

# HELMHOLTZ METADATA COLLABORATION (HMC)

## Project Call 2022

Funded by the Initiative and Networking Fund (INF)

### 1. Background

The Helmholtz Metadata Collaboration (HMC) develops and implements concepts and technologies to leverage high-quality metadata for research data across research fields and their communities. Its main goal is to make the vast amount of diverse research data produced by Helmholtz Centres findable, accessible, interoperable and reusable (FAIR). HMC liaises closely with the National Research Data Infrastructure (NFDI) and its European counterpart EOSC.

HMC is a cornerstone in the exploitation of Helmholtz' data treasures. Enabling FAIR data across the association unlocks the potential of the diverse datasets and enables new and innovative science across all research fields. One essential component of HMC is the funding of projects that initiate and underpin the growing metadata network within the Helmholtz Association. These projects should initiate new developments, extend existing solutions for the usage in the HMC context, expand the HMC network, and enable new cross-discipline collaborations.

### 2. Objectives

The objective of this Call for HMC Projects is to initiate and facilitate activities that address practical challenges in the **field of metadata generation and data enrichment**. The call aims at funding promising collaborative projects with the potential to add new knowledge and solutions to the wider HMC framework at the end of the project's lifetime.

Hence, first practical results and promising prototypes are expected in Q1/Q2 of 2024, i.e. one year after the funding starts. The results shall underpin and stimulate the growing HMC network. As part of this, results shall be presented at an HMC conference in 2024. To ensure the project's link to HMC, all applicants must contact at least one HMC Metadata hub and/or the technology unit FAIR Data Commons when considering a proposal submission (see below for contacts and formal regulations).

### 3. Goals of project call

An HMC project addresses one or more of these overarching goals:

- further metadata generation with interoperable metadata standards, vocabularies and/or ontologies
- adopt or develop tools for data enrichment, e.g. automated metadata generation for recording dataset descriptions and workflows
- adopt or develop tools to further metadata quality assessment and metadata curation
- promote interdisciplinary collaboration between metadata experts and domain scientists, collaborations between Helmholtz research fields are encouraged

HMC welcomes proposals in **all areas relevant to Metadata**. The following list exemplifies key areas of particular interest to HMC<sup>1</sup> (in no particular order):

- Novel strategies for the automatic generation, or exchange of metadata. Suggestions for use cases include:
  - Machine interfaces for repository ingest/exchange.
  - Keeping (meta)data alive from orphaned data, for example in case of decommissioned infrastructure, or retiring staff.
  - Exposure of metadata and harvesting from pre-existing data sources for example machine actionable data management plans, workflow tools, or instruments.
- The innovative integration and/or application of persistent identifiers (PIDs) in diverse contexts. This could include:
  - Integration of PIDs in the research workflow, for example samples/specimens.
  - Automatic generation of PID graphs.
  - The application of FAIR Digital Objects (FDOs).
  - Reuse of data enabled by Research Object (RO) crates.
- Approaches to achieve metadata interoperability. Potential topics include:
  - Interfaces between metadata generating tools, for example electronic lab notebooks.
  - Crosswalks between metadata schemata, ontologies, or other semantic artefacts.
  - Agile approaches to the development, extension, or alteration of existing schemata.

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<sup>1</sup> Please refer to chapter 12 (glossary) for definitions.

Projects need to show the potential impact on science, its data services and communities. Further, projects should demonstrate their potential to add new knowledge and solutions to the wider HMC framework at the end of the project's lifetime. This includes links to respective infrastructures within HMC<sup>2</sup> and at participating Helmholtz Centres as well as the impact on research data curation practices in the respective domains. In summary, projects should contribute to the overall development of the emerging HMC community; and they should enable the transfer of technologies, methods and best practices within research fields or across programs (please also see 4. Criteria for more details).

## 4. Criteria

Projects shall be aligned with the goals formulated above. Proposals that meet the following criteria will be evaluated based on the evaluation criteria (see Chapter 8).

### Thematic criteria

- a. The project must further one or more of the goals of this call.
- b. The project must demonstrably support the FAIR principles.

### Further criteria

#### a. Transfer

HMC projects shall contribute to Helmholtz' transfer objective through **one or more** of the following:

- Openness to enable knowledge transfer (in science and society)
- Collaboration with relevant external partners such as companies or non-profits
- Outlining where the project fits into the research or technology lifecycle - from early stage innovation to potential transfer to large-scale implementation - and delivering an appropriate strategy to achieve these aims
- Outlining how the project achieves the maturation of (preliminary) findings and results, e.g. advancing the Technology Readiness Level (TRL)
- Outlining a sound and implementable exploitation strategy

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<sup>2</sup> <https://helmholtz-metadaten.de/fairdata> and <https://helmholtz-metadaten.de/en/communities>

## b. Budget

Projects can apply for a total volume of approximately € 400k for a running time of up to 2 years. Half of the financial volume and at most € 200k will be funded by the Initiative and Networking Fund (INF). The contribution by participating Helmholtz Centres has to be confirmed by a signed letter from the board of directors, both the administrative and scientific director<sup>3</sup>, when submitting the proposal.

A maximum of 70% of the INF funding can be assigned to one Helmholtz Centre.

Staff, travel expenses and cost for consumables are eligible for funding; investments are excluded.

Funding will be provided for Helmholtz Centres only. In clearly documented cases, funding can also be provided for highly qualified university partners (within Germany). The provided funds will NOT be eligible for overhead costs.

## c. Duration of Projects

Projects must start as soon as possible (within 3 months) after positive formal notification by the President of the Helmholtz Association. Applications shall describe how a swift start of the project is ensured upon the funding decision (e.g. hiring, data provision).

Projects may run for no longer than two years. First deliverables/prototypes need to be presented 12 months after the start of the project.

## d. Applicants and Eligibility

Any eligible proposal must comprise partners from at least two different Helmholtz Centres (or two AST programs respectively). HMC encourages the submission of interdisciplinary proposals from different Helmholtz research fields.

Applicants must specify a coordinating centre and person. Coordinators can only lead three projects, but can participate in multiple other project proposals.

Proposals submitted for this call must not have been submitted simultaneously to another funding line of the Helmholtz Association or any other funding line, i.e. there must be a formal rejection of a previous submission.

Revised resubmissions of previously unsuccessful HMC project proposals must be accompanied by a brief description of changes applied in the appendix (max. 1 page).

Employees of HMC, people who provide substantial support to HMC or anyone else connected in any way with helping to set up the project call, including members of the collaboration, steering and scientific advisory board, shall not be permitted to enter the project call.

Project applicants must contact at least one HMC Metadata hub and/or the technology unit FAIR Data Commons for advice and discussions during the application phase. This needs to

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<sup>3</sup> as listed here: <https://www.helmholtz.de/en/about-us/structure-and-governance/statutes-and-governance/assembly-of-members/> (22.02.2022)

be confirmed in writing by at least one of the respective HMC Hub or FAIR Data Commons coordinators and to be enclosed in section 3 of the proposal.

#### e. Format

A proposal MUST be submitted **as a single PDF file** and formatted as follows:

- single PDF file
- Page format: A4 (portrait format)
- Font: Arial, 12pt
- Line spacing: 1.5, Border Top/Left/Right/Bottom 2.5/2.5/2.5/2.0cm
- Language: English
- Budgets: EUR x00,000.00
- References: Harvard Citation Format

#### f. Exclusion Criteria

Proposals will be rejected by the following arguments:

- Extensions of existing projects cannot be funded.
- Deadline for submission was not met or the submission is incomplete.
- Guidelines for budget, duration, applicants and eligibility, proposal content, format, and/or length were not followed entirely.
- Confirmation letters of board of directors, both the scientific and administrative director (see chapter 4), are not included or incomplete.
- Confirmation letter from at least one HMC Hub or FAIR Data Commons coordinator is not included or incomplete.

## 5. Rights and Obligations

- During the funding period, project partners can participate in HMC events (e.g. training offers, seminars, workshops).
- During the funding period, project partners commit to participate in HMC's cross-field activities, such as progress workshops, method exchange workshops or hackathons, and to present their results.
- The results of an HMC Project are to be made available to the HMC and Helmholtz community. This means, e.g., that software and algorithms must be open source

(complying with an OSI approved license) and methods, reference data, reports and publications of the project results must be open access.

- Funded projects commit to acknowledging financial support through the HMC projects funding line in any project-related published output.
- Funded projects commit to share short updates about ongoing projects (e.g. on the HMC website and associated social media channels) regularly.
- Funded projects shall be in regular contact with their respective HMC Hub and/or FAIR Data Commons for subject-specific exchange, technical exchange and integration into the community.
- Reporting by funded projects is to be made to the INF following its processes and to the HMC Boards. This includes bi-annual and final reports demonstrating progress and results (referencing deliverables). Further reports can be requested. Reporting is as coordinated as possible.

## 6. Proposal Submission and Structure

To submit a proposal, please use our submission system at <https://proposals.helmholtz-metadaten.de/>

The Proposal consist of three sections:

**Section 1:** additional information (will be submitted only via the online submission tool):

- Cover Page
  - Abstract (English, max. 1000 characters incl. blanks)
  - up to 10 keywords
  - project duration (max. 24 months)
  - requested INF-funding (max. 200,000.00€)
  - matching funds
  - Names and contact information of principal investigator(s)
  - Names of participating centres and external partners

**Section 2:** Proposal (main body maximum 6 pages in total including figures, excluding the appendices, template is provided):

- Project title, acronym, Name of PIs and project duration
- State of the research field
- Objectives
- Approach
- Expected Results
- Expected impact and link to HMC
  - Incl. sustainability beyond project lifetime
- Transfer
- Implementation and management
- Result handling

**Section 3:** Appendices (templates are provided)

- References (max. 2 pages)
- List of contributions of PIs and staff
- Work plan, Gantt Chart, and milestones
- Brief description of proposed staffing incl. timeline
- Detailed budget plan (personnel, consumables): use both templates Annex 2a and 2b
- If applicable: Revised resubmissions of previously unsuccessful HMC project proposals must be accompanied by a brief description of changes (max. 1 page, to be inserted in the appendix).
- Brief CVs of the principal investigators and potential staff members.
- Confirmation letter by all Helmholtz Centres<sup>4</sup> involved concerning the co-funding provided. The confirmation letter needs to be signed by the board of directors, both the scientific and administrative director (see chapter 4), of the respective centre.
- Confirmation letter of consultation signed by at least one HMC Hub or FAIR Data Commons coordinator
- A list of cooperation partners (only via the submission portal)

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<sup>4</sup> If you plan to submit a proposal with a university please consult our FAQs for more information (<https://helmholtz-metadaten.de/faq-projectcall>).

- A list of independent experts as potential reviewers can be provided. The proposed experts need to be unbiased (only via the submission portal)

## 7. Evaluation Process and Selection

Proposals are subject to the following evaluation procedure. Proposals are checked with regard to formal requirements. Proposals are evaluated by a panel of independent experts (no presentation), on the basis of the evaluation criteria listed below. At least two external reviews will be solicited for each proposal. The panel performs a pre-assessment of all proposals (all proposals subject to the pre-assessment will also be assessed in the panel meeting). Based on this evaluation, the panel will recommend a list of projects for funding. The President will review the list of ranked proposals and decide which projects shall be funded. Staff at the Helmholtz Association's Head Office and Helmholtz Metadata Collaboration's administrative office will jointly manage the evaluation procedure and the handling of proposals. The Helmholtz Head Office will manage the evaluation meeting. The HMC collaboration board members and HMC steering board members will have no access to submitted proposals or assessments at any stage during the evaluation procedure. They will not contact the panel of experts.



## 8. Evaluation Criteria

Novelty and innovative character	<ul style="list-style-type: none"> <li>• Potential to open new and sustainable pathways in handling data and with that enabling new science</li> <li>• Clarity of the objective and extent to which the proposed project addresses one or more of the call's goals<sup>5</sup></li> <li>• Extent to which the proposal is beyond the current state of the art in the respective community</li> </ul>
Impact on tools/services in domain, Helmholtz and HMC	<ul style="list-style-type: none"> <li>• Extent to which the expected output(s) of the proposal would advance the development/ implementation/use of tools/services in the domain, Helmholtz and HMC</li> <li>• Extent to which the expected outputs are reusable and adaptable by other communities/centres</li> <li>• Extent to which the expected outcome addresses a specific demand by a community</li> <li>• Extent to which the proposal addresses one or more of the defined HMC key areas<sup>5</sup></li> </ul>
Impact on community building in domain, Helmholtz and HMC	<ul style="list-style-type: none"> <li>• The potential to contribute to establishing and strengthening a long-term cooperation between the partners</li> <li>• Potential to engage with the community in the domain/hub/HMC and making an impact</li> <li>• Potential to impact, advance and harmonize metadata practices and the community in the domain/hub/HMC</li> <li>• Potential to cross-fertilize other developments and to enable transfer<sup>6</sup> to multiple communities, research fields, HMC, ...</li> </ul>
Quality and efficiency of the implementation	<ul style="list-style-type: none"> <li>• Quality and effectiveness of the work plan</li> <li>• Complementarity of the partners and balance of expertise to achieve the goal</li> <li>• Appropriateness of the allocation of tasks, ensuring that all PIs and staff have a valid role and adequate resources in the project to fulfil that role</li> <li>• Readiness of proponents to commence the project within the timeline indicated in the call</li> </ul>

The criteria are given in descending order of importance.

<sup>5</sup> See chapter 3. Goals of project call

<sup>6</sup> See chapter 4. Criteria

## 9. Inquiries

Answers to general questions concerning the call can be found in the FAQs:

<https://helmholtz-metadaten.de/faq-projectcall>.

For **formal questions** concerning this call, please write to [hmc-proposals@geomar.de](mailto:hmc-proposals@geomar.de) to reach the HMC Office and the Helmholtz Association's Head Office.

For **topic-related questions and consultation** please contact at least one HMC Metadata Hub and/or the technology unit FAIR Data Commons at:

<b>AST</b>	Witold Arndt, DLR, phone: +49 2203 601 5429, email: <a href="mailto:witold.arndt@dlr.de">witold.arndt@dlr.de</a>
<b>Earth and Environment</b>	Dr. Emanuel Söding, GEOMAR, phone: +49 431 600 4256, email: <a href="mailto:esoeding@geomar.de">esoeding@geomar.de</a>
<b>Energy</b>	Dr. Wolfgang Suess, KIT, phone: +49 721 608 25722; email: <a href="mailto:wolfgang.suess@kit.edu">wolfgang.suess@kit.edu</a>
<b>Health</b>	Dr. Marco Nolden, DKFZ, phone: +49 6221 42-2325, Email: <a href="mailto:m.nolden@dkfz-heidelberg.de">m.nolden@dkfz-heidelberg.de</a>
<b>Matter</b>	Dr. Oonagh Mannix, HZB, phone: +49 30 8062 12539, email: <a href="mailto:oonagh.mannix@helmholtz-berlin.de">oonagh.mannix@helmholtz-berlin.de</a>
<b>Information</b>	Dr. Volker Hofmann, FZJ, phone: +49 241 927803 21, email: <a href="mailto:v.hofmann@fz-juelich.de">v.hofmann@fz-juelich.de</a>
<b>FAIR Data Commons</b>	Thomas Jejkal, KIT, phone: +49 721 608-24042, email: <a href="mailto:thomas.jejkal@kit.edu">thomas.jejkal@kit.edu</a>

## 10. Timeline

Date	Event or Action
20 April 2022	Announcement of the HMC Project Call 2022. Submissions are accepted only via <a href="https://proposals.helmholtz-metadaten.de/">https://proposals.helmholtz-metadaten.de/</a>
06 July 2022	Application deadline
July-October 2022	Proposals are checked for compliance with the formal criteria and scored by panel members according to award criteria
November 2022	Assessment by the panel members
December 2022- January 2023	Funding decision made by the President, funding contracts between Helmholtz Association and submitting centre are being drawn up
February-April 2023	Start of HMC Projects

## 11. Annexes

- Annex 1: Proposal template for proposal submission
- Annex 2a and b: Templates for budget tables
- Annex 3: Template for Gantt Chart
- Annex 4: Template for CV
- Annex 5: Conflict of interest for suggested reviewers
- Annex 6: Data protection information

## 12. Glossary

<b>AST</b>	Research field Aeronautics, Space and Transport conducted by DLR.
<b>EOSC</b>	The European Open Science Cloud (EOSC) is a trusted digital platform for the scientific community.
<b>FAIR</b>	The FAIR Data Principles are a set of guiding principles in order to make data findable, accessible, interoperable and reusable (Wilkinson et al., 2016).
<b>FAIR Digital Object</b>	A digital container for data or links to data which has its own identifier (usually unique, persistent and web accessible) and contains metadata describing the data and/or the FAIR digital object itself. The container itself is findable, accessible, interoperable, and reusable according to an implementation of the FAIR principles.
<b>HMC</b>	Helmholtz Metadata Collaboration
<b>INF (IVF)</b>	Initiative and Networking Fund (Impuls und Vernetzungsfond), a Helmholtz funding scheme.
<b>Metadata schema</b>	A template which shows how to structure and store metadata. For example, the arrangement of fields in a BibTeX template constitutes a metadata schema used by a reference management programme.
<b>NFDI</b>	National Research Data Infrastructure (Nationale Forschungsdateninfrastruktur), a national funding scheme.
<b>Ontology</b>	A structured collection of terms, their definitions and the relationships between them expressed in a formal, typically machine readable, manner.
<b>Persistent Identifier</b>	A persistent identifier is a long-lasting reference to an object. Some persistent identifiers are linked to kernel information profiles which provide metadata or information about that object when the persistent identifier is resolved.
<b>RDM</b>	Research data management
<b>Repository</b>	A place where data, code, software, or other digital assets are stored.
<b>Research Object Crate</b>	A data structure based on schema.org and JSON-LD designed to package research data with their metadata. The RO-Crate specifications are defined by an RDM community that aims to facilitate data exchange between researchers as well as infrastructures.
<b>Semantic artefact</b>	Any digital entity that associates meaning with or defines the elements within it. One should distinguish between semantic artefacts that are only human-readable (e.g. a glossary on a web page) and those that are machine actionable (e.g. ontologies that allow machine-driven reasoning).