TIDY, SAFE AND SHARABLE DATA

Maggie Hellström
ICOS Carbon Portal

ICOS Cities webinar, May 11, 2022

Let’s start with some poll questions!

Feel free to introduce yourself in the chat, adding a sentence of what aspects of research data management interests you!

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Surfing the wave…

Image:unknown

- In 2021, approximately 80 zettabytes of data were created – that's almost 10^{22} bytes
- Access to "new" data gives fantastic opportunities for science
  - Ask – and answer – new scientific questions!
  - Applications of AI and machine learning
  - Address "grand challenges" like the Covid crisis
- Data is also expected to be a driver for the "global digital economy"
- Much resources are being spent on data infrastructure, e.g. for the EOSC

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Your data is everyone's data?!

Image:imgflip.com

Pressure from funders and stakeholders:

Public-funded data should/must be

- easy to find,
- well documented,
- follow standards,
- simple to reuse,
- free from unnecessary restrictions & conditions
- "as open as possible, as closed as necessary"

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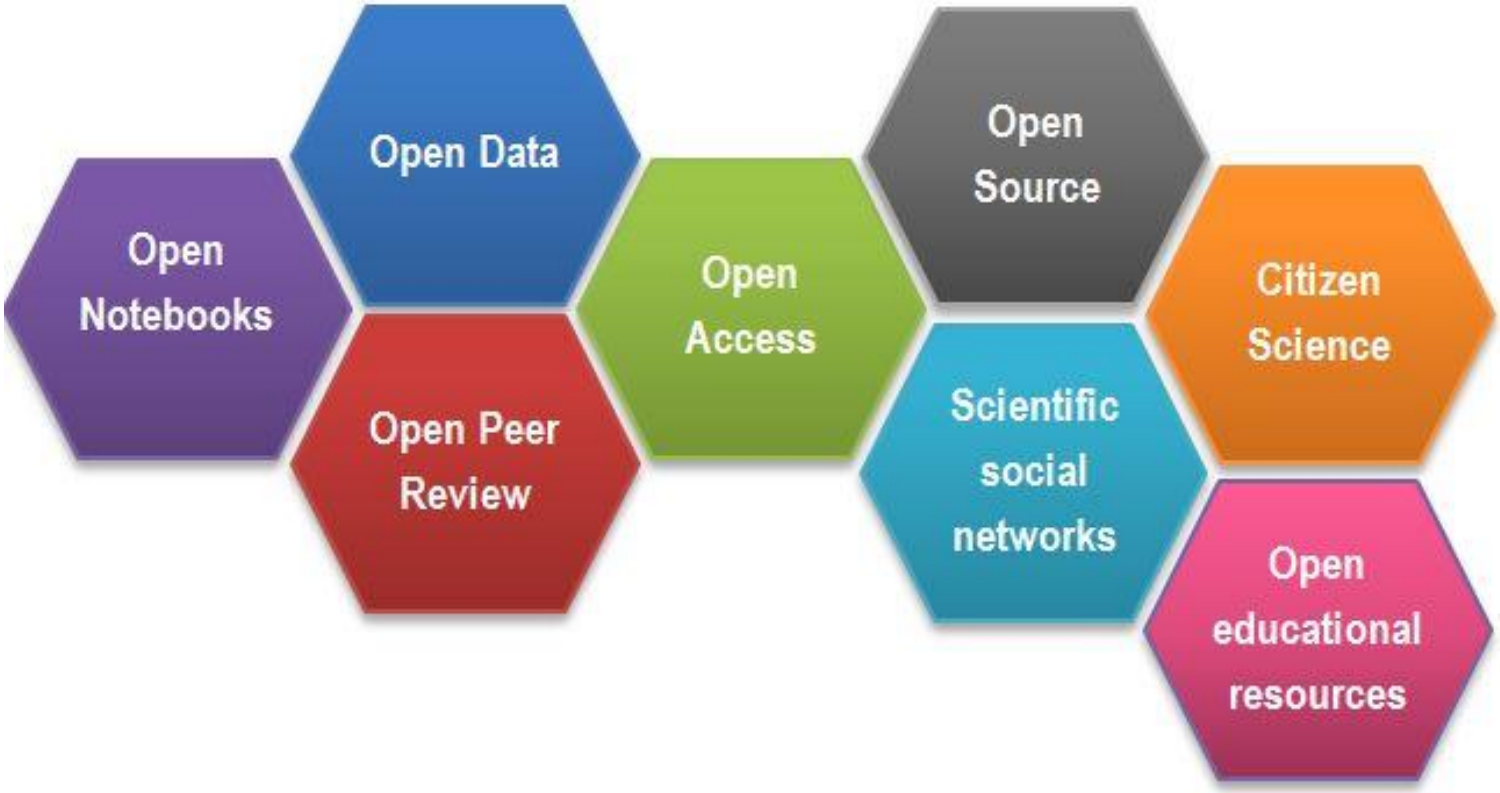
Open Science: the new paradigm



https://www.fosteropenscience.eu/content/what-open-science-introduction

Sharing is caring...

...but not always so easy in practice!

[link to video](#)

Data Sharing and Management Snafu in 3 Short Acts (Higher Quality)

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How to cope (and improve)

- Take a deep breath (and put the kettle on)
- Find out more about RDM, FAIR, OS, …
- Talk to your colleagues & analyse current practices
  - documentation of the research process?
  - data storage during a project?
  - archiving afterwards?
  - publishing data with papers?
- Use a data management plan (DMP) tool
- Ask for help, if needed!

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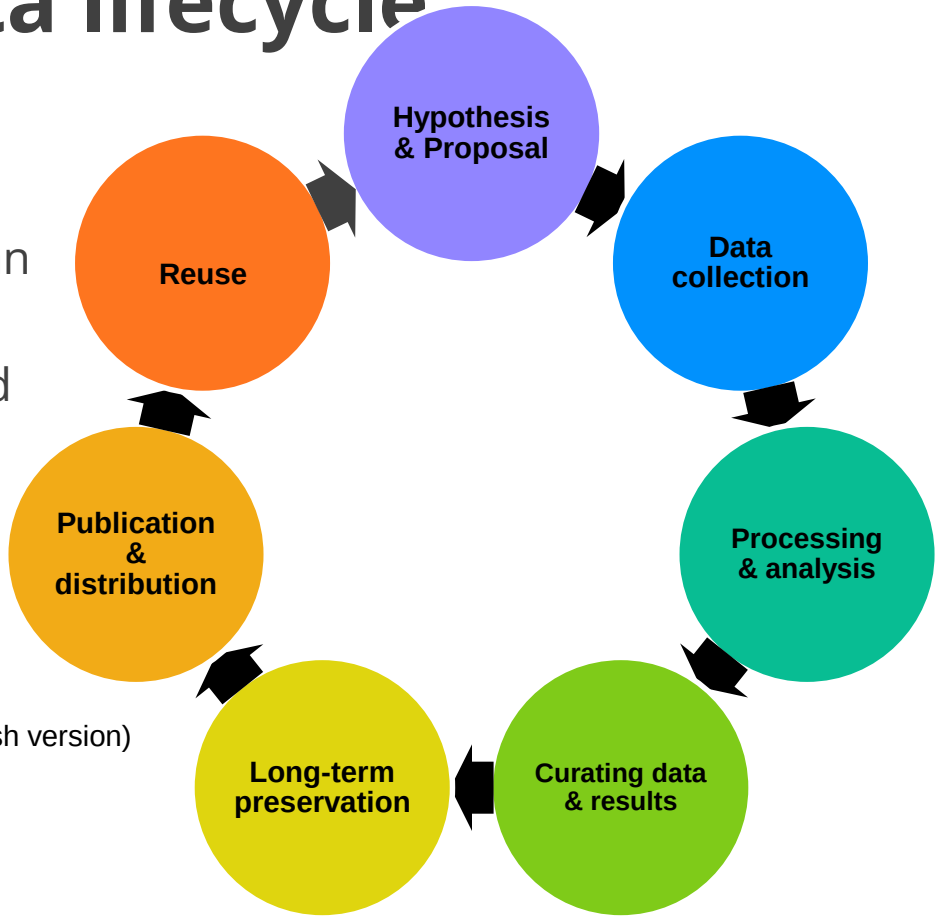
The research data lifecycle

- All steps not always included
- Starting point – and order - can vary
- Some iteration to be expected
- More spiral than circle?



Avoin tiede (2014): Open Science Handbook (English version)

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The FAIR principles

- Findable, Accessible, Interoperable, Reusable
- a set of guiding principles that
  - encourage comprehensive & sustainable data management
  - support & facilitate computer-based data processing
- relevant for “everyone”: data producers, data stewards and data users
- FAIR is not equal to Open
- FAIR is no guarantee for high quality or “fitness for use”

https://force11.org/info/the-fair-data-principles/

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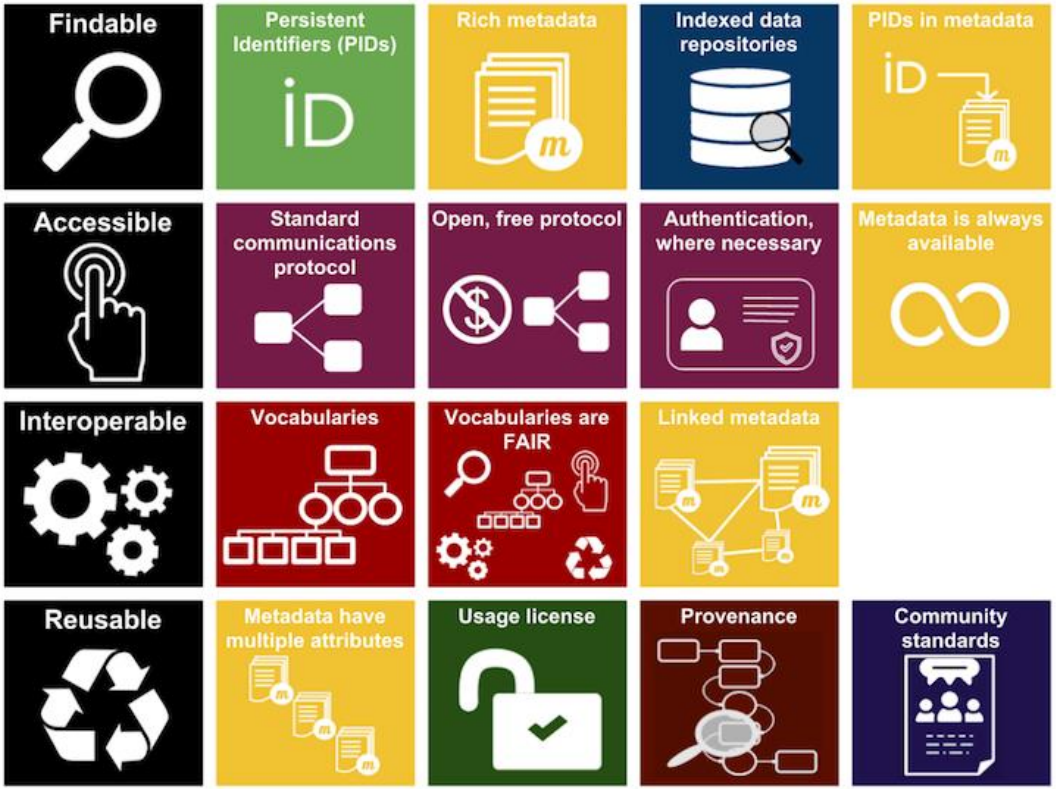
Components of FAIR

Read more at and
https://www.go-fair.org/



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What's in it for me?

Making your data "FAIR enough" gives you better control of what happens to your data, and

- helps make your data sustainable, also for you & your co-workers!
- ensures your data can be found – and used - by others
- facilitates collection & storage of metadata
- guarantees data can be cited, giving you credit
- facilitates extraction of data usage statistics
- simplifies reporting to funders & streamlines cost estimates
- makes data management plans easier to write

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Making your data FAIR(er)

- Make a **plan** for the data **before you start** a project!
- Design a **logical folder structure**, and keep to it!
- Collect detailed descriptive information (= **metadata**) throughout
- **Document all steps** of the data processing & analysis
- Use **standards** and **formats common** to your discipline
- Keep **at least 2 separate backups** of data, metadata and code

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Making your data FAIR(er), cont'd

- Store the data in a **trusted & sustainable** repository or data center
- See to that the data gets **persistent identifiers** (DOIs or similar)
- Apply a suitable **usage license**
- Provide end users with information on "**intended use**"
- Make the data **"as open as possible, as closed as necessary"**
- Ensure that **metadata remain available** even if the data cannot be accessed any more
- **Test the FAIRness** of your data using some online tool

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Some useful links

- DMPonline data management plan tool: https://dmponline.dcc.ac.uk/
- ORCiD identifiers for people: https://orcid.org/
- Re3data catalogue of data repositories: https://www.re3data.org/
- EUDAT license selector tool: https://ufal.github.io/public-license-selector/
- DataCite's metadata schema: https://schema.datacite.org/
- RDA metadata standards catalog: https://rdamsc.bath.ac.uk/
- The FAIR principles: https://www.go-fair.org/
- FAIRness assessment tools: https://satifyd.dans.knaw.nl/ (for humans) & https://www.f-uji.net/ (for machines)
- ICOS Carbon Portal: https://icos-ri.eu/

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Let’s wrap up with more poll questions!

If you want, please add your “take home message(s)” from today’s webinar in the chat!

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Thanks for listening!

You’re welcome to get in touch with Maggie with your data management questions via margareta.hellstrom@nateko.lu.se

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