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Open Science

Anchoring Research Integrity in Open Science and Good (Digital) Research Practice

Lea Maria Ferguson

Helmholtz-Gemeinschaft,
Helmholtz Open Science Office

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Overview

- Research Integrity and its Principles

- Open Science

- Good Research Practice

- Discussion Questions

The European Code of Conduct for Research Integrity

The European Code of Conduct for Research Integrity

(2017, revised edition)

Description of good research practices in the following contexts:

- Research Environment
- Training, Supervision and Mentoring
- Research Procedures
- Safeguards
- Data Practices and Management
- Collaborative Working
- Publication and Dissemination
- Reviewing, Evaluating and Editing
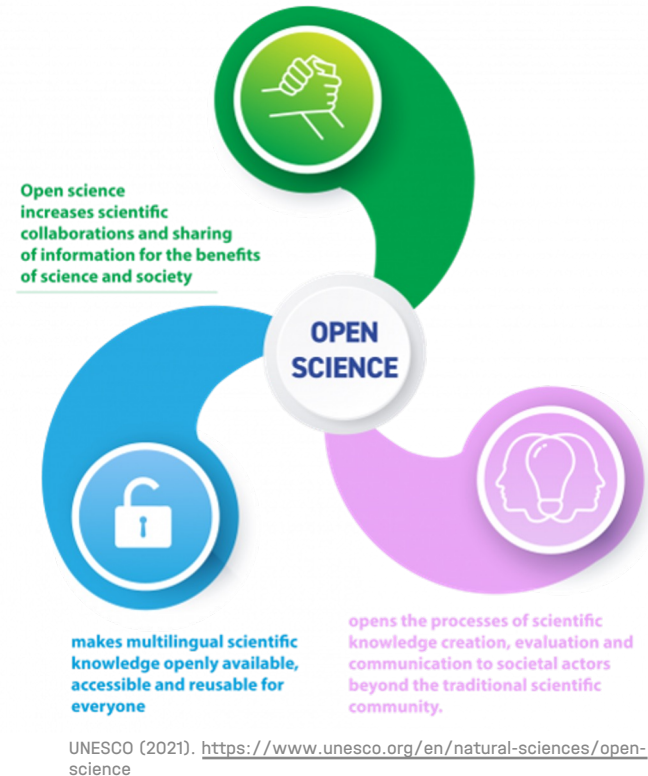
Fundamental Principles

- **Reliability** in ensuring the quality of research, reflected in the design, the methodology, the analysis and the use of resources.

- **Honesty** in developing, undertaking, reviewing, reporting and communicating research in a transparent, fair, full and unbiased way.

- **Respect** for colleagues, research participants, society, ecosystems, cultural heritage and the environment.

- **Accountability** for the research from idea to publication, for its management and organisation, for training, supervision and mentoring, and for its wider impacts.

Open Science

Good Research Practice

Research Integrity
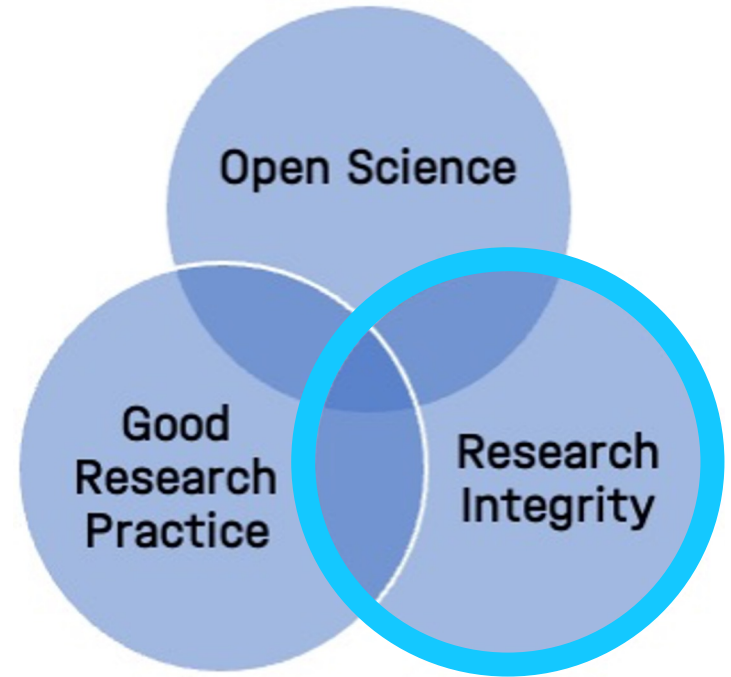
Synergy effects

Research Integrity and Open Science

- "Building on the essential principles of academic freedom, research integrity and scientific excellence, open science sets a new paradigm that integrates into the scientific enterprise practices for reproducibility, transparency, sharing and collaboration resulting from the increased opening of scientific contents, tools and processes" (UNESCO, 2021, Recommendation on Open Science, p. 7).

- "Open science should respect academic freedom and human rights and support high-quality research by bringing together multiple sources of knowledge and making research methods and outputs widely available for rigorous review and scrutiny, and transparent evaluation processes" (UNESCO, 2021, Recommendation on Open Science, p. 17).

Open science increases scientific collaborations and sharing of information for the benefits of science and society

OPEN SCIENCE

makes multilingual scientific knowledge openly available, accessible and reusable for everyone

opens the processes of scientific knowledge creation, evaluation and communication to societal actors beyond the traditional scientific community.

UNESCO (2021). https://www.unesco.org/en/natural-sciences/open-science

Open Science

- Open Access – access to and re-use of textual publications

- Open Research Data – access to and re-use of research data

- Open Research Software – access to and re-use of research software
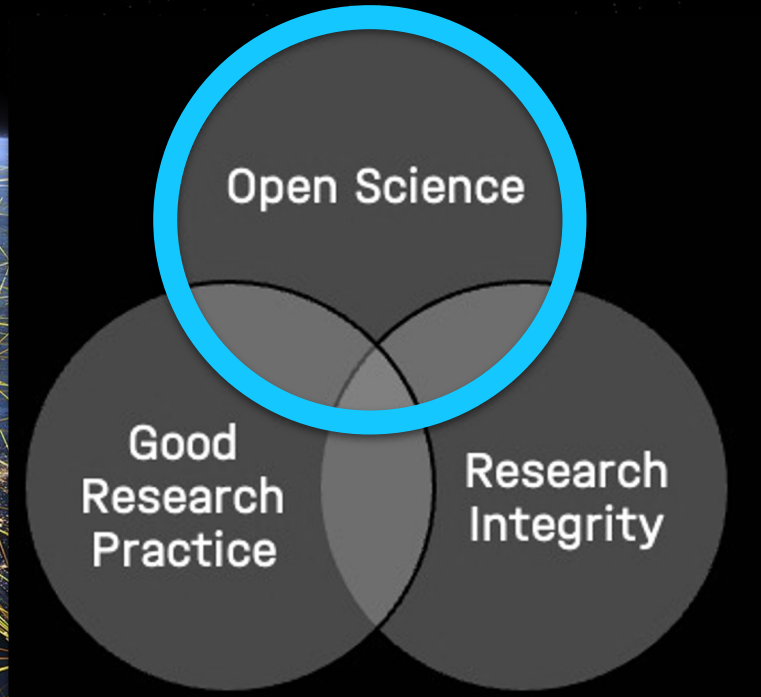
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Position paper on research data management in Helmholtz
## "Making information resources more usable!"

- Position paper "Making information resources more usable!" (2016). https://doi.org/10.48440/os.helmholtz.026:
  - foster the development and operation of information infrastructures;
  - make research data from the Centres available openly and free of charge for subsequent use by science and society;
  - provide a basis for knowledge transfer;
  - support education and training in research data management.

- → promote the quality, productivity, sustainability and competitiveness of science
- → facilitate scientific cooperation
- → trustfulness and reliability through research integrity and good research practice arising from transparency and openness

Making information resources more usable

A position paper on the management of research data in the Helmholtz Association[1]

European Research Council (ERC)

- "The mission of the ERC is to support excellent research in all fields of science and scholarship. (…) The ERC considers that providing free online access to these materials is the most effective way of ensuring that the fruits of the research it funds can be accessed, read, and used as the basis for further research" (ERC, 2022, Open Science)

- Open science requirements ERC Funding Programmes:
  - Horizon 2020 (2014-2020)
  - Horizon Europe (2021-2027)

- The ERC is a supporter of responsible management of research data and other research outputs, in line with the FAIR principles (Findable, Accessible, Interoperable and Re-usable). (ERC, 2022, Open Science)

F_{indable} A_{ccessible} I_{nteroperable} R_{eusable}
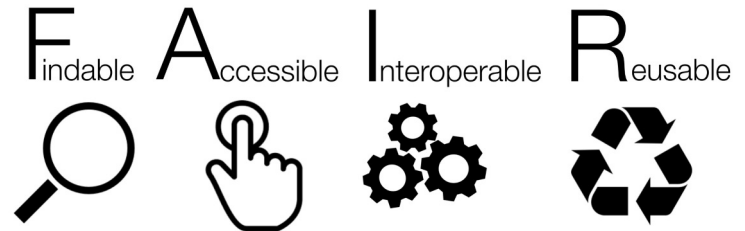
German Reproducibility Network

- On February 1, 2021, eight key Open Science actors in Germany, including the Helmholtz Open Science Office, founded the German Reproducibility Network.
- The Helmholtz Association is a key actor of this cross-disciplinary consortium, which promotes reproducible and robust research on a national level.
- The networks activities include:

  - Supporting researchers in practising open science practices and founding local open science communities.
  - Connecting reproducibility initiatives.
  - Advising institutions on how to embed open science practices in their work.
  - Representing the open science community in the wider scientific landscape.

The Helmholtz-Incubator Information & Data Science
# Helmholtz Metadata Collaboration (HMC)
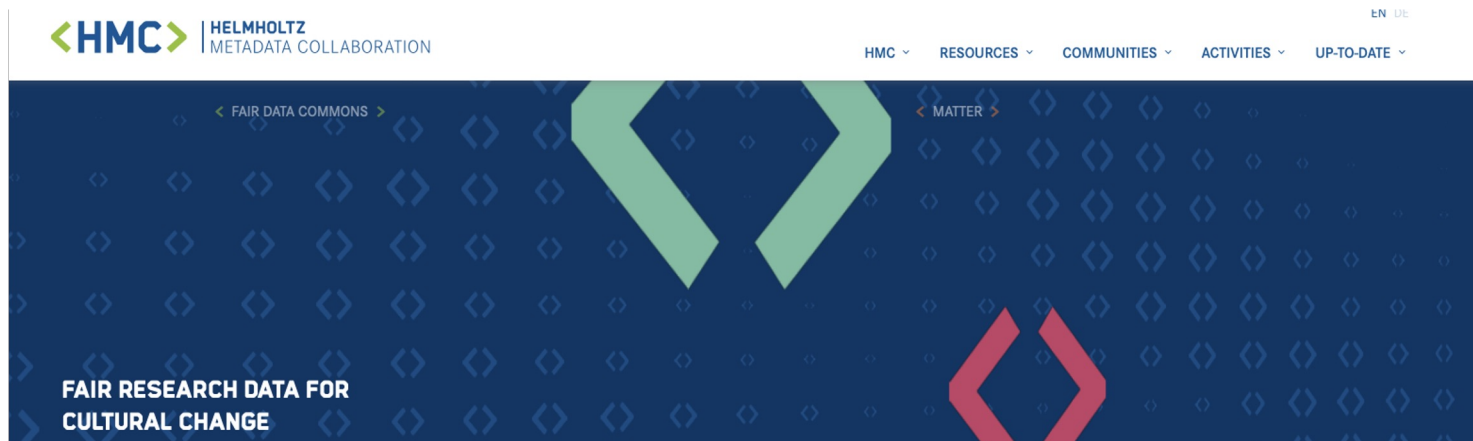
The Helmholtz Metadata Collaboration (HMC) develops and implements novel concepts and technologies for a sustainable handling of research data through high-quality metadata.

Main mission: Enable Helmholtz Centers and researchers to describe data and its context comprehensively, following the FAIR principles in research data.
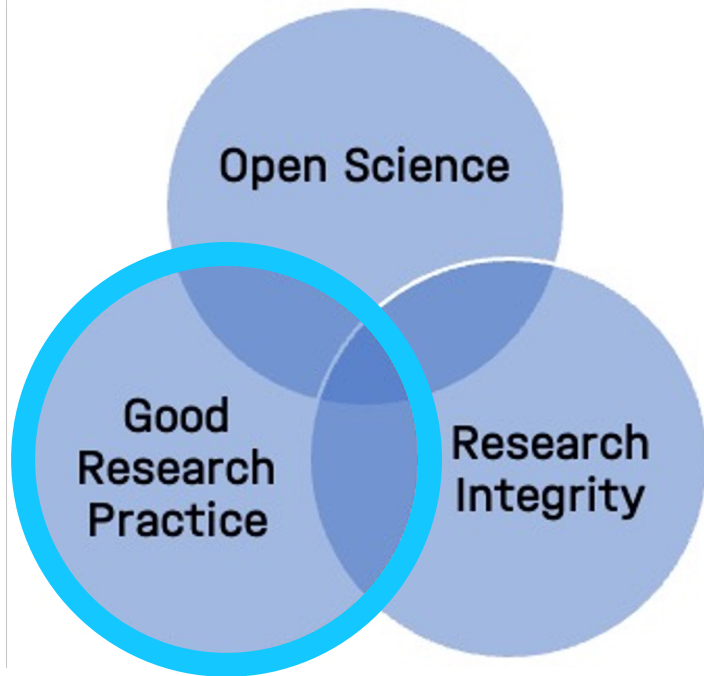
Further information on HMC

Guideline Report on Research Integrity and Open Science
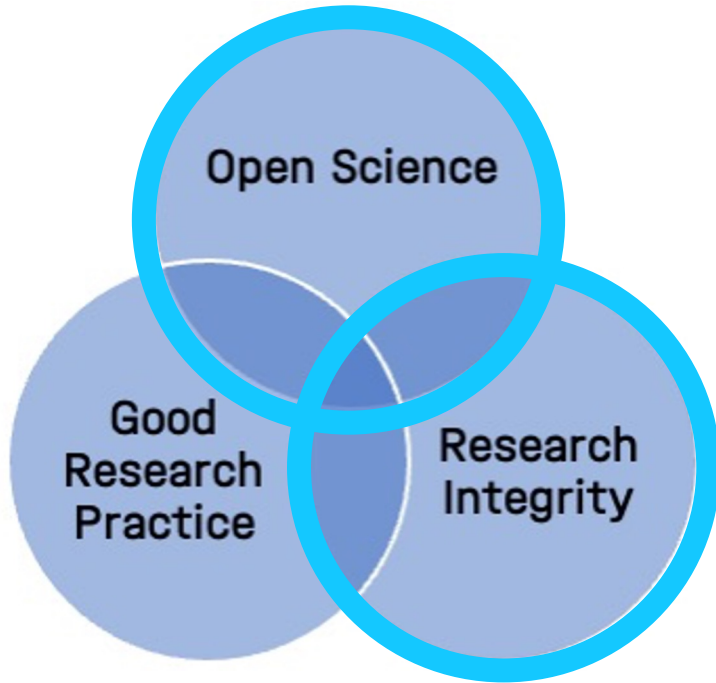
Cross-cutting issues:

- ''… the importance of open science as a mechanism for reinforcing research integrity, while, at the same time, research integrity contributes to open science'' (Guideline Report on Research Integrity and Open Science, 2021, p. 2).

- ''Communicate about Open Science and Research Integrity in a positive way, as two fundamental and complementary pathways towards excellent science and greater social impact of research'' (Guideline Report on Research Integrity and Open Science, 2021, p. 4).

Deutsche Forschungsgemeinschaft (DFG, German Research Foundation)
Guidelines for Safeguarding Good Research Practice

German Research Ombudsman

Ombuds Committee for scientific integrity in Germany

The German Research Ombudsman (*Ombudsman für die Wissenschaft*) is a committee appointed by the German Research Foundation (DFG) that assists all scientists and researchers in Germany when it comes to questions and conflicts related to good scientific practice (GSP) and scientific integrity. The Ombuds Committee is supported in its deliberations and conflict mediation by an office that is located in Berlin.

The deliberations of the *Ombudsman* are orientated in line with the 19 "Guidelines for Safeguarding Good Scientific Practice" (see the DFG code of conduct, 2019). Everyone is free to contact either the *German Research Ombudsman* or a local ombudsperson at a university or non-university research institution.

As a matter of principle, the *Ombudsman* treats all enquiries *neutrally, fairly and in strict confidence.*

- The Research Ombudsman may be approached by all researchers, directly and independently of any connection with the DFG, for advice and support in matters relating to good research practice and its abuse due to lack of integrity.
- [More information on the German Research Ombudsman](#)

Discussion hub: „Dealing with research data"
Project coordination: Dr. Katrin Frisch

Helmholtz Ombudspersons and network

- Central Ombudsperson of the Helmholtz Association:
  Prof. Karin Lochte

- Decentralized Ombudsperson activities:
  - Ombudspersons at each Helmholtz Center
  - Network of Ombudspersons
  - Mediation of conflicts

- For Helmholtz: "Framework Guideline for Ensuring Good Research Practice (GWP) and procedures in the event of scientific misconduct"
  - Explicit consideration of open science aspects

HERMANN VON HELMHOLTZ-GEMEINSCHAFT DEUTSCHER FORSCHUNGSZENTREN (HGF)

RAHMENLEITLINIE ZUR SICHERUNG GUTER WISSENSCHAFTLICHER PRAXIS (GWP)
UND
VERFAHREN BEI WISSENSCHAFTLICHEM FEHLVERHALTEN

(VON DER MITGLIEDERVERSAMMLUNG DER HELMHOLTZ-GEMEINSCHAFT AM XX.XX.2021 VERABSCHIEDETE FASSUNG)

DFG Code of Conduct
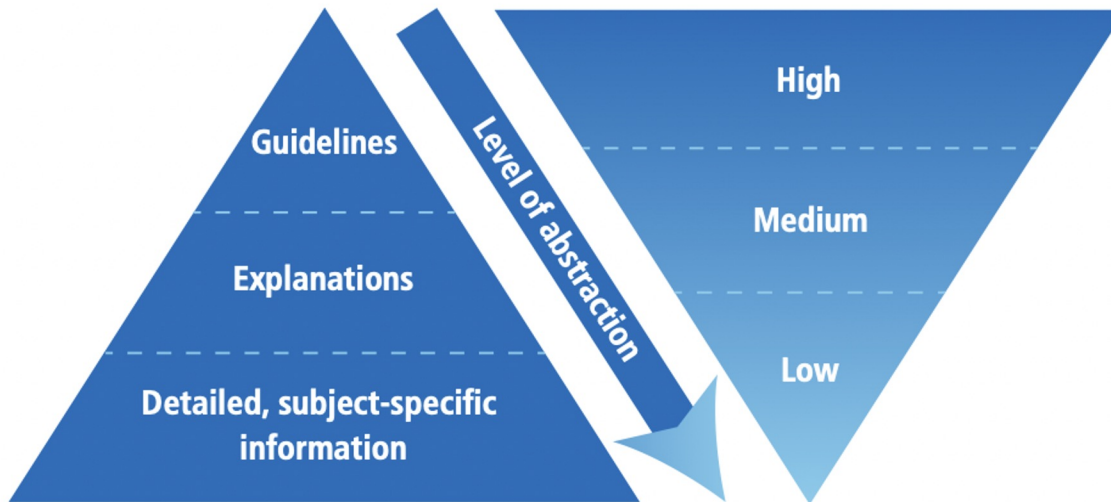# Safeguarding Good Research Practice

Research Integrity

Figure 1: Structure of the DFG Code of Conduct *Guidelines for Safeguarding Good Research Practice*

- First level: Guidelines and second level: Explanations, available via: https://doi.org/10.5281/zenodo.3923602
- Third level: Online portal "Research Integrity", available via: https://wissenschaftliche-integritaet.de/en

Relevant Guidelines in the DFG Code

Safeguarding Good Research Practice

Guidelines for Safeguarding Good Research Practice

Code of Conduct

DFG
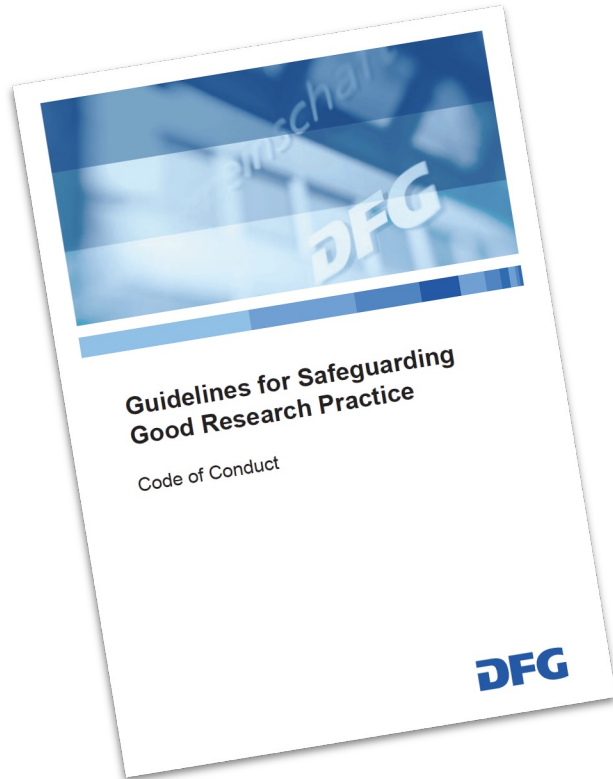
- Guideline 5: Performance dimensions and evaluation criteria
- Guideline 7: Cross-phase quality assurance
- Guideline 10: Legal and ethical framework, rights of use
- Guideline 11: Methods and standards
- Guideline 12: Documentation
- Guideline 13: Establishing public access to research results
- Guideline 14: Authorship
- Guideline 15: Publication organ
- Guideline 17: Archiving

Deutsche Forschungsgemeinschaft. (2022). Guidelines for Safeguarding Good Research Practice. Code of Conduct. https://doi.org/10.5281/zenodo.6472827

Briefing: Good (Digital) Research Practice and Open Science

Helmholtz Open Science Briefing: Good (Digital) Research Practice and Open Science: Support and Best Practices for the Implementation of the DFG Code of Conduct "Guidelines for Ensuring Good Scientific Practice" (Version 2.0) https://doi.org/10.48440/os.helmholtz.052

- Occasion. DFG Code of Conduct "Guidelines for Ensuring Good Scientific Practice"; obligatory implementation.

- Content. Practical description of the relevance of Open Science in implementing the Code (based on selected recommendations of the DFG Code).

- Objective. Impulses for anchoring research integrity in open science and good (digital) research practice.

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Helmholtz Open Science Briefing

Good (Digital) Research
Practice and Open Science
Support and Best Practices for Implementing the DFG
Code of Conduct "Guidelines for Safeguarding Good Re-
search Practice"

Version 2.0

Briefing: Good (Digital) Research Practice and Open Science

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Discussion Questions

- How can open science further support research integrity and good research practice, especially in terms of facilitating scientific collaboration?

- What are the concrete needs to ensure a successful integration of research integrity and good research practice into practical research work and how can this be further supported - especially in the open science context?

- To what extent can research integrity and good research practice be understood as an institutional and/or an individual task?

- What are the potential challenges and opportunities against the background of the existing policies and guidelines concerning research integrity and good research practice?

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Keep in touch

- Email – open-science@helmholtz.de

- Twitter – @helmholtz_os

- Website – https://os.helmholtz.de

- Mailing list for members of Helmholtz – Helmholtz Open Science Professionals

- Open Science Newsletter

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Thank you very much for your attention!

✉ **Lea Maria Ferguson**

iD leamaria.ferguson@os.helmholtz.de

🐦 https://orcid.org/0000-0002-7060-3670

@LeamariaF