Use~events={id={options}}.}}
\cs_new_protected:Npn \crc_plot_override:nn #1#2
  {
    \prop_if_in:NnTF \l__crc_event_ids_prop {#1}
      {\prop_put:Nnn \l__crc_plot_overrides_prop {#1}{#2}}
      {\msg_error:nnn {crc-events}{bad-input}{Unknown~event~ID~'#1'.}}
  }
\keys_define:nn {crc/timeline}
  {
    width .dim_set:N = \l__crc_plot_width_dim,
    year .code:n = {\crc_event_set_year:Nn \l__crc_plot_year_tl {#1}},
    rotation .fp_set:N = \l__crc_plot_rotation_fp,
    date~rotation .tl_set:N = \l__crc_plot_date_rotation_tl,
    labels .choices:nn = {title,label,abbreviation}
      {\tl_set_eq:NN \l__crc_plot_labels_tl \l_keys_choice_tl},
    summary .bool_set:N = \l__crc_plot_summary_bool,
    icons .bool_set:N = \l__crc_plot_icons_bool,
    legend .bool_set:N = \l__crc_plot_legend_bool,
    label~width .dim_set:N = \l__crc_plot_label_width_dim,
    label~distance .dim_set:N = \l__crc_plot_distance_dim,
    lane .tl_set:N = \l__crc_plot_default_lane_tl,
    lane~spacing .tl_set:N = \l__crc_plot_lane_spacing_tl,
    date~lane .tl_set:N = \l__crc_plot_default_date_lane_tl,
    date~distance .dim_set:N = \l__crc_plot_date_distance_dim,
    date~lane~spacing .tl_set:N = \l__crc_plot_date_spacing_tl,
    gap .dim_set:N = \l__crc_plot_gap_dim,
    font .tl_set:N = \l__crc_plot_font_tl,
    date~font .tl_set:N = \l__crc_plot_date_font_tl,
    line~color .tl_set:N = \l__crc_plot_line_color_tl,
    line~width .dim_set:N = \l__crc_plot_line_width_dim,
    connector~width .dim_set:N = \l__crc_plot_connector_width_dim,
    date~connector~width .dim_set:N = \l__crc_plot_date_connector_width_dim,
    range~width .dim_set:N = \l__crc_plot_range_width_dim,
    dot~radius .dim_set:N = \l__crc_plot_dot_dim,
    events .code:n = {\keyval_parse:NNn \crc_plot_missing_override:n \crc_plot_override:nn {#1}},
    show~labels .bool_set:N = \l__crc_plot_show_labels_bool,
    show~dates .bool_set:N = \l__crc_plot_show_dates_bool,
  }
\keys_define:nn {crc/timeline/event}
  {
    lane .tl_set:N = \l__crc_plot_lane_tl,
    xshift .dim_set:N = \l__crc_plot_xshift_dim,
    yshift .dim_set:N = \l__crc_plot_yshift_dim,
    rotation .fp_set:N = \l__crc_plot_event_rotation_fp,
    date~rotation .tl_set:N = \l__crc_plot_event_date_rotation_tl,
    date~direction .choices:nn = {left,right}
      {\tl_set_eq:NN \l__crc_plot_date_direction_tl \l_keys_choice_tl},
    label~width .dim_set:N = \l__crc_plot_event_width_dim,
    label .tl_set:N = \l__crc_event_label_tl,
    icon .tl_set:N = \l__crc_event_icon_tl,
    font .tl_set:N = \l__crc_plot_event_font_tl,
    date~lane .tl_set:N = \l__crc_plot_date_lane_tl,
    date~xshift .dim_set:N = \l__crc_plot_date_xshift_dim,
    date~yshift .dim_set:N = \l__crc_plot_date_yshift_dim,
    node~options .tl_set:N = \l__crc_plot_options_tl
  }
% Invalid spacing recovers to auto after the error, so even nonstopmode cannot
% get stuck retrying exactly the same position. Zero line widths are allowed.
\cs_new_protected:Npn \crc_plot_positive:Nn #1#2
  {\dim_compare:nNnF {#1}>{0pt}
```

```
    {\msg_error:nnn {crc-events}{bad-input}{'#2'~must~be~positive.}
     \dim_set:Nn #1 {1pt}}}
\cs_new_protected:Npn \crc_plot_nonnegative:Nn #1#2
  {\dim_compare:nNnT {#1}<{0pt}
    {\msg_error:nnn {crc-events}{bad-input}{'#2'~must~not~be~negative.}
     \dim_zero:N #1}}
\cs_new_protected:Npn \crc_plot_validate_spacing:Nn #1#2
  {\tl_if_eq:NnF #1 {auto}
    {\dim_compare:nNnF {#1}>{0pt}
      {\msg_error:nnn {crc-events}{bad-input}{'#2'~must~be~auto~or~a~positive~dimension.}
       \tl_set:Nn #1 {auto}}}}
\cs_new_protected:Npn \crc_plot_validate:
  {
    \crc_plot_positive:Nn \l__crc_plot_width_dim {width}
    \crc_plot_nonnegative:Nn \l__crc_plot_gap_dim {gap}
    \crc_plot_nonnegative:Nn \l__crc_plot_label_width_dim {label~width}
    \crc_plot_nonnegative:Nn \l__crc_plot_distance_dim {label~distance}
    \crc_plot_nonnegative:Nn \l__crc_plot_date_distance_dim {date~distance}
    \crc_plot_nonnegative:Nn \l__crc_plot_line_width_dim {line~width}
    \crc_plot_nonnegative:Nn \l__crc_plot_connector_width_dim {connector~width}
    \crc_plot_nonnegative:Nn \l__crc_plot_date_connector_width_dim {date~connector~width}
    \crc_plot_nonnegative:Nn \l__crc_plot_range_width_dim {range~width}
    \crc_plot_nonnegative:Nn \l__crc_plot_dot_dim {dot~radius}
    \crc_plot_validate_spacing:Nn \l__crc_plot_lane_spacing_tl {lane~spacing}
    \crc_plot_validate_spacing:Nn \l__crc_plot_date_spacing_tl {date~lane~spacing}
  }
\cs_new_protected:Npn \crc_plot_load:n #1
  {
    \crc_event_load:n {#1}
    \tl_if_blank:VT \l__crc_event_id_tl
      {\tl_set:Nn \l__crc_event_id_tl {event-#1}}
    \str_case:Vn \l__crc_plot_labels_tl
      {
        {title}{\tl_set_eq:NN \l__crc_event_label_tl \l__crc_event_title_tl}
        {abbreviation}{\tl_if_blank:VF \l__crc_event_abbreviation_tl
          {\tl_set_eq:NN \l__crc_event_label_tl \l__crc_event_abbreviation_tl}}
      }
    \tl_set_eq:NN \l__crc_plot_lane_tl \l__crc_plot_default_lane_tl
    \tl_set_eq:NN \l__crc_plot_date_lane_tl \l__crc_plot_default_date_lane_tl
    \tl_set_eq:NN \l__crc_plot_event_date_rotation_tl \l__crc_plot_date_rotation_tl
    \tl_set:Nn \l__crc_plot_date_direction_tl {left}
    \tl_set_eq:NN \l__crc_plot_event_font_tl \l__crc_plot_font_tl
    \fp_set_eq:NN \l__crc_plot_event_rotation_fp \l__crc_plot_rotation_fp
    \dim_set_eq:NN \l__crc_plot_event_width_dim \l__crc_plot_label_width_dim
    \dim_zero:N \l__crc_plot_xshift_dim
    \dim_zero:N \l__crc_plot_yshift_dim
    \dim_zero:N \l__crc_plot_date_xshift_dim
    \dim_zero:N \l__crc_plot_date_yshift_dim
    \tl_clear:N \l__crc_plot_options_tl
    \prop_get:NnNT \l__crc_event_formatting_prop {#1}\l_tmpa_tl
      {\exp_args:NnV \keys_set:nn {crc/timeline/event}\l_tmpa_tl}
    \prop_get:NVNT \l__crc_plot_overrides_prop \l__crc_event_id_tl \l_tmpa_tl
      {\exp_args:NnV \keys_set:nn {crc/timeline/event}\l_tmpa_tl}
    \crc_plot_nonnegative:Nn \l__crc_plot_event_width_dim {label~width}
    \tl_if_eq:NnTF \l__crc_plot_event_date_rotation_tl {auto}
      {\fp_set_eq:NN \l__crc_plot_event_date_rotation_fp \l__crc_plot_event_rotation_fp}
      {\fp_set:Nn \l__crc_plot_event_date_rotation_fp {\l__crc_plot_event_date_rotation_tl}}
    % Icons remain upright when upper text is hidden. Dates still follow the
    % configured label angle unless date rotation explicitly overrides it.
    \bool_if:NF \l__crc_plot_show_labels_bool
      {\fp_zero:N \l__crc_plot_event_rotation_fp}
  }
\cs_new_protected:Npn \crc_plot_label_text:
  {
    \bool_if:NT \l__crc_plot_icons_bool
      {\textcolor{\l__crc_event_color_tl}{\l__crc_event_icon_tl}\enspace}
    \textbf{\l__crc_event_label_tl}
    \bool_if:NT \l__crc_plot_summary_bool
      {\tl_if_blank:VF \l__crc_event_summary_tl
        {\\[1.5pt]\textcolor{EventMuted}{\l__crc_event_summary_tl}}}
  }
\cs_new_protected:Npn \crc_plot_measure:n #1
  {
    \crc_plot_load:n {#1}
```

```
15628       \prop_put:Nnx \l__crc_plot_geometry_prop {#1/fraction}
15629         {\fp_eval:n {max(0,min(1,(\prop_item:Nn \l__crc_event_start_positions_prop {#1}-
15630           \l__crc_plot_start_fp)/\l__crc_plot_span_fp))}}
15631       \prop_put:Nnx \l__crc_plot_geometry_prop {#1/end-fraction}
15632         {\fp_eval:n {max(0,min(1,(\prop_item:Nn \l__crc_event_end_positions_prop {#1}-
15633           \l__crc_plot_start_fp)/\l__crc_plot_span_fp))}}
15634       \seq_if_in:NVF \l__crc_plot_categories_seq \l__crc_event_category_tl
15635         {\seq_put_right:NV \l__crc_plot_categories_seq \l__crc_event_category_tl}
15636       \cs_if_exist:cF {l__crc_plot_label_#1_box}{\box_new:c {l__crc_plot_label_#1_box}}
15637       \cs_if_exist:cF {l__crc_plot_date_#1_box}{\box_new:c {l__crc_plot_date_#1_box}}
15638       \hbox_set:cn {l__crc_plot_label_#1_box}
15639         {
15640           \tl_use:N \l__crc_plot_event_font_tl
15641           \bool_if:NTF \l__crc_plot_show_labels_bool
15642             {\dim_compare:nNnTF {\l__crc_plot_event_width_dim}>{0pt}
15643               {\parbox{\l__crc_plot_event_width_dim}{\raggedright\crc_plot_label_text:}}
15644               {\shortstack[l]{\crc_plot_label_text:}}}
15645             {\bool_if:NT \l__crc_plot_icons_bool {\l__crc_event_icon_tl}}
15646         }
15647       \hbox_set:cn {l__crc_plot_date_#1_box}
15648         {\bool_if:NT \l__crc_plot_show_dates_bool
15649           {\tl_use:N \l__crc_plot_date_font_tl\l__crc_event_date_label_tl}}
15650       % Measure the selected digit's top centre relative to the north-east text
15651       % corner. Dates extend left from their last digit, or right from their first.
15652       % For a range, use the start date's first digit or the end date's last digit.
15653       \hbox_set:Nn \l__crc_plot_date_digit_box
15654         {\bool_if:NT \l__crc_plot_show_dates_bool
15655           {\tl_use:N \l__crc_plot_date_font_tl
15656            \str_if_eq:VnTF \l__crc_plot_date_direction_tl {right}
15657              {\tl_item:Nn \l__crc_event_date_tl {1}}
15658              {\tl_item:Nn \l__crc_event_end_date_tl {-1}}}}
15659       \dim_set:Nn \l__crc_plot_date_anchor_offset_dim
15660         {-.5\box_wd:N \l__crc_plot_date_digit_box}
15661       \str_if_eq:VnT \l__crc_plot_date_direction_tl {right}
15662         {\dim_set:Nn \l__crc_plot_date_anchor_offset_dim
15663           {-\box_wd:c {l__crc_plot_date_#1_box}+.5\box_wd:N \l__crc_plot_date_digit_box}}
15664       \prop_put:Nnx \l__crc_plot_geometry_prop {#1/date-connector-dx}
15665         {\fp_to_dim:n {\dim_to_fp:n {\l__crc_plot_date_anchor_offset_dim}*
15666           cosd(\l__crc_plot_event_date_rotation_fp)}}
15667       \prop_put:Nnx \l__crc_plot_geometry_prop {#1/date-connector-dy}
15668         {\fp_to_dim:n {\dim_to_fp:n {\l__crc_plot_date_anchor_offset_dim}*
15669           sind(\l__crc_plot_event_date_rotation_fp)}}
15670       % Rotated corner coordinates in points; the complete label stays above
15671       % the axis even for negative rotations. Measured boxes drive collision lanes.
15672       \fp_set:Nn \l__crc_plot_a_fp
15673         {\dim_to_fp:n {\box_wd:c {l__crc_plot_label_#1_box}}*cosd(\l__crc_plot_event_rotation_fp)}
15674       \fp_set:Nn \l__crc_plot_b_fp
15675         {\dim_to_fp:n {\box_wd:c {l__crc_plot_label_#1_box}}*sind(\l__crc_plot_event_rotation_fp)}
15676       \fp_set:Nn \l__crc_plot_c_fp
15677         {-(\dim_to_fp:n {\box_ht:c {l__crc_plot_label_#1_box}+\box_dp:c {l__crc_plot_label_#1_box}})*sind(\
15678       \fp_set:Nn \l__crc_plot_d_fp
15679         {(\dim_to_fp:n {\box_ht:c {l__crc_plot_label_#1_box}+\box_dp:c {l__crc_plot_label_#1_box}})*cosd(\l
15680       \dim_set:Nn \l__crc_plot_min_x_dim
15681         {\fp_to_dim:n {min(0,\l__crc_plot_a_fp,\l__crc_plot_c_fp,\l__crc_plot_a_fp+\l__crc_plot_c_fp)}}
15682       \dim_set:Nn \l__crc_plot_max_x_dim
15683         {\fp_to_dim:n {max(0,\l__crc_plot_a_fp,\l__crc_plot_c_fp,\l__crc_plot_a_fp+\l__crc_plot_c_fp)}}
15684       \dim_set:Nn \l__crc_plot_min_y_dim
15685         {\fp_to_dim:n {min(0,\l__crc_plot_b_fp,\l__crc_plot_d_fp,\l__crc_plot_b_fp+\l__crc_plot_d_fp)}}
15686       \dim_set:Nn \l__crc_plot_max_y_dim
15687         {\fp_to_dim:n {max(0,\l__crc_plot_b_fp,\l__crc_plot_d_fp,\l__crc_plot_b_fp+\l__crc_plot_d_fp)}}
15688       % An icon-only node is centred above its point rather than left-aligned.
15689       \bool_if:NF \l__crc_plot_show_labels_bool
15690         {\dim_set:Nn \l__crc_plot_min_x_dim {-.5\box_wd:c {l__crc_plot_label_#1_box}}
15691          \dim_set:Nn \l__crc_plot_max_x_dim {.5\box_wd:c {l__crc_plot_label_#1_box}}}
15692       \prop_put:Nnx \l__crc_plot_geometry_prop {#1/min-x}{\dim_use:N \l__crc_plot_min_x_dim}
15693       \prop_put:Nnx \l__crc_plot_geometry_prop {#1/max-x}{\dim_use:N \l__crc_plot_max_x_dim}
15694       \prop_put:Nnx \l__crc_plot_geometry_prop {#1/min-y}{\dim_use:N \l__crc_plot_min_y_dim}
15695       \prop_put:Nnx \l__crc_plot_geometry_prop {#1/label-cx}
15696         {\fp_eval:n {\bool_if:NTF \l__crc_plot_show_labels_bool
15697           {(.5)*(\l__crc_plot_a_fp+\l__crc_plot_c_fp)}{0}}}
15698       \prop_put:Nnx \l__crc_plot_geometry_prop {#1/label-cy}{\fp_eval:n {(.5)*(\l__crc_plot_b_fp+\l__crc_pl
15699       \prop_put:Nnx \l__crc_plot_geometry_prop {#1/label-hw}{\fp_eval:n {.5*\dim_to_fp:n {\box_wd:c {l__crc
15700       \prop_put:Nnx \l__crc_plot_geometry_prop {#1/label-hh}{\fp_eval:n {.5*\dim_to_fp:n {\box_ht:c {l__crc
15701       \prop_put:Nnx \l__crc_plot_geometry_prop {#1/label-cos}{\fp_eval:n {cosd(\l__crc_plot_event_rotation_
```

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15702     \prop_put:Nnx \l__crc_plot_geometry_prop {#1/label-sin}{\fp_eval:n {sind(\l__crc_plot_event_rotation_
15703     \dim_set:Nn \l__crc_plot_height_dim
15704       {\dim_max:nn {\l__crc_plot_height_dim}{\box_ht:c {l__crc_plot_label_#1_box}+\box_dp:c {l__crc_plot_
15705     % Date geometry is relative to the selected digit's top centre. The text's
15706     % north-east corner is shifted so this centre stays on the connector.
15707     \fp_set:Nn \l__crc_plot_a_fp {-\dim_to_fp:n {\box_wd:c {l__crc_plot_date_#1_box}}*cosd(\l__crc_plot_e
15708     \fp_set:Nn \l__crc_plot_b_fp {-\dim_to_fp:n {\box_wd:c {l__crc_plot_date_#1_box}}*sind(\l__crc_plot_e
15709     \fp_set:Nn \l__crc_plot_c_fp {\dim_to_fp:n {\box_ht:c {l__crc_plot_date_#1_box}+\box_dp:c {l__crc_plo
15710     \fp_set:Nn \l__crc_plot_d_fp {-\dim_to_fp:n {\box_ht:c {l__crc_plot_date_#1_box}+\box_dp:c {l__crc_pl
15711     \prop_put:Nnx \l__crc_plot_geometry_prop {#1/date-cx}
15712       {\fp_eval:n {.5*(\l__crc_plot_a_fp+\l__crc_plot_c_fp)-
15713         \dim_to_fp:n {\prop_item:Nn \l__crc_plot_geometry_prop {#1/date-connector-dx}}}}
15714     \prop_put:Nnx \l__crc_plot_geometry_prop {#1/date-cy}
15715       {\fp_eval:n {.5*(\l__crc_plot_b_fp+\l__crc_plot_d_fp)-
15716         \dim_to_fp:n {\prop_item:Nn \l__crc_plot_geometry_prop {#1/date-connector-dy}}}}
15717     \prop_put:Nnx \l__crc_plot_geometry_prop {#1/date-hw}{\fp_eval:n {.5*\dim_to_fp:n {\box_wd:c {l__crc_
15718     \prop_put:Nnx \l__crc_plot_geometry_prop {#1/date-hh}{\fp_eval:n {.5*\dim_to_fp:n {\box_ht:c {l__crc_
15719     \prop_put:Nnx \l__crc_plot_geometry_prop {#1/date-cos}{\fp_eval:n {cosd(\l__crc_plot_event_date_rotat
15720     \prop_put:Nnx \l__crc_plot_geometry_prop {#1/date-sin}{\fp_eval:n {sind(\l__crc_plot_event_date_rotat
15721     \prop_put:Nnx \l__crc_plot_geometry_prop {#1/date-min-y}
15722       {\fp_to_dim:n {min(0,\l__crc_plot_b_fp,\l__crc_plot_d_fp,\l__crc_plot_b_fp+\l__crc_plot_d_fp)-
15723         \dim_to_fp:n {\prop_item:Nn \l__crc_plot_geometry_prop {#1/date-connector-dy}}}}
15724     \prop_put:Nnx \l__crc_plot_geometry_prop {#1/date-max-y}
15725       {\fp_to_dim:n {max(0,\l__crc_plot_b_fp,\l__crc_plot_d_fp,\l__crc_plot_b_fp+\l__crc_plot_d_fp)-
15726         \dim_to_fp:n {\prop_item:Nn \l__crc_plot_geometry_prop {#1/date-connector-dy}}}}
15727     \dim_set:Nn \l__crc_plot_date_height_dim
15728       {\dim_max:nn {\l__crc_plot_date_height_dim}{\box_ht:c {l__crc_plot_date_#1_box}+\box_dp:c {l__crc_p
15729     \prop_put:Nnx \l__crc_plot_geometry_prop {#1/fit-min}
15730       {\fp_eval:n {min(-\dim_to_fp:n {\l__crc_plot_dot_dim+.2pt},
15731         \bool_if:nTF {\l__crc_plot_show_labels_bool || \l__crc_plot_icons_bool}
15732           {\dim_to_fp:n {\l__crc_plot_xshift_dim+\l__crc_plot_min_x_dim}}{0},
15733         \bool_if:NTF \l__crc_plot_show_dates_bool
15734           {\dim_to_fp:n {\l__crc_plot_date_xshift_dim-
15735             \prop_item:Nn \l__crc_plot_geometry_prop {#1/date-connector-dx}}+
15736             min(0,\l__crc_plot_a_fp,\l__crc_plot_c_fp,\l__crc_plot_a_fp+\l__crc_plot_c_fp)}{0})}}
15737     \prop_put:Nnx \l__crc_plot_geometry_prop {#1/fit-max}
15738       {\fp_eval:n {max(\dim_to_fp:n {\l__crc_plot_dot_dim+.2pt},
15739         \bool_if:nTF {\l__crc_plot_show_labels_bool || \l__crc_plot_icons_bool}
15740           {\dim_to_fp:n {\l__crc_plot_xshift_dim+\l__crc_plot_max_x_dim}}{0},
15741         \bool_if:NTF \l__crc_plot_show_dates_bool
15742           {\dim_to_fp:n {\l__crc_plot_date_xshift_dim-
15743             \prop_item:Nn \l__crc_plot_geometry_prop {#1/date-connector-dx}}+
15744             max(0,\l__crc_plot_a_fp,\l__crc_plot_c_fp,\l__crc_plot_a_fp+\l__crc_plot_c_fp)}{0})}}
15745   }
15746 % Maximise the common date scale subject to every event's actual left/right
15747 % extent. Calendar endpoints also stay inside the requested width. Reserving
15748 % the longest label at both endpoints wastes space when it occurs mid-chart.
15749 \cs_new_protected:Npn \crc_plot_fit_pair:nn #1#2
15750   {
15751     \fp_compare:nT {\prop_item:Nn \l__crc_plot_geometry_prop {#2/fraction}>
15752                     \prop_item:Nn \l__crc_plot_geometry_prop {#1/fraction}}
15753       {\fp_set:Nn \l__crc_plot_fit_span_fp
15754         {min(\l__crc_plot_fit_span_fp,
15755           (\dim_to_fp:n {\l__crc_plot_width_dim-4mm}+
15756            \prop_item:Nn \l__crc_plot_geometry_prop {#1/fit-min}-
15757            \prop_item:Nn \l__crc_plot_geometry_prop {#2/fit-max})/
15758           (\prop_item:Nn \l__crc_plot_geometry_prop {#2/fraction}-
15759            \prop_item:Nn \l__crc_plot_geometry_prop {#1/fraction}))}}
15760   }
15761 \cs_new_protected:Npn \crc_plot_fit:
15762   {
15763     \seq_set_eq:NN \l__crc_plot_fit_seq \l__crc_plot_events_seq
15764     \seq_put_left:Nn \l__crc_plot_fit_seq {start}
15765     \seq_put_right:Nn \l__crc_plot_fit_seq {end}
15766     \prop_put:Nnn \l__crc_plot_geometry_prop {start/fraction}{0}
15767     \prop_put:Nnn \l__crc_plot_geometry_prop {end/fraction}{1}
15768     \clist_map_inline:nn {start,end}
15769       {\prop_put:Nnn \l__crc_plot_geometry_prop {##1/fit-min}{0}
15770        \prop_put:Nnn \l__crc_plot_geometry_prop {##1/fit-max}{0}}
15771     \fp_set:Nn \l__crc_plot_fit_span_fp {\dim_to_fp:n {\l__crc_plot_width_dim-4mm}}
15772     \seq_map_inline:Nn \l__crc_plot_fit_seq
15773       {\seq_map_inline:Nn \l__crc_plot_fit_seq {\crc_plot_fit_pair:nn {##1}{####1}}}
15774     \dim_set:Nn \l__crc_plot_axis_span_dim {\fp_to_dim:N \l__crc_plot_fit_span_fp}
15775     \dim_set:Nn \l__crc_plot_left_dim {2mm}
```

```
15776       \seq_map_inline:Nn \l__crc_plot_fit_seq
15777         {\dim_set:Nn \l__crc_plot_left_dim
15778           {\dim_max:nn {\l__crc_plot_left_dim}{\fp_to_dim:n {\dim_to_fp:n {2mm}-
15779             \prop_item:Nn \l__crc_plot_geometry_prop {##1/fit-min}-
15780             \prop_item:Nn \l__crc_plot_geometry_prop {##1/fraction}*\l__crc_plot_fit_span_fp}}}}
15781       \bool_set_false:N \l__crc_plot_conflict_bool
15782       \dim_compare:nNnF {\l__crc_plot_axis_span_dim}>{0pt}
15783         {\bool_set_true:N \l__crc_plot_conflict_bool}
15784       \seq_map_inline:Nn \l__crc_plot_fit_seq
15785         {\fp_compare:nT
15786           {\dim_to_fp:n {\l__crc_plot_left_dim}+
15787            \prop_item:Nn \l__crc_plot_geometry_prop {##1/fraction}*\l__crc_plot_fit_span_fp+
15788            \prop_item:Nn \l__crc_plot_geometry_prop {##1/fit-max}>
15789            \dim_to_fp:n {\l__crc_plot_width_dim-2mm}+.01}
15790           {\bool_set_true:N \l__crc_plot_conflict_bool}}
15791       \bool_if:NT \l__crc_plot_conflict_bool
15792         {\msg_error:nnn {crc-events}{bad-input}{Timeline~width~is~too~small~for~its~labels.}}
15793     }
15794   % Separating-axis checks let parallel rotated labels share vertical space.
15795   % Each cached box is an oriented rectangle; only true intersections add lanes.
15796   \fp_new:N \l__crc_plot_dx_fp
15797   \fp_new:N \l__crc_plot_dy_fp
15798   \fp_new:N \l__crc_plot_nx_fp
15799   \fp_new:N \l__crc_plot_ny_fp
15800   \fp_new:N \l__crc_plot_radius_a_fp
15801   \fp_new:N \l__crc_plot_radius_b_fp
15802   \tl_new:N \l__crc_plot_sat_type_tl
15803   \tl_new:N \l__crc_plot_sat_a_tl
15804   \tl_new:N \l__crc_plot_sat_b_tl
15805   \bool_new:N \l__crc_plot_intersects_bool
15806   \cs_new_protected:Npn \crc_plot_candidate_y:nn #1#2
15807     {
15808       \str_if_eq:nnTF {#1}{label}
15809         {\dim_set:Nn \l__crc_plot_y_dim
15810           {\l__crc_plot_distance_dim+\l__crc_plot_candidate_int\l__crc_plot_step_dim+
15811            \l__crc_plot_yshift_dim-\prop_item:Nn \l__crc_plot_geometry_prop {#2/min-y}}}
15812         {\dim_set:Nn \l__crc_plot_y_dim
15813           {-\l__crc_plot_date_distance_dim-\l__crc_plot_candidate_int\l__crc_plot_date_step_dim+
15814            \l__crc_plot_date_yshift_dim-\prop_item:Nn \l__crc_plot_geometry_prop {#2/date-max-
      y}}}
15815     }
15816   \cs_new_protected:Npn \crc_plot_sat_axis:nn #1#2
15817     {
15818       \bool_if:NT \l__crc_plot_intersects_bool
15819         {
15820           \fp_set:Nn \l__crc_plot_nx_fp {#1}
15821           \fp_set:Nn \l__crc_plot_ny_fp {#2}
15822           \fp_set:Nn \l__crc_plot_radius_a_fp
15823             {\prop_item:Ne \l__crc_plot_geometry_prop {\l__crc_plot_sat_a_tl/\l__crc_plot_sat_type_tl-
      hw}
15824              *abs(\prop_item:Ne \l__crc_plot_geometry_prop {\l__crc_plot_sat_a_tl/\l__crc_plot_sat_type_tl-
      cos}*\l__crc_plot_nx_fp+
15825                   \prop_item:Ne \l__crc_plot_geometry_prop {\l__crc_plot_sat_a_tl/\l__crc_plot_sat_type_tl-
      sin}*\l__crc_plot_ny_fp)+
15826              \prop_item:Ne \l__crc_plot_geometry_prop {\l__crc_plot_sat_a_tl/\l__crc_plot_sat_type_tl-
      hh}
15827              *abs(-\prop_item:Ne \l__crc_plot_geometry_prop {\l__crc_plot_sat_a_tl/\l__crc_plot_sat_type_tl
      sin}*\l__crc_plot_nx_fp+
15828                    \prop_item:Ne \l__crc_plot_geometry_prop {\l__crc_plot_sat_a_tl/\l__crc_plot_sat_type_tl
      cos}*\l__crc_plot_ny_fp)}
15829           \fp_set:Nn \l__crc_plot_radius_b_fp
15830             {\prop_item:Ne \l__crc_plot_geometry_prop {\l__crc_plot_sat_b_tl/\l__crc_plot_sat_type_tl-
      hw}
15831              *abs(\prop_item:Ne \l__crc_plot_geometry_prop {\l__crc_plot_sat_b_tl/\l__crc_plot_sat_type_tl-
      cos}*\l__crc_plot_nx_fp+
15832                   \prop_item:Ne \l__crc_plot_geometry_prop {\l__crc_plot_sat_b_tl/\l__crc_plot_sat_type_tl-
      sin}*\l__crc_plot_ny_fp)+
15833              \prop_item:Ne \l__crc_plot_geometry_prop {\l__crc_plot_sat_b_tl/\l__crc_plot_sat_type_tl-
      hh}
15834              *abs(-\prop_item:Ne \l__crc_plot_geometry_prop {\l__crc_plot_sat_b_tl/\l__crc_plot_sat_type_tl
      sin}*\l__crc_plot_nx_fp+
15835                    \prop_item:Ne \l__crc_plot_geometry_prop {\l__crc_plot_sat_b_tl/\l__crc_plot_sat_type_tl
      cos}*\l__crc_plot_ny_fp)}
15836           \fp_compare:nT
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```
15837           {abs(\l__crc_plot_dx_fp*\l__crc_plot_nx_fp+\l__crc_plot_dy_fp*\l__crc_plot_ny_fp)
15838            >=\l__crc_plot_radius_a_fp+\l__crc_plot_radius_b_fp+\dim_to_fp:n {\l__crc_plot_gap_dim}}
15839           {\bool_set_false:N \l__crc_plot_intersects_bool}
15840       }
15841   }
15842 \cs_new_protected:Npn \crc_plot_intersects:nnn #1#2#3
15843   {
15844     \tl_set:Nn \l__crc_plot_sat_type_tl {#1}
15845     \tl_set:Nn \l__crc_plot_sat_a_tl {#2}
15846     \tl_set:Nn \l__crc_plot_sat_b_tl {#3}
15847     \fp_set:Nn \l__crc_plot_dx_fp
15848       {\dim_to_fp:n {\prop_item:Nn \l__crc_plot_geometry_prop {#2/#1-x}}+
15849        \prop_item:Nn \l__crc_plot_geometry_prop {#2/#1-cx}-
15850        \dim_to_fp:n {\prop_item:Nn \l__crc_plot_geometry_prop {#3/#1-x}}-
15851        \prop_item:Nn \l__crc_plot_geometry_prop {#3/#1-cx}}
15852     \fp_set:Nn \l__crc_plot_dy_fp
15853       {\dim_to_fp:n {\l__crc_plot_y_dim}+\prop_item:Nn \l__crc_plot_geometry_prop {#2/#1-
    cy}-
15854        \dim_to_fp:n {\prop_item:Nn \l__crc_plot_geometry_prop {#3/#1-y}}-
15855        \prop_item:Nn \l__crc_plot_geometry_prop {#3/#1-cy}}
15856     \bool_set_true:N \l__crc_plot_intersects_bool
15857     \clist_map_inline:nn {#2,#3}
15858       {
15859         \crc_plot_sat_axis:nn
15860           {\prop_item:Nn \l__crc_plot_geometry_prop {##1/#1-cos}}
15861           {\prop_item:Nn \l__crc_plot_geometry_prop {##1/#1-sin}}
15862         \crc_plot_sat_axis:nn
15863           {-\prop_item:Nn \l__crc_plot_geometry_prop {##1/#1-sin}}
15864           {\prop_item:Nn \l__crc_plot_geometry_prop {##1/#1-cos}}
15865       }
15866   }
15867 \cs_new_protected:Npn \crc_plot_find_lane:nn #1#2
15868   {
15869     \tl_if_eq:NnTF \l__crc_plot_request_tl {auto}
15870       {
15871         \int_zero:N \l__crc_plot_candidate_int
15872         \str_if_eq:nnT {#1}{label}
15873           {\seq_map_inline:Nn \l__crc_plot_events_seq
15874             {\int_compare:nNnT {##1}<{#2}
15875               {\str_if_eq:eeT {\prop_item:Nn \l__crc_event_dates_prop {##1}}
15876                               {\prop_item:Nn \l__crc_event_dates_prop {#2}}
15877                 {\prop_get:NnNT \l__crc_plot_geometry_prop {##1/label-lane}\l_tmpa_tl
15878                   {\int_set:Nn \l__crc_plot_candidate_int
15879                     {\int_max:nn {\l__crc_plot_candidate_int}{\l_tmpa_tl+1}}}}}}}}
15880         \bool_set_true:N \l__crc_plot_conflict_bool
15881         \int_zero:N \l__crc_plot_attempts_int
15882         \bool_while_do:nn {\l__crc_plot_conflict_bool}
15883           {
15884             \int_incr:N \l__crc_plot_attempts_int
15885             \bool_set_false:N \l__crc_plot_conflict_bool
15886             \crc_plot_candidate_y:nn {#1}{#2}
15887             \seq_map_inline:Nn \l__crc_plot_events_seq
15888               {
15889                 \prop_if_in:NnT \l__crc_plot_geometry_prop {##1/#1-y}
15890                   {\crc_plot_intersects:nnn {#1}{#2}{##1}
15891                    \bool_if:NT \l__crc_plot_intersects_bool
15892                      {\bool_set_true:N \l__crc_plot_conflict_bool\seq_map_break:}}
15893               }
15894             \bool_if:NT \l__crc_plot_conflict_bool {\int_incr:N \l__crc_plot_candidate_int}
15895             \int_compare:nNnT {\l__crc_plot_attempts_int}>{999}
15896               {\bool_if:NT \l__crc_plot_conflict_bool
15897                 {\msg_error:nnn {crc-events}{bad-input}
15898                   {Automatic~placement~exceeded~1000~attempts;~increase~lane~spacing~or~set~a~lane.}
15899                  \bool_set_false:N \l__crc_plot_conflict_bool}}
15900           }
15901       }
15902       {
15903         \exp_args:NnV \regex_match:nnTF {\A[0-9]+\Z}\l__crc_plot_request_tl
15904           {\int_set:Nn \l__crc_plot_candidate_int {\l__crc_plot_request_tl}}
15905           {\msg_error:nnn {crc-events}{bad-input}{Use~lane=auto~or~a~nonnegative~integer.}}
15906         \crc_plot_candidate_y:nn {#1}{#2}
15907       }
15908     \prop_put:Nnx \l__crc_plot_geometry_prop {#2/#1-lane}{\int_use:N \l__crc_plot_candidate_int}
15909     \prop_put:Nnx \l__crc_plot_geometry_prop {#2/#1-y}{\dim_use:N \l__crc_plot_y_dim}
```

```
15910   }
15911 \cs_new_protected:Npn \crc_plot_place:n #1
15912   {
15913     \crc_plot_load:n {#1}
15914     \dim_set:Nn \l__crc_plot_x_dim
15915       {\fp_to_dim:n {\dim_to_fp:n {\l__crc_plot_left_dim}+
15916         \prop_item:Nn \l__crc_plot_geometry_prop {#1/fraction}*\dim_to_fp:n {\l__crc_plot_axis_span_dim}}
15917     \prop_put:Nnx \l__crc_plot_geometry_prop {#1/x}{\dim_use:N \l__crc_plot_x_dim}
15918     \prop_put:Nnx \l__crc_plot_geometry_prop {#1/end-x}
15919       {\fp_to_dim:n {\dim_to_fp:n {\l__crc_plot_left_dim}+
15920         \prop_item:Nn \l__crc_plot_geometry_prop {#1/end-fraction}*\dim_to_fp:n {\l__crc_plot_axis_span_d
15921     \prop_put:Nnx \l__crc_plot_geometry_prop {#1/label-x}
15922       {\dim_eval:n {\l__crc_plot_x_dim+\l__crc_plot_xshift_dim}}
15923     \prop_put:Nnx \l__crc_plot_geometry_prop {#1/label-left}
15924       {\dim_eval:n {\l__crc_plot_x_dim+\l__crc_plot_xshift_dim+\prop_item:Nn \l__crc_plot_geometry_prop {
      x}}}
15925     \prop_put:Nnx \l__crc_plot_geometry_prop {#1/label-right}
15926       {\dim_eval:n {\l__crc_plot_x_dim+\l__crc_plot_xshift_dim+\prop_item:Nn \l__crc_plot_geometry_prop {
      x}}}
15927     \prop_put:NnV \l__crc_plot_geometry_prop {#1/lane-request}\l__crc_plot_lane_tl
15928     % Count shared starts separately from full date-range labels: different end
15929     % dates need distinct labels even when their start point is shared.
15930     \prop_if_in:NVTF \l__crc_plot_dates_prop \l__crc_event_date_tl
15931       {\prop_get:NVN \l__crc_plot_dates_prop \l__crc_event_date_tl \l_tmpa_tl
15932        \tl_set:Nx \l_tmpa_tl {\int_eval:n {\l_tmpa_tl+1}}
15933        \prop_put:NVV \l__crc_plot_dates_prop \l__crc_event_date_tl \l_tmpa_tl}
15934       {\prop_put:NVn \l__crc_plot_dates_prop \l__crc_event_date_tl {1}}
15935     \prop_put:Nnn \l__crc_plot_geometry_prop {#1/date-show}{false}
15936     \bool_if:NT \l__crc_plot_show_dates_bool
15937       {
15938         \tl_set:Nx \l_tmpa_tl {\l__crc_event_date_tl/\l__crc_event_end_date_tl}
15939         \prop_if_in:NVF \l__crc_plot_date_labels_prop \l_tmpa_tl
15940           {
15941             \prop_put:NVn \l__crc_plot_date_labels_prop \l_tmpa_tl {used}
15942             \prop_put:Nnn \l__crc_plot_geometry_prop {#1/date-show}{true}
15943             \prop_put:Nnx \l__crc_plot_geometry_prop {#1/date-x}
15944               {\dim_eval:n {\l__crc_plot_x_dim+\l__crc_plot_date_xshift_dim}}
15945             \tl_set_eq:NN \l__crc_plot_request_tl \l__crc_plot_date_lane_tl
15946             \crc_plot_find_lane:nn {date}{#1}
15947             \dim_set:Nn \l__crc_plot_bottom_dim
15948               {\dim_min:nn {\l__crc_plot_bottom_dim}
15949                 {\l__crc_plot_y_dim+\prop_item:Nn \l__crc_plot_geometry_prop {#1/date-min-
      y}}}
15950           }
15951       }
15952   }
15953 % Respect same-date predecessors even when width-based packing visits a shorter
15954 % later label first. Each label is placed once; explicit lanes remain authoritative.
15955 \cs_new_protected:Npn \crc_plot_place_label:n #1
15956   {
15957     \prop_if_in:NnF \l__crc_plot_geometry_prop {#1/label-y}
15958       {
15959         \str_if_eq:eeT {\prop_item:Nn \l__crc_plot_geometry_prop {#1/lane-request}}{auto}
15960           {\seq_map_inline:Nn \l__crc_plot_events_seq
15961             {\int_compare:nNnT {##1}<{#1}
15962               {\str_if_eq:eeT {\prop_item:Nn \l__crc_event_dates_prop {##1}}
15963                               {\prop_item:Nn \l__crc_event_dates_prop {#1}}
15964                 {\crc_plot_place_label:n {##1}}}}}
15965         \crc_plot_load:n {#1}
15966         \tl_set_eq:NN \l__crc_plot_request_tl \l__crc_plot_lane_tl
15967         \crc_plot_find_lane:nn {label}{#1}
15968       }
15969   }
15970 \cs_new_protected:Npn \crc_plot_place_labels:
15971   {
15972     \seq_set_eq:NN \l__crc_plot_label_order_seq \l__crc_plot_events_seq
15973     \seq_sort:Nn \l__crc_plot_label_order_seq
15974       {
15975         \str_if_eq:eeTF {\prop_item:Nn \l__crc_plot_geometry_prop {##1/lane-request}}{auto}
15976           {\str_if_eq:eeTF {\prop_item:Nn \l__crc_plot_geometry_prop {##2/lane-
      request}}{auto}
15977             {\dim_compare:nNnTF {\box_wd:c {l__crc_plot_label_##1_box}}>
15978                                 {\box_wd:c {l__crc_plot_label_##2_box}}
15979               {\sort_return_swapped:}{\sort_return_same:}}
```

```
15980             {\sort_return_swapped:}}
15981           {\sort_return_same:}
15982       }
15983     \seq_map_inline:Nn \l__crc_plot_label_order_seq
15984       {\crc_plot_place_label:n {##1}}
15985   }
15986 \cs_new_protected:Npn \crc_plot_draw_range:n #1
15987   {
15988     \fp_compare:nT {\prop_item:Nn \l__crc_event_end_positions_prop {#1}>
15989                     \prop_item:Nn \l__crc_event_start_positions_prop {#1}}
15990       {
15991         \crc_plot_load:n {#1}
15992         \tl_clear:N \l__crc_plot_range_arrows_tl
15993         \fp_compare:nT {\prop_item:Nn \l__crc_event_start_positions_prop {#1}<\l__crc_plot_start_fp}
15994           {\tl_set:Nn \l__crc_plot_range_arrows_tl {<-}}
15995         \fp_compare:nT {\prop_item:Nn \l__crc_event_end_positions_prop {#1}>
15996                         \l__crc_plot_start_fp+\l__crc_plot_span_fp}
15997           {\tl_if_empty:NTF \l__crc_plot_range_arrows_tl
15998             {\tl_set:Nn \l__crc_plot_range_arrows_tl {->}}
15999             {\tl_set:Nn \l__crc_plot_range_arrows_tl {<->}}}
16000         \tikzset{crc~event/range/.style/.expand~once=\l__crc_plot_range_arrows_tl}
16001         \draw[\l__crc_event_color_tl,line~width=\l__crc_plot_range_width_dim,crc~event/range]
16002           (\prop_item:Nn \l__crc_plot_geometry_prop {#1/x},0)
16003           -- (\prop_item:Nn \l__crc_plot_geometry_prop {#1/end-x},0);
16004         \fp_compare:nT {\prop_item:Nn \l__crc_event_end_positions_prop {#1}<=
16005                         \l__crc_plot_start_fp+\l__crc_plot_span_fp}
16006           {\draw[\l__crc_event_color_tl,line~width=\l__crc_plot_range_width_dim]
16007             (\prop_item:Nn \l__crc_plot_geometry_prop {#1/end-x},-\l__crc_plot_dot_dim)
16008             -- (\prop_item:Nn \l__crc_plot_geometry_prop {#1/end-x},\l__crc_plot_dot_dim);}
16009       }
16010   }
16011 \cs_new_protected:Npn \crc_plot_draw_connector:n #1
16012   {
16013     \crc_plot_load:n {#1}
16014     \bool_if:NT \l__crc_plot_show_labels_bool
16015       {\draw[\l__crc_event_color_tl!35,line~width=\l__crc_plot_connector_width_dim]
16016         (\prop_item:Nn \l__crc_plot_geometry_prop {#1/x},0)
16017         -- (\prop_item:Nn \l__crc_plot_geometry_prop {#1/label-x},
16018             \prop_item:Nn \l__crc_plot_geometry_prop {#1/label-y});}
16019     \str_if_eq:eeT {\prop_item:Nn \l__crc_plot_geometry_prop {#1/date-show}}{true}
16020       {\draw[EventMuted!40,line~width=\l__crc_plot_date_connector_width_dim,shorten~>=1pt]
16021         (\prop_item:Nn \l__crc_plot_geometry_prop {#1/x},0)
16022         -- (\prop_item:Nn \l__crc_plot_geometry_prop {#1/date-x},
16023             \prop_item:Nn \l__crc_plot_geometry_prop {#1/date-y});}
16024   }
16025 \cs_new_protected:Npn \crc_plot_draw_label:n #1
16026   {
16027     \crc_plot_load:n {#1}
16028     \tikzset{crc~event/custom/.style/.expand~once=\l__crc_plot_options_tl}
16029
16030     \bool_if:NTF \l__crc_plot_show_labels_bool
16031       {
16032         % Show slanted labels with icons
16033         \node[
16034           anchor=south~west,
16035           rotate=\fp_use:N \l__crc_plot_event_rotation_fp,
16036           inner~sep=0pt,
16037           outer~sep=0pt,
16038           fill=white,
16039           crc~event/custom
16040         ]
16041         at (
16042           \prop_item:Nn \l__crc_plot_geometry_prop {#1/label-x},
16043           \prop_item:Nn \l__crc_plot_geometry_prop {#1/label-y}
16044         )
16045         {\box_use:c {l__crc_plot_label_#1_box}};
16046       }
16047       {
16048         % Hide slanted labels but keep icons
16049         \bool_if:NT \l__crc_plot_icons_bool
16050           {
16051             \node[
16052               anchor=south,
16053               inner~sep=0pt,
```

```
16054               outer~sep=0pt,
16055               text=\l__crc_event_color_tl
16056             ]
16057             at (
16058               \prop_item:Nn \l__crc_plot_geometry_prop {#1/label-x},
16059               \prop_item:Nn \l__crc_plot_geometry_prop {#1/label-y}
16060             )
16061             {\box_use:c {l__crc_plot_label_#1_box}};
16062           }
16063       }
16064
16065     \str_if_eq:eeT
16066       {\prop_item:Nn \l__crc_plot_geometry_prop {#1/date-show}}
16067       {true}
16068       {
16069         \node[
16070           anchor=north~east,
16071           rotate=\fp_use:N \l__crc_plot_event_date_rotation_fp,
16072           inner~sep=0pt,
16073           outer~sep=0pt,
16074           text=EventMuted
16075         ]
16076         at (
16077           \dim_eval:n {\prop_item:Nn \l__crc_plot_geometry_prop {#1/date-x}-
16078                        \prop_item:Nn \l__crc_plot_geometry_prop {#1/date-connector-dx}},
16079           \dim_eval:n {\prop_item:Nn \l__crc_plot_geometry_prop {#1/date-y}-
16080                        \prop_item:Nn \l__crc_plot_geometry_prop {#1/date-connector-dy}}
16081         )
16082         {\box_use:c {l__crc_plot_date_#1_box}};
16083       }
16084     % A range that began before the selected year has a continuation arrow,
16085     % rather than an artificial event point at the start of January.
16086     \fp_compare:nT {\prop_item:Nn \l__crc_event_start_positions_prop {#1}>=\l__crc_plot_start_fp}
16087       {\int_compare:nNnTF
16088         {\prop_item:Ne \l__crc_plot_dates_prop {\l__crc_event_date_tl}}>{1}
16089         {\tl_set:Nn \l_tmpa_tl {black}}
16090         {\tl_set_eq:NN \l_tmpa_tl \l__crc_event_color_tl}
16091        \filldraw[fill=\l_tmpa_tl,draw=white,line~width=.4pt]
16092          (\prop_item:Nn \l__crc_plot_geometry_prop {#1/x},0)
16093          circle[radius=\l__crc_plot_dot_dim];}
16094   }
16095 \cs_new_protected:Npn \crc_plot_legend:
16096   {
16097     \seq_map_indexed_inline:Nn \l__crc_plot_categories_seq
16098       {\int_compare:nNnT {##1}>{1}{\quad}
16099        {\color{\prop_item:Nn \g__crc_event_category_colors_prop {##2}}
16100         \prop_item:Nn \g__crc_event_category_icons_prop {##2}}\,
16101        \prop_item:Nn \g__crc_event_category_labels_prop {##2}}
16102   }
16103 \NewDocumentCommand \printEventTimeline {O{}}
16104   {
16105     \mode_if_vertical:T {\noindent}
16106     \group_begin:
16107     \prop_clear:N \l__crc_plot_overrides_prop
16108     \prop_clear:N \l__crc_plot_geometry_prop
16109     \prop_clear:N \l__crc_plot_dates_prop
16110     \prop_clear:N \l__crc_plot_date_labels_prop
16111     \keys_set:nn {crc/timeline}
16112       {width=\linewidth,year=all,rotation=30,date~rotation=auto,labels=label,summary=false,icons=true,
16113        legend=true,show~labels=true,show~dates=true,
16114        label~width=0pt,label~distance=1.8mm,lane=auto,lane~spacing=auto,
16115        date~lane=auto,date~distance=1.8mm,date~lane~spacing=auto,gap=.8mm,
16116        font={\sffamily\fontsize{7.4}{9}\selectfont},
16117        date~font={\sffamily\fontsize{6.5}{8}\selectfont},
16118        line~color=EventMuted!40,line~width=.6pt,connector~width=.35pt,
16119        date~connector~width=.3pt,range~width=1.2pt,dot~radius=.9mm}
16120     \keys_set:nn {crc/timeline}{#1}
16121     \crc_plot_validate:
16122     \crc_event_select_year:NN \l__crc_plot_events_seq \l__crc_plot_year_tl
16123     \seq_clear:N \l__crc_plot_categories_seq
16124     \seq_if_empty:NTF \l__crc_plot_events_seq
16125       {\emph{No~events~for~the~selected~year.}}
16126       {
16127         \str_if_eq:VnTF \l__crc_plot_year_tl {all}
```

```
16128           {
16129             \fp_set:Nn \l__crc_plot_start_fp
16130               {floor(\prop_item:Ne \l__crc_event_start_positions_prop
16131                 {\seq_item:Nn \l__crc_plot_events_seq {1}})}
16132             \fp_set_eq:NN \l__crc_plot_span_fp \l__crc_plot_start_fp
16133             \seq_map_inline:Nn \l__crc_plot_events_seq
16134               {\fp_set:Nn \l__crc_plot_span_fp
16135                 {max(\l__crc_plot_span_fp,ceil(\prop_item:Nn \l__crc_event_end_positions_prop {##1}))}}
16136             \fp_sub:Nn \l__crc_plot_span_fp {\l__crc_plot_start_fp}
16137           }
16138           {\fp_set:Nn \l__crc_plot_start_fp {12*\l__crc_plot_year_tl}
16139            \fp_set:Nn \l__crc_plot_span_fp {12}}
16140         \dim_zero:N \l__crc_plot_height_dim
16141         \dim_zero:N \l__crc_plot_date_height_dim
16142         \dim_zero:N \l__crc_plot_bottom_dim
16143         \seq_map_inline:Nn \l__crc_plot_events_seq {\crc_plot_measure:n {##1}}
16144         \crc_plot_fit:
16145         \tl_if_eq:NnTF \l__crc_plot_lane_spacing_tl {auto}
16146           {\dim_set:Nn \l__crc_plot_step_dim {\l__crc_plot_height_dim+\l__crc_plot_gap_dim}}
16147           {\dim_set:Nn \l__crc_plot_step_dim {\l__crc_plot_lane_spacing_tl}}
16148         \tl_if_eq:NnTF \l__crc_plot_date_spacing_tl {auto}
16149           {\dim_set:Nn \l__crc_plot_date_step_dim {\l__crc_plot_date_height_dim+\l__crc_plot_gap_dim}}
16150           {\dim_set:Nn \l__crc_plot_date_step_dim {\l__crc_plot_date_spacing_tl}}
16151         \crc_plot_positive:Nn \l__crc_plot_step_dim {lane~spacing}
16152         \crc_plot_positive:Nn \l__crc_plot_date_step_dim {date~lane~spacing}
16153         \seq_map_inline:Nn \l__crc_plot_events_seq {\crc_plot_place:n {##1}}
16154         \bool_if:nT {\l__crc_plot_show_labels_bool || \l__crc_plot_icons_bool}
16155           {\crc_plot_place_labels:}
16156         \begin{tikzpicture}
16157           \draw[\l__crc_plot_line_color_tl,line~width=\l__crc_plot_line_width_dim]
16158             (\dim_eval:n {.5\l__crc_plot_line_width_dim},0)
16159             -- (\dim_eval:n {\l__crc_plot_width_dim-.5\l__crc_plot_line_width_dim},0);
16160           \seq_map_inline:Nn \l__crc_plot_events_seq {\crc_plot_draw_range:n {##1}}
16161           \seq_map_inline:Nn \l__crc_plot_events_seq {\crc_plot_draw_connector:n {##1}}
16162           \seq_map_inline:Nn \l__crc_plot_events_seq {\crc_plot_draw_label:n {##1}}
16163           \bool_if:NT \l__crc_plot_legend_bool
16164             {\node[anchor=north~west,text~width=\l__crc_plot_width_dim,
16165               align=left,inner~sep=0pt,outer~sep=0pt,text=EventMuted,font=\sffamily\scriptsize]
16166               at (0,\dim_eval:n {\l__crc_plot_bottom_dim-3mm}) {\crc_plot_legend:};}
16167         \end{tikzpicture}
16168       }
16169     \group_end:
16170   }
16171
16172 \tl_new:N \l__crc_event_details_format_tl
16173 \tl_new:N \l__crc_event_details_year_tl
16174 \seq_new:N \l__crc_event_details_seq
16175 \bool_new:N \l__crc_event_details_icons_bool
16176 \bool_new:N \l__crc_event_details_show_dates_bool
16177 \bool_new:N \l__crc_event_details_aggregated_bool
16178 \prop_new:N \l__crc_event_details_overrides_prop
16179 \tl_new:N \l__crc_event_details_override_category_tl
16180 \cs_generate_variant:Nn \prop_put:Nnn {Nxn}
16181 \cs_new_protected:Npn \crc_event_details_category_missing:n #1
16182   {\msg_error:nnn {crc-events}{bad-input}
16183     {Supply~category~details~as~category={title=...,description=...}.}}
16184 \cs_new_protected:Npn \crc_event_details_category_set:nn #1#2
16185   {
16186     \tl_set:Nn \l__crc_event_details_override_category_tl {#1}
16187     \tl_trim_spaces:N \l__crc_event_details_override_category_tl
16188     \prop_if_in:NVTF \g__crc_event_category_labels_prop
16189       \l__crc_event_details_override_category_tl
16190       {\keys_set:nn {crc/event-details-category}{#2}}
16191       {\msg_error:nnx {crc-events}{bad-input}{Unknown~details~category~'#1'.}}
16192   }
16193 \keys_define:nn {crc/event-details-category}
16194   {
16195     title .code:n =
16196       {\prop_put:Nxn \l__crc_event_details_overrides_prop
16197         {\l__crc_event_details_override_category_tl/title}{#1}},
16198     title .value_required:n = true,
16199     description .code:n =
16200       {\prop_put:Nxn \l__crc_event_details_overrides_prop
16201         {\l__crc_event_details_override_category_tl/description}{#1}},
```

```
16202       description .value_required:n = true
16203     }
16204   \keys_define:nn {crc/event-details}
16205     {
16206       format .choices:nn = {list,prose}
16207         {\tl_set_eq:NN \l__crc_event_details_format_tl \l_keys_choice_tl},
16208       year .code:n = {\crc_event_set_year:Nn \l__crc_event_details_year_tl {#1}},
16209       icons .bool_set:N = \l__crc_event_details_icons_bool,
16210       show~dates .bool_set:N = \l__crc_event_details_show_dates_bool,
16211       nodate .bool_set_inverse:N = \l__crc_event_details_show_dates_bool,
16212       aggregated .bool_set:N = \l__crc_event_details_aggregated_bool,
16213       categories .code:n =
16214         {\keyval_parse:NNn \crc_event_details_category_missing:n
16215           \crc_event_details_category_set:nn {#1}},
16216       categories .value_required:n = true
16217     }
16218   \cs_new_protected:Npn \crc_event_details_list:
16219     {
16220       \footnotesize
16221       \begin{description}[leftmargin=0pt,labelindent=0pt,labelwidth=\linewidth,
16222         labelsep=0pt,style=nextline,itemsep=4pt,parsep=0pt]
16223       \seq_map_inline:Nn \l__crc_event_details_seq
16224         {
16225           \crc_event_load:n {##1}
16226           \item[{\bool_if:NT \l__crc_event_details_icons_bool
16227             {\textcolor{\crcEventColor}{\crcEventIcon}\enspace}
16228             \bool_if:NT \l__crc_event_details_show_dates_bool
16229               {\l__crc_event_date_label_tl\quad}
16230             \l__crc_event_title_tl}]
16231             \l__crc_event_description_tl
16232         }
16233       \end{description}
16234     }
16235   \cs_new_protected:Npn \crc_event_details_prose:
16236     {
16237       \seq_map_indexed_inline:Nn \l__crc_event_details_seq
16238         {
16239           \int_compare:nNnT {##1}>{1}{\space}
16240           \crc_event_load:n {##2}
16241           \bool_if:NT \l__crc_event_details_icons_bool
16242             {\textcolor{\crcEventColor}{\crcEventIcon}\enspace}
16243           \textbf{\l__crc_event_title_tl
16244             \bool_if:NT \l__crc_event_details_show_dates_bool
16245               {\space(\l__crc_event_date_label_tl)}.}
16246           \tl_if_blank:VF \l__crc_event_description_tl
16247             {\space\tl_use:N \l__crc_event_description_tl}
16248         }
16249     }
16250   % Group only selected events. Titles and descriptions remain unexpanded while
16251   % comparing/storing variants, so formatting macros do not run during grouping.
16252   \seq_new:N \l__crc_event_details_categories_seq
16253   \prop_new:N \l__crc_event_details_category_events_prop
16254   \seq_new:N \l__crc_event_details_title_ids_seq
16255   \seq_new:N \l__crc_event_details_variant_ids_seq
16256   \prop_new:N \l__crc_event_details_variant_titles_prop
16257   \prop_new:N \l__crc_event_details_variant_descriptions_prop
16258   \prop_new:N \l__crc_event_details_variant_dates_prop
16259   \clist_new:N \l__crc_event_details_dates_clist
16260   \clist_new:N \l__crc_event_details_all_dates_clist
16261   \tl_new:N \l__crc_event_details_category_tl
16262   \tl_new:N \l__crc_event_details_heading_tl
16263   \tl_new:N \l__crc_event_details_summary_tl
16264   \tl_new:N \l__crc_event_details_variant_id_tl
16265   \tl_new:N \l__crc_event_details_title_tl
16266   \tl_new:N \l__crc_event_details_description_tl
16267   \tl_new:N \l__crc_event_details_compare_title_tl
16268   \tl_new:N \l__crc_event_details_compare_description_tl
16269   \bool_new:N \l__crc_event_details_summary_bool
16270   \bool_new:N \l__crc_event_details_title_found_bool
16271   \bool_new:N \l__crc_event_details_output_bool
16272   \cs_new_protected:Npn \crc_event_details_groups_prepare:
16273     {
16274       \seq_clear:N \l__crc_event_details_categories_seq
16275       \prop_clear:N \l__crc_event_details_category_events_prop
```

```
    \seq_map_inline:Nn \l__crc_event_details_seq
      {
        \crc_event_load:n {##1}
        \seq_if_in:NVF \l__crc_event_details_categories_seq \l__crc_event_category_tl
          {
            \seq_put_right:NV \l__crc_event_details_categories_seq \l__crc_event_category_tl
            \prop_put:NVn \l__crc_event_details_category_events_prop
              \l__crc_event_category_tl {}
          }
        \prop_get:NVN \l__crc_event_details_category_events_prop
          \l__crc_event_category_tl \l_tmpa_tl
        \tl_if_empty:NF \l_tmpa_tl {\tl_put_right:Nn \l_tmpa_tl {,}}
        \tl_put_right:Nn \l_tmpa_tl {##1}
        \prop_put:NVV \l__crc_event_details_category_events_prop
          \l__crc_event_category_tl \l_tmpa_tl
      }
  }
\cs_new_protected:Npn \crc_event_details_add_date:N #1
  {
    \clist_if_in:NVF #1 \l__crc_event_date_label_tl
      {\clist_put_right:NV #1 \l__crc_event_date_label_tl}
  }
\cs_new_protected:Npn \crc_event_details_collect:n #1
  {
    \crc_event_load:n {#1}
    \crc_event_details_add_date:N \l__crc_event_details_all_dates_clist
    \bool_if:NF \l__crc_event_details_summary_bool
      {
        \tl_clear:N \l__crc_event_details_variant_id_tl
        \seq_map_inline:Nn \l__crc_event_details_variant_ids_seq
          {
            \prop_get:NnN \l__crc_event_details_variant_titles_prop {##1}
              \l__crc_event_details_compare_title_tl
            \prop_get:NnN \l__crc_event_details_variant_descriptions_prop {##1}
              \l__crc_event_details_compare_description_tl
            \tl_if_eq:NNT \l__crc_event_title_tl \l__crc_event_details_compare_title_tl
              {
                \tl_if_eq:NNT \l__crc_event_description_tl
                  \l__crc_event_details_compare_description_tl
                  {
                    \tl_set:Nn \l__crc_event_details_variant_id_tl {##1}
                    \seq_map_break:
                  }
              }
          }
        \tl_if_empty:NT \l__crc_event_details_variant_id_tl
          {
            \tl_set:Nn \l__crc_event_details_variant_id_tl {#1}
            \seq_put_right:Nn \l__crc_event_details_variant_ids_seq {#1}
            \prop_put:NnV \l__crc_event_details_variant_titles_prop {#1}
              \l__crc_event_title_tl
            \prop_put:NnV \l__crc_event_details_variant_descriptions_prop {#1}
              \l__crc_event_description_tl
            \prop_put:Nnn \l__crc_event_details_variant_dates_prop {#1}{}
            \bool_set_false:N \l__crc_event_details_title_found_bool
            \seq_map_inline:Nn \l__crc_event_details_title_ids_seq
              {
                \prop_get:NnN \l__crc_event_details_variant_titles_prop {##1}
                  \l__crc_event_details_compare_title_tl
                \tl_if_eq:NNT \l__crc_event_title_tl \l__crc_event_details_compare_title_tl
                  {
                    \bool_set_true:N \l__crc_event_details_title_found_bool
                    \seq_map_break:
                  }
              }
            \bool_if:NF \l__crc_event_details_title_found_bool
              {\seq_put_right:Nn \l__crc_event_details_title_ids_seq {#1}}
          }
        \prop_get:NVN \l__crc_event_details_variant_dates_prop
          \l__crc_event_details_variant_id_tl \l_tmpa_tl
        \clist_set:NV \l__crc_event_details_dates_clist \l_tmpa_tl
        \crc_event_details_add_date:N \l__crc_event_details_dates_clist
        \prop_put:NVV \l__crc_event_details_variant_dates_prop
          \l__crc_event_details_variant_id_tl \l__crc_event_details_dates_clist
```

```
      }
  }
\cs_new_protected:Npn \crc_event_details_category_prepare:n #1
  {
    \tl_set:Nn \l__crc_event_details_category_tl {#1}
    \seq_clear:N \l__crc_event_details_title_ids_seq
    \seq_clear:N \l__crc_event_details_variant_ids_seq
    \prop_clear:N \l__crc_event_details_variant_titles_prop
    \prop_clear:N \l__crc_event_details_variant_descriptions_prop
    \prop_clear:N \l__crc_event_details_variant_dates_prop
    \clist_clear:N \l__crc_event_details_all_dates_clist
    \exp_args:NNx \prop_get:NnNTF \l__crc_event_details_overrides_prop
      {#1/title}\l__crc_event_details_heading_tl {}
      {\prop_get:NnN \g__crc_event_category_labels_prop {#1}
        \l__crc_event_details_heading_tl}
    \exp_args:NNx \prop_get:NnNTF \l__crc_event_details_overrides_prop
      {#1/description}\l__crc_event_details_summary_tl
      {\bool_set_true:N \l__crc_event_details_summary_bool}
      {\bool_set_false:N \l__crc_event_details_summary_bool}
    \prop_get:NnN \l__crc_event_details_category_events_prop {#1}\l_tmpa_tl
    \exp_args:NV \clist_map_function:nN \l_tmpa_tl \crc_event_details_collect:n
  }
\cs_new_protected:Npn \crc_event_details_group_label:
  {
    \bool_if:NT \l__crc_event_details_icons_bool
      {\exp_args:NV \EventCategoryIcon \l__crc_event_details_category_tl \enspace}
    \tl_use:N \l__crc_event_details_heading_tl
  }
\cs_new_protected:Npn \crc_event_details_separator:
  {
    \str_if_eq:VnTF \l__crc_event_details_format_tl {prose}
      {\space}
      {\bool_if:NT \l__crc_event_details_output_bool {\par}}
    \bool_set_true:N \l__crc_event_details_output_bool
  }
\cs_new_protected:Npn \crc_event_details_dates:N #1
  {(\clist_use:Nn #1 {,~})}
\cs_new_protected:Npn \crc_event_details_variant:n #1
  {
    \prop_get:NnN \l__crc_event_details_variant_descriptions_prop {#1}
      \l__crc_event_details_description_tl
    \bool_if:nT
      {\l__crc_event_details_show_dates_bool ||
        !\tl_if_blank_p:V \l__crc_event_details_description_tl}
      {
        \crc_event_details_separator:
        \bool_if:NT \l__crc_event_details_show_dates_bool
          {
            \prop_get:NnN \l__crc_event_details_variant_dates_prop {#1}\l_tmpa_tl
            \clist_set:NV \l__crc_event_details_dates_clist \l_tmpa_tl
            \crc_event_details_dates:N \l__crc_event_details_dates_clist
            \tl_if_blank:VF \l__crc_event_details_description_tl {\space}
          }
        \tl_use:N \l__crc_event_details_description_tl
      }
  }
\cs_new_protected:Npn \crc_event_details_group_body:
  {
    \bool_set_false:N \l__crc_event_details_output_bool
    \bool_if:NTF \l__crc_event_details_summary_bool
      {
        \bool_if:NT \l__crc_event_details_show_dates_bool
          {
            \crc_event_details_separator:
            \crc_event_details_dates:N \l__crc_event_details_all_dates_clist
          }
        \tl_if_blank:VF \l__crc_event_details_summary_tl
          {\crc_event_details_separator:\tl_use:N \l__crc_event_details_summary_tl}
      }
      {
        \seq_map_inline:Nn \l__crc_event_details_title_ids_seq
          {
            \prop_get:NnN \l__crc_event_details_variant_titles_prop {##1}
              \l__crc_event_details_title_tl
```

```
16424             \tl_if_eq:NNF \l__crc_event_details_title_tl \l__crc_event_details_heading_tl
16425               {
16426                 \tl_if_blank:VF \l__crc_event_details_title_tl
16427                   {\crc_event_details_separator:
16428                    \textbf{\l__crc_event_details_title_tl}}
16429               }
16430             \seq_map_inline:Nn \l__crc_event_details_variant_ids_seq
16431               {
16432                 \prop_get:NnN \l__crc_event_details_variant_titles_prop {####1}
16433                   \l__crc_event_details_compare_title_tl
16434                 \tl_if_eq:NNT \l__crc_event_details_title_tl
16435                   \l__crc_event_details_compare_title_tl
16436                   {\crc_event_details_variant:n {####1}}
16437               }
16438           }
16439       }
16440   }
16441 \cs_new_protected:Npn \crc_event_details_group_list:
16442   {
16443     \footnotesize
16444     \begin{description}[leftmargin=0pt,labelindent=0pt,labelwidth=\linewidth,
16445       labelsep=0pt,style=nextline,itemsep=4pt,parsep=0pt]
16446     \seq_map_inline:Nn \l__crc_event_details_categories_seq
16447       {
16448         \crc_event_details_category_prepare:n {##1}
16449         \item[{\crc_event_details_group_label:}]
16450         \crc_event_details_group_body:
16451       }
16452     \end{description}
16453   }
16454 \cs_new_protected:Npn \crc_event_details_group_prose:
16455   {
16456     \seq_map_indexed_inline:Nn \l__crc_event_details_categories_seq
16457       {
16458         \int_compare:nNnT {##1}>{1}{\space}
16459         \crc_event_details_category_prepare:n {##2}
16460         \textbf{\crc_event_details_group_label:}
16461         \crc_event_details_group_body:
16462       }
16463   }
16464 \NewDocumentCommand \printEventDetails {O{}}
16465   {
16466     \group_begin:
16467     \prop_clear:N \l__crc_event_details_overrides_prop
16468     \keys_set:nn {crc/event-details}
16469       {format=list,icons=true,year=all,show~dates=true,aggregated=false}
16470     \keys_set:nn {crc/event-details}{#1}
16471     \crc_event_select_year:NN \l__crc_event_details_seq \l__crc_event_details_year_tl
16472     \seq_if_empty:NF \l__crc_event_details_seq
16473       {
16474         \bool_if:NTF \l__crc_event_details_aggregated_bool
16475           {
16476             \crc_event_details_groups_prepare:
16477             \str_if_eq:VnTF \l__crc_event_details_format_tl {prose}
16478               {\crc_event_details_group_prose:}{\crc_event_details_group_list:}
16479           }
16480           {\str_if_eq:VnTF \l__crc_event_details_format_tl {prose}
16481             {\crc_event_details_prose:}{\crc_event_details_list:}}
16482       }
16483     \group_end:
16484   }
16485 \ExplSyntaxOff
16486
16487 % Category declarations: key, legend label, colour, and icon (overridable per event).
16488 \DeclareEventCategory{retreat}{Annual retreat}{EventRetreat}{\faUsers}
16489 \DeclareEventCategory{progress}{Progress day}{EventProgress}{\faComments}
16490 \DeclareEventCategory{networking}{Networking}{EventNetworking}{\faHandshake}
16491 \DeclareEventCategory{graduate}{Graduate school retreat}{EventGraduate}{\faGraduationCap}
16492 \DeclareEventCategory{symposium}{International symposium}{EventSymposium}{\faGlobe}
16493
16494 % Per-call examples are documented at the top of this file.
```

6.1.34 Reusable package: dfg-distribution.sty

Independent package code shared by the class and standard documents.

```
%% Copyright 2026 Lukas C. Bossert. LPPL 1.3c or later.
%% Generated from dfg-crc.dtx.
\NeedsTeXFormat{LaTeX2e}[2022-06-01]
\ProvidesPackage{dfg-distribution}[2026/11/24 v0.4.0 Segmented distribution charts]
% Segmented career-destination charts, RWTH colours, and setup examples.
% Loaded from preamble/dfg-customization.tex.

% Segmented career-destination charts, integrated from tmp/distribution.
% Edit appearance here; set counts beside each figure:
%   \setDistribution{postdoc=9,industry=9,other=5}
%   \DistributionChart
% Each segment represents one person. Geometry can be changed globally with
% \distributionSetup{...}, or locally with \DistributionChart[...].
\RequirePackage{tikz}
\RequirePackage{xparse}
\RequirePackage{expl3}

% All geometry is independent of the counts. One segment = one person.
% RWTH violet, magenta, and orange; project areas use blue, green, and grey.
\providecolor{DistributionPostdoc}{cmyk/RGB/HTML}{.70,1,.35,.15/97,33,88/612158}% violet-100
\providecolor{DistributionIndustry}{cmyk/RGB/HTML}{0,1,.25,0/227,0,102/E30066}% magenta-100
\providecolor{DistributionOther}{cmyk/RGB/HTML}{0,.4,1,0/246,168,0/F6A800}% orange-100
\providecolor{DistributionText}{cmyk/RGB/HTML}{.70,1,.35,.15/97,33,88/612158}% violet-100
\providecolor{DistributionAxis}{cmyk/RGB/HTML}{.70,1,.35,.15/97,33,88/612158}% violet-100

\newif\ifcrcDistributionLabelLeft
\pgfkeys{
  /distribution/.is family,
  /distribution,
  unit width/.store in=\crcDistributionUnitWidth,
  bar height/.store in=\crcDistributionBarHeight,
  row spacing/.store in=\crcDistributionRowSpacing,
  label x/.store in=\crcDistributionLabelX,
  label width/.store in=\crcDistributionLabelWidth,
  label drop/.store in=\crcDistributionLabelDrop,
  label position/.is choice,
  label position/below/.code={\crcDistributionLabelLeftfalse},
  label position/left/.code={\crcDistributionLabelLefttrue},
  label gap/.store in=\crcDistributionLabelGap,
  icon radius/.store in=\crcDistributionIconRadius,
  icon raise/.store in=\crcDistributionIconRaise,
  value gap/.store in=\crcDistributionValueGap,
  axis padding/.store in=\crcDistributionAxisPadding,
  axis width/.store in=\crcDistributionAxisWidth,
  axis dot radius/.store in=\crcDistributionDotRadius,
  separator width/.store in=\crcDistributionSeparatorWidth,
  text color/.store in=\crcDistributionTextColor,
  axis color/.store in=\crcDistributionAxisColor,
  label font/.store in=\crcDistributionLabelFont,
  value font/.store in=\crcDistributionValueFont,
  order/.code={\crcDistributionSetOrder{#1}},
  unit width=7.5mm,
  bar height=7.8mm,
  row spacing=10mm,
  label x=-8mm,
  label width=15mm,
  label drop=4.8mm,
  label position=left,
  label gap=2mm,
  icon radius=3.4mm,
  icon raise=auto, % below: 2.3mm; left: aligned with the bar centres
  value gap=3mm,
  axis padding=2mm, % extension beyond the first/last bar edges
  axis width=.45pt,
  axis dot radius=.4mm,
  separator width=.4pt,
  text color=DistributionText,
  axis color=DistributionAxis,
  label font={\sffamily\bfseries\fontsize{8.8}{10}\selectfont},
  value font={\sffamily\bfseries\fontsize{11}{12}\selectfont}
```

```
16565 }
16566 \newcommand{\distributionSetup}[1]{%
16567   \pgfkeys{/distribution/.cd,#1}%
16568 }
16569
16570 % Vector icons. Coordinates run approximately from -1 to +1.
16571 % The coloured circle is drawn by the chart; icons draw only their symbol.
16572 \newcommand{\DeclareDistributionIcon}[2]{%
16573   \expandafter\def\csname crcDistributionIcon/#1\endcsname{#2}%
16574 }
16575 \DeclareDistributionIcon{cap}{%
16576   \fill[white] (-.68,.13) -- (0,.42) -- (.68,.13)
16577     -- (0,-.14) -- cycle;
16578   \fill[white] (-.37,-.10) -- (0,-.26) -- (.37,-.10)
16579     -- (.37,-.34) .. controls (.18,-.51) and (-.18,-.51) ..
16580     (-.37,-.34) -- cycle;
16581   \draw[white,line width=.45pt,line cap=round]
16582     (.59,.08) -- (.59,-.37);
16583   \fill[white] (.54,-.33) -- (.64,-.33) -- (.68,-.49)
16584     -- (.50,-.49) -- cycle;
16585 }
16586 \DeclareDistributionIcon{factory}{%
16587   \fill[white] (-.61,-.52) -- (.60,-.52) -- (.60,.24)
16588     -- (.25,.03) -- (.25,.26) -- (-.08,.06)
16589     -- (-.08,.57) -- (-.25,.57) -- (-.25,-.12)
16590     -- (-.40,-.12) -- (-.40,.69) -- (-.58,.69)
16591     -- cycle;
16592   \foreach \x in {-.40,-.08,.24}{%
16593     \fill[\crcDistributionCurrentColor] (\x,-.35) rectangle ++(.17,.18);
16594   }%
16595 }
16596 \DeclareDistributionIcon{bulb}{%
16597   \draw[white,line width=.38pt,line cap=round,line join=round]
16598     (-.20,-.36) -- (-.20,-.23)
16599     .. controls (-.21,-.09) and (-.43,-.02) .. (-.43,.25)
16600     .. controls (-.43,.77) and (.43,.77) .. (.43,.25)
16601     .. controls (.43,-.02) and (.21,-.09) .. (.20,-.23)
16602     -- (.20,-.36) -- cycle;
16603   \draw[white,line width=.38pt,line cap=round]
16604     (-.18,-.48) -- (.18,-.48)
16605     (-.12,-.59) -- (.12,-.59)
16606     (-.09,-.31) -- (-.13,.17) -- (0,.06) -- (.13,.17) -- (.09,-.31)
16607     (0,.77) -- (0,.91)
16608     (-.52,.63) -- (-.62,.73)
16609     (.52,.63) -- (.62,.73)
16610     (-.62,.25) -- (-.77,.25)
16611     (.62,.25) -- (.77,.25)
16612     (-.53,-.14) -- (-.64,-.23)
16613     (.53,-.14) -- (.64,-.23);
16614 }
16615 \DeclareDistributionIcon{none}{}
16616
16617 % Drawing helpers use conventional TeX syntax, so TikZ keys retain spaces.
16618 \newcommand{\crcDistributionBeginChart}[1]{%
16619   % Resolve automatic geometry after global and per-chart options are applied.
16620   \def\crcDistributionAutoRaise{auto}%
16621   \ifx\crcDistributionIconRaise\crcDistributionAutoRaise
16622     \ifcrcDistributionLabelLeft
16623       \def\crcDistributionEffectiveIconRaise{0pt}%
16624     \else
16625       \def\crcDistributionEffectiveIconRaise{2.3mm}%
16626     \fi
16627   \else
16628     \let\crcDistributionEffectiveIconRaise\crcDistributionIconRaise
16629   \fi
16630   \pgfmathsetlengthmacro{\crcDistributionHalfHeight}{.5*\crcDistributionBarHeight}%
16631   \pgfmathsetlengthmacro{\crcDistributionAxisTop}{\crcDistributionHalfHeight+\crcDistributionAxisPadding}
16632   \pgfmathsetlengthmacro{\crcDistributionBottom}{-(#1-1)*\crcDistributionRowSpacing-
      \crcDistributionAxisTop}%
16633   \begin{tikzpicture}
16634 }
16635 \newcommand{\crcDistributionDrawRow}[5]{%
16636   % #1 label, #2 colour, #3 icon name, #4 count, #5 row index
16637   \pgfmathsetlengthmacro{\crcDistributionRowY}{-(#5-1)*\crcDistributionRowSpacing}%
```

```
16638   \pgfmathsetlengthmacro{\crcDistributionBarLength}{#4*\crcDistributionUnitWidth}%
16639   \pgfmathsetlengthmacro{\crcDistributionValueX}{\crcDistributionBarLength+\crcDistributionValueGap}%
16640   \begin{scope}[yshift=\crcDistributionRowY]
16641     \def\crcDistributionCurrentColor{#2}%
16642     \ifnum#4>0\relax
16643       \fill[#2] (0,-\crcDistributionHalfHeight)
16644         rectangle (\crcDistributionBarLength,\crcDistributionHalfHeight);
16645     \fi
16646     \ifnum#4>1\relax
16647       \edef\crcDistributionLastSeparator{\number\numexpr#4-1\relax}%
16648       \foreach \crcDistributionSegmentIndex in {1,...,\crcDistributionLastSeparator}{%
16649         \pgfmathsetlengthmacro{\crcDistributionSegmentX}{\crcDistributionSegmentIndex*\crcDistributionUni
16650         \draw[white,line width=\crcDistributionSeparatorWidth]
16651           (\crcDistributionSegmentX,-\crcDistributionHalfHeight)
16652           -- (\crcDistributionSegmentX,\crcDistributionHalfHeight);
16653       }%
16654     \fi
16655     \begin{scope}[shift={(\crcDistributionLabelX,\crcDistributionEffectiveIconRaise)},
16656                   x=\crcDistributionIconRadius,y=\crcDistributionIconRadius]
16657       \fill[#2] (0,0) circle[radius=\crcDistributionIconRadius];
16658       \csname crcDistributionIcon/#3\endcsname
16659     \end{scope}
16660     \ifcrcDistributionLabelLeft
16661       \pgfmathsetlengthmacro{\crcDistributionTextX}{\crcDistributionLabelX-\crcDistributionIconRadius-
    \crcDistributionLabelGap}%
16662       \node[anchor=east,font=\crcDistributionLabelFont,text=\crcDistributionTextColor,
16663             text width=\crcDistributionLabelWidth,align=right,inner sep=0pt,outer sep=0pt]
16664         at (\crcDistributionTextX,\crcDistributionEffectiveIconRaise) {#1};
16665     \else
16666       \node[font=\crcDistributionLabelFont,text=\crcDistributionTextColor,
16667             text width=\crcDistributionLabelWidth,align=center,inner sep=0pt]
16668         at (\crcDistributionLabelX,-\crcDistributionLabelDrop) {#1};
16669     \fi
16670     \node[anchor=west,font=\crcDistributionValueFont,text=\crcDistributionTextColor,
16671           inner sep=0pt,outer sep=0pt]
16672       at (\crcDistributionValueX,0) {#4};
16673   \end{scope}
16674 }
16675 \newcommand{\crcDistributionEndChart}{%
16676   \draw[\crcDistributionAxisColor,line width=\crcDistributionAxisWidth]
16677     (0,\crcDistributionAxisTop) -- (0,\crcDistributionBottom);
16678   \fill[\crcDistributionAxisColor] (0,\crcDistributionAxisTop)
16679     circle[radius=\crcDistributionDotRadius];
16680   \fill[\crcDistributionAxisColor] (0,\crcDistributionBottom)
16681     circle[radius=\crcDistributionDotRadius];
16682   \end{tikzpicture}%
16683 }
16684
16685 \ExplSyntaxOn
16686 \prop_new:N \l__dc_labels_prop
16687 \prop_new:N \l__dc_colors_prop
16688 \prop_new:N \l__dc_icons_prop
16689 \prop_new:N \l__dc_values_prop
16690 \prop_new:N \l__dc_candidate_prop
16691 \clist_new:N \l__dc_order_clist
16692 \clist_new:N \l__dc_candidate_order_clist
16693 \seq_new:N \l__dc_seen_seq
16694 \bool_new:N \l__dc_valid_bool
16695 \int_new:N \l__dc_row_int
16696 \tl_new:N \l__dc_label_tl
16697 \tl_new:N \l__dc_color_tl
16698 \tl_new:N \l__dc_icon_tl
16699 \tl_new:N \l__dc_value_tl
16700
16701 \msg_new:nnn {distributionchart}{bad-input}
16702   {#1}
16703 \cs_new_protected:Npn \__dc_error:n #1
16704   {
16705     \bool_set_false:N \l__dc_valid_bool
16706     \msg_error:nnn {distributionchart}{bad-input}{#1}
16707   }
16708
16709 \NewDocumentCommand \DeclareDistributionCategory {mmmm}
16710   {
```

```
    \cs_if_exist:cTF {crcDistributionIcon/#4}
      {
        \prop_if_in:NnF \l__dc_labels_prop {#1}
          {\clist_put_right:Nn \l__dc_order_clist {#1}}
        \prop_put:Nnn \l__dc_labels_prop {#1}{#2}
        \prop_put:Nnn \l__dc_colors_prop {#1}{#3}
        \prop_put:Nnn \l__dc_icons_prop {#1}{#4}
      }
      {\__dc_error:n {Unknown~icon~'#4'.~Declare~it~first.}}
  }

\cs_new_protected:Npn \crcDistributionSetOrder #1
  {
    \bool_set_true:N \l__dc_valid_bool
    \seq_clear:N \l__dc_seen_seq
    \clist_set:Nn \l__dc_candidate_order_clist {#1}
    \clist_if_empty:NT \l__dc_candidate_order_clist
      {\__dc_error:n {The~category~order~must~not~be~empty.}}
    \clist_map_inline:Nn \l__dc_candidate_order_clist
      {
        \prop_if_in:NnF \l__dc_labels_prop {##1}
          {\__dc_error:n {Unknown~category~'##1'~in~order.}}
        \seq_if_in:NnTF \l__dc_seen_seq {##1}
          {\__dc_error:n {Repeated~category~'##1'~in~order.}}
          {\seq_put_right:Nn \l__dc_seen_seq {##1}}
      }
    \bool_if:NT \l__dc_valid_bool
      {\clist_set_eq:NN \l__dc_order_clist \l__dc_candidate_order_clist}
  }

\cs_new_protected:Npn \__dc_missing_value:n #1
  {\__dc_error:n {Missing~count~for~'#1'.~Use~category=integer.}}
\cs_new_protected:Npn \__dc_set_pair:nn #1#2
  {
    \prop_if_in:NnTF \l__dc_labels_prop {#1}
      {
        \prop_if_in:NnTF \l__dc_candidate_prop {#1}
          {\__dc_error:n {Repeated~category~'#1'~in~the~data.}}
          {
            \regex_match:nnTF {\A[0-9]+\Z} {#2}
              {\prop_put:Nnx \l__dc_candidate_prop {#1}{\int_eval:n {#2}}}
              {\__dc_error:n {Count~for~'#1'~must~be~a~nonnegative~integer.}}
          }
      }
      {\__dc_error:n {Unknown~category~'#1'.~Declare~it~first.}}
  }
\NewDocumentCommand \setDistribution {m}
  {
    % Commit only a valid complete replacement; omitted categories become 0.
    \prop_clear:N \l__dc_candidate_prop
    \bool_set_true:N \l__dc_valid_bool
    \keyval_parse:NNn \__dc_missing_value:n \__dc_set_pair:nn {#1}
    \bool_if:NT \l__dc_valid_bool
      {\prop_set_eq:NN \l__dc_values_prop \l__dc_candidate_prop}
  }

\cs_new_protected:Npn \__dc_draw_row:n #1
  {
    \int_incr:N \l__dc_row_int
    \prop_get:NnN \l__dc_labels_prop {#1}\l__dc_label_tl
    \prop_get:NnN \l__dc_colors_prop {#1}\l__dc_color_tl
    \prop_get:NnN \l__dc_icons_prop {#1}\l__dc_icon_tl
    \prop_get:NnNTF \l__dc_values_prop {#1}\l__dc_value_tl
      {}{\tl_set:Nn \l__dc_value_tl {0}}
    \crcDistributionDrawRow
      {\l__dc_label_tl}{\l__dc_color_tl}{\l__dc_icon_tl}
      {\l__dc_value_tl}{\int_use:N \l__dc_row_int}
  }
\NewDocumentCommand \DistributionChart {O{}}
  {
    \group_begin:
      \distributionSetup{#1}
      \int_zero:N \l__dc_row_int
      \crcDistributionBeginChart{\clist_count:N \l__dc_order_clist}
```

```
        \clist_map_function:NN \l__dc_order_clist \__dc_draw_row:n
      \crcDistributionEndChart
    \group_end:
  }
\ExplSyntaxOff

% Default categories; appearance overrides can be added below.
\DeclareDistributionCategory{postdoc}{Postdoc}{DistributionPostdoc}{cap}
\DeclareDistributionCategory{industry}{Industry}{DistributionIndustry}{factory}
\DeclareDistributionCategory{other}{Other}{DistributionOther}{bulb}
% Example: uncomment to change the appearance of all subsequent charts.
% Counts are still set separately with \setDistribution beside each figure.
% \distributionSetup{
%   order={industry,postdoc,other}, % display order, independent of data order
%   unit width=6mm,                 % width of one person / segment
%   bar height=7mm,
%   row spacing=16mm,
%   label position=left,          % use below for labels underneath the icons
%   label gap=2mm,                % horizontal gap for labels on the left
%   icon radius=3mm,
%   icon raise=auto,              % below: 2.3mm; left: 0pt; or set a dimension
%   value gap=3mm,                 % gap between a bar and its count
%   axis padding=2mm,             % extension beyond the first/last bar edges
%   text color=DistributionText,
%   axis color=DistributionAxis,
%   label font={\sffamily\bfseries\small},
%   value font={\sffamily\bfseries\normalsize}
% }
% Or change one chart only (the global setup is restored afterwards):
% \DistributionChart[label position=left]
% For labels below the icons, label drop sets the vertical label offset.
% Q03 scales the completed chart to 6cm with \resizebox, including its text.
% END segmented distribution charts

```

6.1.35 Reusable package: dfg-icons.sty

Independent package code shared by the class and standard documents.

```
%% Copyright 2026 Lukas C. Bossert. LPPL 1.3c or later.
%% Generated from dfg-crc.dtx.
\NeedsTeXFormat{LaTeX2e}[2022-06-01]
\ProvidesPackage{dfg-icons}[2026/11/24 v0.4.0 Registered paragraph icons]
% Paragraph icons wrap text on the left without floating away from the call.
% \getIcon{name} selects its registered square asset; [vertical] selects its variant.
% Comma-separated names share one wrapping area and print side by side.
% Names and asset variants are registered with \DeclareIcon; no fixed list applies.
% height=<line count> spans the first capital to the last line's baseline.
% Defaults are four/five lines; other graphics options are forwarded.
% gap controls the spacing between icons and before the paragraph text.
% Place the command before font commands such as \textbf{...}.
\RequirePackage{graphicx}
\RequirePackage{etoolbox}
\RequirePackage{wrapstuff}
\ExplSyntaxOn
% wrapstuff 0.3 expects a decimal point when converting heights to line counts.
% Append one so exact multiples of baselineskip (including zero) also work.
\cs_if_exist:NT \__wstf_unit_aux:w
  {\patchcmd{\__wstf_unit:n}{\s_stop}{.\s_stop}{}{}}
\tl_new:N \l__crc_icon_file_tl
\str_new:N \l__crc_icon_dir_str
\str_new:N \l__crc_icon_name_str
\str_new:N \l__crc_icon_ext_str
\tl_new:N \l__crc_icon_shape_tl
\tl_new:N \l__crc_icon_graphics_tl
\dim_new:N \l__crc_icon_height_dim
\dim_new:N \l__crc_icon_gap_dim
\int_new:N \l__crc_icon_lines_int
\box_new:N \l__crc_icon_box
\box_new:N \g__crc_icon_paragraph_box
\bool_new:N \l__crc_icon_found_bool
\msg_new:nnn {crc-icons} {not-supported}
  {Icon~'#1'~is~not~registered;~using~an~example-image~placeholder.}
\msg_new:nnn {crc-icons} {not-found}
```

```
16854   {Icon~file~'#1'~was~not~found;~using~an~example-image~placeholder.}
16855 \msg_new:nnn {crc-icons} {invalid-height}
16856   {Icon~height~must~be~a~positive~integer~number~of~lines;~received~'#1'.}
16857 \keys_define:nn {crc/icons}
16858   {
16859     shape .choices:nn = {square,vertical}
16860       {\tl_set_eq:NN \l__crc_icon_shape_tl \l_keys_choice_tl},
16861     square .meta:n = {shape=square},
16862     vertical .meta:n = {shape=vertical},
16863     square .value_forbidden:n = true,
16864     vertical .value_forbidden:n = true,
16865     gap .dim_set:N = \l__crc_icon_gap_dim,
16866     height .code:n =
16867       {
16868         \exp_args:Nne \regex_match:nnTF {\A[1-9][0-9]*\Z} {#1}
16869           {\int_set:Nn \l__crc_icon_lines_int {#1}}
16870           {\msg_error:nnn {crc-icons} {invalid-height} {#1}}
16871       },
16872     height .value_required:n = true,
16873   }
16874 \cs_new_protected:Npn \__crc_icon_find_file:
16875   {
16876     % Match graphicx's search paths and supported extension order.
16877     \cs_set_eq:cc {input@path} {Ginput@path}
16878     \IfFileExists{\l__crc_icon_file_tl}
16879       {\bool_set_true:N \l__crc_icon_found_bool}
16880       { }
16881     \bool_if:NF \l__crc_icon_found_bool
16882       {
16883         \clist_map_inline:cn {Gin@extensions}
16884           {
16885             \IfFileExists{\l__crc_icon_file_tl##1}
16886               {
16887                 \bool_set_true:N \l__crc_icon_found_bool
16888                 \clist_map_break:
16889               }
16890               { }
16891           }
16892       }
16893     \bool_if:NF \l__crc_icon_found_bool
16894       {
16895         \exp_args:NnnV \msg_warning:nnn {crc-icons} {not-found}
16896           \l__crc_icon_file_tl
16897       }
16898   }
16899 \cs_new_protected:Npn \__crc_icon_place:nn #1#2
16900   {
16901     \noindent
16902     \hbox_overlap_right:n
16903       {
16904         \tex_kern:D -#1 \scan_stop:
16905         \raisebox{#2}[0pt][0pt]{\box_use:N \g__crc_icon_paragraph_box}
16906       }
16907     \box_gclear:N \g__crc_icon_paragraph_box
16908   }
16909
16910 \prop_new:N \g__dfgicons_files_prop
16911 \prop_new:N \g__dfgicons_aliases_prop
16912 \prop_new:N \g__dfgicons_explicit_prop
16913 \bool_new:N \l__dfgicons_valid_bool
16914 \tl_new:N \l__dfgicons_name_tl
16915 \tl_new:N \l__dfgicons_owner_tl
16916 \tl_new:N \l__dfgicons_square_tl
16917 \tl_new:N \l__dfgicons_vertical_tl
16918 \tl_new:N \l__dfgicons_default_tl
16919 \clist_new:N \l__dfgicons_aliases_clist
16920 \keys_define:nn {dfgicons/declare}
16921   {
16922     file .tl_set:N = \l__dfgicons_default_tl,
16923     square .tl_set:N = \l__dfgicons_square_tl,
16924     vertical .tl_set:N = \l__dfgicons_vertical_tl,
16925     aliases .clist_set:N = \l__dfgicons_aliases_clist,
16926   }
16927 \msg_new:nnn {crc-icons}{empty-registration}{Icon~'#1'~needs~a~file,~square,~or~vertical~asset.}
```

```
\msg_new:nnn {crc-icons}{empty-name}{An~icon~name~must~not~be~empty.}
\msg_new:nnn {crc-icons}{alias-conflict}
  {Icon~name~or~alias~'#1'~already~belongs~to~'#2'.~Registration~was~not~changed.}
% Automatic filename aliases never replace an existing name or alias.
\cs_new_protected:Npn \__dfgicons_alias:nn #1#2
  {\prop_if_in:NnF \g__dfgicons_aliases_prop {#1}
    {\prop_gput:Nnn \g__dfgicons_aliases_prop {#1}{#2}}}
\cs_new_protected:Npn \__dfgicons_check_alias:nn #1#2
  {
    \prop_get:NnNT \g__dfgicons_explicit_prop {#1}\l__dfgicons_owner_tl
      {\tl_if_eq:NnF \l__dfgicons_owner_tl {#2}
        {\bool_set_false:N \l__dfgicons_valid_bool
         \msg_error:nnee {crc-icons}{alias-conflict}{\exp_not:n{#1}}{\exp_not:V\l__dfgicons_owner_tl}}}
  }
\cs_new_protected:Npn \__dfgicons_explicit_alias:nn #1#2
  {\prop_gput:Nnn \g__dfgicons_explicit_prop {#1}{#2}
   \prop_gput:Nnn \g__dfgicons_aliases_prop {#1}{#2}}
\cs_generate_variant:Nn \__dfgicons_alias:nn {en}
\cs_new_protected:Npn \__dfgicons_register_variant:nnN #1#2#3
  {
    \prop_gput:NnV \g__dfgicons_files_prop {#1/#2}#3
    \__dfgicons_alias:en {\tl_use:N#3}{#1}
    \file_parse_full_name:VNNN #3\l__crc_icon_dir_str\l__crc_icon_name_str\l__crc_icon_ext_str
    \__dfgicons_alias:en {\l__crc_icon_name_str\l__crc_icon_ext_str}{#1}
    \__dfgicons_alias:en {\l__crc_icon_name_str}{#1}
    % A registered PDF may also be referred to by its SVG source filename.
    \str_if_eq:VnT \l__crc_icon_ext_str {.pdf}
      {\__dfgicons_alias:en {\l__crc_icon_name_str.svg}{#1}
       \str_if_empty:NF \l__crc_icon_dir_str
         {\__dfgicons_alias:en {\l__crc_icon_dir_str/\l__crc_icon_name_str.svg}{#1}}}
  }
\cs_new_protected:Npn \__dfgicons_declare:nn #1#2
  {
    \bool_set_true:N \l__dfgicons_valid_bool
    \tl_if_blank:nT {#1}
      {\bool_set_false:N \l__dfgicons_valid_bool
       \msg_error:nn {crc-icons}{empty-name}}
    \keys_set:nn {dfgicons/declare}{file={},square={},vertical={},aliases={},#2}
    \tl_if_blank:VT \l__dfgicons_square_tl
      {\tl_set_eq:NN \l__dfgicons_square_tl \l__dfgicons_default_tl}
    \tl_if_blank:VT \l__dfgicons_vertical_tl
      {\tl_set_eq:NN \l__dfgicons_vertical_tl \l__dfgicons_default_tl}
    \tl_if_blank:VT \l__dfgicons_square_tl
      {\tl_set_eq:NN \l__dfgicons_square_tl \l__dfgicons_vertical_tl}
    \tl_if_blank:VT \l__dfgicons_vertical_tl
      {\tl_set_eq:NN \l__dfgicons_vertical_tl \l__dfgicons_square_tl}
    \tl_if_blank:VT \l__dfgicons_square_tl
      {\bool_set_false:N \l__dfgicons_valid_bool
       \msg_error:nnn {crc-icons}{empty-registration}{#1}}
    \__dfgicons_check_alias:nn {#1}{#1}
    \clist_map_inline:Nn \l__dfgicons_aliases_clist
      {\__dfgicons_check_alias:nn {##1}{#1}}
    \bool_if:NT \l__dfgicons_valid_bool
      {
        % Remove only this icon's previous aliases, after all checks pass.
        \prop_map_inline:Nn \g__dfgicons_aliases_prop
          {\str_if_eq:nnT {##2}{#1}
            {\prop_gremove:Nn \g__dfgicons_aliases_prop {##1}
             \prop_gremove:Nn \g__dfgicons_explicit_prop {##1}}}
        \__dfgicons_explicit_alias:nn {#1}{#1}
        \clist_map_inline:Nn \l__dfgicons_aliases_clist
          {\__dfgicons_explicit_alias:nn {##1}{#1}}
        \__dfgicons_register_variant:nnN {#1}{square}\l__dfgicons_square_tl
        \__dfgicons_register_variant:nnN {#1}{vertical}\l__dfgicons_vertical_tl
      }
  }
\NewDocumentCommand \DeclareIcon {mm}
  {
    \group_begin:
    \tl_set:Nn \l__dfgicons_name_tl {#1}
    \tl_trim_spaces:N \l__dfgicons_name_tl
    \exp_args:NV \__dfgicons_declare:nn \l__dfgicons_name_tl {#2}
    \group_end:
  }
```

```
\NewDocumentCommand \IconIfRegisteredTF {mmm}
  {
    \group_begin:
    \tl_set:Nn \l__dfgicons_name_tl {#1}
    \tl_trim_spaces:N \l__dfgicons_name_tl
    \prop_if_in:NVTF \g__dfgicons_aliases_prop \l__dfgicons_name_tl
      {\group_end: #2}{\group_end: #3}
  }

\cs_new_protected:Npn \__crc_icon_image:n #1
  {
    \group_begin:

      \tl_set:Nn \l__crc_icon_file_tl {#1}
      \tl_trim_spaces:N \l__crc_icon_file_tl
      \prop_get:NVNTF \g__dfgicons_aliases_prop \l__crc_icon_file_tl \l_tmpa_tl
        {\tl_set_eq:NN \l__crc_icon_file_tl \l_tmpa_tl}{}
      \bool_set_false:N \l__crc_icon_found_bool
      \exp_args:NNx \prop_get:NnNTF \g__dfgicons_files_prop
        {\l__crc_icon_file_tl/\l__crc_icon_shape_tl}\l_tmpa_tl
        {\tl_set_eq:NN \l__crc_icon_file_tl \l_tmpa_tl\__crc_icon_find_file:}
        {\exp_args:NnnV \msg_warning:nnn {crc-icons}{not-supported}\l__crc_icon_file_tl}
      \bool_if:NF \l__crc_icon_found_bool
        {
          \tl_set:Ne \l__crc_icon_file_tl
            {
              \str_if_eq:VnTF \l__crc_icon_shape_tl {square}
                {example-image-1x1} {example-image-9x16}
            }
        }
      \use:e
        {
          \exp_not:N \includegraphics
            [\exp_not:V \l__crc_icon_graphics_tl,
             totalheight=\dim_use:N \l__crc_icon_height_dim]
            {\exp_not:V \l__crc_icon_file_tl}
        }
    \group_end:
  }
\NewDocumentCommand{\getIcon}{ O{} m }
  {
    \par
    \group_begin:
      \tl_set:Nn \l__crc_icon_shape_tl {square}
      \dim_set:Nn \l__crc_icon_gap_dim {.6em}
      \int_zero:N \l__crc_icon_lines_int
      \keys_set_known:nnN {crc/icons} {#1} \l__crc_icon_graphics_tl
      \int_compare:nNnT {\l__crc_icon_lines_int} = {0}
        {
          \int_set:Nn \l__crc_icon_lines_int
            {\str_if_eq:VnTF \l__crc_icon_shape_tl {square} {4} {5}}
        }
      \dim_set:Nn \l__crc_icon_height_dim
        {
          \fontcharht\font`H
          + \baselineskip * \int_eval:n {\l__crc_icon_lines_int - 1}
        }
      \hbox_set:Nn \l__crc_icon_box
        {
          \clist_if_empty:nTF {#2}
            {\__crc_icon_image:n {}}
            {
              \clist_map_inline:nn {#2}
                {
                  \__crc_icon_image:n {##1}
                  \tex_kern:D \l__crc_icon_gap_dim
                }
              \tex_unkern:D
            }
        }
      % Keep a pending list label at its margin rather than beside the image.
      \legacy_if:nT {@inlabel}
        {
          \hbox_gset:cn {@labels}
```

```
            {
              \tex_kern:D -\dim_eval:n
                {\box_wd:N \l__crc_icon_box + \l__crc_icon_gap_dim}
              \box_use_drop:c {@labels}
              \tex_kern:D \dim_eval:n
                {\box_wd:N \l__crc_icon_box + \l__crc_icon_gap_dim}
            }
        }
      % wrapstuff reserves the column; place the visible graphic relative to
      % the first text baseline, independent of its vertical centring.
      \box_gset_eq:NN \g__crc_icon_paragraph_box \l__crc_icon_box
      \use:e
        {
          \exp_not:N \begin{wrapstuff}
            [l,top=0,lines=\int_use:N \l__crc_icon_lines_int,
             leftsep=0pt,rightsep=\dim_use:N \l__crc_icon_gap_dim,
             abovesep=0pt,belowsep=0pt]
        }
        \phantom{\box_use:N \l__crc_icon_box}
      \end{wrapstuff}
      \use:e
        {
          \group_end:
          \exp_not:N \__crc_icon_place:nn
            {\dim_eval:n {\box_wd:N \l__crc_icon_box + \l__crc_icon_gap_dim}}
            {
              \dim_eval:n
                {\box_dp:N \l__crc_icon_box
                 - \baselineskip * \int_eval:n {\l__crc_icon_lines_int - 1}}
            }
        }
    \ignorespaces
  }
\ExplSyntaxOff
```

6.1.36 Reusable package: dfg-bib-highlights.sty

Independent package code shared by the class and standard documents.

```
%% Copyright 2026 Lukas C. Bossert. LPPL 1.3c or later.
%% Generated from dfg-crc.dtx.
\NeedsTeXFormat{LaTeX2e}[2022-06-01]
\ProvidesExplPackage{dfg-bib-highlights}{2026-11-24}{0.4.0}{Independent biblatex name and entry emphasis}
\ExplSyntaxOff
\RequirePackage{biblatex}
\RequirePackage{xcolor}
\ExplSyntaxOn
\bool_new:N \l__dfgbib_backend_bool
\bool_set_true:N \l__dfgbib_backend_bool
\DeclareOption{noauthors}{\bool_set_false:N\l__dfgbib_backend_bool}
\ProcessOptions\relax
\bool_new:N \l__dfgbib_authors_bool
\bool_new:N \l__dfgbib_entries_bool
\bool_set_true:N \l__dfgbib_authors_bool
\bool_set_true:N \l__dfgbib_entries_bool
\tl_new:N \l__dfgbib_color_tl
\tl_set:Nn \l__dfgbib_color_tl {black}
\tl_new:N \l__dfg_bibentry_highlight_keyword_tl
\ProvideExpandableDocumentCommand \DFGBoldNamesFile {}{\jobname-boldAuthors.bib}
\NewDocumentCommand \DFGBibIfAuthorsTF {mm}{\bool_if:NTF\l__dfgbib_authors_bool{#1}{#2}}
\NewDocumentCommand \DFGBibIfEntriesTF {mm}{\bool_if:NTF\l__dfgbib_entries_bool{#1}{#2}}
\NewExpandableDocumentCommand \DFGBibNameColor {}{\tl_use:N\l__dfgbib_color_tl}
\keys_define:nn {dfgbib/setup}
  {emphasizeAuthors .bool_set:N=\l__dfgbib_authors_bool,
   emphasizeEntries .bool_set:N=\l__dfgbib_entries_bool,
   keyword .tl_set:N=\l__dfg_bibentry_highlight_keyword_tl,
   color .tl_set:N=\l__dfgbib_color_tl}
\NewDocumentCommand \BibHighlightSetup {m}{\keys_set:nn{dfgbib/setup}{#1}}
\AtEveryBibitem{\DFGBibIfEntriesTF
  {\tl_if_empty:NF\l__dfg_bibentry_highlight_keyword_tl
    {\exp_args:NV\ifkeyword\l__dfg_bibentry_highlight_keyword_tl{\bfseries}{}}}{}}
\NewDocumentCommand \printHighlightedBibliography {O{} m}
  {\group_begin:\tl_set:Nn\l__dfg_bibentry_highlight_keyword_tl{#2}
   \printbibliography[#1]\group_end:}
```

```
\int_new:N  \g__dfg_boldnames_int
\iow_new:N  \g__dfg_boldnames_iow
\prop_new:N \g__dfg_boldnames_hashes_prop
\tl_new:N   \l__dfg_boldnames_name_tl

% Initialize the backend whenever publications are available. The switch is
% evaluated when a name is printed so project setup can enable it later.
\bool_if:NT \l__dfgbib_backend_bool
{
  % ---------- Auxiliary .bib file ----------------------------------

  \tl_const:Ne \c__dfg_boldnames_bibfile_tl {\DFGBoldNamesFile}
  \iow_open:Nn \g__dfg_boldnames_iow { \c__dfg_boldnames_bibfile_tl }
  \iow_now:Nn  \g__dfg_boldnames_iow { @comment{Auto-generated~file} }
  \AtEndDocument { \iow_close:N \g__dfg_boldnames_iow }
  \addbibresource{\c__dfg_boldnames_bibfile_tl}

  % ---------- Writing a single name --------------------------------
  %
  % We need:
  %   - the entry KEY  (nhblx@name@<N>)  fully expanded
  %   - the AUTHOR field written verbatim (so \"a etc. survive)
  %
  % \iow_now:Nn  → no expansion
  % \iow_now:Nx  → full expansion (breaks accents in names)
  % \iow_now:Nn + \exp_not:n on the name = best of both via \iow_now:Nx

  \cs_new_protected:Npn \__dfg_boldnames_write:n #1
  {
    \int_gincr:N \g__dfg_boldnames_int
    % Stash the name so it survives the x-expansion intact.
    \tl_set:Nn \l__dfg_boldnames_name_tl { #1 }
    \iow_now:Nx \g__dfg_boldnames_iow
    {
      @misc{nhblx@name@\int_use:N \g__dfg_boldnames_int,
          author~=~{\exp_not:V \l__dfg_boldnames_name_tl},
          options~=~{dataonly=true},
        }
    }
    % Schedule hash extraction after biblatex has loaded the entry.
    \exp_args:Nx \AfterPreamble
    {
      \exp_not:N \hbox_set:Nn \exp_not:N \l_tmpa_box
      { \exp_not:N \nhblx@getmethehash
        { nhblx@name@ \int_use:N \g__dfg_boldnames_int } }
    }
  }

  % ---------- User-level commands ----------------------------------

  \NewDocumentCommand \addboldnames { m }
  { \clist_map_function:nN { #1 } \__dfg_boldnames_write:n }

  \NewDocumentCommand \resetboldnames { }
  { \prop_gclear:N \g__dfg_boldnames_hashes_prop }

  % ---------- biblatex glue ----------------------------------------

  \DeclareNameFormat{nhblx@hashextract}
  {
    \prop_gput:Nen \g__dfg_boldnames_hashes_prop { \thefield{hash} } { }
  }

  \DeclareCiteCommand{\nhblx@getmethehash}
  {}{ \printnames[nhblx@hashextract][1-999]{author} }{}{}

  \cs_new_protected:Npn \__dfg_boldnames_mark:n #1
  {
    \DFGBibIfAuthorsTF
    {
      \prop_if_in:NeTF \g__dfg_boldnames_hashes_prop { \thefield{hash} }
        { \mkbibbold { \textcolor{\DFGBibNameColor} { #1 } } }
        { #1 }
    }
```

```
    { #1 }
  }

  \cs_set_eq:NN \mkboldifhashinlist \__dfg_boldnames_mark:n

  \DeclareNameWrapperFormat{boldifhashinlist}
  { \renewcommand*{\mkbibcompletename}{\mkboldifhashinlist} #1 }

  \DeclareNameWrapperAlias{sortname}{default}
  \DeclareNameWrapperAlias{default}{boldifhashinlist}
}

% We need the fallback of the commands in case the functionality isnt used at all.
\providecommand { \addboldnames   } [1] { }
\providecommand { \resetboldnames }     { }

\ExplSyntaxOff
```

6.1.37 Reusable package: dfg-thumbindex.sty

Independent package code shared by the class and standard documents.

```
%% Copyright 2026 Lukas C. Bossert. LPPL 1.3c or later.
%% Generated from dfg-crc.dtx.
\NeedsTeXFormat{LaTeX2e}[2022-06-01]
\ProvidesExplPackage{dfg-thumbindex}{2026-11-24}{0.4.0}{Independent page-edge thumb index}
\ExplSyntaxOff
\RequirePackage{tikz}
\RequirePackage{scrlayer-scrpage}
\providecolor{thumbIndexBG}{gray}{0}
\providecolor{thumbIndexFont}{gray}{1}
\ExplSyntaxOn
% The class predeclares these live settings; standalone use supplies defaults.
\cs_if_exist:NF \l__dfg_custom_thumbindex_bool
  {
    \bool_new:N \l__dfg_custom_thumbindex_bool
    \bool_set_true:N \l__dfg_custom_thumbindex_bool
    \int_new:N \l__dfg_custom_thumbindexpattern_int
    \int_set:Nn \l__dfg_custom_thumbindexpattern_int {8}
    \dim_new:N \l__dfg_custom_thumbindex_width_dim
    \dim_set:Nn \l__dfg_custom_thumbindex_width_dim {12mm}
    \tl_new:N \l__dfg_custom_thumbindex_font_tl
    \tl_set:Nn \l__dfg_custom_thumbindex_font_tl {\sffamily\bfseries}
    \tl_new:N \l__dfg_custom_thumbIndexBG_tl
    \tl_set:Nn \l__dfg_custom_thumbIndexBG_tl {black}
    \tl_new:N \l__dfg_custom_thumbIndexFont_tl
    \tl_set:Nn \l__dfg_custom_thumbIndexFont_tl {white}
    \bool_new:N \l__dfg_custom_thumbindex_topmargin_set_bool
    \bool_new:N \l__dfg_custom_thumbindex_bottommargin_set_bool
    \dim_new:N \l__dfg_custom_thumbindex_topmargin_dim
    \dim_new:N \l__dfg_custom_thumbindex_bottommargin_dim
    \int_new:N \l__dfg_custom_thumbindex_rotation_int
  }
\keys_define:nn {dfgthumb/setup}
  {
    enabled .bool_set:N = \l__dfg_custom_thumbindex_bool,
    pattern .code:n = {\int_compare:nNnTF {#1}>{0}
      {\int_set:Nn\l__dfg_custom_thumbindexpattern_int{#1}}
      {\msg_error:nn{dfg-thumbindex}{bad-pattern}}},
    width .dim_set:N = \l__dfg_custom_thumbindex_width_dim,
    font .tl_set:N = \l__dfg_custom_thumbindex_font_tl,
    bg .tl_set:N = \l__dfg_custom_thumbIndexBG_tl,
    fg .tl_set:N = \l__dfg_custom_thumbIndexFont_tl,
    orientation .choice:,
    orientation / outwards .code:n = {\int_zero:N\l__dfg_custom_thumbindex_rotation_int},
    orientation / inwards .code:n = {\int_set:Nn\l__dfg_custom_thumbindex_rotation_int{180}},
    topmargin .code:n = {\str_if_eq:nnTF{#1}{auto}
      {\bool_set_false:N\l__dfg_custom_thumbindex_topmargin_set_bool}
      {\bool_set_true:N\l__dfg_custom_thumbindex_topmargin_set_bool
       \dim_set:Nn\l__dfg_custom_thumbindex_topmargin_dim{#1}}},
    bottommargin .code:n = {\str_if_eq:nnTF{#1}{auto}
      {\bool_set_false:N\l__dfg_custom_thumbindex_bottommargin_set_bool}
      {\bool_set_true:N\l__dfg_custom_thumbindex_bottommargin_set_bool
       \dim_set:Nn\l__dfg_custom_thumbindex_bottommargin_dim{#1}}},
```

```
17288   }
17289 \msg_new:nnn {dfg-thumbindex}{bad-pattern}{The~number~of~slots~must~be~positive.}
17290 \NewDocumentCommand \ThumbIndexSetup {m}{\keys_set:nn{dfgthumb/setup}{#1}}
17291 \int_new:N \l_thumb_index_int
17292 \int_zero:N \l_thumb_index_int
17293 % The effective margins follow the current text block unless overridden with
17294 % explicit page-edge dimensions.  Calculate them when drawing each tab rather
17295 % than at class load time, when page geometry may not yet be final.
17296 \dim_new:N \l_thumb_height_dim
17297 \dim_new:N \l_thumb_topmargin_dim
17298 \dim_new:N \l_thumb_bottommargin_dim
17299 \cs_new_protected:Npn \thumb_compute_height:
17300 {
17301   \bool_if:NTF \l__dfg_custom_thumbindex_topmargin_set_bool
17302     { \dim_set_eq:NN \l_thumb_topmargin_dim
17303         \l__dfg_custom_thumbindex_topmargin_dim }
17304     {
17305       \dim_set:Nn \l_thumb_topmargin_dim
17306         { 1in + \voffset + \topmargin + \headheight + \headsep }
17307     }
17308   \bool_if:NTF \l__dfg_custom_thumbindex_bottommargin_set_bool
17309     { \dim_set_eq:NN \l_thumb_bottommargin_dim
17310         \l__dfg_custom_thumbindex_bottommargin_dim }
17311     {
17312       \dim_set:Nn \l_thumb_bottommargin_dim
17313         {
17314           \paperheight
17315           - ( 1in + \voffset + \topmargin + \headheight + \headsep )
17316           - \textheight
17317         }
17318     }
17319   \dim_set:Nn \l_thumb_height_dim
17320     {
17321       ( \paperheight - \l_thumb_topmargin_dim
17322         - \l_thumb_bottommargin_dim )
17323       / \l__dfg_custom_thumbindexpattern_int
17324     }
17325 }
17326 % defining now the layout of the thumb index. Be aware of the stripped spaces in
17327 % the LaTeX3 environment.
17328 \tikzset
17329 {
17330   thumb/.style=
17331     {
17332       fill   = thumbIndexBG ,      % colour may be changed later
17333       text   = thumbIndexFont,
17334       minimum~ height = \dim_use:N \l_thumb_height_dim,
17335     minimum~ width  = \dim_eval:n
17336       { \l__dfg_custom_thumbindex_width_dim + 7pt },
17337     outer~ sep      = 0pt,
17338       font            = \tl_use:N \l__dfg_custom_thumbindex_font_tl,
17339     inner~ sep      = 1mm,
17340     }
17341 }
17342 % we need a couple of helper commands though.
17343 %   The <even/odd> macros are now tiny wrappers around a single
17344 %   protected function that does the arithmetic in expl3.
17345 \box_new:N \g__dfg_thumb_shipout_box
17346 \cs_new_protected:Npn \thumb_place_node:nnnn #1#2#3#4
17347 {
17348   % Build in the running head to retain its fonts, colour and page style.
17349   \thumb_compute_height:
17350   \hbox_gset:Nn \g__dfg_thumb_shipout_box
17351   {
17352     \begin{tikzpicture}[overlay]
17353       \node[thumb,anchor=#1,rectangle,rounded~corners=7pt,xshift=#2]
17354         at (0,0)
17355       {
17356         \str_if_eq:nnTF {#1}{west}{\kern2mm}{\kern-2mm}
17357         \rotatebox[origin=c]{#3}{#4}
17358         \str_if_eq:nnTF {#1}{west}{\kern-2mm}{\kern2mm}
17359       };
17360     \end{tikzpicture}
17361   }
```

```
17362   % Freeze the page-edge coordinates; no previous-pass picture origin is used.
17363   \use:x
17364   {
17365     \exp_not:N \AddToHookNext {shipout/background}
17366     {
17367       \exp_not:N \put
17368         (\dim_eval:n {\str_if_eq:nnTF {#1}{west}{0pt}{\paperwidth}-\hoffset},
17369          \dim_eval:n {\voffset-\l_thumb_topmargin_dim
17370            -\l_thumb_height_dim*(\l_thumb_index_int-1)-\l_thumb_height_dim/2})
17371         {\exp_not:N\box_use_drop:N \exp_not:N\g__dfg_thumb_shipout_box}
17372     }
17373   }
17374 }
17375
17376 \NewDocumentCommand{\evenpageletterthumb}{m}
17377 {
17378   \thumb_place_node:nnnn {west}{-7pt}
17379     {\int_eval:n {90 + \l__dfg_custom_thumbindex_rotation_int}}{#1}
17380 }
17381 \NewDocumentCommand{\oddpageletterthumb}{m}
17382 {
17383   \thumb_place_node:nnnn {east}{7pt}
17384     {\int_eval:n {-90 + \l__dfg_custom_thumbindex_rotation_int}}{#1}
17385 }
17386 % Now the key command |\printThumbIndex|.
17387 \tl_new:N \l__dfg_thumb_index_options_tl
17388 \keys_define:nn { dfg / thumb-index }
17389 {
17390   bg .code:n = { \colorlet{thumbIndexBG}{#1} },
17391   bg .value_required:n = true,
17392   fg .code:n = { \colorlet{thumbIndexFont}{#1} },
17393   fg .value_required:n = true,
17394 }
17395 \NewDocumentCommand{\printThumbIndex}{ O{} m }
17396 {
17397   \bool_if:NT \l__dfg_custom_thumbindex_bool
17398   {
17399     \colorlet{thumbIndexBG}{\l__dfg_custom_thumbIndexBG_tl}
17400     \colorlet{thumbIndexFont}{\l__dfg_custom_thumbIndexFont_tl}
17401     \tl_set:Ne \l__dfg_thumb_index_options_tl {#1}
17402     \tl_if_in:VnTF \l__dfg_thumb_index_options_tl {=}
17403       { \keys_set:nV { dfg / thumb-index } \l__dfg_thumb_index_options_tl }
17404       {
17405         \tl_if_blank:VF \l__dfg_thumb_index_options_tl
17406           { \colorlet{thumbIndexBG}{\l__dfg_thumb_index_options_tl} }
17407       }
17408
17409     % ---- reset index if we have reached the bottom of the column -----
17410     \int_compare:nNnT { \l_thumb_index_int } = { \l__dfg_custom_thumbindexpattern_int }
17411     { \int_zero:N \l_thumb_index_int }
17412
17413     % ---- step to the *next* position ----------------------------------
17414     \int_incr:N \l_thumb_index_int
17415
17416     % Install the selected tab in normal and plain running heads.
17417     \lehead[\evenpageletterthumb{#2}]{\evenpageletterthumb{#2}}
17418     \lohead[\oddpageletterthumb{#2}]{\oddpageletterthumb{#2}}
17419   }
17420 }
17421 \NewDocumentCommand{\resetThumbIndex}{}
17422 {
17423   \int_zero:N \l_thumb_index_int
17424 }
17425 \NewDocumentCommand{\printThumbIndexOff}{}
17426 {
17427   \lehead[]{}
17428   \lohead[]{}
17429 }
17430
17431 \ExplSyntaxOff

17432 """Check that every package-owned option has a maintained reference entry."""
17433
17434 import json
```

```
from pathlib import Path
import re
import unittest


ROOT = Path(__file__).resolve().parent
if ROOT.name == "scripts" and ROOT.parent.name == "__admin":
    ROOT = ROOT.parent.parent
CATALOG = ROOT / "docs/module-options.json"
if not CATALOG.exists():
    CATALOG = ROOT / "dfg-module-options.json"


def balanced(text, start):
    depth = 1
    for pos in range(start, len(text)):
        if text[pos] in "{}" and (pos == 0 or text[pos - 1] != "\\"):
            depth += 1 if text[pos] == "{" else -1
            if depth == 0:
                return text[start:pos]
    raise ValueError("Unclosed option definition")


def normalize(value):
    return re.sub(r"\s*/\s*", "/", " ".join(value.replace("~", " ").split()))


def implemented_keys(package):
    text = re.sub(r"(?<!\\)%[^\n]*", "", package.read_text())
    families = {}
    for match in re.finditer(r"\\keys_define:nn\s*\{([^}]+)\}\s*\{", text):
        body = balanced(text, match.end())
        keys = {normalize(m[1]).split("/")[0].strip() for m in
                re.finditer(r"^\s*([\w /~-]+)\s+\.[\w:]+\s*=", body, re.M)}
        families.setdefault(normalize(match[1]), set()).update(keys - {"unknown"})
    if package.name == "dfg-distribution.sty":
        body = balanced(text, re.search(r"\\pgfkeys\s*\{", text).end())
        families['/distribution'] = {normalize(m[1]).split("/")[0].strip() for m in
            re.finditer(r"^\s*([\w /~-]+)\s*/\.[\w ]+\s*=", body, re.M)
            if not m[1].strip().startswith("/")}
    loading = set(re.findall(r"\\DeclareOption\{([^}]+)\}", text))
    if loading:
        families['package-options'] = loading
    return families


class ModuleOptionDocumentation(unittest.TestCase):
    def test_every_owned_key_is_documented_with_values_defaults_and_effect(self):
        catalog = json.loads(CATALOG.read_text())
        self.assertEqual(len(catalog), 8)
        for module, groups in catalog.items():
            with self.subTest(package=module):
                documented = {}
                for group in groups:
                    self.assertTrue(group['scope'])
                    for option in group['options']:
                        for field in ('name', 'values', 'default', 'effect'):
                            self.assertTrue(option[field], (module, field))
                    for family in group['families']:
                        documented.setdefault(family, set()).update(o['name'] for o in group['options'])
                for family, actual in implemented_keys(ROOT / ('dfg-' + module + '.sty')).items():
                    self.assertIn(family, documented, (module, family))
                    self.assertFalse(actual - documented[family],
                                     (module, family, 'Missing options', actual - documented[family]))

    def test_catalog_and_generated_references_stay_in_sync(self):
        catalog = json.loads(CATALOG.read_text())
        guide = ROOT / 'docs/reusable-modules.md'
        if not guide.exists():
            guide = ROOT / 'dfg-modules.md'
        markdown = guide.read_text()
        dtx = ROOT.parent / 'dfg-crc.dtx'
        if not dtx.exists():
            self.skipTest('Source DTX is needed to check manual generation')
```

```
        source = dtx.read_text()
        start = source.index('%<*module-option-catalog>') + len('%<*module-option-catalog>')
        end = source.index('%</module-option-catalog>', start)
        self.assertEqual(catalog, json.loads(source[start:end]))
        for module, groups in catalog.items():
            with self.subTest(package=module):
                first = source.index('% BEGIN MODULE OPTIONS ' + module)
                last = source.index('% END MODULE OPTIONS ' + module, first)
                rendered = source[first:last]
                options = [o for g in groups for o in g['options']]
                self.assertEqual(rendered.count(r'\begin{docKey}'), len(options))
                for option in options:
                    self.assertIn(']{' + option['name'] + '}', rendered)
                    self.assertIn('Initially `' + option['default'] + '`', markdown)
                    self.assertIn(option['effect'], markdown)


if __name__ == '__main__':
    unittest.main()


"""Compile the manual's complete package examples in isolated directories."""

import argparse
import json
from pathlib import Path
import re
import shutil
import subprocess
import sys


EXAMPLES = {
    "plots": ("dfg-plots", "dfg-collaboration", "dfg-gantt"),
    "collaboration": ("dfg-plots", "dfg-collaboration"),
    "gantt": ("dfg-plots", "dfg-gantt"),
    "timeline": ("dfg-timeline",),
    "distribution": ("dfg-distribution",),
    "icons": ("dfg-icons",),
    "bib-highlights": ("dfg-bib-highlights",),
    "thumbindex": ("dfg-thumbindex",),
}
EXAMPLES.update({name + '-options': packages for name, packages in list(EXAMPLES.items())})


def run(command, directory):
    result = subprocess.run(command, cwd=directory, capture_output=True,
                            text=True, timeout=180)
    if result.returncode:
        raise RuntimeError(" ".join(map(str, command)) + "\n" +
                           result.stdout[-5000:] + result.stderr[-2000:])


def visible_bbox(pdf, directory, page=1):
    """Measure visible page ink; PDF font boxes can include off-page artwork."""
    prefix = directory / 'visible-preview'
    run(['pdftoppm', '-f', str(page), '-singlefile', '-gray', '-r', '72',
         str(pdf), str(prefix)], directory)
    data = prefix.with_suffix('.pgm').read_bytes()
    tokens = []
    position = 0
    while len(tokens) < 4:
        match = re.match(rb'(?:\s+|\#[^\n]*\n)*(\S+)', data[position:])
        if not match:
            raise RuntimeError('Invalid preview raster header')
        tokens.append(match[1])
        position += match.end()
    magic, width, height, maximum = tokens
    if magic != b'P5' or maximum != b'255':
        raise RuntimeError('Unsupported preview raster format')
    width, height = int(width), int(height)
    pixels = data[-width * height:]
    left, top, right, bottom = width, height, -1, -1
    for index, gray in enumerate(pixels):
```

```
17582         if gray < 250:
17583             x, y = index % width, index // width
17584             left, right = min(left, x), max(right, x)
17585             top, bottom = min(top, y), max(bottom, y)
17586     if right < left:
17587         raise RuntimeError('Example preview contains no visible content')
17588     # At 72 dpi pixels correspond to PDF big points; margins cover rounding.
17589     return f'{left} {height-bottom-1} {right+1} {height-top}'
17590
17591
17592 def main():
17593     script = Path(__file__).resolve()
17594     root = script.parent
17595     if root.name == "scripts" and root.parent.name == "__admin":
17596         root = root.parent.parent
17597     candidates = [root / "docs/examples", root / "module-examples", root]
17598     source = next((p for p in candidates if (p / "dfg-plots-example.tex").exists()), root)
17599     parser = argparse.ArgumentParser(description=__doc__)
17600     parser.add_argument("--source-dir", type=Path, default=source)
17601     parser.add_argument("--package-dir", type=Path, default=root)
17602     parser.add_argument("--output-dir", type=Path, default=root / "output/module-examples")
17603     parser.add_argument("--engine", choices=("lualatex", "pdflatex"), default="lualatex")
17604     args = parser.parse_args()
17605     source, packages, output = (p.resolve() for p in
17606                                 (args.source_dir, args.package_dir, args.output_dir))
17607     for command in ("latexmk", args.engine, "biber"):
17608         if not shutil.which(command):
17609             parser.error("Required build tool not found: " + command)
17610     crop = shutil.which("pdfcrop") if shutil.which("gs") else None
17611     output.mkdir(parents=True, exist_ok=True)
17612     manifest = {"engine": args.engine, "examples": {}}
17613     for name, dependencies in EXAMPLES.items():
17614         stem = "dfg-" + name + "-example"
17615         job = output / (stem + "-build")
17616         job.mkdir(exist_ok=True)
17617         for filename in [stem + ".tex", *[p.name for p in source.glob("*.bib")],
17618                          *[p.name for p in source.glob("*.csv")]]:
17619             shutil.copyfile(source / filename, job / filename)
17620         for dependency in dependencies:
17621             shutil.copyfile(packages / (dependency + ".sty"), job / (dependency + ".sty"))
17622         print("Building " + stem, flush=True)
17623         flag = "-lualatex" if args.engine == "lualatex" else "-pdf"
17624         run(["latexmk", flag, "-interaction=nonstopmode", "-halt-on-error", stem + ".tex"], job)
17625         pdf = output / (stem + ".pdf")
17626         preview = output / (stem + "-preview.pdf")
17627         shutil.copyfile(job / (stem + ".pdf"), pdf)
17628         # Page edges are part of the thumbindex example and must stay visible.
17629         if crop and not name.startswith("thumbindex"):
17630             options = []
17631             if shutil.which('pdftoppm'):
17632                 two_pages = name.endswith('-options') or name == 'collaboration'
17633                 if two_pages:
17634                     options = ['--bbox-odd', visible_bbox(pdf, job, 1),
17635                                '--bbox-even', visible_bbox(pdf, job, 2), '--clip']
17636                 else:
17637                     options = ['--bbox', visible_bbox(pdf, job), '--clip']
17638             if name.startswith('timeline') and not options:
17639                 shutil.copyfile(pdf, preview)
17640             else:
17641                 run([crop, '--margins', '4', *options, str(pdf), str(preview)], job)
17642         else:
17643             shutil.copyfile(pdf, preview)
17644         manifest["examples"][name] = {
17645             "source": stem + ".tex", "packages": list(dependencies),
17646             "pdf": pdf.name, "preview": preview.name,
17647         }
17648     (output / "manifest.json").write_text(json.dumps(manifest, indent=2) + "\n")
17649     print(f"Built {len(EXAMPLES)} independent package examples in {output}")
17650
17651
17652 if __name__ == "__main__":
17653     try:
17654         main()
17655     except (OSError, RuntimeError, subprocess.TimeoutExpired) as error:
```

```
        print(str(error), file=sys.stderr)
        raise SystemExit(1)

\documentclass{article}
\usepackage{dfg-collaboration,dfg-gantt}
\dfgPlotSetup{plotOptions={style=proposalPlots,nonFloat},
  collaborationPlotOptions={arcs=true,caption={Shared defaults.}},
  ganttPlotOptions={caption={Default chart note.}}}
\GanttSetup{slots=8,first-quarter=1,year-labels={Pilot,Study}}
\pagestyle{empty}
\begin{document}
\dfgPlotProject{Q01}
\printPlot[collaboration={A01,B01},width=.85\linewidth]{{collaboration}}
\clearpage
\DeclareWorkPackage{Q01}{methods}{gantt={label={Methods},start=1,end=8}}
\printPlot[capPos=bottom,floatCapSep=4pt,caption={} ]{{gantt}}
\end{document}

\documentclass{article}
\usepackage{dfg-collaboration}
\DeclareCollaborationProject{Q01}{area=Service,collaboration={A01,B01}}
\DeclareCollaborationProject{A01}{area=Research}
\DeclareCollaborationProject{B01}{area=Clinical}
\DeclareCollaborationProject{X01}{area=External,active=false}
\CollaborationSetup{area-colors={Research=orange,Clinical=blue,Service=teal}}
\pagestyle{empty}
\begin{document}
\printPlot[nonFloat,arcs,capPos=top,show-projects={A01,B01},
  caption={The focus is included automatically.}]{{collaboration}{Q01}}
\clearpage
\printPlot[nonFloat,layout=heatmap,collaboration={},show-projects={A01},
  caption={No connections; only the selected project and focus.}]
  {{collaboration}{Q01}}
\end{document}

\documentclass{article}
\usepackage{dfg-timeline}
\addEvent{id=kickoff,date=2027-01,category=progress,title={Start},
  label={Launch},abbreviation={K},summary={Agree on methods},
  description={The first methods review.}}
\addEvent{id=annual,start date=2027-08-10,end date=2027-08-12,
  category=symposium,title={Summer meeting},abbreviation={SM},
  summary={Discuss results},description={A joint symposium.}}
\addEvent{date=2028-02,category=progress,title={Review},
  description={The next methods review.}}
\pagestyle{empty}
\begin{document}
\printEventTimeline[year=2027,labels=abbreviation,summary=true,icons=false,
  rotation=45,date rotation=0,label width=25mm,legend=false,
  events={kickoff={lane=0,date lane=1,xshift=1mm},
    annual={lane=1,date lane=0,node options={text=blue!70!black}}}]
\clearpage
\printEventDetails[format=list,aggregated=true,nodate,
  categories={progress={title={Research milestones},
    description={Shared review of progress.}}}]
\bigskip
\printEventDetails[year=2027,format=prose,icons=false]
\end{document}

\documentclass{article}
\usepackage{dfg-distribution}
\DeclareDistributionCategory{study}{Study}{blue}{cap}
\DeclareDistributionCategory{clinical}{Clinical}{teal}{bulb}
\distributionSetup{order={study,clinical},unit width=6mm,
  label position=below,row spacing=18mm,bar height=5mm,
  label x=-14mm,label width=18mm,icon radius=2.8mm,
  text color=black,axis color=gray}
\pagestyle{empty}
\begin{document}
\setDistribution{study=5,clinical=2}
\DistributionChart
```

```
\clearpage
\DistributionChart[label position=left,icon raise=auto,
  order={clinical,study},row spacing=11mm,unit width=10mm,
  label width=20mm,label gap=3mm,separator width=.8pt]
\end{document}

\documentclass{article}
\usepackage{dfg-icons}
\DeclareIcon{logo}{file=example-image-a,aliases={partner}}
\DeclareIcon{portrait}{square=example-image-1x1,vertical=example-image-9x16}
\pagestyle{empty}
\begin{document}
\getIcon[square,height=2,gap=1em,trim={2 2 2 2},clip]{partner,portrait}
The square variants share a short area beside this paragraph. The line count
sets their common height, and the gap separates both icons and the text.
Graphic options such as trim and clip are forwarded to each image. The text
continues at full width after the reserved lines, keeping all of it visible.
\clearpage
\getIcon[vertical,height=4,gap=8pt]{portrait,logo}
The portrait variant now occupies four lines. The logo has only one asset,
so that same file supplies either shape. Both graphics remain side by side
and the paragraph wraps beside their combined width. Further text shows
how the paragraph returns to its normal full width after the images.
\end{document}

\documentclass{article}
\usepackage[backend=biber,style=numeric]{biblatex}
\usepackage{dfg-bib-highlights}
\addbibresource{dfg-bib-highlights-example.bib}
\addboldnames{{Doe, Jane}}
\pagestyle{empty}
\begin{document}
\nocite{highlight,normal}
\BibHighlightSetup{emphasizeAuthors=true,emphasizeEntries=false,color=blue}
\printbibliography[heading=subbibliography,title={Only selected authors}]
\clearpage
\resetboldnames
\BibHighlightSetup{emphasizeAuthors=false,emphasizeEntries=true}
\printHighlightedBibliography[heading=subbibliography,
  title={Whole entries with the selected keyword}]{important}
\end{document}

\documentclass[twoside]{article}
\usepackage{dfg-thumbindex}
\pagestyle{scrheadings}
\ThumbIndexSetup{pattern=2,width=8mm,orientation=inwards,
  font={\small\sffamily},bg=black,fg=white}
\begin{document}
\printThumbIndex[bg=orange,fg=black]{Start}
Odd page: inward orientation and local colours.
\newpage
Even page: the same tab appears on the opposite edge.
\clearpage
\printThumbIndex[blue]{Methods}
The second slot uses blue with the default white text.
\clearpage
\resetThumbIndex
\printThumbIndex[bg=green!50!black]{Appendix}
The slot sequence starts again at the top.
\clearpage
\printThumbIndexOff
No tab remains on this page.
\end{document}

\documentclass{article}
\usepackage{dfg-collaboration,dfg-gantt}
\dfgPlotSetup{
  plotOptions={nonFloat,capPos=top},
  collaborationPlotOptions={arcs=true},
  ganttPlotOptions={caption={Shared plot defaults.}}
}
```

```
\pagestyle{empty}
\begin{document}
\dfgPlotProject{Q01}
\printPlot[collaboration={A01,A02}]{{collaboration}}
\bigskip
\DeclareWorkPackage{Q01}{methods}{gantt={label={Methods},start=1,end=4}}
\printPlot[slots=4,first-quarter=1]{{gantt}}
\end{document}
```

```
# Independent package examples

Each `dfg-*-example.tex` is a complete document using `article`. Copy the
listed `.sty` files and any companion data beside an example, then run
`latexmk -lualatex dfg-gantt-example.tex` (substitute its filename).
`latexmk -pdf` also works. Bibliography highlighting needs Biber.
The icon example uses the standard TeX `mwe` sample graphics.

| Example | Package files to copy | Companion data |
|---|---|---|
| `dfg-plots-example.tex` | `dfg-plots.sty`, `dfg-collaboration.sty`, `dfg-gantt.sty` | None |
| `dfg-collaboration-example.tex` | `dfg-plots.sty`, `dfg-collaboration.sty` | None |
| `dfg-gantt-example.tex` | `dfg-plots.sty`, `dfg-gantt.sty` | None |
| `dfg-timeline-example.tex` | `dfg-timeline.sty` | None |
| `dfg-distribution-example.tex` | `dfg-distribution.sty` | None |
| `dfg-icons-example.tex` | `dfg-icons.sty` | None |
| `dfg-bib-highlights-example.tex` | `dfg-bib-highlights.sty` | `dfg-bib-highlights-
example.bib` |
| `dfg-thumbindex-example.tex` | `dfg-thumbindex.sty` | None |

In the proposal repository, `make module-examples` builds all sixteen examples
in isolated directories under `output/module-examples`. The maintained DTX
contains their sources; both installers export the same example files.
The main PDF manual includes these files and their independently compiled
results in its final part, **Independent LaTeX packages**.

## Option combinations

Each variant uses the same package files as its minimal example above.

| Configured example | Options illustrated |
|---|---|
| `dfg-plots-options-example.tex` | Shared styles, per-type captions, local float overrides |
| `dfg-collaboration-options-example.tex` | Area colours, selected nodes, empty connections |
| `dfg-gantt-options-example.tex` | Quarter grids, year titles, bar styles, graphic-
only output |
| `dfg-timeline-options-example.tex` | Year filters, abbreviations, lanes, aggregated details |
| `dfg-distribution-options-example.tex` | Label position, geometry, row order, separators |
| `dfg-icons-options-example.tex` | Variants, grouping, reserved lines, graphic cropping |
| `dfg-bib-highlights-options-example.tex` | Author colour, entry emphasis, local keywords |
| `dfg-thumbindex-options-example.tex` | Inward orientation, colours, slot reset, off switch |
```

```
\documentclass{article}
\usepackage[backend=biber,style=numeric]{biblatex}
\usepackage{dfg-bib-highlights}
\addbibresource{dfg-bib-highlights-example.bib}
\addboldnames{{Doe, Jane}}
\BibHighlightSetup{emphasizeAuthors=true,emphasizeEntries=true,keyword=important}
\pagestyle{empty}
\begin{document}
\nocite{highlight,normal}
\printbibliography
\end{document}
```

```
\documentclass{article}
\usepackage{dfg-collaboration}
\DeclareCollaborationProject{Q01}{area=Services,collaboration={A01}}
\DeclareCollaborationProject{A01}{area=Research}
\DeclareCollaborationProject{A02}{area=Research,collaboration={Q01}}
\pagestyle{empty}
\begin{document}
\printPlot[nonFloat,arcs=true,collaboration={A02}]{{collaboration}{Q01}}
\clearpage
```

```
\printPlot[nonFloat,layout=heatmap]{{collaboration}{Q01}}
\end{document}

\documentclass{article}
\usepackage{dfg-distribution}
\DeclareDistributionIcon{triangle}{%
  \fill[white](-.5,-.4)--(.5,-.4)--(0,.5)--cycle;}
\DeclareDistributionCategory{academic}{Academic}{blue}{triangle}
\distributionSetup{order={academic,industry},unit width=5mm}
\pagestyle{empty}
\begin{document}
\setDistribution{academic=4,industry=2}
\DistributionChart
\end{document}

\documentclass{article}
\usepackage{dfg-gantt}
\GanttSetup{slots=8,first-quarter=1,year-labels={2027,2028}}
\pagestyle{empty}
\begin{document}
\GanttProject{Study}
\begin{workpackages}
  \addWP{methods}{title={Methods},gantt={label={Set up},start=1,end=3}}
  Develop the methods.
  \begin{workpackages}
    \addWP{validation}{gantt={label={Validation},start=2,end=4,style=striped}}
    Validate the methods.
  \end{workpackages}
  \addWP{analysis}{title={Analysis},gantt={start=4,end=8,style=important}}
  Analyse the results.
\end{workpackages}
See \getWP{methods,validation,analysis}.

\printPlot[nonFloat]{{gantt}}
\end{document}

\documentclass{article}
\usepackage{dfg-icons}
\DeclareIcon{my-brand}{file={example-image-a},aliases={brand}}
\DeclareIcon{portrait}{square={example-image-1x1},vertical={example-image-9x16}}
\pagestyle{empty}
\begin{document}
\getIcon[height=3]{brand,portrait}
This example registers its own icon names and assets. There is no fixed list
of permitted icon names. A single asset can serve both shapes, or separate
square and vertical variants can be declared. The paragraph wraps alongside
the complete icon group and continues at its full width below the graphics.
Further text makes the transition visible in this short standalone example.
\end{document}

@article{highlight,
  author = {Doe, Jane and Roe, John},
  title = {A highlighted entry},
  journaltitle = {Example Journal},
  date = {2026},
  keywords = {important}
}
@article{normal,
  author = {Doe, Jane and Roe, John},
  title = {A regular entry with an emphasized author},
  journaltitle = {Example Journal},
  date = {2025}
}

\documentclass[twoside]{article}
\usepackage{dfg-thumbindex}
\pagestyle{scrheadings}
\ThumbIndexSetup{pattern=4,width=10mm,topmargin=20mm,bottommargin=20mm,
  bg=blue,fg=white}
\begin{document}
```

```
\printThumbIndex{First}
An odd page.
\newpage
An even page in the same section.
\clearpage
\printThumbIndex[bg=red]{Second}
The next section occupies the next slot.
\clearpage
\printThumbIndexOff
This page has no tab.
\end{document}

\documentclass{article}
\usepackage{dfg-timeline}
\pagestyle{empty}
\begin{document}
\addEvent{date=2027-03-12,category=progress,title={Progress meeting},
  description={Discuss the first results.}}
\addEvent{start date=2027-06-20,end date=2027-06-22,
  category=symposium,title={Research symposium}}
\printEventTimeline[width=\linewidth,rotation=45]
\printEventDetails[format=prose]
\end{document}
```

6.2 Generated files and examples

6.2.1 Main file

In this section we provide a skeleton of files to be used as a starting point for your proposal. You can adjust the content anytime. The following code block leads to a strange behaviour and in a table are ignored, it can be fixed with a minipage around the table.

```
% \DocumentMetadata{
%   pdfstandard=A-2b,
%   lang=en-EN,
%   % tagging=structure,
%   % uncompress
% }
\documentclass[
  showtags         =true,
  showtags-tables  =false,
  showmarginalia   =true,
  % fastcompile    =true,
  % fastcompile-project =true,
  % fastcompile-project-show-images=true,
  % fastcompile-project-show-publications=false,
  % skip10pub      =true,
  % colorscheme    =rgb,
  % final          =true,
  english % <-- needed here
]{dfg-crc}
```

Use `\frontmatter` before the title pages and table of contents. It selects lowercase Roman page numbers and unnumbered chapters. Use `\mainmatter` before General information: it clears the preliminary pages, restores numbered chapters, and restarts Arabic page numbering at 1. When updating an existing proposal, also copy the page-numbering setup below into its customized proposal drivers: the update targets preserve these files. We use `includeonly` for the case to compile only one, two or n-many chapters. This speeds up the compiling time in case you are working mainly and currently on one specific chapter.

```
%% % \includeonly{
%% %   content/01_general-information,
%% %   content/02_existing-funds-and-requested-funds,
%% %   content/03_project,
%% %   content/04_bylaws-of-the-crc,
%% %   content/05_declarations
%% %}
\begin{document}
% Preliminary pages use lowercase Roman page numbers.
```

```
\frontmatter
\dfgIfFastCompileProjectF{\input{content/00_titlepage}}
% Start numbered chapters on Arabic page 1.
\mainmatter
\include{content/01_general-information}
\include{content/02_existing-funds-and-requested-funds}
\include{content/03_project}
\include{content/04_bylaws-of-the-crc}
\include{content/05_declarations}
\include{content/99_backmatter}
\end{document}
```

6.2.2 Complete proposal included in the manual

The documentation build uses the same main file and chapter inputs as the local proposal, including its shared consortium metadata and project files. Final mode removes drafting aids. The makefile compiles this generated wrapper before the manual and publishes its PDF beside the manual.

```
\PassOptionsToClass{final=true}{dfg-crc}
\input{crc-proposal.tex}
```

6.2.3 Shared research-project example

Each compact project file supplies its own ID and status to this reusable example body. All project leaders and affiliations come from shared metadata.

```
\providecommand{\dfgExampleResearchProject}[2]{%
  \printProjectHead{#1}
  \section{Summary}
  This project investigates \getEntry[project]{#1}{name}. Its project leaders
  combine experimental and analytical approaches within the shared research
  programme of \thisCRC.
  \ifstrequal{#2}{C}{%
    \section{Project progress to date}
    The preceding funding period established the experimental models and
    shared datasets. The next phase tests causal mechanisms and validates
    their relevance across the participating projects.
  }{%
    \section{Research rationale}
    Preliminary observations motivate a new testable hypothesis. The project
    establishes its experimental framework and independent validation strategy
    during the requested funding period.
  }
  \projectPublicationsHeading
  \projectNocite{FAIR2016}
  \printProjectBibliography[heading=none]
  \section{Project plan}
  \begin{aims}
    \addAim{1} Establish reproducible experimental and analytical workflows.
    \addAim{2} Validate the findings in complementary models and datasets.
  \end{aims}
  \begin{workpackages}
    \addWP{wp1}{
      name = {Experimental framework},
      description = {Establish models, controls, and quality criteria},
      periodStart = {1}, periodEnd = {7}, style = {default}
    }
    Define the controls, sampling strategy, and analysis workflow for \getAim{1}.
    \addWP{wp2}{
      name = {Validation and integration},
      description = {Validate results and integrate consortium datasets},
      periodStart = {6}, periodEnd = {16}, style = {important}
    }
    Test robustness and share the validated results for \getAim{2}.
  \end{workpackages}
  \printPlot{{Gantt}{#1}}
  \section{Relevance of sex, gender and/or diversity in the research project}
  Include relevant biological variables in sampling and analysis; document
  the rationale for each model and the limits of generalisation.
  \section{Role within the Collaborative Research Centre}
  Share methods, data, and validation resources with the linked projects.
  \printPlot{{ProjectCollaboration}{#1}}
```

```
  \section{Differentiation from other funded projects}
  The proposed work addresses the CRC-specific hypothesis and does not
  duplicate personnel or experiments supported by other grants.
  \section{Project funding}
  \addEntry[funding]{RequestedFunding}{
    ref-project-id = {#1}, funding-type = {staff}, category = {PhD},
    percentage = {65},
    quantity = {year1=1,year2=1,year3=1,year4=1,year5=1}
  }
  \addEntry[funding]{RequestedFunding}{
    ref-project-id = {#1}, funding-type = {costs}, category = {consumables},
    sum = {year1=1000,year2=2000,year3=2000,year4=2000,year5=1000}
  }
  \printTable{{RequestedFunding}{#1}}
  The doctoral researcher performs the experiments and integrates the data.
  Consumables cover sample preparation, assays, and independent validation.
  \printProjectTail
}
```

6.2.4 Complete local project index

```
\chapter{Project details}
\printThumbIndex{3}
\dfgTOCprojectPart{A}{Research Projects}
\input{content/03_project_A01}
\input{content/03_project_A02}
\input{content/03_project_A03}
\input{content/03_project_A04}
\input{content/03_project_A05}
\input{content/03_project_A06}
\dfgTOCprojectPart{B}{Research Projects}
\input{content/03_project_B01}
\input{content/03_project_B02}
\input{content/03_project_B03}
\input{content/03_project_B04}
\input{content/03_project_B05}
\input{content/03_project_B06}
\dfgTOCprojectPart{Q}{Central Projects}
\input{content/03_project_Q01}
\input{content/03_project_Q02}
\input{content/03_project_Q03}
\dfgTOCprojectPart{A}{Former project}
\input{content/03_project_A00}

\input{content/03_project_research-example}
\dfgExampleResearchProject{A03}{C}

\input{content/03_project_research-example}
\dfgExampleResearchProject{A04}{N}

\input{content/03_project_research-example}
\dfgExampleResearchProject{A05}{C}

\input{content/03_project_research-example}
\dfgExampleResearchProject{A06}{N}

\input{content/03_project_research-example}
\dfgExampleResearchProject{B02}{N}

\input{content/03_project_research-example}
\dfgExampleResearchProject{B03}{C}

\input{content/03_project_research-example}
\dfgExampleResearchProject{B04}{N}

\input{content/03_project_research-example}
\dfgExampleResearchProject{B05}{C}

\input{content/03_project_research-example}
\dfgExampleResearchProject{B06}{N}
```

6.2.5 Complete CV appendix included in the manual

Reuse the starter CV and its metadata, suppress drafting aids, and expose destinations for the manual's individual-CV previews. The header wrapper adds an invisible target after the original header has selected its page.

```
\PassOptionsToClass{final=true}{dfg-crc}
\AddToHook{class/dfg-crc/after}{%
  \NewCommandCopy{\dfgDocOriginalCVHeader}{\dfgCVheader}
  \RenewDocumentCommand{\dfgCVheader}{m}{%
    \dfgDocOriginalCVHeader{#1}%
    \hypertarget{doc-cv:#1}{}%
  }%
}
\input{crc-cv.tex}
```

6.2.6 Bibliography Files

There are at least two bibliography files in the folder `bib/`. One is for the common `bibtex`-entries, the others contain so called `strings`.

Main Bibliography File

```
@Article{FAIR2016,
   Author          = {Wilkinson, Mark D. and others},
   Title           = {The {FAIR} Guiding Principles for scientific data management and stewardship},
   JournalTitle    = {Scientific Data},
   Date            = {2016-12},
   DOI             = {10.1038/sdata.2016.18},
   Keywords        = {{FAIR}},
   langid          = {english},
   Number          = {1},
   Pages           = {160018},
   ShortJournal    = {Sci Data},
   URLDate         = {2021-05-31},
   Volume          = {3}
  }

@Comment{All ExampleCV records below are fictional template examples, not real research outputs.}

@Article{ExampleCVper1,
  Author       = {Sample, Kim},
  Title        = {Illustrative study of microbial metabolites and epithelial signalling},
  JournalTitle = {Fictional Journal of Consortium Research},
  Date         = {2025},
  Volume       = {1},
  Pages        = {1--8},
  Keywords     = {per1-A},
  Note         = {Fictional reference for template demonstration only},
  LangID       = {english}
}

@Article{ExampleCVper1Methods,
  Author       = {Sample, Kim},
  Title        = {Reproducible methods for microbial metabolites and epithelial signalling},
  JournalTitle = {Fictional Journal of Consortium Research},
  Date         = {2024},
  Volume       = {1},
  Pages        = {1--8},
  Keywords     = {per1-A},
  Note         = {Fictional reference for template demonstration only},
  LangID       = {english}
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@Dataset{ExampleCVper1Data,
  Author       = {Sample, Kim},
  Title        = {Fictional demonstration dataset: microbial metabolites and epithelial signalling},
  Date         = {2025},
  Version      = {1.0},
  Publisher    = {Example Research Repository},
  Keywords     = {per1-B},
  Note         = {Fictional reference for template demonstration only},
  LangID       = {english}
}

@Article{ExampleCVper2,
  Author       = {Example, Alex},
  Title        = {Illustrative study of multimodal data integration and reproducible analysis},
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18171   JournalTitle = {Fictional Journal of Consortium Research},
18172   Date         = {2025},
18173   Volume       = {1},
18174   Pages        = {1--8},
18175   Keywords     = {per2-A},
18176   Note         = {Fictional reference for template demonstration only},
18177   LangID       = {english}
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18180 @Article{ExampleCVper2Methods,
18181   Author       = {Example, Alex},
18182   Title        = {Reproducible methods for multimodal data integration and reproducible analysis},
18183   JournalTitle = {Fictional Journal of Consortium Research},
18184   Date         = {2024},
18185   Volume       = {1},
18186   Pages        = {1--8},
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18188   Note         = {Fictional reference for template demonstration only},
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18192 @Dataset{ExampleCVper2Data,
18193   Author       = {Example, Alex},
18194   Title        = {Fictional demonstration dataset: multimodal data integration and reproducible analysis}
18195   Date         = {2025},
18196   Version      = {1.0},
18197   Publisher    = {Example Research Repository},
18198   Keywords     = {per2-B},
18199   Note         = {Fictional reference for template demonstration only},
18200   LangID       = {english}
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18202
18203 @Article{ExampleCVper3,
18204   Author       = {Meier, Hansi},
18205   Title        = {Illustrative study of microbial sensing and innate immune memory},
18206   JournalTitle = {Fictional Journal of Consortium Research},
18207   Date         = {2025},
18208   Volume       = {1},
18209   Pages        = {1--8},
18210   Keywords     = {per3-A},
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18215 @Article{ExampleCVper3Methods,
18216   Author       = {Meier, Hansi},
18217   Title        = {Reproducible methods for microbial sensing and innate immune memory},
18218   JournalTitle = {Fictional Journal of Consortium Research},
18219   Date         = {2024},
18220   Volume       = {1},
18221   Pages        = {1--8},
18222   Keywords     = {per3-A},
18223   Note         = {Fictional reference for template demonstration only},
18224   LangID       = {english}
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18227 @Dataset{ExampleCVper3Data,
18228   Author       = {Meier, Hansi},
18229   Title        = {Fictional demonstration dataset: microbial sensing and innate immune memory},
18230   Date         = {2025},
18231   Version      = {1.0},
18232   Publisher    = {Example Research Repository},
18233   Keywords     = {per3-B},
18234   Note         = {Fictional reference for template demonstration only},
18235   LangID       = {english}
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18238 @Article{ExampleCVper4,
18239   Author       = {Miller, Kimmi},
18240   Title        = {Illustrative study of epithelial repair and tissue regeneration},
18241   JournalTitle = {Fictional Journal of Consortium Research},
18242   Date         = {2025},
18243   Volume       = {1},
18244   Pages        = {1--8},
```

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  Author       = {Miller, Kimmi},
  Title        = {Reproducible methods for epithelial repair and tissue regeneration},
  JournalTitle = {Fictional Journal of Consortium Research},
  Date         = {2024},
  Volume       = {1},
  Pages        = {1--8},
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@Dataset{ExampleCVper4Data,
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  Title        = {Fictional demonstration dataset: epithelial repair and tissue regeneration},
  Date         = {2025},
  Version      = {1.0},
  Publisher    = {Example Research Repository},
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@Article{ExampleCVper5,
  Author       = {Redata, Friedhelm},
  Title        = {Illustrative study of structured doctoral training and research integrity},
  JournalTitle = {Fictional Journal of Consortium Research},
  Date         = {2025},
  Volume       = {1},
  Pages        = {1--8},
  Keywords     = {per5-A},
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@Article{ExampleCVper5Methods,
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  Title        = {Reproducible methods for structured doctoral training and research integrity},
  JournalTitle = {Fictional Journal of Consortium Research},
  Date         = {2024},
  Volume       = {1},
  Pages        = {1--8},
  Keywords     = {per5-A},
  Note         = {Fictional reference for template demonstration only},
  LangID       = {english}
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  Publisher    = {Example Research Repository},
  Keywords     = {per5-B},
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  Author       = {Hartmann, Samira},
  Title        = {Illustrative study of microbial metabolic pathways and immune adaptation},
  JournalTitle = {Fictional Journal of Consortium Research},
  Date         = {2025},
  Volume       = {1},
  Pages        = {1--8},
  Keywords     = {per6-A},
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18321   Author       = {Hartmann, Samira},
18322   Title        = {Reproducible methods for microbial metabolic pathways and immune adaptation},
18323   JournalTitle = {Fictional Journal of Consortium Research},
18324   Date         = {2024},
18325   Volume       = {1},
18326   Pages        = {1--8},
18327   Keywords     = {per6-A},
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18332 @Dataset{ExampleCVper6Data,
18333   Author       = {Hartmann, Samira},
18334   Title        = {Fictional demonstration dataset: microbial metabolic pathways and immune adaptation},
18335   Date         = {2025},
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18337   Publisher    = {Example Research Repository},
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18344   Author       = {Lindberg, Noah},
18345   Title        = {Illustrative study of spatial immune niches and quantitative imaging},
18346   JournalTitle = {Fictional Journal of Consortium Research},
18347   Date         = {2025},
18348   Volume       = {1},
18349   Pages        = {1--8},
18350   Keywords     = {per7-A},
18351   Note         = {Fictional reference for template demonstration only},
18352   LangID       = {english}
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18355 @Article{ExampleCVper7Methods,
18356   Author       = {Lindberg, Noah},
18357   Title        = {Reproducible methods for spatial immune niches and quantitative imaging},
18358   JournalTitle = {Fictional Journal of Consortium Research},
18359   Date         = {2024},
18360   Volume       = {1},
18361   Pages        = {1--8},
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18369   Title        = {Fictional demonstration dataset: spatial immune niches and quantitative imaging},
18370   Date         = {2025},
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18372   Publisher    = {Example Research Repository},
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18378 @Article{ExampleCVper8,
18379   Author       = {Winters-Scholz, Alexis-Marie},
18380   Title        = {Illustrative study of dietary perturbations and mucosal microbial communities},
18381   JournalTitle = {Fictional Journal of Consortium Research},
18382   Date         = {2025},
18383   Volume       = {1},
18384   Pages        = {1--8},
18385   Keywords     = {per8-A},
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18391   Author       = {Winters-Scholz, Alexis-Marie},
18392   Title        = {Reproducible methods for dietary perturbations and mucosal microbial communities},
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  Date         = {2024},
  Volume       = {1},
  Pages        = {1--8},
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@Dataset{ExampleCVper8Data,
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  Version      = {1.0},
  Publisher    = {Example Research Repository},
  Keywords     = {per8-B},
  Note         = {Fictional reference for template demonstration only},
  LangID       = {english}
}

@Article{ExampleCVper9,
  Author       = {Navarro, Leonie},
  Title        = {Illustrative study of nutrient sensing and predictive metabolic models},
  JournalTitle = {Fictional Journal of Consortium Research},
  Date         = {2025},
  Volume       = {1},
  Pages        = {1--8},
  Keywords     = {per9-A},
  Note         = {Fictional reference for template demonstration only},
  LangID       = {english}
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@Article{ExampleCVper9Methods,
  Author       = {Navarro, Leonie},
  Title        = {Reproducible methods for nutrient sensing and predictive metabolic models},
  JournalTitle = {Fictional Journal of Consortium Research},
  Date         = {2024},
  Volume       = {1},
  Pages        = {1--8},
  Keywords     = {per9-A},
  Note         = {Fictional reference for template demonstration only},
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  Version      = {1.0},
  Publisher    = {Example Research Repository},
  Keywords     = {per9-B},
  Note         = {Fictional reference for template demonstration only},
  LangID       = {english}
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@Article{ExampleCVper10,
  Author       = {Okafor, Daniel},
  Title        = {Illustrative study of microbial biomarkers and clinical tissue responses},
  JournalTitle = {Fictional Journal of Consortium Research},
  Date         = {2025},
  Volume       = {1},
  Pages        = {1--8},
  Keywords     = {per10-A},
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@Article{ExampleCVper10Methods,
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  Title        = {Reproducible methods for microbial biomarkers and clinical tissue responses},
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  Date         = {2024},
  Volume       = {1},
  Pages        = {1--8},
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18474   Title        = {Fictional demonstration dataset: microbial biomarkers and clinical tissue responses},
18475   Date         = {2025},
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18477   Publisher    = {Example Research Repository},
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18484   Author       = {Sato, Mira},
18485   Title        = {Illustrative study of inflammatory circuits between intestine and liver},
18486   JournalTitle = {Fictional Journal of Consortium Research},
18487   Date         = {2025},
18488   Volume       = {1},
18489   Pages        = {1--8},
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18497   Title        = {Reproducible methods for inflammatory circuits between intestine and liver},
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18499   Date         = {2024},
18500   Volume       = {1},
18501   Pages        = {1--8},
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18508   Author       = {Sato, Mira},
18509   Title        = {Fictional demonstration dataset: inflammatory circuits between intestine and liver},
18510   Date         = {2025},
18511   Version      = {1.0},
18512   Publisher    = {Example Research Repository},
18513   Keywords     = {per11-B},
18514   Note         = {Fictional reference for template demonstration only},
18515   LangID       = {english}
18516 }
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18518 @Article{ExampleCVper12,
18519   Author       = {Keller, Robin},
18520   Title        = {Illustrative study of patient-derived models and biomarker translation},
18521   JournalTitle = {Fictional Journal of Consortium Research},
18522   Date         = {2025},
18523   Volume       = {1},
18524   Pages        = {1--8},
18525   Keywords     = {per12-A},
18526   Note         = {Fictional reference for template demonstration only},
18527   LangID       = {english}
18528 }
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18530 @Article{ExampleCVper12Methods,
18531   Author       = {Keller, Robin},
18532   Title        = {Reproducible methods for patient-derived models and biomarker translation},
18533   JournalTitle = {Fictional Journal of Consortium Research},
18534   Date         = {2024},
18535   Volume       = {1},
18536   Pages        = {1--8},
18537   Keywords     = {per12-A},
18538   Note         = {Fictional reference for template demonstration only},
18539   LangID       = {english}
18540 }
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18542  @Dataset{ExampleCVper12Data,
18543    Author       = {Keller, Robin},
18544    Title        = {Fictional demonstration dataset: patient-derived models and biomarker translation},
18545    Date         = {2025},
18546    Version      = {1.0},
18547    Publisher    = {Example Research Repository},
18548    Keywords     = {per12-B},
18549    Note         = {Fictional reference for template demonstration only},
18550    LangID       = {english}
18551  }
```

Bibliography Strings

The `strings` are used for quick and consistent referencing parts repeatedly.

```
18552  @String {equal      = {\textit{*equal contribution}}}
18553  @String {sharedlast = {\textit{*shared last authorship}}}
```

6.2.7 Customization File

In the file `preamble/dfg-customization.tex` you can adjust settings of this template. Further information you find in section 3.2. If you want to create new commands put them in this file as well.

```
18554  % \title{<Title>}
18555  % \subtitle{<Subtitle>}
18556  %% \changeSettings{
18557  %% dfgLocation                ={<Location>},
18558  %% dfgDate                    ={<date>},
18559  %% dfgTitle                   ={<Proposal title>},
18560  %% InfoTeX                    ={<Compiler information>},
18561  %% font                       =<nn>,
18562  %% crcLogoPath                =<file path>,
18563  %% affiliationLogoPath        =<file path>,
18564  %% doiAPIMail                 =<contact email for optional DOI API lookup>,
18565  %% projectPIOncePerSection    =true,
18566  %% projectsTableInstitutionAbbreviations=false,
18567  %% categoryAbbreviations=false,
18568  %% cvTableAfterSkip           ={0pt},
18569  %% % Alternative built-in style: plotOptions={style=proposalPlots}.
18570  %% plotOptions                ={floatPos=!hb,capPos=bottom},
18571  %% ganttPlotOptions           ={},
18572  %% collaborationPlotOptions   ={},
18573  %% salary@prof                =126600,
18574  %% salary@groupLeader         =105000,
18575  %% salary@postDoc             =90600,
18576  %% salary@medDoc              =112200,
18577  %% salary@PhD                 =83700,
18578  %% salary@research            =69000,
18579  %% salary@nonResearch         =61500,
18580  %% salary@student             =1,
18581  %% salary@assistant           =1,
18582  %% animalHousing@mouse        =0.75,
18583  %% animalHousing@mouseGnotobiotic=3.9,
18584  %% animalHousing@rat          =1.4,
18585  %% thumbindex                 =true,
18586  %% thumbindex@pattern         =<int>,
18587  %% thumbindex@orientation     =outwards, % or inwards
18588  %% thumbindex@topmargin       =auto,
18589  %% thumbindex@bottommargin    =auto,
18590  %% emphasizeAuthors           =true,
18591  %% emphasizeEntries           =false,
18592  %% journalTitle               =journaltitle, % or shortjournal
18593  %% biblatexstyleCV            =<nn>,
18594  %% biblatexstyleFeatureCV     ={<nn>,<nn>},
18595  %% biblatexstyleProposal      =<nn>,
18596  %% biblatexstyleFeatureProposal={<nn>,<nn>},
18597  %%%%%   color section   %%%%%
18598  %% color@reference@boldAuthor =<nn>,
18599  %% color@reference@PI         =black, % or current / a named color
18600  %% color@reference@WP         =<nn>,
18601  %% color@reference@Aim        =<nn>,
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%% color@table@link            =<nn>,
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%% color@table@caption         =<nn>,
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%% color@gantt@default         =<nn>,
%% color@gantt@crosshatch      =<nn>,
%% color@gantt@important       =<nn>,
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%% color@item@i                =<nn>,
%% }
```

6.2.8 DFG salary and animal-housing defaults

The DFG specifies standardised all-in salary costs (*Personalmittel*) per position category. The salary defaults use the 2027 rates. These constants are used in the requested-funding staff tables to calculate yearly personnel costs from FTE counts.

The values are updated annually and published by the DFG. Their canonical defaults are keys in the `dfg/custom` key family. Override them together with the other proposal settings in `dfg-customization.tex`:

Overriding salary and animal-housing rates

```
%   \changeSettings{
%     salary@postDoc      = 90000,
%     animalHousing@mouse = 0.80,
%   }
%
```

Source: https://www.dfg.de/resource/blob/408716/60-12-2027-de.pdf (DFG personnel rates for 2027, form 60.12, version 01/27).

Use `\getValue` with the setting key, for example `\num{\getValue{animalHousing@mouse}}`, to read these rates in text. The expandable `\dfgSalaryProf`, `\dfgSalaryGroupLeader`, `\dfgSalaryPostDoc`, `\dfgSalaryMedDoc`, `\dfgSalaryPhD`, `\dfgSalaryResearch`, `\dfgSalaryNonResearch`, `\dfgSalaryStudent`, `\dfgSalaryAssistant`, `\dfgMouseHousing`, `\dfgMouseHousingGnotobiotic`, and `\dfgRatHousing` accessors remain available for compatibility. They expand to the corresponding setting.

6.2.9 Shared proposal and documentation metadata

The manual, local proposal, and CV use one fictional consortium: six active A projects, six active B projects, three Q projects, twelve PIs, and one former project. Person/project references are reciprocal; collaboration targets exist. The developer installer extracts these same records into local/metadata/.

⟨*meta | doc-table-a | doc-table-b | doc-table-q | doc-table-pis⟩

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\addEntry{meta}{
  id                  = {crc}, %<--- id (do not change)
  name                = {Mechanisms of Host--Microbiome Communication},
  nameAddon           = {From Molecular Interactions to Organ Function},
  number              = {9999},
  fundingPeriodNumeral = {3}, % 1|2|3
```

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  fundedSince          = {2019-07-01},
  fundingYears         = {2027|2,2028,2029,2030,2031|1},
  fundingYearsPrevious = {2022|2,2023,2024,2025,2026|1}
}
⟨/meta | doc-table-a | doc-table-b | doc-table-q | doc-table-pis⟩

⟨*meta | doc-table-a | doc-table-b | doc-table-q | doc-table-pis⟩
\addEntry{institution}{
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  name              = {Institute of Microbial Systems Medicine},
  abbreviation      = {IMSM},
  ref-affiliation-id = {aff1}
}
⟨/meta | doc-table-a | doc-table-b | doc-table-q | doc-table-pis⟩

⟨*meta | doc-table-a | doc-table-b | doc-table-q | doc-table-pis⟩
\addEntry{institution}{
  id                = {ins2},
  name              = {Department of Translational Biosciences},
  abbreviation      = {DTB},
  ref-affiliation-id = {aff2}
}
⟨/meta | doc-table-a | doc-table-b | doc-table-q | doc-table-pis⟩

⟨*meta | doc-table-a | doc-table-b | doc-table-q | doc-table-pis⟩
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  id           = {aff1},
  name         = {Example University},
  abbreviation  = {EU},
  addressStreet = {University Avenue 1},
  addressZIP    = {12345},
  location      = {Example City},
  country       = {Germany}
}
⟨/meta | doc-table-a | doc-table-b | doc-table-q | doc-table-pis⟩

⟨*meta | doc-table-a | doc-table-b | doc-table-q | doc-table-pis⟩
\addEntry{affiliation}{
  id           = {aff2},
  name         = {Partner University},
  abbreviation  = {PU},
  addressStreet = {Research Road 2},
  addressZIP    = {54321},
  location      = {Partner City},
  country       = {Germany}
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⟨*meta | doc-table-a | doc-table-pis⟩
\addEntry{person}{
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  firstname           = {Kim},
  lastname            = {Sample},
  academicdegree      = {Prof. Dr. rer. nat.},
  period              = {1,2,3},
  role                = {PI},
  gender              = {d},
  ref-institution-id  = {ins1,ins2},
  ref-project-id      = {A01,A02},
  name-alias          = {
    {Kim Sample},
    {Sample, Kim S.}
  },
  orcid               = {0000-0000-0000-0001},
  doctorateYear       = {2000},
  doctorate           = {Dr. rer. nat., Example University},
  degree-programme    = {Biology, Example University},
  position            = {prof-W3},
  positionText        = {Professor and Director},
  url                 = {https://www.example.org/kim-sample},
  phone               = {+49 000 100-1000},
  email               = {kim.sample@example.org},
  contract-information = {
```

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    C2  = {yes},
    C2a = {2028-12-31},
    C2b = {2029-01-03},
    C3  = {yes},
    C3a = {2054-03-10},
    C4  = {no},
    C4a = {DFG}
  }
}
```
⟨/meta | doc-table-a | doc-table-pis⟩

⟨*meta | doc-table-a | doc-table-b | doc-table-q | doc-table-pis⟩
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\addEntry{person}{
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  period              = {2,3},
  firstname           = {Alex},
  lastname            = {Example},
  academicdegree      = {Prof. Dr. phil.},
  position            = {groupLeader},
  positionText        = {Research group leader},
  role                = {PI,steering-committee-member},
  doctorateYear       = {1999},
  doctorate           = {Dr. phil., Partner University},
  degree-programme    = {Data Science, Partner University},
  gender              = {m},
  ref-institution-id  = {ins2},
  ref-project-id      = {A01,B01,Q01},
  orcid               = {0000-0000-0000-0002},
  phone               = {+49 000 200-2000},
  email               = {alex.example@example.org},
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    C2  = {no},
    C2a = {},
    C2b = {},
    C3  = {no},
    C3a = {},
    C4  = {yes},
    C4a = {BMFTR}
  }
}
```
⟨/meta | doc-table-a | doc-table-b | doc-table-q | doc-table-pis⟩

⟨*meta | doc-table-b | doc-table-q | doc-table-pis⟩
```
\addEntry{person}{
  id                  = {per3},
  period              = {2,3},
  firstname           = {Hansi},
  lastname            = {Meier},
  academicdegree      = {Dr. rer. nat.},
  position            = {postDoc},
  positionText        = {Senior research scientist},
  role                = {PI,steering-committee-member},
  doctorateYear       = {1999},
  doctorate           = {Dr. rer. nat., Partner University},
  degree-programme    = {Microbiology, Partner University},
  gender              = {f},
  ref-institution-id  = {ins2},
  ref-project-id      = {B01,B03,Q03},
  orcid               = {0000-0000-0000-0003},
  phone               = {+49 000 200-3000},
  email               = {hansi.meier@example.org},
  contract-information = {
    C1  = {yes},
    C2  = {no},
    C2a = {},
    C2b = {},
    C3  = {no},
    C3a = {},
    C4  = {yes},
    C4a = {DFG}
  }
}
```

```
⟨/meta | doc-table-b | doc-table-q | doc-table-pis⟩

⟨*meta | doc-table-b | doc-table-pis⟩
\addEntry{person}{
  id                  = {per4},
  period              = {2,3},
  firstname           = {Kimmi},
  lastname            = {Miller},
  academicdegree      = {Prof. Dr. rer. nat.},
  position            = {prof-W2},
  positionText        = {Professor of Molecular Medicine},
  role                = {PI},
  doctorateYear       = {1999},
  doctorate           = {Dr. rer. nat., Partner University},
  degree-programme    = {Molecular Medicine, Partner University},
  gender              = {f},
  ref-institution-id  = {ins2},
  ref-project-id      = {B02,B04},
  orcid               = {0000-0000-0000-0004},
  phone               = {+49 000 200-4000},
  email               = {kimmi.mueller@example.org},
  contract-information = {
    C1  = {yes},
    C2  = {no},
    C2a = {},
    C2b = {},
    C3  = {no},
    C3a = {},
    C4  = {yes},
    C4a = {DFG}
  }
}
⟨/meta | doc-table-b | doc-table-pis⟩

⟨*meta | doc-table-b | doc-table-q | doc-table-pis⟩
\addEntry{person}{
  id                  = {per5},
  period              = {3},
  firstname           = {Friedhelm},
  lastname            = {Redata},
  academicdegree      = {Prof. Dr.-Ing.},
  orcid               = {0000-0000-0000-0005},
  position            = {prof-W2},
  positionText        = {Professor of Research Training},
  role                = {PI,steering-committee-member},
  doctorateYear       = {1998},
  doctorate           = {Dr.-Ing., Example University},
  degree-programme    = {Biomedical Engineering, Example University},
  gender              = {m},
  ref-institution-id  = {ins1},
  ref-project-id      = {B05,Q02},
  phone               = {+49 000 100-5000},
  email               = {friedhelm.redata@example.org},
  contract-information = {
    C1  = {yes},
    C2  = {yes},
    C2a = {2028-12-31},
    C2b = {2029-01-03},
    C3  = {yes},
    C3a = {2054-03-10},
    C4  = {no},
    C4a = {DFG}
  }
}
⟨/meta | doc-table-b | doc-table-q | doc-table-pis⟩

⟨*meta | doc-table-a | doc-table-pis⟩
\addEntry{project}{
  id                = {A01},
  project-area      = {A},
  number            = {A01},
  project-status    = {C},
  consider-for-lists = {true},
  reference-only    = {false},
```

```
18855   name               = {Microbial signalling across epithelial barriers},
18856   project-type       = {research},
18857   research-area      = {2.21-02},
18858   ref-person-id      = {per1,per2},
18859   collaboration      = {A02,A04,A06,B01,B03,B06,Q01},
18860   legal-issues       = {
18861       L1  = yes,
18862       L1a = no,
18863       L2  = no,
18864       L2a = no,
18865       L3  = no,
18866       L4  = no,
18867       L5  = no,
18868       L5a = no,
18869       L6  = no,
18870       L7  = no,
18871       L7a = no
18872     }
18873 }
18874 ⟨/meta | doc-table-a | doc-table-pis⟩
18875
18876 ⟨*meta | doc-table-a | doc-table-pis⟩
18877 \addEntry{project}{
18878   id                 = {A02},
18879   project-area       = {A},
18880   number             = {A02},
18881   project-status     = {N},
18882   consider-for-lists = {true},
18883   reference-only     = {false},
18884   project-type       = {research},
18885   name               = {Metabolic control of tissue-resident immunity},
18886   research-area      = {2.21-05},
18887   ref-person-id      = {per1,per6},
18888   collaboration      = {A01,A03,B02,Q02},
18889   legal-issues       = {
18890     L1  = no,
18891     L1a = no,
18892     L2  = yes,
18893     L2a = no,
18894     L3  = yes,
18895     L4  = yes,
18896     L5  = no,
18897     L5a = no,
18898     L6  = yes,
18899     L7  = no,
18900     L7a = yes
18901   }
18902 }
18903 ⟨/meta | doc-table-a | doc-table-pis⟩
18904
18905 ⟨*meta⟩
18906 \addEntry{project}{
18907   id                 = {A00},
18908   project-area       = {A},
18909   number             = {A00},
18910   project-status     = {E},
18911   consider-for-lists = {false},
18912   reference-only     = {true},
18913   project-type       = {research},
18914   name               = {Former project on microbial community dynamics},
18915   research-area      = {},
18916   ref-person-id      = {per4,per10},
18917   collaboration      = {}
18918 }
18919 ⟨/meta⟩
18920
18921 ⟨*meta | doc-table-b | doc-table-pis⟩
18922 \addEntry{project}{
18923   id                 = {B01},
18924   project-area       = {B},
18925   number             = {B01},
18926   project-status     = {C},
18927   consider-for-lists = {true},
18928   reference-only     = {false},
```

```
18929   project-type       = {research},
18930   research-area      = {2.21-03,2.21-05,2.22-15},
18931   name               = {Host defence during microbiome perturbation},
18932   ref-person-id      = {per3,per2},
18933   collaboration      = {A01,B02,B03,Q02},
18934   legal-issues       = {
18935     L1  = no,
18936     L1a = no,
18937     L2  = no,
18938     L2a = no,
18939     L3  = no,
18940     L4  = no,
18941     L5  = no,
18942     L5a = no,
18943     L6  = no,
18944     L7  = no,
18945     L7a = no
18946   }
18947 }
18948 ⟨/meta | doc-table-b | doc-table-pis⟩
18949
18950 ⟨*meta | doc-table-b | doc-table-pis⟩
18951 \addEntry{project}{
18952   id                 = {B02},
18953   project-area       = {B},
18954   number             = {B02},
18955   project-status     = {N},
18956   consider-for-lists = {true},
18957   reference-only     = {false},
18958   project-type       = {research},
18959   research-area      = {2.22-15},
18960   name               = {Molecular signatures of tissue regeneration},
18961   ref-person-id      = {per4,per10},
18962   collaboration      = {A02,B01,B04,Q01},
18963   legal-issues       = {
18964       L1  = yes,
18965       L1a = no,
18966       L2  = yes,
18967       L2a = yes,
18968       L3  = yes,
18969       L4  = yes,
18970       L5  = yes,
18971       L5a = no,
18972       L6  = yes,
18973       L7  = yes,
18974       L7a = no
18975     }
18976 }
18977 ⟨/meta | doc-table-b | doc-table-pis⟩
18978
18979 ⟨*meta | doc-table-q | doc-table-pis⟩
18980 \addEntry{project}{
18981   id                 = {Q01},
18982   project-area       = {Q},
18983   number             = {Q01},
18984   project-status     = {C},
18985   consider-for-lists = {true},
18986   reference-only     = {false},
18987   project-type       = {service},
18988   name               = {Integrated imaging and analysis services},
18989   research-area      = {2.21-02,2.22-15},
18990   ref-person-id      = {per2,per7},
18991   collaboration      = {A01,A03,A04,A06,B02,B03,B05},
18992   legal-issues       = {
18993     L1  = no,
18994     L1a = no,
18995     L2  = no,
18996     L2a = no,
18997     L3  = no,
18998     L4  = no,
18999     L5  = no,
19000     L5a = no,
19001     L6  = no,
19002     L7  = no,
```

```
    L7a = no
  }
}
⟨/meta | doc-table-q | doc-table-pis⟩

⟨*meta | doc-table-q | doc-table-pis⟩
\addEntry{project}{
  id                = {Q02},
  project-area      = {Q},
  number            = {Q02},
  project-status    = {C},
  consider-for-lists = {true},
  reference-only    = {false},
  project-type      = {mgk},
  name              = {Integrated Research Training Group},
  research-area     = {},
  ref-person-id     = {per5,per9},
  collaboration     = {A02,A05,B01,B04,B06}
}
⟨/meta | doc-table-q | doc-table-pis⟩

⟨*meta | doc-table-q | doc-table-pis⟩
\addEntry{project}{
  id                = {Q03},
  project-area      = {Q},
  number            = {Q03},
  project-status    = {C},
  consider-for-lists = {true},
  reference-only    = {false},
  project-type      = {admin},
  name              = {Central coordination and data stewardship},
  research-area     = {},
  ref-person-id     = {per3,per12},
  collaboration     = {A01,A02,A03,A04,A05,A06,B01,B02,B03,B04,B05,B06,Q01,Q02}
}
⟨/meta | doc-table-q | doc-table-pis⟩

⟨*meta⟩
\addEntry{person}{
  id                = {spokesperson},
  role              = {spokesperson,steering-committee-member},
  period            = {1,2,3},
  lastname          = {Sample},
  firstname         = {Morgan},
  academicdegree    = {Prof. Dr. med.},
  gender            = {f},
  position          = {prof-W3},
  positionText      = {CRC spokesperson and professor of systems medicine},
  doctorateYear     = {1998},
  doctorate         = {Dr. med., Example University},
  degree-programme  = {Medicine, Example University},
  ref-institution-id = {ins1},
  ref-affiliation-id = {aff1},
  orcid             = {0000-0000-0000-0006},
  phone             = {+49 000 100-6000},
  email             = {morgan.sample@example.org}
}
⟨/meta⟩

⟨*meta⟩
\addEntry{person}{
  id                = {man1},
  role              = {manager},
  period            = {2,3},
  firstname         = {Jamie},
  lastname          = {Coordinator},
  academicdegree    = {Dr. rer. nat.},
  gender            = {d},
  position          = {nonResearch},
  positionText      = {Scientific manager},
  doctorateYear     = {2012},
  doctorate         = {Dr. rer. nat., Partner University},
  degree-programme  = {Life Sciences, Partner University},
  ref-institution-id = {ins2},
```

```
19077   ref-affiliation-id = {aff2},
19078   orcid              = {0000-0000-0000-0007},
19079   phone              = {+49 000 200-7000},
19080   email              = {jamie.coordinator@example.org}
19081 }
19082 ⟨/meta⟩
19083
19084 ⟨*meta⟩
19085 \addEntry{person}{
19086   id                 = {rector},
19087   role               = {rector},
19088   period             = {3},
19089   lastname           = {Rector},
19090   firstname          = {Robin},
19091   academicdegree     = {Prof. Dr.},
19092   gender             = {d},
19093   position           = {prof},
19094   positionText       = {Rector of Example University},
19095   ref-affiliation-id = {aff1},
19096   phone              = {+49 000 100-8000},
19097   email              = {rector@example.org}
19098 }
19099 ⟨/meta⟩
19100
19101 ⟨*meta⟩
19102 \addEntry{person}{
19103   id                 = {rector2},
19104   role               = {rector},
19105   period             = {3},
19106   lastname           = {President},
19107   firstname          = {Casey},
19108   academicdegree     = {Prof. Dr.},
19109   gender             = {d},
19110   position           = {prof},
19111   positionText       = {President of Partner University},
19112   ref-affiliation-id = {aff2},
19113   phone              = {+49 000 200-8000},
19114   email              = {president@partner.example.org}
19115 }
19116 ⟨/meta⟩
19117
19118 ⟨*meta | doc-table-a | doc-table-q | doc-table-pis⟩
19119 \addEntry{affiliation}{
19120   id                  = {aff3},
19121   name                = {Northbridge University},
19122   abbreviation        = {NU},
19123   addressStreet       = {Science Avenue 3},
19124   addressZIP          = {34567},
19125   location            = {Northbridge},
19126   country             = {Germany}
19127 }
19128 ⟨/meta | doc-table-a | doc-table-q | doc-table-pis⟩
19129
19130 ⟨*meta | doc-table-a | doc-table-b | doc-table-q | doc-table-pis⟩
19131 \addEntry{affiliation}{
19132   id                  = {aff4},
19133   name                = {Westhaven Research Centre},
19134   abbreviation        = {WRC},
19135   addressStreet       = {Science Avenue 3},
19136   addressZIP          = {34567},
19137   location            = {Westhaven},
19138   country             = {Germany}
19139 }
19140 ⟨/meta | doc-table-a | doc-table-b | doc-table-q | doc-table-pis⟩
19141
19142 ⟨*meta | doc-table-a | doc-table-q | doc-table-pis⟩
19143 \addEntry{institution}{
19144   id                  = {ins3},
19145   name                = {Centre for Computational Microbiology},
19146   abbreviation        = {CCM},
19147   ref-affiliation-id  = {aff3}
19148 }
19149 ⟨/meta | doc-table-a | doc-table-q | doc-table-pis⟩
19150
```

```
⟨*meta | doc-table-a | doc-table-q | doc-table-pis⟩
\addEntry{institution}{
  id                 = {ins4},
  name               = {Department of Experimental Immunology},
  abbreviation       = {DEI},
  ref-affiliation-id = {aff3}
}
⟨/meta | doc-table-a | doc-table-q | doc-table-pis⟩

⟨*meta | doc-table-a | doc-table-b | doc-table-q | doc-table-pis⟩
\addEntry{institution}{
  id                 = {ins5},
  name               = {Institute of Metabolic Medicine},
  abbreviation       = {IMM},
  ref-affiliation-id = {aff4}
}
⟨/meta | doc-table-a | doc-table-b | doc-table-q | doc-table-pis⟩

⟨*meta | doc-table-a | doc-table-b | doc-table-q | doc-table-pis⟩
\addEntry{institution}{
  id                 = {ins6},
  name               = {Centre for Clinical Translation},
  abbreviation       = {CCT},
  ref-affiliation-id = {aff4}
}
⟨/meta | doc-table-a | doc-table-b | doc-table-q | doc-table-pis⟩

⟨*meta | doc-table-a | doc-table-pis⟩
\addEntry{person}{
  id                 = {per6},
  orcid              = {0000-0000-0000-0016},
  firstname          = {Samira},
  lastname           = {Hartmann},
  academicdegree     = {Prof. Dr. rer. nat.},
  period             = {3},
  role               = {PI,steering-committee-member},
  gender             = {f},
  ref-institution-id = {ins3},
  ref-project-id     = {A02,A03},
  position           = {prof-W2},
  positionText       = {Professor of Systems Medicine},
  doctorateYear      = {2010},
  doctorate          = {Dr. rer. nat., Example University},
  degree-programme   = {Life Sciences, Example University},
  phone              = {+49 000 300-0006},
  email              = {samira@example.org}
}
⟨/meta | doc-table-a | doc-table-pis⟩

⟨*meta | doc-table-a | doc-table-q | doc-table-pis⟩
\addEntry{person}{
  id                 = {per7},
  firstname          = {Noah},
  lastname           = {Lindberg},
  academicdegree     = {Prof. Dr. rer. nat.},
  period             = {3},
  role               = {PI},
  gender             = {m},
  ref-institution-id = {ins3,ins4},
  ref-project-id     = {A03,A04,Q01},
  position           = {prof-W2},
  positionText       = {Professor of Systems Medicine},
  doctorateYear      = {2010},
  doctorate          = {Dr. rer. nat., Example University},
  degree-programme   = {Life Sciences, Example University},
  phone              = {+49 000 300-0007},
  email              = {noah@example.org}
}
⟨/meta | doc-table-a | doc-table-q | doc-table-pis⟩

⟨*meta | doc-table-a | doc-table-pis⟩
\addEntry{person}{
  id                 = {per8},
  firstname          = {Alexis-Marie},
```

```
19225   lastname            = {Winters-Scholz},
19226   academicdegree      = {Prof. Dr. rer. nat.},
19227   period              = {3},
19228   role                = {PI},
19229   gender              = {d},
19230   ref-institution-id  = {ins4},
19231   ref-project-id      = {A04,A05},
19232   position            = {prof-W2},
19233   positionText        = {Professor of Systems Medicine},
19234   doctorateYear       = {2010},
19235   doctorate           = {Dr. rer. nat., Example University},
19236   degree-programme    = {Life Sciences, Example University},
19237   phone               = {+49 000 300-0008},
19238   email               = {alexis-marie@example.org}
19239 }
19240 ⟨/meta | doc-table-a | doc-table-pis⟩
19241
19242 ⟨*meta | doc-table-a | doc-table-q | doc-table-pis⟩
19243 \addEntry{person}{
19244   id                  = {per9},
19245   firstname           = {Leonie},
19246   lastname            = {Navarro},
19247   academicdegree      = {Prof. Dr. rer. nat.},
19248   period              = {3},
19249   role                = {PI},
19250   gender              = {f},
19251   ref-institution-id  = {ins5},
19252   ref-project-id      = {A05,A06,Q02},
19253   position            = {prof-W2},
19254   positionText        = {Professor of Systems Medicine},
19255   doctorateYear       = {2010},
19256   doctorate           = {Dr. rer. nat., Example University},
19257   degree-programme    = {Life Sciences, Example University},
19258   phone               = {+49 000 300-0009},
19259   email               = {leonie@example.org}
19260 }
19261 ⟨/meta | doc-table-a | doc-table-q | doc-table-pis⟩
19262
19263 ⟨*meta | doc-table-a | doc-table-b | doc-table-pis⟩
19264 \addEntry{person}{
19265   id                  = {per10},
19266   firstname           = {Daniel},
19267   lastname            = {Okafor},
19268   academicdegree      = {Prof. Dr. rer. nat.},
19269   period              = {3},
19270   role                = {PI},
19271   gender              = {m},
19272   ref-institution-id  = {ins5,ins6},
19273   ref-project-id      = {A06,B02,B06},
19274   position            = {prof-W2},
19275   positionText        = {Professor of Systems Medicine},
19276   doctorateYear       = {2010},
19277   doctorate           = {Dr. rer. nat., Example University},
19278   degree-programme    = {Life Sciences, Example University},
19279   phone               = {+49 000 300-0010},
19280   email               = {daniel@example.org}
19281 }
19282 ⟨/meta | doc-table-a | doc-table-b | doc-table-pis⟩
19283
19284 ⟨*meta | doc-table-b | doc-table-pis⟩
19285 \addEntry{person}{
19286   id                  = {per11},
19287   firstname           = {Mira},
19288   lastname            = {Sato},
19289   academicdegree      = {Prof. Dr. rer. nat.},
19290   period              = {3},
19291   role                = {PI},
19292   gender              = {f},
19293   ref-institution-id  = {ins6},
19294   ref-project-id      = {B03,B04},
19295   position            = {prof-W2},
19296   positionText        = {Professor of Systems Medicine},
19297   doctorateYear       = {2010},
19298   doctorate           = {Dr. rer. nat., Example University},
```

```
19299   degree-programme    = {Life Sciences, Example University},
19300   phone               = {+49 000 300-0011},
19301   email               = {mira@example.org}
19302 }
19303 ⟨/meta | doc-table-b | doc-table-pis⟩
19304
19305 ⟨*meta | doc-table-b | doc-table-q | doc-table-pis⟩
19306 \addEntry{person}{
19307   id                  = {per12},
19308   firstname           = {Robin},
19309   lastname            = {Keller},
19310   academicdegree      = {Prof. Dr. rer. nat.},
19311   period              = {3},
19312   role                = {PI},
19313   gender              = {d},
19314   ref-institution-id  = {ins1,ins6},
19315   ref-project-id      = {B05,B06,Q03},
19316   position            = {prof-W2},
19317   positionText        = {Professor of Systems Medicine},
19318   doctorateYear       = {2010},
19319   doctorate           = {Dr. rer. nat., Example University},
19320   degree-programme    = {Life Sciences, Example University},
19321   phone               = {+49 000 300-0012},
19322   email               = {robin@example.org}
19323 }
19324 ⟨/meta | doc-table-b | doc-table-q | doc-table-pis⟩
19325
19326 ⟨*meta | doc-table-a | doc-table-pis⟩
19327 \addEntry{project}{
19328   id                  = {A03},
19329   project-area        = {A},
19330   number              = {A03},
19331   project-status      = {C},
19332   consider-for-lists  = {true},
19333   reference-only      = {false},
19334   name                = {Microbiome-derived metabolites and immune memory},
19335   project-type        = {research},
19336   research-area       = {2.21-02},
19337   ref-person-id       = {per6,per7},
19338   collaboration       = {A02,A04,B03,Q01}
19339 }
19340 ⟨/meta | doc-table-a | doc-table-pis⟩
19341
19342 ⟨*meta | doc-table-a | doc-table-pis⟩
19343 \addEntry{project}{
19344   id                  = {A04},
19345   project-area        = {A},
19346   number              = {A04},
19347   project-status      = {N},
19348   consider-for-lists  = {true},
19349   reference-only      = {false},
19350   name                = {Spatial niches of host--microbe interactions},
19351   project-type        = {research},
19352   research-area       = {2.21-02},
19353   ref-person-id       = {per7,per8},
19354   collaboration       = {A01,A03,A05,B04,Q01}
19355 }
19356 ⟨/meta | doc-table-a | doc-table-pis⟩
19357
19358 ⟨*meta | doc-table-a | doc-table-pis⟩
19359 \addEntry{project}{
19360   id                  = {A05},
19361   project-area        = {A},
19362   number              = {A05},
19363   project-status      = {C},
19364   consider-for-lists  = {true},
19365   reference-only      = {false},
19366   name                = {Dietary control of microbial community dynamics},
19367   project-type        = {research},
19368   research-area       = {2.21-02},
19369   ref-person-id       = {per8,per9},
19370   collaboration       = {A04,A06,B05,Q02}
19371 }
19372 ⟨/meta | doc-table-a | doc-table-pis⟩
```

```
19373
19374 ⟨*meta | doc-table-a | doc-table-pis⟩
19375 \addEntry{project}{
19376   id                 = {A06},
19377   project-area       = {A},
19378   number             = {A06},
19379   project-status     = {N},
19380   consider-for-lists = {true},
19381   reference-only     = {false},
19382   name               = {Modelling microbial resilience and recovery},
19383   project-type       = {research},
19384   research-area      = {2.21-02},
19385   ref-person-id      = {per9,per10},
19386   collaboration      = {A01,A05,B06,Q01}
19387 }
19388 ⟨/meta | doc-table-a | doc-table-pis⟩
19389
19390 ⟨*meta | doc-table-b | doc-table-pis⟩
19391 \addEntry{project}{
19392   id                 = {B03},
19393   project-area       = {B},
19394   number             = {B03},
19395   project-status     = {C},
19396   consider-for-lists = {true},
19397   reference-only     = {false},
19398   name               = {Immune circuits linking intestine and liver},
19399   project-type       = {research},
19400   research-area      = {2.21-02},
19401   ref-person-id      = {per3,per11},
19402   collaboration      = {A01,A03,B01,B05,Q01}
19403 }
19404 ⟨/meta | doc-table-b | doc-table-pis⟩
19405
19406 ⟨*meta | doc-table-b | doc-table-pis⟩
19407 \addEntry{project}{
19408   id                 = {B04},
19409   project-area       = {B},
19410   number             = {B04},
19411   project-status     = {N},
19412   consider-for-lists = {true},
19413   reference-only     = {false},
19414   name               = {Cross-organ consequences of inflammatory stress},
19415   project-type       = {research},
19416   research-area      = {2.21-02},
19417   ref-person-id      = {per4,per11},
19418   collaboration      = {A04,B02,B06,Q02}
19419 }
19420 ⟨/meta | doc-table-b | doc-table-pis⟩
19421
19422 ⟨*meta | doc-table-b | doc-table-pis⟩
19423 \addEntry{project}{
19424   id                 = {B05},
19425   project-area       = {B},
19426   number             = {B05},
19427   project-status     = {C},
19428   consider-for-lists = {true},
19429   reference-only     = {false},
19430   name               = {Patient-derived models of metabolic disease},
19431   project-type       = {research},
19432   research-area      = {2.21-02},
19433   ref-person-id      = {per5,per12},
19434   collaboration      = {A05,B03,B06,Q01}
19435 }
19436 ⟨/meta | doc-table-b | doc-table-pis⟩
19437
19438 ⟨*meta | doc-table-b | doc-table-pis⟩
19439 \addEntry{project}{
19440   id                 = {B06},
19441   project-area       = {B},
19442   number             = {B06},
19443   project-status     = {N},
19444   consider-for-lists = {true},
19445   reference-only     = {false},
19446   name               = {Translating microbial biomarkers into interventions},
```

```
19447   project-type        = {research},
19448   research-area       = {2.21-02},
19449   ref-person-id       = {per10,per12},
19450   collaboration       = {A01,A06,B04,B05,Q02}
19451 }
19452 ⟨/meta | doc-table-b | doc-table-pis⟩
19453
19454 ⟨*!example-data⟩
19455 ⟨*meta⟩
19456 \addEntry[funding]{RequestedFunding}{
19457   ref-project-id={A02}, funding-type={staff}, category={PhD}, percentage={65},
19458   quantity={year1=1,year2=1,year3=1,year4=1,year5=1}
19459 }
19460 ⟨/meta⟩
19461 ⟨*meta⟩
19462 \addEntry[funding]{RequestedFunding}{
19463   ref-project-id={A02}, funding-type={costs}, category={consumables},
19464   sum={year1=1000,year2=2000,year3=2000,year4=2000,year5=1000}
19465 }
19466 ⟨/meta⟩
19467 ⟨*meta⟩
19468 \addEntry[staff]{RequestedFundingStaff}{
19469   ref-project-id={A02}, ref-person-id={per6},
19470   funding-status={existing}, staff-type={research},
19471   field-of-research={Microbiology}, commitment={8}, funding-source={State funds},
19472   description={Supervises experiments and analysis.}
19473 }
19474 ⟨/meta⟩
19475 ⟨/!example-data⟩

19476
19477 %% Fictional CV fixtures shared by the local CV and the embedded manual PDF.
19478
19479 %% Each PI demonstrates three career stages and all five optional categories.
19480
19481
19482 %% Kim Sample: Microbial systems medicine.
19483
19484 \addEntry[cv]{cv-per1}{
19485   ref-person-id      = {per1},
19486   cv-type            = {mandatory},
19487   periodStart        = {2013},
19488   periodEnd          = {},
19489   positionText       = {Professor and Director},
19490   position           = {Current appointment},
19491   description        = {Leads the mechanistic microbiome programme and
19492     coordinates the shared experimental strategy.},
19493   ref-institution-id = {ins1}
19494 }
19495
19496 \addEntry[cv]{cv-per1}{
19497   ref-person-id      = {per1},
19498   cv-type            = {mandatory},
19499   periodStart        = {2005},
19500   periodEnd          = {2012},
19501   positionText       = {Independent research group leader},
19502   position           = {Independent research},
19503   description        = {Established a research team on microbial metabolites
19504     and epithelial signalling and developed collaborative
19505     methods.},
19506   ref-institution-id = {ins1}
19507 }
19508
19509 \addEntry[cv]{cv-per1}{
19510   ref-person-id      = {per1},
19511   cv-type            = {mandatory},
19512   periodStart        = {2001},
19513   periodEnd          = {2004},
19514   positionText       = {Postdoctoral researcher},
19515   position           = {Postdoctoral training},
19516   description        = {Developed experimental and analytical approaches to
19517     microbial metabolites and epithelial signalling.},
19518   ref-institution-id = {ins2}
19519 }
```

```
19520
19521 \addEntry[cv]{cv-per1}{
19522   ref-person-id      = {per1},
19523   cv-type            = {supplement},
19524   description        = {Research focus: microbial metabolites and epithelial
19525     signalling. A visiting fellowship at the Example
19526     Centre for Interdisciplinary Research supported new
19527     collaborations and exchange of methods.}
19528 }
19529
19530 \addEntry[cv]{cv-per1}{
19531   ref-person-id      = {per1},
19532   cv-type            = {activities},
19533   description        = {Chairs the consortium steering committee and an
19534     annual host--microbiome symposium. Contributes to
19535     peer review and open teaching materials.}
19536 }
19537
19538 \addEntry[cv]{cv-per1}{
19539   ref-person-id      = {per1},
19540   cv-type            = {supervision},
19541   description        = {Mentors laboratory and clinical doctoral researchers
19542     through joint thesis committees. Regular progress
19543     reviews include research integrity and publication
19544     planning.}
19545 }
19546
19547 \addEntry[cv]{cv-per1}{
19548   ref-person-id      = {per1},
19549   cv-type            = {distinction},
19550   description        = {2024: Example Academy fellowship for
19551     interdisciplinary microbiome research. 2021:
19552     consortium mentoring recognition for support of
19553     early-career researchers.}
19554 }
19555
19556 \addEntry[cv]{cv-per1}{
19557   ref-person-id      = {per1},
19558   cv-type            = {other},
19559   description        = {Makes analysis protocols and training resources
19560     available for reuse. No commercial interests related
19561     to the proposed research. All career details and
19562     distinctions in this CV are fictional examples.}
19563 }
19564
19565
19566 %% Alex Example: Computational systems biology.
19567
19568 \addEntry[cv]{cv-per2}{
19569   ref-person-id      = {per2},
19570   cv-type            = {mandatory},
19571   periodStart        = {2016},
19572   periodEnd          = {},
19573   positionText       = {Research group leader},
19574   position           = {Current appointment},
19575   description        = {Develops statistical models linking molecular
19576     measurements with clinical phenotypes.},
19577   ref-institution-id = {ins2}
19578 }
19579
19580 \addEntry[cv]{cv-per2}{
19581   ref-person-id      = {per2},
19582   cv-type            = {mandatory},
19583   periodStart        = {2004},
19584   periodEnd          = {2015},
19585   positionText       = {Independent research group leader},
19586   position           = {Independent research},
19587   description        = {Established a research team on multimodal data
19588     integration and reproducible analysis and developed
19589     collaborative methods.},
19590   ref-institution-id = {ins2}
19591 }
19592
19593 \addEntry[cv]{cv-per2}{
```

```
  ref-person-id      = {per2},
  cv-type            = {mandatory},
  periodStart        = {2000},
  periodEnd          = {2003},
  positionText       = {Postdoctoral researcher},
  position           = {Postdoctoral training},
  description        = {Developed experimental and analytical approaches to
    multimodal data integration and reproducible
    analysis.},
  ref-institution-id = {ins2}
}

\addEntry[cv]{cv-per2}{
  ref-person-id      = {per2},
  cv-type            = {supplement},
  description        = {Research focus: multimodal data integration and
    reproducible analysis. A visiting fellowship at the
    Example Centre for Interdisciplinary Research
    supported new collaborations and exchange of methods.}
}

\addEntry[cv]{cv-per2}{
  ref-person-id      = {per2},
  cv-type            = {activities},
  description        = {Leads the data standards working group and maintains
    the consortium code-review programme. Contributes to
    peer review and open teaching materials.}
}

\addEntry[cv]{cv-per2}{
  ref-person-id      = {per2},
  cv-type            = {supervision},
  description        = {Supervises doctoral projects in statistics and
    biology, with paired computational and experimental
    mentors. Regular progress reviews include research
    integrity and publication planning.}
}

\addEntry[cv]{cv-per2}{
  ref-person-id      = {per2},
  cv-type            = {distinction},
  description        = {2024: Partner University award for open research
    software. 2021: consortium mentoring recognition for
    support of early-career researchers.}
}

\addEntry[cv]{cv-per2}{
  ref-person-id      = {per2},
  cv-type            = {other},
  description        = {Makes analysis protocols and training resources
    available for reuse. No commercial interests related
    to the proposed research. All career details and
    distinctions in this CV are fictional examples.}
}


%% Hansi Meier: Microbiology and host defence.

\addEntry[cv]{cv-per3}{
  ref-person-id      = {per3},
  cv-type            = {mandatory},
  periodStart        = {2018},
  periodEnd          = {},
  positionText       = {Senior research scientist},
  position           = {Current appointment},
  description        = {Coordinates experimental infection models and
    validation of immune mechanisms.},
  ref-institution-id = {ins2}
}

\addEntry[cv]{cv-per3}{
  ref-person-id      = {per3},
  cv-type            = {mandatory},
  periodStart        = {2004},
```

```
19668   periodEnd          = {2017},
19669   positionText       = {Independent research group leader},
19670   position           = {Independent research},
19671   description        = {Established a research team on microbial sensing and
19672     innate immune memory and developed collaborative
19673     methods.},
19674   ref-institution-id = {ins2}
19675 }
19676
19677 \addEntry[cv]{cv-per3}{
19678   ref-person-id      = {per3},
19679   cv-type            = {mandatory},
19680   periodStart        = {2000},
19681   periodEnd          = {2003},
19682   positionText       = {Postdoctoral researcher},
19683   position           = {Postdoctoral training},
19684   description        = {Developed experimental and analytical approaches to
19685     microbial sensing and innate immune memory.},
19686   ref-institution-id = {ins2}
19687 }
19688
19689 \addEntry[cv]{cv-per3}{
19690   ref-person-id      = {per3},
19691   cv-type            = {supplement},
19692   description        = {Research focus: microbial sensing and innate immune
19693     memory. A visiting fellowship at the Example Centre
19694     for Interdisciplinary Research supported new
19695     collaborations and exchange of methods.}
19696 }
19697
19698 \addEntry[cv]{cv-per3}{
19699   ref-person-id      = {per3},
19700   cv-type            = {activities},
19701   description        = {Organises a practical course on host defence and
19702     serves on the laboratory methods committee.
19703     Contributes to peer review and open teaching
19704     materials.}
19705 }
19706
19707 \addEntry[cv]{cv-per3}{
19708   ref-person-id      = {per3},
19709   cv-type            = {supervision},
19710   description        = {Mentors early-career scientists in experimental
19711     design, biosafety and reproducible laboratory
19712     practice. Regular progress reviews include research
19713     integrity and publication planning.}
19714 }
19715
19716 \addEntry[cv]{cv-per3}{
19717   ref-person-id      = {per3},
19718   cv-type            = {distinction},
19719   description        = {2024: Example Society prize for translational
19720     infection research. 2021: consortium mentoring
19721     recognition for support of early-career researchers.}
19722 }
19723
19724 \addEntry[cv]{cv-per3}{
19725   ref-person-id      = {per3},
19726   cv-type            = {other},
19727   description        = {Makes analysis protocols and training resources
19728     available for reuse. No commercial interests related
19729     to the proposed research. All career details and
19730     distinctions in this CV are fictional examples.}
19731 }
19732
19733
19734 %% Kimmi Miller: Molecular tissue regeneration.
19735
19736 \addEntry[cv]{cv-per4}{
19737   ref-person-id      = {per4},
19738   cv-type            = {mandatory},
19739   periodStart        = {2015},
19740   periodEnd          = {},
19741   positionText       = {Professor of Molecular Medicine},
```

```
19742   position           = {Current appointment},
19743   description        = {Connects organoid perturbation experiments with
19744     molecular measurements of tissue recovery.},
19745   ref-institution-id = {ins2}
19746 }
19747
19748 \addEntry[cv]{cv-per4}{
19749   ref-person-id      = {per4},
19750   cv-type            = {mandatory},
19751   periodStart        = {2004},
19752   periodEnd          = {2014},
19753   positionText       = {Independent research group leader},
19754   position           = {Independent research},
19755   description        = {Established a research team on epithelial repair and
19756     tissue regeneration and developed collaborative
19757     methods.},
19758   ref-institution-id = {ins2}
19759 }
19760
19761 \addEntry[cv]{cv-per4}{
19762   ref-person-id      = {per4},
19763   cv-type            = {mandatory},
19764   periodStart        = {2000},
19765   periodEnd          = {2003},
19766   positionText       = {Postdoctoral researcher},
19767   position           = {Postdoctoral training},
19768   description        = {Developed experimental and analytical approaches to
19769     epithelial repair and tissue regeneration.},
19770   ref-institution-id = {ins2}
19771 }
19772
19773 \addEntry[cv]{cv-per4}{
19774   ref-person-id      = {per4},
19775   cv-type            = {supplement},
19776   description        = {Research focus: epithelial repair and tissue
19777     regeneration. A visiting fellowship at the Example
19778     Centre for Interdisciplinary Research supported new
19779     collaborations and exchange of methods.}
19780 }
19781
19782 \addEntry[cv]{cv-per4}{
19783   ref-person-id      = {per4},
19784   cv-type            = {activities},
19785   description        = {Coordinates the organoid methods network and an
19786     interdisciplinary regeneration seminar. Contributes
19787     to peer review and open teaching materials.}
19788 }
19789
19790 \addEntry[cv]{cv-per4}{
19791   ref-person-id      = {per4},
19792   cv-type            = {supervision},
19793   description        = {Supervises doctoral researchers in molecular medicine
19794     and provides mentoring for clinician scientists.
19795     Regular progress reviews include research integrity
19796     and publication planning.}
19797 }
19798
19799 \addEntry[cv]{cv-per4}{
19800   ref-person-id      = {per4},
19801   cv-type            = {distinction},
19802   description        = {2024: Partner University award for collaborative
19803     tissue research. 2021: consortium mentoring
19804     recognition for support of early-career researchers.}
19805 }
19806
19807 \addEntry[cv]{cv-per4}{
19808   ref-person-id      = {per4},
19809   cv-type            = {other},
19810   description        = {Makes analysis protocols and training resources
19811     available for reuse. No commercial interests related
19812     to the proposed research. All career details and
19813     distinctions in this CV are fictional examples.}
19814 }
19815
```

```
19816
19817 %% Friedhelm Redata: Biomedical research training.
19818
19819 \addEntry[cv]{cv-per5}{
19820   ref-person-id      = {per5},
19821   cv-type            = {mandatory},
19822   periodStart        = {2014},
19823   periodEnd          = {},
19824   positionText       = {Professor of Research Training},
19825   position           = {Current appointment},
19826   description        = {Directs the graduate programme and evaluates
19827     interdisciplinary training formats.},
19828   ref-institution-id = {ins1}
19829 }
19830
19831 \addEntry[cv]{cv-per5}{
19832   ref-person-id      = {per5},
19833   cv-type            = {mandatory},
19834   periodStart        = {2003},
19835   periodEnd          = {2013},
19836   positionText       = {Independent research group leader},
19837   position           = {Independent research},
19838   description        = {Established a research team on structured doctoral
19839     training and research integrity and developed
19840     collaborative methods.},
19841   ref-institution-id = {ins1}
19842 }
19843
19844 \addEntry[cv]{cv-per5}{
19845   ref-person-id      = {per5},
19846   cv-type            = {mandatory},
19847   periodStart        = {1999},
19848   periodEnd          = {2002},
19849   positionText       = {Postdoctoral researcher},
19850   position           = {Postdoctoral training},
19851   description        = {Developed experimental and analytical approaches to
19852     structured doctoral training and research integrity.},
19853   ref-institution-id = {ins2}
19854 }
19855
19856 \addEntry[cv]{cv-per5}{
19857   ref-person-id      = {per5},
19858   cv-type            = {supplement},
19859   description        = {Research focus: structured doctoral training and
19860     research integrity. A visiting fellowship at the
19861     Example Centre for Interdisciplinary Research
19862     supported new collaborations and exchange of methods.}
19863 }
19864
19865 \addEntry[cv]{cv-per5}{
19866   ref-person-id      = {per5},
19867   cv-type            = {activities},
19868   description        = {Chairs the graduate curriculum committee and
19869     coordinates the annual doctoral retreat. Contributes
19870     to peer review and open teaching materials.}
19871 }
19872
19873 \addEntry[cv]{cv-per5}{
19874   ref-person-id      = {per5},
19875   cv-type            = {supervision},
19876   description        = {Supports thesis committees, individual development
19877     plans and peer mentoring across all research areas.
19878     Regular progress reviews include research integrity
19879     and publication planning.}
19880 }
19881
19882 \addEntry[cv]{cv-per5}{
19883   ref-person-id      = {per5},
19884   cv-type            = {distinction},
19885   description        = {2024: Example University prize for doctoral
19886     education. 2021: consortium mentoring recognition for
19887     support of early-career researchers.}
19888 }
19889
```

```
\addEntry[cv]{cv-per5}{
  ref-person-id      = {per5},
  cv-type            = {other},
  description        = {Makes analysis protocols and training resources
    available for reuse. No commercial interests related
    to the proposed research. All career details and
    distinctions in this CV are fictional examples.}
}


%% Samira Hartmann: Microbial systems medicine.

\addEntry[cv]{cv-per6}{
  ref-person-id      = {per6},
  cv-type            = {mandatory},
  periodStart        = {2018},
  periodEnd          = {},
  positionText       = {Professor of Systems Medicine},
  position           = {Current appointment},
  description        = {Combines microbial genetics with functional assays of
    host metabolic responses.},
  ref-institution-id = {ins3}
}

\addEntry[cv]{cv-per6}{
  ref-person-id      = {per6},
  cv-type            = {mandatory},
  periodStart        = {2015},
  periodEnd          = {2017},
  positionText       = {Independent research group leader},
  position           = {Independent research},
  description        = {Established a research team on microbial metabolic
    pathways and immune adaptation and developed
    collaborative methods.},
  ref-institution-id = {ins3}
}

\addEntry[cv]{cv-per6}{
  ref-person-id      = {per6},
  cv-type            = {mandatory},
  periodStart        = {2011},
  periodEnd          = {2014},
  positionText       = {Postdoctoral researcher},
  position           = {Postdoctoral training},
  description        = {Developed experimental and analytical approaches to
    microbial metabolic pathways and immune adaptation.},
  ref-institution-id = {ins2}
}

\addEntry[cv]{cv-per6}{
  ref-person-id      = {per6},
  cv-type            = {supplement},
  description        = {Research focus: microbial metabolic pathways and
    immune adaptation. A visiting fellowship at the
    Example Centre for Interdisciplinary Research
    supported new collaborations and exchange of methods.}
}

\addEntry[cv]{cv-per6}{
  ref-person-id      = {per6},
  cv-type            = {activities},
  description        = {Coordinates the pathway-discovery workshop and joint
    protocol reviews across the consortium. Contributes
    to peer review and open teaching materials.}
}

\addEntry[cv]{cv-per6}{
  ref-person-id      = {per6},
  cv-type            = {supervision},
  description        = {Supervises paired microbiology and immunology
    projects, including laboratory exchanges for doctoral
    researchers. Regular progress reviews include
    research integrity and publication planning.}
}
```

```
19964
19965 \addEntry[cv]{cv-per6}{
19966   ref-person-id      = {per6},
19967   cv-type            = {distinction},
19968   description        = {2024: Example Foundation award for microbial systems
19969     research. 2021: consortium mentoring recognition for
19970     support of early-career researchers.}
19971 }
19972
19973 \addEntry[cv]{cv-per6}{
19974   ref-person-id      = {per6},
19975   cv-type            = {other},
19976   description        = {Makes analysis protocols and training resources
19977     available for reuse. No commercial interests related
19978     to the proposed research. All career details and
19979     distinctions in this CV are fictional examples.}
19980 }
19981
19982
19983 %% Noah Lindberg: Spatial immunology.
19984
19985 \addEntry[cv]{cv-per7}{
19986   ref-person-id      = {per7},
19987   cv-type            = {mandatory},
19988   periodStart        = {2018},
19989   periodEnd          = {},
19990   positionText       = {Professor of Systems Medicine},
19991   position           = {Current appointment},
19992   description        = {Links spatial profiling to microscopy and
19993     quantitative descriptions of immune-cell
19994     neighbourhoods.},
19995   ref-institution-id = {ins3}
19996 }
19997
19998 \addEntry[cv]{cv-per7}{
19999   ref-person-id      = {per7},
20000   cv-type            = {mandatory},
20001   periodStart        = {2015},
20002   periodEnd          = {2017},
20003   positionText       = {Independent research group leader},
20004   position           = {Independent research},
20005   description        = {Established a research team on spatial immune niches
20006     and quantitative imaging and developed collaborative
20007     methods.},
20008   ref-institution-id = {ins3}
20009 }
20010
20011 \addEntry[cv]{cv-per7}{
20012   ref-person-id      = {per7},
20013   cv-type            = {mandatory},
20014   periodStart        = {2011},
20015   periodEnd          = {2014},
20016   positionText       = {Postdoctoral researcher},
20017   position           = {Postdoctoral training},
20018   description        = {Developed experimental and analytical approaches to
20019     spatial immune niches and quantitative imaging.},
20020   ref-institution-id = {ins2}
20021 }
20022
20023 \addEntry[cv]{cv-per7}{
20024   ref-person-id      = {per7},
20025   cv-type            = {supplement},
20026   description        = {Research focus: spatial immune niches and
20027     quantitative imaging. A visiting fellowship at the
20028     Example Centre for Interdisciplinary Research
20029     supported new collaborations and exchange of methods.}
20030 }
20031
20032 \addEntry[cv]{cv-per7}{
20033   ref-person-id      = {per7},
20034   cv-type            = {activities},
20035   description        = {Leads the imaging quality-control forum and teaches
20036     the annual spatial-analysis course. Contributes to
20037     peer review and open teaching materials.}
```

```
}

\addEntry[cv]{cv-per7}{
  ref-person-id      = {per7},
  cv-type            = {supervision},
  description        = {Mentors doctoral researchers in image analysis, with
    shared supervision across experimental and
    computational groups. Regular progress reviews
    include research integrity and publication planning.}
}

\addEntry[cv]{cv-per7}{
  ref-person-id      = {per7},
  cv-type            = {distinction},
  description        = {2024: Example Imaging Society early-career research
    prize. 2021: consortium mentoring recognition for
    support of early-career researchers.}
}

\addEntry[cv]{cv-per7}{
  ref-person-id      = {per7},
  cv-type            = {other},
  description        = {Makes analysis protocols and training resources
    available for reuse. No commercial interests related
    to the proposed research. All career details and
    distinctions in this CV are fictional examples.}
}


%% Alexis-Marie Winters-Scholz: Host--microbe interactions.

\addEntry[cv]{cv-per8}{
  ref-person-id      = {per8},
  cv-type            = {mandatory},
  periodStart        = {2018},
  periodEnd          = {},
  positionText       = {Professor of Systems Medicine},
  position           = {Current appointment},
  description        = {Develops experimental models of diet-dependent
    microbial colonisation and mucosal responses.},
  ref-institution-id = {ins4}
}

\addEntry[cv]{cv-per8}{
  ref-person-id      = {per8},
  cv-type            = {mandatory},
  periodStart        = {2015},
  periodEnd          = {2017},
  positionText       = {Independent research group leader},
  position           = {Independent research},
  description        = {Established a research team on dietary perturbations
    and mucosal microbial communities and developed
    collaborative methods.},
  ref-institution-id = {ins4}
}

\addEntry[cv]{cv-per8}{
  ref-person-id      = {per8},
  cv-type            = {mandatory},
  periodStart        = {2011},
  periodEnd          = {2014},
  positionText       = {Postdoctoral researcher},
  position           = {Postdoctoral training},
  description        = {Developed experimental and analytical approaches to
    dietary perturbations and mucosal microbial
    communities.},
  ref-institution-id = {ins2}
}

\addEntry[cv]{cv-per8}{
  ref-person-id      = {per8},
  cv-type            = {supplement},
  description        = {Research focus: dietary perturbations and mucosal
    microbial communities. A visiting fellowship at the
```

```
20112      Example Centre for Interdisciplinary Research
20113      supported new collaborations and exchange of methods.}
20114  }
20115
20116  \addEntry[cv]{cv-per8}{
20117    ref-person-id      = {per8},
20118    cv-type            = {activities},
20119    description        = {Coordinates the experimental-models working group and
20120      a public seminar series on microbiome science.
20121      Contributes to peer review and open teaching
20122      materials.}
20123  }
20124
20125  \addEntry[cv]{cv-per8}{
20126    ref-person-id      = {per8},
20127    cv-type            = {supervision},
20128    description        = {Supervises doctoral projects in microbial ecology and
20129      supports exchange placements between partner
20130      laboratories. Regular progress reviews include
20131      research integrity and publication planning.}
20132  }
20133
20134  \addEntry[cv]{cv-per8}{
20135    ref-person-id      = {per8},
20136    cv-type            = {distinction},
20137    description        = {2024: Example University award for experimental
20138      microbiome research. 2021: consortium mentoring
20139      recognition for support of early-career researchers.}
20140  }
20141
20142  \addEntry[cv]{cv-per8}{
20143    ref-person-id      = {per8},
20144    cv-type            = {other},
20145    description        = {Makes analysis protocols and training resources
20146      available for reuse. No commercial interests related
20147      to the proposed research. All career details and
20148      distinctions in this CV are fictional examples.}
20149  }
20150
20151
20152  %% Leonie Navarro: Metabolic systems biology.
20153
20154  \addEntry[cv]{cv-per9}{
20155    ref-person-id      = {per9},
20156    cv-type            = {mandatory},
20157    periodStart        = {2018},
20158    periodEnd          = {},
20159    positionText       = {Professor of Systems Medicine},
20160    position           = {Current appointment},
20161    description        = {Integrates dietary interventions with metabolic
20162      profiling and predictive modelling.},
20163    ref-institution-id = {ins5}
20164  }
20165
20166  \addEntry[cv]{cv-per9}{
20167    ref-person-id      = {per9},
20168    cv-type            = {mandatory},
20169    periodStart        = {2015},
20170    periodEnd          = {2017},
20171    positionText       = {Independent research group leader},
20172    position           = {Independent research},
20173    description        = {Established a research team on nutrient sensing and
20174      predictive metabolic models and developed
20175      collaborative methods.},
20176    ref-institution-id = {ins5}
20177  }
20178
20179  \addEntry[cv]{cv-per9}{
20180    ref-person-id      = {per9},
20181    cv-type            = {mandatory},
20182    periodStart        = {2011},
20183    periodEnd          = {2014},
20184    positionText       = {Postdoctoral researcher},
20185    position           = {Postdoctoral training},
```

```
20186   description        = {Developed experimental and analytical approaches to
20187     nutrient sensing and predictive metabolic models.},
20188   ref-institution-id = {ins2}
20189 }
20190
20191 \addEntry[cv]{cv-per9}{
20192   ref-person-id      = {per9},
20193   cv-type            = {supplement},
20194   description        = {Research focus: nutrient sensing and predictive
20195     metabolic models. A visiting fellowship at the
20196     Example Centre for Interdisciplinary Research
20197     supported new collaborations and exchange of methods.}
20198 }
20199
20200 \addEntry[cv]{cv-per9}{
20201   ref-person-id      = {per9},
20202   cv-type            = {activities},
20203   description        = {Organises the metabolic modelling summer school and
20204     contributes to graduate admissions panels.
20205     Contributes to peer review and open teaching
20206     materials.}
20207 }
20208
20209 \addEntry[cv]{cv-per9}{
20210   ref-person-id      = {per9},
20211   cv-type            = {supervision},
20212   description        = {Mentors doctoral researchers in model validation,
20213     interdisciplinary communication and career planning.
20214     Regular progress reviews include research integrity
20215     and publication planning.}
20216 }
20217
20218 \addEntry[cv]{cv-per9}{
20219   ref-person-id      = {per9},
20220   cv-type            = {distinction},
20221   description        = {2024: Example Society distinction for integrative
20222     metabolic research. 2021: consortium mentoring
20223     recognition for support of early-career researchers.}
20224 }
20225
20226 \addEntry[cv]{cv-per9}{
20227   ref-person-id      = {per9},
20228   cv-type            = {other},
20229   description        = {Makes analysis protocols and training resources
20230     available for reuse. No commercial interests related
20231     to the proposed research. All career details and
20232     distinctions in this CV are fictional examples.}
20233 }
20234
20235
20236 %% Daniel Okafor: Translational systems medicine.
20237
20238 \addEntry[cv]{cv-per10}{
20239   ref-person-id      = {per10},
20240   cv-type            = {mandatory},
20241   periodStart        = {2018},
20242   periodEnd          = {},
20243   positionText       = {Professor of Systems Medicine},
20244   position           = {Current appointment},
20245   description        = {Connects patient-derived measurements with biomarker
20246     validation and experimental tissue models.},
20247   ref-institution-id = {ins5}
20248 }
20249
20250 \addEntry[cv]{cv-per10}{
20251   ref-person-id      = {per10},
20252   cv-type            = {mandatory},
20253   periodStart        = {2015},
20254   periodEnd          = {2017},
20255   positionText       = {Independent research group leader},
20256   position           = {Independent research},
20257   description        = {Established a research team on microbial biomarkers
20258     and clinical tissue responses and developed
20259     collaborative methods.},
```

```
  ref-institution-id = {ins5}
}

\addEntry[cv]{cv-per10}{
  ref-person-id      = {per10},
  cv-type            = {mandatory},
  periodStart        = {2011},
  periodEnd          = {2014},
  positionText       = {Postdoctoral researcher},
  position           = {Postdoctoral training},
  description        = {Developed experimental and analytical approaches to
    microbial biomarkers and clinical tissue responses.},
  ref-institution-id = {ins2}
}

\addEntry[cv]{cv-per10}{
  ref-person-id      = {per10},
  cv-type            = {supplement},
  description        = {Research focus: microbial biomarkers and clinical
    tissue responses. A visiting fellowship at the
    Example Centre for Interdisciplinary Research
    supported new collaborations and exchange of methods.}
}

\addEntry[cv]{cv-per10}{
  ref-person-id      = {per10},
  cv-type            = {activities},
  description        = {Coordinates the translational data-analysis workshop
    and the clinical assay harmonisation group.
    Contributes to peer review and open teaching
    materials.}
}

\addEntry[cv]{cv-per10}{
  ref-person-id      = {per10},
  cv-type            = {supervision},
  description        = {Supervises clinician scientists and laboratory
    researchers in joint translational thesis projects.
    Regular progress reviews include research integrity
    and publication planning.}
}

\addEntry[cv]{cv-per10}{
  ref-person-id      = {per10},
  cv-type            = {distinction},
  description        = {2024: Westhaven Research Centre translational science
    award. 2021: consortium mentoring recognition for
    support of early-career researchers.}
}

\addEntry[cv]{cv-per10}{
  ref-person-id      = {per10},
  cv-type            = {other},
  description        = {Makes analysis protocols and training resources
    available for reuse. No commercial interests related
    to the proposed research. All career details and
    distinctions in this CV are fictional examples.}
}


%% Mira Sato: Cross-organ immunology.

\addEntry[cv]{cv-per11}{
  ref-person-id      = {per11},
  cv-type            = {mandatory},
  periodStart        = {2018},
  periodEnd          = {},
  positionText       = {Professor of Systems Medicine},
  position           = {Current appointment},
  description        = {Coordinates tissue sampling and comparative analyses
    of inflammatory responses across organs.},
  ref-institution-id = {ins6}
}

```

```
\addEntry[cv]{cv-per11}{
  ref-person-id      = {per11},
  cv-type            = {mandatory},
  periodStart        = {2015},
  periodEnd          = {2017},
  positionText       = {Independent research group leader},
  position           = {Independent research},
  description        = {Established a research team on inflammatory circuits
    between intestine and liver and developed
    collaborative methods.},
  ref-institution-id = {ins6}
}

\addEntry[cv]{cv-per11}{
  ref-person-id      = {per11},
  cv-type            = {mandatory},
  periodStart        = {2011},
  periodEnd          = {2014},
  positionText       = {Postdoctoral researcher},
  position           = {Postdoctoral training},
  description        = {Developed experimental and analytical approaches to
    inflammatory circuits between intestine and liver.},
  ref-institution-id = {ins2}
}

\addEntry[cv]{cv-per11}{
  ref-person-id      = {per11},
  cv-type            = {supplement},
  description        = {Research focus: inflammatory circuits between
    intestine and liver. A visiting fellowship at the
    Example Centre for Interdisciplinary Research
    supported new collaborations and exchange of methods.}
}

\addEntry[cv]{cv-per11}{
  ref-person-id      = {per11},
  cv-type            = {activities},
  description        = {Leads the clinical sample-coordination group and
    teaches a course on cross-organ immunology.
    Contributes to peer review and open teaching
    materials.}
}

\addEntry[cv]{cv-per11}{
  ref-person-id      = {per11},
  cv-type            = {supervision},
  description        = {Mentors doctoral researchers in clinical cohort
    design, sample governance and mechanistic validation.
    Regular progress reviews include research integrity
    and publication planning.}
}

\addEntry[cv]{cv-per11}{
  ref-person-id      = {per11},
  cv-type            = {distinction},
  description        = {2024: Example Clinical Research Society award for
    collaborative immunology. 2021: consortium mentoring
    recognition for support of early-career researchers.}
}

\addEntry[cv]{cv-per11}{
  ref-person-id      = {per11},
  cv-type            = {other},
  description        = {Makes analysis protocols and training resources
    available for reuse. No commercial interests related
    to the proposed research. All career details and
    distinctions in this CV are fictional examples.}
}


%% Robin Keller: Integrative systems medicine.

\addEntry[cv]{cv-per12}{
  ref-person-id      = {per12},
```

```
  cv-type            = {mandatory},
  periodStart        = {2018},
  periodEnd          = {},
  positionText       = {Professor of Systems Medicine},
  position           = {Current appointment},
  description        = {Combines patient-derived models with biomarker
    translation and stewardship of shared research data.},
  ref-institution-id = {ins1}
}

\addEntry[cv]{cv-per12}{
  ref-person-id      = {per12},
  cv-type            = {mandatory},
  periodStart        = {2015},
  periodEnd          = {2017},
  positionText       = {Independent research group leader},
  position           = {Independent research},
  description        = {Established a research team on patient-derived models
    and biomarker translation and developed collaborative
    methods.},
  ref-institution-id = {ins1}
}

\addEntry[cv]{cv-per12}{
  ref-person-id      = {per12},
  cv-type            = {mandatory},
  periodStart        = {2011},
  periodEnd          = {2014},
  positionText       = {Postdoctoral researcher},
  position           = {Postdoctoral training},
  description        = {Developed experimental and analytical approaches to
    patient-derived models and biomarker translation.},
  ref-institution-id = {ins2}
}

\addEntry[cv]{cv-per12}{
  ref-person-id      = {per12},
  cv-type            = {supplement},
  description        = {Research focus: patient-derived models and biomarker
    translation. A visiting fellowship at the Example
    Centre for Interdisciplinary Research supported new
    collaborations and exchange of methods.}
}

\addEntry[cv]{cv-per12}{
  ref-person-id      = {per12},
  cv-type            = {activities},
  description        = {Chairs the consortium reproducibility forum and
    coordinates workshops on reusable clinical research
    data. Contributes to peer review and open teaching
    materials.}
}

\addEntry[cv]{cv-per12}{
  ref-person-id      = {per12},
  cv-type            = {supervision},
  description        = {Co-supervises doctoral researchers across clinical
    and computational projects, with individual
    career-development plans. Regular progress reviews
    include research integrity and publication planning.}
}

\addEntry[cv]{cv-per12}{
  ref-person-id      = {per12},
  cv-type            = {distinction},
  description        = {2024: Example University award for reproducible
    translational medicine. 2021: consortium mentoring
    recognition for support of early-career researchers.}
}

\addEntry[cv]{cv-per12}{
  ref-person-id      = {per12},
  cv-type            = {other},
  description        = {Makes analysis protocols and training resources
```

```
20482      available for reuse. No commercial interests related
20483      to the proposed research. All career details and
20484      distinctions in this CV are fictional examples.}
20485  }
20486
20487  % \iffalse
20488  ⟨/meta-cv⟩
20489  ⟨*meta-tables⟩
20490  % \fi
20491
20492
20493
20494
```

6.2.10 Title Page (Proposal specific)

```
20495  \pdfbookmark{Titlepage}{titlepage}
20496  \begin{titlepage}
20497    \def\tmpLocalDB{meta}%
20498    \vspace*{4em}
20499    \begin{center}%
20500     \large
20501   \crc\,\dfgCRCNumber\\
20502      \vspace*{1.5em}
20503      {\Large\bfseries \dfgCRCName}\\
20504      \dfgCRCNameAddon\\
20505   \vspace*{2em}
20506     \crcLogo[height=2cm]\\
20507      \vspace*{2em}
20508      \theCRCCoordinatingAffiliation\\
20509      \dfgApplicantAffiliationsTF
20510        { }
20511        {\theCRCOtherApplicantAffiliations\\}
20512   \vspace*{2em}
20513      {\Large\bfseries Funding Proposal}\\[1em]
20514   for the \dfgFundingPeriodText\space Funding Period\\
20515   \dfgFundingYear{1}--%
20516   \dfgFundingYear{2}--%
20517   \dfgFundingYear{3}--%
20518   \dfgFundingYear{4}--%
20519   \dfgFundingYear{5}
20520      \dfgIfCVT{\par\textcolor{tableHeadingsFont}{Appendix: Research profiles}}
20521      \dfgIfFinalF{{\par\large\InfoTeX}}
20522     % \iftoggle{crc@chapter}{%
20523     %   \par\vspace*{5em}\par
20524     %   \begin{crcTitleBox}
20525     %       \centering\Huge%
20526     %       {\color{rwthRed}%
20527     %           \ttfamily%
20528     %           content/\textbf{\dfgChapter}.tex}\\
20529     %       \Large\dfgCompiled
20530     %   \end{crcTitleBox}%
20531     % }{}
20532     \vfill
20533     %
20534     %  \crcLogo[height=1cm]
20535     \hfill%
20536     \affiliationLogo[height=1cm]
20537    \end{center}
20538    \clearpage
20539    \checkFile{content/00_titlepage-colophon}
20540  \end{titlepage}
20541  \begin{titlepage}
20542    % setting the default database for general information
20543    \def\tmpLocalDB{meta}
20544    \begin{center}
20545   Proposal for the \dfgFundingPeriodText\space Funding Period of\\
20546   \crc\,\dfgCRCNumber
20547
20548   \enquote{\bfseries\dfgCRCName: \dfgCRCNameAddon}
20549    \end{center}
20550    funded since
20551    \begin{center}
20552     \getEntry{crc}{fundedSince}
```

```
  \end{center}
  for
  \begin{center}
 \dfgFundingYear{1}--%
 \dfgFundingYear{2}--%
 \dfgFundingYear{3}--%
 \dfgFundingYear{4}--%
 \dfgFundingYear{5}
  \end{center}
  Coordinating university:
  \begin{center}
 \theCRCCoordinatingAffiliation
  \end{center}
  \dfgApplicantAffiliationsTF
    { }
    {
      Other applicant
      \dfgOtherApplicantAffiliationsTF{university}{universities}:
      \begin{center}
        \theCRCOtherApplicantAffiliations
      \end{center}
    }
  \Hrule[
   thickness = 1.5pt,
   above     = 2em,
   below     = 2em]

  \begin{minipage}[t]{.49\linewidth}
   \textbf{Spokesperson of\\ the \crc:}\\[1\baselineskip]
    \getPIsWithRole[raster columns=1]{spokesperson}
  \end{minipage}\hfill%
  \begin{minipage}[t]{.49\linewidth}
   \textbf{Management or office of\\the \crc:}\\[1\baselineskip]
    \getPIsWithRole[raster columns=1]{manager}
  \end{minipage}
  \vfill
  \printSignaturesWithRole{spokesperson}{(Spokesperson~of~\crc)}
  \printSignaturesWithRole{rector}
    {(Rector,~chancellor,~or~president~of~
      \getEntry[affiliation]{\theAffiliationOfRoleID}{name})}
\end{titlepage}
\bgroup
\let\cleardoublepage\clearpage% to get the TOC on two pages (left/right)
\pdfbookmark{\contentsname}{Contents}
\tableofcontents
\dfgIfCVT{\KOMAoptions{open=left}}
\egroup
```

6.2.11 Content Files (Proposal specific)

```
\newrefsection
\chapter{General information}
\printThumbIndex{1}
\section{Key data}
\subsection{Governing bodies of the \crc}
% \subsubsection{Spokesperson of the \thisCRC}
% \getPIsWithRole{spokesperson}

\subsubsection*{Steering Committee of the \thisCRC}

\getPIsWithRole{steering-committee-member}

For the third funding period, the steering committee includes representatives
of both research areas and the Integrated Research Training Group.  The
spokesperson and committee members are elected by the CRC general assembly in
accordance with the bylaws.  The composition is reviewed annually with regard
to scientific breadth, career stage, and equitable participation.

\subsection{Project leaders}
\printTable{ProjectLeaders}

\subsection{Participating institutions}
\printList{ParticipatingInstitutions}

\clearpage
```

```
\subsection{Project groups and projects}
\printTable{{Projects}{A}{Microbiota and metabolic pathways}}
\printTable{{Projects}{B}{Immunological circuits}}
\printTable{{Projects}{Q}{Central projects}}
N: New projects started in the \dfgFundingPeriodText\space funding period; %
E: Ending projects not continued in the \dfgFundingPeriodText\space funding
period; %
Research areas according to the German Research Foundation (2024--2028)%
\footnote{\raggedright\url{https://www.dfg.de/resource/blob/331950/fachsystematik-2024-2028-
en.pdf}}:
\printList{ResearchAreasFromProjects}


% For the following sections we want to have them
% numbered until 'subsubsection'
\setcounter{secnumdepth}{4}

\clearpage
\section{Research profile of the \crc} %1.2
\begin{dfgSummaryBox}[title={Spotlights: Moving Forward}]
  \item Resolve causal mechanisms of communication between microbial
    communities, epithelial barriers, and tissue-resident immune cells.
  \item Combine spatial profiling, experimental perturbation, and predictive
    modelling across the participating projects.
  \item Translate shared methods into reproducible services, interoperable
    data, and structured training for researchers in early career phases.
\end{dfgSummaryBox}

%% \FloatBarrier % no images in references list.
\defbibheading{frame-references}[References]{\subsection*{#1}}
\printFrameBibliography[heading=frame-references]


\subsection{Summary of the research programme}%1.2.1

The CRC investigates how microbial and host-derived signals cross epithelial
barriers and influence organ function.  During the previous funding periods,
the consortium established shared cohorts, experimental models, imaging
workflows, and computational methods.  The new programme links these resources
in hypothesis-driven projects that test causality across molecular, cellular,
and tissue scales.

\subsection{Detailed presentation of the research programme}%1.2.2

Project area A examines microbial metabolites and barrier signalling, whereas
project area B focuses on immune circuits and tissue responses.  The central
projects provide imaging, analysis, training, coordination, and research-data
services.  Common samples, harmonised metadata, and reciprocal collaborations
connect the individual work programmes and enable validation across models and
participating institutions.

\subsection{Positioning of the \crc within its general research area}%1.2.3

The programme combines mechanistic microbiome research with systems immunology
and organ physiology.  Its distinguishing feature is the coordinated
validation of candidate signals from discovery cohorts through controlled
experimental systems to tissue-level readouts, supported by shared technology
and transparent data-management standards.

\subsection{National and international cooperation and networking} %1.2.4

The CRC maintains method-oriented collaborations with national infrastructure
networks and international partner laboratories.  Cooperation agreements
define sample and data transfer, authorship, quality assurance, and access to
specialised technologies.  Visiting-researcher and exchange formats are
coordinated through the Integrated Research Training Group.

\section{Research profile of the applicant
  \dfgApplicantAffiliationsTF{university}{universities}} %1.3
\subsection{Strategy and planning}%1.3.1

Example University has identified host--microbiome research as a strategic
priority and supports the CRC through permanent scientific positions, shared
technical platforms, research-data infrastructure, and central administration.
```

```
Annual reviews align institutional investments with the scientific milestones
of the consortium.

\subsection{Staff situation} % 1.3.2

The participating units contribute principal investigators, research staff,
technical personnel, data stewards, and administrative support.  Recruitment
planning prioritises timely appointments, transparent selection procedures,
career development, and continuity of essential technical expertise.

\subsection{Research infrastructure} % 1.3.3

The CRC has access to advanced microscopy, flow cytometry, sequencing,
gnotobiotic facilities, secure data storage, and high-performance computing.
Central projects coordinate access, training, maintenance, and quality control
so that methods and datasets remain comparable across all projects.

\section{Support structures} % 1.4
\subsection{Researchers in early career phases} % 1.4.1

Researchers in early career phases receive structured scientific and career
mentoring, transferable-skills training, annual progress reviews, and access to
methods courses and exchange opportunities organised by \getProject{Q02}.

\addEntry[person]{EarlyCareerResearcher}{
  ref-project-id= {A01},
  id              = {KM},
  lastname      = {Sample},
  firstname     = {Kimmi},
  financed-by   = {DFG},
  category      = {PhD},
  topic         = {Epithelial sensing of microbial metabolites},
  periodStart   = {2025-04},
  periodEnd     = {2029-06}
}
\addEntry[person]{EarlyCareerResearcher}{
  ref-project-id= {B01},
  id              = {KiM},
  lastname      = {Wunderlich},
  firstname     = {Kimmi},
  financed-by   = {DFG},
  category      = {MD},
  topic         = {Immune signatures during microbiome perturbation},
  periodStart   = {2025-04},
  periodEnd     = {2029-06}
}

%% \getEntry[EarlyCareerResearcher]{KM}{lastname}
\printTable{EarlyCareerResearchers}

\subsection{Promotion of equity and diversity} % 1.4.2

Recruitment, supervision, and committee appointments follow transparent
criteria and are monitored by career stage and gender.  Flexible working
arrangements, mentoring, accessibility measures, and targeted career support
are available through the central coordination project.

\addEntry[GenderEquality]{GenderEqualityStaff}{
  position                          = {PhD}, %PhD|PostDoc
  previous-objective-percentage-female = {40},
  status-quo-number-female            = {20},
  status-quo-percentage-female        = {14},
  future-objective-percentage-female   = {40}
}

\addEntry[GenderEquality]{GenderEqualityStaff}{
  position                          = {postDoc}, %PhD|PostDoc
  previous-objective-percentage-female = {22},
  status-quo-number-female            = {34},
  status-quo-percentage-female        = {44},
  future-objective-percentage-female   = {34}
}
% -----

```

```
\addEntry[GenderEquality]{GenderEqualityProjectLeaders}{
  position                          = {postDoc}, %PhD|PostDoc
  previous-objective-percentage-female = {22},
  future-objective-percentage-female   = {34}
}
\addEntry[GenderEquality]{GenderEqualityProjectLeaders}{
  position                          = {groupLeader}, %PhD|PostDoc
  previous-objective-percentage-female = {22},
  future-objective-percentage-female   = {34}
}


\addEntry[GenderEquality]{GenderEqualityProjectLeaders}{
  position                          = {prof-W2}, %PhD|PostDoc
  previous-objective-percentage-female = {22},
  future-objective-percentage-female   = {34}
}

\addEntry[GenderEquality]{GenderEqualityProjectLeaders}{
  position                          = {prof-W3}, %PhD|PostDoc
  previous-objective-percentage-female = {22},
  future-objective-percentage-female   = {34}
}

\clearpage
\subsubsection*{A. Objectives for the participation of female researchers}
\printTable{GenderEqualityStaff}

\subsubsection*{B. Project leaders}
\printTable{GenderEqualityProjectLeaders}

\subsection{Knowledge transfer and science communication} % 1.4.3

The CRC communicates results through open research resources, public lectures,
school and patient-group activities, and dialogue formats with clinical and
societal stakeholders.  Transfer opportunities are assessed early, with clear
procedures for intellectual property, responsible communication, and reusable
research outputs.

\section{Risks in international cooperation} %1.5

International partnerships are reviewed for legal, ethical, export-control,
data-protection, and research-security risks.  Written agreements specify
permitted data and material transfers, access rights, publication principles,
and responsibilities.  The participating universities reassess collaborations
when partners, technologies, or regulatory conditions change.

\section{Considerations on aspects of ecological sustainability in project
  planning and implementation} %1.6

The CRC considers ecological sustainability when planning experiments,
procurement, travel, computing, sample storage, and shared infrastructure.
Projects consolidate measurement campaigns, share equipment and reference
materials, select proportionate data-retention and computing strategies, and
prefer lower-emission travel or remote participation where this is compatible
with the scientific objective.  The steering committee reviews these measures
alongside scientific feasibility, research quality, legal obligations, animal
welfare, and the responsible use of resources.


% ok, let's go back to the default (from base.tex)
\setcounter{secnumdepth}{2}

\endrefsection
\resetboldnames

\chapter{Existing funds and requested funds} %2
\printThumbIndex{2}
\section{Existing funds} % 2.1
\subsection{Overview of existing funds for direct costs} %2.1.1

\addEntry[funding]{PreviousExistingFundsDirectCosts}{
  year        = 1,
  applicant   = 1000,
```

```
20846   participant = 2000,
20847   other-funds = 3000
20848 }
20849 \addEntry[funding]{PreviousExistingFundsDirectCosts}{
20850   year        = 2,
20851   applicant   = 1000,
20852   participant = 2000,
20853   other-funds = 3000
20854 }
20855 \addEntry[funding]{PreviousExistingFundsDirectCosts}{
20856   year        = 3,
20857   applicant   = 1000,
20858   participant = 2000,
20859   other-funds = 3000
20860 }
20861 \addEntry[funding]{PreviousExistingFundsDirectCosts}{
20862   year        = 4,
20863   applicant   = 1000,
20864   participant = 2000,
20865   other-funds = 3000
20866 }
20867 \addEntry[funding]{PreviousExistingFundsDirectCosts}{
20868   year        = 5,
20869   applicant   = 1000,
20870   participant = 2000,
20871   other-funds = 3000
20872 }
20873
20874
20875 % New-period values are declared once in the individual project files below.
20876 % The class restores those later declarations from the preceding LaTeX run's
20877 % auxiliary files into the overview database used here.
20878 \printTable{ExistingFundsDirectCosts}
20879
20880
20881 \subsection{Overview of existing staff} % 2.1.2
20882 % Data are reused from project-level RequestedFundingStaff declarations with
20883 % funding-status={existing}.  No separate overview database is required.
20884 \printTable{OverviewExistingStaff}
20885
20886 \subsection{List of existing instrumentation} % 2.1.2
20887 \addEntry[instrumentation]{existingInstrumentation}{
20888   ref-project-id = {A01},
20889   quantity       = {1},
20890   instrument     = {Confocal laser-scanning microscope},
20891   company        = {Example Instruments GmbH},
20892   year           = {2025},
20893   cost           = {250},
20894   financed-by    = {DFG}
20895 }
20896 \addEntry[instrumentation]{existingInstrumentation}{
20897   ref-project-id = {A01,B01},
20898   quantity       = {2},
20899   instrument     = {Anaerobic workstation},
20900   company        = {Laboratory Systems AG},
20901   year           = {2024},
20902   cost           = {80},
20903   financed-by    = {Institutional funds}
20904 }
20905
20906 \printTable{ExistingInstrumentation}
20907
20908 \section{Previous and requested funds} %2.2
20909 \subsection{Overview} % 2.2.1
20910
20911 \addEntry[funding]{PreviousRequestedFunding}{
20912   year            = 1,
20913   staff           = 1000,
20914   costs           = 2000,
20915   instrumentation = 3000,
20916   fellowships     = 4000,
20917   globalfunds     = 5000
20918 }
20919 \addEntry[funding]{PreviousRequestedFunding}{
```

```
20920   year            = 2,
20921   staff           = 1000,
20922   costs           = 2000,
20923   instrumentation = 3000,
20924   fellowships     = 4000,
20925   globalfunds     = 5000
20926 }
20927 \addEntry[funding]{PreviousRequestedFunding}{
20928   year            = 3,
20929   staff           = 1000,
20930   costs           = 2000,
20931   instrumentation = 3000,
20932   fellowships     = 4000,
20933   globalfunds     = 5000
20934 }
20935 \addEntry[funding]{PreviousRequestedFunding}{
20936   year            = 4,
20937   staff           = 1000,
20938   costs           = 2000,
20939   instrumentation = 3000,
20940   fellowships     = 4000,
20941   globalfunds     = 5000
20942 }
20943 \addEntry[funding]{PreviousRequestedFunding}{
20944   year            = 5,
20945   staff           = 1000,
20946   costs           = 2000,
20947   instrumentation = 3000,
20948   fellowships     = 4000,
20949   globalfunds     = 5000
20950 }
20951
20952
20953 \printTable{PreviousAndCurrentRequestedFunding}
20954
20955 \subsection{Overview of funds requested for staff} % 2.2.2
20956 % data comes from all the
20957 % \addEntry[funding]{RequestedFunding}{
20958 %    ...
20959 %   category     = {....},
20960 %   funding-type = {staff},
20961 %    ...
20962 % }
20963 \printTable{OverviewOfFundsRequestedForStaff}
20964
20965 \subsection{Overview of funds requested for instrumentation} % 2.2.3
20966
20967 % data comes from all the
20968 % \addEntry[funding]{RequestedFunding}{
20969 %    ...
20970 %   funding-type = {instrumentation},
20971 %    ...
20972 % }
20973 \printTable{OverviewFundsRequestedInstrumentation}
20974
20975
20976 \section{Upkeep of laboratory animals} % 2.3
20977 \addEntry{UpkeepLaboratoryAnimals}{
20978   ref-project-id   = {A01},
20979   species          = {mouse},
20980   quantity         = {1212},
20981   weeks-kept       = {43},
20982   purchasing-costs = {23},
20983   requested-funds  = {100},
20984   existing-funds   = {232}
20985 }
20986 \addEntry{UpkeepLaboratoryAnimals}{
20987   ref-project-id   = {A01,A02},
20988   species          = {rat},
20989   quantity         = {2},
20990   weeks-kept       = {3},
20991   purchasing-costs = {23.54},
20992   requested-funds  = {1230},
20993   existing-funds   = {232}
```

```
}
\addEntry{UpkeepLaboratoryAnimals}{
  ref-project-id   = {B01},
  species          = {mouse-gnotobiotic},
  quantity         = {3},
  weeks-kept       = {43},
  purchasing-costs = {23},
  requested-funds  = {201},
  existing-funds   = {132}
}
\printTable{UpkeepLaboratoryAnimals}

```

6.2.12 Complete continuing-project example

This file demonstrates the complete heading and command structure for a continuing research project (`project-status=C`).

```
\printProjectHead{A01}

\section{Summary}
\label{A01:summary}

Summarise the continuing project's central question, progress, planned work,
methods, and contribution to the Collaborative Research Centre.

\section{Project progress to date}
\label{A01:project-progress-to-date}

\subsection{Report and current state of research}%
\label{A01:report-and-current-state-of-research}

Report the work and results from the previous funding periods, relate them to
the current state of research, and explain how they motivate the new plan.

\FloatBarrier

\projectPublicationsHeading

%% Add all project-specific publication keys before printing the bibliography.
\projectNocite{FAIR2016}
\printProjectBibliography[heading=none]

\section{Project plan}
\label{A01:project-plan}

\begin{aims}
  \addAim{A} Define the underlying mechanism.
  \addAim{B} Validate the mechanism experimentally.
  \addAim{C} Integrate the findings across the CRC.
\end{aims}

Refer to one aim as \getAim{A}, or to several as \getAim{A,B,C}.

\begin{workpackages}
  \addWP{wp1}{
    name={Mechanistic analysis},
    description={Define the underlying mechanism},
    periodStart={1},
    periodEnd={8},
    style={default},
  }

  Describe the work, methods, milestones, risks, and expected results of
  \getWP{wp1}.

  \begin{workpackages}
    %% Sub-workpackages deliberately have no name key: their authored text is
    %% the visible list item, while description is used only in the Gantt chart.
    \addWP{wp1a}{
      description={Establish the experimental system},
      periodStart={1},
      periodEnd={4},
      style={alternative},
```

```
21062       }
21063       Establish and validate the experimental system.
21064
21065       \addWP{wp1b}{
21066         description={Perform the mechanistic experiments},
21067         periodStart={3},
21068         periodEnd={8},
21069         style={important},
21070       }
21071       Perform the mechanistic experiments and define decision points.
21072     \end{workpackages}
21073
21074     \addWP{wp2}{
21075       name={Experimental validation},
21076       description={Validate and integrate the mechanism},
21077       periodStart={7},
21078       periodEnd={16},
21079       style={striped},
21080     }
21081
21082     Describe the validation strategy, expected results, and contingency plan of
21083     \getWP{wp2}.
21084   \end{workpackages}
21085
21086   \printPlot{{Gantt}{A01}}
21087
21088   \FloatBarrier
21089
21090   \section{Relevance of sex, gender and/or diversity in the research
21091     project}
21092   \label{A01:relevance-of-sex-gender-and-diversity}
21093
21094   Explain whether and how sex, gender, and diversity affect the research
21095   questions, design, analysis, and interpretation.
21096
21097   \section{Role within the Collaborative Research
21098     Centre}
21099   \label{A01:role-within-the-collaborative-research-centre}
21100
21101   Describe the project's contribution to the CRC and its principal
21102   collaborations.
21103
21104   %% The default full-width arc layout shows nodes and area rules without edges.
21105   \printPlot{{collaboration}{A01}}
21106   %% To draw the connecting arcs, replace the call above with:
21107   %% \printPlot[arcs=true,caption={Optional additional caption text.}]
21108   %%   {{collaboration}{A01}}
21109   %% Use [layout=heatmap] for the alternative heatmap layout.
21110
21111
21112   \section{Differentiation from other funded
21113     projects}
21114   \label{A01:differentiation-from-other-funded-projects}
21115
21116   Explain how this project differs from, and complements, other funded work of
21117   the project leaders.
21118
21119   \section{Project funding}
21120   \label{A01:project-funding}
21121
21122   \subsection{Previous funding}
21123
21124   Funding of this project within the Collaborative Research Centre started
21125   in July 2019.  Preparatory work was funded by Example University's seed-fund
21126   programme from January 2018 to June 2019 (reference number EU-EXAMPLE-01).
21127
21128   \subsection{Requested funding}
21129
21130   %% Without sum, the class calculates from salary@prof, percentage, and
21131   %% quantity, using half the annual amount in year1 and year5.
21132   \addEntry[funding]{RequestedFunding}{
21133     ref-project-id = {A01},
21134     funding-type   = {staff},
21135     category       = {prof},
```

```
21136   percentage     = {100},
21137   quantity = {
21138     year1 = {2},
21139     year2 = {2},
21140     year3 = {2},
21141     year4 = {2},
21142     year5 = {2}
21143   }
21144 }
21145
21146 %% With sum, these concrete yearly amounts override the central salary rate;
21147 %% year1 and year5 below already represent half-years.
21148 \addEntry[funding]{RequestedFunding}{
21149   ref-project-id = {A01},
21150   funding-type   = {staff},
21151   category       = {PhD},
21152   percentage     = {65},
21153   quantity = {
21154     year1 = {1},
21155     year2 = {1},
21156     year3 = {1},
21157     year4 = {1},
21158     year5 = {1}
21159   },
21160   sum = {
21161     year1 = {26500},
21162     year2 = {53000},
21163     year3 = {53000},
21164     year4 = {53000},
21165     year5 = {26500}
21166   }
21167 }
21168
21169 \addEntry[funding]{RequestedFunding}{
21170   ref-project-id = {A01},
21171   funding-type       = {costs}, %staff, costs, ...
21172   category   = {Laboratory consumables},
21173   sum = {
21174     year1      =  {2112},
21175     year2      =  {67},
21176     year3      =  {9843},
21177     year4      =  {2375},
21178     year5      =  {983}
21179    }}
21180
21181 \addEntry[funding]{RequestedFunding}{
21182   ref-project-id = {A01},
21183   funding-type       = {costs}, %staff, costs, ...
21184   category   = {Sequencing and data analysis},
21185   sum = {
21186     year1      =  {1000},
21187     year2      =  {2000},
21188     year3      =  {3000},
21189     year4      =  {4000},
21190     year5      =  {5000}
21191    }}
21192
21193 \addEntry[funding]{RequestedFunding}{
21194   ref-project-id = {A01},
21195   funding-type       = {instrumentation}, %staff, costs, ...
21196   category           = {Live-cell imaging system},
21197   sum = {
21198     year1      =  {1000},
21199     year2      =  {2000},
21200     year3      =  {3000},
21201     year4      =  {4000},
21202     year5      =  {5000}
21203    }}
21204
21205 \printTable{{RequestedFunding}{A01}}
21206
21207
21208
21209
```

```
21210
21211 \subsubsection{Requested funding for staff for the new funding period}
21212 \addEntry[staff]{RequestedFundingStaff}{
21213   ref-project-id     = {A01},
21214   funding-status     = {existing},
21215   staff-type         = {research},
21216   ref-person-id      = {per1},
21217   field-of-research  = {Microbiology and systems medicine},
21218   commitment         = {8},
21219   category           = {prof},
21220   funding-source     = {State funds},
21221   description        = {Leads the experimental programme and supervises the
21222     research staff assigned to the project.}
21223 }
21224
21225 \addEntry[staff]{RequestedFundingStaff}{
21226   ref-project-id    = {A01},
21227   funding-status    = {existing},
21228   staff-type        = {nonResearch},
21229   firstname         = {Alex},
21230   lastname          = {Example},
21231   academic-degree   = {M.Sc.},
21232   positionText      = {Technical assistant},
21233   field-of-research = {Laboratory management},
21234   ref-institution-id = {ins1},
21235   commitment        = {20},
21236   category          = {nonResearch},
21237   funding-source    = {Core support},
21238   description       = {Maintains shared laboratory workflows and coordinates
21239     sample logistics.}
21240 }
21241
21242 \addEntry[staff]{RequestedFundingStaff}{
21243   ref-project-id     = {A01},
21244   funding-status     = {requested},
21245   staff-type         = {research},
21246   firstname          = {Researcher},
21247   lastname           = {TBA},
21248   academic-degree    = {Dr. rer. nat.},
21249   positionText       = {Postdoctoral researcher},
21250   field-of-research  = {Host--microbiome interactions},
21251   ref-institution-id = {ins2},
21252   category           = {postDoc},
21253   description        = {Performs the planned mechanistic experiments and
21254     integrates molecular and clinical datasets.}
21255 }
21256
21257 \addEntry[staff]{RequestedFundingStaff}{
21258   ref-project-id    = {A01},
21259   funding-status    = {requested},
21260   staff-type        = {nonResearch},
21261   firstname         = {Taylor},
21262   lastname          = {Demo},
21263   academic-degree   = {B.Sc.},
21264   positionText      = {Research assistant},
21265   field-of-research = {Biobanking and data curation},
21266   ref-institution-id = {ins2},
21267   category          = {assistant},
21268   description       = {Supports biobanking, quality control, and structured
21269     curation of the project datasets.}
21270 }
21271
21272 \printTable{{RequestedFundingStaff}{A01}}
21273
21274 \subsubsection{Requested funding for direct costs for the new funding
21275   period}
21276
21277 \addEntry[funding]{RequestedAndExistingFundingDirectCosts}{
21278   ref-project-id = {A01},
21279   ref-affiliation-id = {aff2},
21280   financed-by = {Partner University core support},
21281   sum = {
21282   year1      =  {1200},
21283   year2      =  {500},
```

```
    year3      =  {21100},
    year4      =  {5600},
    year5      =  {3400}
   }}

  \addEntry[funding]{RequestedAndExistingFundingDirectCosts}{
    ref-project-id = {A01},
    ref-affiliation-id = {aff1},
    financed-by = {Example University core support},
    sum = {
    year1      =  {11100},
    year2      =  {53800},
    year3      =  {21100},
    year4      =  {600},
    year5      =  {38300}
   }}


  \printTable{{RequestedAndExistingFundingDirectCosts}{A01}}

  \begin{FundingDirectCostsTable}[Text]
    Laboratory consumables and antibodies & EUR & 15000 \\
    Single-cell sequencing and spatial profiling & EUR & 12000 \\
    Research data storage and analysis & EUR & 3000 \\
  \end{FundingDirectCostsTable}


  \subsubsection{Requested funding for instrumentation for the new funding
    period}


  \begin{FundingDirectCostsTable}[Text]
    Automated live-cell imaging system & EUR & 95000 \\
    Environmental control module & EUR & 18000 \\
    Analysis workstation and software & EUR & 7000 \\
  \end{FundingDirectCostsTable}


  \printProjectTail
```

6.2.13 Complete new-project example

This file demonstrates the complete heading and command structure for a new research project (`project-status=N`). Its scientific-background section is intentionally named differently from the progress section of a continuing project.

```
  \printProjectHead{A02}

  \section{Summary}
  \label{A02:summary}

  Summarise the new project's central hypothesis, methods, expected results, and
  contribution to the Collaborative Research Centre.

  \section{Research rationale}
  \label{A02:research-rationale}

  \subsection{Current state of research and preliminary work}
  \label{A02:current-state-of-research-and-preliminary-work}

  Describe the relevant state of research, preliminary work, open questions,
  and the scientific rationale for the proposed project.

  \FloatBarrier

  \projectPublicationsHeading
  \projectNocite{FAIR2016}
  \printProjectBibliography[heading=none]

  \section{Project plan}
  \label{A02:project-plan}

  \begin{aims}
```

```
  \addAim{1} Establish the experimental and analytical framework.
  \addAim{2} Test the central hypothesis and validate the findings.
\end{aims}

\begin{workpackages}
  \addWP{wp1}{
    name={Framework and pilot experiments},
    description={Establish the framework and complete pilot experiments},
    periodStart={1},
    periodEnd={7},
    style={default},
  }

  Describe the methods, milestones, expected results, and risks of
  \getWP{wp1} and its contribution to \getAim{1}.

  \addWP{wp2}{
    name={Hypothesis testing and validation},
    description={Test the hypothesis and validate the findings},
    periodStart={6},
    periodEnd={16},
    style={important},
  }

  Describe the validation strategy and contingency plan for \getWP{wp2} and
  \getAim{2}.
\end{workpackages}

\printPlot{{Gantt}{A02}}

\FloatBarrier

\section{Relevance of sex, gender and/or diversity in the research project}
\label{A02:relevance-of-sex-gender-and-diversity}

Explain whether and how sex, gender, and diversity affect the research
questions, design, analysis, and interpretation.

\section{Role within the Collaborative Research Centre}
\label{A02:role-within-the-collaborative-research-centre}

Describe the project's contribution to the CRC and its principal
collaborations.

\printPlot{{ProjectCollaboration}{A02}}

\section{Differentiation from other funded projects of the project leader(s)}
\label{A02:differentiation-from-other-funded-projects}

Explain how this new project differs from, and complements, other funded work
of the project leaders.

\section{Project funding}
\label{A02:project-funding}

\subsection{Previous funding}

State that this is a new CRC project and list related previous funding of the
project leaders where applicable.

\subsection{Requested funding}

%% Automatic staff-cost example: sum is intentionally omitted; the class
%% halves the calculated amounts in year1 and year5.
\addEntry[funding]{RequestedFunding}{
  ref-project-id = {A02},
  funding-type   = {staff},
  category       = {postDoc},
  percentage     = {100},
  quantity = {
    year1 = {1},
    year2 = {1},
    year3 = {1},
    year4 = {1},
```

```
21424       year5 = {1}
21425     }
21426   }
21427
21428   %% Explicit staff-cost example: sum overrides the central salary calculation;
21429   %% the concrete year1 and year5 amounts below already represent half-years.
21430   \addEntry[funding]{RequestedFunding}{
21431     ref-project-id = {A02},
21432     funding-type   = {staff},
21433     category       = {PhD},
21434     percentage     = {65},
21435     quantity = {
21436       year1 = {1},
21437       year2 = {1},
21438       year3 = {1},
21439       year4 = {1},
21440       year5 = {1}
21441     },
21442     sum = {
21443       year1 = {26500},
21444       year2 = {53000},
21445       year3 = {53000},
21446       year4 = {53000},
21447       year5 = {26500}
21448     }
21449   }
21450
21451   \addEntry[funding]{RequestedFunding}{
21452     ref-project-id = {A02},
21453     funding-type   = {costs},
21454     category       = {Consumables},
21455     sum = {
21456       year1 = {2000},
21457       year2 = {2000},
21458       year3 = {2000},
21459       year4 = {2000},
21460       year5 = {2000}
21461     }
21462   }
21463
21464   \addEntry[funding]{RequestedFunding}{
21465     ref-project-id = {A02},
21466     funding-type   = {instrumentation},
21467     category       = {Specialised instrument},
21468     sum = {
21469       year1 = {5000},
21470       year2 = {0},
21471       year3 = {0},
21472       year4 = {0},
21473       year5 = {0}
21474     }
21475   }
21476
21477   \printTable{{RequestedFunding}{A02}}
21478
21479   \subsubsection{Requested funding for staff}
21480
21481   %% When no person database row is needed, all display data can be supplied
21482   %% directly.  Leave academic-degree empty when it is unknown.
21483   \addEntry[staff]{RequestedFundingStaff}{
21484     ref-project-id     = {A02},
21485     funding-status     = {requested},
21486     staff-type         = {research},
21487     firstname          = {Researcher},
21488     lastname           = {TBA},
21489     academic-degree    = {},
21490     positionText       = {Postdoctoral researcher},
21491     field-of-research  = {Experimental systems medicine},
21492     ref-institution-id = {ins1},
21493     category           = {postDoc},
21494     description        = {Establishes the new experimental platform, performs
21495       the mechanistic studies, and analyses the resulting datasets.}
21496   }
21497
```

```
\printTable{{RequestedFundingStaff}{A02}}

Provide the scientific and organisational justification for every requested
staff position.

\subsubsection{Requested funding of direct costs}

\addEntry[funding]{RequestedAndExistingFundingDirectCosts}{
  ref-project-id     = {A02},
  ref-affiliation-id = {aff1},
  financed-by        = {State funds},
  sum = {
    year1 = {500},
    year2 = {500},
    year3 = {500},
    year4 = {500},
    year5 = {500}
  }
}

\printTable{{RequestedAndExistingFundingDirectCosts}{A02}}

\begin{FundingDirectCostsTable}[Text]
  Consumables for pilot experiments & EUR & 10000 \\
  External data analysis & EUR & 5000 \\
\end{FundingDirectCostsTable}

\subsubsection{Requested funding for instrumentation}

\begin{FundingDirectCostsTable}[Text]
  Specialised instrument including installation & EUR & 5000 \\
\end{FundingDirectCostsTable}

\printProjectTail
```

6.2.14 Second continuing-project example

This compact but complete file demonstrates another continuing research project and keeps the funding-category examples used by the dummy proposal.

```
\printProjectHead{B01}

\section{Summary}
\label{B01:summary}

Summarise the continuing project and the work proposed for the new funding
period.

\section{Project progress to date}
\label{B01:project-progress-to-date}

\subsection{Report and current state of research}
\label{B01:report-and-current-state-of-research}

Report the previous work, published and unpublished results, and the current
state of research.

\FloatBarrier

\projectPublicationsHeading
\projectNocite{FAIR2016}
\printProjectBibliography[heading=none]

\section{Project plan}
\label{B01:project-plan}

\begin{aims}
  \addAim{1} Complete the mechanistic analysis.
  \addAim{2} Validate the findings with CRC partners.
\end{aims}

\begin{workpackages}
  \addWP{wp1}{
```

```
21565       name={Mechanistic analysis},
21566       description={Complete the mechanistic analysis},
21567       periodStart={1},
21568       periodEnd={10},
21569       style={default},
21570     }
21571     Describe \getWP{wp1}, including methods, milestones, and risks.
21572
21573     \addWP{wp2}{
21574       name={Collaborative validation},
21575       description={Validate the findings with CRC partners},
21576       periodStart={8},
21577       periodEnd={16},
21578       style={alternative},
21579     }
21580     Describe \getWP{wp2} and its links to \getAim{2}.
21581   \end{workpackages}
21582
21583   \printPlot{{Gantt}{B01}}
21584
21585   \FloatBarrier
21586
21587   \section{Relevance of sex, gender and/or diversity in the research project}
21588   \label{B01:relevance-of-sex-gender-and-diversity}
21589
21590   Explain the relevance of sex, gender, and diversity, or justify why they do
21591   not affect this project's research questions and methods.
21592
21593   \section{Role within the Collaborative Research Centre}
21594   \label{B01:role-within-the-collaborative-research-centre}
21595
21596   Describe the role of the project and its reciprocal collaborations.
21597
21598   \printPlot{{ProjectCollaboration}{B01}}
21599
21600   \section{Differentiation from other funded projects}
21601   \label{B01:differentiation-from-other-funded-projects}
21602
21603   Differentiate the project from other funded work of its project leaders.
21604
21605   \section{Project funding}
21606   \label{B01:project-funding}
21607
21608   \subsection{Previous funding}
21609
21610   State when CRC funding began and list other relevant previous funding.
21611
21612   \subsection{Requested funding}
21613
21614   %% Automatic staff-cost example: sum is intentionally omitted; the class
21615   %% halves the calculated amounts in year1 and year5.
21616   \addEntry[funding]{RequestedFunding}{
21617     ref-project-id = {B01},
21618     funding-type   = {staff},
21619     category       = {groupLeader},
21620     percentage     = {100},
21621     quantity = {
21622       year1 = {2},
21623       year2 = {2},
21624       year3 = {2},
21625       year4 = {2},
21626       year5 = {2}
21627     }
21628   }
21629
21630   %% Explicit staff-cost example: sum overrides the central salary calculation;
21631   %% the concrete year1 and year5 amounts below already represent half-years.
21632   \addEntry[funding]{RequestedFunding}{
21633     ref-project-id = {B01},
21634     funding-type   = {staff},
21635     category       = {postDoc},
21636     percentage     = {100},
21637     quantity = {
21638       year1 = {1},
```

```
21639       year2 = {1},
21640       year3 = {1},
21641       year4 = {1},
21642       year5 = {1}
21643     },
21644     sum = {
21645       year1 = {45000},
21646       year2 = {90000},
21647       year3 = {90000},
21648       year4 = {90000},
21649       year5 = {45000}
21650     }
21651   }
21652
21653   \addEntry[funding]{RequestedFunding}{
21654     ref-project-id = {B01},
21655     funding-type       = {globalfunds}, %staff, costs, ...
21656     category   = {Project-wide data stewardship},
21657     sum = {
21658       year1 = {1000},
21659       year2 = {2000},
21660       year3 = {3000},
21661       year4 = {4000},
21662       year5 = {5000}
21663     }
21664   }
21665
21666   \printTable{{RequestedFunding}{B01}}
21667
21668   \subsubsection{Requested funding for staff for the new funding period}
21669
21670   \addEntry[staff]{RequestedFundingStaff}{
21671     ref-project-id     = {B01},
21672     funding-status     = {requested},
21673     staff-type         = {research},
21674     firstname          = {Researcher},
21675     lastname           = {TBA},
21676     academic-degree    = {},
21677     positionText       = {Research group leader},
21678     field-of-research  = {Translational microbiology},
21679     ref-institution-id = {ins2},
21680     category           = {groupLeader},
21681     description        = {Coordinates the experimental programme and the
21682       collaborative validation studies.}
21683   }
21684
21685   \printTable{{RequestedFundingStaff}{B01}}
21686
21687   \subsubsection{Requested funding for direct costs for the new funding period}
21688
21689   \addEntry[funding]{RequestedAndExistingFundingDirectCosts}{
21690     ref-project-id     = {B01},
21691     ref-affiliation-id = {aff2},
21692     financed-by        = {Institutional funds},
21693     sum = {
21694       year1 = {1000},
21695       year2 = {1000},
21696       year3 = {1000},
21697       year4 = {1000},
21698       year5 = {1000}
21699     }
21700   }
21701
21702   \printTable{{RequestedAndExistingFundingDirectCosts}{B01}}
21703
21704   \begin{FundingDirectCostsTable}[Text]
21705     Experimental consumables & EUR & 10000 \\
21706     Data-processing services & EUR & 5000 \\
21707   \end{FundingDirectCostsTable}
21708
21709   \subsubsection{Requested funding for instrumentation for the new funding
21710     period}
21711
21712   \begin{FundingDirectCostsTable}[Text]
```

```
21713   No instrumentation requested & EUR & 0 \\
21714 \end{FundingDirectCostsTable}
21715
21716 \printProjectTail
```

6.2.15 Complete ending-project example

Ending projects use a deliberately shorter DFG structure: after the general information printed by `\printProjectHead`, they report project history, published results, and closing funding information. They do not contain a new project plan or a request for another funding period.

```
21717 \printProjectHead{A00}
21718
21719 \section{Project history}
21720 \label{A00:project-history}
21721
21722 \subsection{Report}
21723 \label{A00:report}
21724
21725 \begin{projectReport}
21726 Describe the complete funding history, objectives, methods, results, and
21727 contribution of the ending project.  Citations used only in the report are
21728 printed automatically at the end of this environment.  This dummy citation
21729 also demonstrates the exclusion of a result listed below
21730 \autocite{FAIR2016}.
21731 \end{projectReport}
21732
21733 \subsection{Published project results}
21734 \label{A00:published-project-results}
21735
21736 %% Replace the example key with the project's results.  Use the literal value
21737 %% none only when a category genuinely produced no result; leaving a value
21738 %% empty keeps a visible drafting instruction.
21739 \printProjectResults{
21740   quality-assured = {FAIR2016},
21741   other           = none,
21742   patents         = none
21743 }
21744
21745 \section{Funding}
21746 \label{A00:funding}
21747
21748 Funding of this project within the Collaborative Research Centre started in
21749 April 2018.  The project will be completed by the end of the current funding
21750 period.  Replace these dates and, where applicable, add previous funding under
21751 another DFG programme and its reference number.
21752
21753 \subsection{Project staff in the ending funding period}
21754 \label{A00:project-staff-in-the-ending-funding-period}
21755
21756 %% For an ending project, funding-status=requested is printed as
21757 %% ``Staff funded with approved grant money'', matching the DFG form.
21758 \addEntry[staff]{RequestedFundingStaff}{
21759   ref-project-id     = {A00},
21760   funding-status     = {existing},
21761   staff-type         = {research},
21762   ref-person-id      = {per4},
21763   commitment         = {8},
21764   funding-source     = {State funds},
21765   field-of-research  = {Molecular tissue regeneration},
21766   description        = {Led the project, supervised the experimental work,
21767     and integrated its results across the CRC throughout the ending funding
21768     period.}
21769 }
21770
21771 \addEntry[staff]{RequestedFundingStaff}{
21772   ref-project-id     = {A00},
21773   funding-status     = {requested},
21774   staff-type         = {research},
21775   firstname          = {Researcher},
21776   lastname           = {TBA},
21777   academic-degree    = {},
21778   positionText       = {Postdoctoral researcher},
```

```
  field-of-research  = {Regenerative cell biology},
  ref-institution-id = {ins2},
  category           = {postDoc},
  description        = {Completed the final validation experiments and data
    publication from April 2025 until the end of the current funding period.}
}

\printTable{{RequestedFundingStaff}{A00}}

\printProjectTail
```

6.2.16 Complete continuing service-project example

Service projects use the continuing-project headings while the prose and work packages focus on services, resources, access rules, and collaborative use.

```

\printProjectHead{Q01}

\section{Summary}
\label{Q01:summary}

Summarise the service portfolio, its scientific purpose, its users, and the
developments planned for the new funding period.

\section{Project progress to date}
\label{Q01:project-progress-to-date}

\subsection{Report and current state of research}
\label{Q01:report-and-current-state-of-research}

Report completed and ongoing services, usage by CRC projects, technical
developments, quality assurance, and relevant service-project research.

\FloatBarrier

\projectPublicationsHeading
\projectNocite{FAIR2016}
\printProjectBibliography[heading=none]

\section{Project plan}
\label{Q01:project-plan}

\begin{aims}
  \addAim{1} Maintain and quality-assure the core service portfolio.
  \addAim{2} Extend the portfolio for new collaborative requirements.
\end{aims}

\begin{workpackages}
  \addWP{wp1}{
    name={Core service provision},
    description={Provide and quality-assure core services},
    periodStart={1},
    periodEnd={16},
    style={default},
  }
  Describe access, sample or data handover, turnaround, quality assurance,
  responsibilities, and capacity for \getWP{wp1}.

  \addWP{wp2}{
    name={Service development},
    description={Develop and validate new service modules},
    periodStart={3},
    periodEnd={14},
    style={alternative},
  }
  Describe development milestones and the projects participating in
  \getWP{wp2}.
\end{workpackages}

\printPlot{{Gantt}{Q01}}

\FloatBarrier
```

```
21846
21847 \section{Relevance of sex, gender and/or diversity in the research project}
21848 \label{Q01:relevance-of-sex-gender-and-diversity}
21849
21850 Explain relevance for the service methods and the studies supported by them.
21851
21852 \section{Role within the Collaborative Research Centre}
21853 \label{Q01:role-within-the-collaborative-research-centre}
21854
21855 Describe which projects use the services and how priorities, access, and
21856 collaborations are coordinated.
21857
21858 \printPlot{{ProjectCollaboration}{Q01}}
21859
21860 \section{Differentiation from other funded projects}
21861 \label{Q01:differentiation-from-other-funded-projects}
21862
21863 Differentiate the CRC service from existing institutional infrastructure and
21864 other funded service activities.
21865
21866 \section{Project funding}
21867 \label{Q01:project-funding}
21868
21869 \subsection{Previous funding}
21870
21871 State when the service project began and describe relevant previous funding.
21872
21873 \subsection{Requested funding}
21874
21875 %% Automatic staff-cost example: sum is intentionally omitted; the class
21876 %% halves the calculated amounts in year1 and year5.
21877 \addEntry[funding]{RequestedFunding}{
21878   ref-project-id = {Q01},
21879   funding-type   = {staff},
21880   category       = {nonResearch},
21881   percentage     = {65},
21882   quantity = {
21883     year1 = {1},
21884     year2 = {1},
21885     year3 = {1},
21886     year4 = {1},
21887     year5 = {1}
21888   }
21889 }
21890
21891 %% Explicit staff-cost example: sum overrides the central salary calculation;
21892 %% the concrete year1 and year5 amounts below already represent half-years.
21893 \addEntry[funding]{RequestedFunding}{
21894   ref-project-id = {Q01},
21895   funding-type   = {staff},
21896   category       = {assistant},
21897   percentage     = {50},
21898   quantity = {
21899     year1 = {1},
21900     year2 = {1},
21901     year3 = {1},
21902     year4 = {1},
21903     year5 = {1}
21904   },
21905   sum = {
21906     year1 = {9000},
21907     year2 = {18000},
21908     year3 = {18000},
21909     year4 = {18000},
21910     year5 = {9000}
21911   }
21912 }
21913
21914 \addEntry[funding]{RequestedFunding}{
21915   ref-project-id = {Q01},
21916   funding-type       = {costs}, %staff, costs, ...
21917   category   = {Invitation},
21918   sum = {
21919     year1 = {1000},
```

```
    year2 = {2000},
    year3 = {3000},
    year4 = {4000},
    year5 = {5000}
  }
}

\printTable{{RequestedFunding}{Q01}}

\subsubsection{Requested funding for staff for the new funding period}

\addEntry[staff]{RequestedFundingStaff}{
  ref-project-id     = {Q01},
  funding-status     = {requested},
  staff-type         = {nonResearch},
  firstname          = {Service},
  lastname           = {Specialist},
  academic-degree    = {},
  positionText       = {Technical specialist},
  field-of-research  = {Core-facility services},
  ref-institution-id = {ins1},
  category           = {nonResearch},
  description        = {Operates the service platform, performs quality
    control, and supports participating projects.}
}

\printTable{{RequestedFundingStaff}{Q01}}

\subsubsection{Requested funding for direct costs for the new funding period}

\addEntry[funding]{RequestedAndExistingFundingDirectCosts}{
  ref-project-id     = {Q01},
  ref-affiliation-id = {aff1},
  financed-by        = {Core-facility funds},
  sum = {
    year1 = {1000},
    year2 = {1000},
    year3 = {1000},
    year4 = {1000},
    year5 = {1000}
  }
}

\printTable{{RequestedAndExistingFundingDirectCosts}{Q01}}

\begin{FundingDirectCostsTable}[Text]
  Service-specific consumables & EUR & 10000 \\
  Maintenance and quality assurance & EUR & 5000 \\
\end{FundingDirectCostsTable}

\subsubsection{Requested funding for instrumentation for the new funding
  period}

\begin{FundingDirectCostsTable}[Text]
  Service-platform upgrade & EUR & 5000 \\
\end{FundingDirectCostsTable}

\printProjectTail
```

6.2.17 Complete integrated research training group example

The MGK/IRTG project type has its own required narrative and funding headings. This file mirrors that structure instead of pretending it is a conventional research project.

```
\printProjectHead{Q02}

\section{Summary}
\label{Q02:summary}

Summarise the objectives, development, and added value of the Integrated
Research Training Group.

\section{Tabular report}
```

```
\label{Q02:tabular-report}

Provide the required tabular report of all researchers funded by the
Integrated Research Training Group to date.

\section{Qualification programme}
\label{Q02:qualification-programme}

Describe the qualification programme, workshops, courses, retreats, career
development measures, and other training activities.

\section{Management and supervision}
\label{Q02:management-and-supervision}

Describe management responsibilities, recruitment, supervision arrangements,
mentoring, conflict-resolution processes, and quality assurance.

\section{Environment of the Integrated Research Training Group}
\label{Q02:environment-of-the-integrated-research-training-group}

Describe the scientific, institutional, interdisciplinary, and international
training environment.

\section{Interim assessment and outlook}
\label{Q02:interim-assessment-and-outlook}

Assess progress during the current funding period and describe priorities and
measurable objectives for the next funding period.

\section{Project funding}
\label{Q02:project-funding}

\subsection{Previous funding}

The Integrated Research Training Group has been funded within the
Collaborative Research Centre since April 2018.  Replace this date and add any
relevant funding under another programme.

%% Declare all monetary rows before the existing-funds overview: that table
%% compares existing direct-cost resources with the requested direct costs.
%% Automatic staff-cost example: sum is intentionally omitted; the class
%% halves the calculated amounts in year1 and year5.
\addEntry[funding]{RequestedFunding}{
  ref-project-id = {Q02},
  funding-type   = {staff},
  category       = {PhD},
  percentage     = {65},
  quantity = {
    year1 = {1},
    year2 = {1},
    year3 = {1},
    year4 = {1},
    year5 = {1}
  }
}

%% Explicit staff-cost example: sum overrides the central salary calculation;
%% the concrete year1 and year5 amounts below already represent half-years.
\addEntry[funding]{RequestedFunding}{
  ref-project-id = {Q02},
  funding-type   = {staff},
  category       = {nonResearch},
  percentage     = {50},
  quantity = {
    year1 = {1},
    year2 = {1},
    year3 = {1},
    year4 = {1},
    year5 = {1}
  },
  sum = {
    year1 = {15000},
    year2 = {30000},
    year3 = {30000},
```

```
22061       year4 = {30000},
22062       year5 = {15000}
22063     }
22064   }
22065
22066   \addEntry[funding]{RequestedFunding}{
22067     ref-project-id = {Q02},
22068     funding-type   = {costs},
22069     category       = {Qualification programme},
22070     sum = {
22071       year1 = {2000},
22072       year2 = {2000},
22073       year3 = {2000},
22074       year4 = {2000},
22075       year5 = {2000}
22076     }
22077   }
22078
22079   \addEntry[funding]{RequestedFunding}{
22080     ref-project-id = {Q02},
22081     funding-type   = {fellowships},
22082     category       = {Short-term fellowships},
22083     sum = {
22084       year1 = {1000},
22085       year2 = {1000},
22086       year3 = {1000},
22087       year4 = {1000},
22088       year5 = {1000}
22089     }
22090   }
22091
22092   \addEntry[funding]{RequestedFunding}{
22093     ref-project-id = {Q02},
22094     funding-type   = {globalfunds},
22095     category       = {Training and networking},
22096     sum = {
22097       year1 = {3000},
22098       year2 = {3000},
22099       year3 = {3000},
22100       year4 = {3000},
22101       year5 = {3000}
22102     }
22103   }
22104
22105   \addEntry[funding]{RequestedAndExistingFundingDirectCosts}{
22106     ref-project-id     = {Q02},
22107     ref-affiliation-id = {aff2},
22108     financed-by        = {Graduate-school funds},
22109     sum = {
22110       year1 = {1000},
22111       year2 = {1000},
22112       year3 = {1000},
22113       year4 = {1000},
22114       year5 = {1000}
22115     }
22116   }
22117
22118   \addEntry[staff]{RequestedFundingStaff}{
22119     ref-project-id     = {Q02},
22120     funding-status     = {existing},
22121     staff-type         = {nonResearch},
22122     firstname          = {Taylor},
22123     lastname           = {Trainer},
22124     academic-degree    = {},
22125     positionText       = {Training coordinator},
22126     field-of-research  = {Structured doctoral training},
22127     ref-institution-id = {ins2},
22128     commitment         = {20},
22129     funding-source     = {Partner University core funds},
22130     description        = {Coordinates recruitment, course administration,
22131       progress monitoring, mentoring, and quality assurance for the
22132       qualification programme.}
22133   }
22134
```

```
\subsection{Existing funds for the new funding period}

Describe the coordination, training, staff, and direct-cost resources made
available to the Integrated Research Training Group by the participating
institutions.

\subsubsection*{Existing staff}

\printTable{{RequestedFundingStaff}{Q02}}

\printTable{{RequestedAndExistingFundingDirectCosts}{Q02}}

\subsection{Requested funding}

\printTable{{RequestedFunding}{Q02}}

\subsection{Requested funding for staff}

\begin{FundingDirectCostsTable}[Text]
  Doctoral-researcher position: interdisciplinary research and participation
    in the complete qualification programme & EUR & 5000 \\
\end{FundingDirectCostsTable}

\subsection{Requested funding for direct costs}

\begin{FundingDirectCostsTable}[Text]
  Workshops and transferable-skills courses & EUR & 10000 \\
  Visiting researchers and networking & EUR & 5000 \\
\end{FundingDirectCostsTable}

\subsection{Requested funding for fellowships}

\begin{FundingDirectCostsTable}[Text]
  Short-term research fellowships: state the type of fellowship, average
    number of fellows, average duration, monthly allowance per person, and
    justification & EUR & 5000 \\
\end{FundingDirectCostsTable}

\subsection{Requested global funds}

\begin{FundingDirectCostsTable}[Text]
  Training and networking measures: explain the purpose, allocation rules,
    selection process, and administration & EUR & 15000 \\
\end{FundingDirectCostsTable}

\printProjectTail
```

6.2.18 Complete central administrative-project example

The central administrative project has a dedicated DFG structure. It does not reuse the summary, research-progress, publication, project-plan, or instrumentation headings of a continuing research project.

```
\printProjectHead{Q03}

\section{Documentation of the central activities of the Collaborative
  Research Centre}
\label{Q03:documentation-of-central-activities}

Document governance and decision-making, scientific coordination, reporting,
internal communication, data stewardship, publication support, equal-
opportunity measures, early-career support, outreach, and the interfaces with
all applicant and participating institutions.  Distinguish CRC-specific tasks
from permanent institutional duties and state responsibilities, workflows,
results from the current period, and priorities for the new funding period.

\section{Project funding}
\label{Q03:project-funding}

%% The existing-funds overview includes the requested direct-cost total, so
%% all monetary records are declared before either table is printed.
%% Automatic staff-cost example: sum is intentionally omitted.  The class
%% applies the half-year factor to year1 and year5.
```

```
\addEntry[funding]{RequestedFunding}{
  ref-project-id = {Q03},
  funding-type   = {staff},
  category       = {nonResearch},
  percentage     = {100},
  quantity = {
    year1 = {1},
    year2 = {1},
    year3 = {1},
    year4 = {1},
    year5 = {1}
  }
}

%% Explicit staff-cost example: the stated sums override the salary settings;
%% year1 and year5 below already represent half-years.
\addEntry[funding]{RequestedFunding}{
  ref-project-id = {Q03},
  funding-type   = {staff},
  category       = {assistant},
  percentage     = {50},
  quantity = {
    year1 = {1},
    year2 = {1},
    year3 = {1},
    year4 = {1},
    year5 = {1}
  },
  sum = {
    year1 = {12500},
    year2 = {25000},
    year3 = {25000},
    year4 = {25000},
    year5 = {12500}
  }
}

\addEntry[funding]{RequestedFunding}{
  ref-project-id = {Q03},
  funding-type   = {costs},
  category       = {Central coordination and communication},
  sum = {
    year1 = {2000},
    year2 = {2000},
    year3 = {2000},
    year4 = {2000},
    year5 = {2000}
  }
}

\addEntry[funding]{RequestedFunding}{
  ref-project-id = {Q03},
  funding-type   = {globalfunds},
  category       = {Central measures},
  sum = {
    year1 = {2000},
    year2 = {2000},
    year3 = {2000},
    year4 = {2000},
    year5 = {2000}
  }
}

\addEntry[staff]{RequestedFundingStaff}{
  ref-project-id     = {Q03},
  funding-status     = {existing},
  staff-type         = {nonResearch},
  ref-person-id      = {man1},
  field-of-research  = {Research management},
  commitment         = {20},
  funding-source     = {Partner University core funds},
  description        = {Coordinates governance, reporting, internal
    communication, central measures, and interfaces with applicant and
    participating institutions.}
```

```
}

\addEntry[funding]{RequestedAndExistingFundingDirectCosts}{
  ref-project-id     = {Q03},
  ref-affiliation-id = {aff1},
  financed-by        = {Central university funds},
  sum = {
    year1 = {1000},
    year2 = {1000},
    year3 = {1000},
    year4 = {1000},
    year5 = {1000}
  }
}

\subsection{Existing funds for the new funding period}

Describe the central staff, facilities, and direct-cost resources contributed
by the applicant and participating institutions.

\subsubsection*{Existing staff}

\printTable{{RequestedFundingStaff}{Q03}}

\printTable{{RequestedAndExistingFundingDirectCosts}{Q03}}

\subsection{Requested funding for the new funding period}

\printTable{{RequestedFunding}{Q03}}

\subsection{Requested funding for staff}

\begin{FundingDirectCostsTable}[Text]
  Scientific coordination: justify the category, percentage, period, and
    CRC-specific responsibilities & EUR & 5000 \\
\end{FundingDirectCostsTable}

\subsection{Requested funding for direct costs}

\begin{FundingDirectCostsTable}[Text]
  Governance meetings and scientific exchange & EUR & 10000 \\
  Communication and outreach & EUR & 5000 \\
\end{FundingDirectCostsTable}

\subsection{Requested global funds}

\begin{FundingDirectCostsTable}[Text]
  Central measures: explain the purpose, allocation rules, selection process,
    and administration & EUR & 10000 \\
\end{FundingDirectCostsTable}

\printProjectTail


\chapter{Bylaws of the Collaborative Research Centre} %4
\printThumbIndex{4}
\cohead{Bylaws of the \crc}%
\cehead{Bylaws of the \crc}%

\begin{bylaws}
  \item Name, coordinating
    \dfgApplicantAffiliationsTF{university}{universities}, and purpose of the \crc
  \begin{bylaws}
 \item The \crc (CRC) \enquote{\dfgCRCName\space --\space\dfgCRCNameAddon}
      is a legally dependent institution of \theCRCaffiliation.

    \item The \crc conducts interrelated research on microbial signalling,
      epithelial barriers, immune regulation, and organ function.  It is
      divided into research project areas and central projects.

    \item The \crc promotes interaction with other research institutions,
      supports researchers in early career phases, and fosters responsible
      international cooperation, equity, and equal opportunity.
  \end{bylaws}
```

```
22348
22349   \item Membership and governing bodies
22350   \begin{bylaws}
22351     \item Members are the project leaders and persons appointed to central
22352       scientific or administrative responsibilities by the general assembly.
22353     \item The governing bodies are the general assembly, the spokesperson, and
22354       the steering committee.  The general assembly elects the spokesperson
22355       and steering committee for the applicable funding period.
22356     \item The steering committee prepares strategic and budgetary decisions,
22357       monitors milestones, and reports to the general assembly at least once
22358       per year.
22359   \end{bylaws}
22360
22361   \item Decisions and allocation of shared resources
22362   \begin{bylaws}
22363     \item Decisions are normally taken by simple majority of members present;
22364       changes to these bylaws require a two-thirds majority.
22365     \item Shared funds and infrastructure are allocated through documented,
22366       transparent procedures based on scientific need, feasibility, and equal
22367       access across participating projects.
22368     \item Members disclose conflicts of interest and do not participate in the
22369       corresponding deliberation or decision.
22370   \end{bylaws}
22371
22372   \item Research integrity, equity, and conflict resolution
22373   \begin{bylaws}
22374     \item All members follow the applicable rules of good research practice,
22375       data protection, animal welfare, research ethics, and occupational safety.
22376     \item The CRC implements equal-opportunity and accessibility measures and
22377       monitors participation in recruitment, training, and governance.
22378     \item Concerns may be raised confidentially with the spokesperson, the CRC
22379       management, or the competent independent offices of the participating
22380       institutions.
22381   \end{bylaws}
22382
22383   \item Research-data governance
22384   \begin{bylaws}
22385     \item Projects document data, code, samples, access rights, retention, and
22386       publication in project-specific data-management plans.
22387     \item Central data stewardship defines common metadata and quality
22388       standards, manages controlled access, and supports publication according
22389       to the FAIR principles and applicable legal requirements.
22390   \end{bylaws}
22391 \end{bylaws}

22392 \chapter{Declarations} %5
22393 \printThumbIndex{5}
22394 I/We hereby confirm the accuracy of the information contained in the proposal, including the research pro
22395
22396 The \emph{DFG Rules of Procedure for Dealing with Scientific Misconduct}
22397 (\emph{known as VerfOwF})
22398 apply to individuals with a high level of scientific/\-academic responsibility in connection with funding
     academic responsibility in the project proposal submitted by the \dfgApplicantAffiliationsTF{university}{
22399
22400 In submitting this proposal, all project leaders undertake to comply with the
22401 relevant discipline-specific research ethics guidelines, to determine whether
22402 a statement from the responsible ethics committee is required and, where
22403 necessary, to obtain it in good time before the start of funding.  They will
22404 inform the DFG immediately if an ethics committee expresses substantive
22405 concerns or issues a negative statement and will submit the statement if the
22406 DFG requests it.
22407
22408 The DFG takes the protection of your personal data very seriously.
22409 Please note the DFG's data protection notice on research funding, which can be viewed and downloaded at
22410 \url{www.dfg.de/privacy_policy}
22411
22412 Please forward this information to those individuals whose data will be processed by the DFG because they
22413
22414 I/We have read the DFG's data protection notice.
22415
22416 I/We consent to the processing and transfer of special categories of personal
22417 data (including the data of all parties involved) for the purposes stated in the
22418 Privacy Policy if, after careful consideration, I/we provide such data either
22419 now or at a later date.\par
```

```
\vfill

\printSignaturesWithRole{spokesperson}{(Spokesperson~of~\crc)}
\printSignaturesWithRole{rector}
  {(Rector,~chancellor,~or~president~of~
    \getEntry[affiliation]{\theAffiliationOfRoleID}{name})}
```

6.2.19 Backmatter File

The final page suppresses running headers and page numbers and delegates the complete layout to the project-overview table defined by the class.

```
\pagestyle{empty}
\printTable{projectOverview}
```

6.2.20 Project collaboration plot test

This focused test is deliberately independent of the proposal metadata. It contains active, ending, and reference-only projects; duplicate and reverse-only declarations; and calls both supported collaboration layouts.

```
%% Compile from the generated local directory with:
%%   lualatex -interaction=nonstopmode -halt-on-error test-project-collaboration.tex
%%
%% This test is deliberately self-contained.  The image switch is initially
%% false so the fast project option prevents the proposal metadata from loading.
%% Immediately after \begin{document} the image switch is enabled so dummy
%% project entries are retained and the plots below exercise their focused-mode
%% dispatch without disabling the other fast-mode reductions.
\documentclass[
  fastcompile-project = true,
  fastcompile-project-show-images = false,
  english
]{dfg-crc}

\begin{document}

\ExplSyntaxOn
\bool_set_true:N \l_@@_class_fastcompile_project_show_images_bool
\ExplSyntaxOff

%% #1 is either empty or a complete project-area assignment; #2 is the
%% project id, #3 status (C/N/E), #4 collaborations, and #5 reference-only.
\NewDocumentCommand{\AddDummyProjectEntry}{m m m m m}{
  \addEntry{project}{
    id                = {#2},
    #1
    number            = {#2},
    name              = {Dummy project #2},
    project-status    = {#3},
    project-type      = {research},
    consider-for-lists = {true},
    reference-only    = {#5},
    ref-person-id     = {},
    collaboration     = {#4},
    research-area     = {},
    legal-issues      = {
      L1  = {no},
      L1a = {},
      L2  = {no},
      L2a = {},
      L3  = {no},
      L4  = {no},
      L5  = {no},
      L5a = {},
      L6  = {no},
      L7  = {no},
      L7a = {}
    }
  }
}
%% Omitting the optional area leaves the project-area database column absent
```

```
%% until the first plot and therefore exercises both schema and ID fallbacks.
\NewDocumentCommand{\AddDummyProject}{o m m m m}{
  \IfNoValueTF{#1}
    { \AddDummyProjectEntry{}{#2}{#3}{#4}{#5} }
    { \AddDummyProjectEntry{project-area={#1},}{#2}{#3}{#4}{#5} }
}

%% Active project area A.  A11 repeats B06 deliberately to test that an
%% undirected relation declared twice is collapsed.
\AddDummyProject{A02}{C}{}{false}
\AddDummyProject{A03}{C}{}{false}
\AddDummyProject{A05}{C}{}{false}
\AddDummyProject{A09}{C}{}{false}
\AddDummyProject{A10}{C}{}{false}
\AddDummyProject{A11}{C}{B06}{false}
\AddDummyProject{A12}{N}{}{false}
\AddDummyProject{A13}{N}{}{false}

%% A04 is ending and A00 is reference-only.  Neither may occur in a plot.
\AddDummyProject{A04}{E}{}{false}
\AddDummyProject{A00}{C}{}{true}

%% Active project area B.  The A04 relation checks ending-project filtering.
\AddDummyProject{B01}{C}{}{false}
\AddDummyProject{B04}{C}{}{false}
\AddDummyProject{B05}{C}{}{false}
\AddDummyProject{B06}{C}
  {A00,A04,A11,A12,B01,B04,B05,B07,B10}
  {false}
\AddDummyProject{B07}{C}{}{false}
\AddDummyProject{B08}{C}{}{false}
\AddDummyProject{B09}{C}{}{false}
\AddDummyProject{B10}{N}{}{false}

%% Active project area Q.  Q02 declares B06 in the reverse direction only.
\AddDummyProject{Q01}{C}{}{false}
\AddDummyProject{Q02}{C}{B06}{false}
\AddDummyProject{Q03}{C}{}{false}
\AddDummyProject{Q04}{C}{}{false}

%% Focused image mode must retain Gantt rows created through the same data path
%% as ordinary project work packages.
\addEntry[gantt]{gantt-B06}{
  id = {wp1},
  name = {Dummy work package},
  description = {Dummy Gantt bar},
  periodStart = {1},
  periodEnd = {4},
  style = {default}
}

\printPlot{{Gantt}{B06}}

%% The first plot is deliberately called before any project-area key has been
%% entered.  It exercises the missing-column and ID-prefix fallbacks.
\printPlot[layout=heatmap,caption={Many collaborations are shown here.}]
  {{collaboration}{B06}}

\clearpage

%% Explicit project areas need not match the project-ID prefix.  The longer
%% service-area label exercises dynamic label measurement, while the options
%% exercise explicit color mappings for otherwise unknown areas.
\AddDummyProject[C]{X01}{C}{B06}{false}
\AddDummyProject[Shared services]{Y01}{N}{}{false}
\ExplSyntaxOn
\@@_project_count_build:
\prop_get:NnN \g_@@_project_count_area_prop { C } \l_tmpa_tl
\int_compare:nNnF { \l_tmpa_tl } = { 1 }
  { \PackageError{test}{Expected~one~project~in~dynamic~area~C}{} }
\prop_get:NnN \g_@@_project_count_area_prop { SHARED~SERVICES } \l_tmpa_tl
\int_compare:nNnF { \l_tmpa_tl } = { 1 }
  { \PackageError{test}{Expected~one~project~in~dynamic~Shared~services~area}{} }
\ExplSyntaxOff
```

```
\printPlot[
  layout=heatmap,
  area-colors={C=cyan!70!black,Shared services=orange!80!black}
]{{collaboration}{B07}}

\clearpage

%% Select the low arc layout with arcs explicitly. Every displayed arc reaches the
%% same vertical peak, IDs should sit inside the boxes, and each area rule should
%% span its boxes; additional caption text uses the leading options.
\printPlot[
  layout=arc,
  arcs=true,
  area-palette={orange!80!black,violet!75!black,teal!70!black},
  caption={Dummy metadata; A04 and A00 are intentionally omitted.}
]{{collaboration}{B06}}

\clearpage

%% The same full-width node strip can be shown without connecting arcs.
\printPlot[arcs=false]{{collaboration}{B06}}

\clearpage

%% Turning the image switch off again must restore the fast-mode plot skip.
\ExplSyntaxOn
\bool_set_false:N \l_@@_class_fastcompile_project_show_images_bool
\ExplSyntaxOff
\printPlot{{ProjectCollaboration}{B06}}

\end{document}
```

6.2.21 Reference-path lookup regression test

Exercise the public command against real databases, including fan-out, shared destinations, arbitrary database names, missing data and fast mode. The tag hook records the originating row and protected value of every result.

```
\documentclass[english,final=true]{dfg-crc}
\ExplSyntaxOn
\tl_new:N \g_@@_get_test_seen_tl
\int_new:N \g_@@_get_test_count_int
\NewDocumentCommand{\CheckGet}{m m +m}
{
  \tl_gclear:N \g_@@_get_test_seen_tl
  \par\noindent #1:~#3\par
  \str_if_eq:eeF {\tl_to_str:V \g_@@_get_test_seen_tl}{\tl_to_str:n {#2}}
    {\PackageError{get-test}{Failed~#1:~\tl_to_str:V \g_@@_get_test_seen_tl}
      {Expected~\tl_to_str:n {#2}}}
  \int_gincr:N \g_@@_get_test_count_int
  \typeout{GET~TEST~PASS:~#1}
}
% A custom keyset verifies that traversal does not hard-code the four
% built-in relation types or require the source database to match its keyset.
\keys_define:nn {get-test}
{
  id .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{id}{#1},
  name .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{name}{#1},
  code .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{code}{#1},
  ref-person-id .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{ref-person-id}{#1},
  ref-other-unit-id .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{ref-other-unit-id}{#1},
  ref-absent-db-id .code:n = \DTLnewdbentry{\l_@@_database_name_tl}{ref-absent-db-id}{#1},
}
\ExplSyntaxOff
\begin{document}
\DTLcleardb{person}
\DTLcleardb{institution}
\DTLcleardb{affiliation}
\DTLcleardb{project}
\addEntry{affiliation}{id={a1},name={University One},country={Germany}}
\addEntry{affiliation}{id={a2},name={University Two},country={France}}
\addEntry{institution}{id={i1},name={\textbf{Alpha Institute}},ref-affiliation-id={a1}}
\addEntry{institution}{id={i2},name={Beta Institute},ref-affiliation-id={a1}}
```

```
\addEntry{institution}{id={i3},name={Gamma Institute},ref-affiliation-id={a2}}
\addEntry{person}{id={p1},lastname={Example},ref-institution-id={i1},ref-project-id={P1}}
\addEntry{person}{id={p2},lastname={Other},ref-institution-id={i2,i3,i1,i2}}
\addEntry{person}{id={empty},lastname={Empty},ref-institution-id={}}
\addEntry{person}{id={broken},ref-institution-id={unknown,i3}}
\addEntry{project}{id={P1},name={Project One},ref-person-id={p1,p2}}
\addEntry[get-test]{lookup-source}{id={r1},code={alternate},ref-person-id={p1,p2},ref-other-
unit-id={u1}}
\addEntry[get-test]{other-unit}{id={u1},name={Custom Unit},ref-person-id={p1}}
\addEntry[get-test]{lookup-source}{id={r2},ref-absent-db-id={nowhere}}

\ExplSyntaxOn
\RenewDocumentCommand{\dfgShowTag}{m m m o}
{
  \tl_gput_right:Nn \g_@@_get_test_seen_tl {[#4/#1/#2]=#3;}
  #3
}
\ExplSyntaxOff
\CheckGet{direct}{[person/p1/lastname]=Example;}{\get[person]{p1}{lastname}}
\CheckGet{one-hop}{[institution/i1/name]=\textbf{Alpha Institute};}
  {\get[person]{p1}{institution}{name}}
\CheckGet{explicit-key}{[institution/i1/name]=\textbf{Alpha Institute};}
  {\get[person]{p1}{ref-institution-id}{name}}
\CheckGet{two-hops}{[affiliation/a1/name]=University One;}
  {\get[person]{p1}{institution}{affiliation}{name}}
\CheckGet{explicit-chain}{[affiliation/a1/country]=Germany;}
  {\get[person]{p1}{ref-institution-id}{ref-affiliation-id}{country}}
\CheckGet{institution-root}{[affiliation/a1/name]=University One;}
  {\get[institution]{i2}{affiliation}{name}}
\CheckGet{project-reference}{[project/P1/name]=Project One;}
  {\get[person]{p1}{project}{name}}
\CheckGet{person-reference}{[person/p1/lastname]=Example;[person/p2/lastname]=Other;}
  {\get[project]{P1}{person}{lastname}}
\CheckGet{multiple-ids}{[institution/i2/name]=Beta Institute;[institution/i3/name]=Gamma Institute;[insti
  {\get[person]{p2}{institution}{name}}
\CheckGet{shared-affiliation}{[affiliation/a1/name]=University One;[affiliation/a2/name]=University Two;}
  {\get[person]{p2}{institution}{affiliation}{name}}
\CheckGet{three-hops}{[affiliation/a1/name]=University One;[affiliation/a2/name]=University Two;}
  {\get[project]{P1}{person}{institution}{affiliation}{name}}
\CheckGet{named-source}{[person/p1/lastname]=Example;[person/p2/lastname]=Other;}
  {\get[lookup-source]{r1}{person}{lastname}}
\CheckGet{custom-target}{[other-unit/u1/name]=Custom Unit;}
  {\get[lookup-source]{r1}{other-unit}{name}}
\CheckGet{custom-explicit}{[person/p1/lastname]=Example;}
  {\get[lookup-source]{r1}{ref-other-unit-id}{ref-person-id}{lastname}}
\CheckGet{alternative-id}{[person/p1/lastname]=Example;[person/p2/lastname]=Other;}
  {\get[lookup-source]{alternate}{person}[code]{lastname}}
\def\tmpLocalDB{person}
\CheckGet{default-database}{[institution/i1/name]=\textbf{Alpha Institute};}
  {\get{p1}{institution}{name}}
\CheckGet{raw-reference}{[person/p1/ref-institution-id]=i1;}
  {\get[person]{p1}{ref-institution-id}}
\CheckGet{following-group}{[person/p1/lastname]=Example;}
  {\get[person]{p1}{lastname}{\textbf{Following prose.}}}
\CheckGet{field-reference-cycle}{[person/p1/lastname]=Example;[person/p2/lastname]=Other;}
  {\get[person]{p1}{project}{person}{lastname}}
\CheckGet{starred}{}{
  \get*[person]{p1}{\TestLastname=lastname}
  \ifdefstring{\TestLastname}{Example}{}{\PackageError{get-test}{Starred lookup failed}{}}
}
\CheckGet{empty-reference}{}{\get[person]{empty}{institution}{name}}
\CheckGet{missing-root}{}{\get[person]{missing}{institution}{name}}
\CheckGet{missing-leaf}{}{\get[person]{p1}{institution}{absent-field}}
\CheckGet{missing-relation}{}{\get[institution]{i1}{person}{lastname}}
\CheckGet{missing-target-db}{}{\get[lookup-source]{r2}{ref-absent-db-id}{name}}
\CheckGet{missing-source-db}{}{\get[absent-db]{r1}{person}{lastname}}
\CheckGet{broken-branch}{[institution/i3/name]=Gamma Institute;}
  {\get[person]{broken}{institution}{name}}
\CheckGet{after-missing-reset}{[affiliation/a1/name]=University One;}
  {\get[person]{p1}{institution}{affiliation}{name}}
\begingroup
\ExplSyntaxOn
\bool_set_true:N \l_@@_class_fastcompile_project_bool
\RenewDocumentCommand{\dfgFastReference}{m}
```

```
  {\tl_gput_right:Ne \g_@@_get_test_seen_tl {fast:#1;}}
\RenewDocumentCommand{\dfgShowTag}{m m m o}
{
  \tl_gput_right:Ne \g_@@_get_test_seen_tl
    {tag:\IfNoValueTF{#4}{}{#4}/#1/#2;}
  #3
}
\ExplSyntaxOff
\CheckGet{fast-chain}{tag:person/p1/institution/affiliation/name;fast:p1;}
  {\get[person]{p1}{institution}{affiliation}{name}}
\addEntry[get-test]{skipped-source}{id={skip},ref-other-unit-id={u1}}
\CheckGet{fast-skipped-custom}
  {tag:skipped-source/skip/other-unit/person/lastname;fast:skip;}
  {\get[skipped-source]{skip}{other-unit}{person}{lastname}}
\CheckGet{fast-skipped-scalar}{tag:skipped-source/skip/name;fast:skip;}
  {\get[skipped-source]{skip}{name}{\textbf{Following prose.}}}
\CheckGet{fast-star}{}{
  \def\TestLastname{stale}
  \get*[person]{p1}{\TestLastname=lastname}
  \ifdefempty{\TestLastname}{}{\PackageError{get-test}{Fast starred lookup failed}{}}
}
\endgroup
\CheckGet{after-fast-reset}{[person/p1/lastname]=Example;}{\get[person]{p1}{lastname}}
\ExplSyntaxOn
\int_compare:nNnF {\g_@@_get_test_count_int} = {33}
  {\PackageError{get-test}{Not~all~33~cases~ran}{}}
\ExplSyntaxOff
\typeout{REFERENCE LOOKUP TEST PASS: 33 cases}
\end{document}
```

6.2.22 Public-command option regression tests

Small probe renderers check the public dispatchers without depending on a particular table or plot. Database-aware lists retain their real lookup and filtering; only their final cells are replaced with assertions.

```
% The customization file is loaded during class initialization. Probe both
% interfaces there, then verify that later class setup preserves the values.
\AddToHook{file/dfg-customization.tex/before}{%
  \let\DefaultDateBeforeCustomization\dfgDate
  \renewcommand{\dfgLocation}{Direct early location\xspace}%
  \renewcommand{\dfgDate}{Direct early date\xspace}%
  \renewcommand{\dfgTitle}{Direct early title\xspace}%
  \renewcommand{\InfoTeX}{Direct early compiler}%
  \changeSettings{
    dfgLocation={Early location}, dfgDate={Early date},
    dfgTitle={Early title}, InfoTeX={Early compiler}}
}
\documentclass[english,final=true]{dfg-crc}
\ExplSyntaxOn
\int_new:N \g_@@_document_settings_test_count_int
\NewDocumentCommand{\CheckDocumentSetting}{m m m}
{
  \tl_set:No \l_tmpa_tl {#2}
  \tl_if_eq:NnF \l_tmpa_tl {#3}
    {\PackageError{settings-test}{Failed~#1}{Unexpected~document~text.}}
  \int_gincr:N \g_@@_document_settings_test_count_int
}
\ExplSyntaxOff
% Resolve the default date's fast-mode conditional, preserving its spacing
% command. Other checks below deliberately retain deferred metadata lookups.
\ExplSyntaxOn
\group_begin:
\cs_set_eq:NN \xspace \scan_stop:
\cs_set:Npe \ExpandedDefaultDateBeforeCustomization
  {\DefaultDateBeforeCustomization}
\CheckDocumentSetting{generic-date}
  {\ExpandedDefaultDateBeforeCustomization}{<date>\xspace}
\group_end:
\ExplSyntaxOff
\CheckDocumentSetting{early-location}{\dfgLocation}{Early location\xspace}
\CheckDocumentSetting{early-date}{\dfgDate}{Early date\xspace}
\CheckDocumentSetting{early-title}{\dfgTitle}{Early title\xspace}
```

```
\CheckDocumentSetting{early-compiler}{\InfoTeX}{Early compiler}
\begingroup
\changeSettings{
  dfgLocation={Runtime location}, dfgDate={Runtime date},
  dfgTitle={\get[meta]{crc}{name}}, InfoTeX={Runtime compiler}}
\CheckDocumentSetting{runtime-location}{\dfgLocation}{Runtime location\xspace}
\CheckDocumentSetting{runtime-date}{\dfgDate}{Runtime date\xspace}
\CheckDocumentSetting{deferred-title}{\dfgTitle}{\get[meta]{crc}{name}\xspace}
\CheckDocumentSetting{runtime-compiler}{\InfoTeX}{Runtime compiler}
\renewcommand{\dfgLocation}{Direct location\xspace}
\renewcommand{\dfgDate}{Direct date\xspace}
\renewcommand{\dfgTitle}{Direct title\xspace}
\renewcommand{\InfoTeX}{Direct compiler}
\CheckDocumentSetting{direct-location}{\dfgLocation}{Direct location\xspace}
\CheckDocumentSetting{direct-date}{\dfgDate}{Direct date\xspace}
\CheckDocumentSetting{direct-title}{\dfgTitle}{Direct title\xspace}
\CheckDocumentSetting{direct-compiler}{\InfoTeX}{Direct compiler}
\endgroup
\CheckDocumentSetting{local-settings-scope}{\dfgDate}{Early date\xspace}
\ExplSyntaxOn
\int_compare:nNnF {\g_@@_document_settings_test_count_int} = {14}
  {\PackageError{settings-test}{Not~all~14~cases~ran}{}}
\typeout{DOCUMENT~SETTINGS~TEST~PASS:~14~cases}

% Exercise the public customization getter through real key assignments.
% All rates below are synthetic, group-local test inputs, not proposal defaults.
\int_new:N \g_@@_get_value_test_count_int
\cs_new_protected:Npn \@@_test_custom_value:nn #1#2
  {
    \tl_set:Ne \l_tmpa_tl {\getValue{#1}}
    \str_if_eq:VnF \l_tmpa_tl {#2}
      {\PackageError{settings-test}{Unexpected~getValue~result~for~#1}{}}
    \int_gincr:N \g_@@_get_value_test_count_int
  }
\@@_test_custom_value:nn {journalTitle}{journaltitle}
\group_begin:
  \changeSettings{journalTitle=shortjournal}
  \@@_test_custom_value:nn {journalTitle}{shortjournal}
\group_end:
\@@_test_custom_value:nn {journalTitle}{journaltitle}
\clist_map_inline:nn
  {font,fontspec,sansfont,sansfontspec,crcLogoPath,affiliationLogoPath,PIcontactStyle,collaborationAreaCo
one,color@gantt@stripe-two,color@table@headingsBG,color@table@headingsBGalt,color@table@headingsFont,colo
  {
    \group_begin:
    \changeSettings{#1={Getter~probe}}
    \@@_test_custom_value:nn {#1}{Getter~probe}
    \changeSettings{#1={Second~probe}}
    \@@_test_custom_value:nn {#1}{Second~probe}
    \group_end:
  }
\clist_map_inline:nn
  {projectPIOncePerSection,PIReferenceFirstName,projectsTableInstitutionAbbreviations,categoryAbbreviatio
  {
    \group_begin:
    \changeSettings{#1={false}}
    \@@_test_custom_value:nn {#1}{false}
    \changeSettings{#1={true}}
    \@@_test_custom_value:nn {#1}{true}
    \group_end:
  }
\clist_map_inline:nn
  {salary@prof,salary@groupLeader,salary@postDoc,salary@medDoc,salary@PhD,salary@research,salary@nonResea
  {
    \group_begin:
    \changeSettings{#1={17.25}}
    \@@_test_custom_value:nn {#1}{17.25}
    \changeSettings{#1={23.5}}
    \@@_test_custom_value:nn {#1}{23.5}
    \group_end:
  }
\clist_map_inline:nn
  {thumbindex@pattern}
  {
```

```
    \group_begin:
    \changeSettings{#1={17}}
    \@@_test_custom_value:nn {#1}{17}
    \changeSettings{#1={23}}
    \@@_test_custom_value:nn {#1}{23}
    \group_end:
  }
\clist_map_inline:nn
  {thumbindex@width}
  {
    \group_begin:
    \changeSettings{#1={17pt}}
    \@@_test_custom_value:nn {#1}{17.0pt}
    \changeSettings{#1={23pt}}
    \@@_test_custom_value:nn {#1}{23.0pt}
    \group_end:
  }

\group_begin:
\cs_set:Npn \xspace {}
\changeSettings{dfgLocation=Here,dfgDate=Today,dfgTitle=Title,InfoTeX=Compiler,
  collaborationAreaPalette={red,blue},thumbindex@topmargin=17pt,
  thumbindex@bottommargin=23pt,thumbindex@orientation=inwards,
  animalHousing@mouse=0.85,salary@postDoc=90000}
\@@_test_custom_value:nn {dfgLocation}{Here}
\@@_test_custom_value:nn {dfgDate}{Today}
\@@_test_custom_value:nn {dfgTitle}{Title}
\@@_test_custom_value:nn {InfoTeX}{Compiler}
\@@_test_custom_value:nn {collaborationAreaPalette}{red,blue}
\changeSettings{collaborationAreaPalette={}}
\@@_test_custom_value:nn {collaborationAreaPalette}{red,blue}
\@@_test_custom_value:nn {thumbindex@topmargin}{17.0pt}
\@@_test_custom_value:nn {thumbindex@bottommargin}{23.0pt}
\@@_test_custom_value:nn {thumbindex@orientation}{inwards}
\changeSettings{thumbindex@topmargin=auto,thumbindex@bottommargin=auto,
  thumbindex@orientation=outwards}
\@@_test_custom_value:nn {thumbindex@topmargin}{auto}
\@@_test_custom_value:nn {thumbindex@bottommargin}{auto}
\@@_test_custom_value:nn {thumbindex@orientation}{outwards}
\@@_test_custom_value:nn {~animalHousing@mouse~}{0.85}
\fp_compare:nNnF {2 * \getValue{animalHousing@mouse}} = {1.7}
  {\PackageError{settings-test}{getValue~failed~in~arithmetic}{}}
\group_begin:
\changeSettings{animalHousing@mouse=1.25}
\@@_test_custom_value:nn {animalHousing@mouse}{1.25}
\group_end:
\@@_test_custom_value:nn {animalHousing@mouse}{0.85}
\changeSettings{biblatexstyle=shared,biblatexstyleFeature=shared-feature}
\@@_test_custom_value:nn {biblatexstyleCV}{shared}
\@@_test_custom_value:nn {biblatexstyleProposal}{shared}
\changeSettings{biblatexstyleCV=cv-style,biblatexstyleProposal=proposal-style,
  biblatexstyleFeatureCV=cv-feature,biblatexstyleFeatureProposal=proposal-feature}
\bool_set_false:N \l_@@_class_cv_bool
\@@_test_custom_value:nn {biblatexstyle}{proposal-style}
\@@_test_custom_value:nn {biblatexstyleFeature}{proposal-feature}
\bool_set_true:N \l_@@_class_cv_bool
\@@_test_custom_value:nn {biblatexstyle}{cv-style}
\@@_test_custom_value:nn {biblatexstyleFeature}{cv-feature}
\group_end:
% Relative CV spacing follows the line spacing at use, including in getters.
\group_begin:
  \skip_set:Nn \baselineskip {10pt}
  \changeSettings{cvTableAfterSkip={-.5\baselineskip}}
  \@@_test_custom_value:nn {cvTableAfterSkip}{-5.0pt}
  \skip_set:Nn \baselineskip {20pt}
  \@@_test_custom_value:nn {cvTableAfterSkip}{-10.0pt}
  \group_begin:
    \changeSettings{cvTableAfterSkip=0pt}
    \@@_test_custom_value:nn {cvTableAfterSkip}{0.0pt}
  \group_end:
  \@@_test_custom_value:nn {cvTableAfterSkip}{-10.0pt}
\group_end:
\typeout{CUSTOMIZATION~GETTER~TEST~PASS:~\int_use:N\g_@@_get_value_test_count_int~checks}

```

```
22905
22906 \tl_new:N \g_@@_options_test_result_tl
22907 \tl_new:N \l_@@_options_test_mode_tl
22908 \tl_new:N \l_@@_options_test_caption_tl
22909 \dim_new:N \l_@@_options_test_width_dim
22910 \int_new:N \g_@@_options_test_count_int
22911 \keys_define:nn {dfg-options-test}
22912 {
22913   mode .tl_set:N = \l_@@_options_test_mode_tl,
22914   caption .tl_set:N = \l_@@_options_test_caption_tl,
22915 }
22916 \cs_new_protected:Npn \@@_options_test_probe:nnn #1#2#3
22917 {
22918   \tl_set:Nn \l_@@_options_test_mode_tl {empty}
22919   \tl_clear:N \l_@@_options_test_caption_tl
22920   \keys_set:nn {dfg-options-test} {#2}
22921   \tl_gput_right:Ne \g_@@_options_test_result_tl
22922     {#1|\l_@@_options_test_mode_tl|\l_@@_options_test_caption_tl|#3}
22923 }
22924 \NewDocumentCommand{\OptionProbeList}{O{mode=default}}
22925   {\@@_options_test_probe:nnn {list}{#1}{}}
22926 \NewDocumentCommand{\OptionProbePlot}{O{mode=default}}
22927   {\@@_options_test_probe:nnn {plot}{#1}{}}
22928 \NewDocumentCommand{\OptionProbeTable}{O{mode=default}}
22929 {
22930   \int_compare:nNnF {\value{rowNumber}} = {0}
22931     {\PackageError{options-test}{Table~row~counter~was~not~reset}{}}
22932   \@@_options_test_probe:nnn {table}{#1}{}
22933 }
22934 \NewDocumentCommand{\OptionArgumentsList}{O{mode=default} m m}
22935   {\@@_options_test_probe:nnn {list}{#1}{#2/#3}}
22936 \NewDocumentCommand{\OptionArgumentsPlot}{O{mode=default} m m}
22937   {\@@_options_test_probe:nnn {plot}{#1}{#2/#3}}
22938 \NewDocumentCommand{\OptionArgumentsTable}{O{mode=default} m m}
22939   {\@@_options_test_probe:nnn {table}{#1}{#2/#3}}
22940 \NewDocumentCommand{\CheckOptions}{m m +m}
22941 {
22942   \tl_gclear:N \g_@@_options_test_result_tl
22943   #3
22944   \str_if_eq:eeF {\g_@@_options_test_result_tl} {#2}
22945   {
22946     \PackageError{options-test}{Failed~#1:~\g_@@_options_test_result_tl}
22947       {Expected~#2.}
22948   }
22949   \int_gincr:N \g_@@_options_test_count_int
22950   \typeout{OPTIONS~TEST~PASS:~#1}
22951 }
22952 % Keep the real database lookup and option parsing; inspect the resulting
22953 % institution ID and boolean settings at the final formatting boundary.
22954 \cs_set_protected:Npn \_@@_one_institution:n #1
22955 {
22956   \tl_gput_right:Ne \g_@@_options_test_result_tl
22957   {
22958     #1|
22959     \bool_if:NTF \l_@@_institution_abbreviation_bool {1}{0}
22960     \bool_if:NTF \l_@@_narrow_bool {1}{0}
22961     \bool_if:NTF \l_@@_noaddr_bool {1}{0}
22962     \bool_if:NTF \l_@@_nozip_bool {1}{0}
22963     \bool_if:NTF \l_@@_noloc_bool {1}{0}
22964   }
22965 }
22966 % Keep the real PI filtering and raster, but use a minimal box to measure
22967 % the available column width independently of the card's text/padding.
22968 \cs_set_protected:Npn \__getperson_one:n #1
22969 {
22970   \begin{tcolorbox}[blankest]
22971     \dim_compare:nNnT
22972       {\dim_abs:n{\linewidth-\l_@@_options_test_width_dim}} > {.1pt}
22973       {\PackageError{options-test}{PI~raster~column~width~is~wrong}{}}
22974     \tl_gput_right:Ne \g_@@_options_test_result_tl
22975       {#1\bool_if:NT \l_@@_pi_academicdegree_below_bool {|below}}
22976     PI~#1
22977   \end{tcolorbox}
22978 }
```

```
\NewDocumentCommand{\CheckPIOptions}{m m m +m}
{
  \dim_set:Nn \l_@@_options_test_width_dim
    {(\linewidth-12pt*\int_eval:n{#2-1})/#2}
  \CheckOptions{#1}{#3}{#4}
}
\ExplSyntaxOff

\begin{document}
\begingroup
\changeSettings{animalHousing@mouse=0.85,salary@postDoc=90000}
Test-only mouse housing: \num{\getValue{animalHousing@mouse}}\,EUR per week.\par
Test-only postdoctoral salary: \num{\getValue{salary@postDoc}}\,EUR per year.\par
\endgroup

\section*{Command option regression checks}
\CheckOptions{list-omitted}{list|default||}{\printList{OptionProbe}}
\CheckOptions{list-empty}{list|empty||}{\printList[]{OptionProbe}}
\CheckOptions{list-grouped}{list|default||}{\printList{{OptionProbe}}}
\CheckOptions{list-leading}{list|leading||}{\printList[mode=leading]{OptionProbe}}
\CheckOptions{list-legacy}{list|legacy||}{\printList{OptionProbe}[mode=legacy]}
\CheckOptions{list-precedence}{list|leading||}
  {\printList[mode=leading]{{OptionProbe}}[mode=legacy]}
\CheckOptions{list-arguments}{list|leading|left,right|A01/two words}
  {\printList[mode=leading,caption={left,right}]{{OptionArguments}{A01}{two words}}}
\CheckOptions{plot-omitted}{plot|default||}{\printPlot{OptionProbe}}
\CheckOptions{plot-empty}{plot|empty||}{\printPlot[]{OptionProbe}}
\CheckOptions{plot-grouped}{plot|default||}{\printPlot{{OptionProbe}}}
\CheckOptions{plot-arguments}{plot|leading|left,right|A01/two words}
  {\printPlot[mode=leading,caption={left,right}]{{OptionArguments}{A01}{two words}}}
\CheckOptions{plot-embedded-legacy}{plot|legacy||A01/second}
  {\printPlot{{OptionArguments}[mode=legacy]{A01}{second}}}
\setcounter{rowNumber}{99}
\CheckOptions{table-omitted-and-counter}{table|default||}{\printTable{OptionProbe}}
\CheckOptions{table-empty}{table|empty||}{\printTable[]{OptionProbe}}
\CheckOptions{table-grouped}{table|default||}{\printTable{{OptionProbe}}}
\CheckOptions{table-arguments}{table|leading|left,right|A01/two words}
  {\printTable[mode=leading,caption={left,right}]{{OptionArguments}{A01}{two words}}}

\DTLcleardb{person}
\addEntry{person}{id={default-person},lastname={Default},role={PI},
  period={1,2,3},ref-institution-id={default-institute}}
\DTLnewdb{option-people}
\DTLnewrow{option-people}
\DTLnewdbentry{option-people}{id}{other-person}
\DTLnewdbentry{option-people}{lastname}{Other}
\DTLnewdbentry{option-people}{role}{PI,spokesperson}
\DTLnewdbentry{option-people}{period}{1,2,3}
\DTLnewdbentry{option-people}{ref-institution-id}{other-institute}

\CheckOptions{institutions-default}{default-institute|00000}
  {\printList{{Institutions}{default-person}}}
\CheckOptions{institutions-flags}{other-institute|11111}
  {\printList[database=option-people,abbreviation,narrow,noaddress,nozip,nolocation]
    {{Institutions}{other-person}}}
\CheckOptions{institutions-legacy-database}{other-institute|11000}
  {\InstitutionsList[option-people]{other-person}[abbreviation,narrow]}
\CheckOptions{institutions-precedence}{other-institute|01000}
  {\InstitutionsList[database=option-people,abbreviation=false,narrow]
    {other-person}[abbreviation]}
\CheckOptions{institutions-dispatch-precedence}{other-institute|01000}
  {\printList[database=option-people,abbreviation=false,narrow]
    {{Institutions}{other-person}}[abbreviation]}
\CheckOptions{institutions-empty}{default-institute|00000}
  {\InstitutionsList[]{default-person}}
\CheckOptions{institutions-reset}{default-institute|00000}
  {\InstitutionsList{default-person}}

\CheckPIOptions{pi-default}{3}{default-person}{\getPIsWithRole{PI}}
\CheckPIOptions{pi-leading}{2}{other-person}
  {\getPIsWithRole[database=option-people,raster columns=2]{spokesperson}}
\CheckPIOptions{pi-legacy}{1}{other-person}
  {\getPIsWithRole[option-people]{PI}[raster columns=1]}
\CheckPIOptions{pi-precedence}{2}{other-person}
```

```
23053   {\getPIsWithRole[database=option-people,raster columns=2]{PI}[raster columns=1]}
23054 \CheckPIOptions{pi-degree-below}{3}{default-person|below}
23055   {\getPIsWithRole[academicdegree-below]{PI}}
23056 \CheckPIOptions{pi-degree-legacy}{1}{other-person|below}
23057   {\getPIsWithRole[option-people]{PI}[academicdegree-below,raster columns=1]}
23058 \CheckPIOptions{pi-degree-precedence}{3}{default-person}
23059   {\getPIsWithRole[academicdegree-below=false]{PI}[academicdegree-below]}
23060 \CheckPIOptions{pi-degree-reset}{3}{default-person}{\getPIsWithRole{PI}}
23061 \CheckPIOptions{pi-empty}{3}{default-person}{\getPIsWithRole[]{PI}}
23062 \CheckPIOptions{pi-reset}{3}{default-person}{\getPIsWithRole{PI}}
23063 \CheckPIOptions{pi-role-filter}{3}{}{\getPIsWithRole{spokesperson}}
23064
23065 \ExplSyntaxOn
23066 \int_compare:nNnF {\g_@@_options_test_count_int} = {34}
23067   {\PackageError{options-test}{Not~all~34~cases~ran}{}}
23068 \ExplSyntaxOff
23069 \typeout{COMMAND OPTIONS TEST PASS: 34 cases}
23070
23071 % Render real metadata lookups to check punctuation and option defaults.
23072 \clearpage
23073 \section*{Project PI prose lists}
23074 \addEntry{person}{id={pi-test-a},firstname={Alice},lastname={Able},academicdegree={Dr.}}
23075 \addEntry{person}{id={pi-test-b},firstname={Bob},lastname={Baker},academicdegree={Dr.}}
23076 \addEntry{person}{id={pi-test-c},firstname={Carol},lastname={Clark},academicdegree={Dr.}}
23077 \addEntry{person}{id={pi-test-d},firstname={Dan},lastname={Dover},academicdegree={Dr.}}
23078 \addEntry{project}{id={PI0},ref-person-id={}}
23079 \addEntry{project}{id={PI1},ref-person-id={pi-test-a}}
23080 \addEntry{project}{id={PI2},ref-person-id={pi-test-a,pi-test-b}}
23081 \addEntry{project}{id={PI3},ref-person-id={pi-test-a,pi-test-b,pi-test-c}}
23082 \addEntry{project}{id={PI4},ref-person-id={pi-test-a,pi-test-b,pi-test-c,pi-test-d}}
23083 Zero: [\getPIofProject*{PI0}].\par
23084 One: \getPIofProject*{PI1}.\par
23085 Two: \getPIofProject*{PI2}.\par
23086 Three: \getPIofProject*{PI3}.\par
23087 Four: \getPIofProject*{PI4}.\par
23088 Properties: \getPIofProject*[lastname]{PI3}.\par
23089 Final separator: \getPIofProject*{PI3}[\space und \space].\par
23090 Legacy: \getPIofProject[firstname,lastname]{PI3}[; ].\par
23091 Reset: \getPIofProject{PI2}.\par
23092 Empty properties: [\getPIofProject*[]{PI1}].\par
23093 Following group: \getPIofProject*{PI1}{ followed}.\par
23094 \begingroup
23095 \ExplSyntaxOn
23096 \bool_set_true:N \l_@@_class_fastcompile_project_bool
23097 \ExplSyntaxOff
23098 Fast: \getPIofProject*{PI3}.\par
23099 \endgroup
23100
23101 % Use the same destination helper as the PI table. Keep targets on a separate
23102 % page so a PDF check can distinguish working links from fallback destinations.
23103 \clearpage
23104 \section*{PI table link targets}
23105 \ExplSyntaxOn
23106 \clist_map_inline:nn {pi-test-a,pi-test-b,pi-test-c,pi-test-d}
23107   {\@@_pi_target:n {#1} PI~target~#1\par}
23108 \ExplSyntaxOff
23109
23110 % Exercise real project heads/tails in normal and both fast-publication modes.
23111 % An ending administrative project keeps the fixture's heading self-contained.
23112 \clearpage
23113 \begingroup
23114 \addEntry{project}{id={A90},number={A90},name={Project setup scope test},
23115   project-type={admin},project-status={E},ref-person-id={}}
23116 \addEntry{project}{id={A91},number={A91},name={Continuing setup scope test},
23117   project-type={admin},project-status={C},ref-person-id={}}
23118 \addEntry{project}{id={A92},number={A92},name={Legacy ending scope test},
23119   project-type={admin},project-status={E},ref-person-id={}}
23120 \DTLnewdb{project-scope-test}
23121 \ExplSyntaxOn
23122 \int_new:N \l_@@_project_setup_test_group_int
23123 \tl_new:N \l_@@_project_setup_test_error_tl
23124 \cs_set:Npn \ProjectSetupMarker {outside}
23125 \cs_set:Npn \ProjectSetupExpectedTitle {shortjournal}
23126 \changeSettings{journalTitle=journaltitle,animalHousing@mouse=0.85,
```

```
  emphasizeAuthors=false,emphasizeEntries=true}
% This fixture switches between normal and fast modes within one document.
\bool_gset_true:N \g_@@_fast_project_started_bool
\cs_new_eq:NN \@@_project_setup_test_original_head:n \@@_print_project_head:n
\cs_set_protected:Npn \@@_print_project_head:n #1
{
  \str_if_eq:eeF {\getValue{journalTitle}} {\ProjectSetupExpectedTitle}
    {\PackageError{project-setup-test}{Settings~were~not~applied~before~the~head}{}}
  \@@_project_setup_test_original_head:n {#1}
}
\cs_new_protected:Npn \@@_project_setup_test_restored:
{
  \str_if_eq:eeF {\getValue{journalTitle}} {journaltitle}
    {\PackageError{project-setup-test}{Journal~setting~escaped~the~project}{}}
  \fp_compare:nNnF {\getValue{animalHousing@mouse}} = {0.85}
    {\PackageError{project-setup-test}{Funding~rate~escaped~the~project}{}}
  \str_if_eq:eeF {\ProjectSetupMarker} {outside}
    {\PackageError{project-setup-test}{Setup~code~escaped~the~project}{}}
  \str_if_eq:eeF {\getValue{emphasizeAuthors}/\getValue{emphasizeEntries}} {false/true}
    {\PackageError{project-setup-test}{Project~emphasis~escaped~its~scope}{}}
  \int_compare:nNnF {\currentgrouplevel} = {\l_@@_project_setup_test_group_int}
    {\PackageError{project-setup-test}{Project~scope~left~an~unbalanced~group}{}}
  \int_compare:nNnF {\value{refsection}} = {0}
    {\PackageError{project-setup-test}{Project~refsection~was~not~closed}{}}
}
\cs_new_protected:Npn \@@_project_setup_test:nnn #1#2#3
{
  \group_begin:
  \bool_set_false:N \l_@@_class_fastcompile_project_bool
  \bool_set_true:N \l_@@_class_fastcompile_project_show_publications_bool
  \str_case:nn {#1}
  {
    {fast-publications}
      {\bool_set_true:N \l_@@_class_fastcompile_project_bool}
    {fast-text}
      {\bool_set_true:N \l_@@_class_fastcompile_project_bool
       \bool_set_false:N \l_@@_class_fastcompile_project_show_publications_bool}
    {fast-text-legacy-tail}
      {\bool_set_true:N \l_@@_class_fastcompile_project_bool
       \bool_set_false:N \l_@@_class_fastcompile_project_show_publications_bool}
  }
  \int_set:Nn \l_@@_project_setup_test_group_int {\currentgrouplevel}
  \resetThumbIndex
  \printProject[
    \changeSettings{journalTitle=shortjournal,animalHousing@mouse=1.25}
    \def\ProjectSetupMarker{inside}
  ]{{Head}{#2}}
  \str_if_eq:eeF {\getValue{journalTitle}} {shortjournal}
    {\PackageError{project-setup-test}{Journal~setting~did~not~reach~the~body}{}}
  \fp_compare:nNnF {\getValue{animalHousing@mouse}} = {1.25}
    {\PackageError{project-setup-test}{Funding~rate~did~not~reach~the~body}{}}
  \str_if_eq:eeF {\ProjectSetupMarker} {inside}
    {\PackageError{project-setup-test}{Setup~code~did~not~reach~the~body}{}}
  \str_if_eq:eeF {\getValue{emphasizeAuthors}/\getValue{emphasizeEntries}} {true/false}
    {\PackageError{project-setup-test}{Ending~project~defaults~were~not~applied}{}}
  \bool_if:NF \l_@@_class_fastcompile_project_bool
    {\addEntry[person]{project-scope-test}{id={#1},lastname={Survives}}}
  Project~setup~case:~#1.\par
  #3
  \@@_project_setup_test_restored:
  \bool_if:NF \l_@@_class_fastcompile_project_bool
  {
    \int_compare:nNnF {\l_thumb_index_int} = {1}
      {\PackageError{project-setup-test}{Thumb-index~progress~was~lost}{}}
  }
  \bool_if:NF \l_@@_class_fastcompile_project_bool
  {
    \DTLgetvalueforkey{\ProjectSetupStoredValue}{lastname}{project-scope-test}{id}{#1}
    \str_if_eq:eeF {\ProjectSetupStoredValue} {Survives}
      {\PackageError{project-setup-test}{Project~database~entry~was~lost}{}}
  }
  \typeout{PROJECT~SETUP~TEST~PASS:~#1}
  \group_end:
}
```

```
\@@_project_setup_test:nnn {normal} {A90} {\printProject{{Tail}}}
\@@_project_setup_test:nnn {normal-legacy-tail} {A92} {\printProjectTail}
\@@_project_setup_test:nnn {fast-publications} {A90} {\printProject{{Tail}}}
\@@_project_setup_test:nnn {fast-text} {A90} {\printProject{{Tail}}}
\@@_project_setup_test:nnn {fast-text-legacy-tail} {A90} {\printProjectTail}

\bool_set_true:N \l_@@_class_fastcompile_project_bool
\bool_set_false:N \l_@@_class_fastcompile_project_show_publications_bool
\cs_set:Npn \ProjectSetupExpectedTitle {journaltitle}
\int_set:Nn \l_@@_project_setup_test_group_int {\currentgrouplevel}
\printProject[]{{Head}{A90}}
\changeSettings{journalTitle=shortjournal}
\printProject{{Tail}}
\@@_project_setup_test_restored:
\typeout{PROJECT~SETUP~TEST~PASS:~empty-setup}
\printProject{{Head}{A90}}
\str_if_eq:eeF {\getValue{emphasizeAuthors}/\getValue{emphasizeEntries}} {true/false}
  {\PackageError{project-setup-test}{Unadorned~ending~head~missed~its~defaults}{}}
\printProject{{Tail}}
\@@_project_setup_test_restored:
\printProjectHead{A90}
\str_if_eq:eeF {\getValue{emphasizeAuthors}/\getValue{emphasizeEntries}} {true/false}
  {\PackageError{project-setup-test}{Legacy~ending~head~missed~its~defaults}{}}
\printProjectTail
\@@_project_setup_test_restored:
\typeout{PROJECT~SETUP~TEST~PASS:~ending-defaults}
\printProject{{Head}{A91}}
\str_if_eq:eeF {\getValue{emphasizeAuthors}/\getValue{emphasizeEntries}} {false/true}
  {\PackageError{project-setup-test}{Continuing~head~changed~global~emphasis}{}}
\printProject{{Tail}}
\@@_project_setup_test_restored:
\typeout{PROJECT~SETUP~TEST~PASS:~continuing-defaults}
\printProject[
  \changeSettings{emphasizeAuthors=false,emphasizeEntries=true}
]{{Head}{A90}}
\str_if_eq:eeF {\getValue{emphasizeAuthors}/\getValue{emphasizeEntries}} {false/true}
  {\PackageError{project-setup-test}{Explicit~ending~override~did~not~win}{}}
\printProject{{Tail}}
\@@_project_setup_test_restored:
\typeout{PROJECT~SETUP~TEST~PASS:~ending-override}
\printProjectHead[
  \changeSettings{emphasizeAuthors=true,emphasizeEntries=false}
]{A91}
\str_if_eq:eeF {\getValue{emphasizeAuthors}/\getValue{emphasizeEntries}} {true/false}
  {\PackageError{project-setup-test}{Legacy~head~setup~was~not~applied}{}}
\printProjectTail
\@@_project_setup_test_restored:
\typeout{PROJECT~SETUP~TEST~PASS:~legacy-head-setup}

% Invalid calls must report the error without executing setup or opening groups.
\cs_new_protected:Npn \@@_project_setup_test_error:nn #1#2
{
  \tl_clear:N \l_@@_project_setup_test_error_tl
  \group_begin:
  \cs_set_protected:Npn \PackageError ##1##2##3
    {\tl_gset:Nn \l_@@_project_setup_test_error_tl {##2}}
  #2
  \group_end:
  \tl_if_empty:NT \l_@@_project_setup_test_error_tl
    {\PackageError{project-setup-test}{Missing~diagnostic~for~#1}{}}
  \@@_project_setup_test_restored:
  \typeout{PROJECT~SETUP~TEST~PASS:~#1}
}
\@@_project_setup_test_error:nn {invalid-head}
  {\printProject[\def\ProjectSetupMarker{unexpected}]{{Head}{}}}
\@@_project_setup_test_error:nn {invalid-part}
  {\printProject[\def\ProjectSetupMarker{unexpected}]{{Other}{A90}}}
\@@_project_setup_test_error:nn {setup-on-tail}
  {\printProject[\def\ProjectSetupMarker{unexpected}]{{Tail}}}
\printProject[]{{Head}{A90}}
\tl_clear:N \l_@@_project_setup_test_error_tl
\cs_set_eq:NN \ProjectSetupSavedPackageError \PackageError
\cs_set_protected:Npn \PackageError #1#2#3
  {\tl_set:Nn \l_@@_project_setup_test_error_tl {#2}}
```

```
\printProject[\def\ProjectSetupMarker{unexpected}]{{Head}{A90}}
\cs_set_eq:NN \PackageError \ProjectSetupSavedPackageError
\tl_if_empty:NT \l_@@_project_setup_test_error_tl
  {\PackageError{project-setup-test}{Missing~nested-project~diagnostic}{}}
\str_if_eq:eeF {\ProjectSetupMarker} {outside}
  {\PackageError{project-setup-test}{Nested~project~setup~was~executed}{}}
\printProject{{Tail}}
\@@_project_setup_test_restored:
\typeout{PROJECT~SETUP~TEST~PASS:~nested-head}
\ExplSyntaxOff
\endgroup
\end{document}
```

6.2.23 Participating-institution layout regression test

Assert the width and complete, ordered content of the rendered institution groups. Shared PI institutions must appear once, inactive/non-PI institutions must be absent, and options must not leak into the next list.

```
\documentclass[english,final=true]{dfg-crc}

\ExplSyntaxOn
\seq_new:N \g_@@_institutions_test_seen_seq
\dim_new:N \l_@@_institutions_test_width_dim
\NewDocumentCommand{\TestInstitutionName}{m}
{
  \dim_compare:nNnT
    {\dim_abs:n {\linewidth-\l_@@_institutions_test_width_dim}} > {.1pt}
  {
    \PackageError{institutions-test}
      {Wrong~column~width~for~#1:~\the\linewidth}
      {The~list~did~not~honour~its~column~count~or~column~gap.}
  }
  \seq_gput_right:Nn \g_@@_institutions_test_seen_seq {#1}
  Institute~#1
}
\AddToHook{env/multicols/before}
{
  \dim_compare:nNnT {\lastskip} < {\medskipamount}
    {\PackageError{institutions-test}{Missing~space~above~columns}{}}
}
\NewDocumentCommand{\TestInstitutionList}{m m m m +m}
{
  \clearpage
  \section*{#1}
  \seq_gclear:N \g_@@_institutions_test_seen_seq
  \dim_set:Nn \l_@@_institutions_test_width_dim
    {(\linewidth-\dim_eval:n{#3}*\int_eval:n{#2-1})/#2}
  #5
  \tl_set:Ne \l_tmpa_tl
    {\seq_use:Nn \g_@@_institutions_test_seen_seq {,}}
  \tl_if_eq:NnF \l_tmpa_tl {#4}
  {
    \PackageError{institutions-test}
      {Unexpected~institutions~in~#1:~\l_tmpa_tl}
      {Check~filtering,~duplicate~removal,~sorting,~and~option~scoping.}
  }
  \typeout{INSTITUTIONS~TEST~PASS:~#1}
}
\ExplSyntaxOff

\newcommand{\TestInstitution}[2]{%
  \addEntry{institution}{
    id={#1},name={\TestInstitutionName{#1}},ref-affiliation-id={#2}
  }%
}

\begin{document}
\DTLcleardb{affiliation}
\DTLcleardb{institution}
\DTLcleardb{person}

\addEntry{affiliation}{id={z},name={Zeta University},location={Zeta City}}
```

```
\addEntry{affiliation}{id={a},name={Alpha University},location={Alpha City}}
\addEntry{affiliation}{id={b},name={Beta University},location={Beta City}}
\addEntry{affiliation}{id={unused},name={Unused University},location={Unused City}}
\TestInstitution{Z1}{z}
\TestInstitution{Z2}{z}
\TestInstitution{Z3}{z}
\TestInstitution{Z4}{z}
\TestInstitution{Z5}{z}
\TestInstitution{Z6}{z}
\TestInstitution{A1}{a}
\TestInstitution{B1}{b}
\TestInstitution{INACTIVE}{unused}
\TestInstitution{NONPI}{unused}
\addEntry{person}{
  id={active},role={PI},period={1,2,3},
  ref-institution-id={Z1,Z2,Z3,Z4,Z5,Z6,A1,B1,Z1}
}
\addEntry{person}{
  id={shared},role={PI},period={1,2,3},ref-institution-id={Z1,A1}
}
\addEntry{person}{
  id={inactive},role={PI},period={1},ref-institution-id={INACTIVE}
}
\addEntry{person}{
  id={manager},role={manager},period={1,2,3},ref-institution-id={NONPI}
}

\TestInstitutionList{flow-two}{2}{12pt}{Z1,Z2,Z3,Z4,Z5,Z6,A1,B1}
  {\printList[columns=2]{ParticipatingInstitutions}}
\TestInstitutionList{flow-three-alpha}{3}{16pt}{A1,B1,Z1,Z2,Z3,Z4,Z5,Z6}
  {\printList[columns=3,column sep=16pt,order=alpha]{ParticipatingInstitutions}}
\TestInstitutionList{raster-two}{2}{12pt}{Z1,Z2,Z3,Z4,Z5,Z6,A1,B1}
  {\printList[raster columns=2]{ParticipatingInstitutions}}
\TestInstitutionList{raster-three}{3}{16pt}{Z1,Z2,Z3,Z4,Z5,Z6,A1,B1}
  {\printList[raster columns=3,raster column skip=16pt]{ParticipatingInstitutions}}
\TestInstitutionList{legacy-alpha}{2}{12pt}{A1,B1,Z1,Z2,Z3,Z4,Z5,Z6}
  {\printList[columns=2]{{ParticipatingInstitutions}}[alpha]}
\TestInstitutionList{leading-order-wins}{2}{12pt}{Z1,Z2,Z3,Z4,Z5,Z6,A1,B1}
  {\printList[columns=2,order=count]{{ParticipatingInstitutions}}[alpha]}
\TestInstitutionList{default-reset}{1}{12pt}{Z1,Z2,Z3,Z4,Z5,Z6,A1,B1}
  {\printList{ParticipatingInstitutions}}
\TestInstitutionList{flow-after-text}{2}{12pt}{Z1,Z2,Z3,Z4,Z5,Z6,A1,B1}
  {Introductory text.\printList[columns=2]{ParticipatingInstitutions}}
\TestInstitutionList{flow-one}{1}{12pt}{Z1,Z2,Z3,Z4,Z5,Z6,A1,B1}
  {\printList[columns=1]{ParticipatingInstitutions}}
\DTLcleardb{person}
\TestInstitutionList{empty-list}{2}{12pt}{}
  {\printList[columns=2]{ParticipatingInstitutions}}

\end{document}
```

6.2.24 Nested work-package reference test

This focused test creates repeated child-counter values under three parent work packages. It catches both loss of later references during sorting and ranges that incorrectly cross a parent boundary.

```
%% Compile from the generated local directory with:
%%   latexmk -lualatex -g -halt-on-error test-workpackage-references.tex
\documentclass[
  fastcompile-project = true,
  fastcompile-project-show-images = false,
  english
]{dfg-crc}

\begin{document}

\ExplSyntaxOn
\tl_set:Nn \l__tmp_current_project_tl {WPTEST}
\ExplSyntaxOff

\begin{workpackages}
  \addWP{wp1}{name={Parent one}}
```

```
23407    Parent one.
23408    \begin{workpackages}
23409      \addWP{wp1a}{} Child 1a.
23410      \addWP{wp1b}{} Child 1b.
23411      \addWP{wp1c}{} Child 1c.
23412      \addWP{wp1d}{} Child 1d.
23413    \end{workpackages}
23414
23415    \addWP{wp2}{name={Parent two}}
23416    Parent two.
23417    \begin{workpackages}
23418      \addWP{wp2a}{} Child 2a.
23419      \addWP{wp2b}{} Child 2b.
23420    \end{workpackages}
23421
23422    \addWP{wp3}{name={Parent three}}
23423    Parent three.
23424    \begin{workpackages}
23425      \addWP{wp3a}{} Child 3a.
23426      \addWP{wp3b}{} Child 3b.
23427      \addWP{wp3c}{} Child 3c.
23428    \end{workpackages}
23429  \end{workpackages}
23430
23431  \noindent Range result:
23432  \getWP{wp1b,wp1c,wp1d,wp2b,wp3c}.
23433
23434  \noindent Unordered result:
23435  \getWP{wp2b,wp3c,wp1d}.
23436
23437
23438  \noindent Mixed result:
23439  \getWP{wp1a,wp1b,wp2,wp3a,wp3b}.
23440
23441  \noindent Reversed mixed:
23442  \getWP{wp3b,wp2,wp1a,wp3a,wp1b}.
23443
23444  \noindent Parent and children:
23445  \getWP{wp1,wp1a,wp1b,wp1c,wp2,wp2a,wp2b,wp3}.
23446
23447  \noindent Parent range:
23448  \getWP{wp1,wp2,wp3}.
23449
23450  \end{document}
```

6.2.25 Work-package metadata compatibility test

This fixture checks stored raw fields, precedence, explicit empty values, deferred expansion and mixed old/new declarations in three compilation modes. Rendered headings, nested references and late-bound chart labels are also checked by the test target.

```
23451  %% Run make test-workpackage-metadata for normal, focused/image and focused/text.
23452  \providecommand*\WPTestMode{normal}
23453  \ExplSyntaxOn
23454  \str_if_eq:eeT {\WPTestMode}{normal}
23455    {\PassOptionsToClass{final=true}{dfg-crc}}
23456  \str_if_eq:eeF {\WPTestMode}{normal}
23457    {\PassOptionsToClass{fastcompile-project=true}{dfg-crc}}
23458  \str_if_eq:eeT {\WPTestMode}{images}
23459    {\PassOptionsToClass{fastcompile-project-show-images=true}{dfg-crc}}
23460  \str_if_eq:eeT {\WPTestMode}{text}
23461    {\PassOptionsToClass{fastcompile-project-show-images=false}{dfg-crc}}
23462  \ExplSyntaxOff
23463  \documentclass[english]{dfg-crc}
23464  \newcommand*\WPTitleToken{Deferred heading}
23465  \newcommand*\WPLabelToken{Original deferred label}
23466  \ExplSyntaxOn
23467  \int_new:N \g_wp_test_checks_int
23468  \tl_new:N \l_wp_test_value_tl
23469  \NewDocumentCommand \WPCheck {m m m}
23470    {
23471      \str_if_eq:eeF {\WPTestMode}{text}
23472        {
```

```
        \DTLgetvalueforkey{\l_wp_test_value_tl}{#2}{gantt-WPTEST}{id}{#1}
        \tl_if_eq:NnF \l_wp_test_value_tl {#3}
          {\PackageError{wp-test}{Wrong~#2~for~#1}{Expected~unexpanded~#3.}}
        \int_gincr:N \g_wp_test_checks_int
      }
  }
\NewDocumentCommand \WPCheckEmpty {m m}
  {
    \str_if_eq:eeF {\WPTestMode}{text}
      {
        \DTLgetvalueforkey{\l_wp_test_value_tl}{#2}{gantt-WPTEST}{id}{#1}
        \DTLifnullorempty{\l_wp_test_value_tl}{}
          {\PackageError{wp-test}{Unexpected~#2~for~#1}{Expected~empty~or~absent.}}
        \int_gincr:N \g_wp_test_checks_int
      }
  }
\ExplSyntaxOff
\begin{document}
\ExplSyntaxOn
\tl_set:Nn \l__tmp_current_project_tl {WPTEST}
\ExplSyntaxOff
\begin{workpackages}
  \addWP{legacy}{name={LEGACY HEADING},description={Shared label},
    periodStart=1,periodEnd=6,style=alternative}
  Legacy declaration.
  \WPCheck{legacy}{name}{LEGACY HEADING}
  \WPCheck{legacy}{description}{Shared label}
  \WPCheck{legacy}{periodStart}{1}\WPCheck{legacy}{periodEnd}{6}
  \WPCheck{legacy}{style}{alternative}
  \addWP{grouped}{title={GROUPED HEADING},gantt={label={Shared label},
    start=1,end=6,style=alternative}}
  Grouped declaration.
  \WPCheck{grouped}{name}{GROUPED HEADING}
  \WPCheck{grouped}{description}{Shared label}
  \WPCheck{grouped}{periodStart}{1}\WPCheck{grouped}{periodEnd}{6}
  \WPCheck{grouped}{style}{alternative}
  \addWP{new-first}{title={NEW FIRST HEADING},
    gantt={label={Preferred label A},start=2,end=5,style=important},
    name={STALE HEADING A},description={STALE LABEL A},
    periodStart=1,periodEnd=16,style=bad}
  New keys precede their legacy counterparts.
  \WPCheck{new-first}{name}{NEW FIRST HEADING}
  \WPCheck{new-first}{description}{Preferred label A}
  \WPCheck{new-first}{periodStart}{2}\WPCheck{new-first}{periodEnd}{5}
  \WPCheck{new-first}{style}{important}
  \addWP{old-first}{name={STALE HEADING B},description={STALE LABEL B},
    periodStart=1,periodEnd=16,style=bad,title={OLD FIRST HEADING},
    gantt={label={Preferred label B},start=4,end=9,style=striped}}
  Legacy keys precede their replacements.
  \WPCheck{old-first}{name}{OLD FIRST HEADING}
  \WPCheck{old-first}{description}{Preferred label B}
  \WPCheck{old-first}{periodStart}{4}\WPCheck{old-first}{periodEnd}{9}
  \WPCheck{old-first}{style}{striped}
  \addWP{fallback}{title={TITLE FALLBACK HEADING},gantt={start=3,end=8}}
  Omitted label uses the title.
  \WPCheck{fallback}{name}{TITLE FALLBACK HEADING}
  \WPCheck{fallback}{description}{TITLE FALLBACK HEADING}
  \WPCheck{fallback}{style}{default}
  \addWP{empty-label}{title={EMPTY LABEL HEADING},
    gantt={label={},start=2,end=7},description={STALE EMPTY LABEL},
    style=alternative}
  An explicitly empty label wins; the legacy style is retained.
  \WPCheckEmpty{empty-label}{description}
  \WPCheck{empty-label}{style}{alternative}
  \addWP{legacy-missing}{name={LEGACY MISSING LABEL},periodStart=1,periodEnd=5}
  An old declaration does not acquire a title fallback.
  \WPCheckEmpty{legacy-missing}{description}
  \WPCheckEmpty{legacy-missing}{style}
  \addWP{legacy-empty}{name={LEGACY EMPTY LABEL},description={},
    periodStart=1,periodEnd=5,style={}}
  An old empty label stays empty.
  \WPCheckEmpty{legacy-empty}{description}
  \WPCheck{legacy-empty}{style}{default}
  \addWP{partial}{title={PARTIAL MIGRATION HEADING},
```

```
23547     description={Legacy short label},periodStart=4,periodEnd=8,style=crosshatch}
23548   A legacy description takes precedence over the title fallback.
23549   \WPCheck{partial}{description}{Legacy short label}
23550   \WPCheck{partial}{periodStart}{4}\WPCheck{partial}{periodEnd}{8}
23551   \WPCheck{partial}{style}{crosshatch}
23552   \addWP{empty-title}{name={STALE EMPTY TITLE},title={},
23553     gantt={label={},start=5,end=5}}
23554   Empty title overrides the legacy name. Equal endpoints omit the chart row.
23555   \WPCheckEmpty{empty-title}{name}\WPCheckEmpty{empty-title}{description}
23556   \WPCheck{empty-title}{periodStart}{5}\WPCheck{empty-title}{periodEnd}{5}
23557   \addWP{repeated}{title={STALE REPEATED TITLE},title={REPEATED HEADING},
23558     gantt={label={STALE REPEATED LABEL},start=1,end=4},
23559     gantt={label={Repeated label},start=3,style={}}}
23560   Repeated new assignments use the last value and keep other fields.
23561   \WPCheck{repeated}{name}{REPEATED HEADING}
23562   \WPCheck{repeated}{description}{Repeated label}
23563   \WPCheck{repeated}{periodStart}{3}\WPCheck{repeated}{periodEnd}{4}
23564   \WPCheck{repeated}{style}{default}
23565   \addWP{tokens}{title={\WPTitleToken},
23566     gantt={label={\WPLabelToken},start=6,end=12}}
23567   Formatting commands and labels are stored without expansion.
23568   \WPCheck{tokens}{name}{\WPTitleToken}
23569   \WPCheck{tokens}{description}{\WPLabelToken}
23570   \begin{workpackages}
23571     \addWP{child}{title={HIDDEN CHILD TITLE},
23572       gantt={label={Nested chart label},start=8,end=10}}
23573     Nested body starts here.
23574     \WPCheck{child}{name}{HIDDEN CHILD TITLE}
23575     \WPCheck{child}{description}{Nested chart label}
23576   \end{workpackages}
23577 \end{workpackages}
23578 \renewcommand*\WPLabelToken{UPDATED DEFERRED LABEL}
23579 \noindent Nested reference: \getWP{tokens,child}.
23580 \ExplSyntaxOn
23581 \str_if_eq:eeTF {\WPTestMode}{text}
23582   {
23583     \DTLifdbexists{gantt-WPTEST}
23584       {\PackageError{wp-test}{Focused~text~mode~created~a~Gantt~database}{}}{}
23585   }
23586   {
23587     \int_compare:nNnF {\g_wp_test_checks_int}>{40}
23588       {\PackageError{wp-test}{Too~few~metadata~checks}{}}
23589     % Direct low-level callers retain the old schema and validation.
23590     \addEntry[gantt]{WPDirect}{id=direct,name={Direct~title},
23591       description={Direct~label},periodStart=1,periodEnd=4,style=default}
23592     \DTLgetvalueforkey{\l_wp_test_value_tl}{description}{WPDirect}{id}{direct}
23593     \tl_if_eq:NnF \l_wp_test_value_tl {Direct~label}
23594       {\PackageError{wp-test}{Direct~Gantt~declaration~changed}{}}
23595     \int_gincr:N \g_wp_test_checks_int
23596     \clearpage
23597     \dfgGanttEnvironment{WPTEST}
23598   }
23599 \typeout{WP~METADATA~TEST~PASS:~\WPTestMode,~\int_use:N\g_wp_test_checks_int~stored-
    field~checks}
23600 \ExplSyntaxOff
23601 \end{document}
```

6.2.26 Existing direct-cost overview test

This focused two-pass test prints section 2.1.1 before declaring the project-level rows. On the following run, the auxiliary-file mirror must restore those rows early enough for the table and the assertions.

```
23602 %% Compile from the generated local directory with:
23603 %%   latexmk -lualatex -g -halt-on-error test-existing-funds-direct-costs.tex
23604 \documentclass[english,final=true]{dfg-crc}
23605
23606 \providecommand{\dfgDirectCostsAuxReady}{0}
23607
23608 %% Ending-period values remain explicit because they describe the preceding
23609 %% funding period rather than the project requests below.
23610 \addEntry[funding]{PreviousExistingFundsDirectCosts}{
23611   year=1, applicant=4300, participant=1200, other-funds=500
```

```
}
\addEntry[funding]{PreviousExistingFundsDirectCosts}{
  year=2, applicant=0, participant=0, other-funds=0
}
\addEntry[funding]{PreviousExistingFundsDirectCosts}{
  year=3, applicant=0, participant=0, other-funds=0
}
\addEntry[funding]{PreviousExistingFundsDirectCosts}{
  year=4, applicant=0, participant=0, other-funds=0
}
\addEntry[funding]{PreviousExistingFundsDirectCosts}{
  year=5, applicant=0, participant=0, other-funds=0
}

\begin{document}

\section*{Overview of existing funds for direct costs}

%% The second and later passes must see the rows restored from the auxiliary
%% file before the live project declarations below are encountered.
\ifnum\dfgDirectCostsAuxReady=1\relax
  \ExplSyntaxOn
  \cs_set_eq:NN
    \@@_direct_costs_test_show_saved:nnN
    \@@_show_calculated_number:nnN
  \cs_set_protected:Npn
    \@@_show_calculated_number:nnN #1#2#3 { }
  \cs_new_protected:Npn \@@_direct_costs_test_expect:nnn #1#2#3
  {
    \getSumRequestedFundingDirectCosts
      [RequestedAndExistingFundingDirectCostsOverview]{#1}{#2}
    \DTLconverttodecimal {\SumRequestedFundingDirectCosts} \l_tmpa_tl
    \fp_compare:nNnF {\l_tmpa_tl} = {#3}
    {
      \PackageError{direct-costs-test}
        {Expected~#1/#2~sum~#3,~got~\SumRequestedFundingDirectCosts}
        {The~section~2.1.1~overview~classification~is~incorrect.}
    }
  }
  \@@_direct_costs_test_expect:nnn {1}{applicant}{5000}
  \@@_direct_costs_test_expect:nnn {1}{participant}{2100}
  \@@_direct_costs_test_expect:nnn {1}{other-funds}{300}
  \@@_direct_costs_test_expect:nnn {1}{all}{7400}
  \@@_direct_costs_test_expect:nnn {all}{applicant}{25000}
  \@@_direct_costs_test_expect:nnn {all}{participant}{10500}
  \@@_direct_costs_test_expect:nnn {all}{other-funds}{1500}
  \@@_direct_costs_test_expect:nnn {all}{all}{37000}
  \cs_set_eq:NN
    \@@_show_calculated_number:nnN
    \@@_direct_costs_test_show_saved:nnN
  \iow_term:n
    {DIRECT~COSTS~TEST~PASS:~auxiliary~restore,~classification,~and~totals}
  \ExplSyntaxOff
\fi

\printTable{ExistingFundsDirectCosts}

%% These rows intentionally occur after the overview.  aff1 is the applicant
%% affiliation in the generated metadata; aff2 is a participating affiliation.
\addEntry[funding]{RequestedAndExistingFundingDirectCosts}{
  ref-project-id     = {A01},
  ref-affiliation-id = {aff1},
  financed-by        = {Applicant university core support},
  sum = {
    year1 = {5000}, year2 = {5000}, year3 = {5000},
    year4 = {5000}, year5 = {5000}
  }
}
\addEntry[funding]{RequestedAndExistingFundingDirectCosts}{
  ref-project-id     = {B01},
  ref-affiliation-id = {aff2},
  financed-by        = {Participating university core support},
  sum = {
    year1 = {2100}, year2 = {2100}, year3 = {2100},
```

```
    year4 = {2100}, year5 = {2100}
  }
}
\addEntry[funding]{RequestedAndExistingFundingDirectCosts}{
  ref-project-id     = {Q01},
  ref-affiliation-id = {other-funds},
  financed-by        = {External grant},
  sum = {
    year1 = {300}, year2 = {300}, year3 = {300},
    year4 = {300}, year5 = {300}
  }
}

%% Project fast mode must update existing-funds totals as well as the rows.
%% Keep this local so the normal-mode auxiliary overview remains unchanged.
\ExplSyntaxOn
\group_begin:
\cs_set_protected:Npn \@@_direct_costs_fast_expect:nnn #1#2#3
{
  \@@_funding_sum_set:Nnnnn \l_tmpa_tl
    {RequestedAndExistingFundingDirectCosts}{#1}{__ALL__}{#2}
  \fp_compare:nNnF {\l_tmpa_tl} = {#3}
  {
    \PackageError{direct-costs-test}
      {Expected~#1/#2~sum~#3,~got~\l_tmpa_tl}
      {Existing~direct-cost~totals~must~match~the~project~rows.}
  }
}
%% Normal-mode rows above must still be counted exactly once.
\@@_direct_costs_fast_expect:nnn {A01}{sum-year1}{5000}
\bool_set_true:N \l_@@_class_fastcompile_project_bool
\bool_set_true:N \l_@@_class_fastcompile_project_show_funding_tables_bool
\addEntry[funding]{RequestedAndExistingFundingDirectCosts}{
  ref-project-id={FASTTEST}, ref-affiliation-id={aff1}, financed-by={Test},
  sum={year1=1000,year2=1000,year3=1000,year4=1000,year5=1000}
}
\clist_map_inline:nn {sum-year1,sum-year2,sum-year3,sum-year4,sum-year5}
  { \@@_direct_costs_fast_expect:nnn {FASTTEST}{#1}{1000} }
\@@_direct_costs_fast_expect:nnn {FASTTEST}
  {sum-year1,sum-year2,sum-year3,sum-year4,sum-year5}{5000}
%% A second entry adds to the same project without affecting other projects.
\addEntry[funding]{RequestedAndExistingFundingDirectCosts}{
  ref-project-id={FASTTEST}, ref-affiliation-id={aff1}, financed-by={Test},
  sum={year1=200,year2=200,year3=200,year4=200,year5=200}
}
\@@_direct_costs_fast_expect:nnn {FASTTEST}{sum-year1}{1200}
\@@_direct_costs_fast_expect:nnn {FASTTEST}
  {sum-year1,sum-year2,sum-year3,sum-year4,sum-year5}{6000}
\@@_direct_costs_fast_expect:nnn {A01}{sum-year1}{5000}
\iow_term:n {FAST~DIRECT~COSTS~TEST~PASS:~yearly~and~combined~totals}
\group_end:
\ExplSyntaxOff

\makeatletter
\protected@write\@auxout{}{%
  \string\gdef\string\dfgDirectCostsAuxReady{1}}
\makeatother

\end{document}
```

Starting now a template CV file.

```
\documentclass[english,cv]{dfg-crc}
\begin{document}
\input{content/00_titlepage}
\dfgCVsection
% %% \dfgCV{MM}
\end{document}
```

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Part III

Independent LaTeX packages

7 Choose and install a package

The following packages work with standard document classes such as `article` and `report`. They support pdfLaTeX and LuaLaTeX, load their own TeX dependencies, and require no proposal metadata or project-specific fonts. Load only the packages needed by your document. The proposal class loads the same implementations and supplies adapters for its metadata and settings; that usage is explained in Part I.

dfg-plots Shared plot dispatch, defaults, and float options; Chapter 8.

dfg-collaboration Project connections as arc diagrams or heatmaps; Chapter 9.

dfg-gantt Narrative workpackages, references, and quarter charts; Chapter 10.

dfg-timeline Events, date ranges, and descriptions; Chapter 11.

dfg-distribution Counts with registered categories and vector icons; Chapter 12.

dfg-icons Registered assets beside paragraphs; Chapter 13.

dfg-bib-highlights Author and whole-entry bibliography emphasis; Chapter 14.

dfg-thumbindex Coloured tabs on odd and even page edges; Chapter 15.

7.1 Install and compile a complete example

Run the portable installer to generate the class, packages, package guide, and the complete example files shown in this part:

```
luatex dfg-crc.ins
latexmk -lualatex dfg-gantt-example.tex
```

Use `latexmk -pdf` for pdfLaTeX. Bibliography highlighting also requires Biber; latexmk runs it automatically. Keep the package files listed in each chapter and any companion data beside the example, or install the package files in a TeX search directory. Each example uses the standard `article` class. The icon example uses sample graphics from the standard mwe bundle; other examples need no image files.

The developer installer writes these same files into `local/module-examples`. In the proposal repository they are in `docs/examples`. The independent guide `dfg-modules.md` describes the public interfaces in more detail.

7.2 How these examples enter the manual

Every source listing below reads the actual example file. The rendered result comes from compiling that file as a separate document with only the listed module files. Its preamble, bibliography, and page settings are independent of this manual. Sources are maintained in the DTX and extracted by both installers; listings and compiled examples use those same files.

In the template repository, `make module-examples` builds all sixteen examples and `make doc` also includes them in this manual. The generated helper can be used from a portable installation:

```
python3 dfg-build-module-examples.py
```

This needs Python 3, latexmk, the selected TeX engine, and Biber. If pdfcrop and Ghostscript are available, preview PDFs have excess white margins removed. Full PDFs are always retained; the thumbindex preview preserves its page edges.

8 Shared plot infrastructure

dfg-plots loads hvfloat. Collaboration and Gantt packages load this shared core automatically. The example uses both, so copy `dfg-plots.sty`, `dfg-collaboration.sty`, and `dfg-gantt.sty`.

Use `\dfgPlotSetup` to configure defaults:

- `plotOptions` applies to both plot types;
- `ganttPlotOptions` applies to Gantt charts;
- `collaborationPlotOptions` applies to collaboration plots.

Native `hvFloat` options are forwarded after plot-specific options are consumed. Precedence is built-in defaults, shared defaults, type defaults, then the individual call. Changes follow TeX grouping. `caption` appends text to the automatic caption; `caption={}` removes inherited additional text for that call. The predefined `proposalPlots` style selects `floatPos=!t`, `capPos=top`, `floatCapSep=8pt`.

`\dfgPlotProject{ID}` supplies the focus when an ID is omitted from `\printPlot`. Direct `\GanttPlotFigure` and `\CollaborationPlot` commands use the same defaults. With the proposal class loaded, these commands also read its live shared and type-specific defaults. The direct collaboration command uses its declared dataset; class `\printPlot` uses proposal metadata.

8.1 Commands

`\dfgPlotSetup``{`⟨*options*⟩`}`

Set shared and type-specific defaults; their precedence is described below.

`\dfgPlotProject``{`⟨*ID*⟩`}`

Select the default focus for plots whose specification omits an ID.

`\dfgDeclarePlotType``{`⟨*name*⟩`}{`⟨*renderer*⟩`}`

Register a plot renderer globally. It receives an optional options argument and a mandatory project ID.

`\printPlot``[`⟨*options*⟩`]{`⟨*plot specification*⟩`}`

Render a registered plot type, for example {{gantt}{Study}}. A missing ID uses the current default focus.

8.2 Complete option reference

Defaults below describe standalone use. Boolean keys accept true or false; a bare boolean key means true, with inverse aliases described explicitly.

8.2.1 Shared and type-specific setup

Pass these keys to `\dfgPlotSetup`; standalone `\changeSettings` is an alias when the host has not defined it.

Changes follow TeX grouping.

Each renderer consumes its own keys and forwards remaining keys to hvFloat.

`plotOptions`=⟨*value*⟩ (initially `{}`)

Shared options for both plot types, including native float keys. Replaces the previous shared list. Accepts Key-value list.

`ganttPlotOptions`=⟨*value*⟩ (initially `{}`)

Additional Gantt-only defaults. Overrides shared values and is overridden by the individual call. Accepts Key-value list.

collaborationPlotOptions=⟨*value*⟩ (initially {})

Additional collaboration-only defaults, including layout, connection overrides, and float placement. An empty list clears earlier type defaults. Accepts Key-value list.

8.2.2 Native float options and extension commands

Both floating plot wrappers accept native hvFloat keys in the same option list.

The complete backend reference is available with texdoc hvfloat.

This includes placement, caption position, rotation, non-floating output, and named styles; the package does not introduce a separate whitelist.

floatPos=⟨*value*⟩ (initially !hb)

The wrapper defaults to source/bottom placement. A later style or explicit call can override it. Accepts Native hvFloat placement value.

capPos=⟨*value*⟩ (initially bottom)

The wrapper places captions below by default; for example top changes their position. Accepts Native hvFloat caption position.

style=⟨*value*⟩

The supplied proposalPlots style sets floatPos=!t, capPos=top, floatCapSep=8pt. Native styles and remaining keys retain hvFloat semantics. Accepts An hvFloat style name. Initially No named style selected.

8.2.3 Command arguments and customization hooks

\dfgPlotProject{ID} changes the default focus in its TeX group.

\dfgDeclarePlotType{name}{renderer} globally registers an exact type name; its renderer is called with [options]{project}.

Built-in type aliases are gantt/Gantt and collaboration/collaborations/ProjectCollaboration.

Explicit IDs override the default only for that rendering.

Packages other than bib-highlights have no package-load options; pass their settings to the setup/render commands.

Example 8.1: Shared defaults for two plot types

```
\documentclass{article}
\usepackage{dfg-collaboration,dfg-gantt}
\dfgPlotSetup{
  plotOptions={nonFloat,capPos=top},
  collaborationPlotOptions={arcs=true},
  ganttPlotOptions={caption={Shared plot defaults.}}
}
\pagestyle{empty}
\begin{document}
\dfgPlotProject{Q01}
\printPlot[collaboration={A01,A02}]{{collaboration}}
\bigskip
\DeclareWorkPackage{Q01}{methods}{gantt={label={Methods},start=1,end=4}}
\printPlot[slots=4,first-quarter=1]{{gantt}}
\end{document}
```

Independently compiled result (page 1)

Figure 1: Collaborations of Q01.

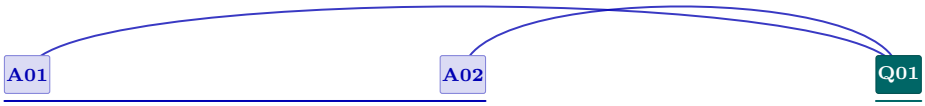
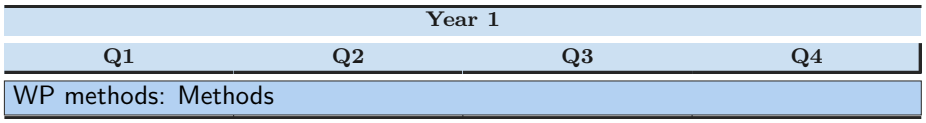


Figure 2: Gantt chart of Q01. Shared plot defaults.



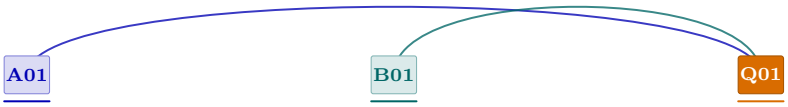
8.3 Examples with different options

Example 8.2: Shared styles and local float overrides

```
\documentclass{article}
\usepackage{dfg-collaboration,dfg-gantt}
\dfgPlotSetup{plotOptions={style=proposalPlots,nonFloat},
  collaborationPlotOptions={arcs=true,caption={Shared defaults.}},
  ganttPlotOptions={caption={Default chart note.}}}
\GanttSetup{slots=8,first-quarter=1,year-labels={Pilot,Study}}
\pagestyle{empty}
\begin{document}
\dfgPlotProject{Q01}
\printPlot[collaboration={A01,B01},width=.85\linewidth]{collaboration}
\clearpage
\DeclareWorkPackage{Q01}{methods}{gantt={label={Methods},start=1,end=8}}
\printPlot[capPos=bottom,floatCapSep=4pt,caption={} ]{gantt}
\end{document}
```

Independently compiled result (page 1)

Figure 1: Collaborations of Q01. Shared defaults.



Independently compiled result (page 2)

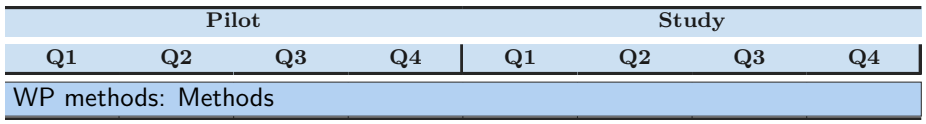


Figure 2: Gantt chart of Q01.

9 Collaboration plots

Copy `dfg-collaboration.sty` and `dfg-plots.sty`. The package also loads TikZ with its `calc` library.

Declare project IDs with `\DeclareCollaborationProject{ID}{options}`. Options are `area`, `collaboration`, and `active`; areas default to the first character of the ID. Connections are undirected; duplicate and self-links are ignored. Inactive projects are excluded. Declarations follow TeX grouping; `\clearCollaborationProjects` starts a separate dataset.

The plot option `collaboration={A01,A02}` replaces all connections incident to the focus for that call, including incoming declarations. An empty list means no connections. No second project list is needed. Without any declared dataset, the focus and this explicit connection list provide a complete ID-only dataset. The optional `show-projects={A01,A02}` restricts displayed nodes, always including the focus. Neither option changes stored data. The plural `collaborations` and former filter name `projects` remain aliases.

The default layout is `arc`; use `arcs=true` for connecting arcs, or `layout=heatmap` for a heatmap. Set colours through `\CollaborationSetup` or local `area-colors` and `area-palette` options. Unknown targets in a declared dataset produce a diagnostic; an unknown or inactive focus is an error.

9.1 Commands

`\DeclareCollaborationProject``{`⟨*ID*⟩`}{`⟨*fields*⟩`}`

Declare or replace project data in the current group.

`\CollaborationSetup``{`⟨*options*⟩`}`

Set persistent area-colour defaults in the current group.

`\CollaborationPlot``[`⟨*options*⟩`]{`⟨*ID*⟩`}`

Render the independent project registry, with optional per-call connection and display overrides.

`\clearCollaborationProjects`

Clear the independent project registry in the current group.

9.2 Complete option reference

Defaults below describe standalone use. Boolean keys accept true or false; a bare boolean key means true, with inverse aliases described explicitly.

9.2.1 Project declarations

Options for `\DeclareCollaborationProject`{ID}{options}.

Each declaration replaces that ID in the current TeX group.

IDs contain letters, digits, and hyphens and start with a letter or digit.

`area`=⟨*value*⟩

Groups projects and selects their area colour; it need not match the ID prefix. Accepts Area name. Initially `First character of ID`.

`collaboration`=⟨*value*⟩ (initially `{}`)

Stored undirected connections. Duplicate and self-links are ignored; reverse declarations need not be repeated. Accepts Comma-separated project IDs.

`collaborations`=⟨*value*⟩ (initially `{}`)

Compatibility alias for the singular declaration key. Accepts Same as collaboration.

`active`=`true|false` (initially `true`)

False omits this project and incident edges from plots. Accepts true or false.

9.2.2 Area setup

Options for \CollaborationSetup; follow TeX grouping.

Per-plot area options override these defaults.

With the class loaded this setup also updates its area-colour settings.

area-colors=⟨*value*⟩ (initially {})

Explicit area colours. Local plots merge individual mappings with the setup mappings. Accepts Area=colour pairs.

area-palette=⟨*value*⟩

Rotating fallback palette for areas without an explicit colour. Accepts Nonempty colour list. Initially blue!70!black, teal!80!black, orange!85!black, violet, brown.

9.2.3 Per-plot options

Options for \CollaborationPlot or the collaboration type of \printPlot.

Each rendering resets built-in defaults, then applies shared, type-specific, and local options.

Float keys also pass through to hvFloat.

layout=⟨*value*⟩ (initially arc)

Selects the visual layout. arc-diagram is a value alias for arc. Accepts arc, arc-diagram, or heatmap.

arc

Shorthand for layout=arc. Accepts Bare key. Initially Not selected separately.

arc-diagram

Shorthand for layout=arc. Accepts Bare key. Initially Not selected separately.

heatmap

Shorthand for layout=heatmap. Accepts Bare key. Initially Not selected separately.

arcs=true|false (initially false)

Draws connecting arcs in the arc layout. Accepts true or false; bare key means true.

no-arcs

Shorthand for arcs=false. Accepts Bare key. Initially Not selected separately.

area-colors=⟨*value*⟩

Overrides or adds individual area colours for this rendering. Accepts Area=colour pairs. Initially Setup mappings.

area-colours=⟨*value*⟩

British-spelling alias. Accepts Same as area-colors. Initially Setup mappings.

area-palette=⟨*value*⟩

Replaces the fallback palette for this call. An empty per-call list leaves the palette unchanged. Accepts Colour list. Initially Setup palette.

caption=⟨*value*⟩ (initially {})

Appends text to the automatic caption. An empty value clears inherited additional caption text. Accepts TeX text.

collaboration=⟨*value*⟩

Replaces all edges incident to the focus for this rendering, including incoming edges. With no dataset, supplies the other one-off node IDs. Accepts Comma-separated IDs; {} allowed. Initially Stored connections.

collaborations=⟨*value*⟩

Compatibility alias for the local connection override. Accepts Same as collaboration. Initially `Stored connections`.

show-projects=⟨*value*⟩

Filters displayed nodes. The focus is always included; an empty list shows only the focus. Accepts Comma-separated IDs; {} allowed. Initially `All active projects`.

projects=⟨*value*⟩

Compatibility alias for the display filter; it does not define connections. Accepts Same as show-projects. Initially `All active projects`.

width=⟨*value*⟩

Requested plot width; layout measurement uses this width. Accepts TeX dimension. Initially `\linewidth`.

9.2.4 Command arguments and customization hooks

`\CollaborationPlot`[options]{ID} uses the independent registry.

`\clearCollaborationProjects` clears that registry in the current group.

The class adds `\ProjectCollaborationPlot`, `\collaborationPlot` and its plural alias; its `\printPlot` reads class metadata.

Node IDs are not arbitrary TeX labels.

Edges between filtered or inactive nodes are not shown.

Example 9.1: Declared data and a local connection override

```
\documentclass{article}
\usepackage{dfg-collaboration}
\DeclareCollaborationProject{Q01}{area=Services,collaboration={A01}}
\DeclareCollaborationProject{A01}{area=Research}
\DeclareCollaborationProject{A02}{area=Research,collaboration={Q01}}
\pagestyle{empty}
\begin{document}
\printPlot[nonFloat,arcs=true,collaboration={A02}]{{collaboration}{Q01}}
\clearpage
\printPlot[nonFloat,layout=heatmap]{{collaboration}{Q01}}
\end{document}
```

Independently compiled result (page 1)

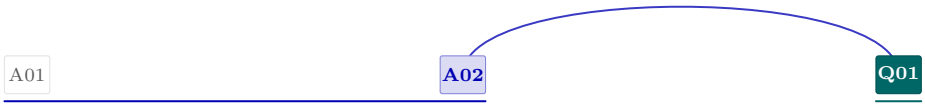


Figure 1: Collaborations of Q01.

Independently compiled result (page 2)

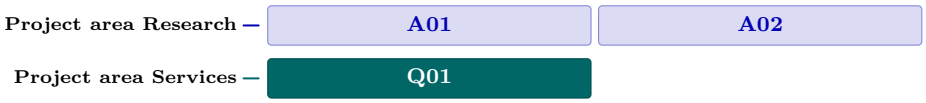


Figure 2: Collaborations of Q01.

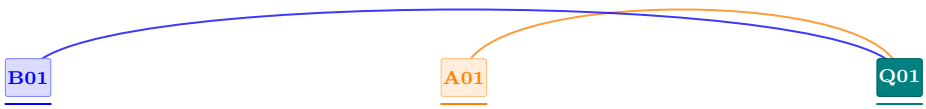
9.3 Examples with different options

Example 9.2: Colours, display filtering, and empty connections

```
\documentclass{article}
\usepackage{dfg-collaboration}
\DeclareCollaborationProject{Q01}{area=Service,collaboration={A01,B01}}
\DeclareCollaborationProject{A01}{area=Research}
\DeclareCollaborationProject{B01}{area=Clinical}
\DeclareCollaborationProject{X01}{area=External,active=false}
\CollaborationSetup{area-colors={Research=orange,Clinical=blue,Service=teal}}
\pagestyle{empty}
\begin{document}
\printPlot[nonFloat,arcs,capPos=top,show-projects={A01,B01},
  caption={The focus is included automatically.}]{{collaboration}{Q01}}
\clearpage
\printPlot[nonFloat,layout=heatmap,collaboration={},show-projects={A01},
  caption={No connections; only the selected project and focus.}]
  {{collaboration}{Q01}}
\end{document}
```

Independently compiled result (page 1)

Figure 1: Collaborations of Q01. The focus is included automatically.



Independently compiled result (page 2)

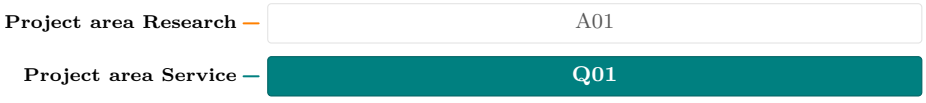


Figure 2: Collaborations of Q01. No connections; only the selected project and focus.

10 Gantt charts and workpackages

Copy `dfg-gantt.sty` and `dfg-plots.sty`. Additional TeX dependencies are pgfgantt, datatool, enumitem, and etoolbox.

Workpackages supply narrative headings and Gantt rows from one declaration. `\GanttProject{ID}` selects their project and the default plot focus. Grouped `title` and `gantt` fields take precedence over legacy `name`, `description`, `periodStart`, `periodEnd`, and `style` fields. Styles are `default`, `alternative`, `important`, `crosshatch`, and `striped`. Nested workpackages and references need no proposal class; references require the usual second LaTeX pass.

Set `slots`, `first-quarter`, and `year-labels` globally with `\GanttSetup` or for one plot. The default is 16 quarters beginning in Q3. Vertical rules after Q4 retain the year boundaries of the original class. Grid validation runs before geometry calculations; if compilation continues after an invalid grid error, it recovers to these defaults. Equal start/end values omit a bar; reversed or non-integer ranges are rejected.

For chart data without narrative text, use:

```
\DeclareWorkPackage{Study}{methods}{
  gantt={start=1,end=3}}
\GanttChart[slots=8]{Study}
```

The `\GanttChart` command renders only the graphic without float options.

10.1 Commands

\GanttSetup{⟨*options*⟩}

Set the quarter grid defaults in the current group.

\GanttProject{⟨*ID*⟩}

Select the project for narrative workpackages and the default plot focus.

\addWP{⟨*ID*⟩}{⟨*fields*⟩}

Add a narrative item inside workpackages, with the same data supplying its Gantt row.

\DeclareWorkPackage{⟨*project*⟩}{⟨*ID*⟩}{⟨*fields*⟩}

Declare a chart row without a narrative list item.

\getWP[⟨*project*⟩]{⟨*IDs*⟩}

Reference one or more narrative workpackages. The optional project replaces the current project for this call.

\GanttChart[⟨*options*⟩]{⟨*project*⟩}

Draw a graphic only, without the float wrapper.

\GanttPlotFigure[⟨*options*⟩]{⟨*project*⟩}

Draw a chart with automatic caption and native hvFloat options.

10.2 Complete option reference

Defaults below describe standalone use. Boolean keys accept true or false; a bare boolean key means true, with inverse aliases described explicitly.

10.2.1 Narrative workpackage fields

Fields for `\addWP`{ID}{fields} and `\DeclareWorkPackage`{project}{ID}{fields}.

Set a project before narrative declarations with `\GanttProject`.

Grouped title/gantt fields take precedence over corresponding legacy fields.

title=⟨*value*⟩ (initially {})

Narrative heading; normalizes to name. It also supplies the chart description when no chart label/description was given. Accepts TeX text.

gantt=⟨*value*⟩

Sets the workpackage chart fields without entering a second dataset. Accepts Nested label, start, end, style keys. Initially `No grouped chart fields`.

id=⟨*value*⟩

Accepted by normalization for compatibility; standalone storage uses the mandatory command ID and ignores this field. Prefer the mandatory argument. Accepts Legacy ID field. Initially `Mandatory command argument`.

name=⟨*value*⟩ (initially {})

Legacy narrative heading. title overrides it. Accepts TeX text.

description=⟨*value*⟩

Legacy chart label. gantt/label overrides it. Accepts TeX text. Initially `{}; falls back to title/name in grouped syntax`.

periodStart=⟨*value*⟩ (initially 1)

Legacy first chart slot. gantt/start overrides it. Accepts Nonnegative integer.

periodEnd=⟨*value*⟩ (initially 1)

Legacy final chart slot. gantt/end overrides it. Equal endpoints omit the bar. Accepts Nonnegative integer, at least start.

style=⟨*value*⟩ (initially `default`)

Legacy bar appearance. gantt/style overrides it. Accepts default, alternative, important, crosshatch, striped.

10.2.2 Nested gantt fields

Use inside gantt={...} in a workpackage declaration.

Start/end are chart-slot indices, not calendar dates.

label=⟨*value*⟩

Label printed inside the bar. Accepts TeX text. Initially `Workpackage title/name when present`.

start=⟨*value*⟩ (initially 1)

First slot. A value greater than end is an error. Accepts Nonnegative integer.

end=⟨*value*⟩ (initially 1)

Last slot. Equal start/end values omit the bar. Accepts Nonnegative integer.

style=⟨*value*⟩ (initially `default`)

Solid default/alternative/important colours, a crosshatch pattern, or alternating stripes. Accepts default, alternative, important, crosshatch, striped.

10.2.3 Grid setup and individual charts

Use `\GanttSetup` for grouped persistent defaults, `\GanttChart` for a graphic, or the standalone Gantt plot wrapper for a floating graphic.

The standalone wrapper also consumes caption and forwards remaining float keys to hvFloat.

The class retains its own plot adapter.

slots=⟨*value*⟩ (initially 16)

Number of quarter slots. Validated before geometry calculations. Accepts Positive integer.

first-quarter=⟨*value*⟩ (initially 3)

First quarter label. Subsequent labels cycle Q1 to Q4. Accepts Integer 1 to 4.

year-labels=⟨*value*⟩ (initially {})

Successive year-group titles. Missing labels use the funding-year formatter, whose standalone default is Year followed by the group number. Accepts Comma-separated TeX labels.

caption=⟨*value*⟩ (initially {})

Appends to the automatic Gantt caption. An empty value clears inherited additional text; it is not a graphic-only GanttChart option. Accepts TeX text; floating wrapper only.

10.2.4 Command arguments and customization hooks

`\GanttProject`{ID} selects the workpackage project and generic plot focus.

`\getWP`[project]{IDs} references workpackages, with the optional project replacing the current one for that call.

`\GanttPlotFigure`[options]{ID} wraps a chart in hvFloat.

`\GanttChart` and legacy `\dfgGanttEnvironment` render graphics only.

`\dfgGanttContent` renders stored rows, and `\DFGGanttTitles` renders grid headings inside pgfgantt.

Standalone formatter hooks are `\dfgFundingYear`{number}, `\DFGGanttLabel`{project}{id}, `\DFGGanttTag`{project}{field}{text}{tag}, and `\dfgGanttShowQs`{quarter}{slot}.

The class supplies its own reference/debug formatters.

Gantt colours can be redefined through the xcolor names tableHeadingsBG, tableHeadingsFont, tableOuterLines, color@gantt@frame, color@gantt@default, color@gantt@alternative, color@gantt@important, color@gantt@crosshatch, color@gantt@stripe-one, color@gantt@stripe-two.

Example 10.1: Narrative workpackages, references, and a quarter chart

```
\documentclass{article}
\usepackage{dfg-gantt}
\GanttSetup{slots=8,first-quarter=1,year-labels={2027,2028}}
\pagestyle{empty}
\begin{document}
\GanttProject{Study}
\begin{workpackages}
  \addWP{methods}{title={Methods},gantt={label={Set up},start=1,end=3}}
  Develop the methods.
  \begin{workpackages}
    \addWP{validation}{gantt={label={Validation},start=2,end=4,style=striped}}
    Validate the methods.
  \end{workpackages}
  \addWP{analysis}{title={Analysis},gantt={start=4,end=8,style=important}}
  Analyse the results.
\end{workpackages}
See \getWP{methods,validation,analysis}.

\printPlot[nonFloat]{{gantt}}
\end{document}
```

Independently compiled result (page 1)

WP 1: Methods Develop the methods.

WP 1a: Validate the methods.

WP 2: Analysis Analyse the results.

See WP 1, WP 1a, WP 2.

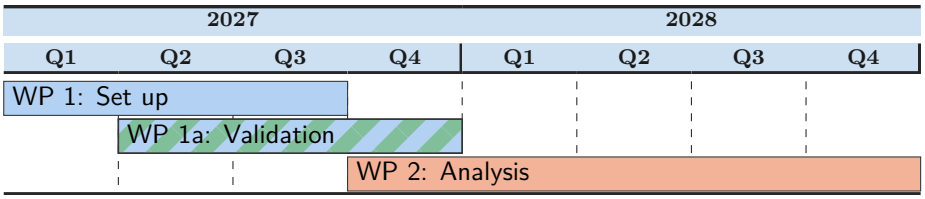


Figure 1: Gantt chart of Study.

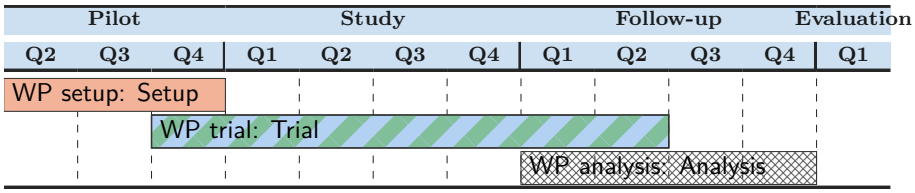
10.3 Examples with different options

Example 10.2: Quarter grids and different bar styles

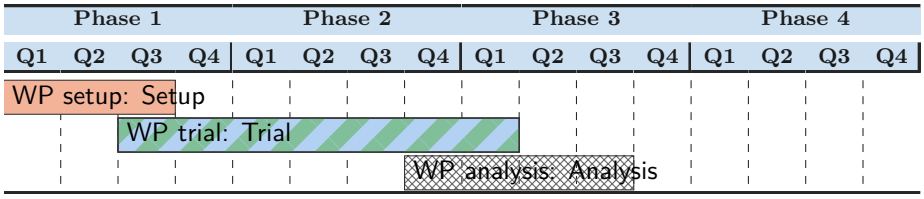
```
\documentclass{article}
\usepackage{dfg-gantt}
\GanttSetup{slots=12,first-quarter=2,
  year-labels={Pilot,Study,Follow-up,Evaluation}}
\DeclareWorkPackage{Study}{setup}{gantt={label={Setup},start=1,end=3,
  style=important}}
\DeclareWorkPackage{Study}{trial}{gantt={label={Trial},start=3,end=9,
  style=striped}}
\DeclareWorkPackage{Study}{analysis}{gantt={label={Analysis},start=8,end=11,
  style=crosshatch}}
\pagestyle{empty}
\begin{document}
\printPlot[nonFloat,capPos=top,caption={Starting in Q2.}]{gantt}{Study}
\clearpage
\noindent\GanttChart[slots=16,first-quarter=1,
  year-labels={Phase 1,Phase 2,Phase 3,Phase 4}]{Study}
\end{document}
```

Independently compiled result (page 1)

Figure 1: Gantt chart of Study. Starting in Q2.



Independently compiled result (page 2)



11 Event timelines

Copy `dfg-timeline.sty`. It loads TikZ, fontawesome5, and enumitem. Events can use month/day precision, date ranges, year filters, category icons, and automatic or manual label placement. The same declarations produce a chart and a description list or prose.

`\clearEvents` starts a new collection. Register a category with:

```
\DeclareEventCategory{conference}{Conference}{blue}{\faGlobe}
```

The proposal's old `preamble/dfg-event-timeline.tex` file is a compatibility loader.

11.1 Commands

\addEvent [⟨*formatting*⟩] {⟨*data*⟩}

Register one dated event. Formatting can be overridden when rendering.

\printEventTimeline [⟨*options*⟩]

Render the selected events as a horizontal timeline.

\printEventDetails [⟨*options*⟩]

Render the same event data as individual or aggregated details.

\DeclareEventCategory {⟨*key*⟩} {⟨*label*⟩} {⟨*colour*⟩} {⟨*icon*⟩}

Register or replace a global category.

\clearEvents

Clear event data and stored formatting, preserving categories.

11.2 Complete option reference

Defaults below describe standalone use. Boolean keys accept true or false; a bare boolean key means true, with inverse aliases described explicitly.

11.2.1 Event data

Mandatory data argument of `\addEvent`[formatting]{data}.

Events and clearEvents follow TeX grouping; category registrations are global.

The optional formatting argument is documented separately below.

id=⟨*value*⟩

Stable key for later per-render overrides. Duplicate IDs warn and retain the first event. Accepts Unique ID. Initially `Automatically generated event-N`.

date=⟨*value*⟩ (initially `Required`)

Point date, or beginning of a date range. Month-only dates are positioned mid-month; days and leap years are validated. Accepts YYYY-MM or YYYY-MM-DD.

start date=⟨*value*⟩

Alias for the start date. If both forms are given, the later assignment wins. Accepts Same as date. Initially `Required when date is absent`.

end date=⟨*value*⟩

End of a range, not before its beginning. Accepts YYYY-MM or YYYY-MM-DD. Initially `Start date`.

category=⟨*value*⟩ (initially `Required`)

Selects colour, legend label, and default icon. Built-ins are retreat, progress, networking, graduate, symposium. Accepts Registered category key.

title=⟨*value*⟩
Full event title and details heading. Accepts TeX text. Initially `Required nonempty text`.

label=⟨*value*⟩ (initially `Title`)
Short chart label when labels=label. Accepts TeX text.

abbreviation=⟨*value*⟩
Used when labels=abbreviation and a value is supplied. Accepts TeX text. Initially `Falls back to label/title`.

summary=⟨*value*⟩ (initially `{}`)
Optional second line in the chart when summary=true; also available to aggregated detail rendering. Accepts Short TeX text.

description=⟨*value*⟩ (initially `{}`)
Long details text; kept separate from the chart summary. Accepts TeX text.

icon=⟨*value*⟩
Overrides the category icon for this event. Accepts TeX icon command. Initially `Category icon`.

11.2.2 Timeline rendering

Options for `\printEventTimeline`.

Each call resets the following defaults; changes are local to that rendering.

Labels occupy lanes above the axis; date labels use independent lanes below it.

width=⟨*value*⟩
Total requested width including label fitting. Insufficient width produces a diagnostic. Accepts Positive dimension. Initially `\linewidth`.

year=⟨*value*⟩ (initially `all`)
Filters to events intersecting that year; a range can intersect several years. Accepts all or four-digit year.

rotation=⟨*value*⟩ (initially `30`)
Upper event-label angle. Accepts Angle in degrees.

date rotation=⟨*value*⟩ (initially `auto`)
Auto follows the effective event-label angle unless independently overridden. Accepts auto or angle in degrees.

labels=⟨*value*⟩ (initially `label`)
Selects the event text, with the fallbacks documented above. Accepts title, label, abbreviation.

summary=`true|false` (initially `false`)
Adds a nonempty summary below the chart label. Accepts true or false.

icons=`true|false` (initially `true`)
Displays the event icons. Accepts true or false.

legend=`true|false` (initially `true`)
Shows the categories used by the selected events. Accepts true or false.

show labels=`true|false` (initially `true`)
Displays upper label text; icons can remain visible independently. Accepts true or false.

show dates=`true|false` (initially `true`)
Displays date or date-range labels below the axis. Accepts true or false.

label width=⟨*value*⟩ (initially 0pt)
Zero uses natural text width; positive values constrain/wrap label text. Accepts Nonnegative dimension.

label distance=⟨*value*⟩ (initially 1.8mm)
Distance from the axis to the first upper label lane. Accepts Nonnegative dimension.

lane=⟨*value*⟩ (initially auto)
Default upper lane request. Lane numbering begins at zero; auto avoids collisions. Accepts auto or nonnegative integer.

lane spacing=⟨*value*⟩ (initially auto)
Auto uses measured upper-label height plus gap. Accepts auto or positive dimension.

date lane=⟨*value*⟩ (initially auto)
Default date-label lane request, independent of upper lanes. Accepts auto or nonnegative integer.

date distance=⟨*value*⟩ (initially 1.8mm)
Distance from the axis to the first lower date lane. Accepts Nonnegative dimension.

date lane spacing=⟨*value*⟩ (initially auto)
Auto uses measured date-label height plus gap. Accepts auto or positive dimension.

gap=⟨*value*⟩ (initially .8mm)
Collision/automatic-lane gap. Accepts Nonnegative dimension.

font=⟨*value*⟩
Upper-label font. Accepts TeX font commands. Initially `\sffamily\fontsize{7.4}{9}\selectfont`.

date font=⟨*value*⟩
Date-label font. Accepts TeX font commands. Initially `\sffamily\fontsize{6.5}{8}\selectfont`.

line color=⟨*value*⟩ (initially EventMuted!40)
Main timeline axis colour. Accepts xcolor colour expression.

line width=⟨*value*⟩ (initially .6pt)
Main axis stroke. Accepts Nonnegative dimension.

connector width=⟨*value*⟩ (initially .35pt)
Upper-label connector stroke. Accepts Nonnegative dimension.

date connector width=⟨*value*⟩ (initially .3pt)
Date-label connector stroke. Accepts Nonnegative dimension.

range width=⟨*value*⟩ (initially 1.2pt)
Date-range segment stroke. Accepts Nonnegative dimension.

dot radius=⟨*value*⟩ (initially .9mm)
Radius of event dots. Accepts Nonnegative dimension.

events=⟨*value*⟩ (initially {})
Overrides specific registered event IDs for this rendering. These overrides take precedence over stored optional addEvent formatting. Accepts ID={formatting keys} pairs.

11.2.3 Per-event formatting

Use in the optional argument of `\addEvent` or under events={id={...}} in `\printEventTimeline`.

Values inherit the timeline settings unless listed otherwise.

Local events overrides win over stored formatting.

lane=⟨*value*⟩

Upper-label lane for this event. Accepts auto or nonnegative integer. Initially `Timeline lane`.

xshift=⟨*value*⟩ (initially `0pt`)

Horizontal upper-label shift; does not change the event date. Accepts Signed dimension.

yshift=⟨*value*⟩ (initially `0pt`)

Vertical upper-label shift. Accepts Signed dimension.

rotation=⟨*value*⟩

Event label/icon angle. When show labels=false, upper icons remain upright. Accepts Angle in degrees. Initially `Timeline rotation`.

date rotation=⟨*value*⟩

Independent date-label rotation. Auto follows the effective per-event label rotation. Accepts auto or angle. Initially `Timeline date rotation`.

date direction=⟨*value*⟩ (initially `left`)

Chooses which end/digit of the date label aligns with its connector. Accepts left or right.

label width=⟨*value*⟩

Per-event text wrapping width. Accepts Nonnegative dimension. Initially `Timeline label width`.

label=⟨*value*⟩

Overrides the rendered short label. Accepts TeX text. Initially `Selected event label`.

icon=⟨*value*⟩

Overrides the rendered icon. Accepts TeX icon command. Initially `Event/category icon`.

font=⟨*value*⟩

Per-event upper-label font. Accepts TeX font commands. Initially `Timeline upper font`.

date lane=⟨*value*⟩

Per-event lower date lane. Accepts auto or nonnegative integer. Initially `Timeline date lane`.

date xshift=⟨*value*⟩ (initially `0pt`)

Horizontal date-label shift. Accepts Signed dimension.

date yshift=⟨*value*⟩ (initially `0pt`)

Vertical date-label shift. Accepts Signed dimension.

node options=⟨*value*⟩ (initially `{}`)

Additional upper-label node styling. These are TikZ options, not timeline keys. Accepts TikZ node options.

11.2.4 Event details

Options for `\printEventDetails`.

Every call resets the listed defaults.

Aggregated rendering groups selected events by category; category override text is applied in that aggregated mode.

format=⟨*value*⟩ (initially `list`)

Description-list layout or continuous prose. Accepts list or prose.

year=⟨*value*⟩ (initially all)

Same intersection filter as the chart. Accepts all or four-digit year.

icons=true|false (initially true)

Shows icons in detail headings/prose. Accepts true or false.

show dates=true|false (initially true)

Shows event dates or collected dates. Accepts true or false.

nodate=true|false (initially false)

Inverse alias: nodate=true means show dates=false. Accepts true or false; bare means true.

aggregated=true|false (initially false)

Combines events by category and common text rather than printing each event separately. Accepts true or false.

categories=⟨*value*⟩ (initially {})

Overrides aggregate category headings/descriptions; it is not a category-selection filter. Accepts Category={title=...,description=...} pairs.

11.2.5 Aggregate category overrides

Nested keys under categories={category={...}} for \printEventDetails.

The category must already be registered.

title=⟨*value*⟩

Replaces the aggregate heading for this category. Accepts TeX text. Initially Registered/generated category heading.

description=⟨*value*⟩

Replaces the aggregate category description. Accepts TeX text. Initially Automatically combined event text.

11.2.6 Command arguments and customization hooks

\DeclareEventCategory{key}{label}{colour}{icon} registers or replaces a global category.

\EventCategoryIcon{key} prints its coloured icon.

Built-ins are retreat (Annual retreat, EventRetreat, users), progress (Progress day, EventProgress, comments), networking (Networking, EventNetworking, handshake), graduate (Graduate school retreat, EventGraduate, graduation cap), and symposium (International symposium, EventSymposium, globe).

Redefine the EventRetreat, EventProgress, EventNetworking, EventGraduate, EventSymposium, EventInk, EventMuted, EventTalk, or EventMisc xcolor names to customize their colours.

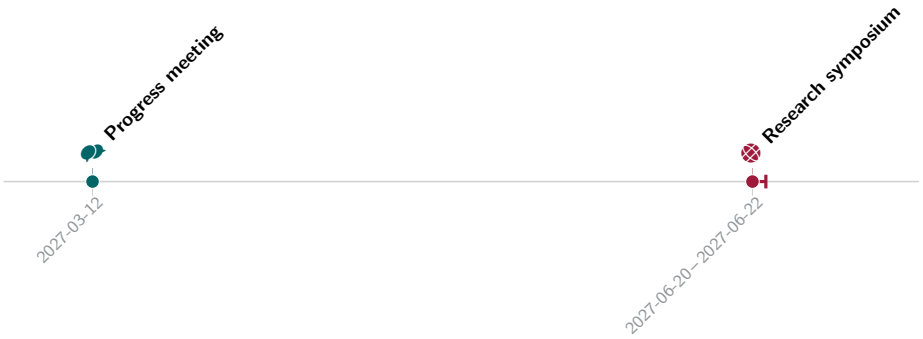
\clearEvents clears event data and stored formatting, preserving categories.

There is no persistent timeline setup command: rendering settings reset on every call.

Example 11.1: Dates, a date range, and prose details

```
\documentclass{article}
\usepackage{dfg-timeline}
\pagestyle{empty}
\begin{document}
\addEvent{date=2027-03-12,category=progress,title={Progress meeting},
  description={Discuss the first results.}}
\addEvent{start date=2027-06-20,end date=2027-06-22,
  category=symposium,title={Research symposium}}
\printEventTimeline[width=\linewidth,rotation=45]
\printEventDetails[format=prose]
\end{document}
```

Independently compiled result (page 1)



Progress day International symposium

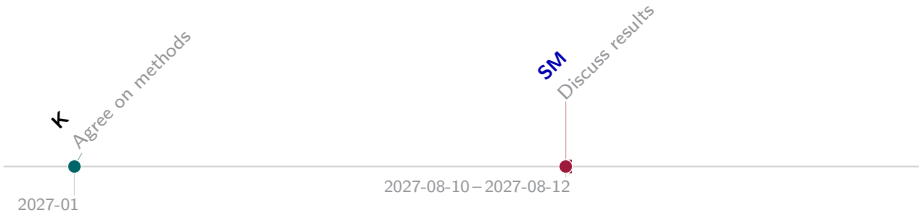
Progress meeting (2027-03-12). Discuss the first results. **Research symposium (2027-06-20 – 2027-06-22).**

11.3 Examples with different options

Example 11.2: Year filters, label placement, and aggregated details

```
\documentclass{article}
\usepackage{dfg-timeline}
\addEvent{id=kickoff,date=2027-01,category=progress,title={Start},
  label={Launch},abbreviation={K},summary={Agree on methods},
  description={The first methods review.}}
\addEvent{id=annual,start date=2027-08-10,end date=2027-08-12,
  category=symposium,title={Summer meeting},abbreviation={SM},
  summary={Discuss results},description={A joint symposium.}}
\addEvent{date=2028-02,category=progress,title={Review},
  description={The next methods review.}}
\pagestyle{empty}
\begin{document}
\printEventTimeline[year=2027,labels=abbreviation,summary=true,icons=false,
  rotation=45,date rotation=0,label width=25mm,legend=false,
  events={kickoff={lane=0,date lane=1,xshift=1mm},
    annual={lane=1,date lane=0,node options={text=blue!70!black}}}]
\clearpage
\printEventDetails[format=list,aggregated=true,nodate,
  categories={progress={title={Research milestones},
    description={Shared review of progress.}}}]
\bigskip
\printEventDetails[year=2027,format=prose,icons=false]
\end{document}
```

Independently compiled result (page 1)



Independently compiled result (page 2)

Research milestones
Shared review of progress.

International symposium
Summer meeting
A joint symposium.

Start (2027-01). The first methods review. **Summer meeting (2027-08-10 – 2027-08-12).** A joint symposium.

12 Distribution charts

Copy `dfg-distribution.sty`. It loads TikZ and uses LaTeX3. Register vector symbols with `\DeclareDistributionIcon` and categories with `\DeclareDistributionCategory`. Category declarations provide their label, colour, and icon. Supply counts with `\setDistribution` and render them with `\DistributionChart`. Geometry and counts remain separate.

Counts must be nonnegative integers. Omitted registered categories become zero. Per-chart options follow TeX grouping.

12.1 Commands

\DeclareDistributionIcon{⟨*name*⟩}{⟨*TikZ code*⟩}

Register a normalized vector icon.

\DeclareDistributionCategory{⟨*key*⟩}{⟨*label*⟩}{⟨*colour*⟩}{⟨*icon*⟩}

Register a category using an existing icon.

\distributionSetup{⟨*options*⟩}

Set geometry and row-order defaults.

\setDistribution{⟨*counts*⟩}

Replace category counts; omitted registered categories become zero.

\DistributionChart[⟨*options*⟩]

Render the current dataset with optional local geometry settings.

12.2 Complete option reference

Defaults below describe standalone use. Boolean keys accept true or false; a bare boolean key means true, with inverse aliases described explicitly.

12.2.1 Chart geometry, labels, and order

Use `\distributionSetup` for defaults or `\DistributionChart`[options] for a single grouped chart.

Registered categories initially are postdoc, industry, other, with cap, factory, bulb icons.

The additional none icon draws no symbol.

unit width=⟨*value*⟩ (initially `7.5mm`)

Width of one count segment. Accepts Dimension.

bar height=⟨*value*⟩ (initially `7.8mm`)

Height of each bar. Accepts Dimension.

row spacing=⟨*value*⟩ (initially `10mm`)

Distance between row centres. Accepts Dimension.

label x=⟨*value*⟩ (initially `-8mm`)

Horizontal icon/label anchor relative to the axis. Accepts Signed dimension.

label width=⟨*value*⟩ (initially `15mm`)

Text width of the category label. Accepts Dimension.

label drop=⟨*value*⟩ (initially `4.8mm`)

Downward text offset when label position=below. Accepts Dimension.

label position=⟨*value*⟩ (initially `left`)

Category text to the left of the icon, or below it. Accepts left or below.

label gap=⟨*value*⟩ (initially 2mm)
Gap between left-positioned label and icon. Accepts Dimension.

icon radius=⟨*value*⟩ (initially 3.4mm)
Radius of the category icon background. Accepts Dimension.

icon raise=⟨*value*⟩ (initially auto)
Auto is 0pt for left labels and 2.3mm for below labels. Accepts auto or signed dimension.

value gap=⟨*value*⟩ (initially 3mm)
Gap from the end of a bar to its numeric count. Accepts Dimension.

axis padding=⟨*value*⟩ (initially 2mm)
Axis extension beyond the first and last bars. Accepts Dimension.

axis width=⟨*value*⟩ (initially .45pt)
Axis stroke width. Accepts Dimension.

axis dot radius=⟨*value*⟩ (initially .4mm)
Radius of the dots at the axis ends. Accepts Dimension.

separator width=⟨*value*⟩ (initially .4pt)
White strokes between count segments. Accepts Dimension.

text color=⟨*value*⟩ (initially DistributionText)
Category and count text colour. Accepts xcolor colour expression.

axis color=⟨*value*⟩ (initially DistributionAxis)
Axis and endpoint-dot colour. Accepts xcolor colour expression.

label font=⟨*value*⟩
Category-label font. Accepts TeX font commands. Initially `\sffamily\bfseries \fontsize{8.8}{10}\selectfont`.

value font=⟨*value*⟩
Numeric-count font. Accepts TeX font commands. Initially `\sffamily\bfseries \fontsize{11}{12}\selectfont`.

order=⟨*value*⟩
Selects and orders displayed rows. Unknown or repeated categories are errors. Accepts Nonempty list of distinct registered categories. Initially `postdoc, industry, other; new categories append`.

12.2.2 Command arguments and customization hooks

`\DeclareDistributionIcon`{name}{TikZ code} declares a normalized vector symbol; cap, factory, bulb, and none are built in.

`\DeclareDistributionCategory`{key}{label}{colour}{icon} adds or replaces a category; its icon must exist.

`\setDistribution`{category=count,...} replaces counts, treating omitted registered categories as zero.

Negative/non-integer counts, unknown categories, and duplicates are errors; rejected data leave the last valid counts intact.

`\DistributionChart`[options] renders the current dataset.

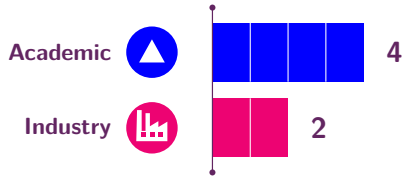
Colour hooks are DistributionPostdoc, DistributionIndustry, DistributionOther, DistributionText, and DistributionAxis.

The stock geometry has no sign/range validation; use sensible positive sizes for bars and spacing.

Example 12.1: A custom category and vector icon

```
\documentclass{article}
\usepackage{dfg-distribution}
\DeclareDistributionIcon{triangle}{%
  \fill[white](-.5,-.4)--(.5,-.4)--(0,.5)--cycle;}
\DeclareDistributionCategory{academic}{Academic}{blue}{triangle}
\distributionSetup{order={academic,industry},unit width=5mm}
\pagestyle{empty}
\begin{document}
\setDistribution{academic=4,industry=2}
\DistributionChart
\end{document}
```

Independently compiled result (page 1)

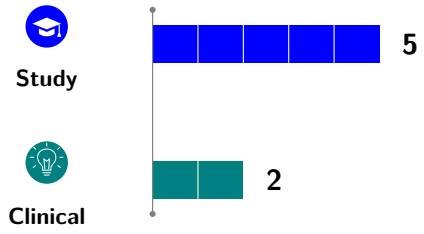


12.3 Examples with different options

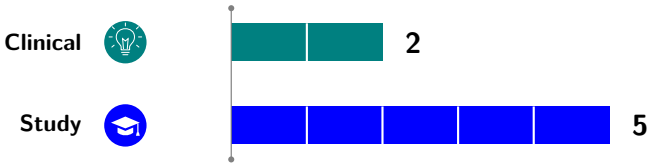
Example 12.2: Geometry, label placement, and row order

```
\documentclass{article}
\usepackage{dfg-distribution}
\DeclareDistributionCategory{study}{Study}{blue}{cap}
\DeclareDistributionCategory{clinical}{Clinical}{teal}{bulb}
\distributionSetup{order={study,clinical},unit width=6mm,
  label position=below,row spacing=18mm,bar height=5mm,
  label x=-14mm,label width=18mm,icon radius=2.8mm,
  text color=black,axis color=gray}
\pagestyle{empty}
\begin{document}
\setDistribution{study=5,clinical=2}
\DistributionChart
\clearpage
\DistributionChart[label position=left,icon raise=auto,
  order={clinical,study},row spacing=11mm,unit width=10mm,
  label width=20mm,label gap=3mm,separator width=.8pt]
\end{document}
```

Independently compiled result (page 1)



Independently compiled result (page 2)



13 Registered paragraph icons

Copy `dfg-icons.sty`. It loads graphicx, wrapstuff, and etoolbox. The example uses the TeX installation's sample images; replace them with your own files in a real document.

`\DeclareIcon{name}{options}` registers exact names, variants, and aliases; there is no whitelist of proposal-specific assets. A single `file` serves both shapes; one supplied variant is the fallback for the other. `\getIcon[options]{name1,name2}` places a group beside the following paragraph. Graphic options are forwarded to graphicx. `\IconIfRegisteredTF{name}{yes}{no}` checks registration.

Registrations are global. Redeclaring a name replaces its files and complete alias list, removing old aliases. Names are case-sensitive and surrounding spaces are ignored. Blank names and declarations without assets are errors. Explicit names and aliases take precedence over automatic filename aliases. Reusing another icon's explicit alias is an error and leaves the registry unchanged. Ambiguous automatic aliases keep their first owner; use explicit aliases or full registered paths to distinguish identical basenames. Legacy shorthand names must be registered explicitly with `aliases`; a file named `icon-logo-square.pdf` does not implicitly register `icon-logo`.

13.1 Commands

\DeclareIcon{⟨*name*⟩}{⟨*assets*⟩}

Globally register graphic variants and explicit aliases.

\getIcon[⟨*options*⟩]{⟨*names*⟩}

Place registered icons side by side next to the following paragraph.

\IconIfRegisteredTF{⟨*name*⟩}{⟨*yes*⟩}{⟨*no*⟩}

Test registration of a name or alias after trimming spaces.

13.2 Complete option reference

Defaults below describe standalone use. Boolean keys accept true or false; a bare boolean key means true, with inverse aliases described explicitly.

13.2.1 Icon registration

Options for `\DeclareIcon`{name}{options}.

Names and aliases are registered globally.

At least one asset is needed; redeclaration replaces the complete alias list.

file=⟨*value*⟩ (initially `{}`)

Default asset for both shapes unless a variant is supplied. Accepts Graphics filename/path.

square=⟨*value*⟩

Square-shape asset. Accepts Graphics filename/path. Initially `file or supplied vertical variant`.

vertical=⟨*value*⟩

Portrait-shape asset. Accepts Graphics filename/path. Initially `file or supplied square variant`.

aliases=⟨*value*⟩ (initially `{}`)

Additional explicit names. Conflicts with another icon are errors and leave the registry unchanged. Filename, basename, and PDF-to-SVG aliases are also registered automatically, without overriding explicit names. Accepts Comma-separated exact names.

13.2.2 Paragraph icon placement

Options for `\getIcon`[options]{comma-separated names}.

All placement options reset per call.

Remaining options are forwarded to graphicx includegraphics for every image; see texdoc graphics for its complete backend reference.

shape=⟨*value*⟩ (initially `square`)

Selects the registered variant, with the registration fallback rules. Accepts square or vertical.

square

Shorthand for shape=square. Accepts Bare key; no value. Initially `Not selected separately`.

vertical

Shorthand for shape=vertical. Accepts Bare key; no value. Initially `Not selected separately`.

gap=⟨*value*⟩ (initially `.6em`)

Spacing between grouped images and between the image group and paragraph text. Accepts Dimension.

height=⟨*value*⟩

Reserved paragraph lines. Total image height is capital-H height plus (height-1) baselines. This computed totalheight is applied after forwarded graphicx keys. Accepts Positive integer. Initially `4 lines for square; 5 for vertical`.

13.2.3 Command arguments and customization hooks

`\IconIfRegisteredTF`{name}{yes}{no} tests a registered name or alias after trimming spaces.

Missing graphics files produce a warning and example-image fallback at rendering time, rather than failing registration.

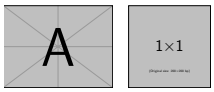
Graphics lookup follows graphicspath and driver extension order.

The computed totalheight is appended after forwarded graphicx options, so it controls the final icon height; width, trim, clip, page, and angle retain graphicx semantics.

Example 13.1: Own asset names and grouped paragraph icons

```
\documentclass{article}
\usepackage{dfg-icons}
\DeclareIcon{my-brand}{file={example-image-a},aliases={brand}}
\DeclareIcon{portrait}{square={example-image-1x1},vertical={example-image-9x16}}
\pagestyle{empty}
\begin{document}
\getIcon[height=3]{brand,portrait}
This example registers its own icon names and assets. There is no fixed list
of permitted icon names. A single asset can serve both shapes, or separate
square and vertical variants can be declared. The paragraph wraps alongside
the complete icon group and continues at its full width below the graphics.
Further text makes the transition visible in this short standalone example.
\end{document}
```

Independently compiled result (page 1)



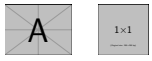
This example registers its own icon names and assets. There is no fixed list of permitted icon names. A single asset can serve both shapes, or separate square and vertical variants can be declared. The paragraph wraps alongside the complete icon group and continues at its full width below the graphics. Further text makes the transition visible in this short standalone example.

13.3 Examples with different options

Example 13.2: Variants, grouped icons, and graphic options

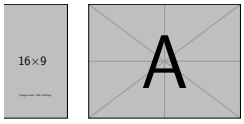
```
\documentclass{article}
\usepackage{dfg-icons}
\DeclareIcon{logo}{file=example-image-a,aliases={partner}}
\DeclareIcon{portrait}{square=example-image-1x1,vertical=example-image-9x16}
\pagestyle{empty}
\begin{document}
\getIcon[square,height=2,gap=1em,trim={2 2 2 2},clip]{partner,portrait}
The square variants share a short area beside this paragraph. The line count
sets their common height, and the gap separates both icons and the text.
Graphic options such as trim and clip are forwarded to each image. The text
continues at full width after the reserved lines, keeping all of it visible.
\clearpage
\getIcon[vertical,height=4,gap=8pt]{portrait,logo}
The portrait variant now occupies four lines. The logo has only one asset,
so that same file supplies either shape. Both graphics remain side by side
and the paragraph wraps beside their combined width. Further text shows
how the paragraph returns to its normal full width after the images.
\end{document}
```

Independently compiled result (page 1)



The square variants share a short area beside this paragraph. The line count sets their common height, and the gap separates both icons and the text. Graphic options such as trim and clip are forwarded to each image. The text continues at full width after the reserved lines, keeping all of it visible.

Independently compiled result (page 2)



The portrait variant now occupies four lines. The logo has only one asset, so that same file supplies either shape. Both graphics remain side by side and the paragraph wraps beside their combined width. Further text shows how the paragraph returns to its normal full width after the images.

14 Bibliography highlighting

Copy `dfg-bib-highlights.sty` and `dfg-bib-highlights-example.bib`. Load biblatex with the desired backend and style first. The package also loads xcolor. The author-hash backend requires Biber.

Register names with `\addboldnames`, bracing names that contain commas. Author emphasis matches Biber hashes. Entries carrying the selected keyword are entirely bold. The `emphasizeAuthors` and `emphasizeEntries` switches are independent and support local changes through `\BibHighlightSetup`. `\resetboldnames` clears the active hash registry. `\printHighlightedBibliography[options]{keyword}` selects a keyword for one list. Ordinary BibLaTeX filters and styles still apply.

The generated author-names file is written beside the job by default. Run LaTeX, Biber, then LaTeX twice, or use latexmk. Package option `noauthors` disables the author-hash backend and keeps its registration commands as no-ops.

14.1 Commands

\BibHighlightSetup{⟨*options*⟩}

Set independent author and entry highlighting options.

\addboldnames{⟨*names*⟩}

Register selected authors; brace names containing commas.

\resetboldnames

Clear the active author-hash registry.

\printHighlightedBibliography[⟨*bibliography options*⟩]{⟨*keyword*⟩}

Select the highlight keyword locally and forward list options to BibLaTeX. This does not filter the list by keyword.

14.2 Complete option reference

Defaults below describe standalone use. Boolean keys accept true or false; a bare boolean key means true, with inverse aliases described explicitly.

14.2.1 Package loading

Only noauthors is a load-time package option.

Load biblatex first to choose its backend/style.

Setup options below are passed to BibHighlightSetup, not to usepackage.

noauthors

Disables creation/registration of the auxiliary author-hash bibliography. Author registration/reset commands become no-ops. Whole-entry highlighting remains available. Accepts Bare load-time option. Initially `Not selected: hash backend enabled`.

14.2.2 Highlight setup

Options for `\BibHighlightSetup`.

Settings follow TeX grouping.

The class connects the two switches and author colour to its own live customization.

emphasizeAuthors=`true|false` (initially `true`)

Turns matching-author bold/colour emphasis on or off independently of whole-entry emphasis. Accepts true or false.

emphasizeEntries=true|false (initially true)

Enables bold type for entries carrying the selected keyword. Accepts true or false.

keyword=⟨*value*⟩

Selects entries for complete bold type. printHighlightedBibliography supplies a local keyword for one list; it does not filter out other entries. Accepts BibLaTeX keyword. Initially {}; no whole-entry keyword selected.

color=⟨*value*⟩ (initially black)

Colour of matching author names; does not recolour the entire entry. Accepts xcolor colour expression.

14.2.3 Command arguments and customization hooks

\addboldnames{{Family, Given},...} registers names through Biber hashes.

\resetboldnames clears the active hash registry.

Declare \DFGBoldNamesFile before loading the package to change the auxiliary .bib path; the default is \jobname-boldAuthors.bib and its directory must exist.

\printHighlightedBibliography[options]{keyword} uses the keyword locally and forwards all bracketed options to BibLaTeX printbibliography (see texdoc biblatex); it does not add a keyword filter.

Advanced adapter hooks are \DFGBibIfAuthorsTF{yes}{no}, \DFGBibIfEntriesTF{yes}{no}, and expandable \DFGBibNameColor.

Match-name aliases must be registered explicitly with addboldnames.

Example 14.1: Companion bibliography records

```
@article{highlight,
  author = {Doe, Jane and Roe, John},
  title = {A highlighted entry},
  journaltitle = {Example Journal},
  date = {2026},
  keywords = {important}
}
@article{normal,
  author = {Doe, Jane and Roe, John},
  title = {A regular entry with an emphasized author},
  journaltitle = {Example Journal},
  date = {2025}
}
```

Example 14.2: Independent author and whole-entry emphasis

```
\documentclass{article}
\usepackage[backend=biber,style=numeric]{biblatex}
\usepackage{dfg-bib-highlights}
\addbibresource{dfg-bib-highlights-example.bib}
\addboldnames{{Doe, Jane}}
\BibHighlightSetup{emphasizeAuthors=true,emphasizeEntries=true,keyword=important}
\pagestyle{empty}
\begin{document}
\nocite{highlight,normal}
\printbibliography
\end{document}
```

Independently compiled result (page 1)

References

[1] **Jane Doe and John Roe. "A highlighted entry". In: *Example Journal* (2026).**

[2] **Jane Doe** and John Roe. "A regular entry with an emphasized author". In: *Example Journal* (2025).

14.3 Examples with different options

Example 14.3: Author colour and independent entry highlighting

```
\documentclass{article}
\usepackage[backend=biber,style=numeric]{biblatex}
\usepackage{dfg-bib-highlights}
\addbibresource{dfg-bib-highlights-example.bib}
\addboldnames{{Doe, Jane}}
\pagestyle{empty}
\begin{document}
\nocite{highlight,normal}
\BibHighlightSetup{emphasizeAuthors=true,emphasizeEntries=false,color=blue}
\printbibliography[heading=subbibliography,title={Only selected authors}]
\clearpage
\resetboldnames
\BibHighlightSetup{emphasizeAuthors=false,emphasizeEntries=true}
\printHighlightedBibliography[heading=subbibliography,
  title={Whole entries with the selected keyword}]{important}
\end{document}
```

Independently compiled result (page 1)

Only selected authors

[1] **Jane Doe** and John Roe. “A highlighted entry”. In: *Example Journal* (2026).

[2] **Jane Doe** and John Roe. “A regular entry with an emphasized author”. In: *Example Journal* (2025).

Independently compiled result (page 2)

Whole entries with the selected keyword

[1] **Jane Doe and John Roe. “A highlighted entry”. In: *Example Journal* (2026).**

[2] Jane Doe and John Roe. “A regular entry with an emphasized author”. In: *Example Journal* (2025).

15 Page-edge thumbindex

Copy `dfg-thumbindex.sty`. It loads TikZ and scrlayer-scrpage. The example uses an ordinary two-sided article, with no proposal metadata.

Use `\ThumbIndexSetup` for width, colours, orientation, and slot count. Explicit `topmargin` and `bottommargin` are physical page-edge distances; `auto` follows the live text block. `\printThumbIndex` advances to a new slot, `\printThumbIndexOff` removes tabs, and `\resetThumbIndex` resets the sequence. The package handles odd/even outer edges and facing-page rotation. The class shares these live settings through its existing customization keys.

15.1 Commands

`\ThumbIndexSetup``{`⟨*options*⟩`}`

Set live tab geometry, appearance, and orientation.

`\printThumbIndex``[`⟨*colours*⟩`]{`⟨*label*⟩`}`

Advance to the next slot and install a tab in normal and plain running heads.

`\printThumbIndexOff`

Remove installed tab heads without resetting the slot counter.

`\resetThumbIndex`

Reset the slot counter without removing the current tab.

15.2 Complete option reference

Defaults below describe standalone use. Boolean keys accept true or false; a bare boolean key means true, with inverse aliases described explicitly.

15.2.1 Live thumbindex setup

Options for `\ThumbIndexSetup`; follow TeX grouping and share the class live state when used with dfg-crc.

Defaults here describe an ordinary standalone document.

Activate a scrlayer-scrpage page style to use the running heads.

`enabled``=true|false` (initially `true`)

Controls whether printThumbIndex installs a new tab. Turning this false does not remove a tab already installed; use printThumbIndexOff for that. Accepts true or false.

`pattern`=⟨*value*⟩ (initially `8`)

Number of vertical slots before wrapping to the first slot. Accepts Positive integer.

`width`=⟨*value*⟩ (initially `12mm`)

Nominal tab width; edge overhang is handled internally. Accepts Dimension.

`font`=⟨*value*⟩

Tab-label font. Accepts TeX font commands. Initially `\sffamily\bfseries`.

`bg`=⟨*value*⟩ (initially `black`)

Default background for subsequent printThumbIndex calls. Accepts xcolor colour expression.

`fg`=⟨*value*⟩ (initially `white`)

Default tab text colour. Accepts xcolor colour expression.

`orientation`=⟨*value*⟩ (initially `outwards`)

Inwards adds 180 degrees to the odd/even outward rotations. Accepts outwards or inwards.

topmargin=⟨*value*⟩ (initially auto)

Physical distance from the page top; auto follows the live text block. Accepts auto or dimension.

bottommargin=⟨*value*⟩ (initially auto)

Physical distance from the page bottom; auto follows the live text block. The remaining height is divided into pattern equal slots. Accepts auto or dimension.

15.2.2 Individual tabs

Options for \printThumbIndex[options]{label}.

Each call begins from the current setup colours and installs the selected tab on subsequent normal/plain pages until another call or printThumbIndexOff.

A bare colour without an equals sign is background shorthand.

bg=⟨*value*⟩

Background override for this tab; does not change the setup default. Accepts xcolor colour expression. Initially Current setup background.

fg=⟨*value*⟩

Text-colour override for this tab; does not change the setup default. Accepts xcolor colour expression. Initially Current setup foreground.

15.2.3 Command arguments and customization hooks

\printThumbIndexOff removes installed tab heads without resetting the slot counter.

\resetThumbIndex resets the counter without removing a displayed tab.

Lower-level \evenpageletterthumb{label} and \oddpageletterthumb{label} draw the left/right edge tab.

Normal and plain heads are both installed by printThumbIndex.

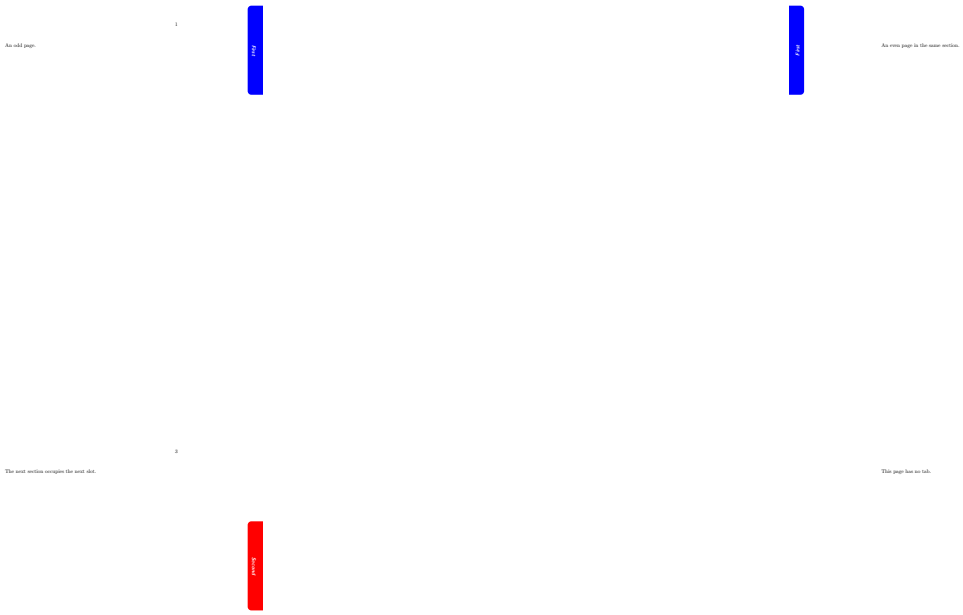
Width and explicit margins are dimension inputs without additional sign validation; margins must leave room on the page.

Standalone defaults apply here; class defaults may differ and are read live.

Example 15.1: Four pages with odd/even tabs and an off switch

```
\documentclass[twoside]{article}
\usepackage{dfg-thumbindex}
\pagestyle{scrheadings}
\ThumbIndexSetup{pattern=4,width=10mm,topmargin=20mm,bottommargin=20mm,
  bg=blue,fg=white}
\begin{document}
\printThumbIndex{First}
An odd page.
\newpage
An even page in the same section.
\clearpage
\printThumbIndex[bg=red]{Second}
The next section occupies the next slot.
\clearpage
\printThumbIndexOff
This page has no tab.
\end{document}
```

Independent article pages, left to right



15.3 Examples with different options

Example 15.2: Inward tabs, colour overrides, reset, and off

```
\documentclass[twoside]{article}
\usepackage{dfg-thumbindex}
\pagestyle{scrheadings}
\ThumbIndexSetup{pattern=2,width=8mm,orientation=inwards,
  font={\small\sffamily},bg=black,fg=white}
\begin{document}
\printThumbIndex[bg=orange,fg=black]{Start}
Odd page: inward orientation and local colours.
\newpage
Even page: the same tab appears on the opposite edge.
\clearpage
\printThumbIndex[blue]{Methods}
The second slot uses blue with the default white text.
\clearpage
\resetThumbIndex
\printThumbIndex[bg=green!50!black]{Appendix}
The slot sequence starts again at the top.
\clearpage
\printThumbIndexOff
No tab remains on this page.
\end{document}
```

Independent article pages, left to right

1

Odd page: inward orientation and local colours.

Even page: the same tab appears on the opposite edge.

2

The second slot uses blue with the default white text.

The slot sequence starts again at the top.

3

No tab remains on this page.

A Change history

0.0.1 – 2026-01-05
General: initial setup ; 207
0.0.10 – 2026-05-13
General: adjusting addEntry when cv-bool active. 207
0.0.11 – 2026-05-23
General: change symbol of last shared authorship, so it is easier to differentiate. Fallback if there is no cv for a PI of current funding period. Add a version information on the titlepage. 207
0.0.12 – 2026-05-23
General: calculate overview of requested instrumentation and staff from the various projects. no dedicated database is needed. 207
0.0.13 – 2026-05-25
General: fix dfgTOCprojectPart now properly working with bookmarks. 207
0.0.14 – 2026-05-29
General: rename all 'true/false' to 'yes/no' since xlsx cannot handle it. 207
0.0.15dev – 2026-05-29
General: cv: test for empty start and end 207
0.0.16 – 2026-06-08
General: put the test for existing cv-database at proper position, so there is no error when calling dfgCV directly. 207
0.0.17 – 2026-06-10
General: small functional fix for cv, adding missing spaces change font of section headers in cv 207
0.0.18 – 2026-06-11
General: extend documentation for PI and project helper commands make documentation examples more coherent and concrete fix typos and stale yes/no key documentation 207
0.0.19 – 2026-06-15
General: align optional CV table layout with mandatory CV entries add and document CRC/TRR reference commands 207
0.0.2 – 2026-02-14
General: intensive documentation ; more funding tables added 207
0.0.20 – 2026-06-22
General: add more vertical spacing between multiple institutions in standard institution lists avoid a leading institution-list line break when the institution name is empty expand user documentation for institution metadata, compilation, generated files, and release steps enable open-access markers in biblatex output and document manual BibTeX fallback annotations enable LuaTeX socket support in makefile builds for DOI API lookup load open-access bibliography markers only for final documents 207
0.0.21 – 2026-06-23
General: reuse the standard institution-list formatter in the project leaders table 207
0.0.22 – 2026-06-24
General: rename documentclass for compatibility reason to dfg-crc.cls 207
0.0.23 – 2026-07-03
General: collect all institutions from comma-separated PI institution references in the participating institutions list 207
0.0.24 – 2026-07-14
General: emphasize bibliography aliases for every PI assigned to a project 207
0.0.25 – 2026-07-14
General: configure biblatex styles and additional options separately for CV and proposal documents load bibliography customization before biblatex so style settings take effect 207
0.0.26 – 2026-07-16
General: add project-local report references and result lists for quality-assured publications, other results, and patents 207
0.0.27 – 2026-07-17
General: replace repeated requested-funding database sums with incremental LaTeX3 property-list indexes reduce each project funding table from five filtered database traversals to one preserve the optional conversion-missing bibliography when generating release classes document the funding-cache architecture, correctness guarantees, and complete-proposal benchmark 207
0.0.28 – 2026-07-18
General: add the DFG project-level RequestedFundingStaff roster with four official staff groups, continuous numbering, institution/affiliation legends, and job descriptions extend the existing staff key

family with validated roster metadata and resilient missing-reference diagnostics calculate omitted yearly staff sums from DFG salary constants, percentage, and quantity while retaining explicit sums as overrides document the roster schema, table call, automatic staff-cost formula, and a complete four-group example polish the staff roster typography and spacing and resolve institutions with their parent-affiliation legend render roster categories as personnel categories such as Prof, PhD, and Research rather than salary-table descriptions extract a focused regression test for the staff roster and automatic salary totals as local/test.tex reuse existing RequestedFundingStaff rows for the chapter-2 overview of existing staff, grouped by DFG category and affiliation fix the CV smoke-build target to use the generated crc-cv.tex filename 207

0.0.29 – 2026-07-20

General: add an empty-page-style project-overview backmatter page to the generated proposal template improve DOCX conversion of project placeholders and general work-package and subwork-package structures seed converted project files with requested-staff examples and float barriers around publication and diversity sections keep Gantt charts directly after the work packages with strict `h` placement and a following float barrier move salary and animal-housing rates into validated `changeSettings` keys and remove the separate generated `dfg-salaries.tex` file add configurable CRC and affiliation logo paths and retain the former salary and housing commands as expandable compatibility accessors map W2/W3 professorial funding to the shared configurable rate clarify requested-staff applicability rules, validate DFG categories, and use visible no-value backgrounds without alternating row colors separate research and non-research staff groups with a conditional horizontal rule while retaining one row-spanning label per group print resolved existing-staff surnames in bold and format job-description lead-ins as number, academic degree, first name, and last name replace an empty requested-instrumentation overview table with a funding-period-specific explanatory sentence make proposal CI builds reproducible with pinned images, a single Data Hub refresh job, parallel smoke checks, and clean authoritative builds keep live DOI lookups opt-in and preserve generated Data Hub file timestamps when their contents are unchanged support unnamed staff vacancies with `lastname={TBA}` without requiring a synthetic first name or academic degree make generated-class Flymake diagnostics useful by suppressing ChkTeX's expl3/Lua false positives and fixing the remaining typography warnings remove the unused `l3keys2e` dependency and replace `pdftexcmds` timing with the kernel-native expl3 timer 207

0.0.3 – 2026-03-11

General: documentation extended 207

0.0.30 – 2026-07-30

General: add a dedicated `fastcompile-project` text-drafting mode that skips metadata databases, calculated project headers, and auxiliary funding restoration add an independent `project-publications` switch for project publication headings, nocite lists, bibliographies, reports, and result lists use draft graphics, hyperlinks, and microtypography in project-fast mode while retaining authored project prose, sections, labels, aims, and work packages provide database-free fallbacks for project/person references and silence per-item skip output in project-fast builds make final-mode precedence effective before metadata and package setup, and add public fast-project/publication conditionals avoid registering bibliography sources or reading stale bbl data when project-fast publication output is disabled add no-Data-Hub fast project make targets for publication-free and publication-enabled drafting 207

0.0.31 – 2026-07-30

General: keep sub-workpackage names bold and join their following prose into the same paragraph add an opt-in `fastcompile-project-images` switch for rendering project figures during focused drafting identify fast project drafts with a running project header and a hook-based page watermark 207

0.0.32 – 2026-07-30

General: rename the focused-project switches to `fastcompile-project-show-images` and `fastcompile-project-show-publications` apply the selected graphics draft state explicitly after `graphicx` loads so image toggling is reliable enable real project images in the active focused-project proposal configuration 207

0.0.33 – 2026-07-30

General: add orthogonal `consider-for-lists` and `reference-only` project controls exclude non-considered projects from generated project aggregates and active-project counts add cached `\getProjectCount` totals for all active projects and the A, B, and Q areas mark reference-only projects as former projects without creating broken project-section links add a consolidated information-retrieval command reference to the documentation and proposal README 207

0.0.34 – 2026-08-01
General: show the standard skipped-item notice for generated tables and lists in focused project builds apply the same fast-mode notice to direct \OverviewExistingStaffTable calls support comma-separated applicant affiliations in title-page metadata, funding totals, section labels, and existing-staff headings reuse a referenced person's category and organisation in staff rows when no row-level override is supplied use positionText consistently for the staff roster while retaining position as a compatibility alias add institution abbreviations and use them as compact labels in generated tables while retaining full names in legends render work-package names only at the top level and start sub-workpackage prose without an extra space 207
0.0.35 – 2026-08-01
General: restore provenance tags for direct database values and calculated results, with independently suppressible table-cell tags 207
0.0.36 – 2026-08-01
General: mark reference-only projects with an asterisk and a local legend in generated tables and lists while retaining the explicit prose wording 207
0.0.37 – 2026-08-01
General: add compile-based GitLab CI validation and a latest-only Pages deployment of the local dummy proposal extract generated files with plain LuaTeX so clean CI clones need neither a pre-generated installer nor a full documentation build 207
0.0.38 – 2026-08-01
General: join comma-separated project references from \getProject as a natural-language list . . 207
0.0.39 – 2026-08-01
General: show project PIs only on the first \getProjectPI reference to each project per section by default, with a configurable opt-out 207
0.0.4 – 2026-05-01
General: working on more efficient code like reducing database queries. 207
0.0.40 – 2026-08-01
General: alternate successive provenance tags across two vertical levels and reserve table-cell headroom so rules do not obscure the labels make the CI build portable to minimal runners that do not provide an external time command 207
0.0.41 – 2026-08-01
General: distinguish multiple unnamed staff vacancies by their role metadata when checking requested-funding rosters for duplicates 207
0.0.42 – 2026-08-01
General: keep alternating provenance labels strictly zero-width, zero-height, and zero-depth so they never alter prose line spacing or table-row height 207
0.0.43 – 2026-08-01
General: omit an empty staff academic degree cleanly instead of displaying and warning about a missing value 207
0.0.44 – 2026-08-01
General: move the two alternating provenance-label levels closer together 207
0.0.45 – 2026-08-01
General: make \getProject share the first-reference PI expansion and per-section state of \getProjectPI when projectPIOncePerSection=true 207
0.0.46 – 2026-08-01
General: forward the xparse no-value sentinel correctly so \getProjectPI works in focused project builds 207
0.0.47 – 2026-08-01
General: omit redundant zero decimal parts from monetary values in the requested-funding project table 207
0.0.48 – 2026-08-01
General: add running marginal totals to the central funding overview tables and keep marginal annotations inside the page 207
0.0.49 – 2026-08-02
General: keep table marginalia fixed to their row anchors, place them safely in the outer margin, and format their sums consistently 207
0.0.5 – 2026-05-04
General: a lot of refactoring to speed up compiling tables, putting PI information into tcolorboxes for better handling (raster) 207

0.0.50 – 2026-08-02
General: add compact project-collaboration heatmaps and equal-peak arc diagrams with labeled nodes, tight project-area rules, ending/reference-only filtering, and hvFloat captions, a common plot dispatcher for collaboration and Gantt graphics, mirrored marginal leaders, and safe expansion of funding-source metadata . . . 207
0.0.51 – 2026-08-02
General: generate a self-contained project-collaboration regression file from the DTX, extend the dummy proposal metadata with explicit collaboration, list, ending, and reference-only cases, show both collaboration plot calls in the dummy project chapter, and document the collaboration metadata relationship and dispatcher syntax keep project numbers compact in the table of contents so section titles retain their normal indentation apply half-year factors to automatically calculated staff costs in years 1 and 5, test the resulting four-year salary total across five funding columns, and show both automatic and explicit staff-cost entries in every active generated project example and converted project template . . . 207
0.0.52 – 2026-08-02
General: release the complete project-template, funding-calculation, TOC, and converter updates, including half-year staff-cost calculation, compact project TOC numbers, complete active-project examples, and focused regression coverage . . . 207
0.0.53 – 2026-08-02
General: generate collaboration heatmap and arc-diagram rows dynamically from project areas, support optional project-area metadata with ID-prefix fallback, cycle colors for additional areas, and document the resulting behavior . . . 207
0.0.6 – 2026-05-07
General: various optimizations regarding runtime creating tables . . . 207
0.0.7 – 2026-05-10
General: improving bibliography stuff for cv section . . . 207
0.0.9 – 2026-05-12
General: renaming -name- to -positionText- for being streamlined. . . . 207
0.1.0 – 2026-08-03
General: harden dynamic collaboration plots and project-area counts, preserve deterministic row and edge order, keep inactive nodes white, and add configurable colors for arbitrary project areas suppress redundant zero decimal parts in numeric and EUR output while preserving explicitly fractional values populate the section 2.1.1 direct-cost overview from project-local existing-funds declarations, classify applicant affiliations from the CRC metadata, present aggregated monetary table values as full integer euros with the note “Figures in EUR”, retain informational existing-instrumentation costs as “Figures in thousands”, and preserve decimals for those costs and explicit animal-housing rates restore siunitx model alignment in guarded tagged numeric columns and use compact slash-separated project references inside table cells while retaining natural-language joins in prose prepare the first CTAN release with a portable installer, synchronized release metadata, explicit LPPL 1.3c licensing, reproducible archive and clean-install checks, and CI release artifacts 207
0.1.1 – 2026-08-03
General: add the `projectsTableInstitutionAbbreviations` setting to choose compact institution abbreviations with a full-name legend or full institution names without a legend in `ProjectsTable` make `resetThumbIndex` public so manually separated document parts can restart the thumb-index sequence document the new ProjectsTable display setting, the public thumb-index reset command, and the post-0.1.0 CTAN update procedure . . . 207
0.1.2 – 2026-08-03
General: default `\ProjectsTable` to full institution names and refine the optional abbreviation mode with small, table-local, alphabetically sorted legends containing only the institutions used in each table warn when one institution abbreviation denotes different institution names, and retain the corrected non-empty legend check treat `id` as a database-local unique key: a later `\addEntry` with the same identifier warns, removes every earlier matching row, and becomes the stored entry tighten the former-project legend spacing, vertically center project identifiers, and add release regressions for the new defaults and duplicate-ID replacement . . . 207
0.1.3 – 2026-08-07
General: allow generated plots in focused project builds when `fastcompile-project-show-images=true`, retaining the project metadata they need make the collaboration arc diagram the default project-collaboration plot, with an `arcs=false`/`no-arcs` option and explicit heatmap selection add the unified `\printProject` command for project heads

and tails while retaining the original commands as compatibility interfaces give PI, work-package, and aim references independent configurable colours format generic table body text consistently at footnote size, including table-cell content that overrides theme row settings correct collaboration-plot colour propagation, width and node placement, and support suppressing connecting arcs without suppressing project nodes document singular/plural-sensitive contract-question wording and avoid a documentation-driver list-label dimension overflow 207
0.1.4 – 2026-09-04
General: add `make update-all` to rebuild and copy both the generated class and manual PDF into a separately controlled proposal worktree allow existing non-research staff to omit `field-of-research` without a warning or a missing-value placeholder, and grey out the empty cell as not applicable keep the `to` connector in compact `\getWP` ranges at normal font weight and retain references to nested work packages under later parent work packages, with focused regression coverage warn when a `RequestedFundingStaff` row omits both `ref-person-id` and `ref-institution-id`, because its institution cannot otherwise be resolved render staff job descriptions as itemized lists with consistent indentation make the generic `TableEnv` options argument genuinely optional by defaulting it to an empty option list make `ProjectLeadersTable` follow `projectsTableInstitutionAbbreviations` when choosing full institution names or abbreviations, with regression coverage increase the default vertical spacing between and after rows of PI boxes printed by `\getPIsWithRole` 207
0.1.5 – 2026-09-07
General: apply the default table font size at theme scope so cell-local declarations such as `font=\bfseries` retain `\footnotesize`, while explicit size declarations remain available as overrides document the table-font inheritance and override behaviour 207
0.1.6 – 2026-09-14
General: reserve binding space with the configurable `BCOR` option (5 mm by default), while keeping a 160 mm text block and fitting notes into the narrower outer margin give thumb-index tabs regular rounded corners and rotated labels that fit the outer marginal column on both sides of a two-sided page separate the `WP` or `WPs` prefix from work-package numbers with a narrow, unbreakable space while retaining sorted and compressed references remove project-area letters below collaboration-plot nodes and show connecting arcs only when `arcs=true` is requested; align wide plots with the text edge on both sides of a spread omit empty staff positions without warnings, placeholders, or extra lines; align numbered staff descriptions with a hanging indent tighten heading, caption, project-header, legal-issue, PI-card, bibliography, and aims-box typography and spacing reduce the shared gap above generated tables to 4 pt and match dashed Gantt vertical grid lines to the horizontal rule colour place Gantt captions below the chart whether or not additional caption text is supplied, keeping the default `Fig.` label visible abbreviate English figure caption labels to `Fig.` keep direct-cost table headings with their tables at page boundaries use the footnote-sized project bibliography wrapper for project reports and published-result lists 207
0.1.7 – 2026-09-14
General: place collaboration-plot captions below the image with or without optional caption text, matching the Gantt-chart caption layout 207
0.1.8 – 2026-09-14
General: bold entire project bibliography entries tagged `<project-id>-highlight` when `emphasizeEntries` is enabled, without affecting other project lists document that one highlight keyword per distinct project is enough even when several PIs from that project coauthor an entry align numbered section and subsection titles in a shared 12 mm number column increase the default text height by 5 mm with 20 mm top and 15 mm bottom margins, without changing the inner binding or outer note margins separate each staff member’s name from the job description with a normal space move the text block 5 mm toward the binding by using 25 mm inner and 20 mm outer margins without changing its width or the binding correction remove the trailing blank Gantt row and leave a very small gap before its bottom rule 207
0.2.0 – 2026-09-14
General: typeset fenced README code in the PDF manual with a monospaced verbatim font align the default thumb-index stack with the current text block, dividing `\textheight` into equal tabs while retaining explicit page-edge margin settings print person-specific institutions through `\printList{{Institutions}{id}}` throughout the class and examples, retaining `\dfgInstitutionList` as an alias show `\printPlot` as the Gantt command in the manual and clarify the distinct thumb-index show, hide, and reset operations accept lowercase plot types with or without a project ID, including `\printPlot{{gantt}{B06}}` and

\printPlot{{collaborations}{B06}} open the user documentation with an overview of the proposal template and move log-message guidance into troubleshooting keep the changelog as a separate generated file instead of including it in the documentation PDF 207
0.2.1 – 2026-09-17
General: align PI-box titles ragged right and reserve the tallest title's height throughout each raster, keeping the contact information aligned after wrapping increase the default column gap to 12 pt in both PI rasters allow a line break between phone and email while keeping each contact intact and retaining the one-em gap when both fit on the same line print affiliation names in bold in \printList{ParticipatingInstitutions} 207
0.2.10 – 2026-10-02
General: Add ID-oriented person-first and project-first PI references; warn when the older getPIProject and getProjectPI commands are used. 207
Add the opt-in fastcompile-show-tags option. When enabled, fast reference annotations identify the source row and requested lookup path, including project-number lookups. 207
Let PIReferenceFirstName make unstarred getPI, person-first PI/project references, and getPIofProject include first names. Project-first references continue to use last names unless starred. 207
Show field-name placeholders for missing staff metadata in fast compilation, and render fast database and project references as red typewriter placeholders such as <person-id>. 207
0.2.11 – 2026-10-07
General: Accept the mixed spellings \getPIwithProject, \getProjectwithPI, and \getPIOfProject alongside the canonical command names. 207
Add lowercase aliases for PI and project commands, including \getpiwithproject, \getprojectwithpi, and \getpiofproject, preserving starred forms, optional arguments, formatting, links, and legacy warnings. 207
Prevent tables printed immediately after headings from overlapping them at natural page breaks; \printTable adds a guarded \null\nobreak. 207
0.2.12 – 2026-10-08
General: Add the proposal workspace's standalone test-overview-staff.tex layout test: 85 complete fictional staff records, seven categories, and nine real affiliations. It uses an isolated database, documents a two-pass LuaLaTeX build, and has been checked in the rendered PDF. . 207
Emit each legacy PI/project command's deprecation warning only once per LaTeX run, including repeated calls inside groups and lowercase aliases. Calls through the replacement commands remain warning-free. 207
Narrow the first column of OverviewExistingStaff from X[4,l] to X[3,l], retaining equal-width institution columns. Break the junior research group leader label before "leaders". Maintain this in the DTX class source rather than a proposal customization override. 207
Use \frontmatter for Roman-numbered preliminary pages and \mainmatter before Chapter 1 to restart Arabic page numbering at 1. Existing proposal drivers need the same update because template update targets preserve them. 207
0.2.13 – 2026-10-09
General: Ignore surrounding spaces in research-area codes when processing project headings, overview tables, and individual research-area lookups. 207
Keep the generated class header and footer filename as dfg-crc.cls in both development and release extraction, independent of the output directory. 207
0.2.14 – 2026-10-11
General: Make validation warnings identify the rejected item, accepted values or required format, and whether the value is ignored, retained, or replaced. Fix funding-period and institution-order diagnostics and the animal-species choice list; require complete staff-funding category names. . . 207
0.2.15 – 2026-10-15
General: Keep project references inside \getPIWithProject and the legacy \getPIProject compact, so PI names are not repeated inside the project list. Starred forms still include first names, independently of projectPIOncePerSection. 207
0.2.16 – 2026-10-15
General: Keep custom aim labels compatible with expl3 releases that do not provide the \str_mdfive_hash:V variant. 207
Let aims[label={RDM Aims}] set the numbered item prefix and the name used by \cref, \Cref, and \getAim, independently for each list. 207

0.2.17 – 2026-10-16
General: Add \printFrameBibliography for chapter 1 references. With emphasizeEntries=true, entries tagged frametext-highlight are bold; project highlights remain independent and the normal bibliography font size is preserved. Update the starter chapter and document the keyword. 207
0.2.18 – 2026-10-20
General: Add expandable \getValue{key} access to all customization settings, including live numeric rates, text, booleans, dimensions, and mode-specific bibliography aliases. Document formatting, local scope, and unknown-key errors; add regression coverage for all 72 settings. 207
Sort the existing-instrumentation table by project ID, including alternate databases, while retaining shared equipment as a single row. 207
Update all seven standard salary defaults to the DFG personnel rates for 2027, with matching documentation, template comments, and default checks. 207
0.2.2 – 2026-09-17
General: print fast-compilation project identifiers in bold black while retaining error colours add a 7 pt gap below affiliation headings in participating-institution boxes standardize leading options for lists and role-based PI rasters, combining sorting, formatting, database selection, and layout before the main argument while retaining compatible trailing options and grouped list names add configurable raster columns and spacing to participating-institution lists, with one affiliation per cell and compatible count/alphabetical sorting 207
0.2.3 – 2026-09-17
General: Add 30 command-option checks and 10 participating-institution layout cases to the DTX and make check, covering defaults, empty/leading/legacy options, precedence, grouped names, arguments, databases, boolean flags, PI rasters, column widths and gaps, spacing, sorting, filtering, and duplicate removal. Extend funding and work-package regressions for the corrected cases and retain the new test logs and PDFs as CI artifacts. 207
Add flowing, balanced participating-institution columns with columns=2, columns=3, etc., and configurable column sep (12 pt by default). Keep each affiliation and its institutions together, without equal-height row padding. Retain raster columns for aligned rows and reset layout and sorting options for each call. 207
Default biblatexstyleFeatureProposal to empty, so changing bibliography styles does not implicitly pass the unsupported dashed=false option. 207
Include project-local existing direct costs in focused fast-build totals, instead of displaying zero; retain accumulation across multiple funding rows. 207
Install Poppler utilities for CTAN checks and report missing PDF-inspection tools before running the installation test. Refine ChkTeX suppressions for expl3 bracket parsing and TikZ coordinate syntax. 207
Prevent tables from overlapping preceding text by ending paragraphs before \printTable, using a shared 6 pt gap, and removing negative spacing from TableEnv and its captions. 207
Recognize parent and nested work packages together in \getWP, preserving hierarchical sorting and range boundaries, including lists such as \getWP{wp1a,wp1b,wp2,wp3a,wp3b}. 207
Reserve local/test.tex for manual experiments. Maintain the general regression document in ci/test-template.tex and compile its copy as local/test-template.tex; extraction and automated checks leave the manual file untouched. 207
Start flowing institution lists with a paragraph break and a medium vertical skip. Remove the extra 7 pt gap between an affiliation heading and its institutions; retain 10 pt between affiliation groups. . . . 207
0.2.4 – 2026-09-17
General: Add 33 reference-lookup regression cases to make check, including custom keysets, multiple IDs, shared destinations, finite cyclic paths, missing data, direct/starred compatibility, and focused-build placeholders. Check rendered separators and duplicate removal in the PDF when Poppler is available. 207
Add \get[database]{id}{relation}{field} for generic ref-<database>-id traversal, including multi-step paths, multiple IDs, destination deduplication, explicit reference-key spellings, and direct/starred lookup compatibility. Keep final-value formatting and destination showtags annotations. Preserve stored ID order, separate results with commas, and warn without emitting dangling separators when a branch cannot be resolved. 207
Retain database keyset information when focused builds skip metadata rows, so shorthand reference paths are consumed correctly for custom databases too. 207
0.2.5 – 2026-09-17
General: Add opt-in documentation=true to load manual fixtures explicitly, without importing proposal

customizations, metadata, or default bibliography files. Generate all documentation fixtures from the DTX. 207
Add practical live examples for branching metadata lookups, person statistics, staff counts, nested and cross-project references, contact cards, bibliographies, research areas, applicant wording, rules, and signatures. Show the funding records and the salary setting in the requested-funding example. Extract the complete input records for project and PI table examples from the same DTX fixtures. Render table results outside their code boxes. Demonstrate the project-status legend, automatic funding-period wording, and research-area list with its DFG classification footnote. 207
Add six complete funding/personnel examples: existing and requested equipment, doctoral candidates, named staff and vacancies, annual staff quantities, and existing direct-cost funding. Show every input record and explain units, ongoing/completed doctorates, and the custom-database table option. . 207
Complete the rendered gallery for all built-in table, list, and plot targets, including female-researcher objectives, project-leader participation, all finance overviews, animal upkeep, filtered research areas, and plot aliases. Group examples in proposal order and show the input records for each new table. 207
Demonstrate explicit and current-project collaboration/Gantt plots, layout aliases, connecting arcs, captions, and area colours. Add live `TableEnv` column/row options, aim/work-package references, signatures, figures, and publication results. Give repeated plot examples unique figure labels. . . 207
Expand the complete A06 funding example to all five funding groups: staff, direct costs, fellowships, global funds, and instrumentation. Show annual amounts and a one-off equipment purchase, with combined yearly totals. 207
Expand the independent manual fixtures to six active A projects, six B projects, three Q projects, twelve PIs, six institutions, and four affiliations. Include continuing/new research, service, training, administration, and a former-project reference. Add live examples throughout the command reference, including PI/project links, project counts, names, institution options, role cards, metadata retrieval, and project/PI overview tables. 207
Include the complete fictional starter proposal as a chapter in the manual and distribute its standalone PDF. Show imported pages at 82% size inside a frame, with a separate-document label and the manual page number outside. Generate its final-mode wrapper from the DTX; `make doc` builds the proposal before importing every page. 207
Nest individual generated-file descriptions beneath a shared implementation section, including the customization file and the documentation fixtures. 207
Restore page breaking for wide example boxes after disabling side-by-side layout; allow long input listings and table results to continue across pages. 207
Typeset the manual with `dfg-crc` itself and add executable code/result examples for metadata lookups, references, lists, contact cards, boxes, tables, and collaboration plots. Use stacked output for wide examples. 207

0.2.6 – 2026-09-18

General: Add `\getPIofProject*` for full PI names joined with commas and a final “and”; explicit properties and a custom final separator remain supported. 207
Add rendered Gantt examples for all five bar styles, a custom colour palette, and grayscale fills/patterns. Explain preamble-wide colour settings versus grouped changes for a single chart, with links from the relevant descriptions. 207
Add stable labels to rendered example boxes and clickable example references to command and environment descriptions, including the CV entry points. 207
Build the embedded proposal from the manual’s shared project and PI metadata: six A projects, six B projects, three Q projects, and twelve PIs. Include every active project chapter and use former project A00 for the ending-project example, keeping B02 new as declared in the documentation. 207
Consolidate repeated galleries and shared PI/project metadata; keep rendered examples beside their explanations and retain all built-in table/list/plot targets. Explain new, continuing, ending, and reference-only projects and distinguish status from service, training, and administration project types. 207
Embed the complete final-mode CV appendix beside the proposal example and distribute its standalone PDF through the documentation build, CTAN archive, CI artifacts, and `update-all`. Frame and label every imported CV page. 207
Expand all twelve example CVs with three career stages, all five optional sections, two fictional category-A articles, and a category-B dataset each. Rebuild the standalone CV appendix and its framed inclusion in the manual. 207
Link each name printed by `\getPIofProject` (including its starred form) to the PI table, using the same target and reference styling as `\getPI`. 207

Make dfgLocation, dfgDate, dfgTitle, and InfoTeX available before customization is loaded and configurable through \changeSettings. Preserve pre-class definitions and direct redefinitions; replace the fixed submission date with the generic \providecommand{\dfgDate}{<date>\xspace}. 207
Reorganize the manual into shared commands, a proposal-order walkthrough, and a separate metadata/configuration reference. Introduce record creation, lookup, reference traversal, and dispatcher syntax before specialised output. 207
Use one shared consortium dataset for the local proposal, local CV appendix, and manual: twelve PIs, six A projects, six B projects, and three Q projects. Generate individual project files and career/optional CV records for every PI, with explicitly fictional publication examples selected by person keywords. 207
0.2.7 – 2026-09-27
General: Add thumbindex@orientation=outwards|inwards to \changeSettings. Keep outward-facing labels by default; inward-facing labels turn 180 degrees on both left and right pages without changing tab placement. 207
Add one baseline of space above section, subsection, and subsubsection headings; continue body text on the next line without an extra blank line. Document the existing paragraph breaks before and after \printTable. 207
Allow color@reference@PI=current to inherit the surrounding text color in PI references; named colors and the black default remain supported. 207
Document the customization hook for footnote-sized bibliographies with \bibitemsep=0pt, explaining inherited entry spacing and the separate compact CV publication list. 207
Embed the second Gantt stripe colour in the PDF pattern so macOS viewers render it correctly; retain per-chart palette changes and stripe geometry. 207
Explicitly center project identifiers vertically in the project overview. 207
Move thumb-index labels 2 mm towards the text block on both page sides, preserving tab dimensions and placement for either label orientation. 207
0.2.8 – 2026-10-02
General: Let an explicit empty positionText in a RequestedFundingStaff row suppress the person's prefilled position; omitted values still inherit it. 207
0.3.0 – 2026-10-20
General: Add first-funding-period numbers and percentages, including gender breakdowns and totals, to the project-leader equality table in section 1.4.2 B, only for third-funding-period proposals. Document commands for the table values and keep the statistics cache consistent across grouped calls. . . 207
Default to the DFG female-only project-leader overview, including third-period status-quo counts and percentages. Use \printTable[all-sexes]{GenderEqualityProjectLeaders} for f/m/d figures in all three periods, alongside the objective columns. Display options apply to one table, with options before the table name. 207
0.3.1 – 2026-10-20
General: Fix the missing space after command names in the deprecation warnings for \getPIProject and \getProjectPI. 207
Move the license notice to the source header and use LaTeX-generated change history instead of separate generated Markdown files. 207
Preserve CRC/TRR numbers and titles in PDF bookmarks, including starred references and optional titles, without hyperref PDF-string warnings. Use plain-text spacing in the PDF author metadata. 207
0.3.10 – 2026-11-23
General: Add cvTableAfterSkip for configurable spacing after CV tables and each non-empty publication list. Evaluate relative dimensions at use, support scoped settings and a zero-space no-op, and expose the value through getValue. 207
Add shared and type-specific plot option defaults through changeSettings, including the built-in proposalPlots hvfloat style, scoped overrides, and getValue access. 207
Allow CRC/TRR references to wrap after the slash while preserving plain-text PDF bookmarks. . . 207
Forward native hvfloat options from Gantt and collaboration plot calls with local default overrides, preserving plot-specific keys and caption behavior. 207
Keep explicit spaces in the hyperref pdfborder value under expl3 syntax so link annotations have a valid zero-width border. 207
Preserve legal page breaks between adjacent CV sections by retaining standard tcolorbox after-spacing and appending cvTableAfterSkip after the final box part. 207

Refactor CV sections as titled breakable tcolorboxes, including career entries, optional descriptions, publication lists and privacy text. Preserve metadata and public commands, and default cvTableAfterSkip to zero for the new box layout. 207
0.3.10 – 2026-11-24
General: Use the normal document font size for CV box titles, content, publication lists, and consent text. 207
0.3.2 – 2026-10-21
General: Identify the funding status in staff missing-field warnings and explain why existing staff need commitment while requested staff do not. 366
0.3.2 – 2026-10-23
General: Omit academic degrees from research and non-research staff job-description lead-ins while retaining them in the staff roster above. 207
Restore the conditional contract dates and funding sources for project leaders by keeping internal answers consistent with the yes/no follow-up conditions. 207
0.3.2 – 2026-11-03
General: Accept optional project setup code on printProject Head and printProjectHead. Apply local settings before the header and retain them until the matching unified or legacy Tail. Ending projects default to author emphasis instead of whole-entry emphasis, with explicit setup taking precedence. Author highlighting can be enabled and disabled during rendering. 207
Add the journalTitle setting to choose full journaltitle or standard shortjournal data in bibliographies and full citations, with full-title fallback and local scope. 207
Rebalance the gender and doctorate columns of the project-leader overview. Compact the contract and legal-issue lists in project heads, retaining conditional follow-up answers. 207
Retain linked open-access symbols while suppressing the DOI API backend’s additional open-access text and URL. 207
Use the nominal 11 pt base size and Arimo as the default main and sansserif families; set subsection and subsubsection headings to 11 pt. Document the remaining explicit Roboto face overrides and how to clear them. 207
Widen the default text block to 165 mm by using a 20 mm nominal inner margin plus the existing 5 mm binding correction. Set the footer distance to 12 mm, yielding a 250 mm text height, and use a 3.5 pt paragraph gap with 1 pt stretch and 0.5 pt shrink. Document the dimensions and customization order. 207
0.3.2 – 2026-11-04
General: Add configurable laboratory-animal types, grouping by registered type IDs, dynamic represented-group and grand totals, direct count and selectable cost queries, explicit missing-value diagnostics, and backward-compatible housing rates and table database arguments. 207
Allow paragraph breaks in the mandatory content argument of dfgBox and document its complete command signature. 207
Match the research-area legend to project tables by including non-ending research and service projects. Rebuild the formatted list for each call so exclusions do not retain codes from earlier calls. Widen the research-area column to 15 mm so its heading fits, allow 2.5 mm for the project status marker, and keep the codes centered as text without a row-level ragged-right override. 207
0.3.2 – 2026-11-05
General: Make the paragraph gap immediately after displayed headings rigid while preserving elastic gaps between ordinary paragraphs. Replace the table dispatcher’s empty-box anchor with a zero-size rule to avoid added interline space. Match the requested-funding staff roster’s leading gap to ordinary uncaptioned tables when it follows a heading. 207
Use the same contact-card raster for one and several project leaders, with one full-width column for a single PI and two columns otherwise, so the gap below the project-leader heading is consistent. . 207
0.3.3 – 2026-11-06
General: Add the categoryAbbreviations customization setting for compact English personnel category labels in commands, funding tables, staff rosters, and CV category fallbacks. Preserve full names by default, custom category fallbacks, metadata validation, and local settings scope. 207
Allow requested non-research staff, as well as existing non-research staff, to omit their field of research. Keep the cell grey and empty without a warning or missing-value placeholder; retain supplied values and validation for research staff. 207
Print each staff-roster institution legend entry directly as abbreviation: full institution name (full parent affiliation name). Omit the redundant separate affiliation list while retaining entries for affiliation-only legacy rows. 207

Unify long-table and direct-cost-block spacing using the normal subsection-to-text gap derived from the final fonts and paragraph spacing, with explicit length overrides. Preserve that gap when a heading moves to the next page with its table; keep continuation tables aligned at the page top. 207
Use the selected category label for a staff-roster position line when no positionText is supplied or inherited. Preserve custom position text verbatim and keep explicit empty roster overrides hidden. 207
0.3.4 – 2026-11-06
General: Add a per-call note option to printTable. Render it in the final tabularray footer, append to existing notes, support unbreakable tables and formatted paragraphs, and preserve target options and empty-note behavior. 207
Bold the entire early-career researcher row when dateDefense is nonempty, preserving topic italics and row colours. Keep former-project references unannotated in this roster and support legacy databases without a dateDefense column. 207
Document the leading TableEnv outer-specification argument and compact early-career table layout. Render the category-abbreviation reference directly from the registered class labels. 207
Print staff-roster legends in normal weight as abbreviation: full institution name (parent-affiliation abbreviation), followed after a semicolon by the used affiliation abbreviations and full names. Keep comma-separated first-use order, deduplication, and legacy affiliation-only references. 207
Terminate all fixed Figures in EUR notices with a full stop so appended table notes start a new sentence. 207
0.3.5 – 2026-11-06
General: Preserve page-footnote text and hyperlinks inside printTable notes by saving boxed footnotes until the table has finished. Support nested research-area lists and retain normal footnote numbering without requiring a wrapper environment. 207
0.3.6 – 2026-11-09
General: Cache raw ID lookups for PI and project references and prefetch project-leader table data. Retain funding-phase and surname indexes, invalidate on raw database edits, and preserve dynamic formatting and hyperlink targets. Document the automatic caches, invalidation rules and reader fallbacks. 207
0.3.7 – 2026-11-09
General: Separate work-package titles from grouped Gantt options. Retain flat-key compatibility with order-independent precedence, explicit empty labels and focused-mode support; document migration and add executable label-fallback examples and metadata regression checks. 207
0.3.7 – 2026-11-10
General: Keep generated collaboration and Gantt plots below preceding section headings by using here-or-bottom float placement in both caption branches; avoid LaTeX promoting failed here-only placement to a top float. Add page-boundary ordering regression coverage. 207
Reuse complete project-header space recorded by normal builds for focused-mode placeholders. Skip header metadata and layout work; preserve page spans, following body positions and section counters, with a marked approximate fallback and page-dimension checks. Add metadata-free geometry regression tests. 207
0.3.7 – 2026-11-11
General: Add optional project short-title metadata and independent full/short selections for TOC, running head and project-start title. Default to full titles, fall back to name for missing or blank short titles, preserve scoped setup and metadata-free fast headers. 207
Add per-tab bg and fg colour options to printThumbIndex. Retain the bare-colour background shorthand and reset omitted colours to configured defaults on each selection, preventing colour carry-over. Document examples, macro arguments and the changed default-reset behaviour. . . . 207
Allow FundingDirectCostsTable to continue across pages between rows. Keep its optional unnumbered heading with the first row and preserve the column formats and common table spacing. 207
Draw complete thumb-index tabs in the shipout background so page text and graphics can cover them, retaining first-pass positioning and page-style visibility. 207
Fit the closing project overview to the available page height by proportionally shrinking the table only when necessary. Retain natural type size for shorter tables and the original logo size. 207
Place thumb-index tabs at shipout using frozen page-edge coordinates so they are correct in the first LuaLaTeX pass. Preserve running-head fonts, colours and page-style visibility. Document that contents, cross-references and bibliography may still require additional compilation runs. 207
Remove the hanging indent from wrapped remarks in theme main, including appended printTable notes, while preserving native note templates. 207

Reserve half of the current text height for approximate focused-mode project headers when no matching normal-build geometry is available. Keep recorded header replay unchanged and identify the larger fallback in its label and warning. 207
Restore the original 20 mm top and 15 mm bottom margins, undoing the 5 mm translation of running heads, text and footers while preserving the text block dimensions. 207
0.3.8 – 2026-11-13
General: Allow unavailable existing-instrumentation costs as n.a. without numeric parsing, use a text multiplication sign for quantities, and document the global PI-name cache fallback for macro-valued names. 207
Control table alignment through halign instead of paragraph alignment in font declarations. Preserve left-aligned body defaults while honouring explicit column, row and cell settings and retaining centred project-overview headings. 207
Implement PI-specific bibliography notes in protected expl3 code, preserving literal empty-text handling, expanded token comparisons, paragraph output and alternative text colour. Correct the documentation of calls outside expl3 syntax. 207
Keep early-career names left aligned, widen appointment durations and shared-instrumentation project cells, retain spacing in the abbreviated doctoral-candidate label and use the normal running-head font. 207
Label project PDF bookmarks with the project number and PI surnames in metadata order, independently of visible titles and project status. 207
Recommend plain metadata identity fields and document the compilation cost of presentation macros that disable indexes. 207
Restrict completion highlighting in the early-career roster to surname and first name cells. Keep the other column styles and PhD/MD row colours, including empty or missing defence-date handling. 207
0.3.9 – 2026-11-14
General: Use native raggedright centrally for left-aligned table cells. Size existing-staff affiliation columns to their contents and share regular abbreviation notes between existing- and requested-staff tables. 207
0.3.9 – 2026-11-18
General: m, including spanning staff and financial headings. Keep caller alignment overrides and update the guide and release notes. 207
0.3.9 – 2026-11-20
General: Standardize Gantt figure labels as fig:gantt-A02 in both caption variants; document references and migration from undashed labels. 207
0.4.0 – 2026-11-24
General: Document every package-owned option with values, defaults, aliases, scope, and effects; check coverage against the implemented key families. 207
Extract collaboration, Gantt/workpackages, event timelines, distributions, registered icons, bibliography highlighting, and the thumbindex as independent packages loaded by the class. Add standalone data APIs, collaboration overrides, package documentation, and installer support. 207
Give staff and funding metadata documentation distinct hyperlink labels and correct the table-colour option reference, including the real defaults. 207
Keep the repository README as a separate file instead of embedding it in the manual appendix. . 207
Preserve the vertical Q4 year-boundary rules and original PGF coordinate arithmetic in configurable Gantt grids, matching the pre-modular class. 207
Rename the documented source, portable installer, and manual to dfg-crc.dtx, dfg-crc.ins, and dfg-crc.pdf; update build, CI, installation, and release references following CTAN maintainer feedback. 207
Resolve live-example project links to the corresponding pages of the embedded complete proposal and supply the example-only spokesperson destination. 207
Select the supported picture calc mode before loading hvfloat in the class and standalone plot package, avoiding the picture v2 disabled-package warning. 207
Share live plot defaults with direct package commands, validate Gantt grids before geometry calculations, and make icon alias replacement and conflict handling deterministic. 207
Standardize the collaboration plot type, declaration key, and local override on the singular spelling; retain plural aliases and name the optional node filter show-projects. 207
Start the manual with proposal/CV usage, followed by the implementation reference and finally the independent package documentation. Include sixteen complete example files and their independently compiled output; export examples, companion data, and a build helper from both installers. 207

Use the standard docCommand and docKey reference format for reusable packages; add configured examples alongside minimal examples and rebuild the complete CV appendix with breakable sections and normal-size text. 207
Widen the CV label/stage column to one quarter of the row width. Keep multiline labels from stretching detail paragraphs while reserving enough row height and preserving page breaks. 207

Bibliography

Hoare, C. A. R. (1973). “Hints on programming language design”. In: *Computer Systems Reliability*. Ed. by C. Bunyan. State of the Art Report 20, pp. 193–216. (Visited on 2018).