eurac
research

Research Data and Source Code Management Strategy for Eurac Research

Eurac Research considers research data, source code and research software as key research outputs. Research data are information that underpin scientific analysis and results. Research software and source code are created during research process or for research purposes. **To guarantee that research data, source code and research software are first class research outputs, Eurac Research supports the adoption of responsible research data and source code management practices.**

We encourage all our researchers to adopt responsible research data and source code management practices throughout the research life cycle, from the planning, funding and designing of research projects to publishing and disseminating the outputs of research projects. Responsible research data and source code management supports greater data and source code quality and increases the credibility of our research outputs.

We expect all our researchers to share metadata about their research data and other research outputs; we also strongly encourage all our researchers to share research data and source code whenever possible, both within Eurac Research and beyond. Data and source code sharing supports the reproducibility and replicability of research and facilitates the findability and reuse of our research outputs. Responsible research data and source code sharing also increases the visibility of our research outputs, as well as of the researchers producing them. Researchers within Eurac Research, and beyond, are able to discover research data and source code produced in Eurac Research. This facilitates new collaborations and strategic partnerships both within and without Eurac Research, and allows Eurac Research to contribute actively into making our local as well as the national, European and international research system more efficient and sustainable. When sharing research data and source code, Eurac Research encourages researchers to adopt the principle "as open as possible, as closed as necessary".

We recognize that research data and source code management in line with established international best practice[1] requires time, effort, and resources. We consider that researchers are responsible for managing their research data and source code in line with disciplinary best practice, applicable legal and ethical norms, and guidelines and policies set by Eurac Research. Eurac Research as an organization is responsible for providing the guidelines and policies as well as the infrastructure, tools, training and services that support responsible research data and outputs management.

This Strategy is an important milestone in the long-term institutional commitment of Eurac Research to research data and source code management. Our Research Data Management Working Group was established in 2018. The first Research Data Management Roadmap for Eurac Research[2] was adopted in 2021 and our collaborators actively engage with national and international organizations and initiatives that support best-practice in research data and outputs management. Eurac Research is also a member of ORCID[3] and DataCite.[4] This Strategy re-confirms our commitment to research data and output management and underscores our ambition to ensure that research data, source code and research software are visible, first class outputs.

[1] The FAIR Data Principles outline guidelines for data management and stewardship to increase the reusability of data, algorithms, tools and workflows. Wilkinson, M., Dumontier, M., Aalbersberg, I. et al. The FAIR Guiding Principles for scientific data management and stewardship. Sci Data 3, 160018 (2016). https://doi.org/10.1038/sdata.2016.18 The CARE Principles for Indigenous Data Governance underscore that research data and outputs are products of specific socio-cultural contexts and call for the inclusion of data subjects in data and outputs management when possible. Carroll, S. R., Garba, I., Figueroa-Rodríguez, O. L., Holbrook, J., Lovett, R., Materechera, S., Hudson, M. (2020). The CARE Principles for Indigenous Data Governance. Data Science Journal, 19(1), 43. https://doi.org/10.5334/dsj-2020-043
[2] https://www.eurac.edu/en/research-support/open-science/research-data-management
[3] https://www.orcid.org
[4] https://www.datacite.org

Research Data and Source Code Management Policy for Eurac Research

Eurac Research adopts this Research Data and Source Code Management Policy to guide and support all our researchers in developing mature research data and source code management practices.

This policy recognizes discipline-specific requirements and needs to research data and source code management. The general guidelines for the management of research data and source code outlined below should be specified further in **institute or center-specific research data and source code management policies**, on which institutes and centers with similar research data and/or source code needs are invited to collaborate. Discipline-specific policies support research data and source code management in-line with disciplinary community standards, which ensures better findability, accessibility, interoperability, and reuse of research data and source code. In case of inconsistences, the Research Data and Source Code Management Policy for Eurac Research supersedes institute or center level policies.

To support the implementation of the Research Data and Source Code Management Policy, an **Implementation Guide** is provided alongside this Policy and offers concrete examples of tools, standards, and approaches for effective research data and source code management. Institutes and centers are encouraged to develop similar implementation guides alongside their specific policy documents.

GUIDELINES FOR THE MANAGEMENT OF RESEARCH DATA

Eurac Research encourages its researchers to manage their research data in line with the FAIR Data Principles.[5] This means:

— generate appropriately rich metadata for all research data. Metadata should be rich and include also structural information about the research data when possible. Metadata should be developed using an established discipline-specific or general metadata standard when reasonable;

— provide globally unique, persistent identifiers to research data and its related metadata whenever possible. The persistent identifiers for research data and its metadata should be linked to one another;

— make research data "as open as possible, as closed as necessary", using established research data archives or repositories. When access to research data is restricted due to ethical or privacy concerns, commercial interest, contractual terms or other legitimate grounds, metadata of such research data should still be made "as open as possible, as closed as necessary" using established research data archives or repositories to facilitate data findability. Trusted discipline-specific repositories should be used when available;

— describe and structure research data and its related metadata using established (meta)data models/schemas and commonly used controlled vocabularies, ontologies, and thesauri;

— release any research data and/or its related metadata only with clear licenses;

— manage research data throughout the research data life cycle. This means that for each research project, researchers should consider and make decisions about how they manage data during data collection, data analysis, and results preparation as well as what happens with research data after the end of the research project. A **Data Management Plan** is the appropriate tool for establishing data management workflows for a research project and ensuring that all researchers working on the project are aware and up-to-date with the project's research data management workflows.

To facilitate data findability and reuse, Eurac Research expects that researchers share metadata about their research data, as minimum with all colleagues in Eurac Research.

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5   Wilkinson, M., Dumontier, M., Aalbersberg, I. et al. The FAIR Guiding Principles for scientific data management and stewardship. Sci Data 3, 160018 (2016). https://doi.org/10.1038/sdata.2016.18 See also https://www.go-fair.org/fair-principles/

GUIDELINES FOR THE MANAGEMENT OF SOURCE CODE AND RESEARCH SOFTWARE

Eurac Research recognizes source code and research software as research outputs and encourages its researchers to document and manage their source code and research software in line with the FAIR principles.[6] This means:

— provide appropriate supporting documentation for their source code and research software;

— ensure maintenance of developed research software to guarantee long-term support and reliability;

— make use of the institutionally-provided and public version-control environments for managing source code and research software;

— respect license conditions when reusing source code and research software created by others, and attribute the original authors by citing reused source code and research software;

— publish source code and research software as open source whenever possible, using clear open source licenses. When appropriate or necessary, the possibility of commercial exploitation and the risks of Intellectual Property Rights infringements must be considered and evaluated.

To facilitate findability and reuse, Eurac Research expects that researchers share metadata about their research software, as minimum with all colleagues in Eurac Research.

ROLES AND RESPONSIBILITIES

RESEARCHERS

— Manage research data, source code and research software in line with disciplinary standards and relevant policies and regulations, including Eurac Research policies and regulations, any institute or center policies, privacy regulations such as the GDPR and any other relevant applicable law;

— Make use of the support, resources, training, tools and infrastructure made available by institutes and centers and by Eurac Research;

— Communicate issues and needs related to research data, source code and research software management to their institute or center, which liaises with other institutes and centers and relevant support departments to ensure necessary research data and source code management support, workflows and tools and infrastructure.

INSTITUTES AND CENTERS

— Develop and maintain up to date institute or center specific research data and source code management policy and a related implementation guide. The institute or center specific policy defines effective, discipline-specific practices for working with research data, source code and research software in the institute or center. Institutes and centers with similar research data and/or source code needs are invited to collaborate;

— Define all necessary data and source code management roles and responsibilities in the institute or center;

6   Barker, M., Chue Hong, N.P., Katz, D.S. et al. Introducing the FAIR Principles for research
     software. Sci Data 9, 622 (2022). DOI: https://doi.org/10.1038/s41597-022-01710-x ; Chue
     Hong, N. P., Katz, D. S., Barker, M., Lamprecht, A-L, Martinez, C., Psomopoulos, F. E.,
     Harrow, J., Castro, L. J., Gruenpeter, M., Martinez, P. A., Honeyman, T., et al. (2022). FAIR
     Principles for Research Software version 1.0. (FAIR4RS Principles v1.0). Research Data
     Alliance. DOI: https://doi.org/10.15497/RDA00068

— Ensure that the institute or center values research data, source code and research software as first class research outputs alongside scientific articles and books and recognizes the effort of its researchers to manage these outputs;

— Ensure that researchers in the institute or center are adequately trained about disciplinary standards and relevant research data and source code management policies and regulations, including institute or center policies, Eurac Research policies and regulations, as well as applicable privacy regulations such as the GDPR and any other relevant applicable law. Training may also be organized in collaboration with other institutes and centers and Eurac Research support departments;

— Ensure that researchers in the institute or center are supported and able to manage their research data and source code in line with FAIR principles and good disciplinary practice. Such support may include integrating data stewardship services in the institute or center, now or in the future;

— Responsible for compliance with privacy regulation and other applicable law at institute or center level;

— Liaise with other institutes, centers, and support departments about practical data management to ensure necessary research data and source code management support, workflows and tools and infrastructure for the institute or center and for Eurac Research.

INFORMATION TECHNOLOGIES DEPARTMENT

— Provides robust, high-quality infrastructure to facilitate good research data, source code and research software management in all Eurac Research institutes and centers;

— Supports institute-specific ICT where applicable;

— Provides secure access management to data according to ICT guidelines;

— Provides regular training to all researchers in Eurac Research about how to use Eurac Research infrastructure and tools to manage research data and source code;

— Liaises with institutes, centers, and other support departments about practical data management to ensure necessary research data and source code management support, workflows and tools and infrastructure across Eurac Research.

RESEARCH SUPPORT OFFICE

— Monitors the policy landscape around research data and source code management and communicates with the Head Office as well as with institutes and centers and other support departments to ensure awareness and alignment of Eurac Research policies with the national, European and international policy landscape;

— Supports researchers with research data and source code management. This support includes training and awareness raising as well as support with the preparation of data and outputs management plans, including referral of researchers to other support departments when necessary. In the future, this support can also include coordinating data stewardship services, including setting up a data steward network in Eurac Research in collaboration with institutes and centers;

— Raises awareness within Eurac Research about research data, source code and research software as research outputs and the importance of research data and source code management;

— Coordinates the Research Data Management Working Group;

— Liaises with institutes, centers, and other support departments about practical data management to ensure necessary research data and source code management support, workflows and tools and infrastructure across Eurac Research;

— Monitors the implementation of the Eurac Research Data and Source Code Management Policy with the support of the Research Data Management Working Group and ensures periodic review and any necessary updates to this Policy.

RESEARCH DATA MANAGEMENT WORKING GROUP

— Facilitates information exchange between institutes, centers and other stakeholders about research data, source code and research software management;

— Ensures through the mechanism of the Research Data Management Roadmaps that Eurac Research develops a comprehensive organizational culture and infrastructure environment that supports the implementation of this Policy;

— Monitors the implementation of this Eurac Research Data and Source Code Management Policy and supports the Research Support Office in the periodic review and any necessary updates to this Policy;

— Supports awareness raising within Eurac Research about research data, source code and research software as research outputs and the importance of research data and source code management.

LEGAL OFFICE

— Supports researchers with licensing contracts and related copyright issues;

— Serves as point of contact for GDPR and related national law compliance at Eurac Research level;

— Provides information and adequate training to researchers and all other stakeholders about privacy regulation and other relevant legal norms impacting research in Eurac Research;

— Liaises with institutes, centers, and other support departments about practical data management to ensure necessary research data and source code management support, workflows and tools and infrastructure across Eurac Research.

HEAD OFFICE

— Firmly supports and expects researchers and institutes and centers to share metadata about research data and research software for better findability and re-use of research data and other research outputs. As minimum, metadata should be shared with colleagues across Eurac Research;

— Ensures that Eurac Research values research data and source code and research software as first class research outputs;

— Ensures that stakeholders are able to deliver relevant research data, source code and research software management services, including providing the necessary computing infrastructure and the necessary research data and source code management support services;

— Encourages awareness raising and training about research data, source code and research software management across Eurac Research.

The Research Data and Source Code Management Policy for Eurac Research is adopted as of 15.09.2023. The implementation of the Policy will be monitored by the Research Support Office in collaboration with the Research Data Management Working Group. The Policy will be first reviewed 2 years after its adoption, with focus on reviewing the adoption of institute and center-specific policies and the assumption of roles and responsibilities by stakeholders in Eurac Research.