



Open Science - Open/FAIR Research Software

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Open Science

The term open science describes a cultural change in science

It means open access to

- scientific publications
- research data
- research software

to expand the reusability, transparency and quality assurance of scientific work.

Computerized work and digital communication facilitate open science.



HELMHOLTZ Open Science (<https://os.helmholtz.de/>)

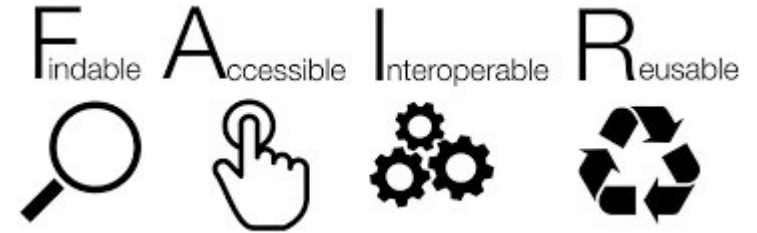
Helmholtz strongly promotes open science

- [Open Access Policy](#) - a framework for the transformation towards open access
- [position paper](#) on the management of research data
- paper on open [research software](#)



How to get open?

Major step to open science are the FAIR Principles



FAIR Principles, at a high level, are intended to apply to all research objects.

While high level goals (F,A,I,R) are mostly the same, the details and how they are implemented differ for different categories of research objects (publication, data, software); they have to be specified for each category.

FAIR4RS

Adoption and implementation of the FAIR principles for Research Software principles

<https://www.rd-alliance.org/group/fair-research-software-fair4rs-wg/outcomes/fair-principles-research-software-fair4rs-0>



How to promote and implement FAIR4RS at GFZ/Helmholtz level?

Policy

GFZ Guidelines

<http://intranet.gfz-potsdam.de/themen/regelungen-und-formulare/interne-regelungen/uebergreifendes/forschungssoftware-am-gfz/>

Incentives

- Research software counts as scientific result
Helmholtz Quality Indicator in preparation
=> see *Workshop in the afternoon!*
- DFG funding in preparation for research software infrastructures

Communities

- e.g. section guidelines and processes

Skills and training

- HIFIS activities

Infrastructure

- Some procedures are already implemented at GFZ
- Further support has to be developed

Who is expected to apply FAIR4RS?

And why?

"...the application of the FAIR4RS Principles is the responsibility of the owners (who are often the creators) of the software, not the users."

"The FAIR4RS Principles must also be enabled and supported by various stakeholders in the larger ecosystem that supports research software (e.g., repositories and registries)."



*Adapted by Michelle Barker from original by Brian Nosek:
[Strategy for Culture Change \(2019\)](#)*

Why is it worth to go open?

- reducing duplication and the costs of creating software
- allowing more research with the same software, multiplying scientific opportunities
- offer the opportunity of a wider evaluation and scrutiny by the scientific community, allow a greater and more accurate replication and validation of research results
- Get credit for your research software

