



Universität  
Marburg

# Open Science

At Marburg University

Dr. Lydia Riedl 

eResearch Service Center | Open Science Working Group at UB MR

01.06.2026

# eResearch Service Center



## Lydia Riedl

- Linguist & neuroscientist
- Head of Open Science working group
- Coordinating team member of eResearch Center
- Managing research-infrastructure projects, e.g., FID Media
- ePublishing & data expert





<https://www.uni-marburg.de/eresearch>

# Good research practice

1. Quality assurance
2. Stakeholders, responsibilities and roles
3. Research design
4. Legal and ethical frameworks, usage rights
5. Methods and standards
6. Documentation
7. Providing Open Access to research results
8. Authorship
9. Publication medium
10. Confidentiality and neutrality of review processes and discussions
11. Archiving

Deutsche Forschungsgemeinschaft. (2025). Guidelines for Safeguarding Good Research Practice. Code of Conduct. <https://doi.org/10.5281/zenodo.14281892>



„Science is everywhere, science is all around us.  
This is your last chance. After this there is no turning back.  
You take the blue pill, the story ends, you wake up in your bed, and  
believe whatever you want to believe.  
You take the red pill, you stay in Wonderland, and we show you  
how deep the rabbit hole goes.” (Fishburne, 1999)

From: MOOC-Module-1: <https://github.com/OpenScienceMOOC/Module-1-Open-Principles/> (CC0)

# Agenda\*

9:00-9:30 The blue pill

9:30-10:00 The red pill

10:00-10:30 Your community



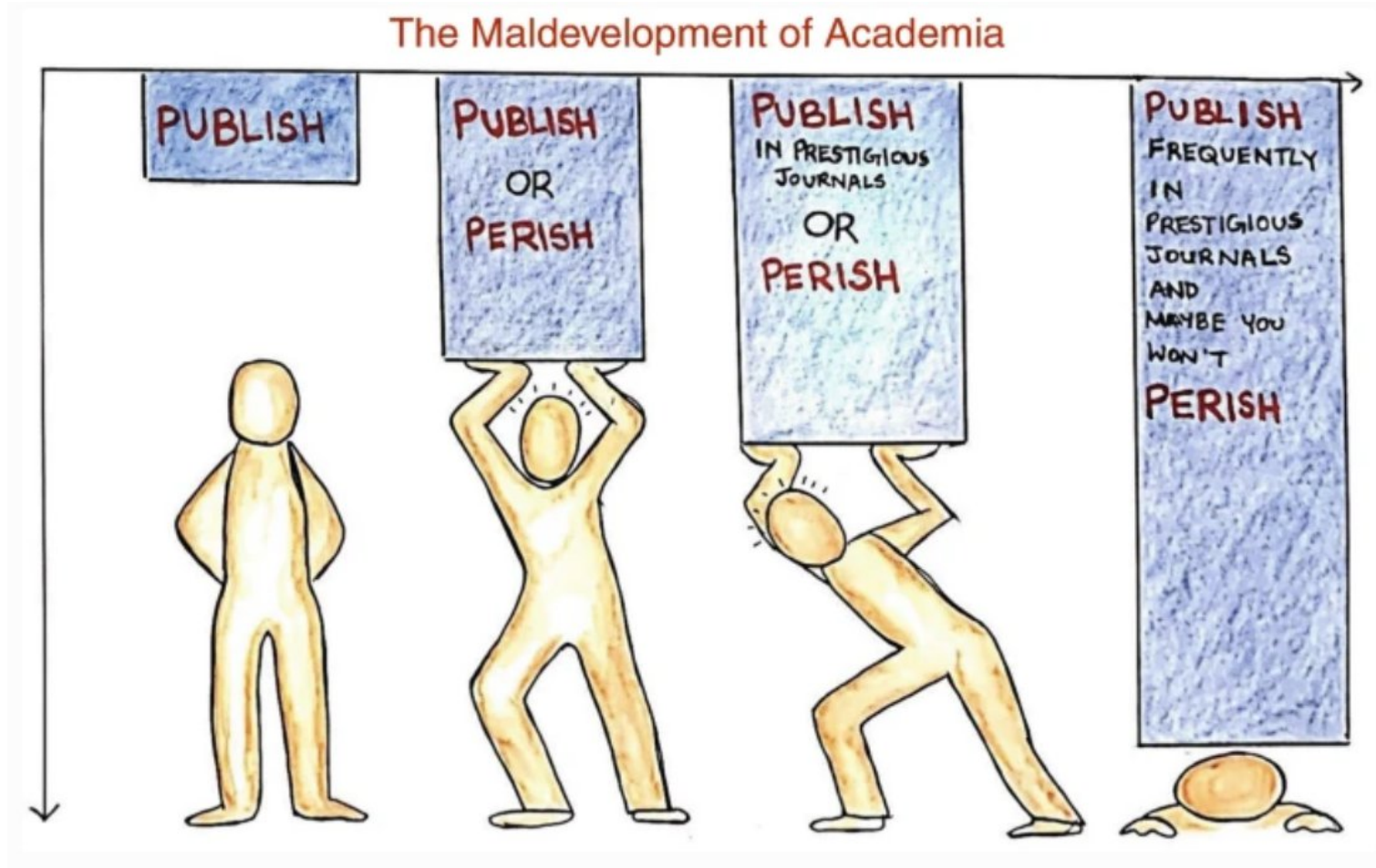
This Symbol indicates  
recommended materials

*\*Time may be subject to change*

# The blue pill



# The publish or perish system...



Publish or perish explained:

[German video](#)

[English video](#)

Nundy, S., Kakar, A., Bhutta, Z.A. (2022). When Should We Start Doing Research and Publishing Papers?. In: How to Practice Academic Medicine and Publish from Developing Countries?. Springer, Singapore. [https://doi.org/10.1007/978-981-16-5248-6\\_4](https://doi.org/10.1007/978-981-16-5248-6_4), CC-BY



# The publish or perish system...



Doktor Watson: <https://www.youtube.com/watch?v=Y0YYgdSEdu4>

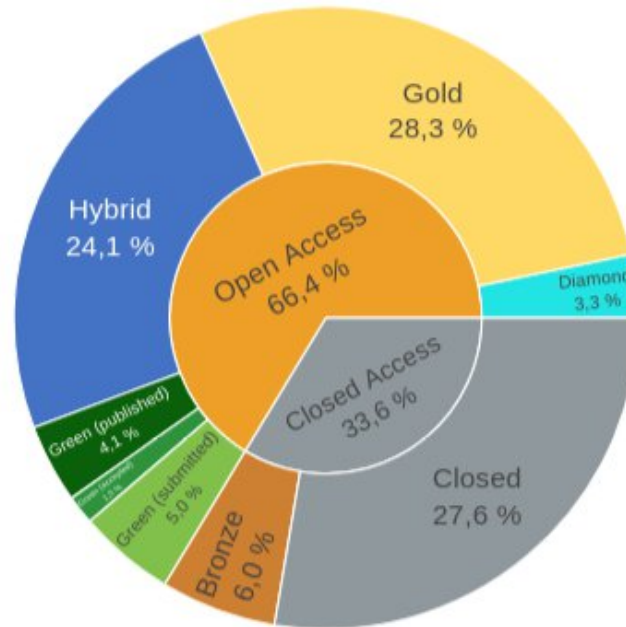
**... makes text publications a currency**



# What's the problem?

## ... reinforces Impact Factor over Open Access

### Verteilung der Zeitschriftenartikel in Deutschland



Die Grafik zeigt das Open/Closed Access Verhältnis der Zeitschriftenartikel (815.111) in Deutschland für die letzten fünf Jahre (2020 - 2024) auf Basis von OpenAlex, Unpaywall sowie den im OAM verwendeten Zeitschriftenlisten (DOAJ, DOAG) an.

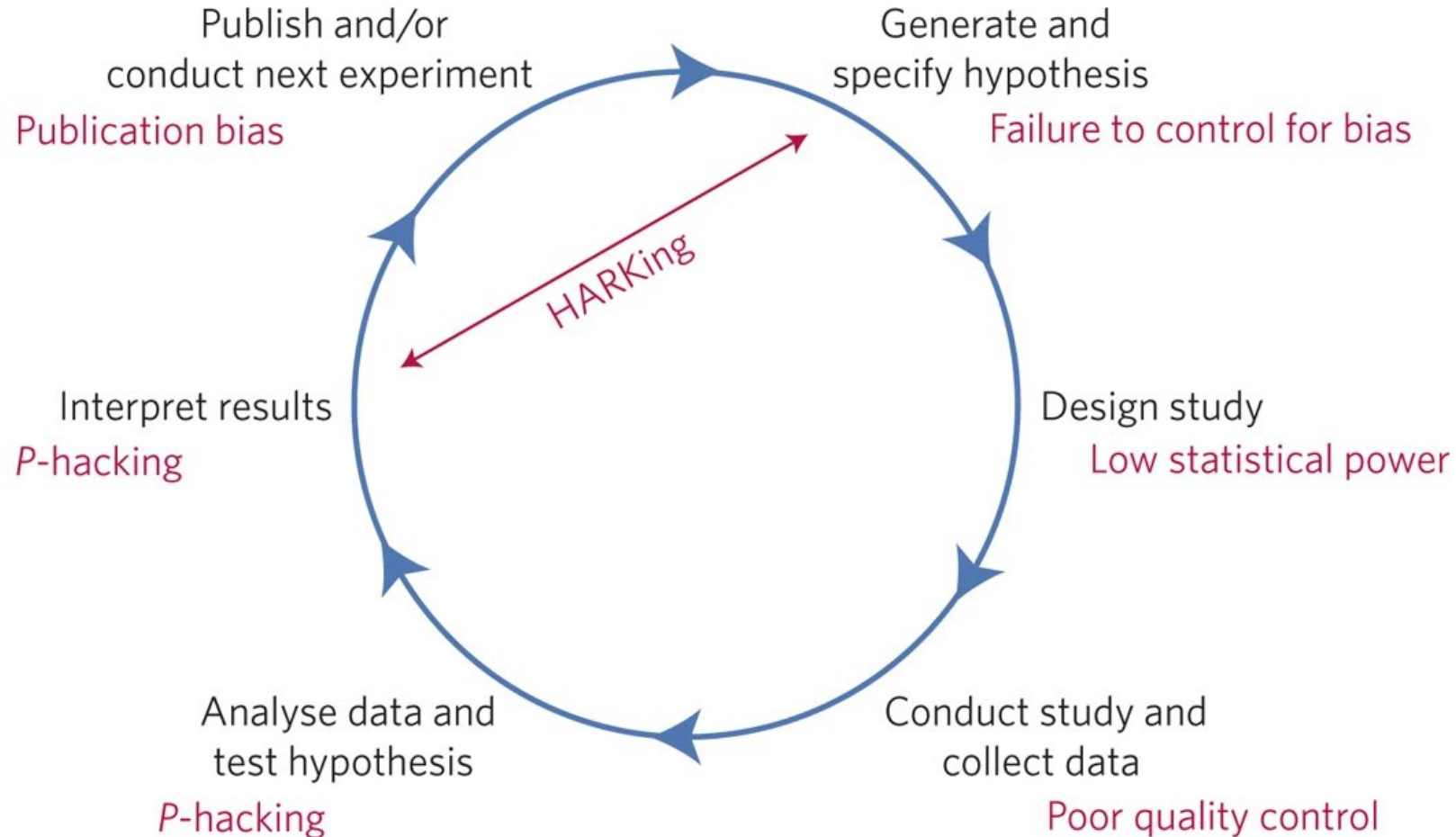
<https://open-access-monitor.de/>, [DbCL](#)



... and therewith biases



## ... and the hunt for positive results



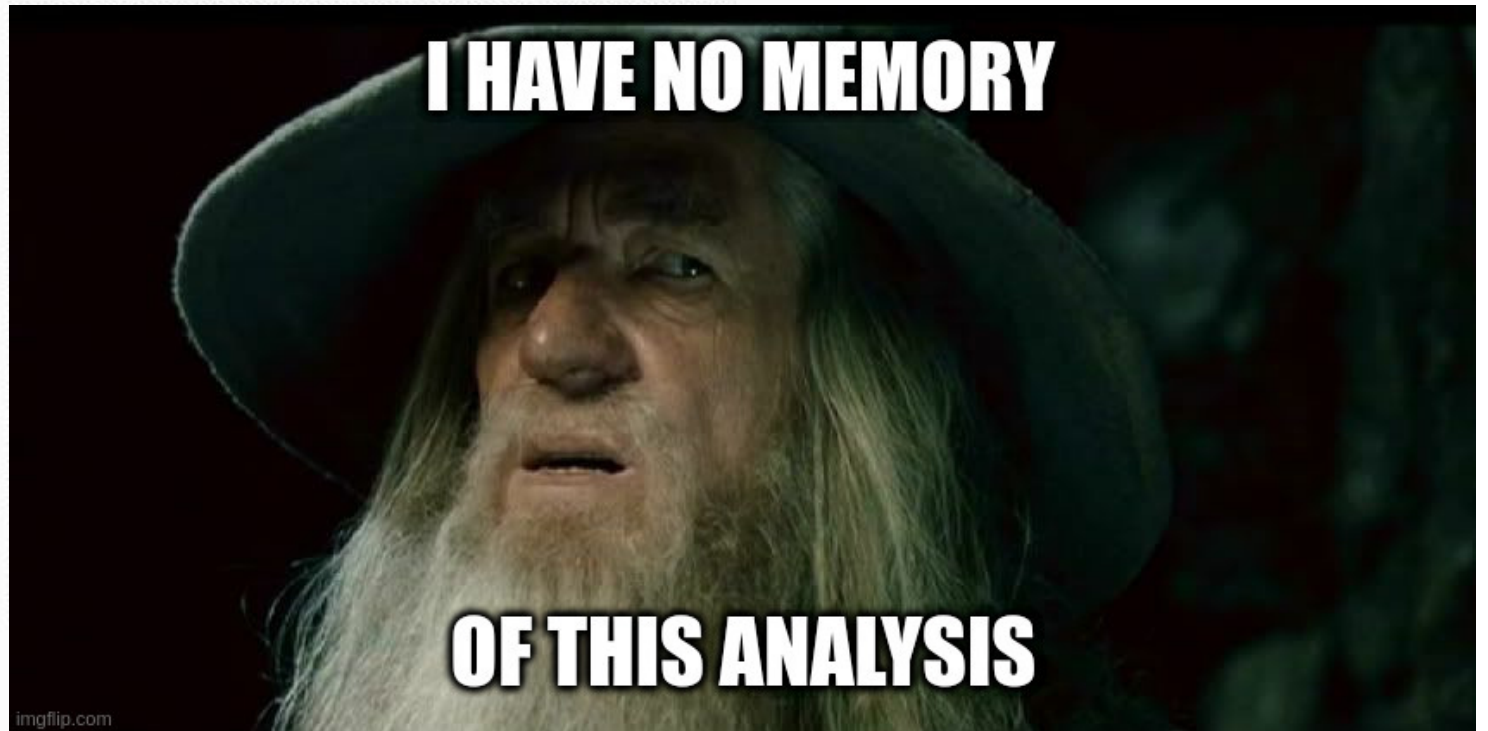
Munafò, Marcus R., et al. "A manifesto for reproducible science." *Nature human behaviour* 1.1 (2017): 1-9. DOI: [10.1038/s41562-016-0021](https://doi.org/10.1038/s41562-016-0021), CC-BY

... increases time pressure at the expense of reproducibility

## The Reproducibility “Crisis”

**“More than 70% of researchers have tried and failed to reproduce another scientist's experiments, and more than half have failed to reproduce their own experiments.”**

Baker, Monya. 2016. “1,500 Scientists Lift the Lid on Reproducibility.” *Nature* 533 (7604): 452–54.



**... excludes less privileged people**



Eisherif, Mahmoud M., et al. "Bridging Neurodiversity and Open Scholarship: How Shared Values Can Guide Best Practices for Research Integrity, Social Justice, and Principled Education." MetaArXiv (2022), DOI: [10.31222/osf.io/k7a9p](https://doi.org/10.31222/osf.io/k7a9p), [CC-BY](#)



...and as if we didn't have enough problems already...



Michael I Schiller/Reveal, <https://www.flickr.com/photos/149561324@N03/38226390422/>, CC-BY



Further information:

Silencing Science: documents and highlights political interference in science

Data Rescue Project: backs up and preserves at-risk public data

Safeguarding Research & Culture: advocates for the preservation of research data with a focus on cultural heritage

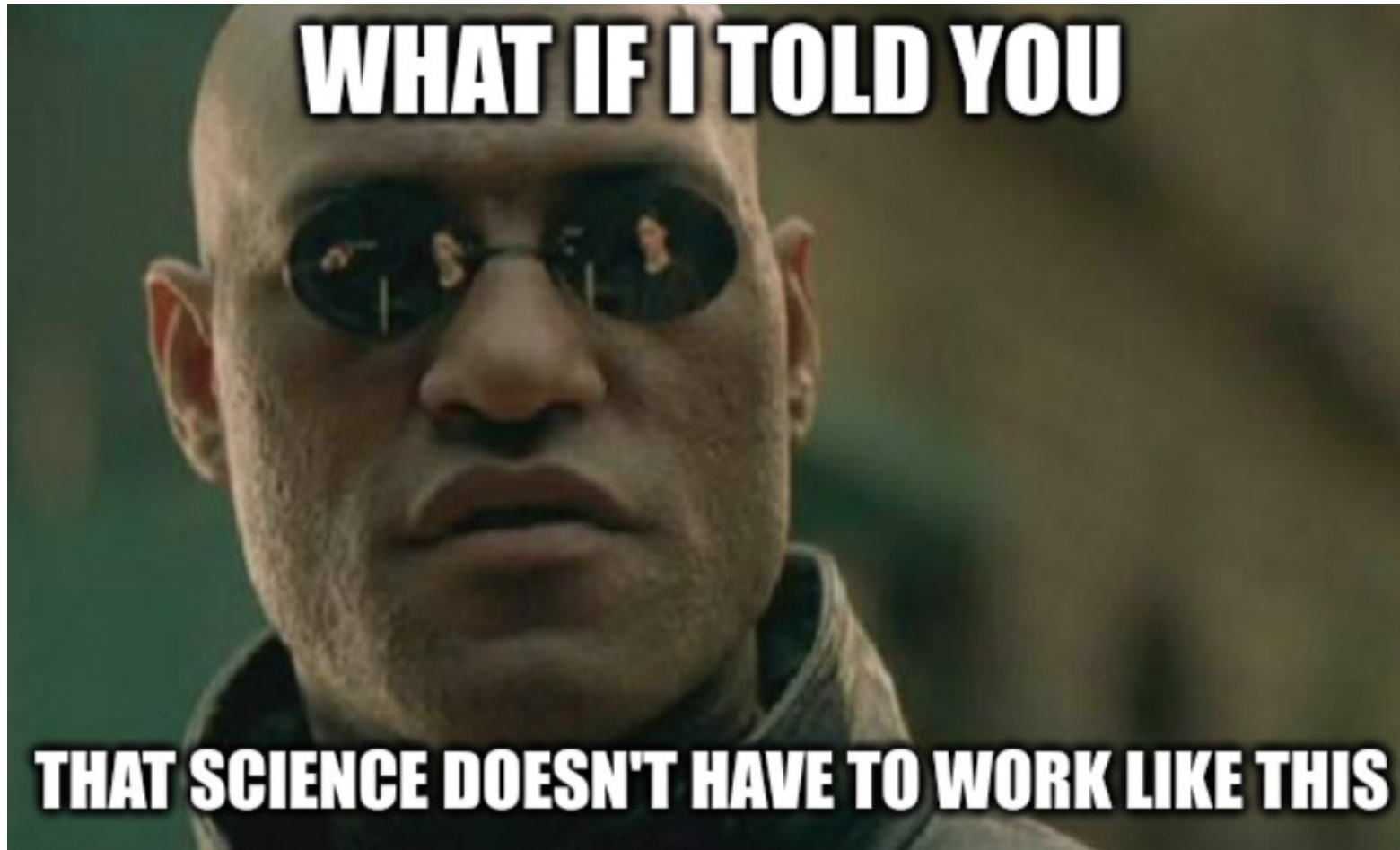
DFG Funding Initiative to Secure Endangered Data Repositories and Promote Data Resilience 2025 to 2027

**In other words, the house is ON FIRE**



Session „Decentralizing for Resilience: Beyond Data Rescue in Global Climate Networks“, International Data Week 2025

But wait...



# The red pill



# Good research practice

1. Quality assurance
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11. Archiving

Deutsche Forschungsgemeinschaft. (2025). Guidelines for Safeguarding Good Research Practice. Code of Conduct. <https://doi.org/10.5281/zenodo.14281892>





# What does Open Science mean to you?

# This is Open Science

„The term 'Open Science' has not yet a universally accepted definition,  
but usually refers to one core theme:

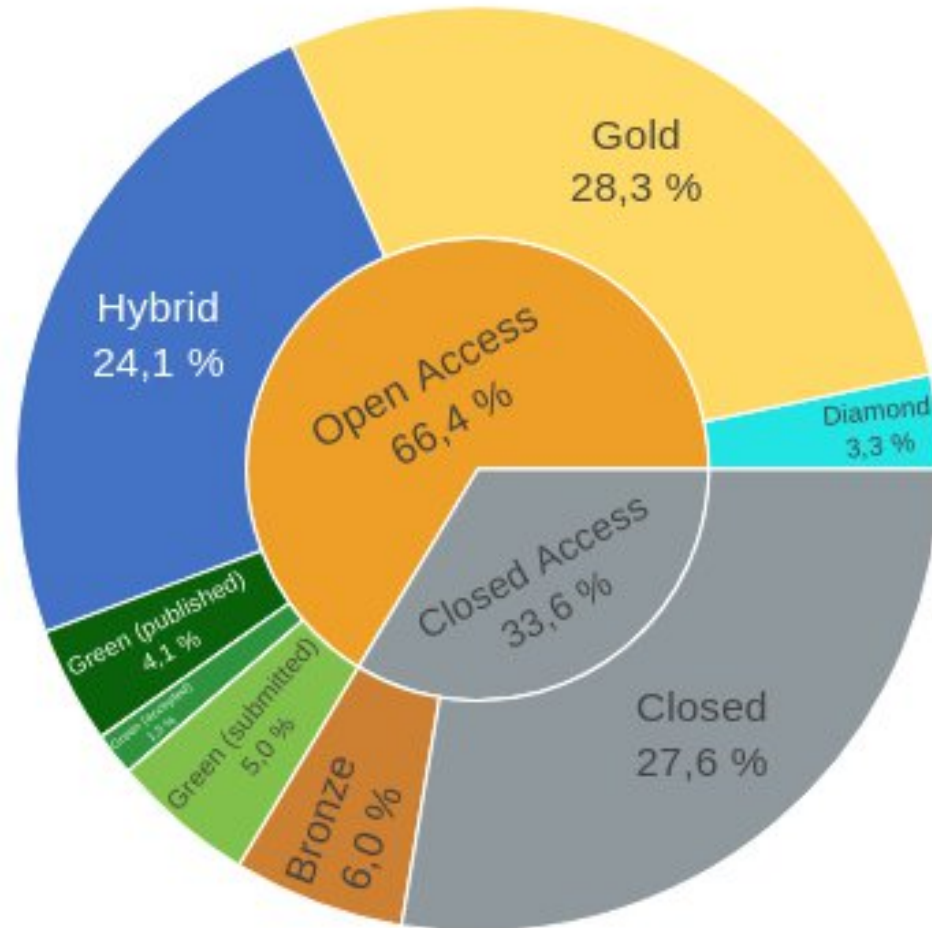
**Increasing knowledge availability as a public good,**  
typically with critical research principles such as  
credibility, reproducibility, and verifiability included in some combination.  
Many other terms are being used synonymously with Open Science, such as  
Open Research, Open Scholarship, Science 2.0, and eScience.”

From: MOOC-Module-1: <https://github.com/OpenScienceMOOC/Module-1-Open-Principles/> (CC0)

# Open Access

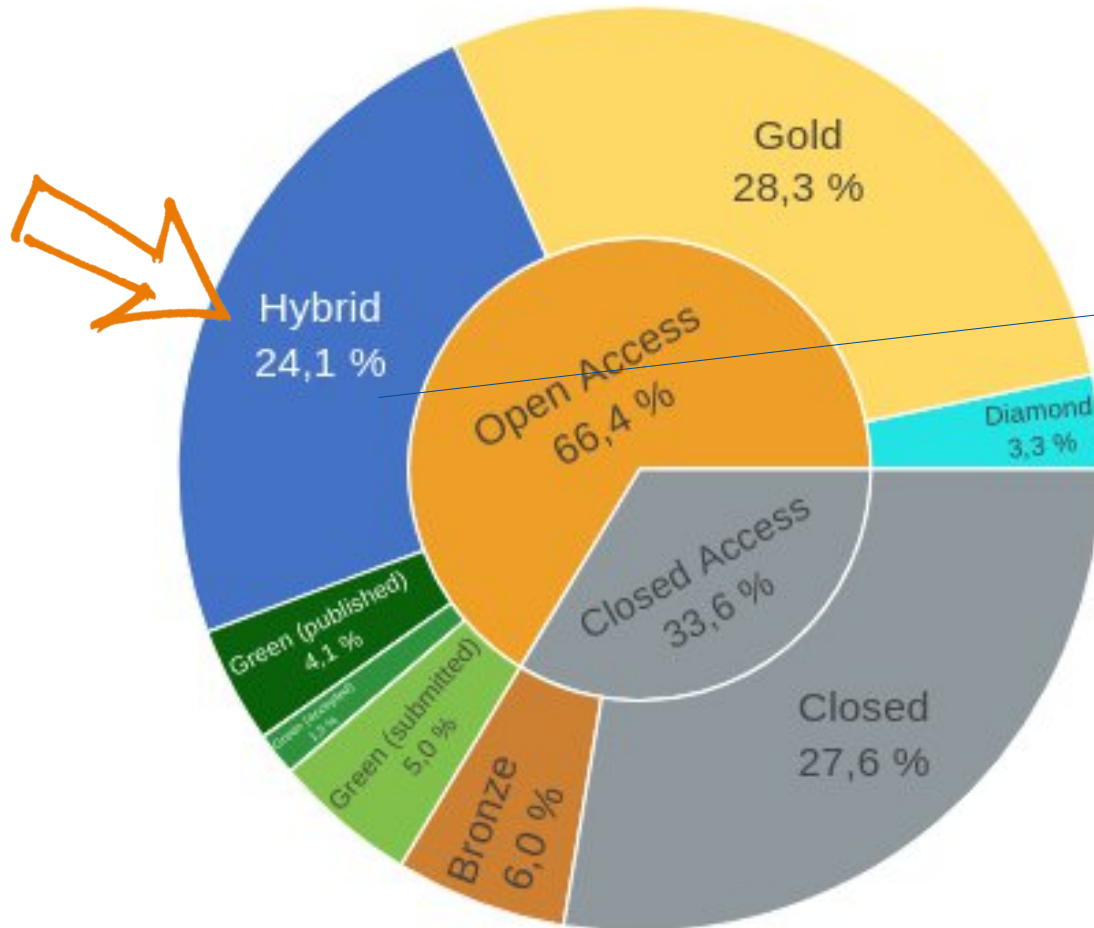


# Publish in Open Access



<https://open-access-monitor.de/>, DbCL

# Publish in Open Access



<https://open-access-monitor.de/>, DbCL

American Association for the Advancement of Science (AAAS) - Science Advances →

Association for Computing Machinery (ACM) →

American Institute of Physics (AIP) →

Bentham Science Publishers →

BioMed Central (BMC) →

British Medical Journal (BMJ) Publishing Group →

Cambridge University Press →

The Company of Biologists →

De Gruyter →

Elsevier (inkl. Cell Press & The Lancet) →

Frontiers →

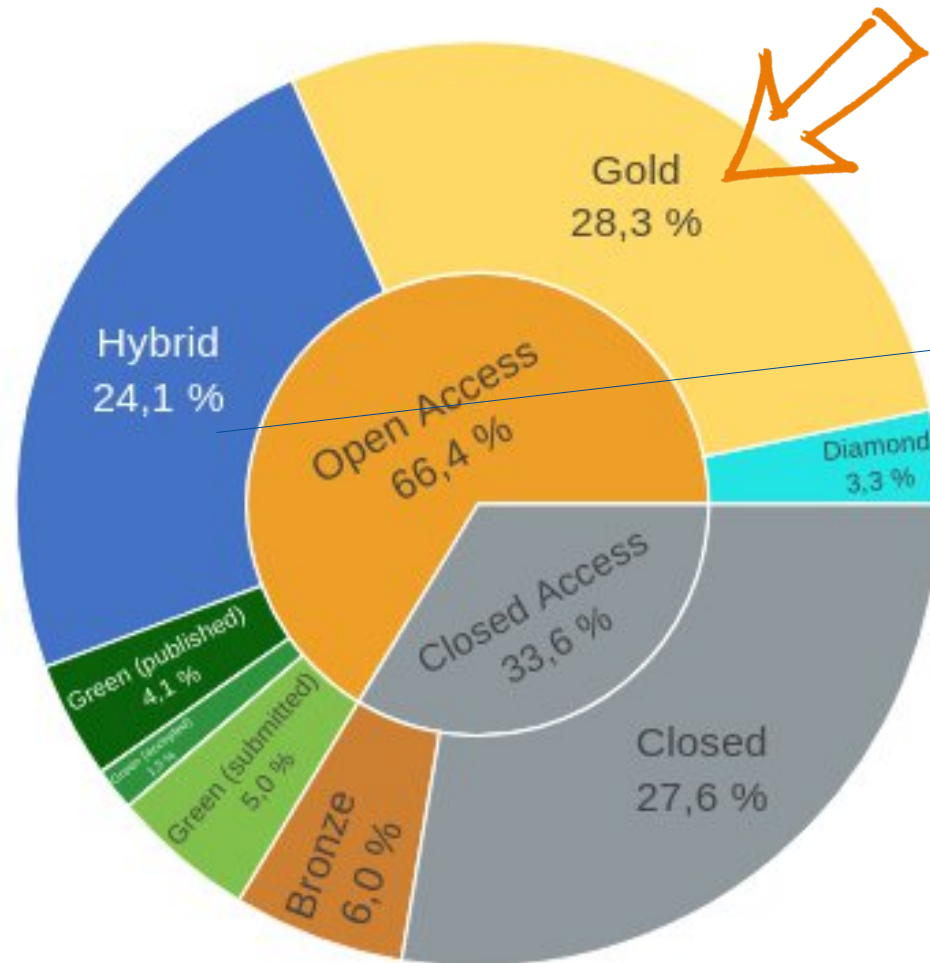
Hogrefe - "PsyJournals" →



Marburg contracts:  
<https://www.uni-marburg.de/de/ub/publizieren/open-access/verlagsspezifische-informationen>



# Publish in Open Access



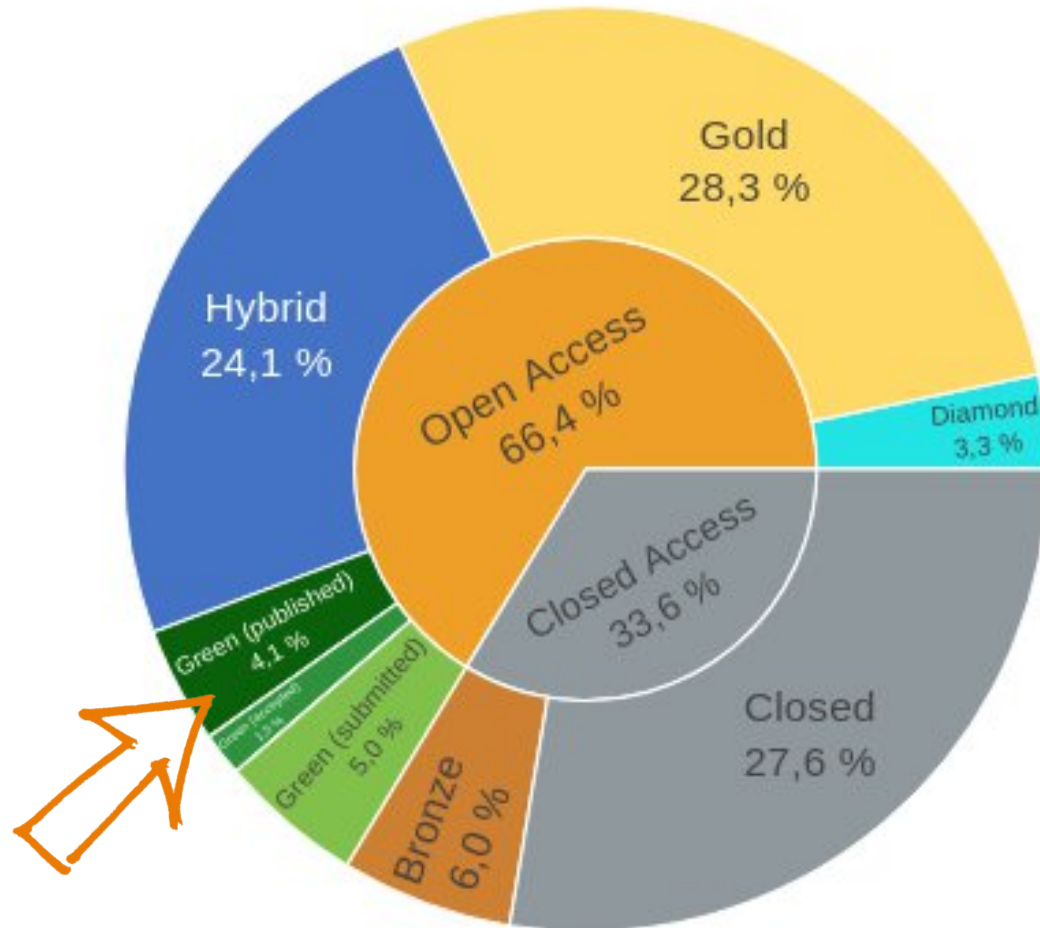
<https://open-access-monitor.de/>, DbCL

- OA-Journals Overview: <https://doaj.org/>
- Journal Policy Overview: <https://www.sherpa.ac.uk/romeo/>
- Open Access Finder (financing): <https://finder.open-access.network/>
- Journal Finder: <https://service.tib.eu/bison/> (by topic/abstract)  
<https://topfactor.org/> (by transparency factor)
- Publishers conditions for your institution: <https://finder.open-access.network/>



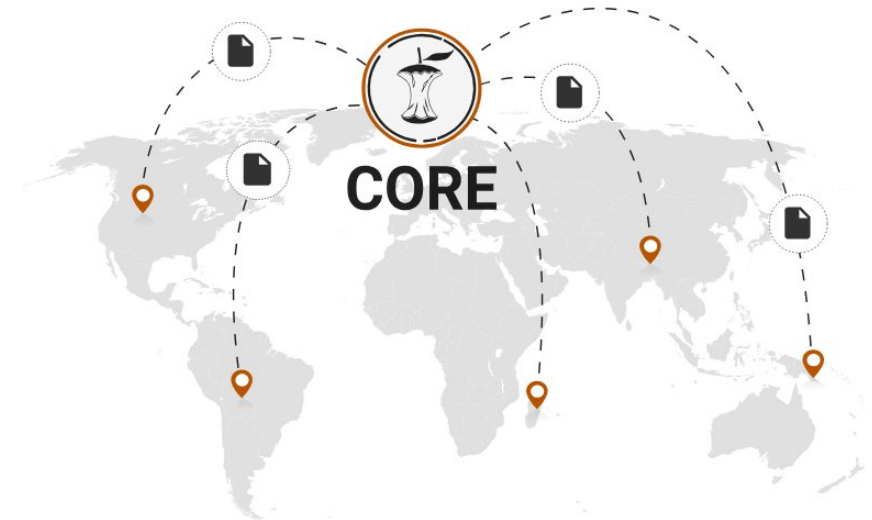
Open Access Fund UMR:  
<https://www.uni-marburg.de/de/ub/forschen/open-access/open-access-publikationsfonds>

# Publish in Open Access



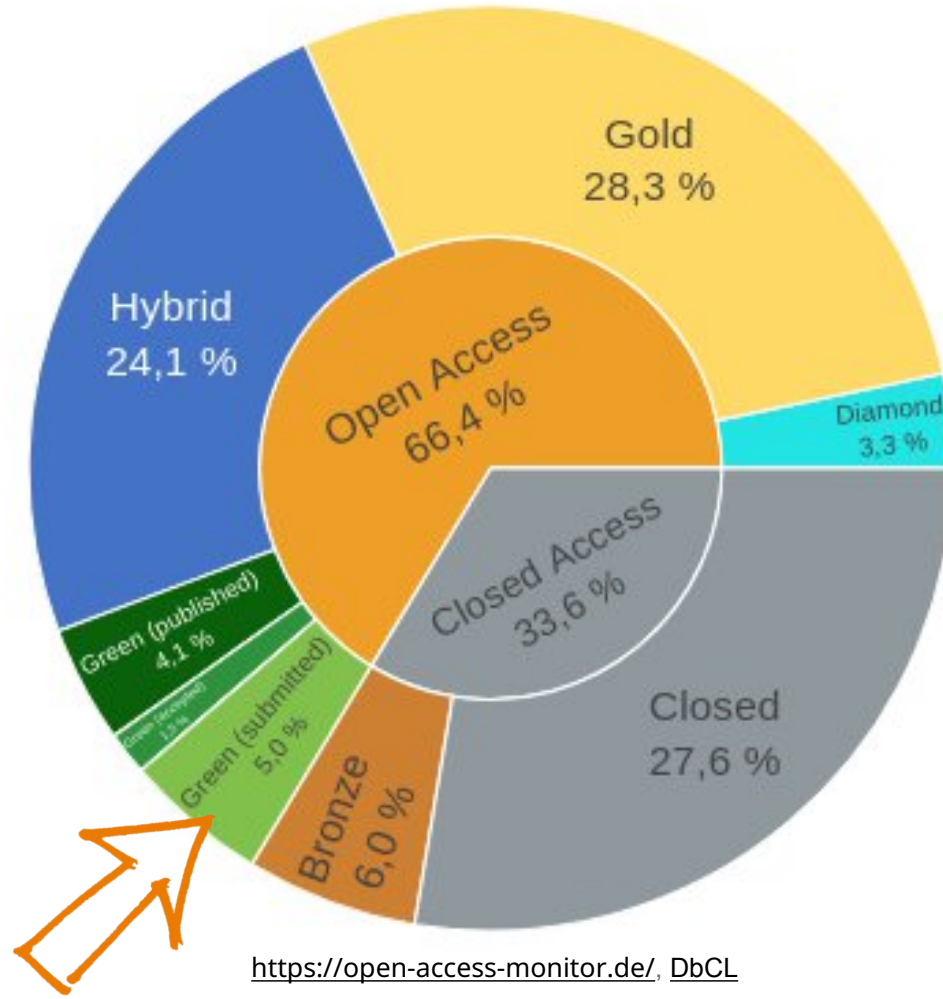
<https://open-access-monitor.de/>, DbCL

make your research resilient...



<https://core.ac.uk/>

# Publish in Open Access



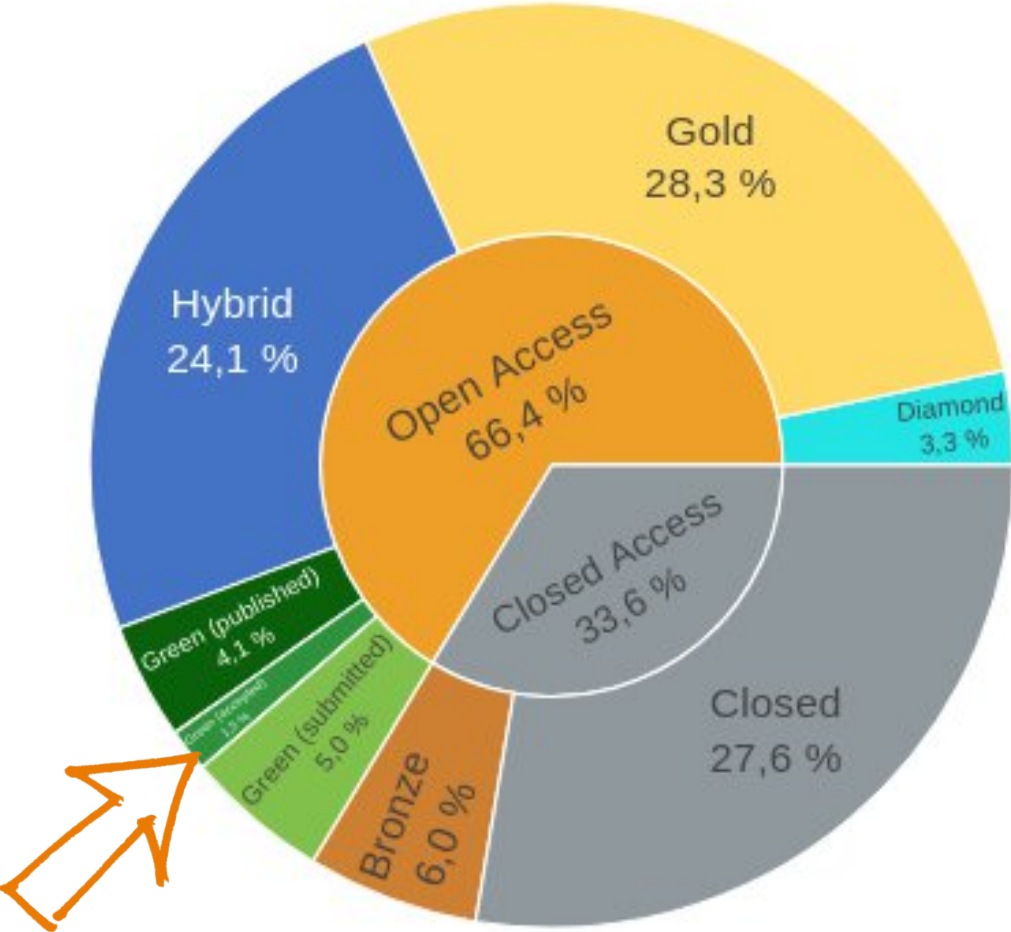
„Der Urheber eines wissenschaftlichen Beitrags, der im Rahmen einer mindestens zur Hälfte mit öffentlichen Mitteln geförderten Forschungstätigkeit entstanden und in einer periodisch mindestens zweimal jährlich erscheinenden Sammlung erschienen ist, hat auch dann, wenn er dem Verleger oder Herausgeber ein ausschließliches Nutzungsrecht eingeräumt hat, das Recht, den Beitrag nach Ablauf von **zwölf Monaten** seit der Erstveröffentlichung in der akzeptierten **Manuskriptversion** öffentlich zugänglich zu machen, soweit dies keinem gewerblichen Zweck dient. Die Quelle der Erstveröffentlichung ist anzugeben. Eine zum Nachteil des Urhebers abweichende Vereinbarung ist unwirksam.“

UrhG § 38(4)



Check publisher policies here:  
<https://www.sherpa.ac.uk/romeo/>

# Publish in Open Access



<https://open-access-monitor.de/>, DbCL



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# medRxiv

THE PREPRINT SERVER FOR HEALTH SCIENCES

Advanced Search

Caution: Preprints are preliminary reports of work that have not been certified by peer review. They should not be relied on to guide clinical practice or health-related behavior and should not be reported in news media as established information.

<https://www.medrxiv.org/>

**OSF PREPRINTS**  
A scholarly commons to connect the entire research cycle  
[Powered by OSF Preprints](#)

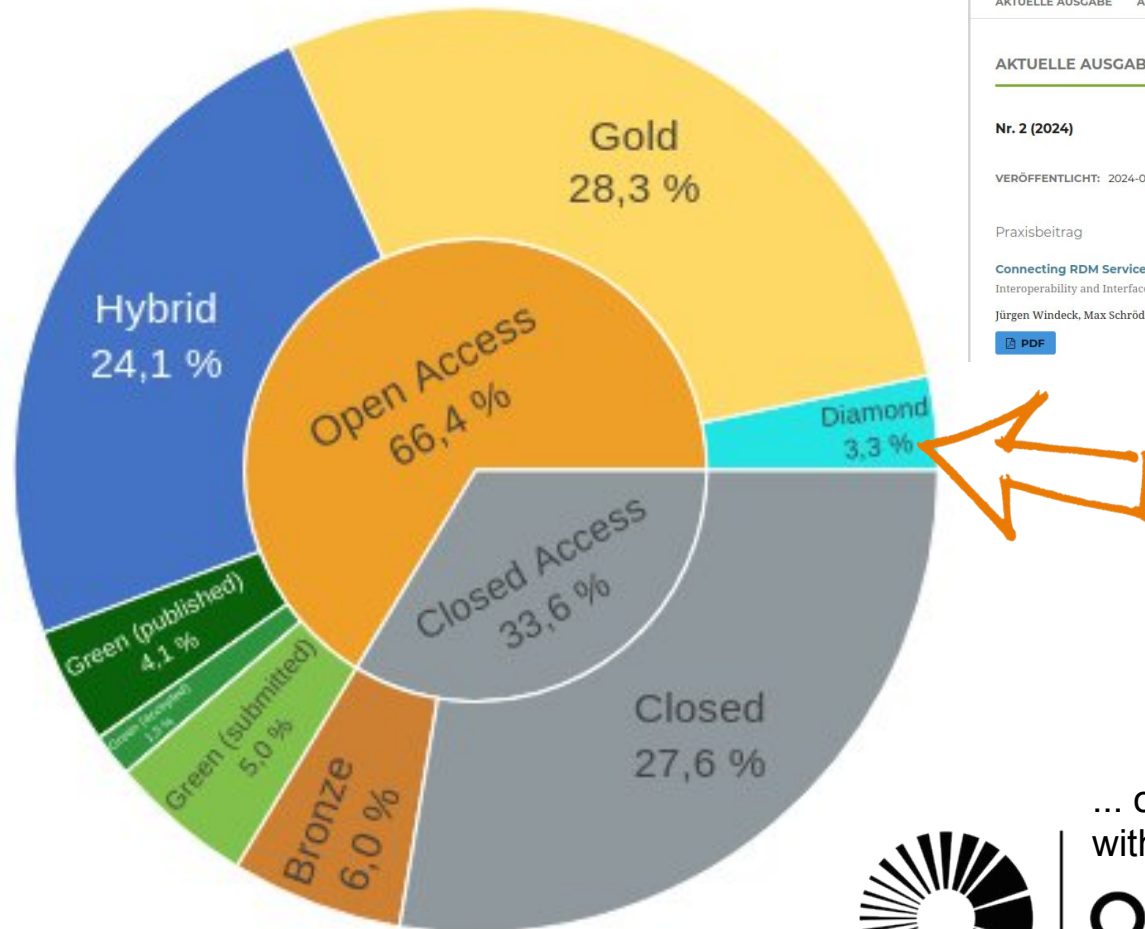
or

[Submit a preprint](#)

<https://osf.io/preprints>

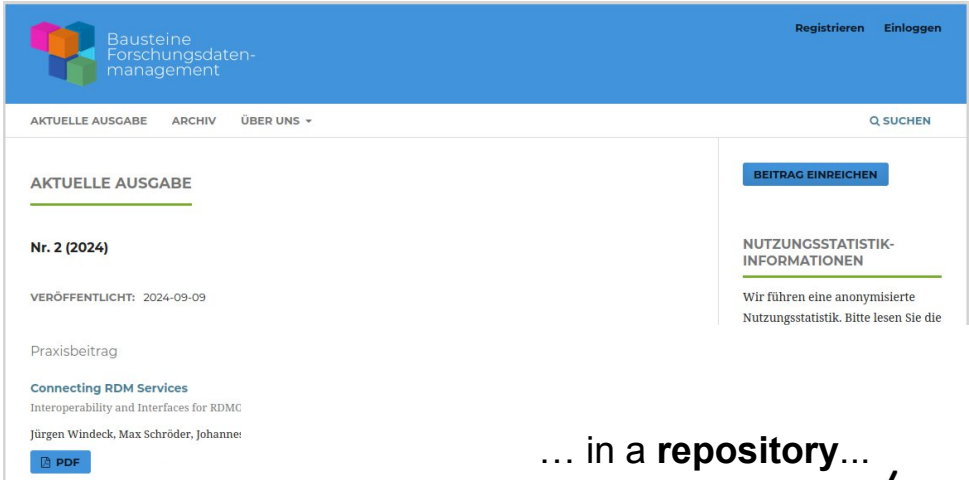


# Publish in Open Access

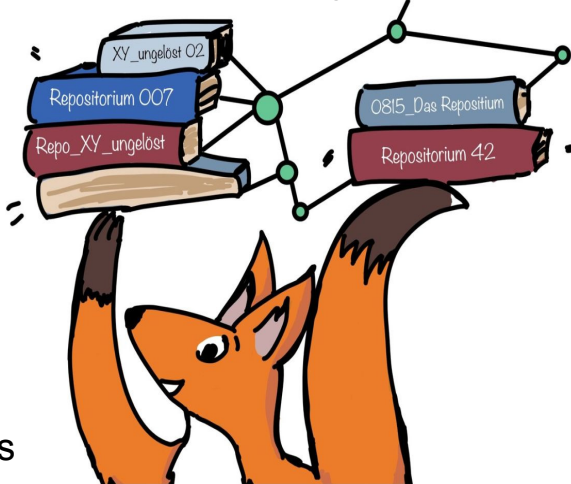


<https://open-access-monitor.de/>, DbCL

## Publication in a **diamond** journal...



## ... in a repository...



... or modern platforms  
with open peer review



**open research europe**



# The impact of Open Access



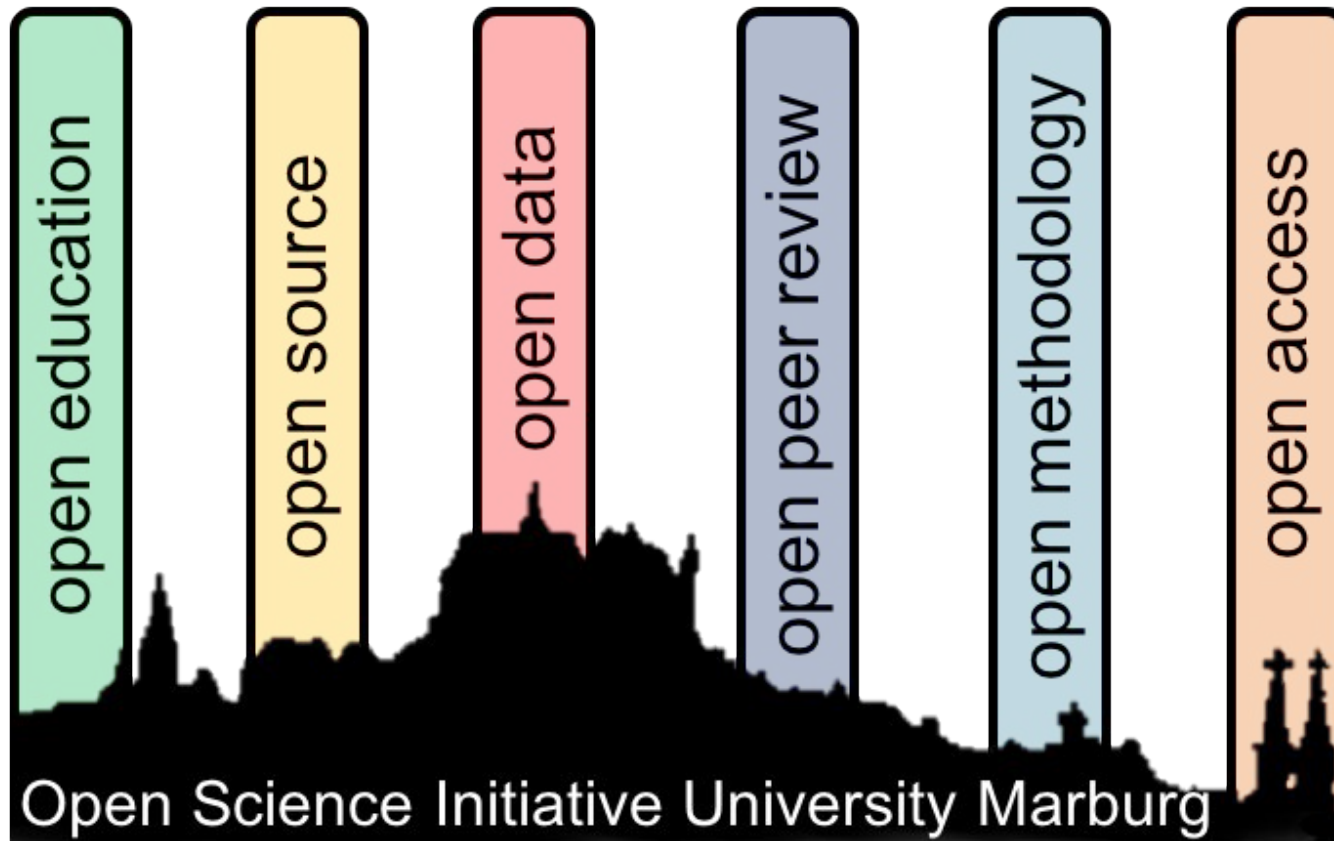
In der empirischen Literatur untersuchte Wirkungen von Open Access

**OPEN SCIENCE:  
JUST  
SCIENCE  
DONE RIGHT**

Melanie Imming & Jon Tennat,  
<https://doi.org/10.5281/zenodo.1285575>, CC-BY

See Hopf, David, et al. "Wirkungen von Open Access. Literaturstudie über empirische Arbeiten 2010-2021" *Technische Informationsbibliothek (TIB)* (2022). DOI: [10.34657/7666](https://doi.org/10.34657/7666), CC-BY

# Components of Open Science

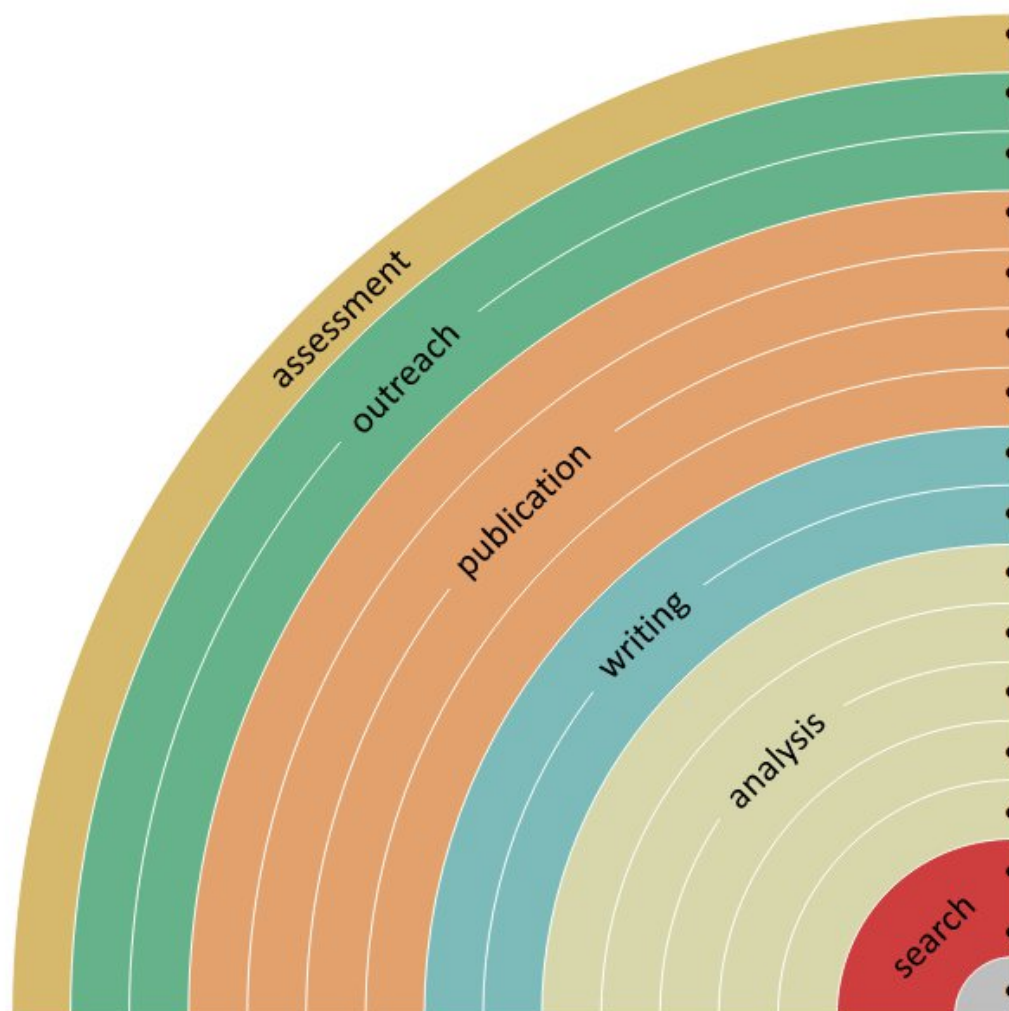


Marburg Open Science Community

# Open Data & Code



# You can make your workflow more open by ...



- adding alternative evaluation, e.g. with altmetrics
- communicating through social media, e.g. Twitter
- sharing posters & presentations, e.g. at FigShare
- using open licenses, e.g. CC0 or CC-BY
- publishing open access, 'green' or 'gold'
- using open peer review, e.g. at journals or PubPeer
- sharing preprints, e.g. at OSF, arXiv or bioRxiv
- using actionable formats, e.g. with Jupyter or CoCalc
- open XML-drafting, e.g. at Overleaf or Authorea
- sharing protocols & workfl., e.g. at Protocols.io
- sharing notebooks, e.g. at OpenNotebookScience
- sharing code, e.g. at GitHub with GNU/MIT license
- sharing data, e.g. at Dryad, Zenodo or Dataverse
- pre-registering, e.g. at OSF or AsPredicted
- commenting openly, e.g. with Hypothes.is
- using shared reference libraries, e.g. with Zotero
- sharing (grant) proposals, e.g. at RIO





# Upload your work to an open research repository!

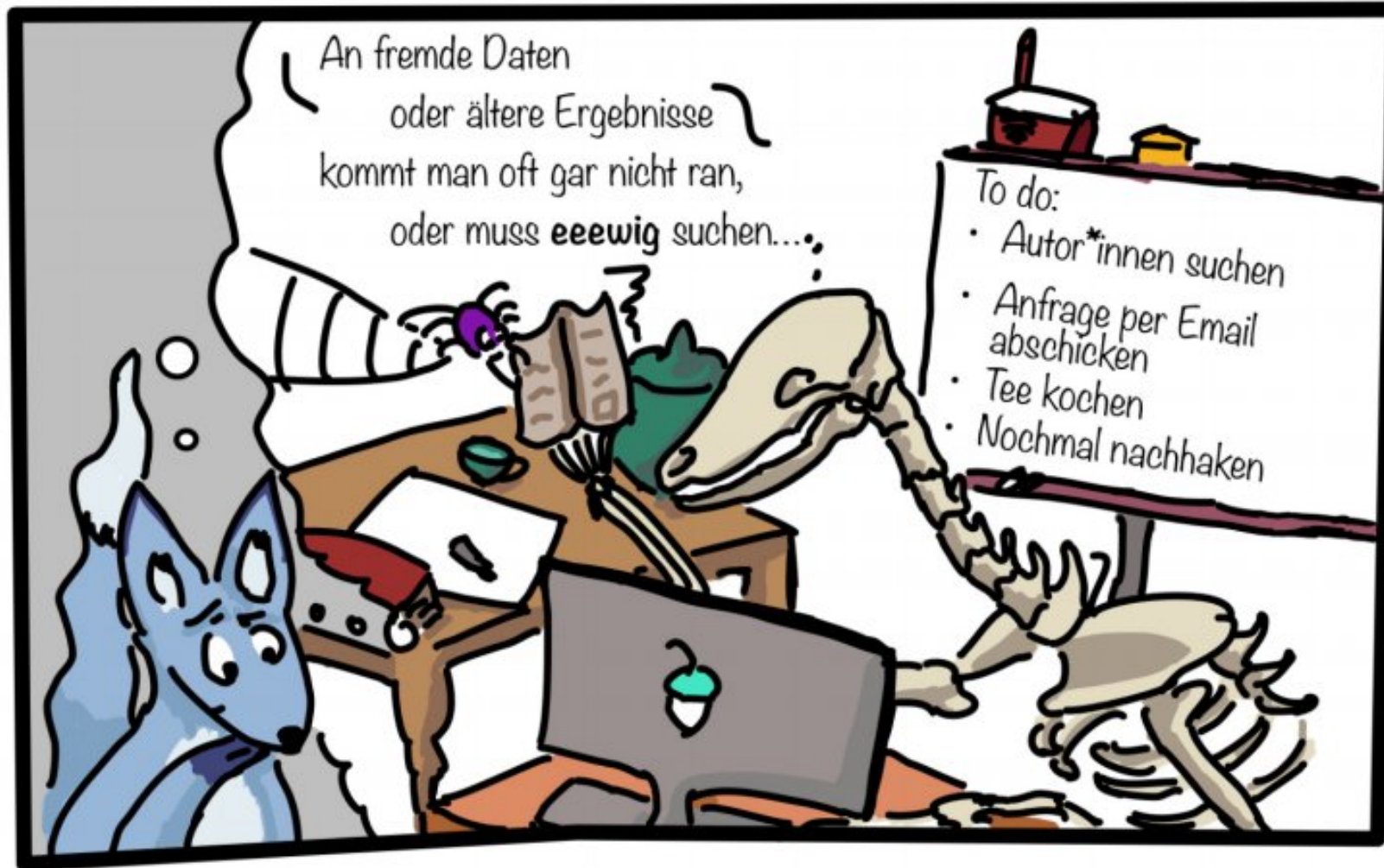




Upload your work to an open research repository!



# Upload your work to an open research repository!

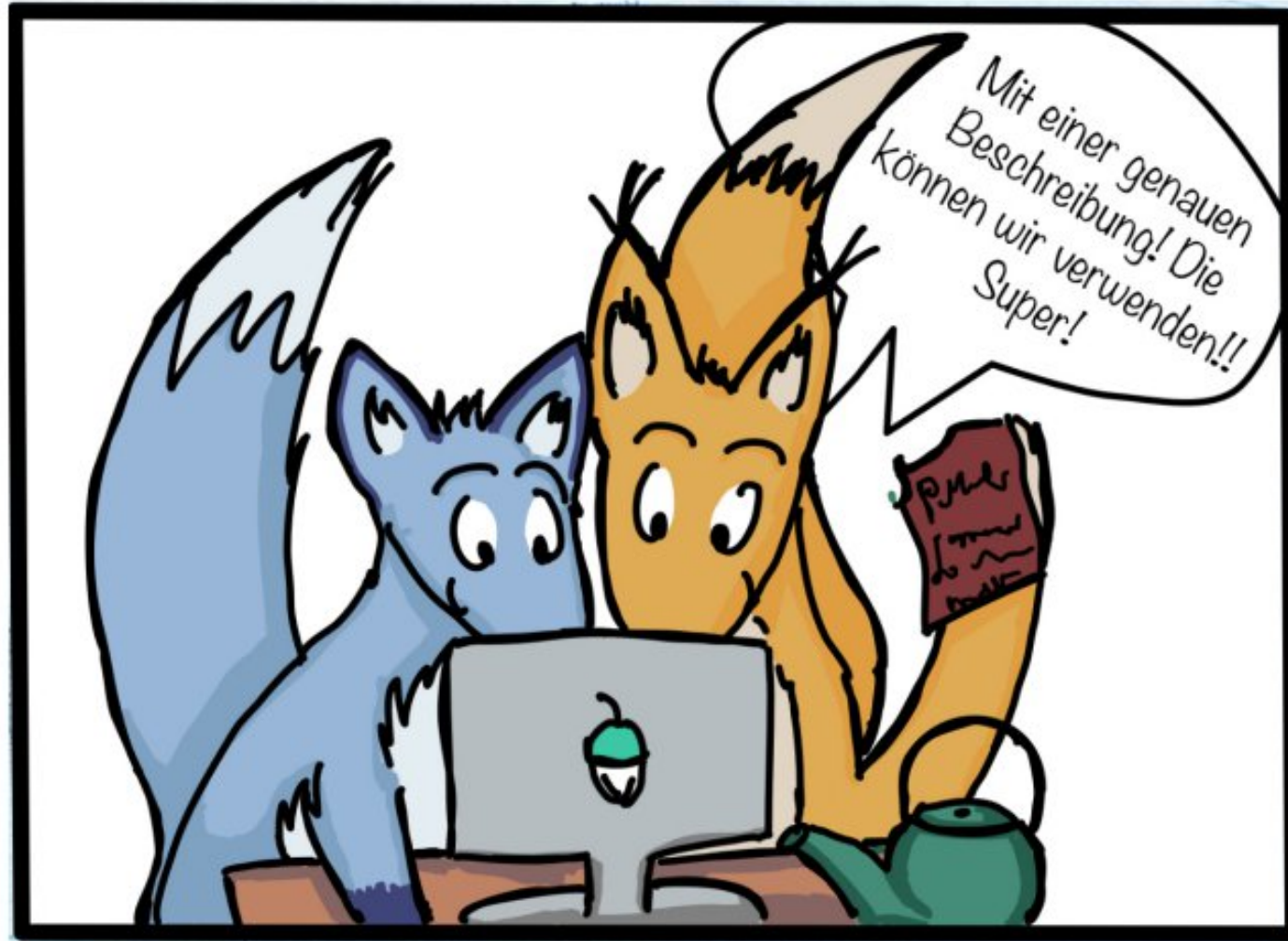


# Upload your work to an open research repository!





# Upload your work to an open research repository!



# Upload your work to an open research repository!



Image by Heidi Seibold, [CC-BY](#)



# Open Repositories

## subject specific repositories:

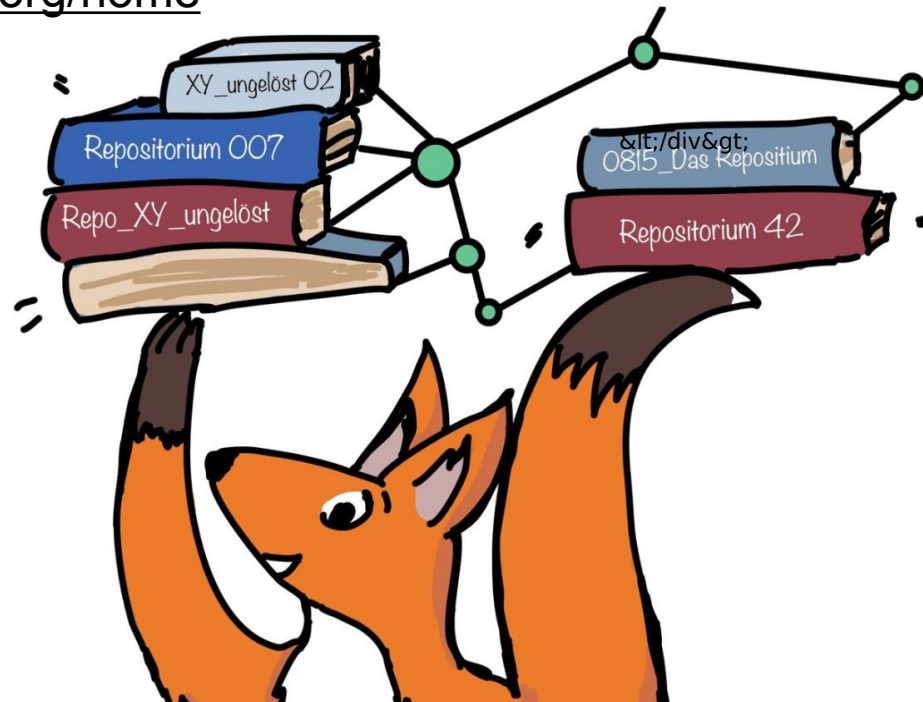
e.g., <https://mediarep.org/home>

## generic repositories:

e.g., <https://zenodo.org/>

incl. HeFDI

community: <https://zenodo.org/communities/hefdi/>



## institutional repositories:

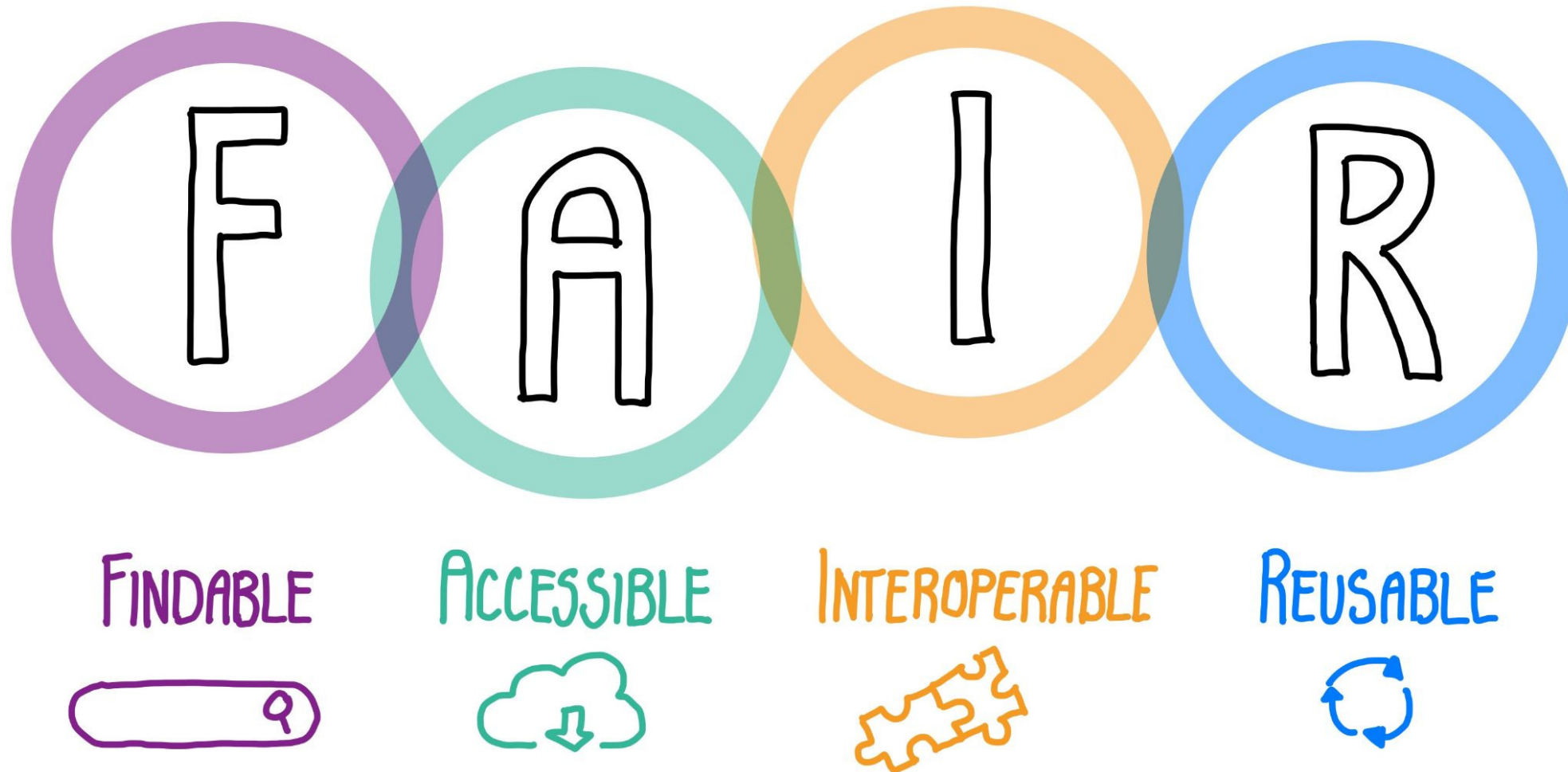
e.g., <https://open.uni-marburg.de/>

# Publish Your Data & Code



Adapted from Roger D. Peng [DOI: 10.1126/science.1213847](https://doi.org/10.1126/science.1213847) (Copyright © 2011, American Association for the Advancement of Science)

# Make Your Publications FAIR



BERD Course: Make Your Research Reproducible, 2023, Heidi Seibold, <https://berd-nfdi.github.io/BERD-reproducible-research-course/>, <https://doi.org/10.17605/OSF.IO/RUPT7>, CC-BY

# FAIR Publications: FINDABLE



- Attach a **DOI** to your data & code
- Attach your ORCID
- Provide **machine-readable metadata**



{JSON}

## FAIR Publications: **ACCESSIBLE**



- **Explain** how someone can **access** your data or code
- For software use open and **standardized protocols** to ensure access
- **Metadata** should be **permanently** accessible
- **Consider legal** (GDPR, copyright) and **ethical issues** before you give access to data or code



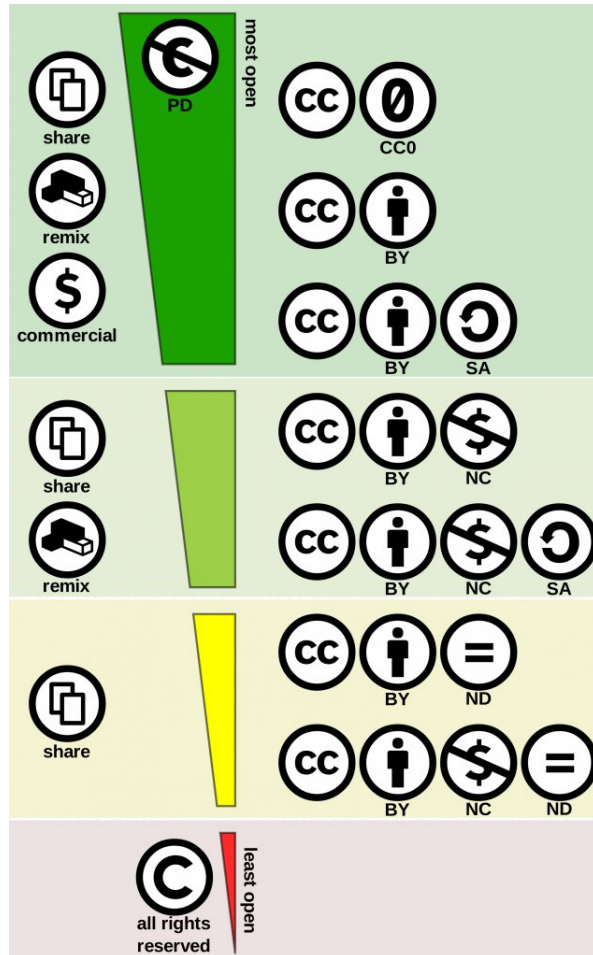
# FAIR Publications:

- Use common data formats
- **Documentation** is key!
- **Reference** other resources in this context
- **Metadata** should be:
- Machine-readable
- Complete and accurate
- Describing every detail
- Following a metadata standard
- Already been tested in automatized workflows
- Pro tip: if you write advanced code, implement an **open API**

File type	Recommended	Conditionally suitable	Not suitable
text	<ul style="list-style-type: none"> <li>PDF/A (*.pdf, preferred subtypes 2b and 2u)</li> <li>Unformatted text (*.txt or source code, etc.) encoded as ASCII, UTF-8 or UTF-16 with Byte Order Mark (BOM)</li> <li>XML (including XSD/XSL/XHTML, etc.; schema &amp; character encoding included)</li> </ul>	<ul style="list-style-type: none"> <li>(*.pdf) with embedded fonts</li> <li>Unformatted text (.txt, .asc, .c, .h, .cpp, .m, .py, .r, etc.) (ISO 8859-1 encoded)</li> <li>Rich Text Format (*.rtf)</li> <li>HTML and XML (without external content)</li> <li>Word *.docx</li> <li>PowerPoint *.pptx</li> <li>LaTeX and TeX (including license-free software packages with special fonts and resulting PDF)</li> <li>OpenDocument formats (.odm, .odt, .odg, .odc, *.odf)</li> </ul>	<ul style="list-style-type: none"> <li>Word *.doc</li> <li>PowerPoint *.ppt</li> </ul>
Spread-sheets and tables	<ul style="list-style-type: none"> <li>Comma- or tab-delimited text files (*.csv)</li> </ul>	<ul style="list-style-type: none"> <li>Excel *.xlsx</li> <li>OpenDocument formats (.odm, .odt, .odg, .odc, *.odf)</li> </ul>	<ul style="list-style-type: none"> <li>Excel .xls, .xlsb conversion: to .xlsx</li> </ul>
Raw data and work-space		<ul style="list-style-type: none"> <li>Unformatted text (ASCII encoded)</li> <li>S-Plus (*.sdd)</li> <li>Matlab (*.mat) from v7.3 MAT file</li> <li>Network Common Data Format or NetCDF (.nc, .cdf)</li> <li>Hierarchical Data Format (HDF5) (.h5, .hdf5, *.he5)</li> </ul>	<ul style="list-style-type: none"> <li>Matlab files *.mat (binary) Conversion: HDF5 format.</li> <li>R files *.RData conversion: HDF5 format (with the rhdf5 package)</li> </ul>
Raster graphics (bitmap)	<ul style="list-style-type: none"> <li>TIFF (*.tif, uncompressed, preferably TIFF 6.0+)</li> <li>Portable Network Graphics (*.png, uncompressed)</li> <li>JPEG2000 (*.jp2, lossless compression)</li> <li>Digital Negative Format (*.dng)</li> </ul>	<ul style="list-style-type: none"> <li>TIFF (*.tif, compressed)</li> <li>GIF (*.gif)</li> <li>BMP (*.bmp)</li> <li>JPEG/JFIF (*.jpg)</li> <li>JPEG2000 (*.jp2, lossy compression)</li> </ul>	
Vector graphics	<ul style="list-style-type: none"> <li>SVG without JavaScript binding (*.svg)</li> </ul>		<ul style="list-style-type: none"> <li>Graphics InDesign (.indd), Illustrator (.ait)</li> <li>Encapsulated Postscript (*.eps)</li> <li>Photoshop (*.psd)</li> </ul>
Sound, audio	<ul style="list-style-type: none"> <li>WAV (*.wav) (uncompressed, pulse-code modulated)</li> </ul>	<ul style="list-style-type: none"> <li>Advanced Audio Coding (*.mp4)</li> <li>MP3 (*.mp3)</li> </ul>	
video <sup>1</sup>	<ul style="list-style-type: none"> <li>FFV1 codec (from version 3) in Matroska container (*.mkv)</li> </ul>	<ul style="list-style-type: none"> <li>MPEG-2 (.mpeg, .mpeg)</li> <li>MP4, also called MPEG-4 Part 14 (*.mp4)</li> <li>Audio Video Interleave (*.avi)</li> <li>Motion JPEG 2000 (.mi2, .mip2)</li> </ul>	<ul style="list-style-type: none"> <li>Windows Media Video (*.wmv)</li> <li>QuickTime Movie (*.mov)</li> </ul>

Cordes, B., Pietsch, A., Dähne, J., Geissner, A., Jordan, S., Richter, T., Riedl, L., & Trebels, B. (2025). Curation recommendations for HeFDI repositories (1.0\_en). Zenodo, p. 24. DOI: [10.5281/zenodo.15804662](https://doi.org/10.5281/zenodo.15804662). CC-BY

FAIR Publications: **REUSABLE**



"Creative Commons License Spectrum" by Shaddim, CC-BY



**I want it simple  
and permissive.**

The **MIT License** is short and to the point. It lets people do almost anything they want with your project, like making and distributing closed source versions.

<https://choosealicense.com>

- Again include **rich machine-readable metadata**
- Use **domain-relevant standards** if available
- Attach an appropriate open license, e.g.,  
CC-BY for data or  
MIT for code
- Read further information from the Turing Way



License chooser for data:  
<https://creativecommons.org/choose/>



License chooser for code:  
<https://choosealicense.com>

# Openness for society

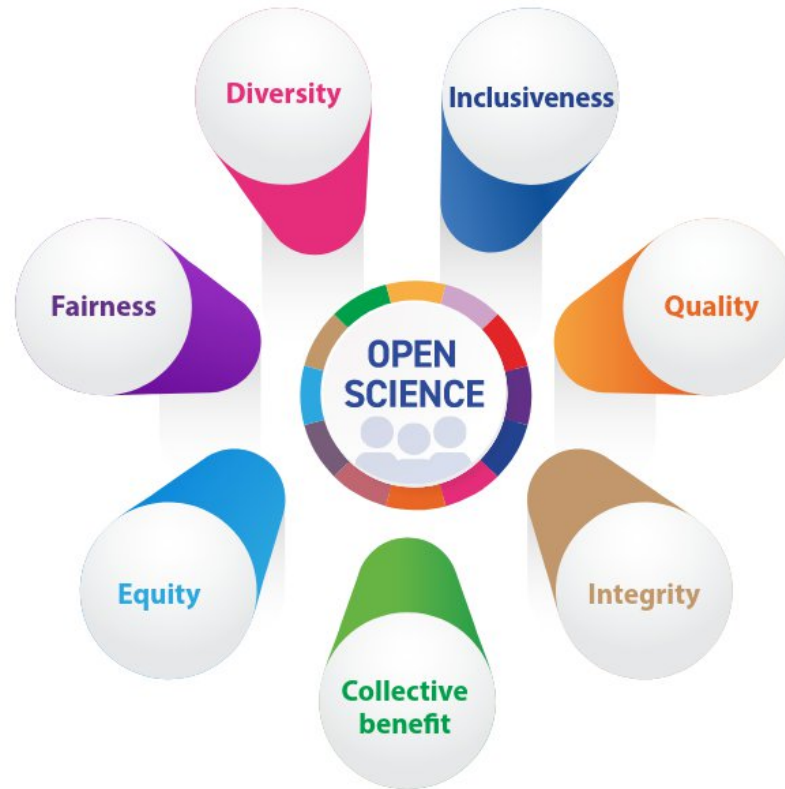


Figure 4.1. Shared values of open science as defined in the 2021 UNESCO Recommendation on Open Science

<https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en>

# That's why we need Open Science

The UNESCO Recommendation on Open Science:  
[https://www.youtube.com/watch?v=I3Wkvx\\_ZaFo](https://www.youtube.com/watch?v=I3Wkvx_ZaFo)



**UNESCO Recommendation  
on Open Science**

<https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en>

**OPEN SCIENCE:  
JUST  
SCIENCE  
DONE RIGHT**

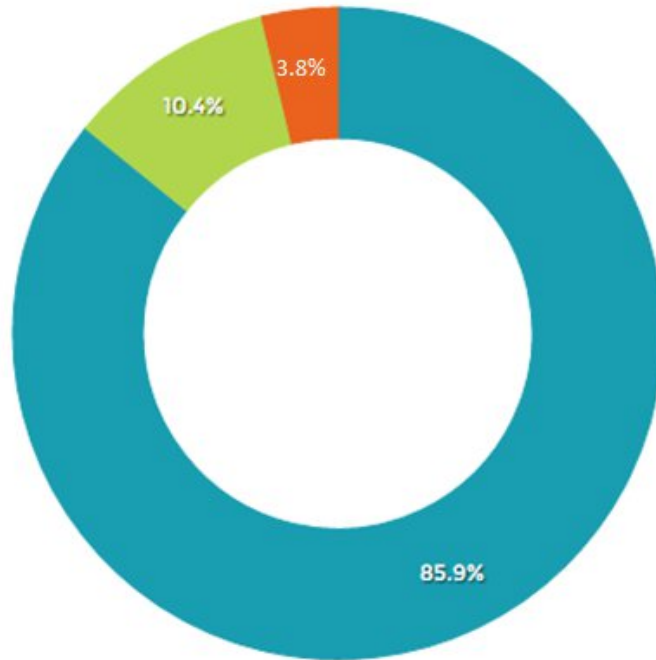
Melanie Imming & Jon Tennat, <https://doi.org/10.5281/zenodo.1285575>, CC-BY



# That's why most researchers support the goals of Open Science

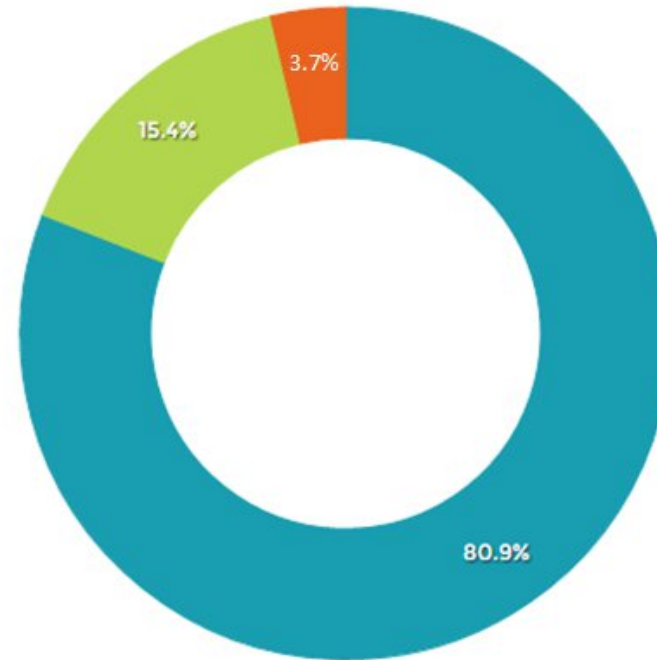
**OPEN SCIENCE:  
JUST  
SCIENCE  
DONE RIGHT**

Melanie Imming & Jon Tennat,  
<https://doi.org/10.5281/zenodo.1285575>, CC-BY



Do you support the goal of Open Access?

● Yes ● I don't know ● No



Do you support the goals of Open Science?

● Yes ● I don't know ● No

i.e. openly creating, sharing and assessing research, wherever viable

Jeroen Bosman and  
Bianca Kramer, <https://101innovations.wordpress.com/survey-results/open-access-open-science/>, CC-BY

All right, the we can get started now, right?

# Congrats! You are a unicorn!



**But there are no unicorns!**



# So let's collaborate in teams of experts!



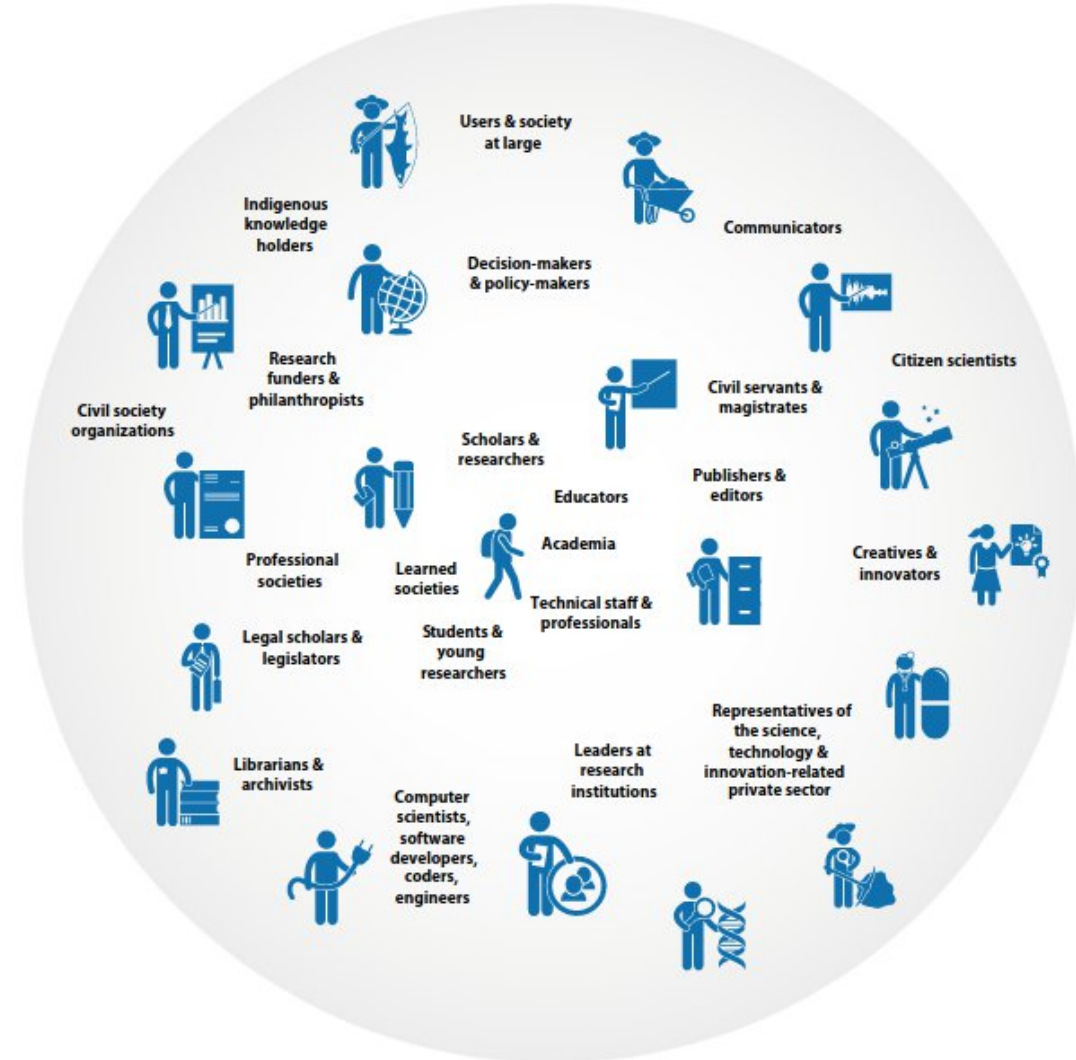


# Your community



# Work with experts to support your research

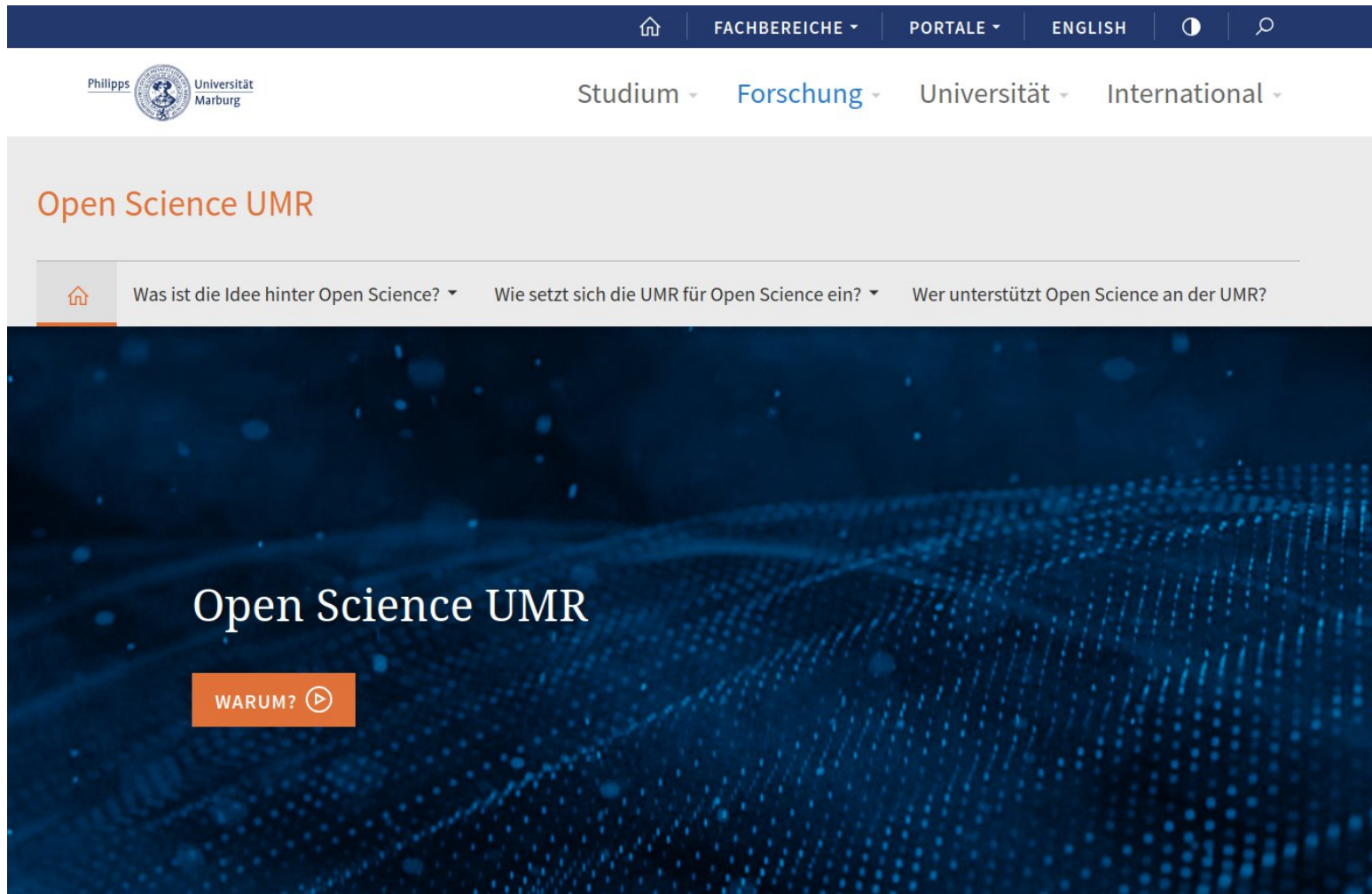
- Data scientists
- Data stewards
- Statisticians
- Research Software Engineers
- Science communicators
- Research managers
- etc



UNESCO open science outlook 1: status and trends around the world. DOI: <https://doi.org/10.54677/GIIC6829>

**Examples of open science actors.** Icons: Gan Khoon Lay, Miroslav Kurdov, Adrien Coquet, Wynne Nafus Sayer, courtesy of The Noun Project, CC BY 3.0\*

# Check out Open Science projects at Marburg University



<https://uni-marburg.de/open-science>



Melanie Imming & Jon Tennat,  
<https://doi.org/10.5281/zenodo.1285575>, CC-BY

Join a community!



German  
Reproducibility Network



The Turing Way

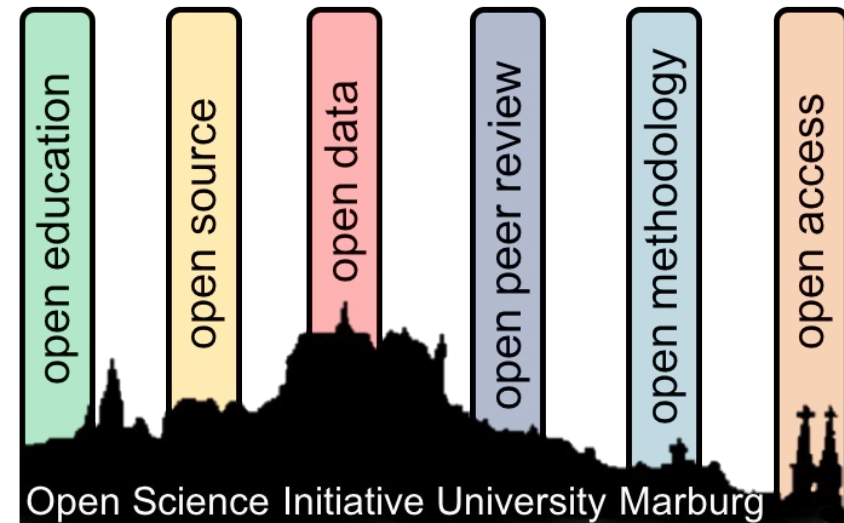


Framework for  
Open and  
Reproducible  
Research  
Training



FORRT

Framework for Open and Reproducible  
Research Training



Marburg Open Science Community



# Consult our experts at eResearch Service Center!



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# The slides



Here are our slides



Riedl, L. (2025, June 27). Open Science. Zenodo.  
<https://doi.org/10.5281/zenodo.15756225>



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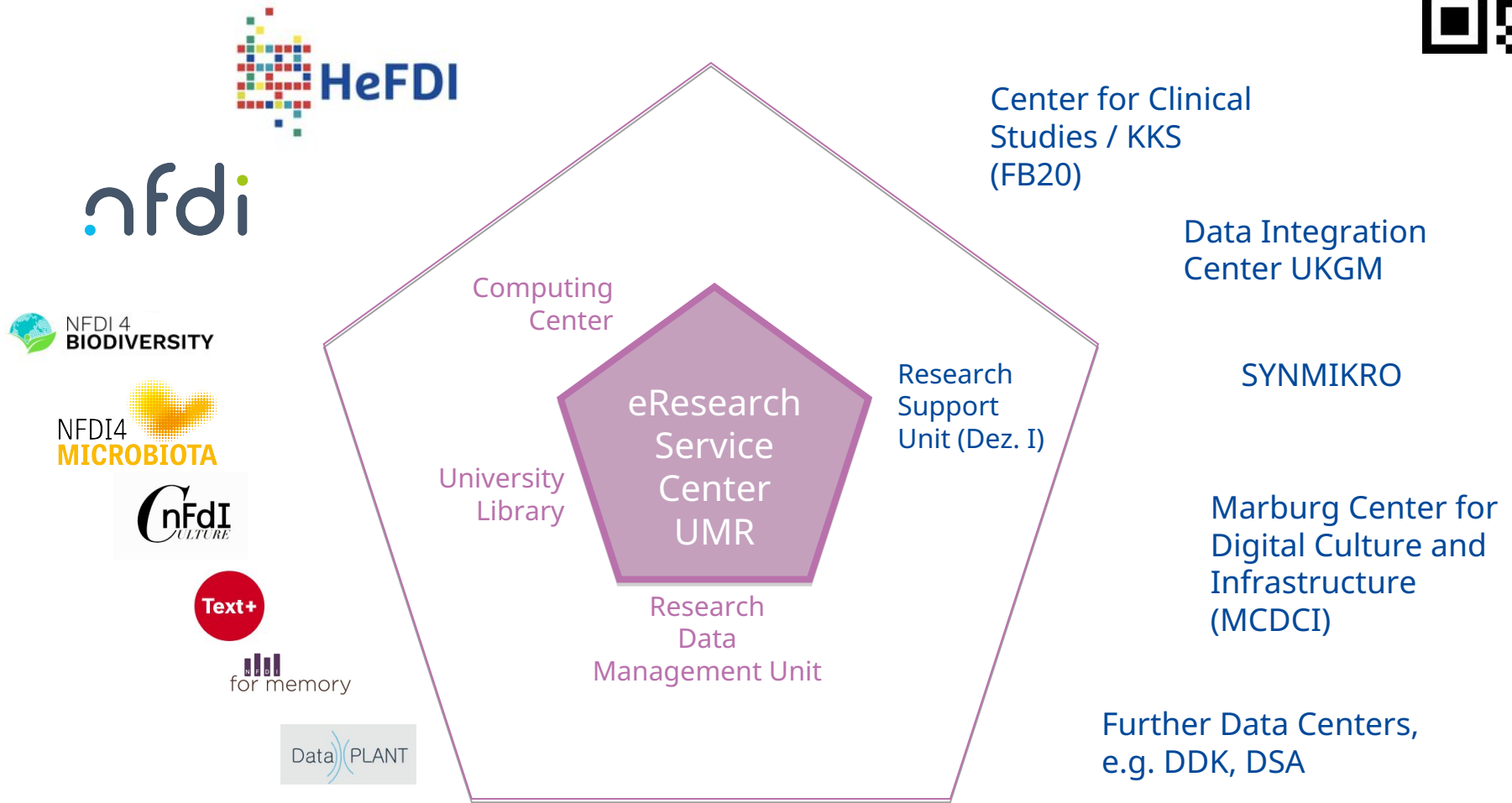
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