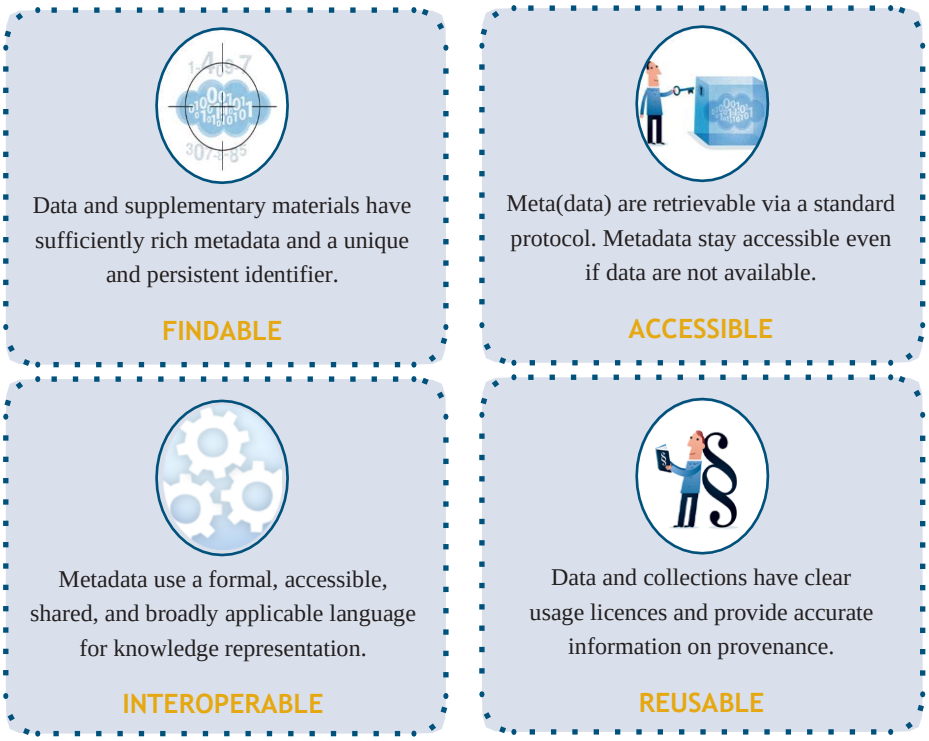
A GUIDE TO FAIR PRACTICES IN RESEARCH LIBRARIES

What are the FAIR Principles?

The FAIR Principles are a set of guiding principles for making data Findable, Accessible, Interoperable and Reusable (FAIR) (Wilkinson, 2016). These principles provide guidance for research data management and data stewardship and are relevant to all stakeholders (researchers, funders, research support staff) in the research data ecosystem. Research libraries can use the FAIR Principles (GO FAIR) as a framework for fostering and extending research data services.

What is FAIR data?



Why is FAIR data important?

The advancement of science thrives on the sharing, accessibility, and reuse of research data. The FAIR principles strengthen the development of infrastructure and services that enable the systemic change of Open Science practices. This is now strongly advocated by both research and funding organisations.

Consequently, research institutions, funders, and publishers have significantly stepped up their demand for FAIR data. In Horizon Europe, there are two mandatory practices on Open Science: Open access to publications (OpenAIRE-a), and open access to research data (OpenAIRE-b) based on the principle of 'as open as possible, as closed as necessary'. Open data is expected to be FAIR data.

How can library staff get started?

Below you will find tangible actions that research libraries or librarians can take to move towards FAIR practices.

Findable

In order to make research data more 'findable', research libraries can:

- Raise awareness and provide guidance and support to researchers on the topic of persistent identifiers (PIDs).
- Ensure that your data repository uses Persistent Identifiers (PIDs) such as DOIs. Project THOR has a good overview of different kinds of persistent identifiers (THOR).
- Clarify and communicate what your metadata service offers for research data, e.g. provide a rich set of FAIR recommended descriptive metadata.
- Check whether your research organisation's archiving solutions include indexing by scholarly aggregators and search engines (e.g. OpenAIRE, DataCite, Google).
- Ensure that your data repository can be found in the registry of research data repositories re3data (re3data.org-a).
- If the repository you use or recommend is missing, register the repository with re3data.org by filling out the suggestion form (re3data.org-b).

Accessible

In order to make research data more 'accessible' research libraries can:

- Provide clear guidance on whether, how and under what conditions research data can be accessed.
- Make your repository as accessible as possible for humans and machines (e.g. interfaces for retrieval, harvesting, and indexing).
- Share metadata under an open licence, e.g. Creative Commons Licence (Creative Commons).
- Secure reliable and continuous access to metadata and data, and implement related standards, e.g. CoreTrustSeal (CoreTrustSeal, 2024).

Interoperable

In order to make research data more 'interoperable', research libraries can:

- Build up expertise on metadata standards for research data, controlled vocabularies, and ontologies in your library, e.g. Disciplinary metadata (Digital Curation Centre) and Metadata Standards Catalog (Research Data Alliance).
- Link research datasets stored in repositories to other scholarly relevant entities via persistent identifiers (e.g. publications, data, pre-registration, software, ORCID).
- Prepare a list of open file formats to assist researchers in making their data interoperable.
- Guide researchers in achieving software interoperability (Barker et al., 2022).

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Reusable

In order to make research data 'reusable', research libraries can:

- Take the lead in advocating best practices for data documentation and building curation services.
- Liaise with the communities of practice across disciplines at your institution to build institutional expertise in reusable data.

- Provide guidance on the selection/use of an appropriate data licence when publishing data.
- Raise awareness about the importance of the discovery and reuse of existing data.

Other actions to work towards FAIR

- Enable and provide training for data stewards and librarians on aspects of making data FAIR(er).
- Provide guidance and training for researchers on how to make their data FAIR (Engelhardt, 2022).
- Join a library working group on research data management and FAIR data (LIBER, Research Data Alliance).
- Research software should be usable and reusable. According to the FAIR Principles for Research Software, "*Software is both usable (can be executed) and reusable (can be understood, modified, built upon, or incorporated into other software*", (Barker et al., 2022; European Commission).
- Ensure that data or metadata is stored in a trusted repository (Freie Universität Berlin).

Tools

- There are tools that can help you to assess the FAIRness of a dataset in your repository, e.g. the F-UJI - Automated FAIR Data Assessment Tool (Devaraju & Huber, 2020).
- Self-assessment tool for researchers to test their knowledge of FAIR principles: https://fairaware.dans.knaw.nl/
- For more tools, please consult https://fair-impact.eu/fair-assessment-tools
- General licences: https://chooser-beta.creativecommons.org/
- Licences for software: https://choosealicense.com/
- Example list of preferred file formats by the Dutch institute for Data Archiving and Networked Services (DANS): https://dans.knaw.nl/en/file-formats/

References

Images in the FAIR Data graphic are by Jørgen Stamp, Digitalbevaring.dk (CC BY 2.5 Denmark licence).

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These guidelines have been compiled by LIBER's Research Data Management Working Group.