1. Introduction

Why RDM?

<https://www.labfolder.com/research-data-management/>

 Save time for research

 Avoid risk of data loss

 Ensure transparency and reproducibility

 Increase data visibility and number of citations

 Fulfill funders’ requirements and receive more grants

 Produce new knowledge and make more discoveries just by re-using data

 Archive, retrieve and re-use own data

For whom?

Info on the document – create links between projects and thematic groups

1. Best practices
   1. Plan and fund a new project
      1. data management plan

**Action 1**: Look through a [data management planning checklist](http://www.dcc.ac.uk/sites/default/files/documents/resource/DMP/DMP_Checklist_2013.pdf) DMP checklist?

**Action 2**: Create a data management plan.  You can use [DMP Online](https://dmponline.dcc.ac.uk/) use it as a template or if required, use a funder's format.

RDM checklist before starting with a new project

Brauchen wir eine Data Management Plan?

See e.g. <https://dmponline.dcc.ac.uk/>

* + 1. Electronic Lab Notebooks

Electronic Lab Notebooks (ELNs) <https://www.labfolder.com/research-data-management/>

ELNs are an essential asset for researchers to fulfil any requirements for data management, and they create direct bridges between scientists and stakeholders. By adopting an ELN, the data lifecycle can proceed smoothly and easily: from creating and collecting data digitally in one place to one-click data archiving, ELNs empower researchers by allowing them to implement their RDM plan without effort and time investment.

An ELN to make your data FAIR? Welches ist das?

* + 1. Project acronyms
  1. Data storage
     1. Folder structure

@Michael: **Regeln für die Verbesserung der Ordnerstruktur**

@Michael: **Vorschlag für verbesserte Ordnerstrukturen**

* + 1. Naming

@Michael: **Konventionen für Ordner- und Dateinamen, Vorschlag einer Nomenklatur**

@Michael: **Regeln zur Vermeidung langer Dateipfade**

Useful file names are:

* consistent
* meaningful to you and your colleagues
* allow you to find the file easily

It is useful if your department/project agrees on the following elements of a file name:

* **Vocabulary** – choose a standard vocabulary for file names, so that everyone uses a common language
* **Punctuation** – decide on conventions for if and when to use punctuation symbols, capitals, hyphens and spaces
* **Dates** – agree on a logical use of dates so that they display chronologically i.e. YYYY-MM-DD
* **Order** - confirm which element should go first, so that files on the same theme are listed together and can therefore be found easily
* **Numbers** – specify the amount of digits that will be used in numbering so that files are listed numerically e.g. 01, 002, etc.

!!!!! Good practice: Remove spaces from file names or use punctuation such as underscores and hyphens to separate words e.g. “AHRC\_TechnicalApp\_Response20120925.docx” or “AHRC-TechnicalApp-Response20120925.docx” rather than “what we got back from funders about the data stuff.docx !!!!

* + 1. Raw data

Especially in environmental sciences, raw data often cannot be reproduced (e.g. rainfall, river discharge measurements) and are therefore of high value.

1. dürfen umbenannt werden, dies muss in den Metadaten dokumentiert werden
2. dürfen inhaltlich nicht verändert werden
3. werden schreibgeschützt abgelegt
4. werden in einem eigenen Bereich abgelegt (ein Ordner enthält alle Rohdaten)
   * 1. Versioning

Versioning or version control is the way by which different versions and drafts of a document (or file or record or dataset or software code) are managed. Versioning involves the process of naming and distinguishing between a series of draft documents that leads to a final or approved version in the end. Versioning allows you to disclose an audit trail for the revision and update of drafts and final versions.

* + - 1. Manual

!!!! Keep older version in one place (i.e. folder) !!!!!

* + - 1. R scripts
* Verpflichtend für Programmcode und ggf. kleinerer Textdateien
* Aber: nicht geeignet für Rohdatenversionsverwaltung
  + 1. Organising your e-mail account

From: <https://www.data.cam.ac.uk/data-management-guide/organising-your-data#Refernces>

Most people now routinely send and receive lots of messages every day and as a result, their inbox can get very quickly overloaded with hundreds of personal and work-related email. Setting aside some time to organise your emails will ensure information can be found quickly and easily, and is stored securely.

Why should I organise my email?

Apart from the obvious frustration and time wasted looking for that email you remember sending to someone last month, email is increasingly used to store important documents and data, often with information related to the attachments within the email itself.

How can I ensure my emails remain organised?

Here are some general tips to ensure your email remains organised in the long term:

* **Delete emails you do not need.** Remove any trivial or old messages from your inbox and sent items on a regular (ideally daily) basis.
* **Use folders to store messages.** Establish a structured file directory by subject, activity or project.
* **Separate personal emails.** Set up a separate folder for these. Ideally, you should not receive any personal emails to your work email account.
* **Limit the use of attachments.** Use alternative and more secure methods to exchange data where possible (see ‘data sharing’ for options). If attachments are used, exercise version control and save important attachments to other places, such as a network drive.
  + 1. Managing references

Refer to KWB Endnote guidelines….

* + 1. Metadata

What information would someone need to find/re-use your data?

Location, title, creator name, description, date collected

* keep metadata in plain text file “readme.txt”

Tools for metadata tracking and data standards are:

* Metadatenstandards prüfen**,** z. B. DataCite (siehe u.a. ZALF, GFZ Potsdam)
  + 1. Data preservation

Data must be retained to support your research findings

Standards: ?5 years?

* 1. Data collection

Data are often inconsistent, incomplete, incorrect, or misspelled

Data cleaning is essential

You may also use OpenRefine (<http://openrefine.org/>) to clean your messy data

Or use the following tools

* + 1. Logger devices
    2. Spreadsheets
  1. Data publishing and sharing

Make data freely available via repositories

Metadata, file formats, licence, persistent identifiers: DOI, ORCID

* + 1. Repositories

General repositories e.g. [Figshare](https://figshare.com/), [Zenodo](https://zenodo.org/) (a joint project between OpenAIRE and CERN), [Mandeley data](https://data.mendeley.com/), [Dryad](https://datadryad.org/)

Repositories at KWB:

1. Projects
2. FAQs

What is digital curation?

Digital curation is the selection, preservation, maintenance, collection and archiving of digital assets.