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PARTHENOS

Pooling Activities, Resources and Tools
for Heritage E-research Networking,
Optimization and Synergies

*Workshop: How to make the most of your publications in the
Humanities? Discover evolving trends in open access (FOSTER Plus
& DARIAH-EU*



Fachhochschule Potsdam
University of
Applied Sciences

<https://www.fosteropenscience.eu/node/2547>

Future Proof and FAIR Research Data

Open Data Management Best Practices and First Steps
(Hands-On Session)

Ulrike Wuttke

(v_1.0)

DOI: 10.5281/zenodo.2546783

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@PARTHENOS_EU @UWuttke | [CC-BY 4.0](#) | [PARTHENOS](#)

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TABLE OF CONTENTS

- 1) Warm Up
- 2) Code of Conduct
- 3) Rationales and Benefits of the Session
- 4) Open Access to Data
- 5) Research Data in Humanities and Heritage Science
- 6) Basic principles of Research Data Management
- 7) Good Practices
- 8) Further Learning (Resources)

01

WARM UP



Connecting Research
and Researchers

Who has an ORCID?

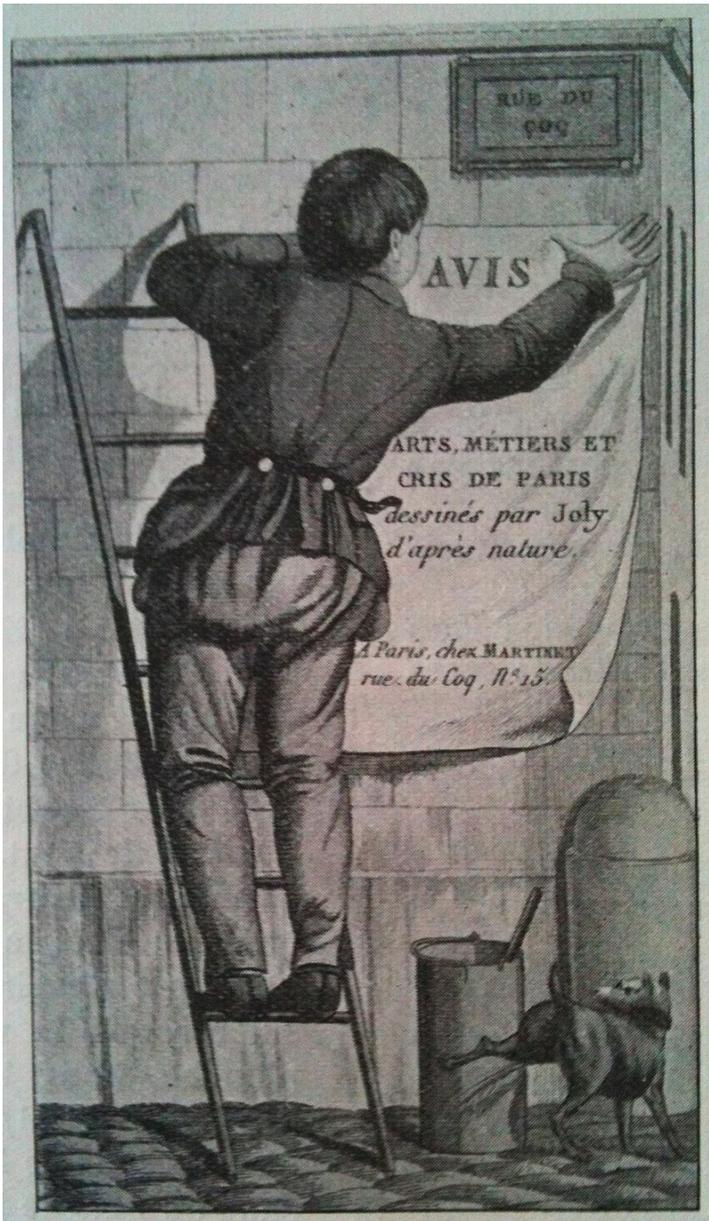
<https://orcid.org/>

**Who has already
published something OA
besides articles, books?**

- Data?

- Software code?

- ...



Who has already written data management plan?



02

CODE OF CONDUCT

Session Code of Conduct

- **Respect** for each other
- There are **no stupid questions**
- We are all **experts**
- **Connect** with each other
- **Share** with the world

03

RATIONALES AND BENEFITS OF THE SESSION

Learning objectives

- Participants can define **Open Access to Data**
- Participants will be able to explain the **advantages** of Open Access to Data for their research and research in general
- Participants can summarize the **FAIR principles** in a Humanities context
- Participants can describe **challenges** involved in the concepts discussed in the session
- Participants will be able to find **key resources and support** for **publishing data &** their own **data management plan**
- Access to session materials (slides) via **Zenodo**

04

OPEN ACCESS TO DATA

Advantages of Open Science for research(ers)

- Higher **transparency** of research methods and evaluation
- Higher **reproducibility** of research findings
- Researchers and research institutions **save money and time**
- Higher (societal) **impact** of research(ers)
- Open Science gets research(ers) **out of the Ivory Towers!**
- Open Science as part of **Good Scientific Practice**

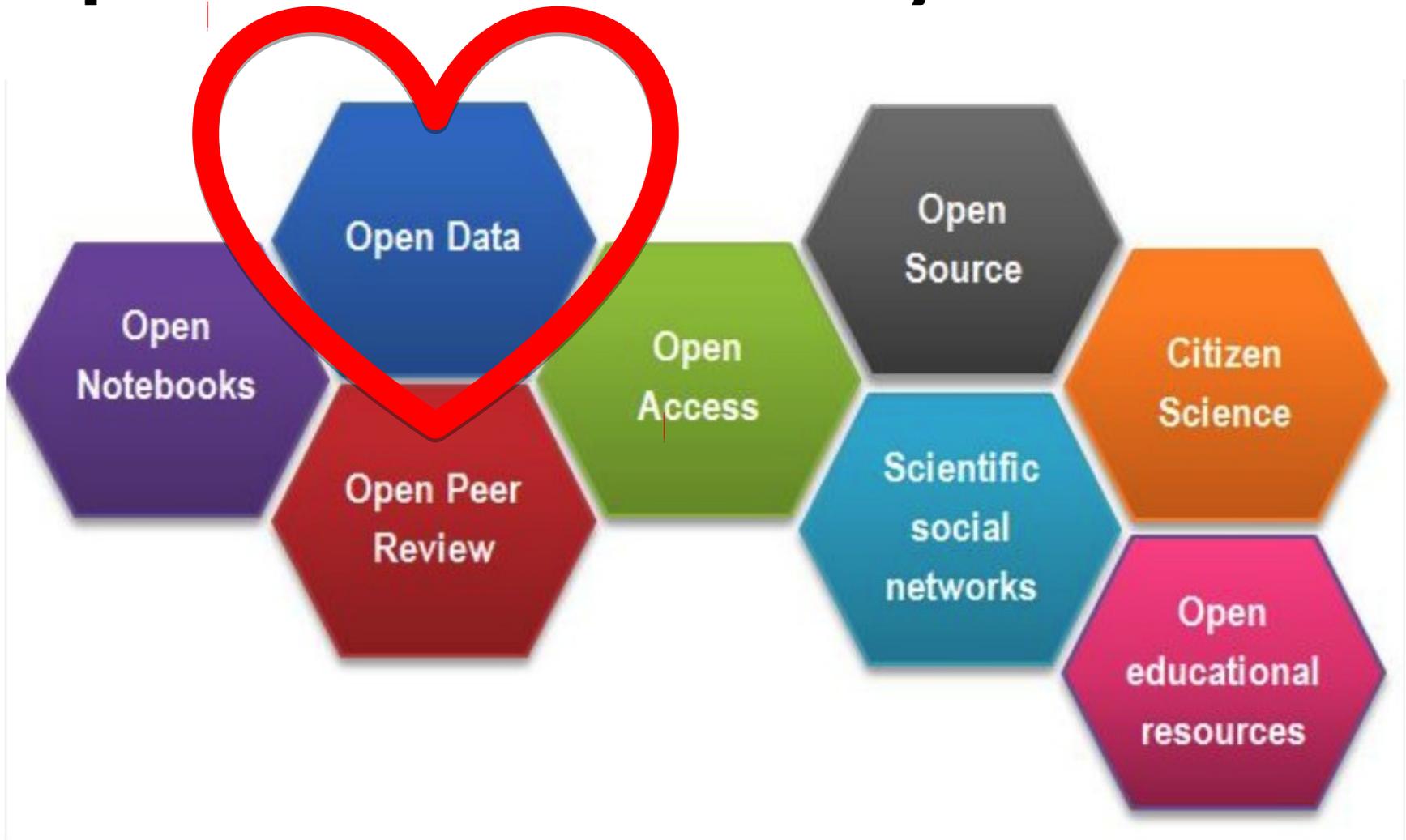


Picture: open by velkr0 CC BY 2.0, <https://flic.kr/p/mzqM>

**OPEN SCIENCE:
JUST
SCIENCE
DONE RIGHT**

Source Picture: <https://zenodo.org/record/1285575#.W09yZH59jOR> (Melanie Imming, John Tennant, CC0)

Open Science has many facets



Key Concept: Open Data

What is it about?

- Open Data = (research) data that is **freely available online for (re)use and republish** for everyone provided that the data source is attributed

*„Open access contributions include original scientific research results, raw data and metadata, source materials, digital representations of pictorial and graphical materials and scholarly multimedia material.“
Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (2003)*

- Ideal: Data with no restrictions from copyright, patents, or other control mechanisms > transparent results
- However: **“as open as possible, as closed as necessary”**

Key Concept: Open Data

What does Open Data involve?

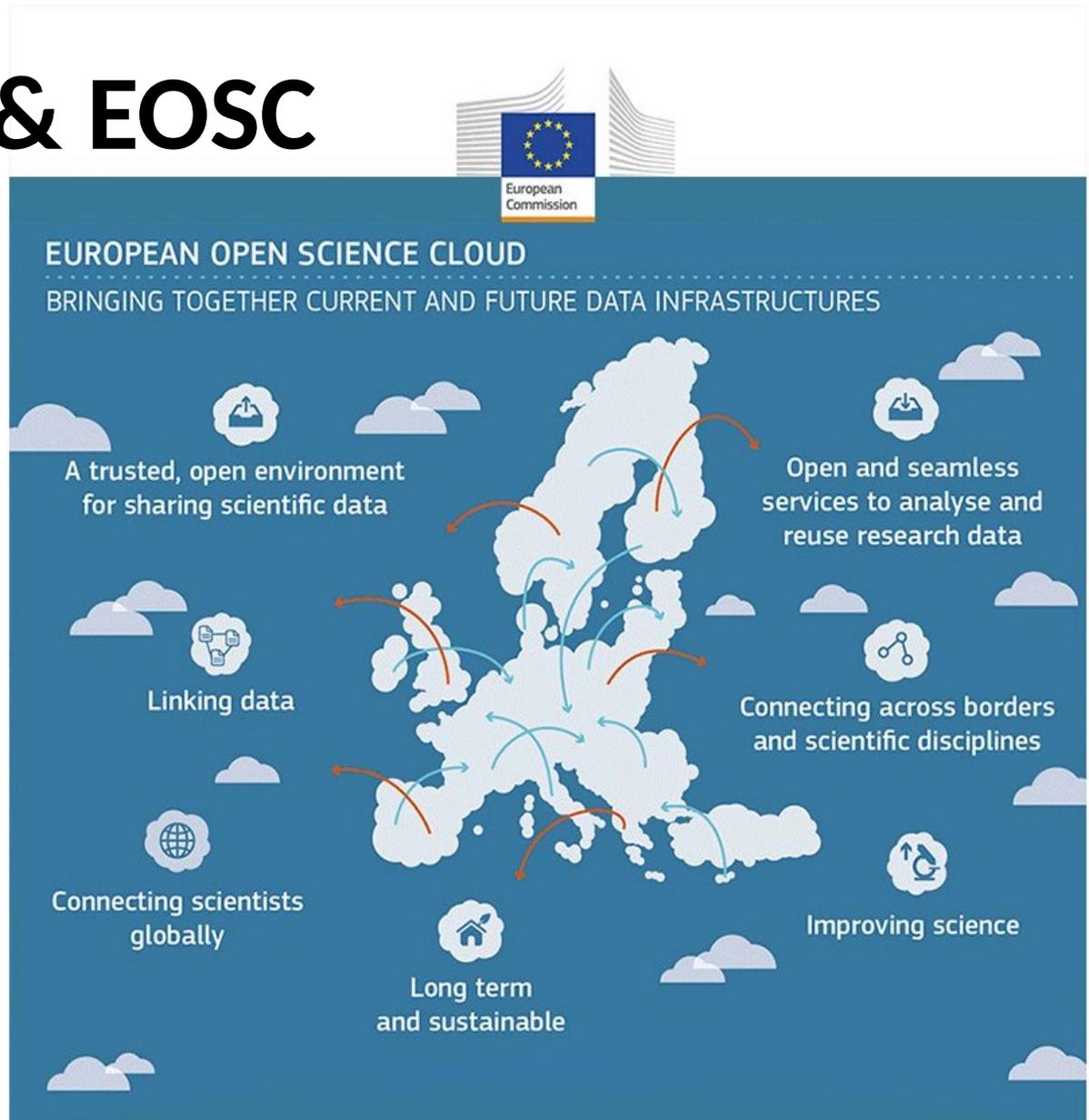
- Sharing is not giving away, to work in an open environment **benefits all, especially the data sharer**
 - reach as many people as possible
 - be cited more often
 - build cooperation
 - etc.
- Poses challenges, e.g. **interoperability** and **documentation**
- Some aspects are discipline specific > e.g. Humanities
- Essential: **Data Management Planning**

Open Data & EOSC

“a virtual environment with open and seamless services for storage, management, analysis and re-use of research data, across borders and scientific disciplines”

<https://www.eosc-portal.eu/about/eosc>

European Open Science Cloud:
<https://www.eosc-portal.eu/>



Open Data & EOSC



DORA (San Francisco Declaration on Research Assessment)

*For the purposes of research assessment, **consider the value and impact of all research outputs (including datasets and software)** in addition to research publications, and consider a broad range of impact measures including qualitative indicators of research impact, such as influence on policy and practice.*



<https://sfdora.org/>

05

RESEARCH DATA IN HUMANITIES AND HERITAGE SCIENCE

eHumanities and eHeritage Research

What is it about?

- Computers, the internet, and big data, led to a rise of **quantitative** and **statistical methods** in the Humanities and CH
- digital workflows & digital methods

Opportunities

- New scholarly methods, research activities, and objects transform and broaden the Humanities and CH > **Digital Humanities** (DH) and **eHeritage**

Challenges

- Research processes dominated by traditional paradigms
- Access (copyright and license issues)
- Sustainability (data loss)
- Lack of documentation and standardization
- **Interoperability** (machine actionability) and **Reuse** (culture of sharing)
- eHumanities and eHeritage are based on **accessible, correct, authoritative, well structured data**

What is Data, Anyway?

Do Humanities and Cultural Heritage researchers have data?

- Yes, a lot, but they don't tend to use the word data
- Research data are data that are produced in and used in scientific processes such as digitization, study of sources, experiments, measurements, interviews, and surveys

What is Data, Anyway?

- **Examples for Humanities data:** primary sources (texts, pictures), secondary sources, theoretical texts, digital tools (software), annotations, etc.
- most “**sources**” are research data and their management has in fact always been part of the scientific process; digitization only adds complexity
- **digitized** sources and **born digital** sources
- **various formats and types** (pictures, texts, multimedia, measurements, etc.)

Are Humanities and Cultural Heritage data special?

- Yes and No!
- Humanities are a very broad research discipline, many specific research contexts, but also increasingly interdisciplinary research
- Humanities research lives from **enrichment** of data (layers of interpretation)
- Problematic to distinguish between **primary data (raw data) and secondary data**
- Issues with **ownership** of the data (cultural heritage institutions, publishers)
- But: Many issues and solutions apply to the broader field (and beyond Humanities and Heritage Science!)

It can get pretty complex, though...

An **information unit** consists of - e.g. in the case of interviews:

- the **audio file** of the interview
- the **interview transcript** in the form of a digital text file
- the discussion guide or **questionnaire**, which explains the methodological approach and is necessary for the comprehensibility of the results of the study.
- the **project explanation** as well as the **declaration of consent** of the interviewee, which documents compliance with the legal provisions of the Federal and State Data Protection Act
- the **codebook**, which e.g. documents the development categories and variables used
- the **documentation** of the procedure for anonymization and pseudonymization
- the indexing information (**metadata**), which guarantees the citation ability of the interview and its findability

Playful Exercise 1

WHAT ARE YOUR RESEARCH DATA?

What are YOUR Research Data?



- In your discipline?
- In your current project?
- In past projects?

- ✓ Form groups
- ✓ Discuss and note results on sticky note
- ✓ Bring sticky notes to front

This exercise is adapted from: Biernacka, K.; Dolzycka, D.; Helbig, K.; Buchholz, P. 2018. Train-the-Trainer Konzept zum Thema Forschungsdatenmanagement. DOI: 10.5281/zenodo.1215377 (CC BY 4.0) <https://creativecommons.org/licenses/by/4.0/>

Picture: Thinking statues taken by Rui Fernandes, CC-BY 2.0 (<https://creativecommons.org/licenses/by/2.0/>), <https://flic.kr/p/8WpM2U>

06

BASIC PRINCIPLES OF RESEARCH DATA MANAGEMENT (IN HUMANITIES AND HERITAGE SCIENCE)



Bastien Conan

@Bastien_Conan

Folgen



Fantastic talk from [@martateperek](#): “the main obstacles to data management and sharing are cultural, not technological” [#scidata18](#)

Tweet übersetzen

11:49 - 14. Nov. 2018

7 Retweets 18 „Gefällt mir“-Angaben



https://twitter.com/Bastien_Conan/status/1062658855203753984

Why would I want or need to manage, improve or open up my data?

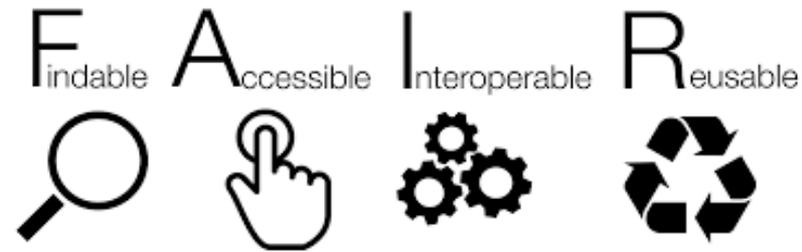
- Opening up the data could lead to many **opportunities** for using and reusing it, for collaborating, informing and increasing the impact of the work (contemporary issues, interdisciplinary research, engaging broader society) > **Publication of research data**
- **Funder requirements** on national and international level (e.g. European Commission) = Research Data Management and Open Science
- **Research Data Policies** (institutional, journals)

Publication of research data

Main principles and basis concepts:

- **Selection of Research Data for Publication** (are there **valid** reasons to not publish the data?)
- **FAIR Principles** apply to publication of Research Data
- The early bird catches the worm! Make a **Research Data Management Plan** (it's not just a document, but a plan to share)

The FAIR Principles



- FAIR Guiding Principles for scientific data management and stewardship
- Baseline understanding for the value sharing data can deliver and the baseline requirements for doing so
- Developed by FORCE 11 ^[1]

–**F**indable

–**A**ccessible

–**I**nteroperable

–**R**eusable

- Note: Not all FAIR Data is Open Data (e.g. sensitive data)

^[1] <https://www.force11.org/group/fairgroup/fairprinciples>

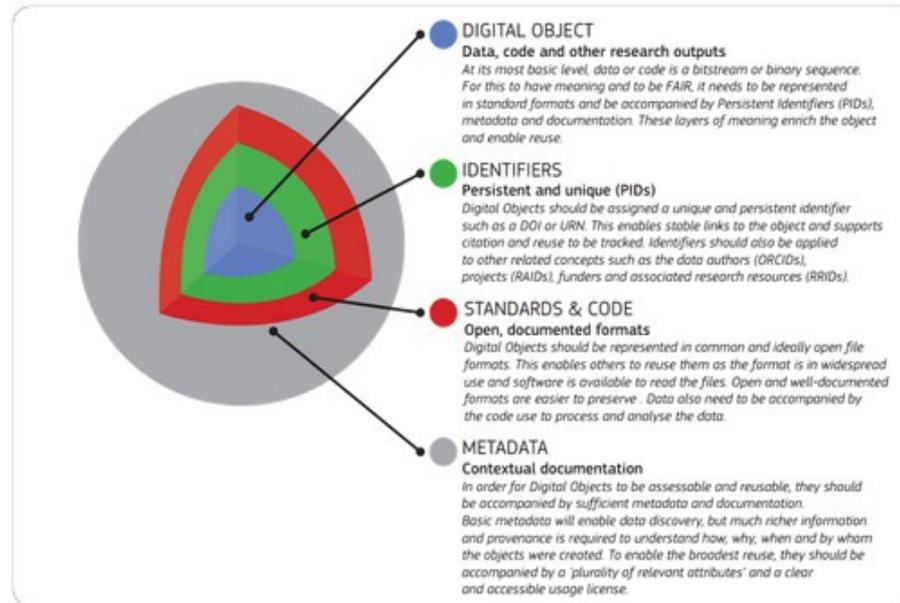


Simon Hodson  
@simonhodson99

Folgen

A model for FAIR digital objects - 'FAIR should be applied broadly to all objects (including metadata, identifiers, software and DMPs) that are essential to the practice of research' [#FAIRdata](#) [#EOSCStakeholdersForum](#)

Tweet übersetzen



15:01 - 22. Nov. 2018

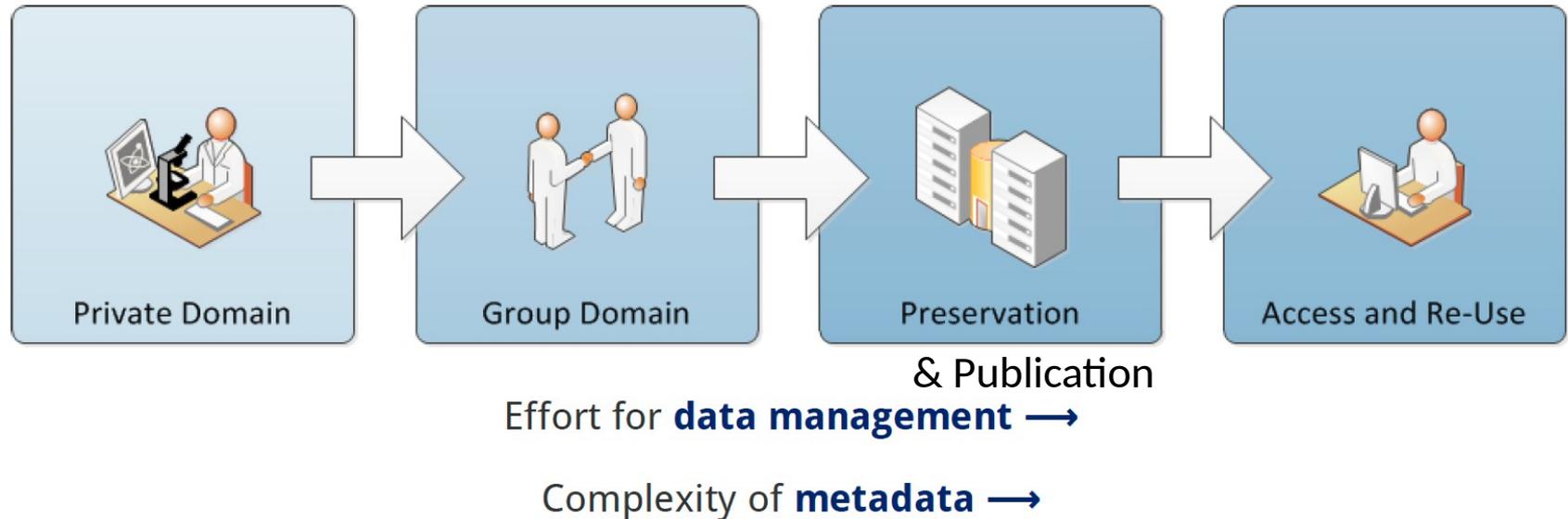
26 Retweets 40 „Gefällt mir“-Angaben



1 26 40

<https://twitter.com/simonhodson99/status/1065606239135170560>

Domain model for research data



Treloar, A., D. Groenewegen, and C. Harboe-Ree (2007), The Data Curation Continuum - Managing Data Objects in Institutional Repositories, <http://dx.doi.org/10.1045/september2007-treloar>

DFG-Projekt RADIESCHEN (2013): Rahmenbedingungen einer disziplinübergreifenden Forschungsdateninfrastruktur. Organisation und Struktur. http://dx.doi.org/10.2312/RADIESCHEN_005

4 / 21

Source Slide: Jochen Klar. (2018, November). Create a data management plan (with RDMO). Zenodo. <http://doi.org/10.5281/zenodo.1493342>

Future proof Research Data Management: Let's go!

- Research Data Management describes the process to **curate** (or manage) research data along the **research data lifecycle** and includes various activities such as **planning, producing, selection, analysis, archiving, and preparation for reuse**. Because data are very heterogeneous, **discipline and data specific solutions can be required**.



Picture: Road Sign by Free Images
(www.inkmedia.com), CC BY 2.0
<https://flic.kr/p/JoVNHU>

Theory and Practice of Data Management: Research Data Management Planning

- Often you will need a written and agreed **Data Management Plan (DMP)**, esp. in case of external funding
- To help DMP, many funding agencies provide a **model or template for a DMP**
- DMP may seem an intimidating (or even unwelcome task), but in the end, it is just a tool for **thinking systematically through your research process from a “data perspective”**
- DMP helps you to **maximize research value** (high quality research data and research excellence) and **prevents unpleasant surprises** at the close of your project (and data loss!)

Research Data Management

=

basic research skills



Sarah Jones

@sjDCC

Folge Ich

In the [#FAIRdata](#) EG report we argue that all researchers need a foundational level of data skills. They don't need to become data scientist or data stewards (unless they choose to) but do need to understand the main principles of data management [#EOSCStakeholdersForum](#)

Monsense and more... @barendmons

[#EOSCStakeholdersForum](#) agree with Francoise that researchers who do proper data stewardship should be rewarded, but the future scientist should be 'consciously incompetent on data stewardship and hire professionals in the team.

Tweet übersetzen

12:34 - 22. Nov. 2018

11 Retweets 19 „Gefällt mir“-Angaben



1 11 19

<https://twitter.com/sjDCC/status/1065569309106282496>

Research Data Management = Research Project Management



Digital Humanities an der Universit...
@DH_Stuttgart

Folge Ich

DFG-Leitlinien zum
Forschungsdatenmanagement. Interessant
daran ist, dass hier natürlich auch
Forschungsprozesse mit konzipiert werden.
Forschungs(daten)zyklen: note to self:

Forschungsdatenmanagement ist auch
Forschungsprojektmanagement.

#dhwissen

17:57 - 31. Okt. 2018

3 „Gefällt mir“-Angaben



3



Twitterte deine Antwort

https://twitter.com/DH_Stuttgart/status/1057677832330055683

Good Data Management is good for you!



IMC_Leeds

@IMC_Leeds

71% of you got this right. Quite a few pairs of sunglasses, but we have a *lot* of USB sticks! Let us know if you think you may have lost yours on campus.

IMC_Leeds @IMC_Leeds

What do you think was the most common item of lost property handed in at #IMC2018?
Get in touch if you're missing something!

5:04pm · 11 Jul 2018 · Twitter Web Client

Link to original tweet: https://twitter.com/IMC_Leeds/status/1017062144280588290

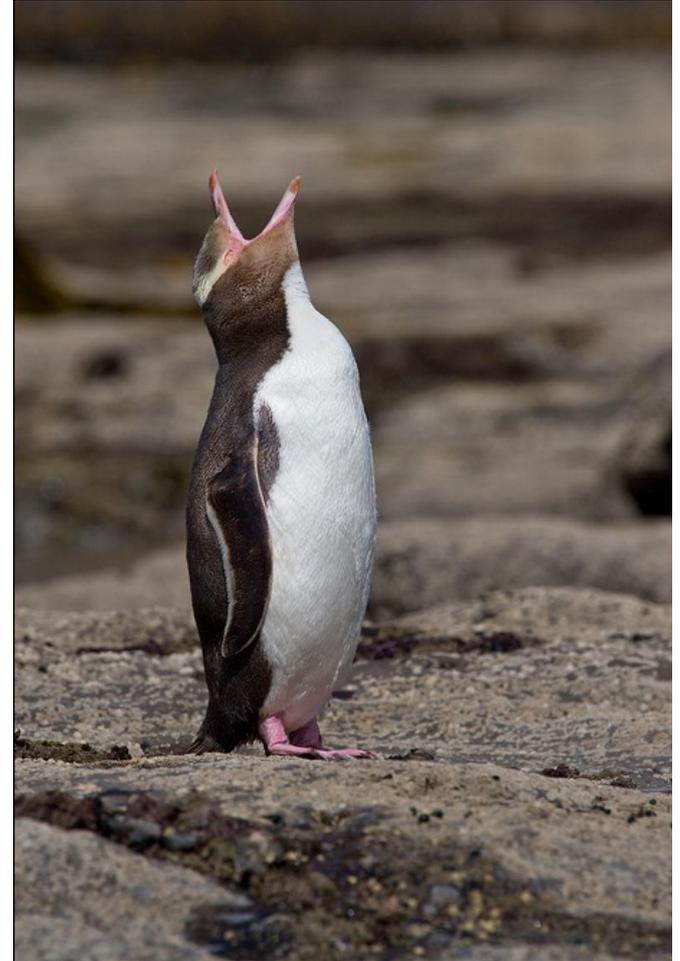
What is a Research Data Management Plan?

- DMP = Document that contains information about handling, organising, documenting and enhancing research data, and enabling their sustainability and sharing for a research project
- A DMP describes and analyzes workflows along the Research Data Lifecycle
- A DMP can be a few paragraphs short up to several pages long

The first step is always the hardest...

Topics in a DMP (here: DCC Template):

- Data Collection
- Data Documentation and Metadata
- Ethics and Legal Compliance
- Storage and Backup
- Selection and Preservation
- Data Sharing
- Responsibilities and Resources



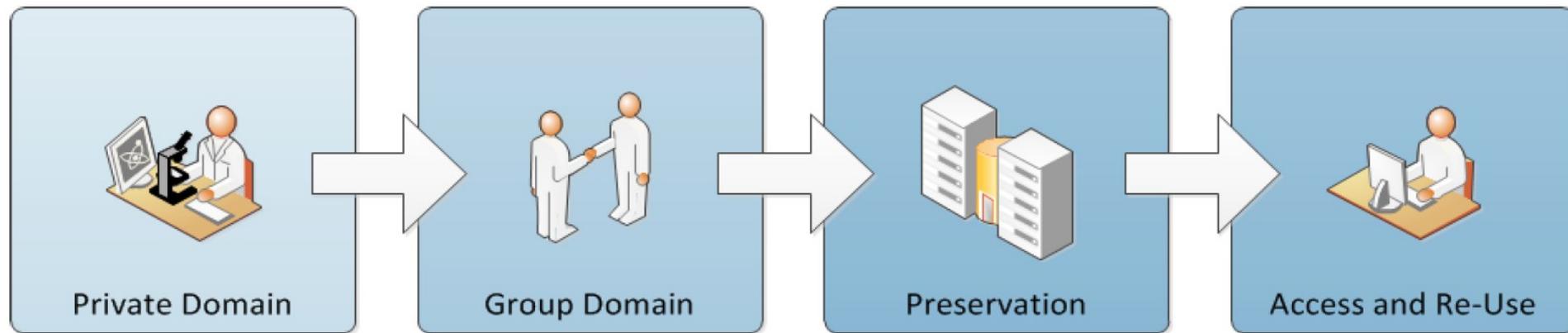
Picture: A Yellow-eyed Penguin (*Megadyptes antipodes*) in the Curio Bay, New Zealand by Christian Mehlführer CC-BY 2.5
https://commons.wikimedia.org/wiki/File:Yellow-eyed_Penguin_crying_MC.jpg

Playful Exercise 2

DOMAIN MODEL FOR RESEARCH DATA

What about your data?

Discuss in groups (5 min.)



& Publication

- Which data do you produce & use?
- Which of your data need to be kept?
- Which of your data could be published OA?
- Have you ever reused data? What are your experiences? Which documentation is needed?

- ✓ Form groups
- ✓ Discuss and note results on paper
- ✓ Bring paper to front

07

GOOD PRACTICES TO START WITH

Data Documentation and Metadata

- **FAIR R1.3.** (Meta)data meet **domain-relevant community standards**
- Metadata are “data about data”
- Metadata are a love letter to the future
- Metadata are used to describe and organize data: formal description and content description
- **Standards** for Metadata to enhance interoperability (disciplinary and generic)
- **Transparent Documentation** includes project description, aims, methods, data cleaning, versioning, etc. (= your detailed data management plan)



Data Documentation and Metadata

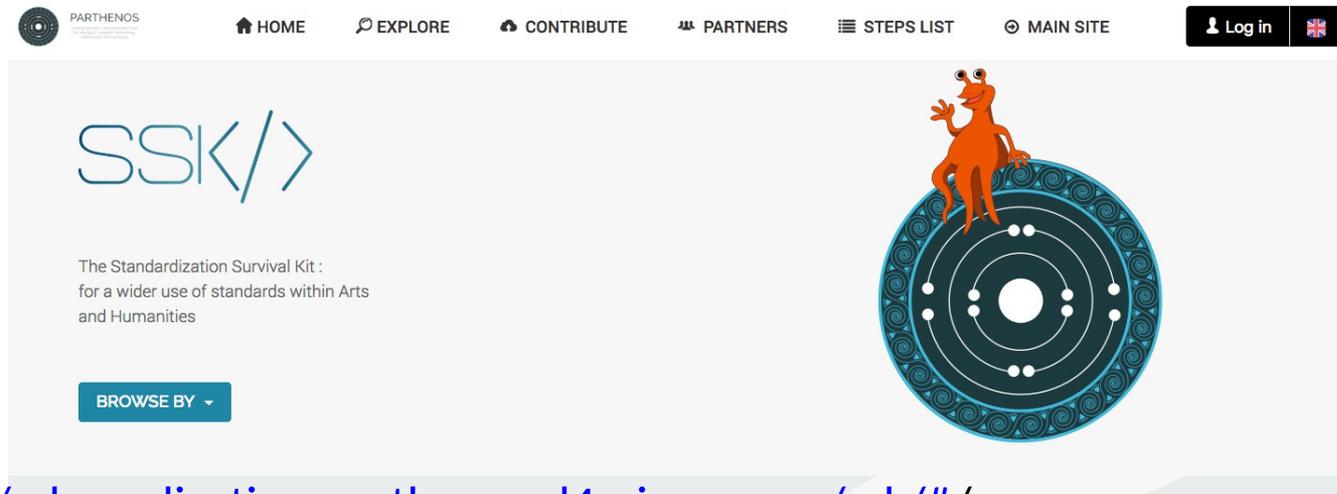
➤ FAIR Humanities!

- **TEI** (Text Encoding Initiative): www.tei-c.org
- **CEI** (Charter Encoding Initiative): <http://www.cei.lmu.de/index.php>
- **MEI** (Music Encoding Initiative): <https://music-encoding.org/>
- **CMDI** (Language Resources, CLARIN):
- **IIIF** (International Image Interoperability Framework):
<https://iiif.io/>
- **EAD** (Encoded Archival Description, for finding aids):
<https://www.loc.gov/ead/>
- **Dublin Core** (description of digital documents):
<http://dublincore.org/>

Data Documentation and Metadata

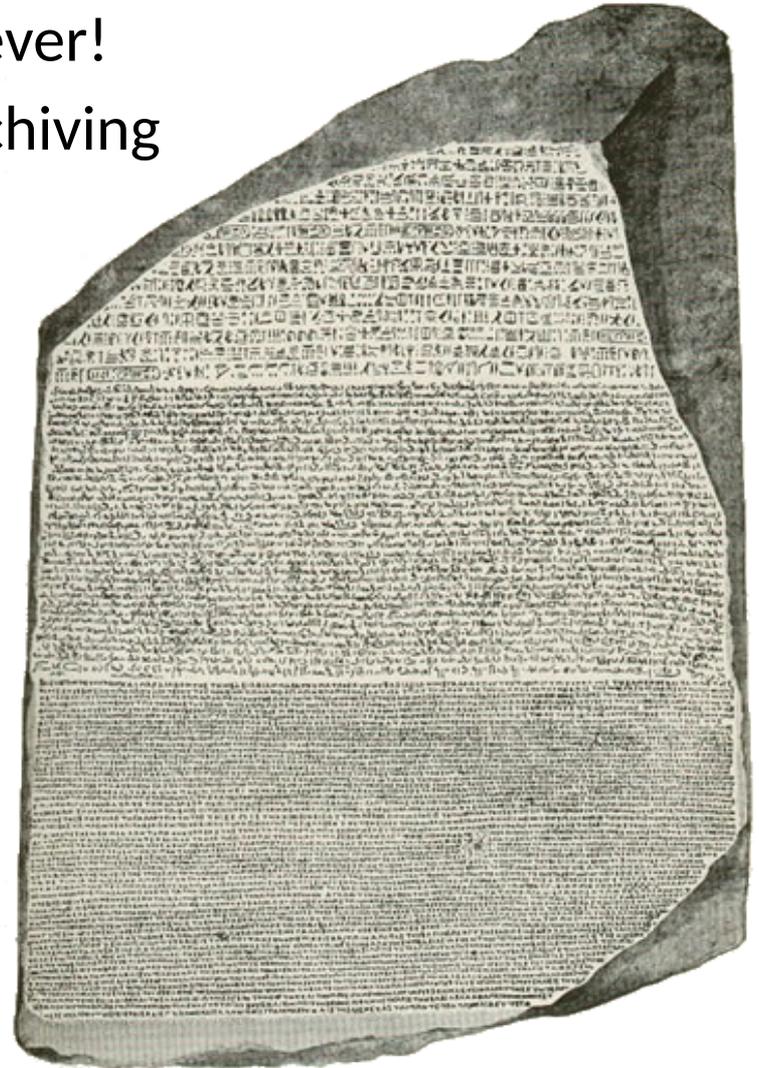
Standardization Survival Kit (SSK)

- Overlay platform developed by PARTHENOS dedicated to promoting a wider use of **standards** (TEI, Dublin Core, etc.) within the Arts and Humanities
- Aims:
 - Designed to support researchers in selecting and using the appropriate standards for their particular disciplines and work flows
 - Documentation of existing standards by providing reference materials
 - Foster the adoption of standards
 - Communication with research communities



Selection and Preservation

- Not everything has to be kept forever!
- Not all formats are suitable for archiving
- Formulate your requirements for long term preservation (volume, certificate, costs, access rights, sustainability)



Rosetta Stone by Unknown, CCO

https://commons.wikimedia.org/wiki/Rosetta_Stone#/media/File:RosettaStone.png

Data Sharing & Publishing

➤ Dropbox, your website, Research Gate/Academia.edu are not OA repositories!

➤ **Do it right: Data Publication**

➤ **Data Journals (Data Paper), Data Supplementaries** to articles

– Research Data Journal for the Humanities and Social Sciences:

<https://brill.com/view/journals/rdj/rdj-overview.xml?rsk ey=2G8kx3&result=1>

– Journal of Open Archaeology Data:

<http://openarchaeologydata.metajnl.com/>

➤ Use **free licences** (e.g. Creative Commons Licenses)



Data Sharing & Publishing

➤ Make use of discipline specific, institutional or European **repositories** to deposit data/publications (e.g. **Zenodo**:

<https://zenodo.org/>)

➤ Use tools to **register research data** (e.g. re3data: <https://www.re3data.org/>) and to **find a repository** (Directory of Open Access Repositories: <http://v2.sherpa.ac.uk/opensoar/>), for **humanities** e.g.:

- **DARIAH** (<https://hal.archives-ouvertes.fr/>, <https://de.dariah.eu/en/repository>)
- **CLARIN** (<https://www.clarin.eu/content/repositories>)
- **GESIS** (www.gesis.org)

Data Sharing & Publishing

- Additional value of **Persistent Identifiers (e.g. DOI and ORCID)**
- ✓ **Slayer of the Error 404 message & Champion of linked open data**
- long-lasting, unambiguous reference to a digital object (journal article, dataset, scientific sample, artwork, PhD thesis, publication or person)
- PID takes you to a metadata record that contains information about a digital object or person (its current location for access or download)
- PIDs are stable: metadata of PID record can be updated (e.g. new location)
- PIDs organisations: **Crossref, DataCite and ORCID**
- example ORCID: <https://orcid.org/0000-0002-8217-4025>

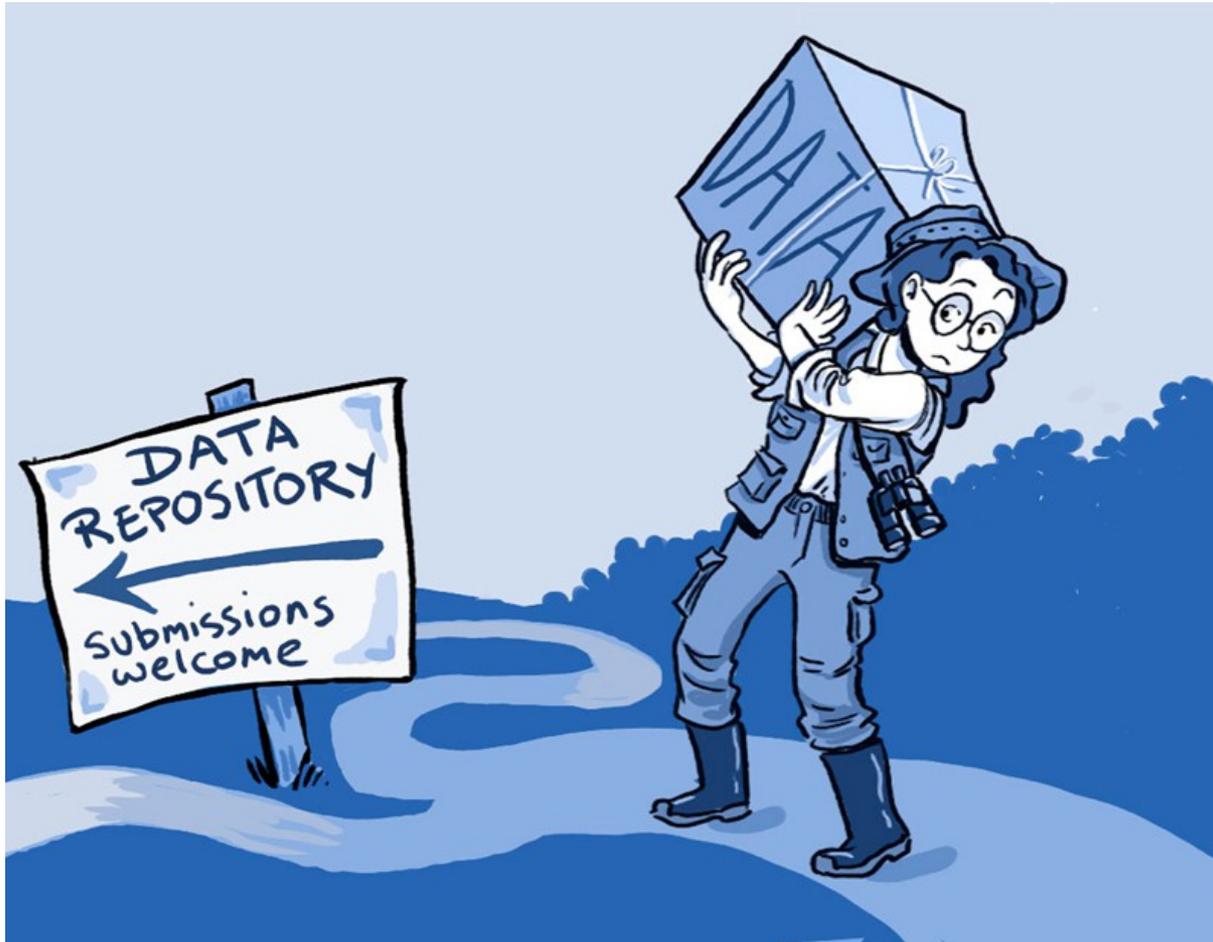
Data Sharing & Publishing

Publishing high-quality Open Data requires some effort. The W3C Foundation has created a basic model for Open Data with regard to quality: the 5-Star Open Data model. The 5 stages of Open Data are:

★	Make your stuff available on the web (whatever format) under an open licence
★★	Make it available as structured data (e.g. Excel instead of image scan of a table)
★★★	Use non-proprietary formats (e.g. CSV instead of Excel)
★★★★	Use URIs to denote things, so that people can point at your stuff
★★★★★	Link your data to other data to provide context

Table 2: Descriptions of all stages of the 5-star Open Data Model

You are not alone!



(Credit Ainsley Seago, PLoS Biology)

<http://www.kavlifoundation.org/science-spotlights/breaking-down-data-barriers-neuroscience#>

XD5P2fx7nOR

You are not alone!



- RDM is **team** work!
- Use **tools** for **Data Management Planning** (e.g. DCC DMPOnline (<https://dmponline.dcc.ac.uk/>), RDMO (<https://rdmorganiser.github.io/en/>))
- Make **use** of **infrastructural support** (research infrastructures, cultural heritage institutions, libraries, data centres)
- Ecosystem of **digital research infrastructures**, cultural heritage institutions, libraries, data centers, etc.
- Ask your library and research data manager!

Research Data Management in the PARTHENOS Training Suite

Module “Manage, Improve and Open Up Your Research Data”

- Intermediate level
- Emerging trends and best practice in Data Management, Quality Assessment, Intellectual Property Rights
- e.g. FAIR Principles, Data Management Planning, Open Data, Open Access, Open Science, etc.



➤ <http://training.parthenos-project.eu/sample-page/manage-improve-and-open-up-your-research-and-data>

∟

Research Data Management in the PARTHENOS Training Suite

Webinar: “How to work together successfully with eHumanities and eHeritage research infrastructures: The Devil is in the Details”

Trainers: Marie Puren (Inria) and Klaus Illmayer (OEAW)

- Beginners’ to intermediate level
- Research lifecycle
“Plan Research Project”
- FAIR Principles
- Standards (PARTHENOS Standardization Survival Kit – SSK)

The slide features the PARTHENOS logo in the top left corner, which includes a circular graphic and the text 'PARTHENOS Training activities, Resources and Tools for eHeritage, Research Infrastructures, Optimization and Synthesis'. In the top right, it says 'A Webinar of the PARTHENOS eHumanities and eHeritage Series #lovedata2018'. The main title is written in a large, hand-drawn font. A cartoon orange alien with large eyes is on the right, and a blue alien with a lightbulb above its head is on the left. The bottom right corner credits '(Klaus Illmayer and Marie Puren)' and 'Pictures Mork and Tork Cartoon CC-BY Agathe Gastaldi'.

➤ <http://training.parthenos-project.eu/sample-page/ehumanities-eheritage-webinar-series/webinar-work-with-research-infrastructures>

Playful Exercise 3

DISCUSSION (SPEED PROPOSITIONS)

Pick a proposition and discuss!

- ✓ Chose a roll with a proposition
- ✓ Prepare a statement
- ✓ Present your statement to the group



Picture: Rocks at Vlychada Beach in Exomytis, Santorini, Greece, by Dietmar Rabich, CC BY-SA 4.0, <https://commons.wikimedia.org/w/index.php?curid=63225571>

This exercise is adapted from: Biernacka, K.; Dolzycka, D.; Helbig, K.; Buchholz, P. 2018. Train-the-Trainer Konzept zum Thema Forschungsdatenmanagement. DOI: 10.5281/zenodo.1215377 (CC BY 4.0) <https://creativecommons.org/licenses/by/4.0/>

Pick a proposition and discuss!

- Persistent identifiers such as ORCID cost time to set up and are of little use afterwards.
- I will publish my data so that my article is quoted more often.
- Research is largely publicly funded, so the resulting data is a public good.
- The subsequent use of data does not save any costs, since research data management also causes many high costs.
- Of course, I will always collect my own data: I will not adapt my questions to existing data.
- The subsequent use of data requires more knowledge than the collection of new data.
- The re-use of my data can lead to exciting new collaborations.
- When I publish my data, my research becomes completely transparent and even the smallest errors become apparent.
- The publication of research data does not contribute to building a reputation.
- If I publish my research data, somebody might scoop me and publish findings based on my data.
- Research data is a commodity whose preservation and safeguarding for the future has a value in itself.
- The management and publication of research data causes costs, which I I can't afford to pay for.
- If I publish my research data, somebody might precede me and publish findings based on my data.
- Research data is a commodity whose preservation and safeguarding for the future has a value of is.
- The management and publication of research data causes costs, which I I can't carry.
- Published data do not bring any further benefit.
- My research data belongs to me!

This exercise is adapted from: Biernacka, K.; Dolzycka, D.; Helbig, K.; Buchholz, P. 2018. Train-the-Trainer Konzept zum Thema Forschungsdatenmanagement. DOI: 10.5281/zenodo.1215377 (CC BY 4.0) <https://creativecommons.org/licenses/by/4.0/>

Summary: What's in there for You?

Some Benefits of Open Research Practices for Researchers:

- Open Publications get more citations and gain higher media attention
- Higher chances for research collaborations
- Better job and funding opportunities
- Higher (team) effectiveness and sustainability
- Stand in for your ideals



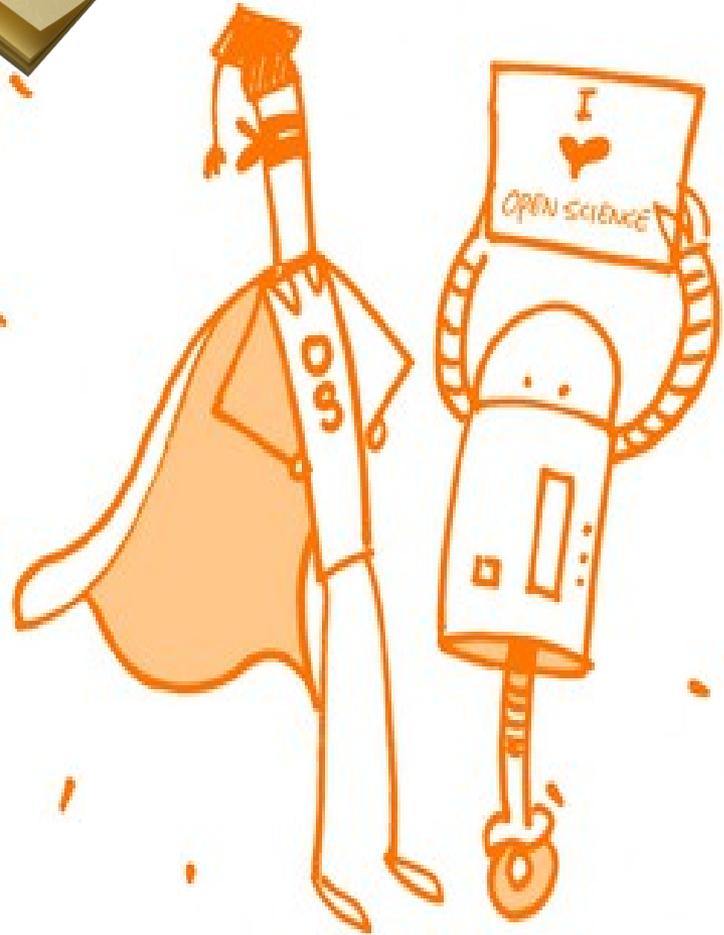
Picture: <https://zenodo.org/record/1285575#.W09yZH59jOR>
(Melanie Imming, John Tennant, CC0)

- RDM is an integral part of Open Science and of Good Scientific Conduct and has many benefits
- Practice Open Access to Data and RDM early and **be prepared for the future!**

Your Next Steps



- Your own Data Management Plan!
- Publish Data!
- Start a discussion about Open Access to Research Data at Your institution!

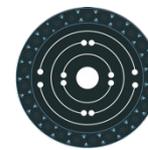


The End! Feedback!



Picture: Manchots empereurs tobogannent by Samuel Blanc

https://commons.wikimedia.org/wiki/Spheniscidae#/media/File:Manchots_empereurs_tobogannent.JPG, CC BY SA 3.0



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@UWuttke

www.parthenos-project.eu

<http://training.parthenos-project.eu>

Never miss an update! **PARTHENOS Social Media Channels:**

➤ **Twitter:** https://twitter.com/Parthenos_EU

➤ **Facebook:** <https://www.facebook.com/PARTHENOSproject/>

➤ **YouTube Channel:**

https://www.youtube.com/channel/UCnKJnFo_IFfoAI3VH51t1hW

08

**FURTHER LEARNING: OPEN SCIENCE / RESEARCH
DATA MANAGEMENT / WORK FLOWS / SERVICES**

Further Learning

Open Science in General:

- **FOSTER Open Science Module**
 - <https://www.fosteropenscience.eu/learning/what-is-open-science>
- **Open Science MOOC (under development)**
 - <https://opensciencemooc.github.io/site/>
- **TU Delft Open Science MOOC (started October 30, 2018)**
 - <https://online-learning.tudelft.nl/courses/open-science-sharing-your-research-with-the-world>
/
- **Innovations in Scholarly Communication (Bianca Kramer & Jeroen Bosman)**
 - <https://101innovations.wordpress.com/>
- **Helmholtz Open Science Webinars**
 - <https://os.helmholtz.de/bewusstsein-schaerfen/workshops/webinare/>
- **European Union Open Science Resources**
 - <https://ec.europa.eu/research/openscience/index.cfm>

Further Learning

FAIR Principles and Open Access to Data

- Wilkinson, Mark D. et al. 2016, The FAIR Guiding Principles for Scientific Data Management and Stewardship, in: *Scientific Data*, Nr. 3.
 - <https://doi.org/10.1038/sdata.2016.18>
- Explanation of FAIR principles by Swiss National Science Foundation (SNF) (eng.)
 - http://www.snf.ch/SiteCollectionDocuments/FAIR_principles_translation_SNSF_logo.pdf
- Explanation of FAIR principles in German (TIB Blog, Angelika Kraft)
 - <https://blogs.tib.eu/wp/tib/2017/09/12/die-fair-data-prinzipien-fuer-forschungsdaten/>
- Mons, Barend, *Data Stewardship for Open Science: Implementing FAIR Principles*, 2018
- Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities
 - <https://openaccess.mpg.de/Berliner-Erklaerung>
- Carrara, Wendy et al., *Open Data Goldbook for Data Managers and Data Holders*, European Commission, 2018 (CC BY)
 - <https://www.europeandataportal.eu/sites/default/files/goldbook.pdf>
- European Data Portal Open Data Training Companion
 - <https://www.europeandataportal.eu/en/resources/training-companion>
- Plan S and Coalition S
 - <https://www.coalition-s.org/>
- DARIAH's position on PlanS
 - <https://www.dariah.eu/2018/10/25/towards-a-planhss-dariahs-position-on-plans/>
- FORCE11 Guidelines for Data Citation
 - <https://www.force11.org/datacitationprinciples>

Further Learning

Research Data Management

- **PARTHENOS Module “Manage, Improve and Open Up Your Research Data” (eHeritage and eHumanities)**
 - <http://training.parthenos-project.eu/sample-page/manage-improve-and-open-up-your-research-and-data>
/
- **FOSTER Module on Data Management**
 - <https://www.fosteropenscience.eu/node/2328>
- **Ulrike Wuttke. (2018, November). Introduction to Humanities Research Data Management. Zenodo.**
 - <http://doi.org/10.5281/zenodo.1491250>
- **PARTHENOS Submodule “Research Impact”**
 - <http://training.parthenos-project.eu/sample-page/intro-to-ri/research-impact/>
- **OSODOS Open Science Training Handbook (Open Science, Open Data, Open Source)**
 - <http://osodos.org>; <https://pfern.github.io/OSODOS/gitbook/>
- **Research Data Management Promotional Material**
 - <https://rdmpromotion.rbind.io/>

Further Learning

Licensing / Legal Aspects

- **Kreutzer, Open Content – A Practical Guide to Using Creative Commons Licenses, 2014**
 - <https://irights.info/wp-content/uploads/2014/11/>
Open Content A Practical Guide to Using Open Content Licences web.pdf
- **ARDC, Research Data Rights Management Guide (ARDC Guides), September 2018**
 - <https://www.ands.org.au/guides/research-data-rights-management>
- **CLARIN-D Language Resources Legal Issues Bibliography**
 - <https://www.clarin-d.net/de/legal-issues-bibleography>

Networks and Organizations

- **Open Knowledge Foundation**
 - <https://okfn.org/>
- **Research Data Alliance**
 - <https://www.rd-alliance.org/>
- **Generation R (Open Science Discourse Platform)**
 - <http://genr.eu>
- **GO FAIR Initiative**
 - <https://www.go-fair.org/>
- **Collections as Data**
 - <https://collectionsasdata.github.io/>

Source Slide nr. 23 of: Stefan Schmunk, & Steven Krauwer. (2018, March). Slides from "e-Humanities and e-Heritage Research Infrastructures: Beyond tools" (PARTHENOS eHumanities and eHeritage Webinar, Thursday, 22.02.2018, 11:00 – 12:00 A.M. CET). Zenodo. <http://doi.org/10.5281/zenodo.1203335>

European RIs for SSH & CH

RIs set up under the auspices of ESFRI, each based on national consortia of universities, libraries, museums, archives etc.:



In addition a number of past or ongoing EC supported Infrastructure Projects, such as



PARTHENOS

- PARTHENOS is a Horizon 2020 project (European Commission, 12 million EUR)
- Aim: strengthen the cohesion of Heritage related E-research
- Running time: 1 May 2015 - 30 April 2019 + 6 months extension
- PARTHENOS has 16 partners from 9 European countries, including the two humanistic research infrastructures CLARIN ERIC and DARIAH ERIC
- PARTHENOS Coordinator: PIN Scribani - Educational and Scientific Services for the University of Florence, Italy



DMP Tools

- **DMPonline**

- <https://dmponline.dcc.ac.uk/>

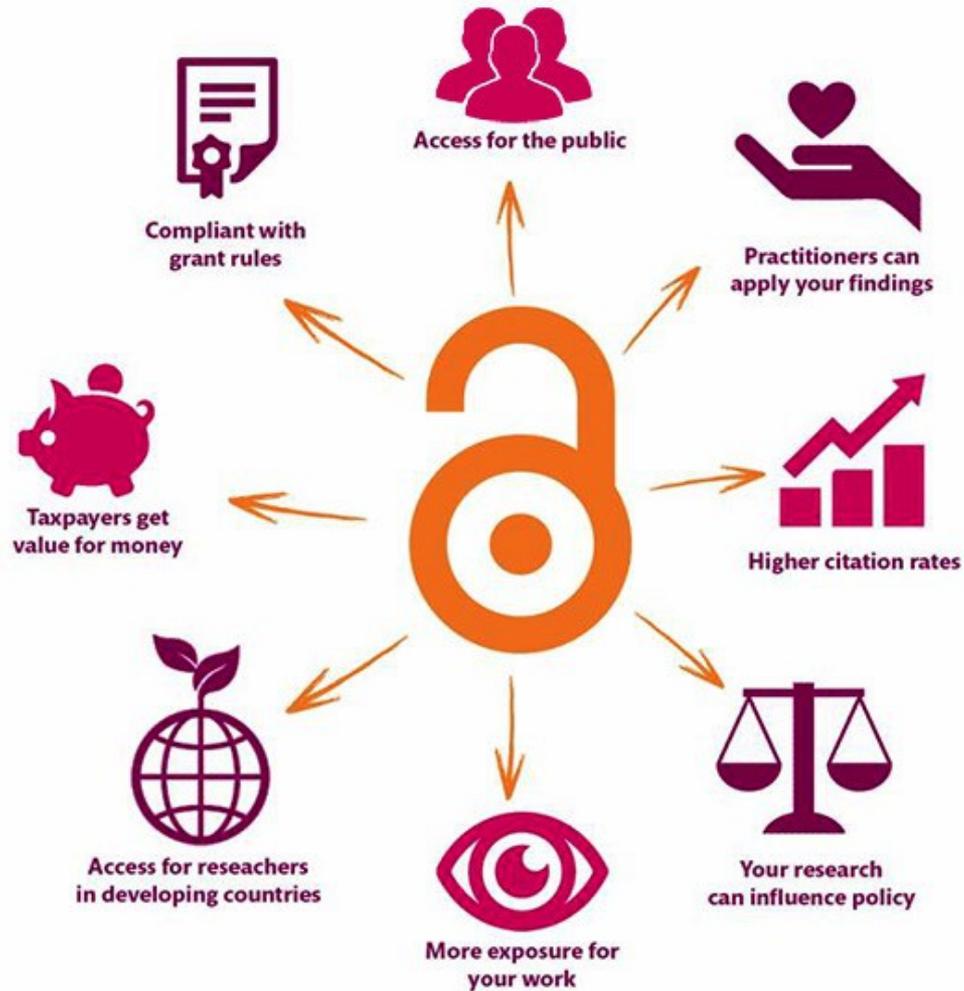
- **RDMO**

- <https://rdmorganiser.github.io/>

DMP Examples

- **NEH** (National Endowment for the Humanities) makes example grants available, including DMPs
 - under the various programs e.g.
<https://www.neh.gov/grants/odh/digital-humanities-advancement-grants>
- **DMPOnline** Public DMPs
 - https://dmponline.dcc.ac.uk/public_plans

Advantages of Open Access



Research Data Lifecycle



Research Data Lifecycle

from <https://www.ukdataservice.ac.uk/manage-data/lifecycle>

Based on the PARTHENOS Training Module “Manage, Improve and Open Up your Research and Data”

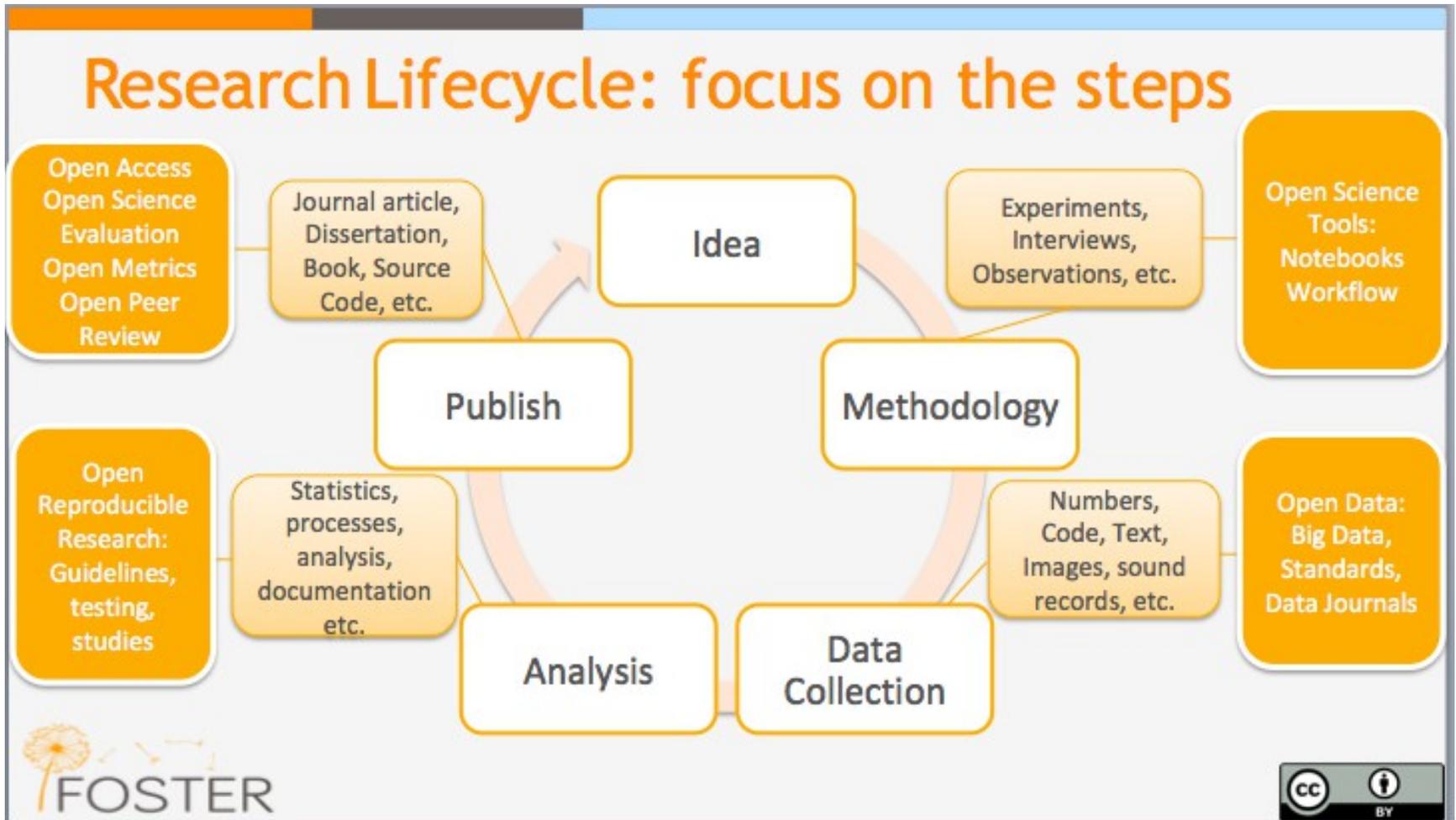
(<http://training.parthenos-project.eu/sample-page/manage-improve-and-open-up-your-research-and-data/>) CC-BY-NC 4.0

(<https://creativecommons.org/licenses/by-nc/4.0/>)

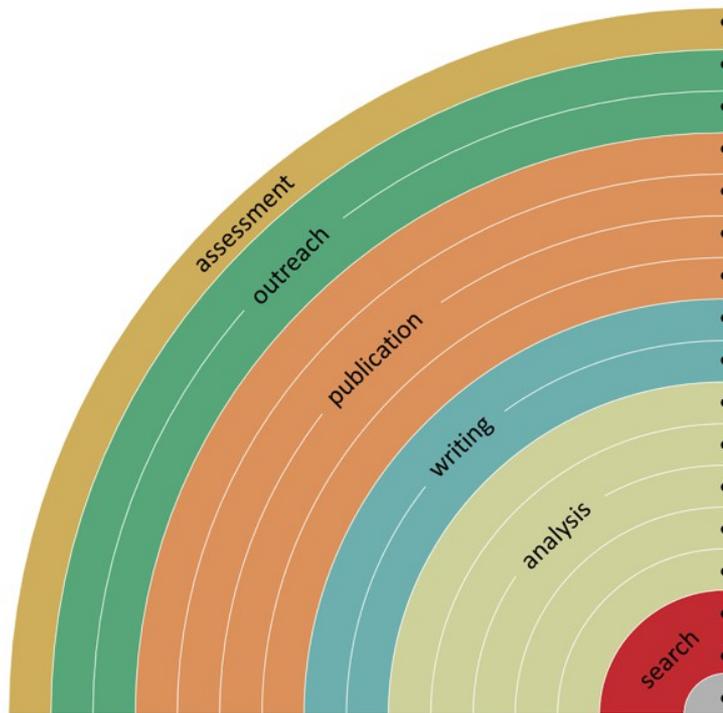
Online Drag-and-Drop Exercise:

<http://training.parthenos-project.eu/sample-page/ehumanities-heritage-webinar-series/webinar-work-with-research-infrastructure/s/wrap-up-materials/>

Open scholarly practices that can make your research more visible



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



The FAIR Principles (1/2)

- **Findability** :
 - F1. (Meta)data are assigned a **globally unique and persistent identifier**
 - F2. Data are described with **rich metadata**
 - F3. Metadata clearly and explicitly include **the identifier of the data** they describe
 - F4. (Meta)data are **registered or indexed** in a searchable resource
- **Accessibility**
 - A1. (Meta)data are **retrievable** by their identifier using a standardised communications protocol
 - A1.1 The protocol is **open, free, and universally implementable**
 - A1.2 The protocol allows for an authentication and authorisation procedure, where necessary
 - A2. Metadata are **accessible**, even when the data are no longer available

The FAIR Principles (2/2)

- **Interoperability**
 - I1. (Meta)data use a **formal, accessible, shared, and broadly applicable language** for knowledge representation.
 - I2. (Meta)data use **vocabularies** that follow FAIR principles
 - I3. (Meta)data include qualified references to other (meta)data
- **Reuse**
 - R1. Meta(data) are **richly described** with a plurality of accurate and relevant attributes
 - R1.1. (Meta)data are released with a clear and accessible **data usage license**
 - R1.2. (Meta)data are associated with **detailed provenance**
 - R1.3. (Meta)data meet **domain-relevant community standards**

The GO FAIR Initiative

- GO **FAIR** initiative - practical implementation of the European Open Science Cloud (EOSC):
“... guidelines to improve the **Findability, Accessibility, Interoperability, and Reuse** of digital assets. The principles emphasise **machine-actionability** (i.e., the capacity of computational systems to find, access, interoperate, and reuse data with none or minimal human intervention) because humans increasingly **rely on computational support to deal with data** as a result of the increase in volume, complexity, and creation speed of data.”