Responsible Open Science

Fundamentals of Research Data Management for Social Scientists

Francesca Morselli & Ricarda Braukmann, DANS

14 and 17 June 2021

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House Rules

- Keep mic muted during the presentations
- Raise your hand if you want to speak or write questions in the chat
- Don't take screenshots without the permission of the participants
- Presentations are recorded | Breakout sessions are not

Veertly Platform

- Google Chrome gives best performance
- Set language Veertly to English
- Agenda
- Main stage
- Break-out rooms (2nd day)
- Chat

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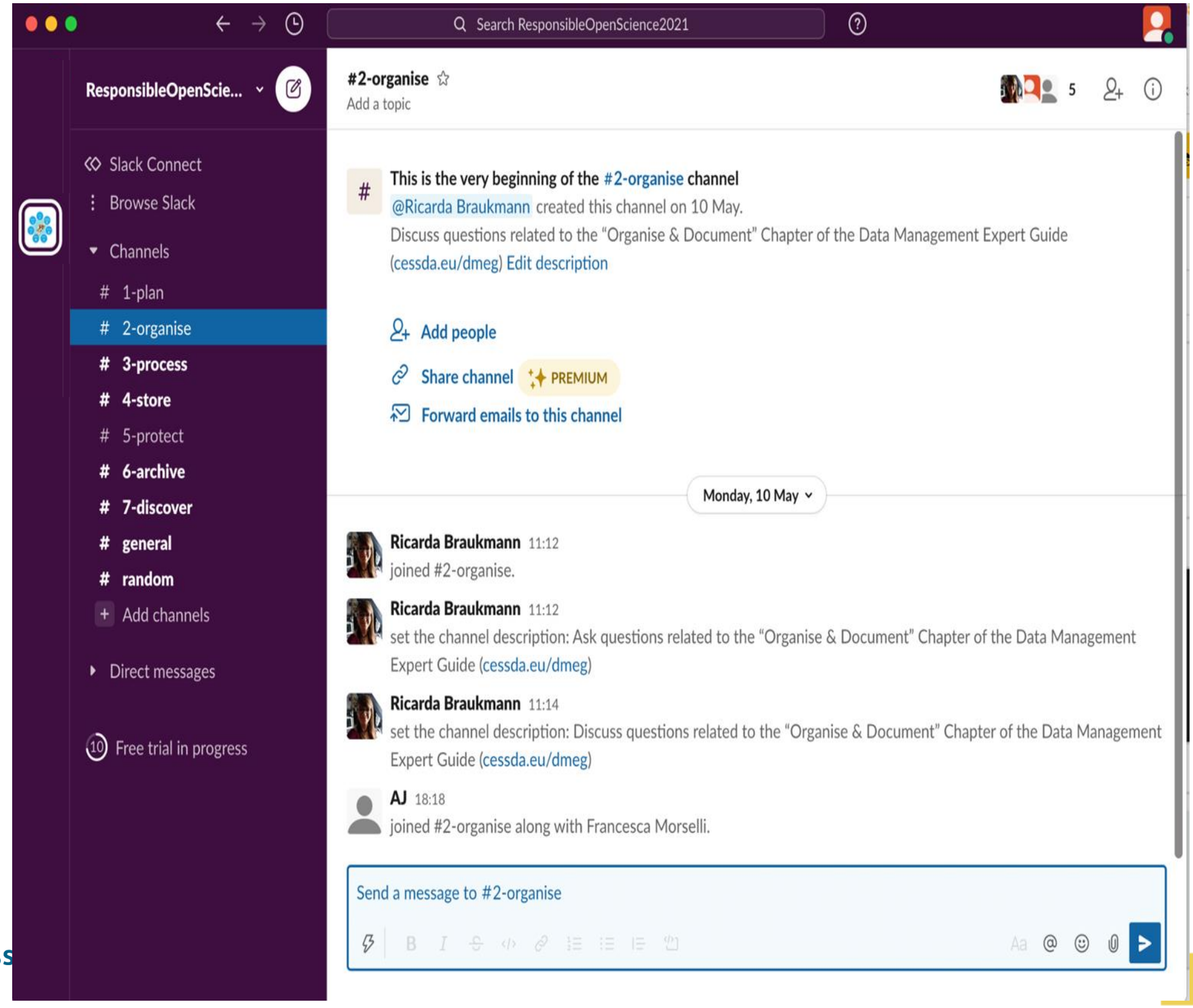
Slack Channel



Open Data Infrastructure for Social Sciences and Economic Innovations

www.odissei-data.nl

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https://odissei-data.nl/nl/

- Open Data Infrastructure for Social Science and Economic Innovations
- Dutch national infrastructure
- Coordinates data collections (i.e. surveys and panels) operated by members
- Supports researchers to access to CBS microdata
- Supports researchers to use the LISS*-panel
- Provides funding (e.g. microdata access grants)
- Super computing facilities (hosted by SURF)

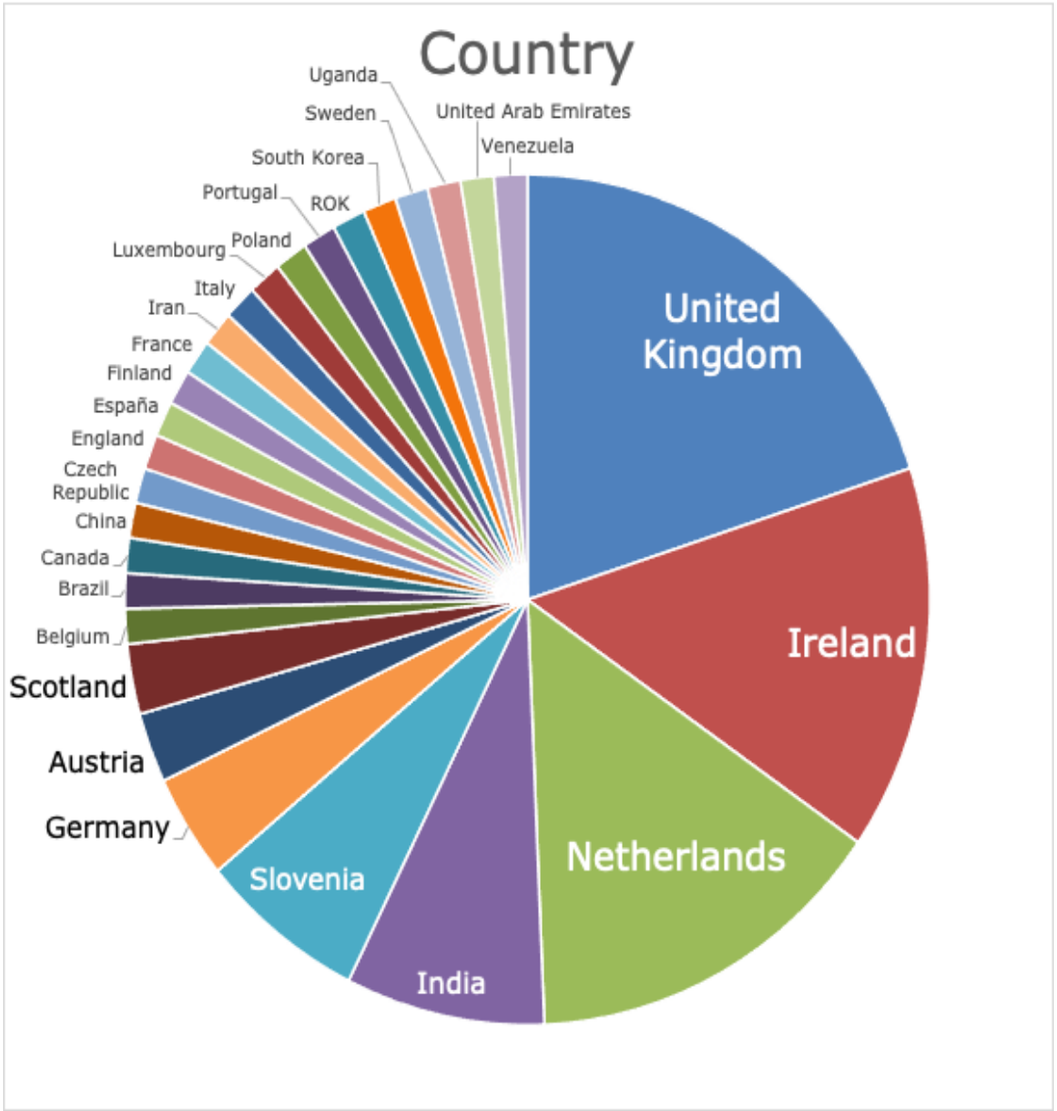
*Longitudinal Internet studies for the Social Sciences

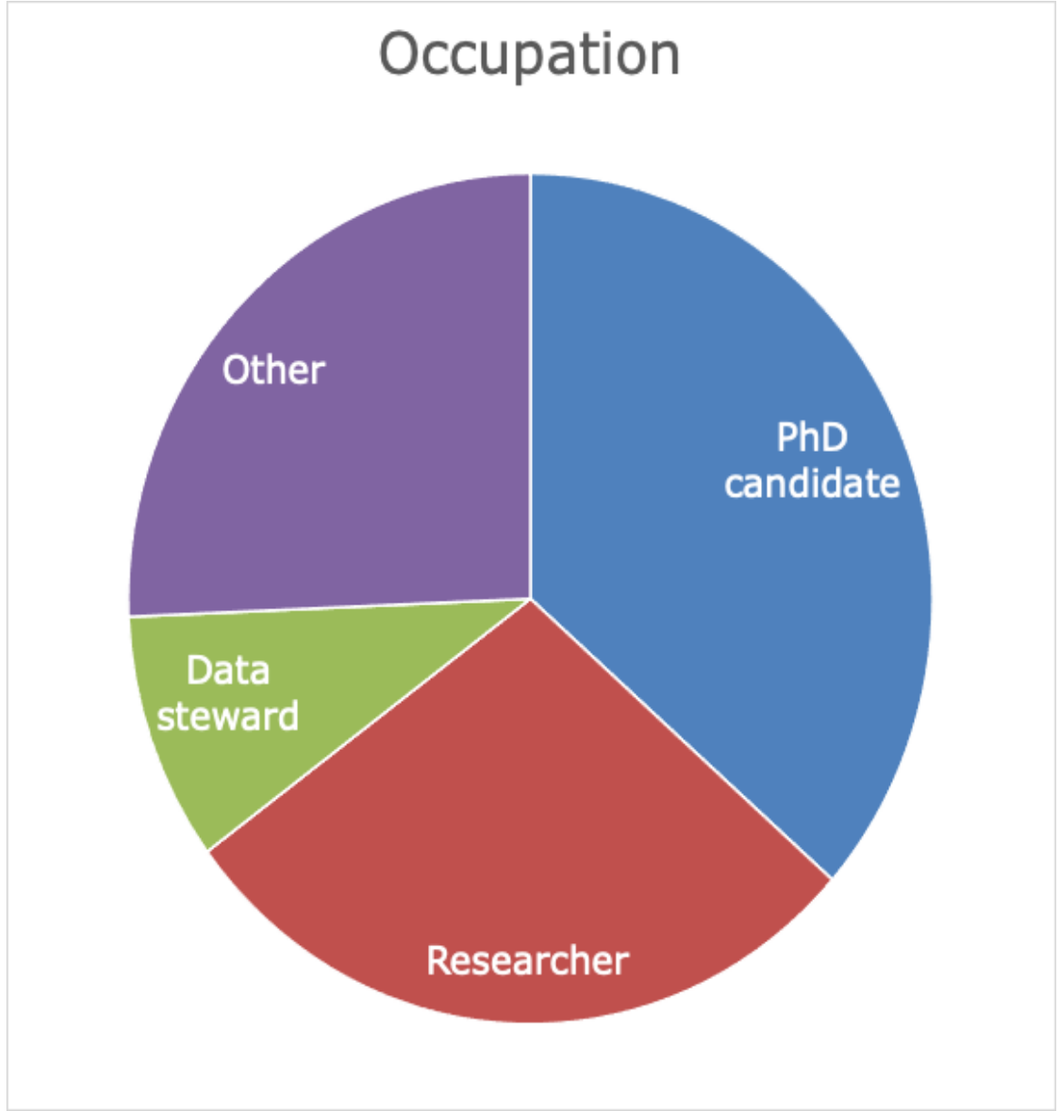
https://www.cessda.eu/

- Consortium European Social Science Data Archives
- European Research Infrastructure Consortium
    - DANS is the Dutch national service provider

- Providers data services to the social sciences
    - CESSDA Data Catalogue
    - CESSDA Training → Data Management Expert Guide

A bit about yourself





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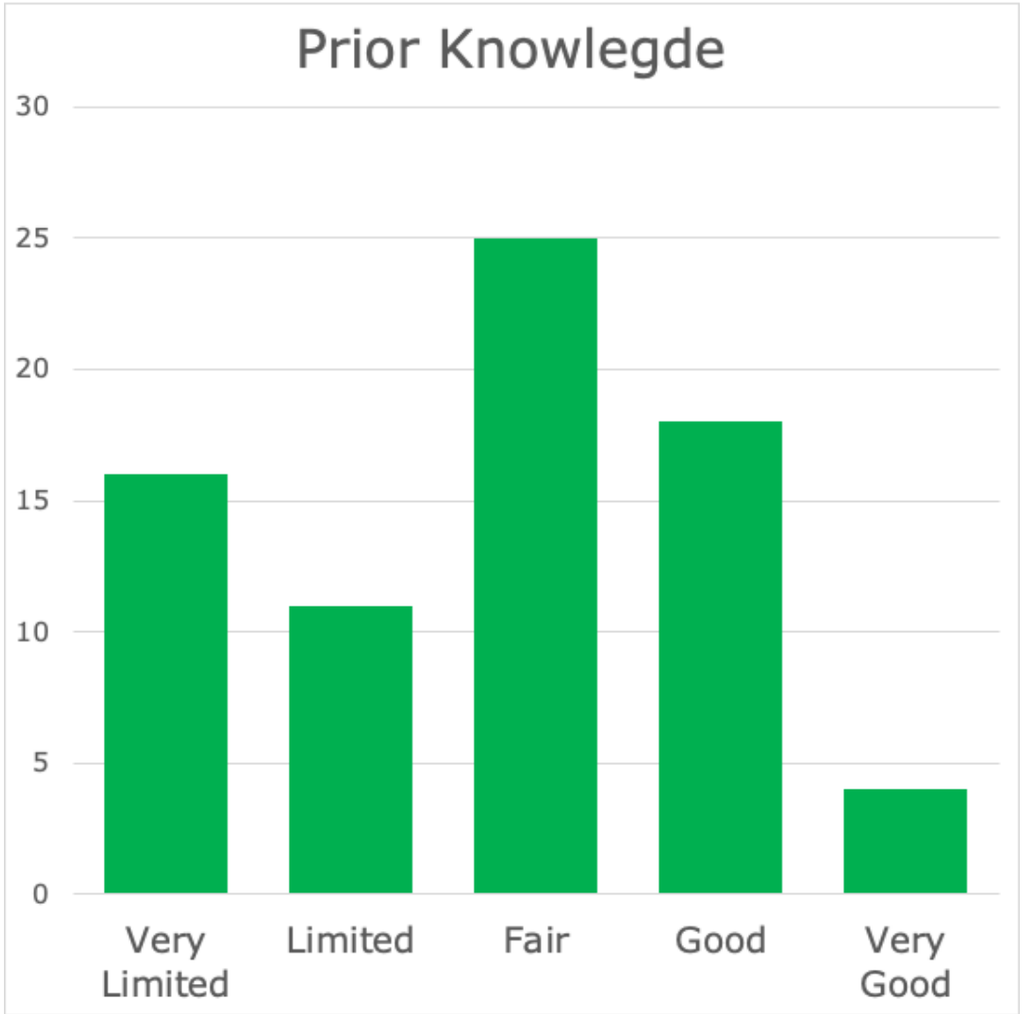

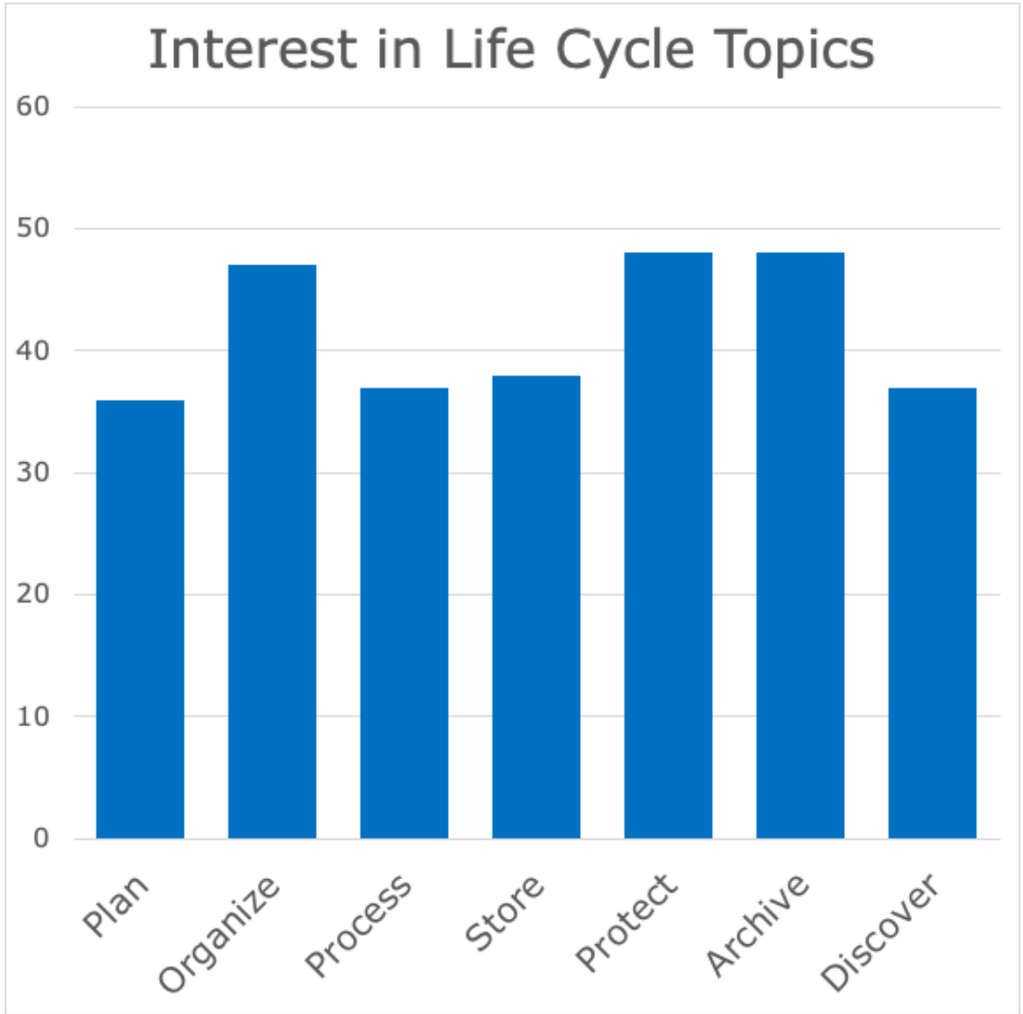

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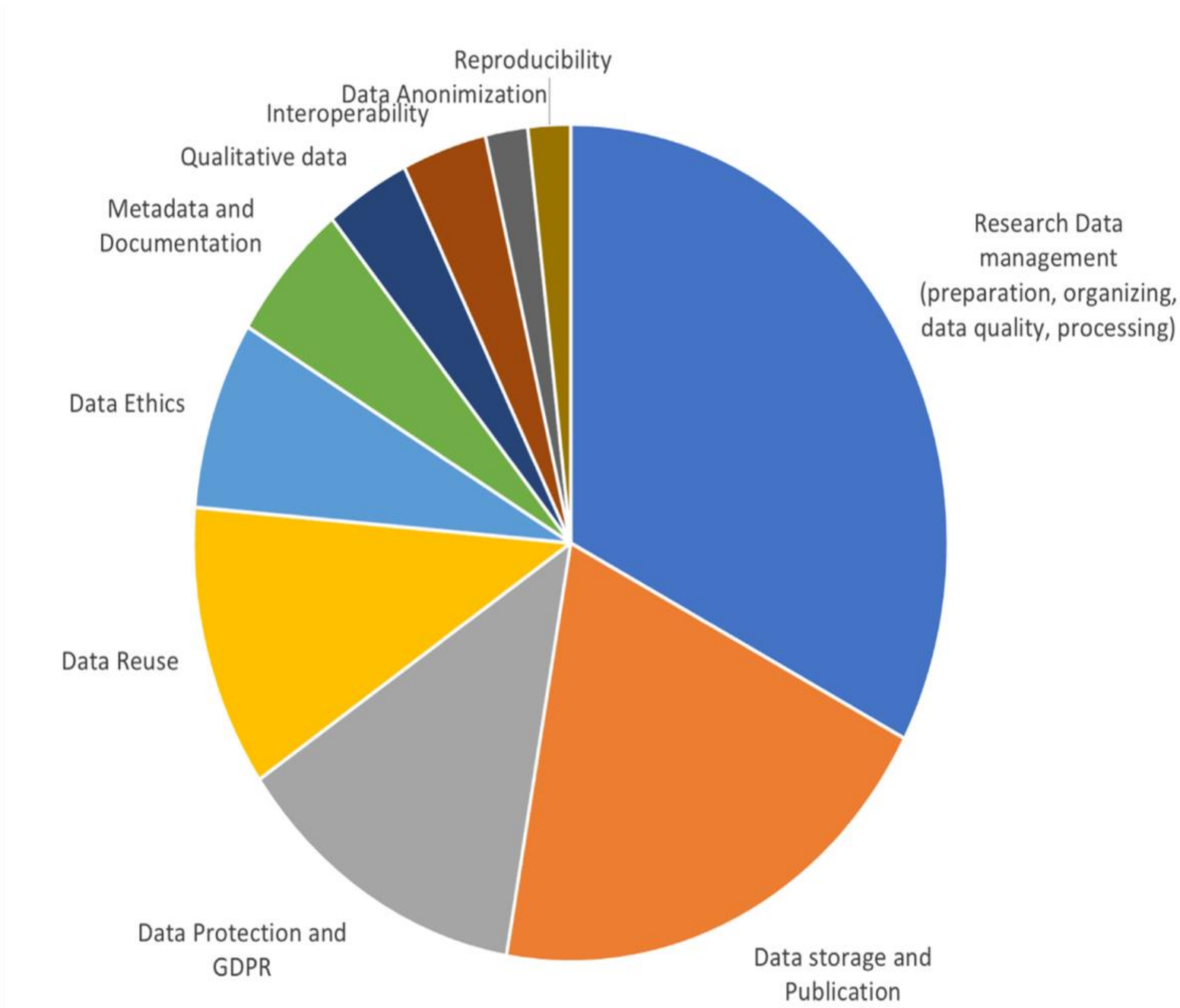
What are the challenges in RDM?



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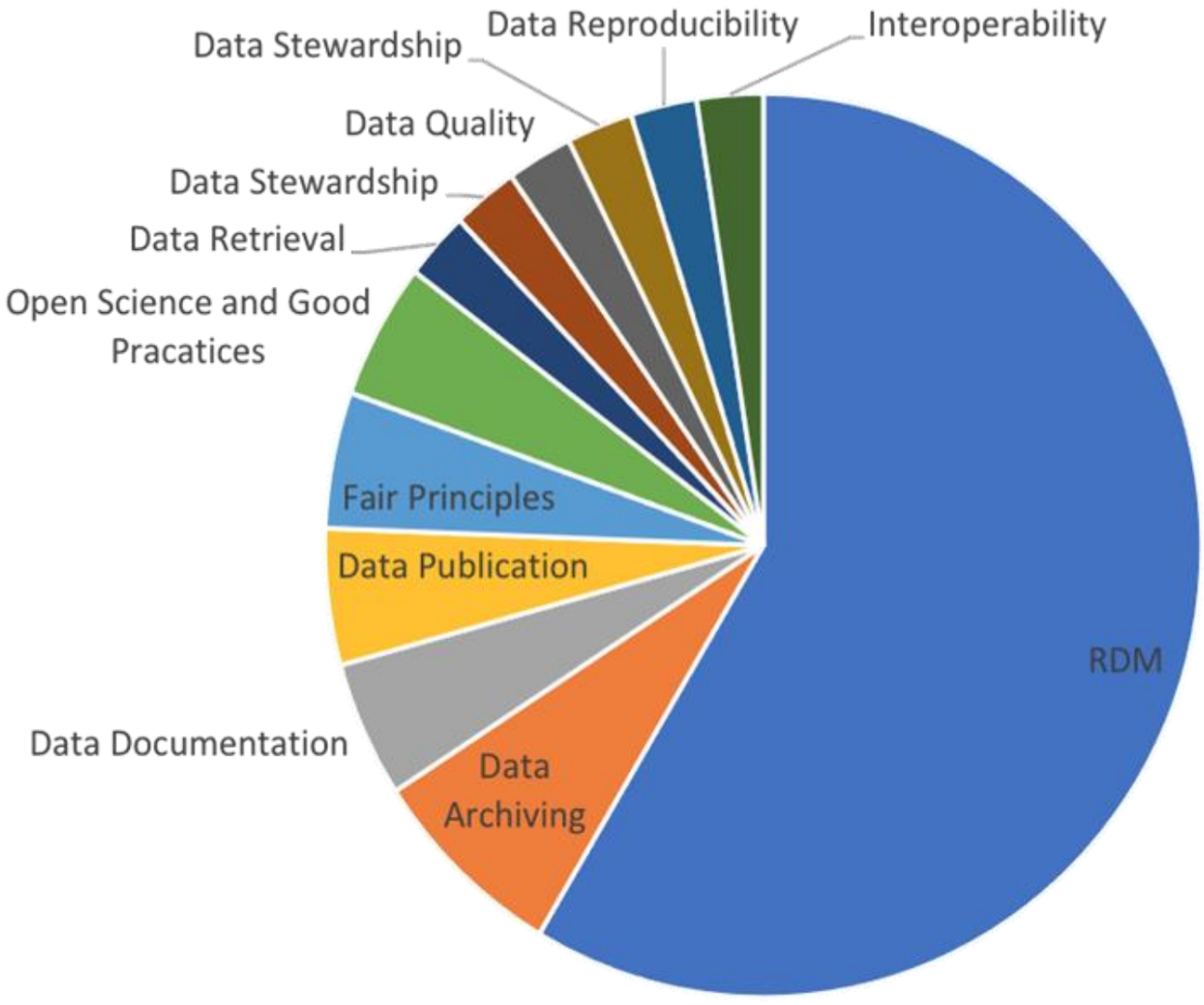
What would you like to learn?



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What we won't cover

- Qualitative data (DMEG covers this aspect)
- The content of the data themselves (e.g. data completeness)

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Workshop's programme

Monday 14th June 10:00-12:30 CEST

10:00 - 10:15 Welcome
10:15 - 11:00 An Introduction to Data Management: Organizing, processing and storing research data - Ricarda Braukmann (DANS)
11:00 - 11:15 Coffee break
11:15 - 12:00 Data protection and GDPR - Emilie Kraaijkamp & Ellen Leenarts (DANS)
12:00 - 12:15 Q&A
12:15 - 12:30 Introduction to the homework - Francesca Morselli (DANS)

In between, we will ask you to work on the homework assignment.

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Workshop's programme

Thursday 17th June 10:00-12:30 CEST

10:00 - 10:05 Welcome
10:05 - 10:35 Working with administrative data: an ODISSEI case study - Tom Emery & Kasia Karpinska (ODISSEI)
10:35 - 10:45 Coffee break
10:45 - 11:45 Group work in breakout sessions
11:45 - 12:15 An Introduction to Data Management: Archiving and discovering data - Ricarda Braukmann (DANS)
12:15 - 12:30 Closing

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Introduction to Data Management

Organizing, processing and storing data

Ricarda Braukmann

(DANS)

14th June 2021

Why Research Data Management?

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Why Research Data Management?

Easily find and understand data

Increase impact

Make research reproducible

Increase reuse potential

Comply with funder mandates

PUBLICATIONS AND DATA

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Why Research Data Management?

Findable **A**ccesible **I**nteroperable **R**eusable

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Why Research Data Management?

Findable

To aid automatic discovery of relevant datasets, (meta)data should be easy to find by both humans and machines and be assigned a persistent identifier.

Accesible

Interoperable

Reusable

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Why Research Data Management?

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To aid automatic discovery of relevant datasets, (meta)data should be easy to find by both humans and machines and be assigned a persistent identifier.

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Limitations on the use of data, and protocols for querying or copying data are made explicit for both humans and machines.

Interoperable

Reusable

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(Meta)data should use standardised terms (controlled vocabularies), have references to other (meta)data and be machine actionable.

Reusable

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Reusable

(Meta)data are sufficiently well described for both humans and computers to be able to understand them and have a clear and accessible data usage license.

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The Data Management Expert Guide

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The Data Management Expert Guide

- Guide on Research Data Management (RDM)
  - For early career researchers (in the social sciences)
- Provides useful information on RDM in one central place
- Created by CESSDA training team 2017-2020
- Free to use at **www.cessda.eu/dmeg**

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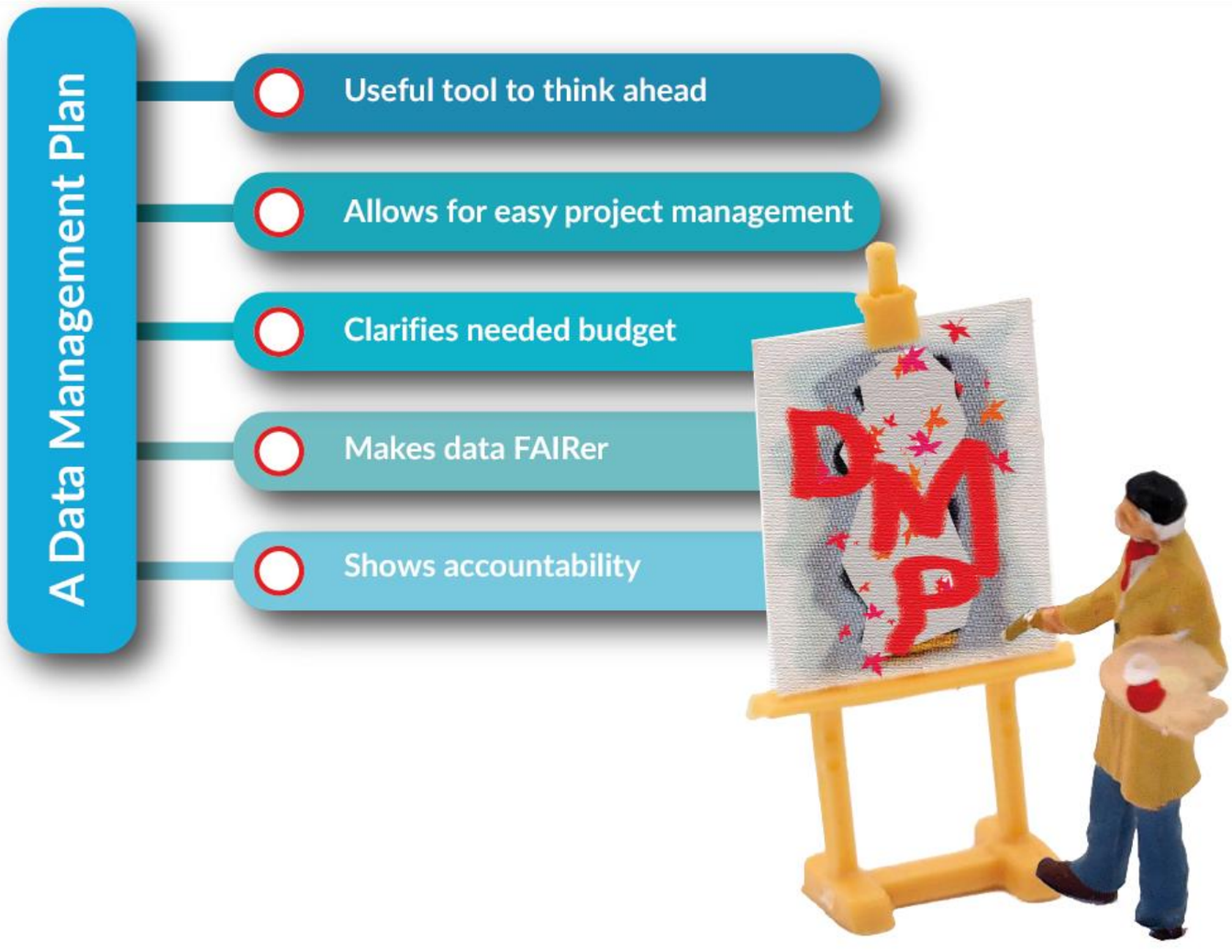
Helps you to create a DMP

- Data Management Plan checklist to answer questions for your own study



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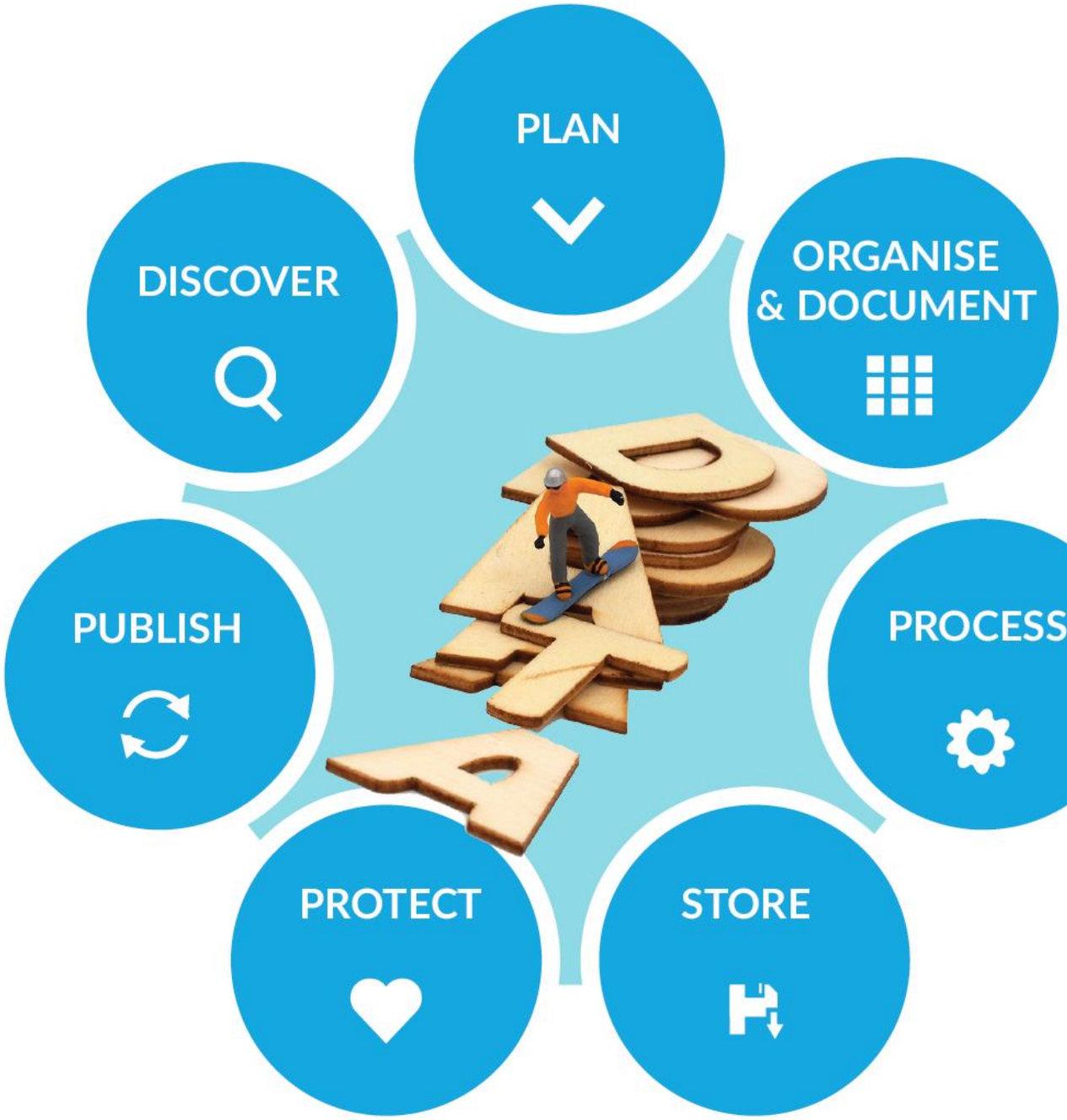
Following the Life Cycle



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A closer look at the DMEG

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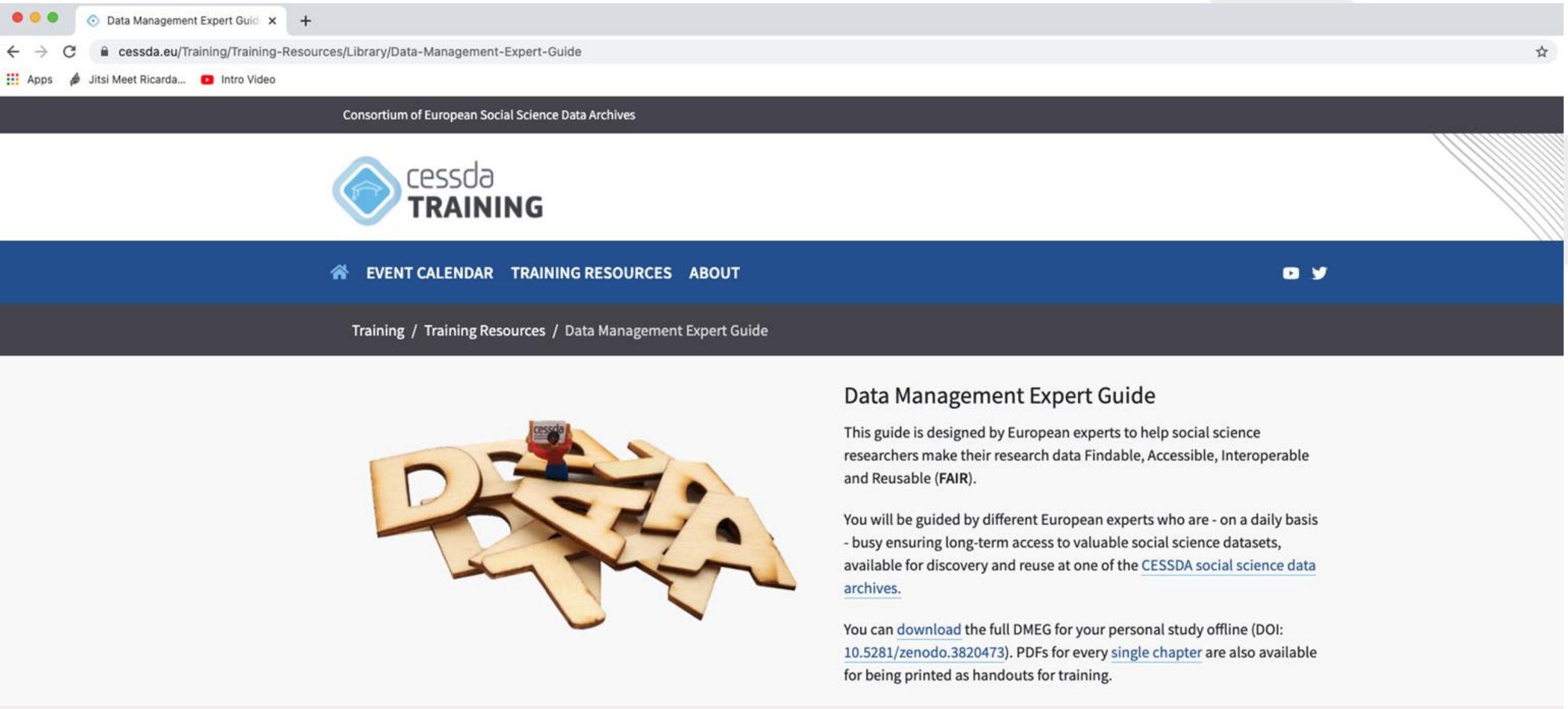
A closer look at the DMEG



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A closer look at the DMEG

This presentation

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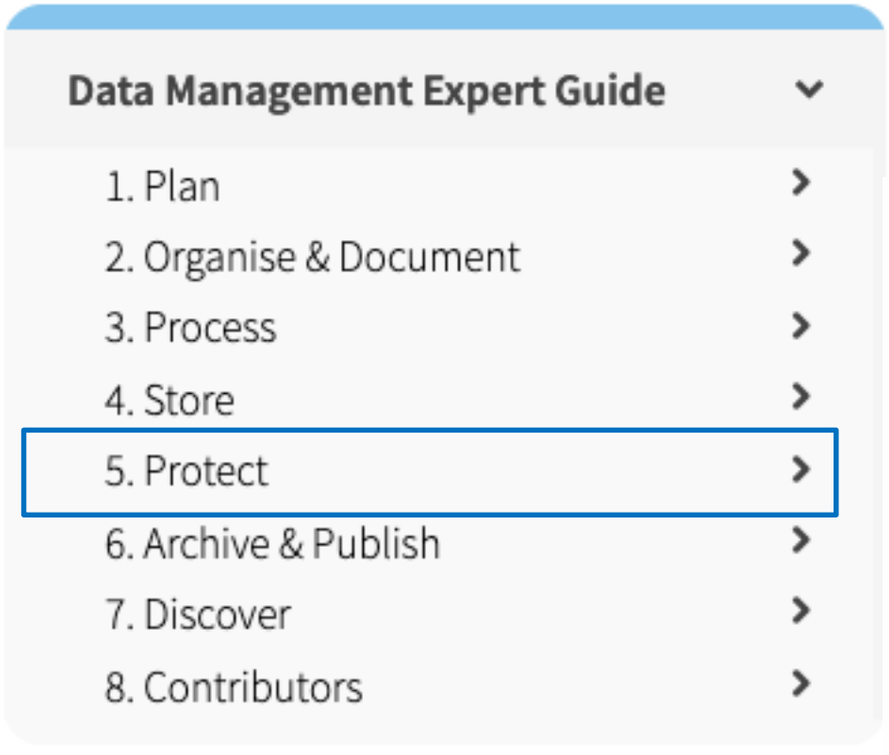
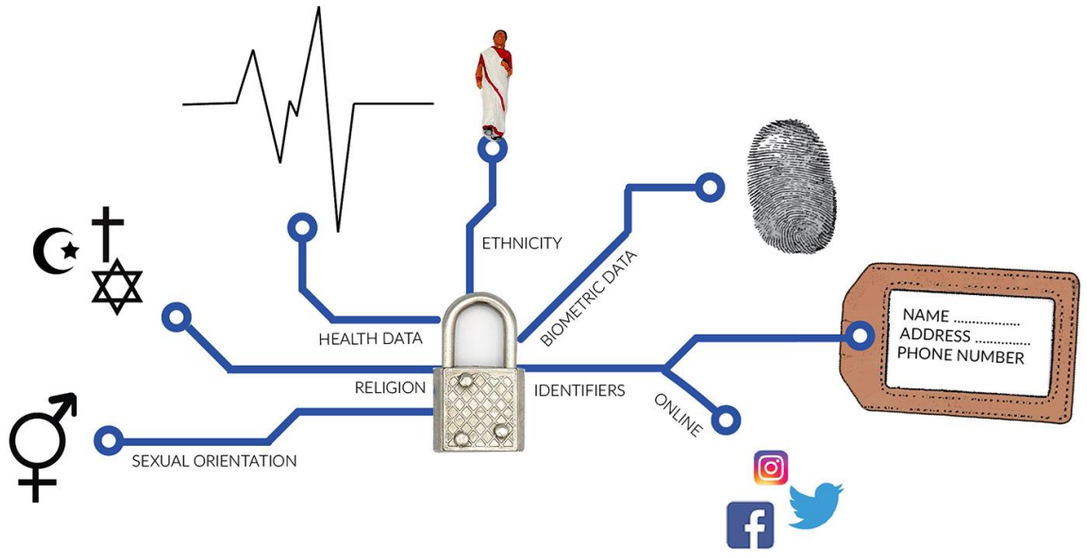
A closer look at the DMEG





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A closer look at the DMEG

Thursday's presentation

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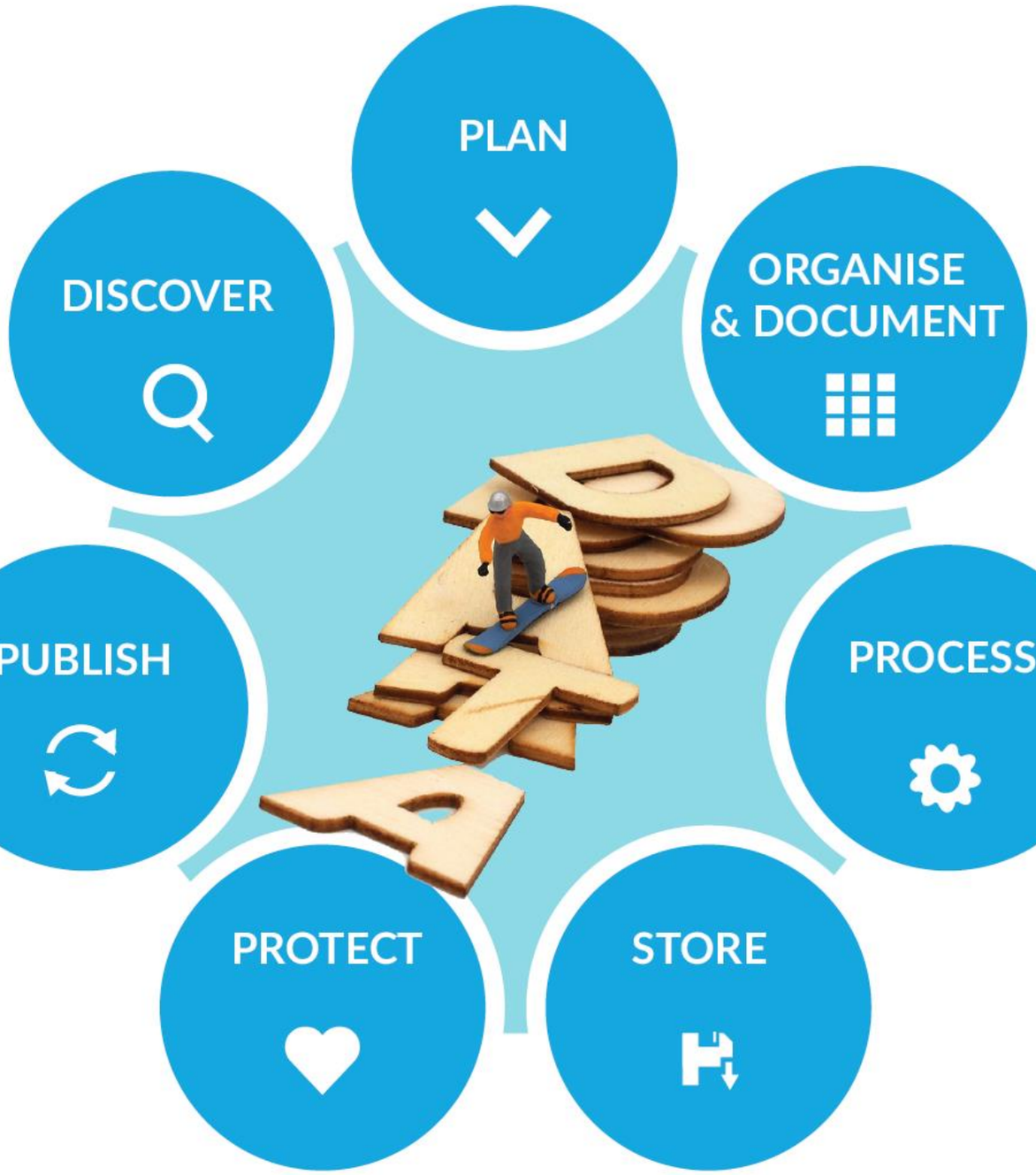
Plan



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Plan

- Describe the project and the data you will collect
- Collect all basic information
- Contact details + ORCIDs* of involved researchers
- Grant information

**ORCID is a persistent identifier (PID) for researchers. Learn more about ORCIDs in this video and PIDs in general in this video*

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Plan

- Collect all basic information
  - Roles and responsibilities

⊖ Project data contact

Who can be contacted about the project during and after it has finished?

⊖ Data owner(s)

- Which organisation(s) own(s) the data?
- If several organisations are involved, which organisation owns what data?

⊖ Roles

- Who is responsible for updating the DMP and making sure that it's followed?
- Do project participants have any specific roles?
- What is the project time line?

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Plan

- Collect all basic information
  - Think about the costs for data storage and management

> ⊖ Costs and Resources
>
> - Are there costs you need to consider to buy specific software or hardware?
> - Are there costs you need to consider for storage and backup?
> - Are potential expenses and resources for (preparing the data for) archiving covered?
> - What resources will be dedicated to data management ensuring that data will be FAIR?

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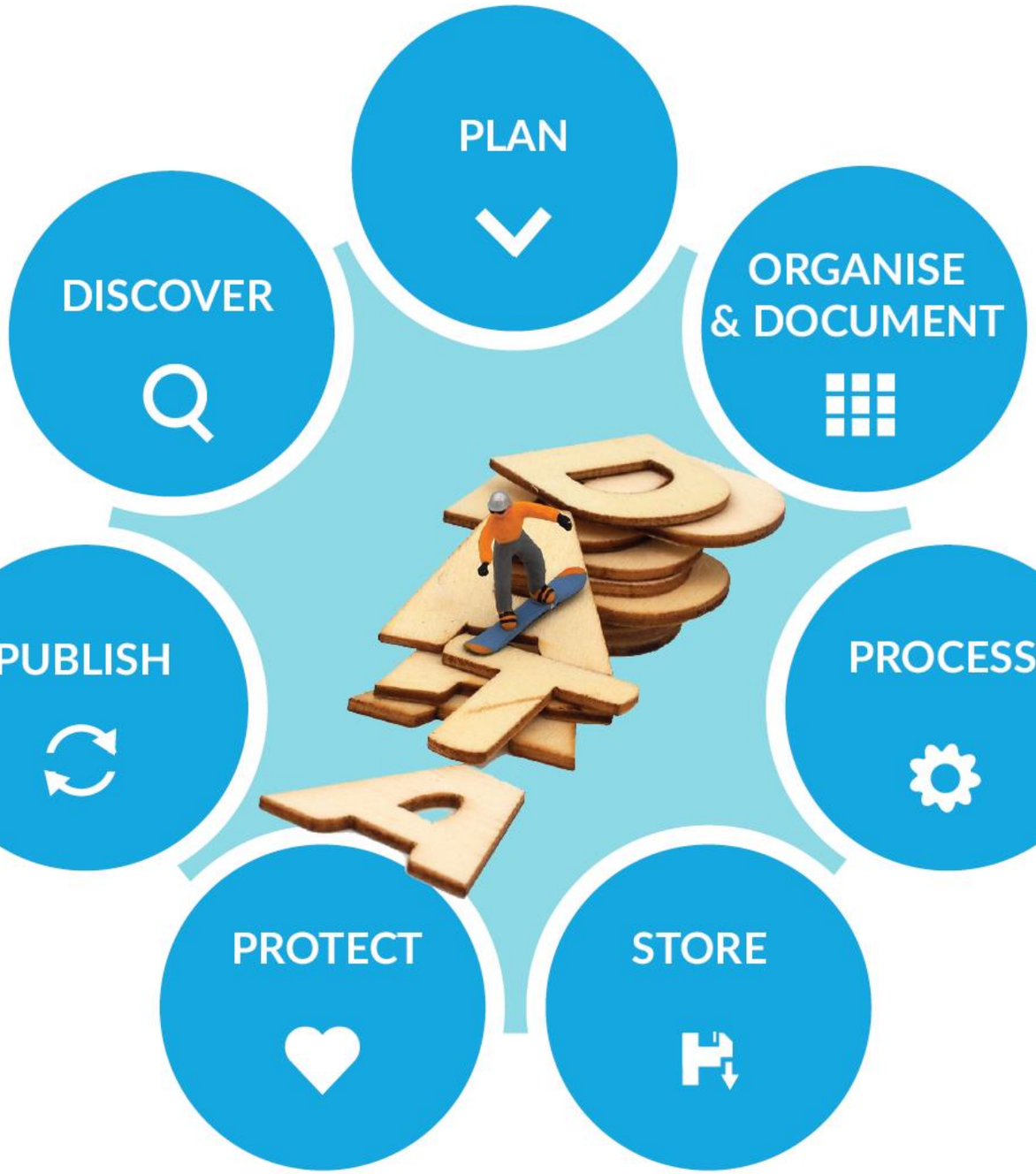
Organise & Document



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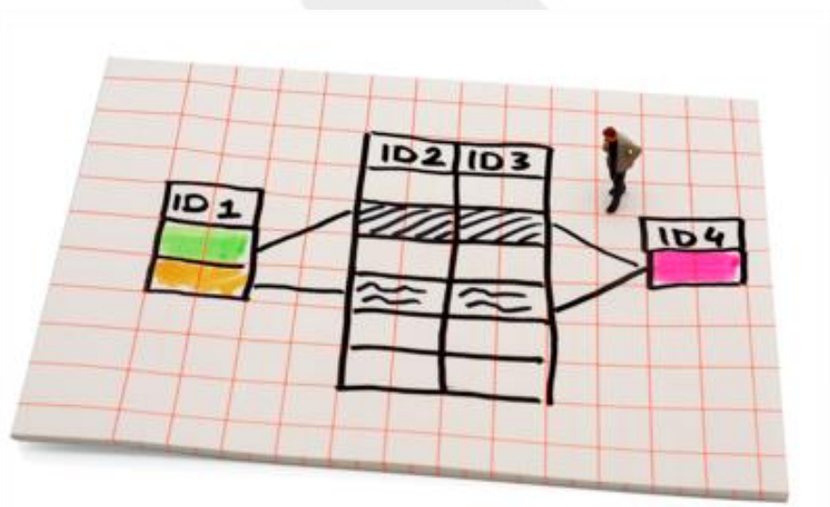
Organize

- Think about file structures
  - Depends on
    - type of data
    - analysis software
    - Linking with other datasets



- DMEG gives examples for qualitative and quantitative data

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Organize

- File naming

Best practice

According to the UK Data Archive (UK Data Service, 2017b), a best practice in naming files is to:

- Create meaningful but brief names;
- Use file names to classify types of files;
- Avoid using spaces, dots and special characters (& or ? or !);
- Use hyphens (-) or underscores (_) to separate elements in a file name;
- Avoid very long file names;
- Reserve the 3-letter file extension for application-specific codes of file format (e.g. .doc, .xls, .mov, .tif);
- Include versioning of file names where appropriate.

Documenting data file conventions

An example of how to document the data file conventions you use:

<date><type><ID1><gender><age><municipality><datatype><ID2>

where:

- <date>is the date on which the data were collected (date format should be YYYY-MM-DD);
- <type> specifies the type of event/data material;
- <ID1> is the ID of the collection event;
- <gender> is the gender of the interviewee;
- <age> is the age of the interviewee;
- <municipality> is the municipality of residence of the interviewee;
- <datatype> specifies the type of data the file contains, for instance, "trans" means transcription, "audio" means audio recording, and "image" means photograph;
- <ID2> is the ID number used to separate the images connected to the collection event.

Organize

- File naming

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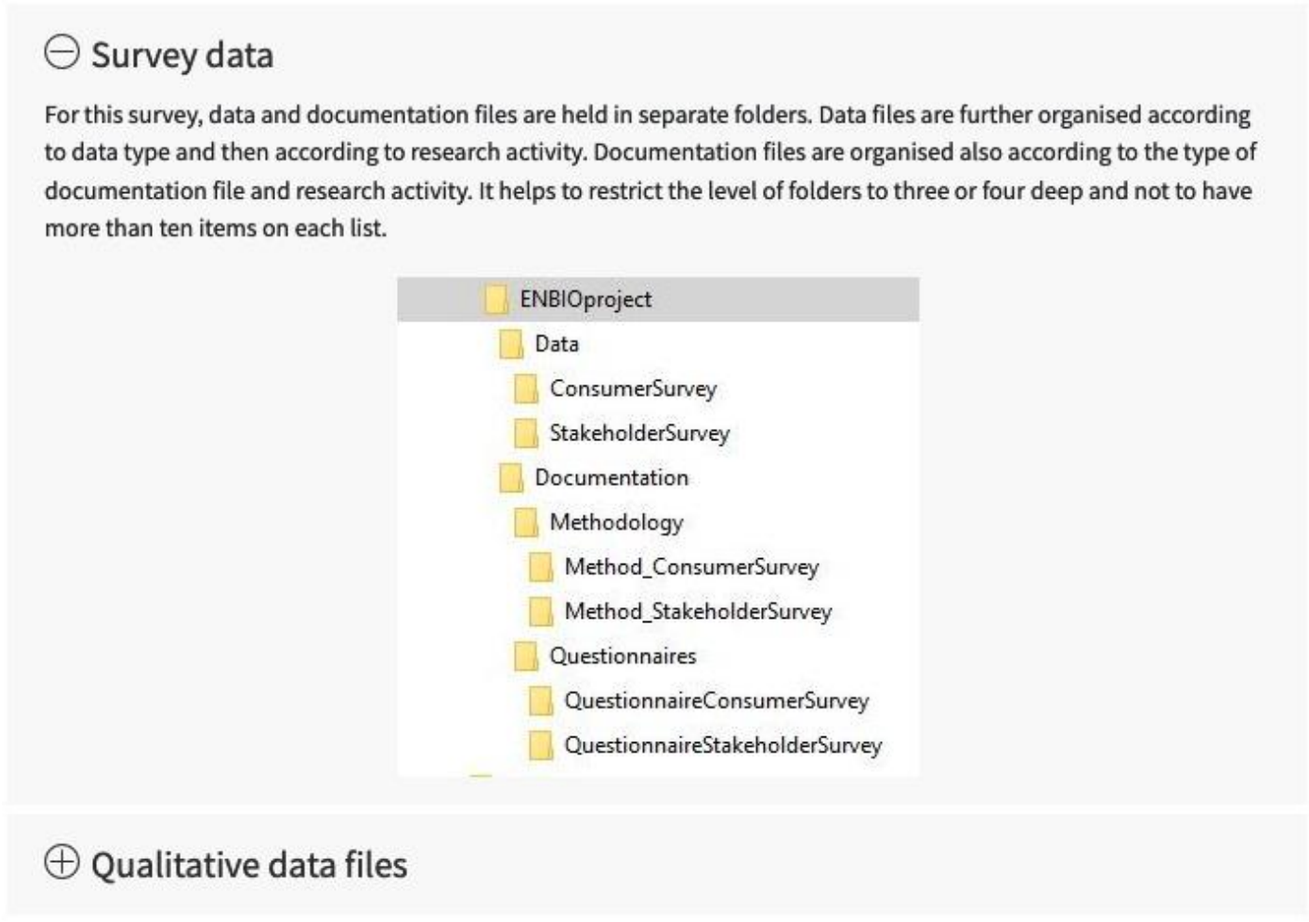
Do not include personal information in filenames!

Organize

- Folder structures
  - Depends on
    - Project structure
    - Data collected
    - Collaborations



- DMEG gives examples for qualitative and quantitative data

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Organize

Metadata is defined as the data providing information about one or more aspects of the data

- Metadata and documentation

Project level details

⊕ 1. For what purpose was the data created

⊕ 2. What does the dataset contain?

⊕ 3. How was data collected?

⊕ 4. Who collected the data and when?

⊕ 5. How was the data processed?

⊕ 6. What possible manipulations were done to the data?

⊕ 7. What were the quality assurance procedures?

⊕ 8. How can the data be accessed?

Data level details

- **Information about the data file**
  Data type, file type, and format, size, data processing scripts.
- **Information about the variables in the file**
  The names, labels and descriptions of variables, their values, a description of derived variables or, if applicable, frequencies, basic contingencies etc. The exact original wording of the question should also be available. Variable labels should:
  - Be brief with a maximum of 80 characters;
  - Indicate the unit of measurement, where applicable;
  - Reference the question number of a survey or questionnaire, where applicable.

→ DMEG gives examples for qualitative and quantitative data

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Organize

- Metadata and documentation → Crucial for FAIR

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Process

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Process

- Minimize errors in data processing → DMEG examples
  - Information on coding
  - Information on weights

Minimising errors in survey data entry

In the accordion below a summary of recommendations on minimising errors in survey data entry is given (UK Data Service, 2017a; ICPSR, 2012; Groves et al., 2004).

- ⊕ Check the completeness of records
- ⊕ Reduce burden of manual data entry
- ⊕ Minimise the number of steps
- ⊕ Conduct data entry twice
- ⊕ Perform in-depth checks for selected records
- ⊕ Perform logical and consistency checks
- ⊕ Automate checks whenever possible

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Process

- File formats
  - Can I open this in 5 years from now?
    - → Some formats are more sustainable than others
- Data archives transform data for you!

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Process

- Data authenticity and versioning
  - Know what happened to the data to ensure high quality
  - Document changes

→ DMEG gives tips on versioning and logging changes

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Store

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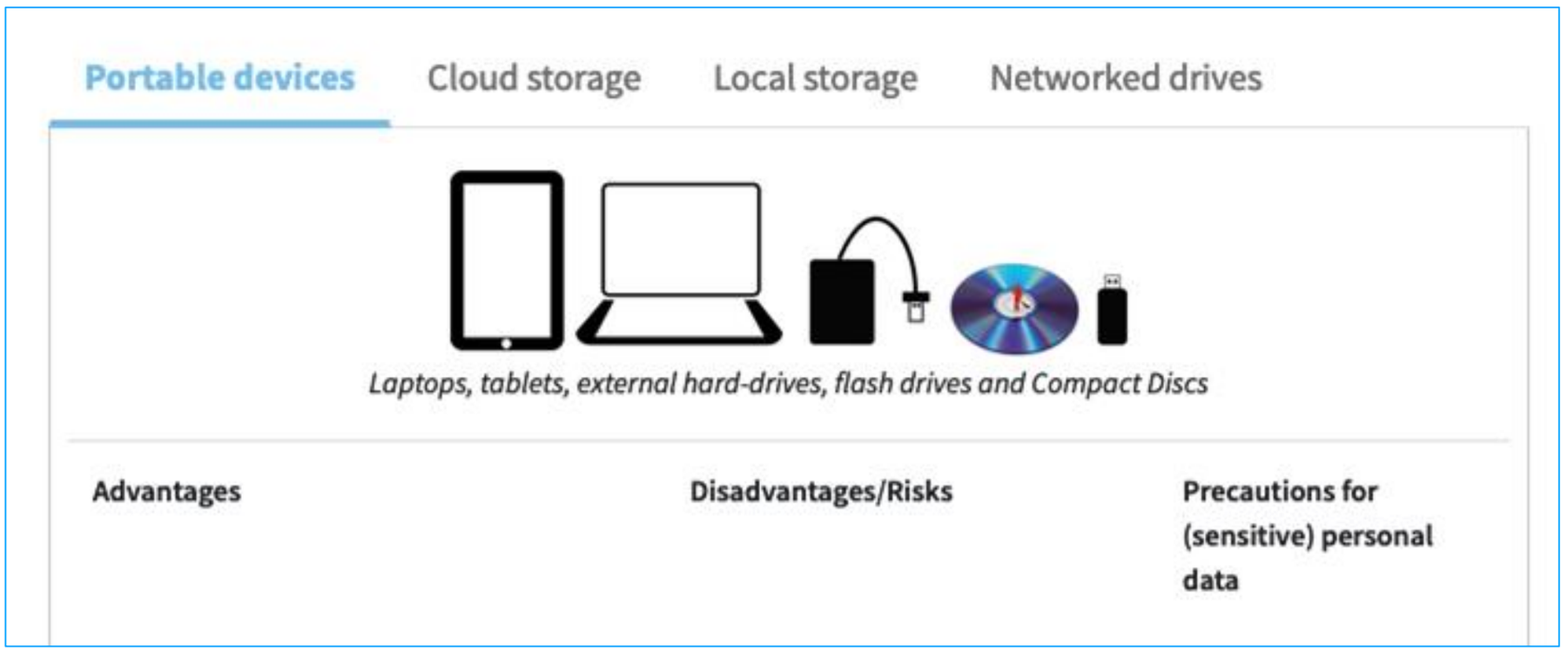
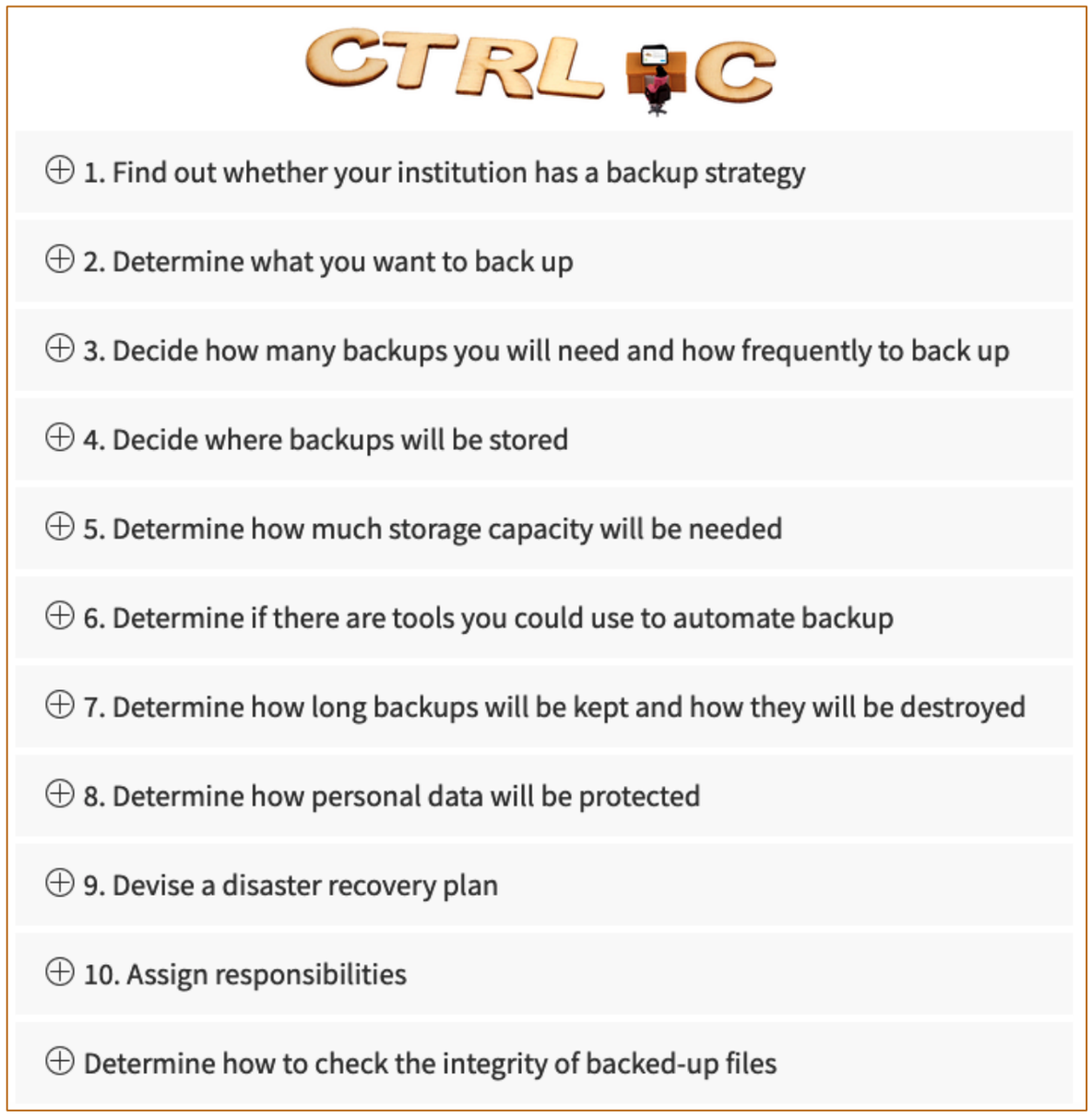
Store

- **Storage** is often organized by your institute → Find out your policies
    - How much space do you need?
    - Who needs access?



Store

- **Backup** is often organized by your institute → Find out your policies



Store

- **Security** is crucial, in particular when working with (sensitive) personal data

⊕ Passwords

⊕ Encryption

⊕ Physical, network and computer security

⊕ Secure disposal

⊕ Organisational aspects

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Store

How do you share (personal) data with your collaborators?

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Thank you for your attention!

ricarda.braukmann@dans.knaw.nl

This workshop is organized by CESSDA-ERIC, ODISSEI and DANS.