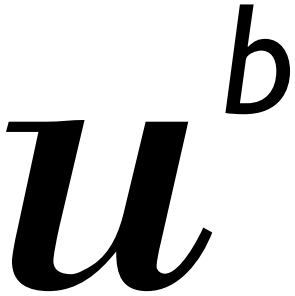

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Data Management Planning

Module 1 Data Acquisition and Management
CAS Applied Data Science, 23.08.2019

Jennifer Morger and Gero Schreier, Open Science Team - University Library Bern

openscience@ub.unibe.ch, www.unibe.ch/ub/openscience

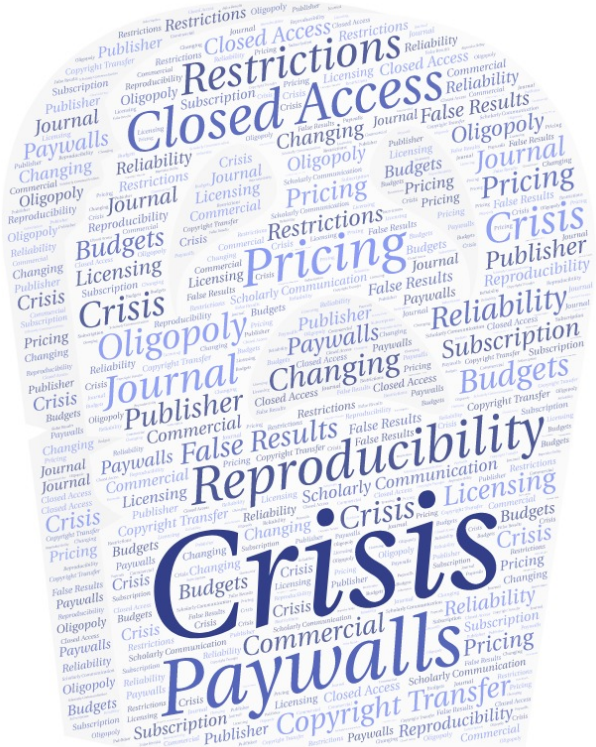
Topics

- Introduction
- Open Science
- Data management
  - General introduction
  - File naming / Folder structure
  - Metadata & Documentation
  - Data protection
  - Storage & Backup
- Data sharing & Reuse
  - General introduction
  - Repository
  - Licenses

Who are we?

Who are you?

Issues


Restrictions
Closed Access
Restrictions
Publisher
Reliability
Closed Access
Restrictions
Closed Access
Commercial
Reliability
Oligopoly
Subscription
Publisher
Journal
False Results
Paywalls
Oligopoly
Changing
Journal
Pricing
Reliability
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Oligopoly
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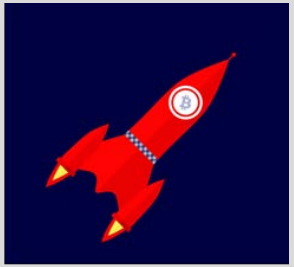
Reproducibility
Commercial

Journal Crisis



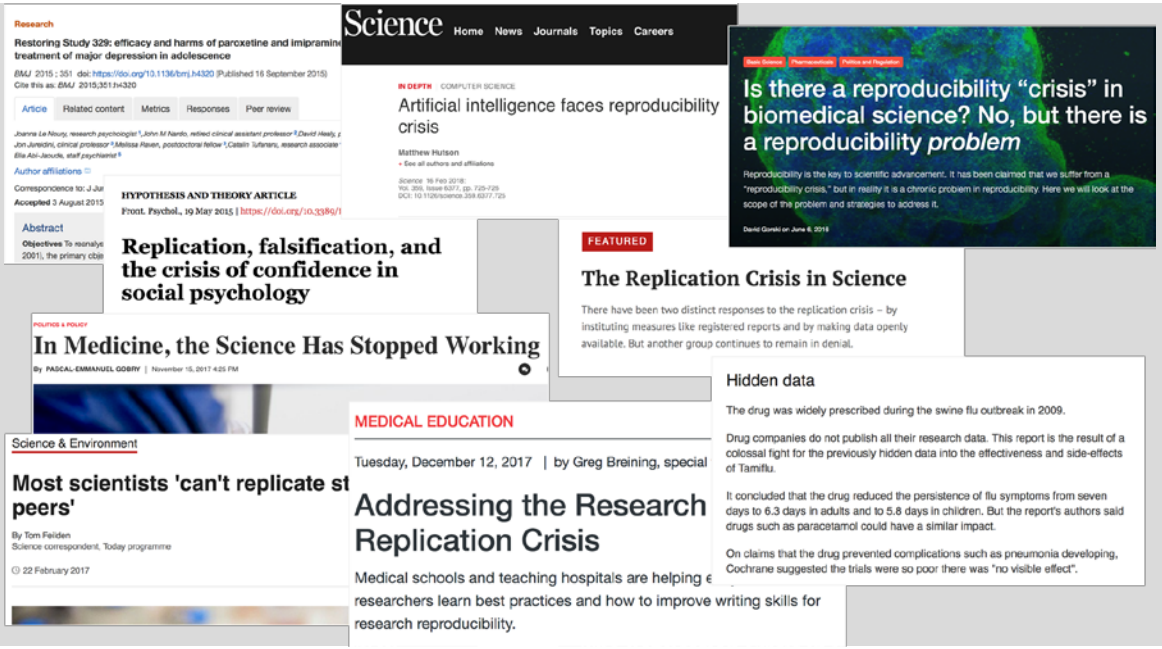
Subscription prices to journals

=

skyrocketing, unsustainable prices

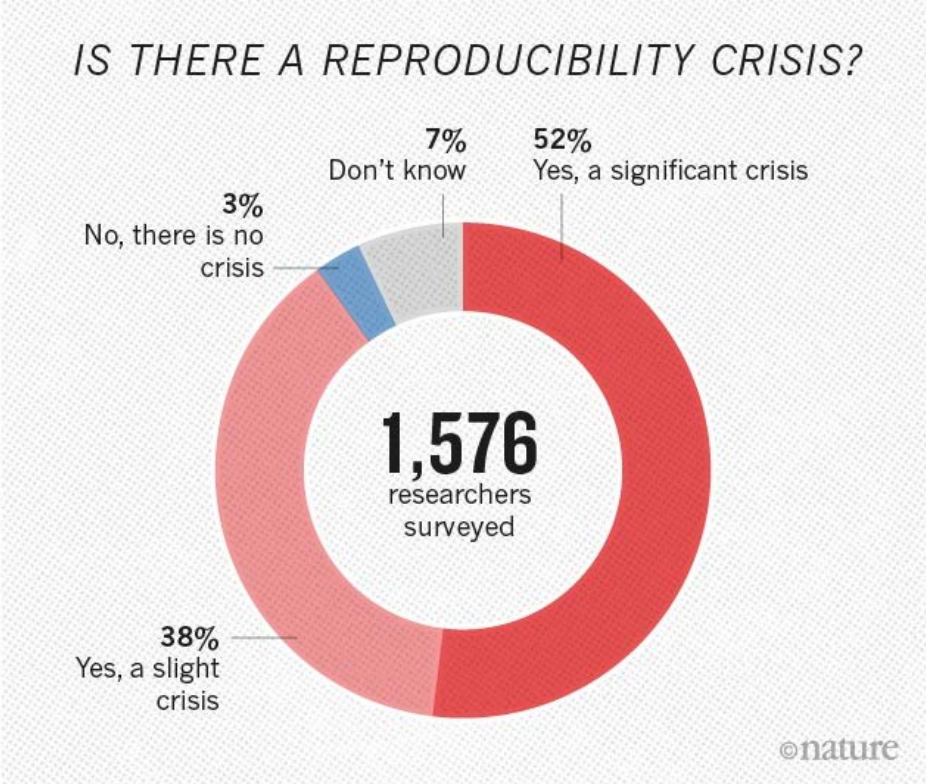
Access gaps

Reproducibility Crisis



Reproducibility Crisis

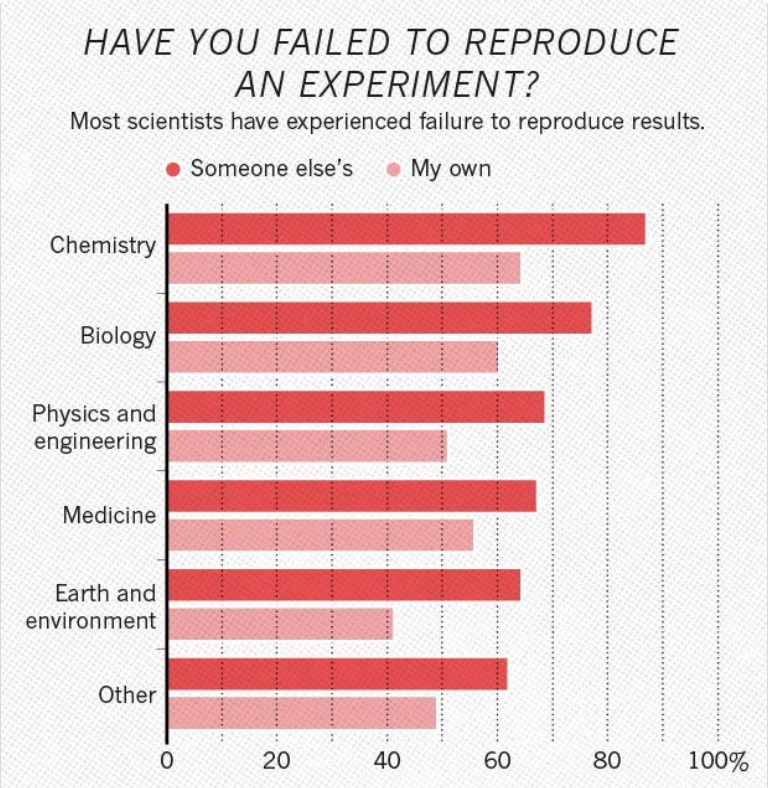
Is There a Crisis?



Monya Baker (2016):1,500 scientists lift the lid on reproducibility. https://www.nature.com/news/1-500-scientists-lift-the-lid-on-reproducibility-1.19970

Reproducibility Crisis

Failed to Reproduce?



Monya Baker (2016):1,500 scientists lift the lid on reproducibility. https://www.nature.com/news/1-500-scientists-lift-the-lid-on-reproducibility-1.19970

Open Science

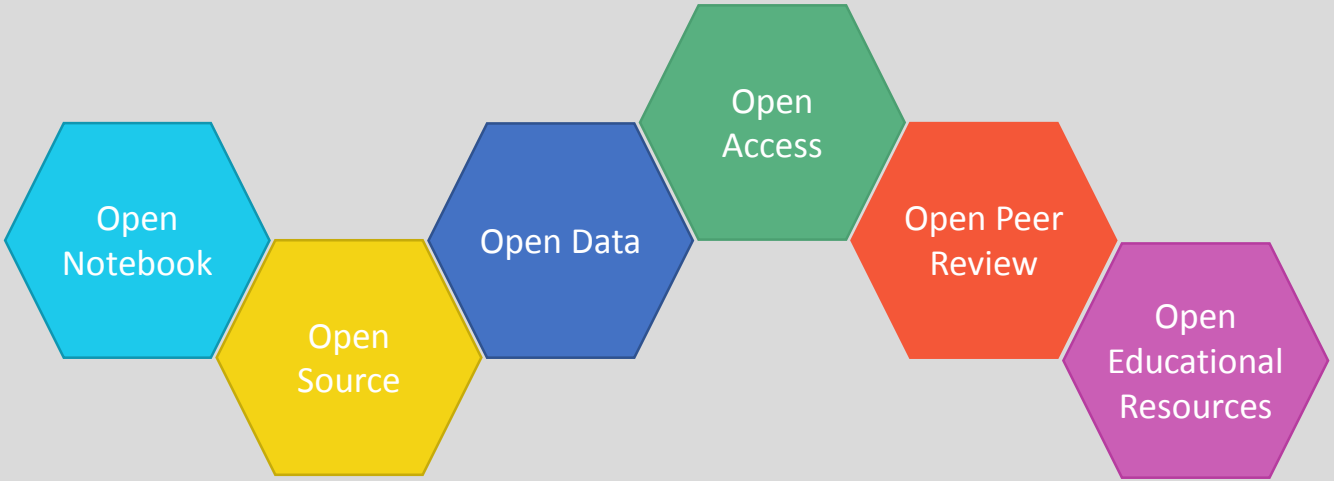
Definition

"*Open Science (OS) [is] the practice of science in such a way that others can collaborate and contribute, where research data, lab notes and other research processes are freely available, under terms that enable reuse, redistribution and reproduction of the research and its underlying data and methods.*"

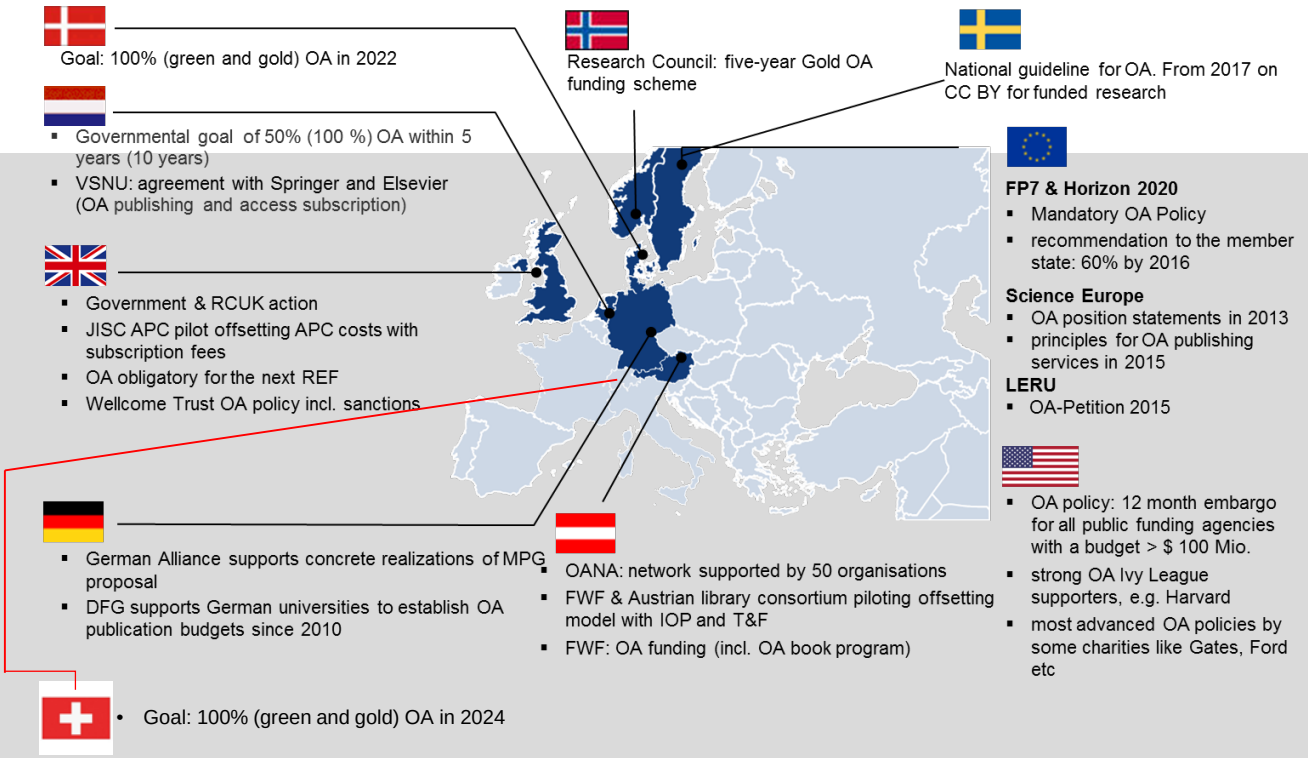
Foster

FOSTER: Open Science Definition. https://www.fosteropenscience.eu/foster-taxonomy/open-science-definition

Open Science



National Strategies – Open Access



Adapted from: Reckling, Falk (2015). Transition to Open Access. The Role of Public Funders and Research Organisations. DOI: 10.5281/zenodo.17272

Open Access Policy

University of Bern

- The University of Bern requires its researchers to deposit a full version of all peer-reviewed and published academic work and the corresponding bibliographical information in the institutional repository of the University of Bern. This makes the academic work publicly available through Open Access, provided that there are no legal obstacles.
- The University of Bern encourages its researchers to publish their research results in Open Access journals, where appropriate journals exist.

University of Bern: Open Access Policy, https://www.unibe.ch/university/services/university_library/services/open_science/open_access/index_eng.html#collapse_pane614213

Funder Guidelines

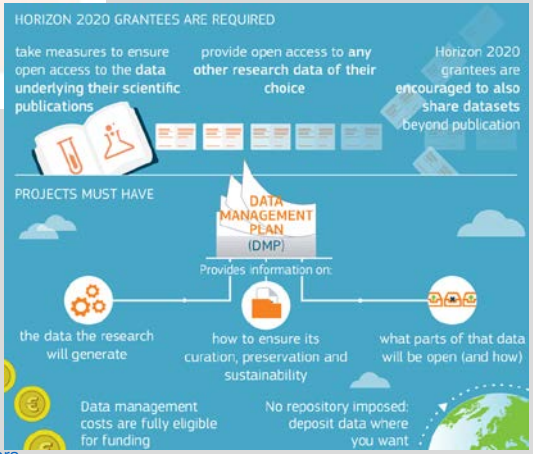
Publications & Data

The results of research financed by public funds are regarded as a public good and should be published electronically so that they are immediately available without charge and can be reused by third parties. The SNSF supports the principle of free accessibility: it has adopted the aim that all publications resulting from its funding will be openly accessible as of 2020.

The Horizon 2020 Open Access Mandate

In Horizon 2020, the European Commission (EC) requires that all peer-reviewed publications resulting from project funding are open access (OA), i.e., freely available online with no restrictions on use.

Research data should be freely accessible to everyone – for scientists as well as for the general public.



OpenAire (2017). Op -factsheet-for-research-administrators

SNSF: Open Access ges/default.aspx

Journals

Data policy - PLoS

UNIVERSITÄT BERN

Data Availability

The following policy applies to all PLOS journals, unless otherwise noted.

PLOS journals require authors to make all data underlying the findings described in their manuscript fully available without restriction at the time of publication. When specific legal or ethical requirements prohibit public sharing of a dataset, authors must indicate how researchers may obtain access to the data.

When submitting a manuscript, authors must provide a *Data Availability Statement* describing compliance with PLOS's policy. If the article is accepted for publication, the data availability statement will be published as part of the accepted article.

Refusal to share data and related metadata and methods in accordance with this policy will be grounds for rejection. PLOS journal editors encourage researchers to contact them if they encounter difficulties in obtaining data from articles published in PLOS journals. If restrictions on access to data come to light after publication, we reserve the right to post a correction, to contact the authors' institutions and funders, or in extreme cases to retract the publication.

Plos: Data availability. http://journals.plos.org/plosone/s/data-availability

Data Management

Introduction

Data Management

Introduction

- General introduction to data management
- Data management in practice:
  - File naming, folder structuring
  - Documentation and metadata
  - Data protection

Data Management

A definition

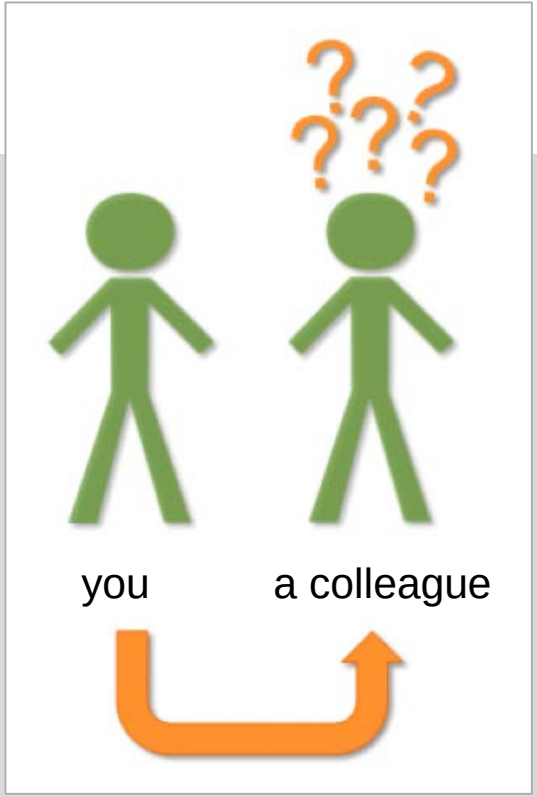
“Administrative process by which the required data is acquired, validated, stored, protected, and processed, and by which its accessibility, reliability, and timeliness is ensured to satisfy the needs of the data users.”

BusinessDictionary
http://www.businessdictionary.com/definition/data-management.html

Data Management

Why?

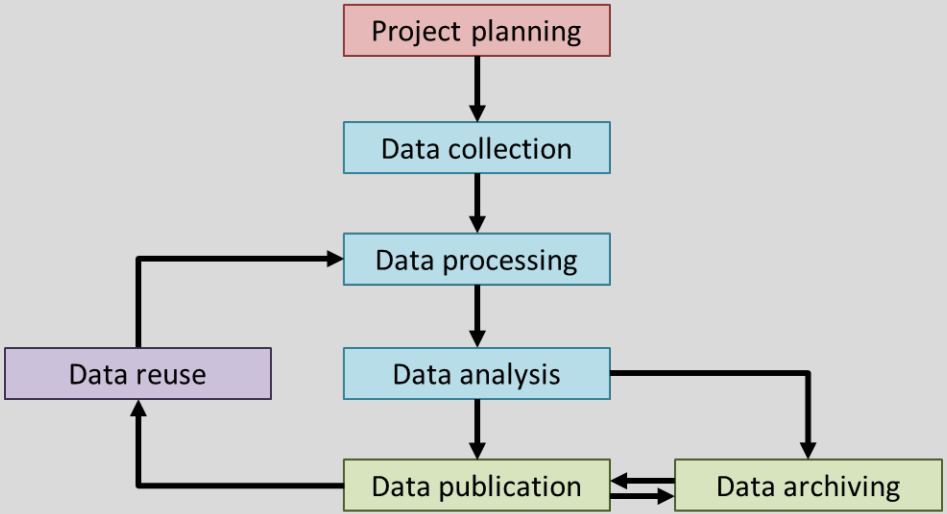
Help others to make sense of your data – and yourself at a later point!



Christine Malinowski, Data Management: File Organization, LIT Libraries, 24.07.2019, CC BY.

Data Management

Data Life Cycle

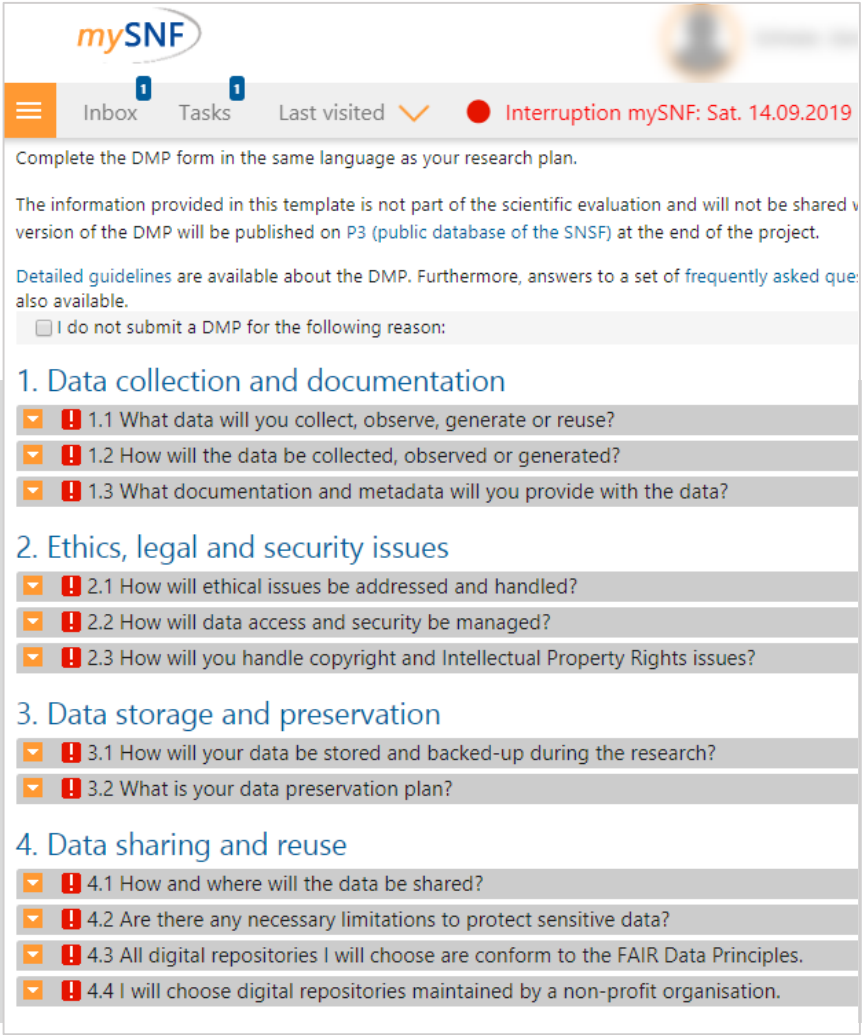


Lifecycle adapted from DDI version 3.0 Combined Life Cycle Model

Data Management

DM Planning

- requirement by major research funders
- helps you to …
  - keep track
  - address all relevant questions systematically and in advance
- DMP as a «living document»



Data Management

How not to: a Data Management horror story

https://www.youtube.com/watch?v=N2zK3sAtr-4, NYU Health Sciences Library, CC BY

Data Management

- What experiences do you have with data management?
- Can you relate to the issues raised in the video?
- Were/are you facing special challenges with your data (e.g. volume, sensitivity …)?

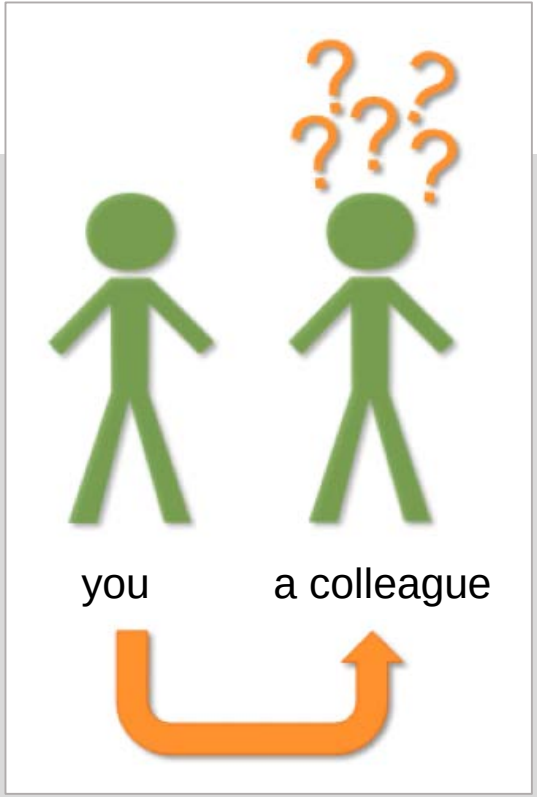
Organization and Naming Convention

https://www.flickr.com/photos/denverjeffrey/1950409800, CC BY ND Jeffrey Beall

Data Management

Why?

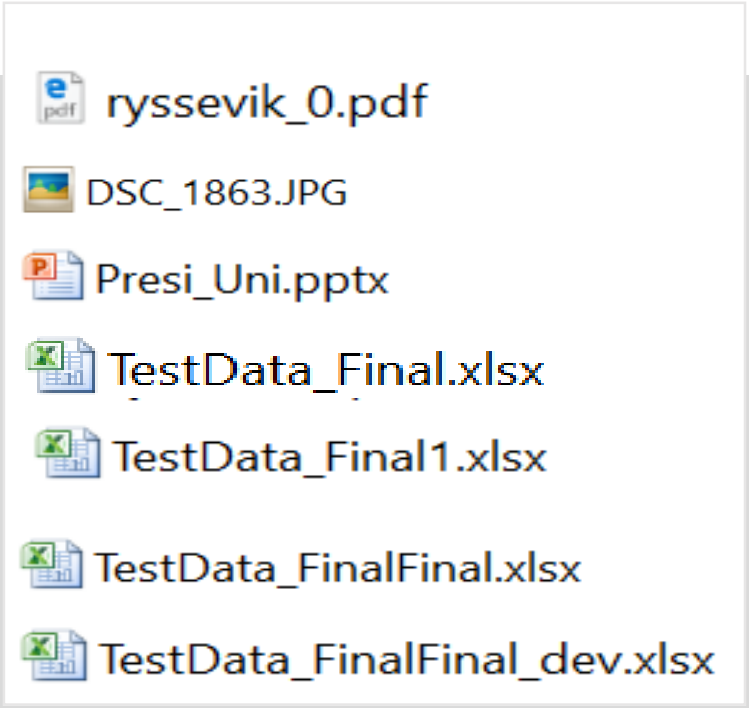
Help others to make sense of your data – and yourself at a later point!

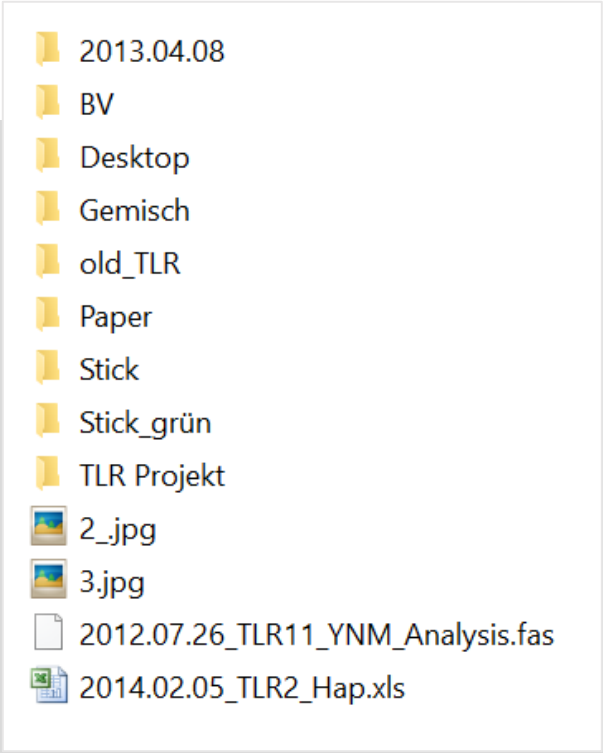


Christine Malinowski, Data Management: File Organization, LIT Libraries, 24.07.2019, CC BY.

Organizing your data

How not to





Organizing your data

Best practices

- Be systematic and consistent
- Start early
- Balance between too much and too little
- Who will the system have to work for: You? Lab Group? Collaborators?

S. Macdonald, Organising and Documenting Data, https://mantra.edina.ac.uk/libtraining.html

Organizing your data

Basic principles – overview

1. Directory structure
2. File naming conventions
3. File version control

Organizing your data

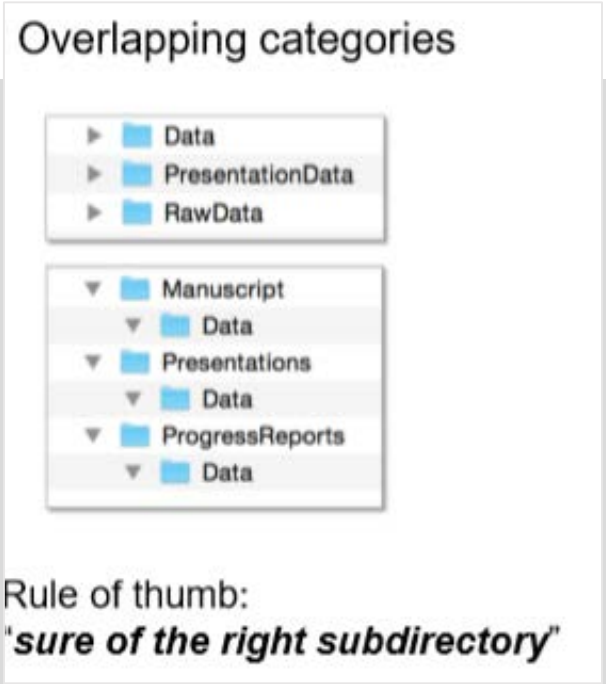
Basic principles – overview

1. Directory structure
   a. Folders and subfolders
   b. Tagging
2. File naming conventions
3. File version control

Structuring your data

Folders and subfolders

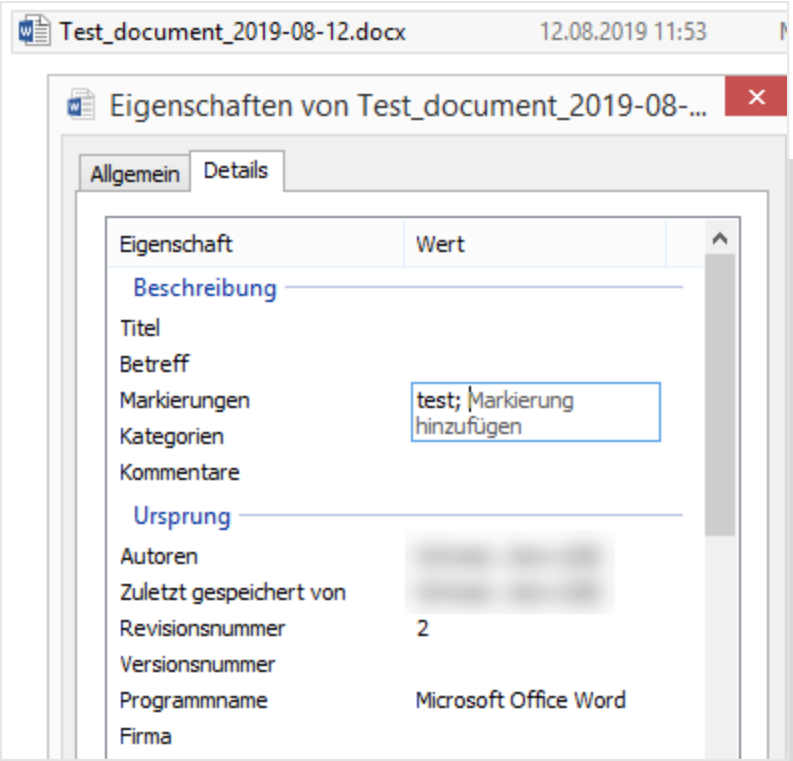
- Avoid overlapping categories
- Don’t let your folders get too big (“fit in one screen”)
- Don’t let your structure get too deep (“no more than 4 clicks”)
- Use shortcuts
- keep track of your structure



Structuring your data

Tagging

- include tags for date and status (“done, pending,” etc.)
- be consistent (wording, spelling): create a master list
- one tag: max. 2 words
- tagging supported by OS vs. tagging tools (e.g. TagSpaces)



Structuring your data

Advantages and drawbacks of strategies

Strategy	Advantages	Drawbacks
Folders and subfolders	+ good represention of information structure + Similar items stored together	- 1 item, 1 place - Difficult to change once set up
Tagging	+ 1 item, several places + Easier to set up and change	- Risk of inconsistency - May be difficult to implement technically

Structuring your data

Tips

- Combine folders and tags
- Use tags / folders for uncharacterized files
- Use an archive folder
- Reassess your structure periodically
- Use your structure – don’t collect files on your desktop ;)

https://www.iqbginc.com/starting-records-management-program/

Slides based on: MIT Libraries: File Organization, https://ocw.mit.edu/resources/res-str-002-data-management-spring-2016/index.htm

Structuring your data

Task – 10 minutes

Please create a folder structure using the following criteria. Work in groups of 2 or 3. The folder naming is up to you.

a. You are working on a survey project together with a colleague.

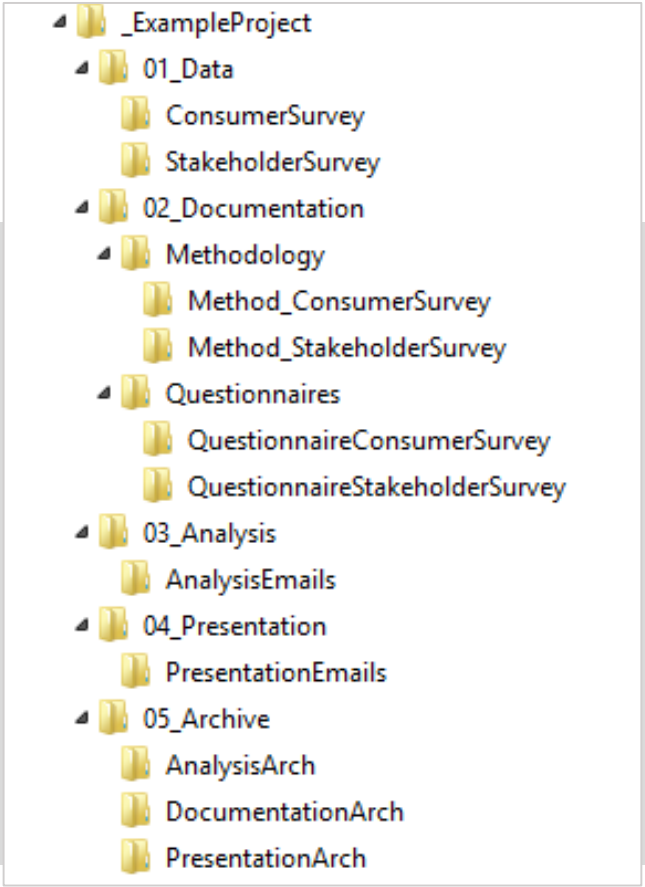
b. The project involves data of a consumer and a stakeholder survey. Both surveys have different methodologies and questionnaires.

c. You are working on a presentation of survey results for a team meeting and a more lengthy analysis for your superior. Sometimes your colleague sends you new file versions via email.

d. You foresee that you will be working on the project for half a year. You will be revising questionnaires, methodologies and analyses several times and produce many new versions.

Structuring your data

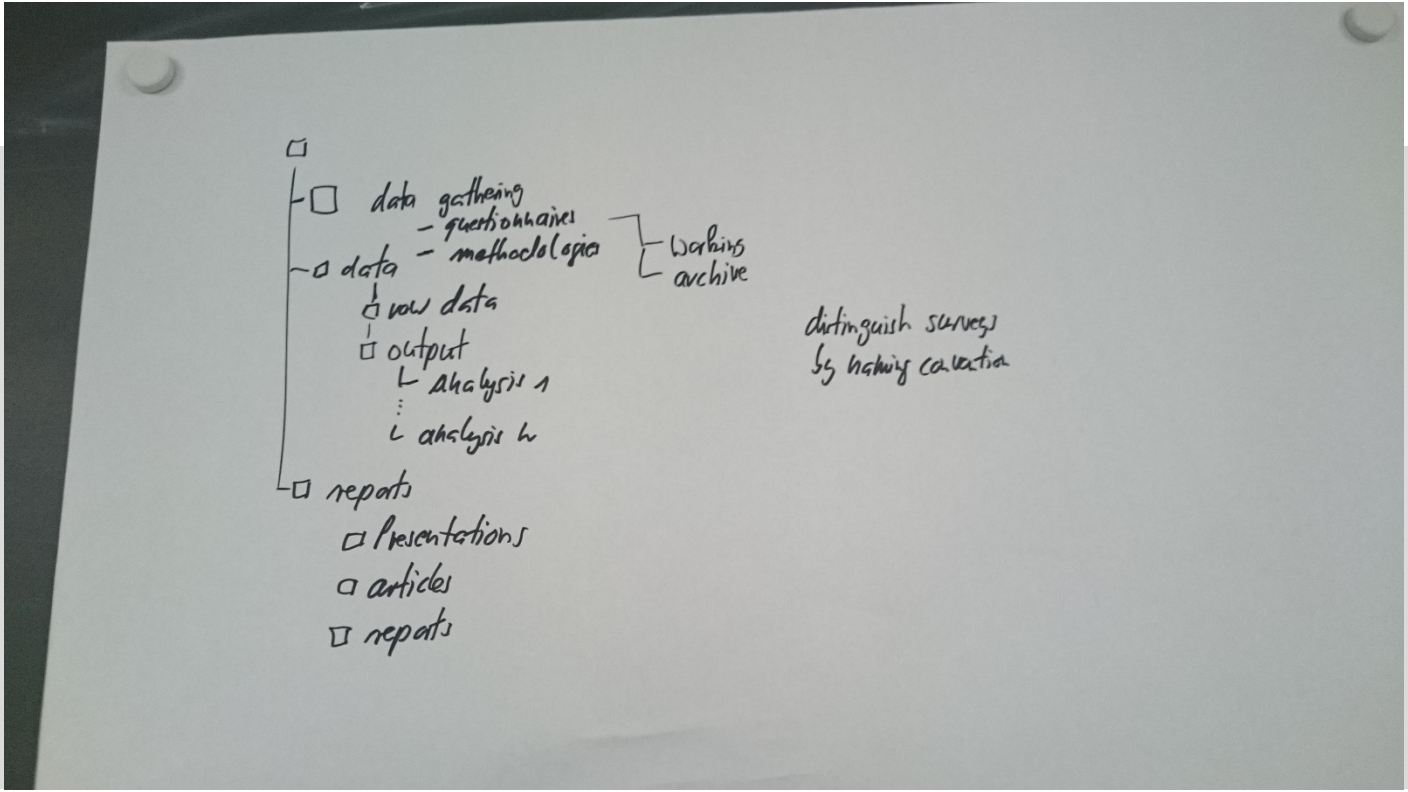
Task – possible answer



based on https://www.cessda.eu/Training/Training-Resources/Library/Data-Management-Expert-Guide/2.-Organise-Document/File-naming-and-folder-structure, example survey data

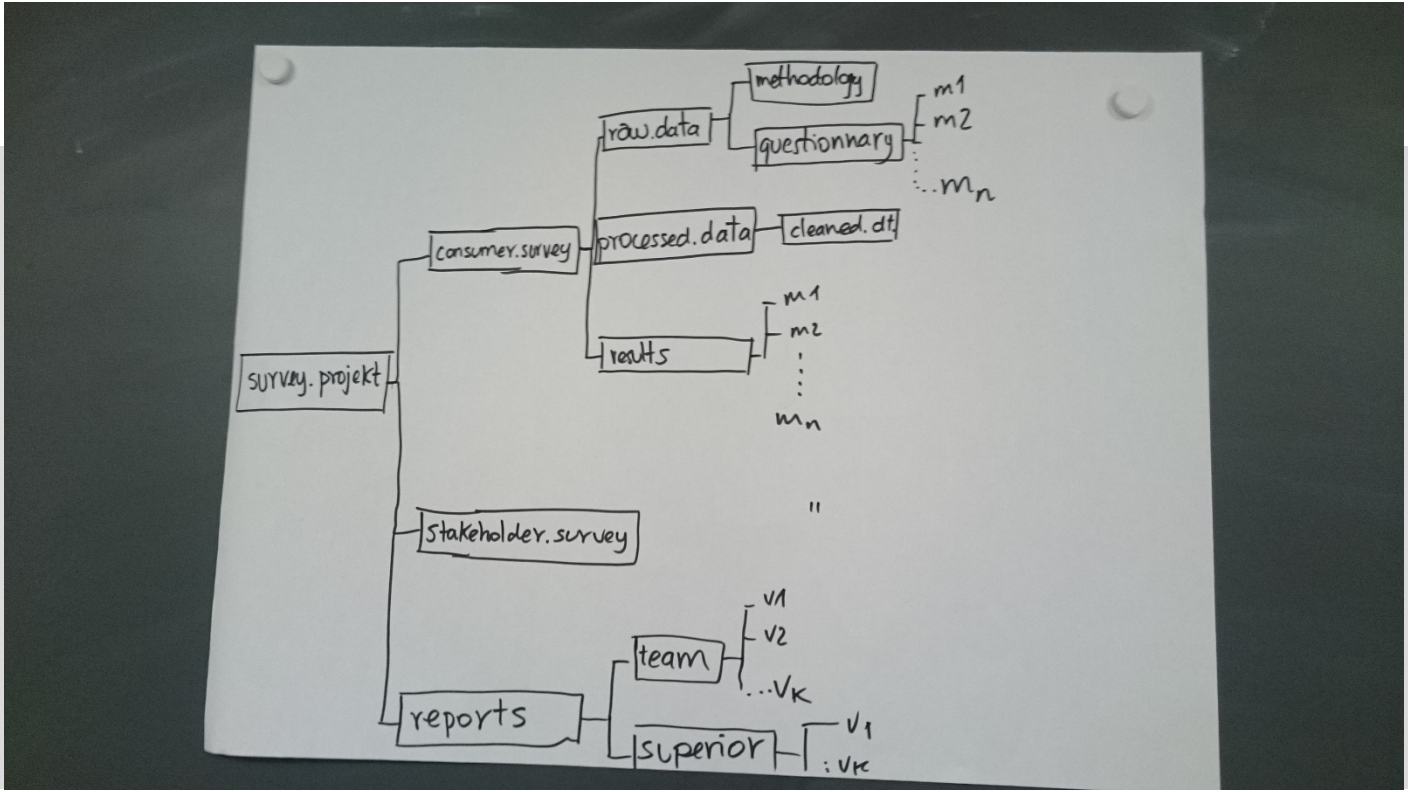
Structuring your data

Group 1



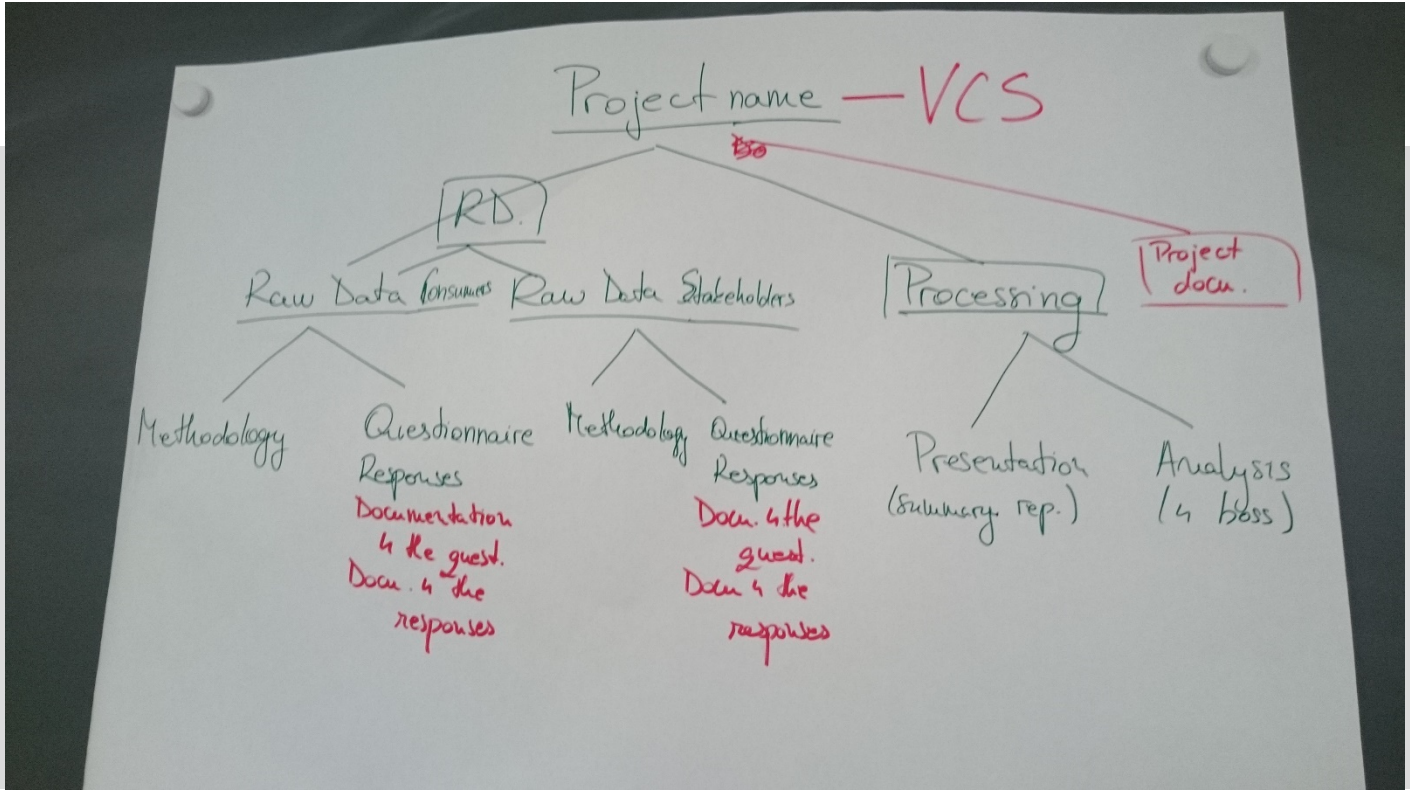
Structuring your data

Group 2



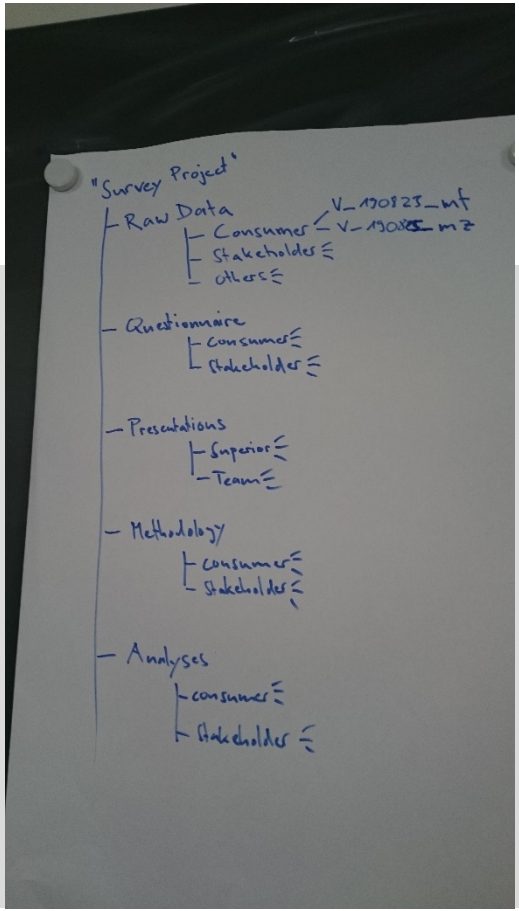
Structuring your data

Group 3



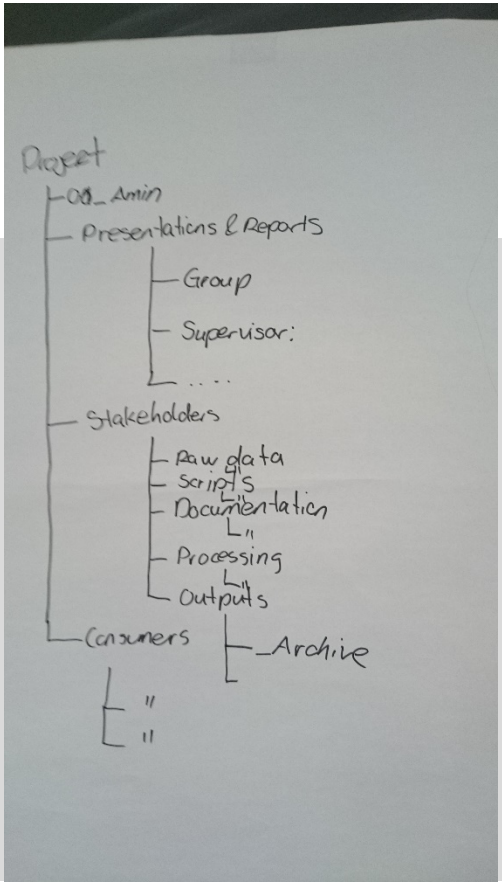
Structuring your data

Group 4



Structuring your data

Group 5



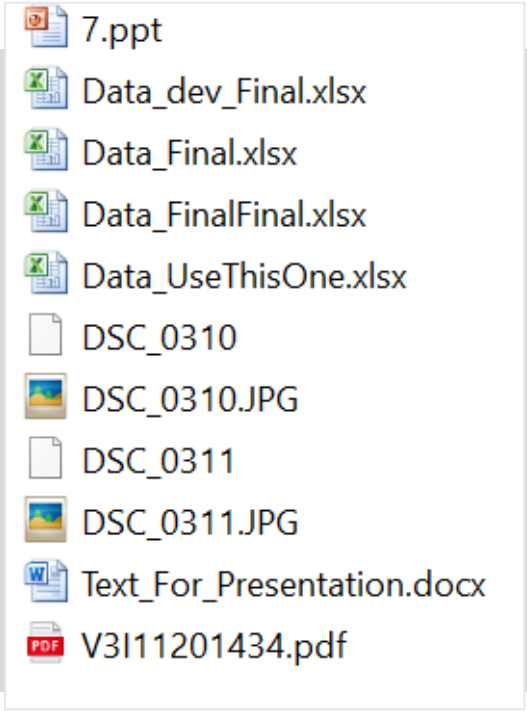
Organizing your data

Basic principles – overview

1. Directory structure
2. File naming conventions
3. File version control

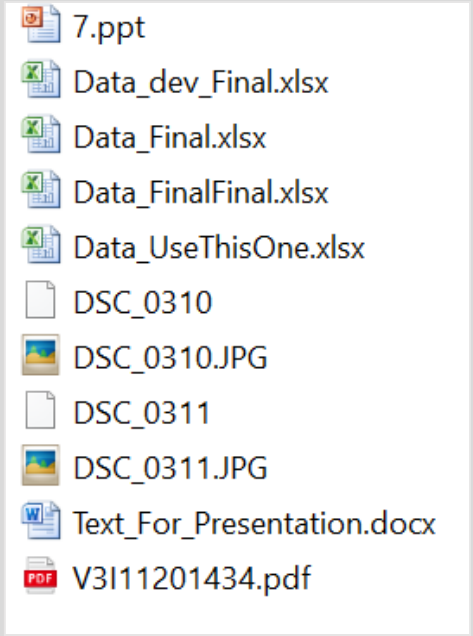
Organizing your data

File Naming



Organizing your data

File Naming Task – 10 minutes



Work in groups of 2-3. Develop a naming convention for your files.

- What are some general considerations when chosing a file name?
- Which parts should it contain?
- Determine the sequence of the components and explain why.
- Where would you document your naming convention?

File Naming Conventions

Tips

Include
- name or initials
- Date
- Version number
- Unique identifier (e.g. project number)
- Project name

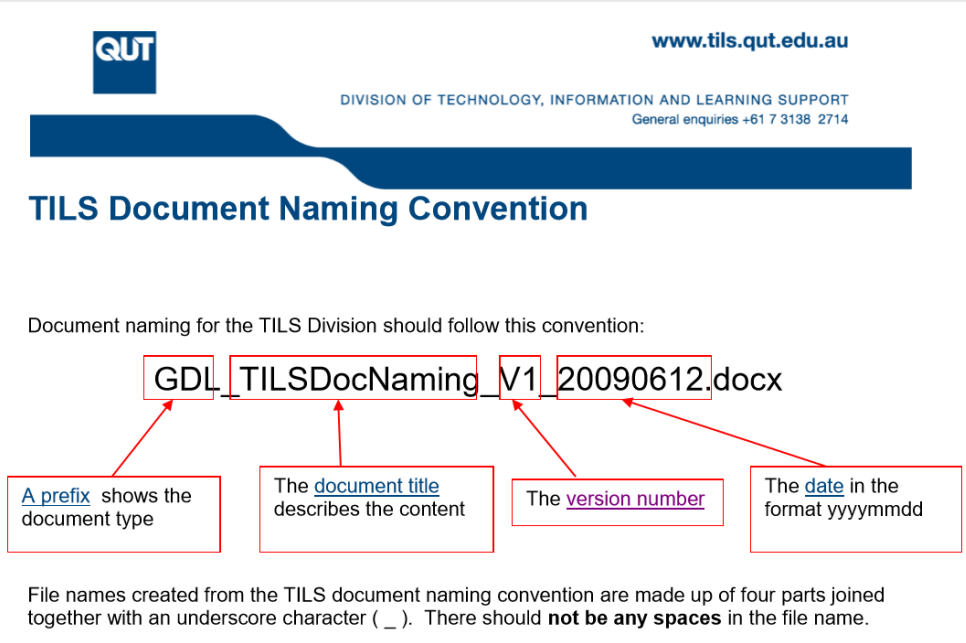
Avoid
- spaces (use hyphens or underscores)
- special characters (e.g. & ( ) [ ] “)

Document your convention (readme-file)

https://library.stanford.edu/research/data-management-services/data-best-practices/best-practices-file-naming

File Naming Conventions

Example: TILS



QUT

www.tils.qut.edu.au

DIVISION OF TECHNOLOGY, INFORMATION AND LEARNING SUPPORT
General enquiries +61 7 3138 2714

TILS Document Naming Convention

Document naming for the TILS Division should follow this convention:

GDL_TILSDocNaming_V1_20090612.docx

A prefix shows the document type

The document title describes the content

The version number

The date in the format yyyymmdd

File names created from the TILS document naming convention are made up of four parts joined together with an underscore character (_). There should **not be any spaces** in the file name.

https://www.data.cam.ac.uk/files/gdl_tilsdocnaming_v1_20090612.pdf

File Naming Conventions

Example: TILS

GDL_TILSDocNaming_V1_20090612.docx

PRE_LibDatabaseMgmt_V1_20090124.ppt

Prefix	Meaning
AGD	Agenda
AGR	Agreement
GDL	Guideline
MEM	Memorandum
MIN	Minutes and Notes
PRE	Presentation
PRO	Procedure
PRP	Proposal
REP	Report
TEM	Template

File Naming Conventions

Example: TILS

GDL_TILSDocNaming_V1_20090612.docx

- Version 1 of the TILS Document Naming guidelines prepared on the 12th of June 2009

PRE_LibDatabaseMgmt_V1_20090124.ppt

- A powerpoint presentation about database management prepared by the Library on the 24th of January 2009

https://www.data.cam.ac.uk/files/gdl_tilsdocnaming_v1_20090612.pdf

File Naming Conventions

Example: Stanford Best Practice

FR3S.140623.129C.2653.W.JPG

File Naming

Example: Stanford Best Practice

Info tracked & the convention used

The researchers wanted to track several things about the tiles:

1. **Study site.** Indicated by the name, ex. FR3, FR7, FR9.
2. **Depth of the water.** Indicated by S (shallow), M (middle), or D (deep).
3. **Date.** Indicated by YYMMDD.
4. **Tile number.** Indicated on the tile.
5. **Tile treatment.** Indicated by C (caged) or U (uncaged).
6. **Number assigned to photo by camera.**
7. **Whether the post-removal photo was of the entire tile or a tile section.** Indicated by W (whole area), A (upper right), B (lower right), C (lower left), or D (upper left).

Example: FR3S.140623.129C.2653.W.JPG

This was image 2653 of whole, uncovered tile 129 from study site 3 in shallow water, taken on June 23, 2014.

 Stanford Libraries, Part of File naming Best Practices https://library.stanford.edu/research/data-management-services/data-best-practices/best-practices-file-naming

File Naming Conventions

Renaming Files - Tools

Batch/bulk renaming tools e.g.:

- Ant Renamer (Windows)
- Renamer 5 (Mac)
- GNOME Commander (Linux)

Tips:

- make sure the software doesn't change the file format
- keep track of original file names

Organizing your data

Basic principles – overview

1. Directory structure
2. File naming conventions
3. File version control

Organizing your data

Version Control

GDL_TILSDocNaming_V1_20090612.docx

- Version 1 of the TILS Document Naming guidelines prepared on the 12th of June 2009

- Revert to previous versions
- Find out what is different between two versions
- Find out what has changed in a specific time period
- Manage multiple versions
- Work with multiple people on the same files
- Transparency and integrity

Version Control

How to – simple

Versioning in file names

- Ordinal numbers for major and decimals for minor changes → file_V1-2
- Use dates to distinguish between versions or add to version numbers → file_V1-2_2019-08-13
- Use the label “final” – but only once ☺ → file_V1-2_2019-08-13 file_V1-3_final

Version Control

How to – simple

Tips

- Use an archive folder
- Delete versions you don’t need anymore
- document your convention (readme-file)

Version Control

How to – elaborate

Versioning systems

- Git
- Mercurial
- Bazaar
- Darcs

… for text or table files

- automated versioning in cloud applications (Office 365, GoogleDocs)
- other software, e.g. Word 2016-19, Simul

Organizing your data

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Any Questions?

Metadata & Documentation

Metadata

What is it?

- Commonly described as “data about data”
- Structured information that conforms to standards
- Make data findable, reusable and citable
- For a dataset e.g.: Title, Creator, Description, Format, Rights,…
- Metadata schemas: e.g. Dublin Core, Data Cite

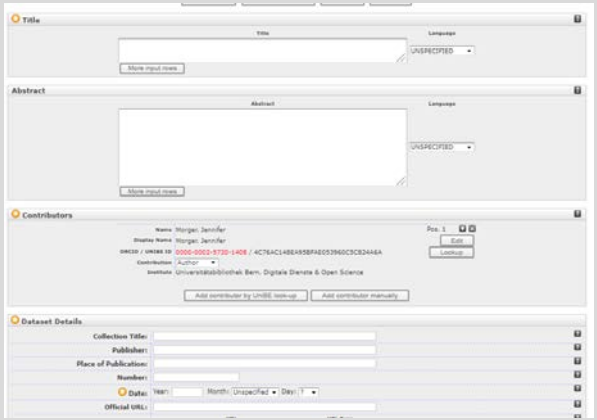
Metadata

Where is it?

- In your raw/processed data
- Manual input
- Automatic input (from lab tools)
- In your documentation [Readme.txt, log files, Info files, Submitting interface]
- File & folder name
- In a data repository [where you will deposit your data]

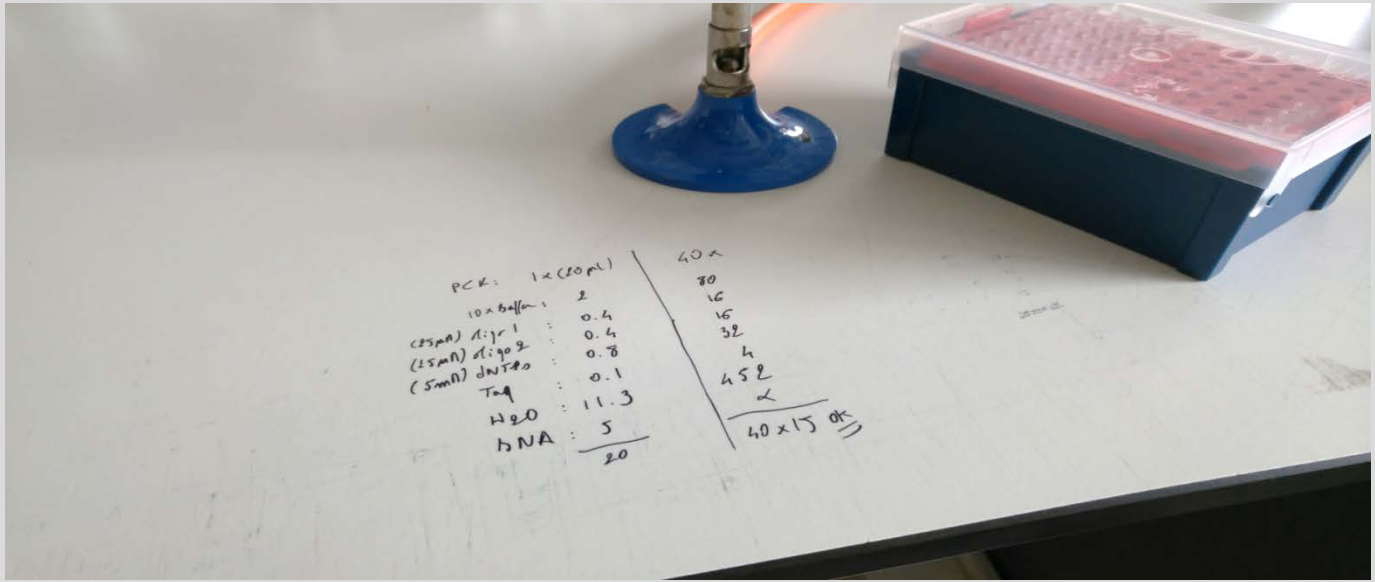
Metadata

In a Repository



Documentation

How do I document?



Documentation

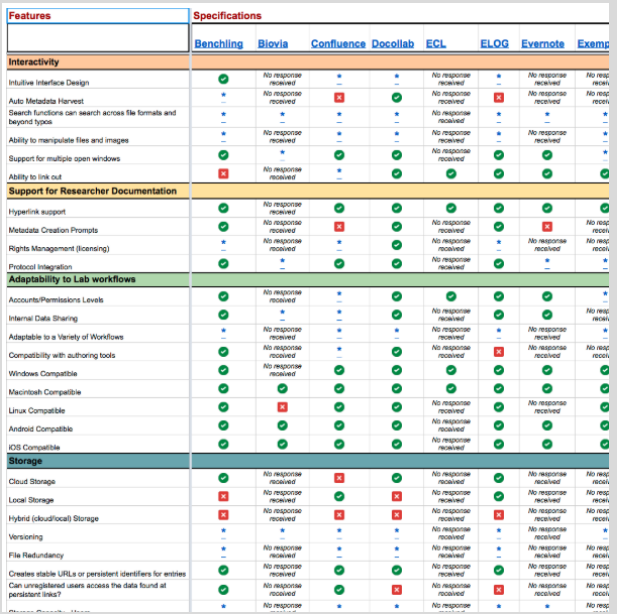
How do I document?

- Document your data *throughout* your research – do not wait till the end!
- A few tips for continuous documentation:
  - Try a generic note-taking software (e.g. SCINote, OneNote, Evernote,…)
  - Use an electronic lab notebook for structured documenting
  - If you work with scripting languages, such as R or Python, take a look at Jupyter Notebook.

ELN yes, but which one?

More information

- Practical guidelines on how to introduce ELN and LIMS in an academic research laboratory by the DLCM Team.
- Lists of available products:
  - ELN list by the University of Harvard: comparative table
  - DLCM list of ELNs and LIMS
  - Website with ELN list and additional information by the Gurdon Institut (University of Cambridge)



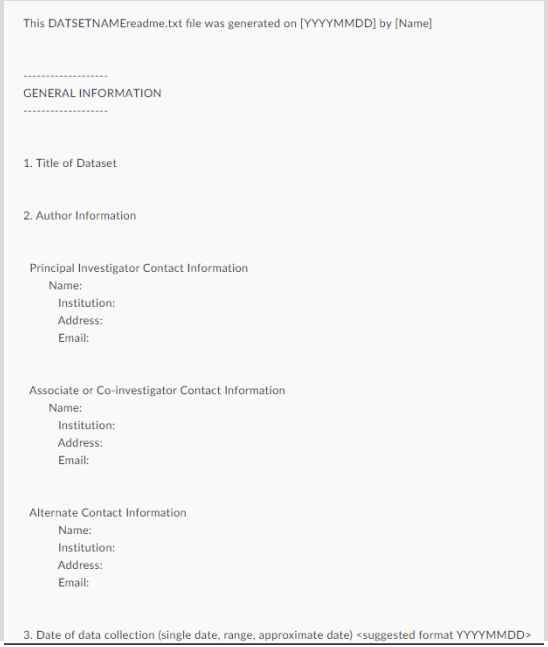
Features	Specifications							
	Benchling	Biovia	Confluence	Docollab	ECL	ELOG	Evernote	Exemp
Interactivity								
Intuitive Interface Design	✓	No response received	*	*	No response received	*	No response received	No resp
Auto Metadata Harvest	*	No response received	✗	✓	No response received	✗	No response received	No resp
Search functions can search across file formats and beyond typos	*	*	*	*	No response received	*	*	*
Ability to manipulate files and images	*	No response received	*	*	No response received	*	No response received	*
Support for multiple open windows	✓	*	✓	✓	No response received	✓	✓	*
Ability to link out	✗	No response received	*	✓	✓	✓	✓	✓
Support for Researcher Documentation								
Hyperlink support	✓	No response received	✓	✓	✓	✓	✓	✓
Metadata Creation Prompts	✓	No response received	✗	✓	No response received	✓	✗	No resp
Rights Management (licensing)	*	No response received	*	✓	No response received	*	No response received	No resp
Protocol Integration	✓	*	✓	✓	No response received	✓	*	*
Adaptability to Lab workflows								
Accounts/Permissions Levels	✓	No response received	*	✓	✓	✓	✓	*
Internal Data Sharing	✓	*	*	✓	No response received	✓	✓	No resp
Adaptable to a Variety of Workflows	*	No response received	*	*	No response received	*	No response received	*
Compatibility with authoring tools	✓	No response received	*	✓	No response received	✗	No response received	No resp
Windows Compatible	✓	No response received	✓	✓	✓	✓	✓	✓
Macintosh Compatible	✓	✓	✓	✓	✓	✓	✓	✓
Linux Compatible	✓	✗	✓	✓	No response received	✓	No response received	✓
Android Compatible	✓	✓	✓	✓	No response received	✓	✓	✓
iOS Compatible	✓	✓	✓	✓	No response received	✓	✓	✓
Storage								
Cloud Storage	✓	No response received	✗	✓	No response received	✓	No response received	No resp
Local Storage	✗	No response received	✓	✗	No response received	✓	No response received	No resp
Hybrid (cloud/local) Storage	✗	No response received	✗	✗	No response received	✗	No response received	No resp
Versioning	*	*	*	*	No response received	*	No response received	*
File Redundancy	*	No response received	*	*	No response received	*	No response received	No resp
Creates stable URLs or persistent identifiers for entries	✓	No response received	✓	✓	No response received	✓	No response received	No resp
Can unregistered users access the data found at persistent links?	✓	No response received	✓	✗	No response received	✗	No response received	No resp
	*	No response	*	*	No response	*	*	No resp

Documentation

READEME files

- Describe the files and folders in a project.
- Primarily aimed at an external audience and your future self
- Write as a plain text file
- Use standards
- README Template:

  https://data.research.cornell.edu/content/readme



This DATSETNAMEreadme.txt file was generated on [YYYYMMDD] by [Name]

GENERAL INFORMATION
---

1. Title of Dataset

2. Author Information

Principal Investigator Contact Information
Name:
Institution:
Address:
Email:

Associate or Co-investigator Contact Information
Name:
Institution:
Address:
Email:

Alternate Contact Information
Name:
Institution:
Address:
Email:

3. Date of data collection (single date, range, approximate date) <suggested format YYYYMMDD>

Legal Frameworks

For working with data

Legal Frameworks

Please note

We are no legal experts.

This is meant only as an orientation.

For more detailed questions and for advice, please consult a lawyer or data protection officer!

Legal Frameworks

Overview

- Legal frameworks and definitions
- Before processing data:
    - Which data?
    - Informed consent
- Data processing: how to?
    - Anonymisation, pseudonymisation

Legal Frameworks

For working with data

§

- Federal Act on Data Protection, Switzerland (1992/2019, under revision)
- Data Protection Regulation, Bern (1986/2013)
- General Data Protection Regulation, EU (GDPR, 2018)

Legal Frameworks

For research involving data

Datenschutz und Forschung im Allgemeinen

https://www.edoeb.admin.ch/edoeb/de/home/datenschutz/statistik--register-und-forschung/forschung/datenschutz-und-forschung-im-allgemeinen.html

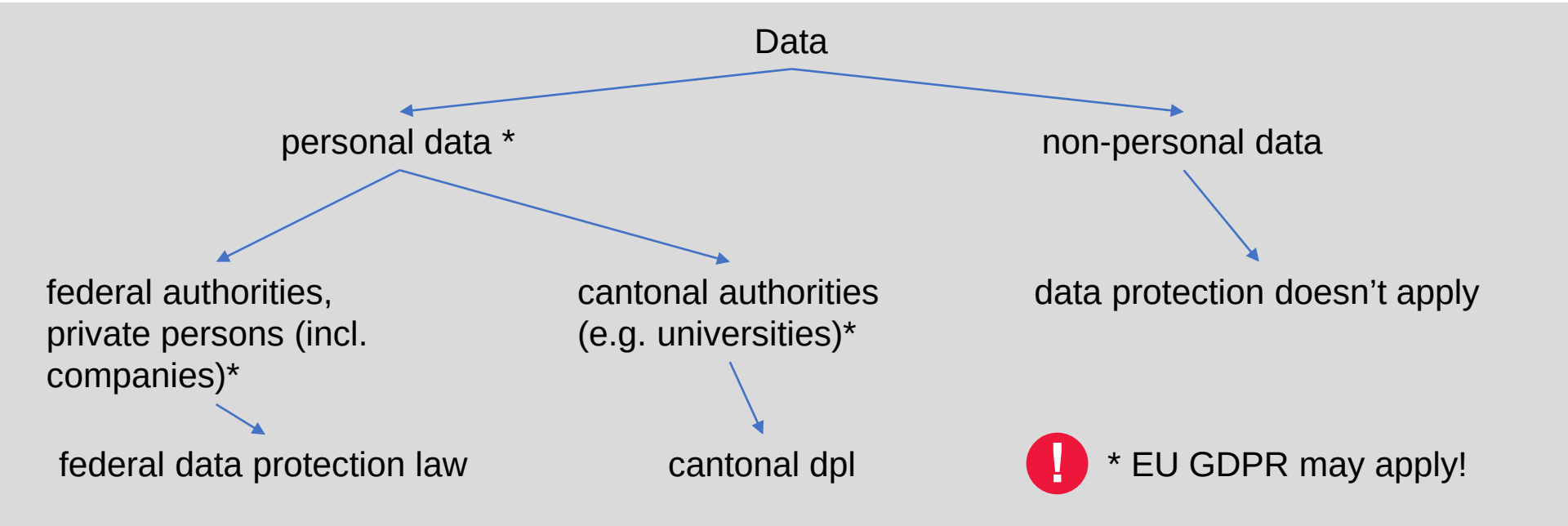
Federal Act on Research involving Human Beings

https://www.admin.ch/opc/en/classified-compilation/20061313/index.html

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

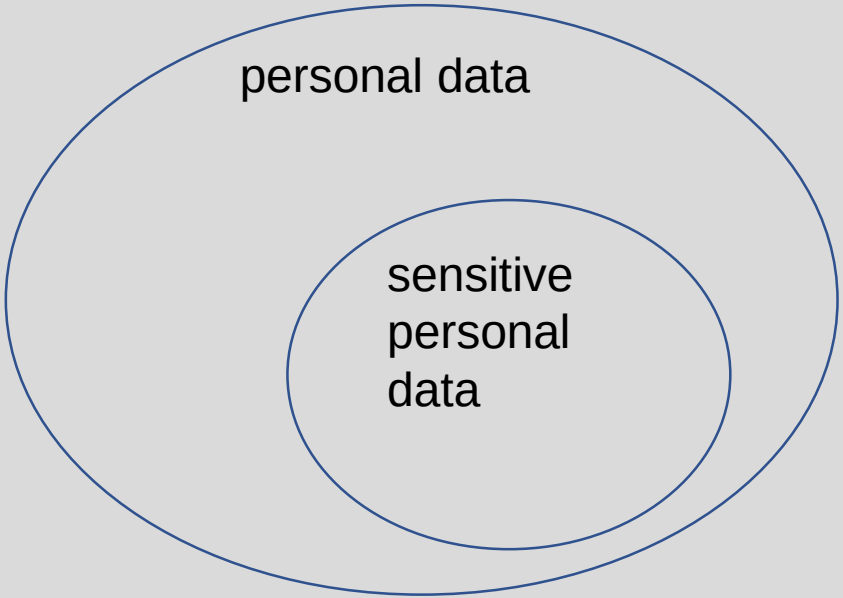
DPR Switzerland

Working with data



DPR Switzerland

Some definitions



Personal Data

- Any data that can be related to an identifiable or identified person

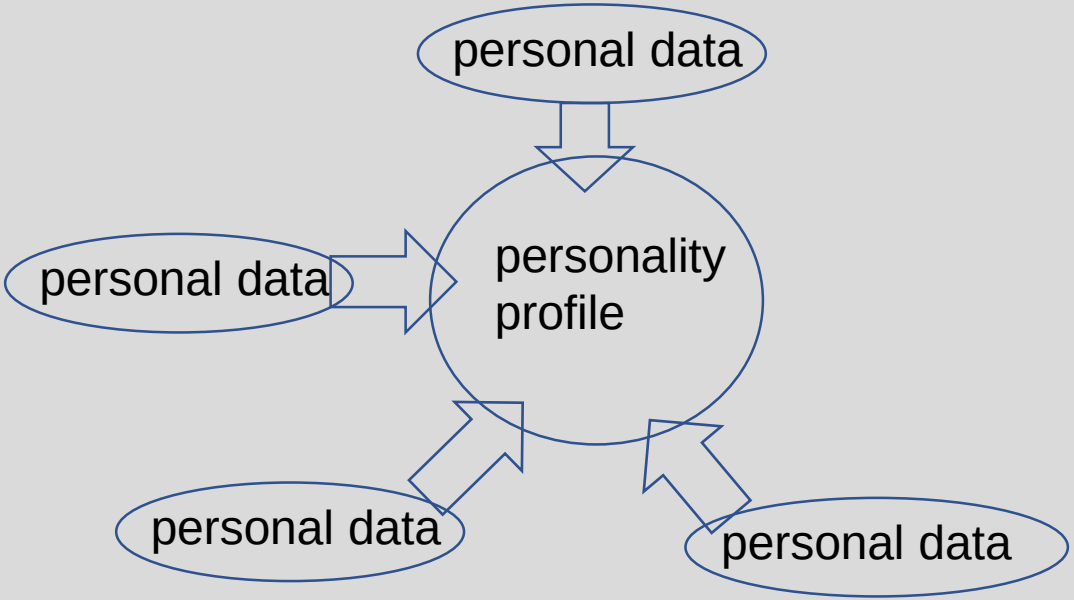
Sensitive Personal Data

- religious, ideological, political or trade union-related views or activities
- health, intimate sphere, race
- social security measures
- administrative or criminal proceedings and sanctions

FADP, Art. 3a, c

DPR Switzerland

Some definitions



Personality Profile

- a collection of data that permits an assessment of essential characteristics of the personality of a natural person

FADP, Art. 3d

DPR Switzerland

Some definitions

Data processing

= anything (!) that can be done with data:

collecting, storing, archiving, analysing (or other forms of use), publishing, deleting …

(FADP, Art. 3e)

Legal Frameworks

Overview

- Legal frameworks and definitions
- Before processing data:
  - Which data?
  - Informed consent
- Data processing: how to?
  - Anonymisation, pseudonymisation

DPR Switzerland

Which Data?

- Collect only data needed to the purpose of your study (Principle of Proportionality)
- Data may only be processed to fulfill the purpose indicated when it was collected
- Data must be accurate
- Data processing must not aim at identifying a person or making a person identifiable

DPR Switzerland

Informed Consent

Data subjects

- must be informed about planned data processing and their rights in advance.
- must consent to the processing of their data.
- have the right to object to processing their data.
- Tip: keep it short and simple (as far as possible)!

Legal Frameworks

Overview

- Legal frameworks and definitions
- Before processing data:
    - Which data?
    - Informed consent
- Data processing: how to?
    - Anonymisation, pseudonymisation

DPR Switzerland

Anonymisation

- Ensure that data cannot be related to a specific person, or can only be assigned with extraordinary effort
- Legal obligation!
- The data must be anonymised as quickly as possible
- The research results must be published in anonymous form
- Data protection regulations do not apply to anonymized data

DPR Switzerland

Anonymisation - Example

Before anonymization

Name	Age	Sex	Income	postcode
Martin Müller	51	m	79’000	3001
Andrea Sommer	21	f	55’000	3013
Dominik Fischer	44	m	102’000	3012
Arnold Furrer	65	m	40’000	3001
Simone Meier	38	f	67’000	3011

After anonymization

Name	Age	Sex	Income	postcode
*	41-60	m	79’000	30**
*	21-40	f	55’000	30**
*	41-60	m	102’000	30**
*	*	*	*	30**
*	21-40	f	67’000	30**

DPR Switzerland

Pseudonymisation

- Identifying data is replaced by an identifier or pseudonym
- Key allows mapping of identifiers to data subjects
- Key must be kept
    - separate from data
    - securely, encrypted
- Must only be used if anonymization is not possible

! Data protection regulations apply to pseudnoymized data (≠ anonymisation)

DPR Switzerland

Pseudonymisation - example

Before pseudonymization

Name	Age	Sex	Income	postcode
Martin Müller	51	m	79’000	3001
Andrea Sommer	20	f	55’000	3013
Dominik Fischer	44	m	102’000	3012
Arnold Furrer	75	m	40’000	3001

After pseudonymization

Identifier	Age	Sex	Income	postcode
1	51	m	79’000	3001
2	20	f	55’000	3013
3	44	m	102’000	3012
4	75	m	40’000	3001

Name	Identifier
Martin Müller	1
Andrea Sommer	2
Dominik Fischer	3
Arnold Furrer	4

DPR beyond Switzerland

Europe - GDPR

General Data Protection Regulation (2018)

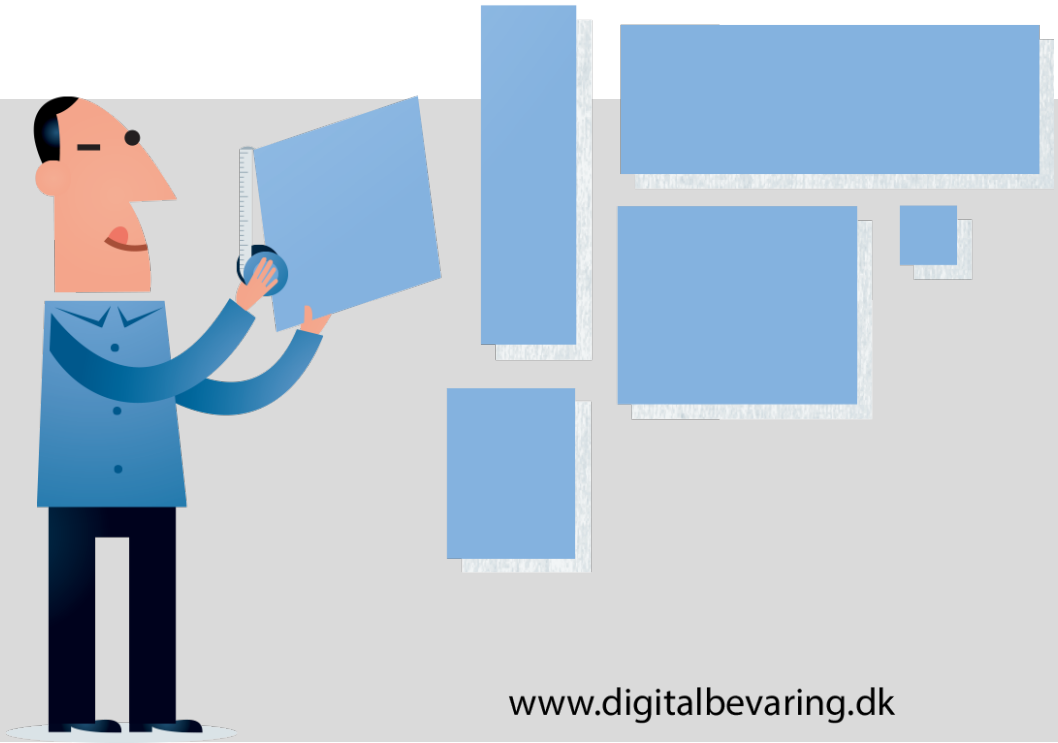
- Lawful, fair, transparent
- Consent form easy to understand
- Re-purposing of data requires informed consent of data subject
- Transferring data outside EU requires that target countries provide similiar protection

Data protection

Where to get more information

- Data protection office of the Canton of Berne
- Bern University Legal Services Office
- Legal texts:
  - Federal Act on Data Protection (1992/2019)
  - Data Protection Act, Canton of Berne (1986/2013)
  - EU, GDPR (2018)
- datenrecht.ch: website on legal regulations around data (German)
- Open Science @ UniBe: basic information around handling sensitive data
- and many more …

Data Storage & Back-up



Data Storage

Check your Needs

- How much space do you need?
- Who needs access to the data and on what level?
- Do you need extra protection for sensitive data?

Data storage

Storage solutions - overview

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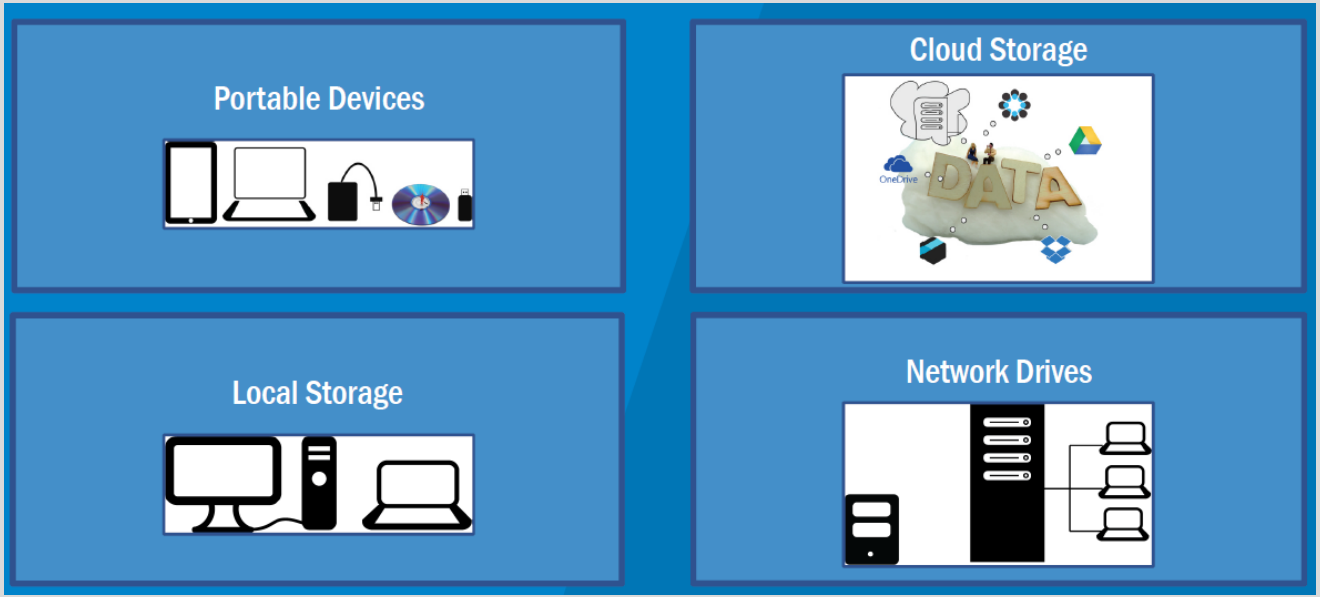
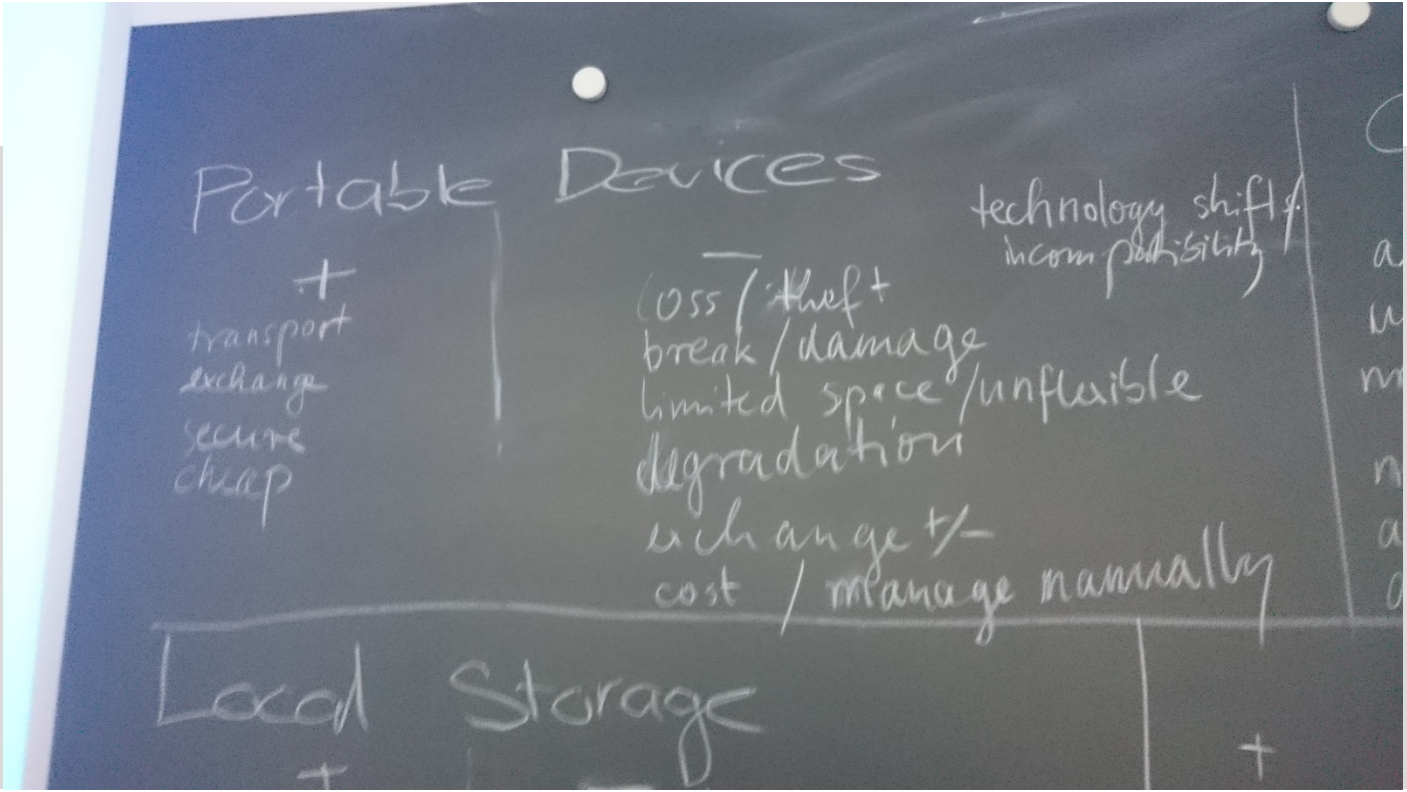
Discuss with your Neighbour the advantages or disadvantages of:



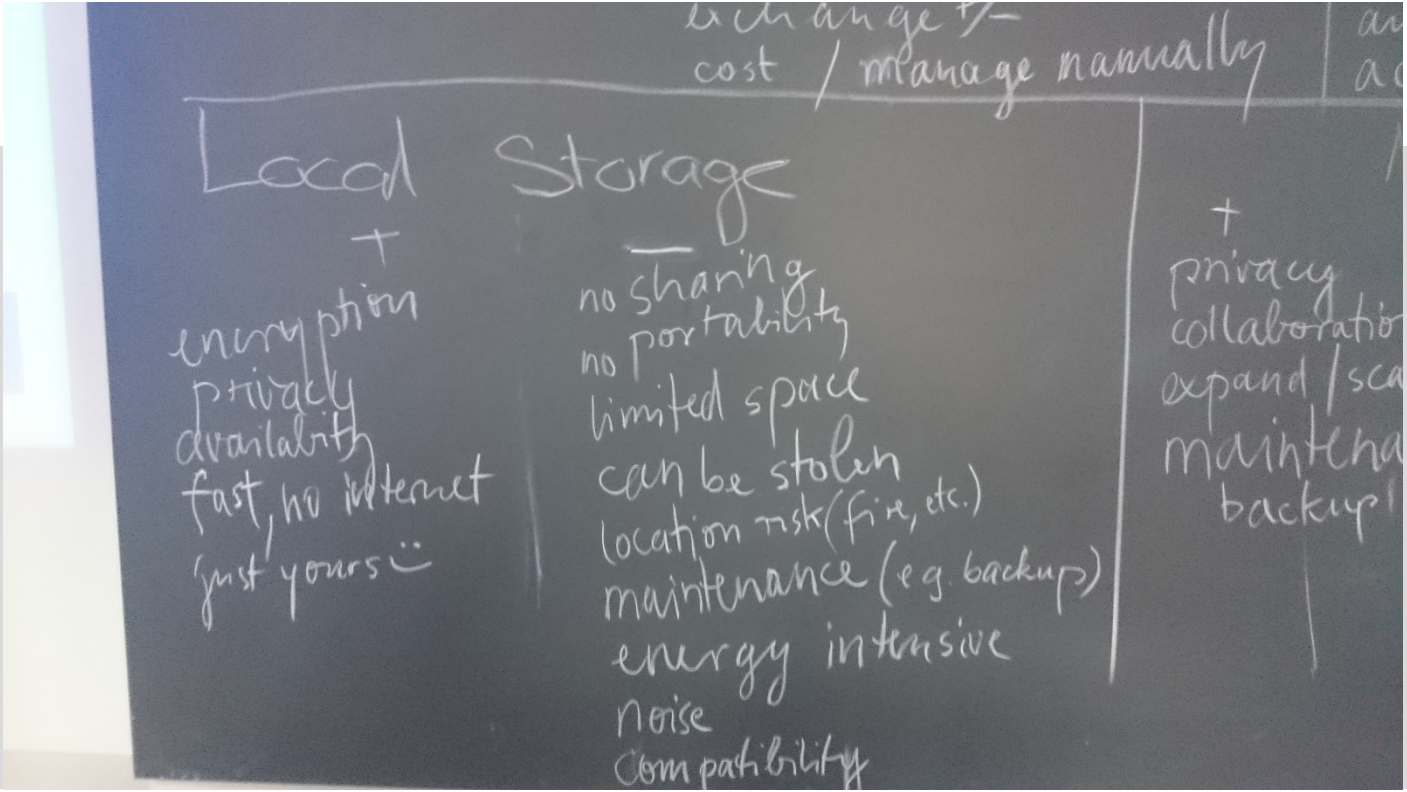
Data storage

Storage solutions – Portable Devices



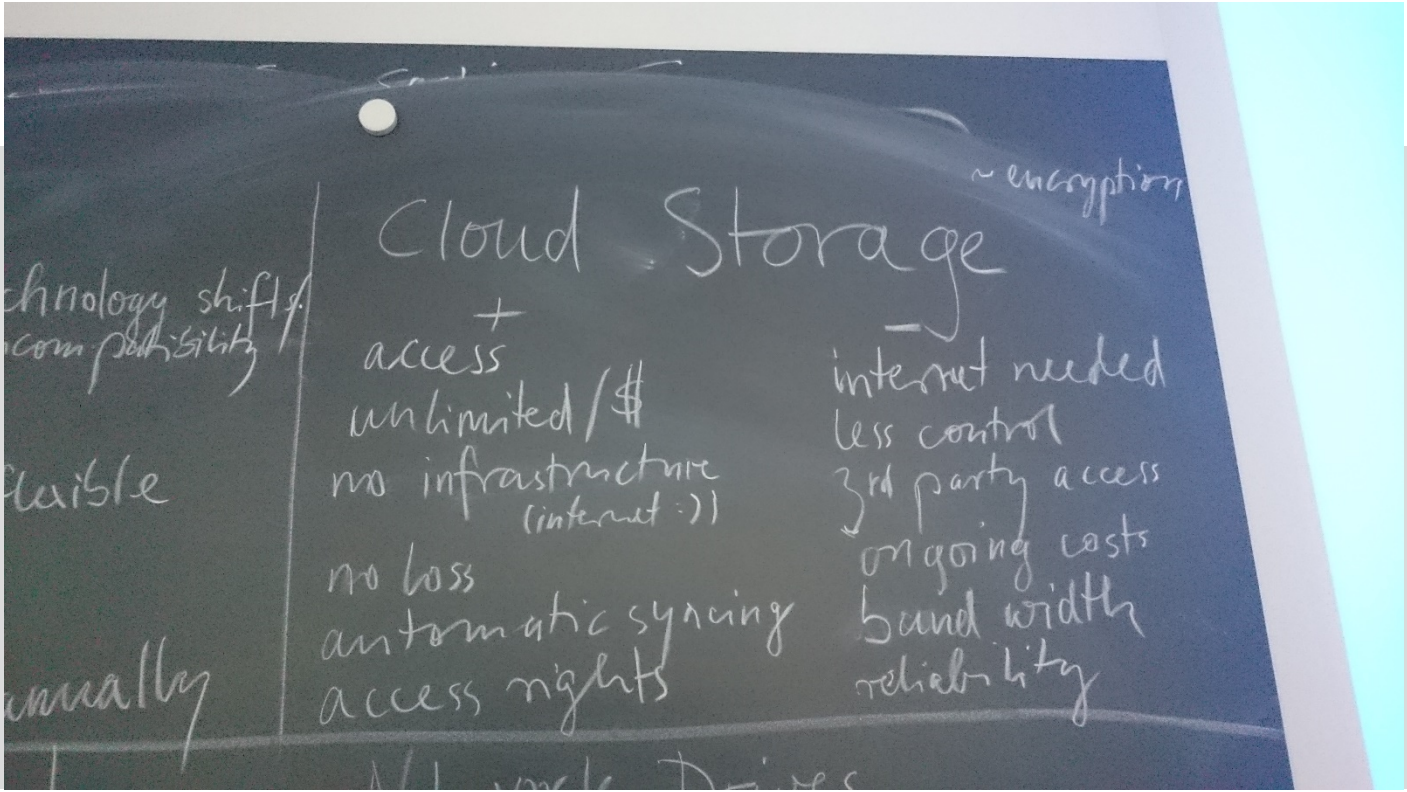
Data storage

Storage solutions – Local Storage



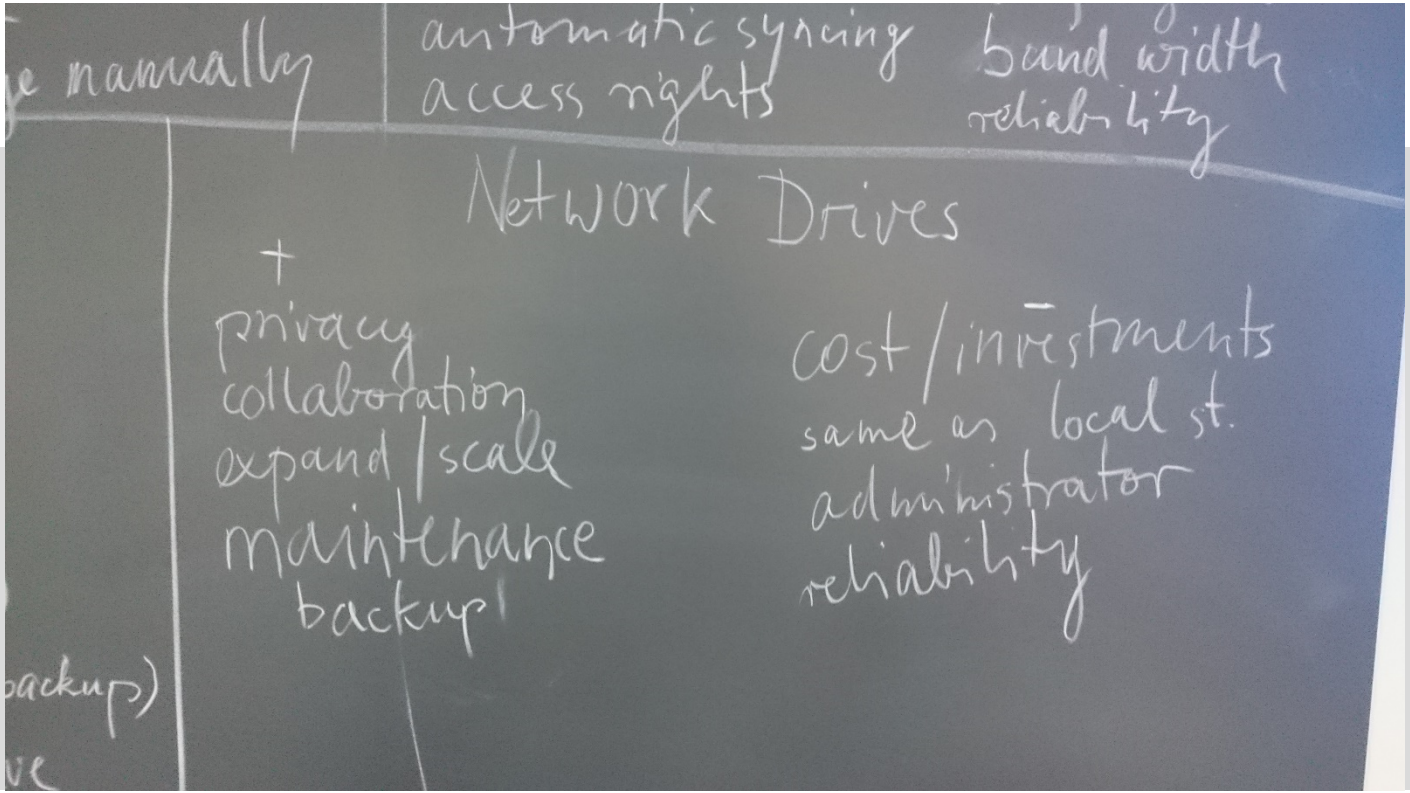
Data storage

Storage solutions – Cloud Storage



Data storage

Storage solutions – Network Drives



Data storage

File formats and long-term storage

Not all formats are suited for archiving, if possible store data:

- In non-proprietary file formats
- Uncompressed
- Unencrypted

File formats for archiving:

- ETH
- Kost (german and french)

Data storage

Changing the file format

Risks of file conversion:

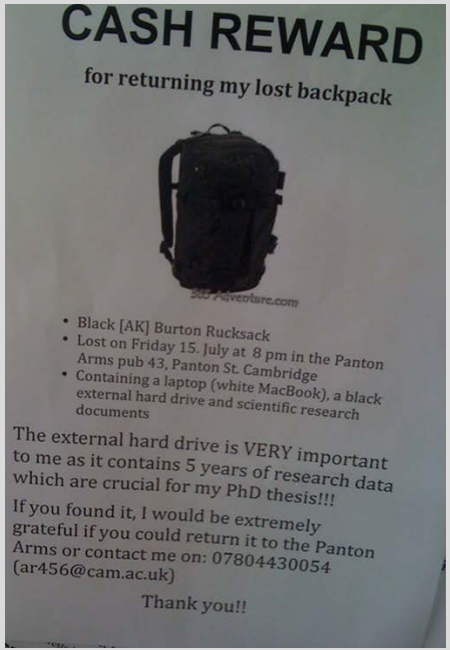
- loss of content
- loss of characteristics of the file stored within the file
- loss of layout
- loss of quality

- Not always possible
- Keep a copy in the original format

- Conversion recommendations: ETH
- Tools to validate the formats of your data files
  - File Information Tool Set (FITS)
  - DROID

Backup

Is it really necessary?



CC image by Sharyn Morrow on Flickr

CC image by momboleum on Flickr

94 Image via petermr's blog (Peter Murray-Rust): Why YOU need a data management plan, https://blogs.ch.cam.ac.uk/pmr/2011/08/01/why-you-need-a-data-management-plan/

Backup

Things to consider

- Who is responsible?
- What do you want to backup?
- How many backups and how frequently?
- Where will backups be stored?
- How much storage will you need?
- How will personal data be protected?
- Are there tools for automated backup?
- How long will backups be stored and how destroyed?
- How will you check the integrity of your backup files?

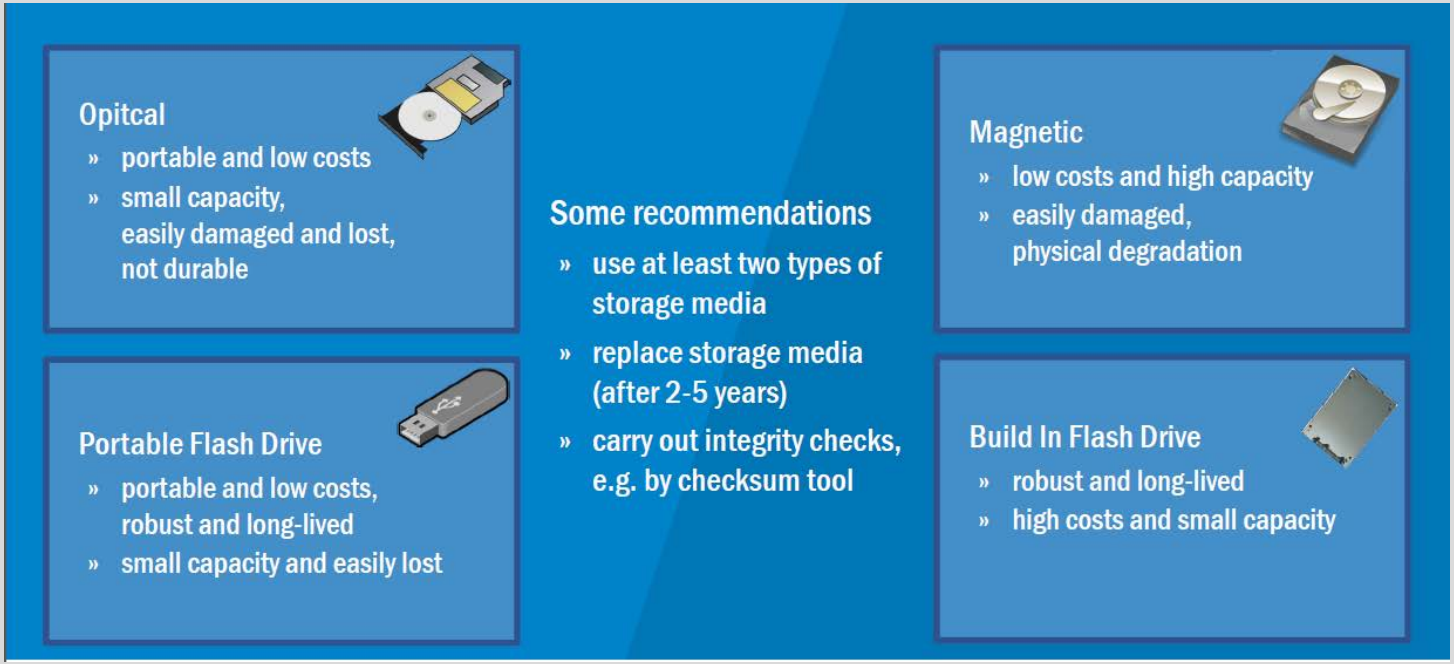
Backup

Simple rules

- Automated backups are better than manual
- 3-2-1 backup strategy: 3 copies, 2 different media, 1 external location
- Backups of sensitive data must be protected in the same way as the original files
- Regularly test whether restoring files from your backups is possible.
- Replace storage media regularly (portable storage media after 2-5 years)
- Tools for integrity checks: e.g. MD5summer or Checksum Checker

Data Storage & Backup

Media



Storage & Backup

Take home

- You need a strategy
- Various storage solutions with advanteges and disadvantages
- Not a one-size fits all solution: define a specific strategy for each project
- Short term strategy vs. Long term strategy

Data sharing and reuse

Digitalbevaring.dk

Data sharing and reuse

Why?

https://www.youtube.com/watch?v=jpGWfEgT0F0, Odum Institute, CC BY

Data sharing and reuse

Have you ever shared data?

Have you ever reused other people's data?

Sharing Data

Why?

- Funders' requirement
- Make use of resources more sustainable (reuse of data!)
- More transparency through reproducibility
- Access to data as a larger trend

Digitalbevaring.dk

partially based on https://www.ukdataservice.ac.uk/manage-data/plan/why-share

Sharing Data

Why?

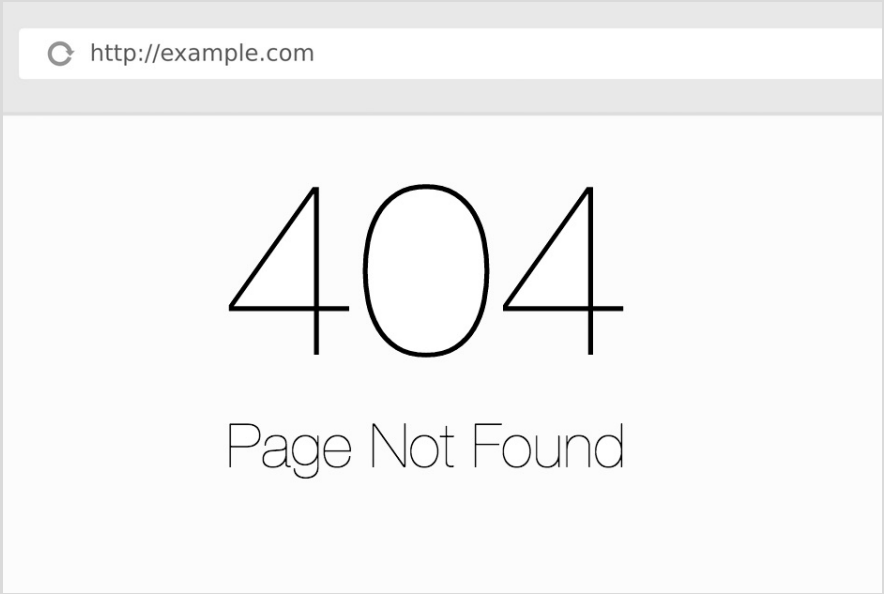
- Bring science forward, innovation
- Improvement and validation of research methods, better quality of data
- Increase impact and visibility of research
- Get more publications & citations
- Reuse other people’s shared data

Digitalbevaring.dk

partially based on https://www.ukdataservice.ac.uk/manage-data/plan/why-share

Sharing Data

How?



https://blog.algorithmia.com/404-error-scanner-algorithm-find-broken-links/

https://dx.doi.org/10.1038/nature.2017.22793

Sharing Data

How: some options

1. Data Paper / Data Journals
2. Data Repository

Sharing Data

Data Paper / Data Journal

- Useful for larger datasets
- Usually peer-reviewed
- In-depth descripton and contextualization
- one more publication
- Tip: link data paper to main paper record (DOI)

- Examples: Foster, HU Berlin

Research Data Journal
for the Humanities and Social Sciences

nature > scientific data
SCIENTIFIC DATA

Reilly Susan et al. (2011), Report on Integration of Data and Publications. https://www.stm-assoc.org/2011_12_5_ODE_Report_On_Integration_of_Data_and_Publications.pdf

Sharing Data

Repositories – general

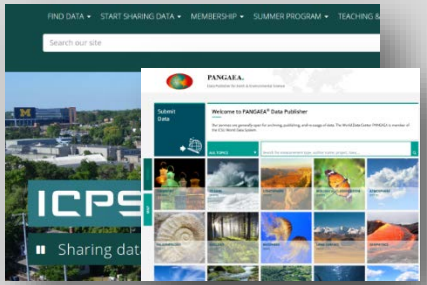
- Online platforms
- Allow upload of files (e.g. research data)
- Describe and give proof of files
- Increase discoverability of deposits
- Generally: good repositories best way to share data

Types of Repositories I

Subject-specific

Advantages

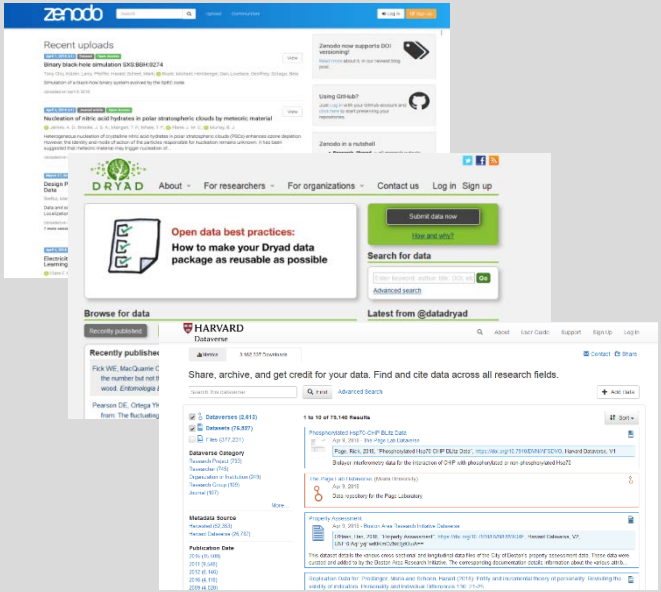
- Best visibility
- May offer subject-specific metadata
- Familiar with technical requirements for specific data



- **Examples:**
- GenBank (Genome data)
- Pangaea (Earth & Environmental Science)
- ICPSR (numeric social science data)

Types of Repositories II

Generic



Advantages

- Open to all disciplines
- Easy to use

Examples

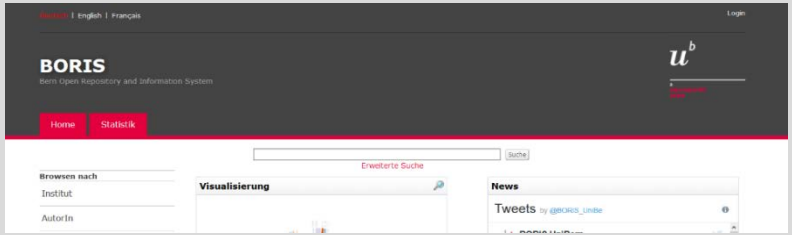
- Zenodo
- Harvard Dataverse
- Dryad

Types of Repositories III

Institutional

Advantages

- Linked to your institution
- All Data at same location
- Financing of the repository is secured



Examples

- BORIS for Publications (boris.unibe.ch)
- In process: BORIS Research Data

How to find a suitable repository

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Ask in your community
Search re3data.org

Registry of Research Data Repositories; https://www.re3data.org/

Data Reuse

How?

- Find data via a search engine or on a repository
- Check thoroughly for copyright, licenses and other reuse regulations
- Restricted data (e.g personal): data reuse agreements
- Act accordingly: mutual trust is the basis of data sharing and reuse!

Data Reuse

Data search engines

- Google Dataset Search (prototype)
- Elsevier DataSearch (prototype)
- DataCite

Copyright & Licenses

Copyright Transfer Agreement (CTA)

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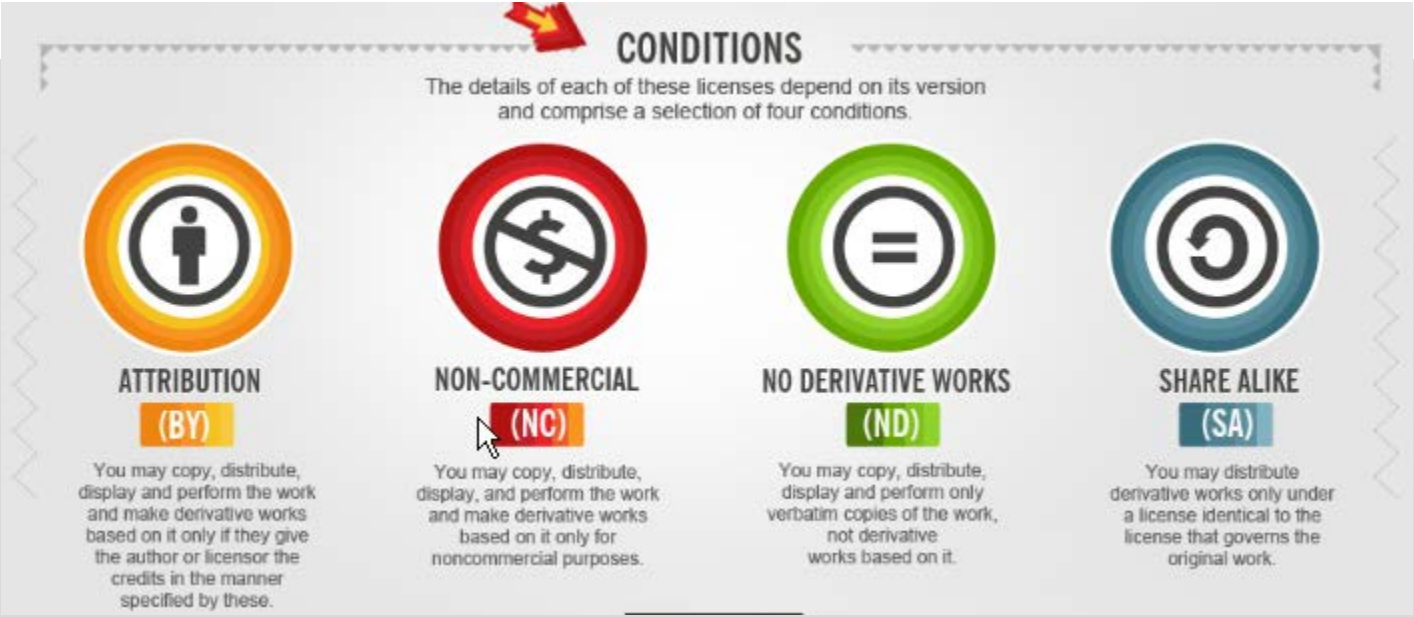
Conditions



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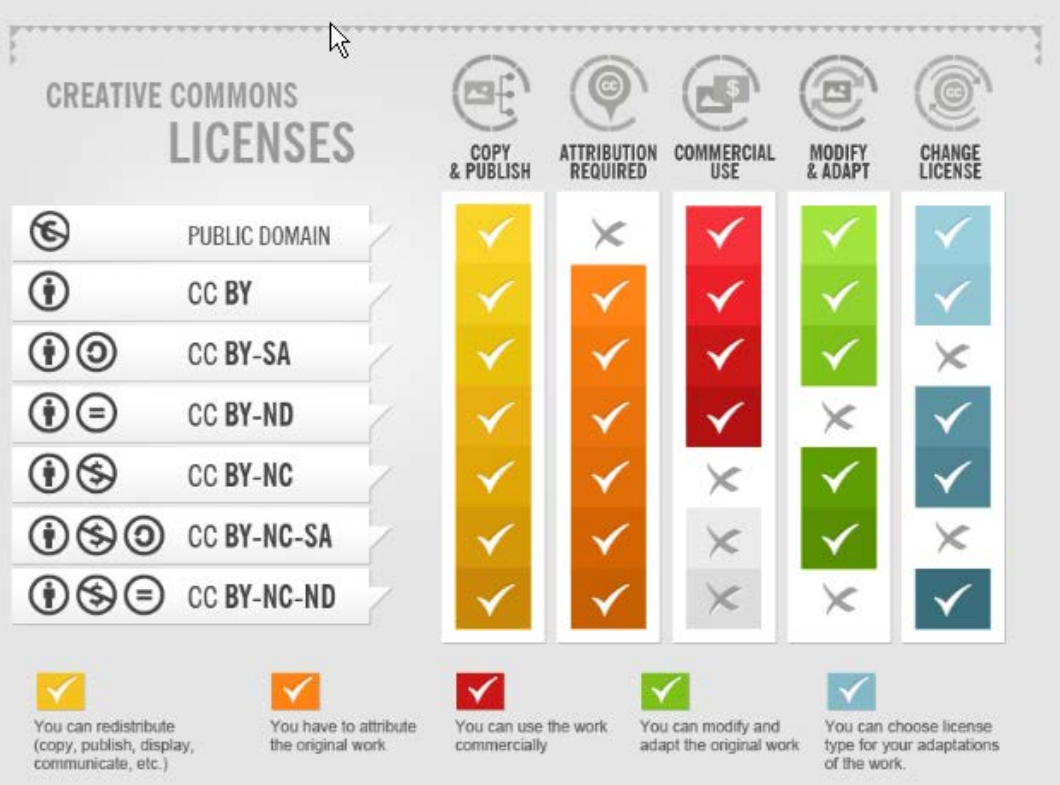


Foter blog: How To Attribute Creative Commons Photos (CC BY-SA 3.0)

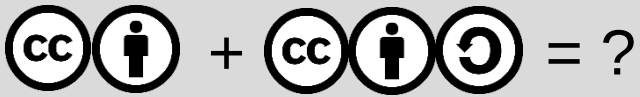
Creative Commons Licenses

How does it work?

https://vimeo.com/25684782

Excercise

What do you get?



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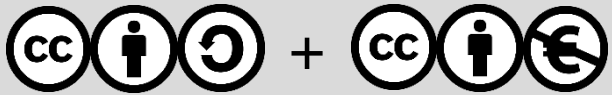
CC BY-NC-ND (Attribution + Non Commercial + Share Alike)

Excercise



Creative Commons for Data

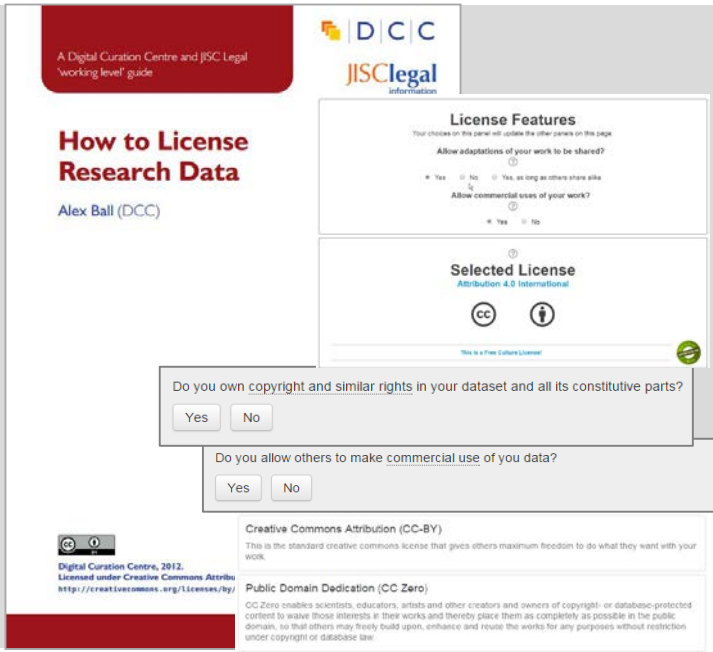
How to License Research Data

UNIVERSITÄT BERN

DCC guide on “How to License Research Data”

EUDAT Licensing Tool

Creative Commons License Chooser



Wrap up

Data Management Planning

Write a DMP

Common themes in a DMP

- Description of data to be collected / created
- Standards / methodologies for data collection
- Data organization and file naming
- Ethics and Intellectual Property
- Short- and long-term storage and backup
- Data sharing

Need any help?

Check out our website!

www.unibe.ch/ub/openscience