

Data Champion Network @ UzK

Meet-Up #2 | 8.09.2022 | virtual



Agenda

1. Recap Meet-Up #1
2. How to write a Data Management Plan (DMP)?
Input + Q&A
3. Further activities & discussion

Voting results

9 votes

Tools for data/process handling

Organization & Documentation of Research Data

Unique voters 9

Unique voters 8

7 votes

Data management plan

Technical Data Infrastructure

Unique voters 7

Unique voters 7

3 votes

Medical Data

Meet-Up #1: Fields of interest

2 votes

Legal aspects

Unique voters 2

data collection & storage system for RTGs

Unique voters 2

Training

Unique voters 2

Finding and reusing data

Unique voters 2

Data policies

Unique voters 2

1 vote

How to prepare reasonable meta-data (content, extent)

Unique voters 1

Data Preservation

Unique voters 1

<https://app.mural.co/t/c3rdm9937/m/c3rdm9937/1644935027760/bb3d4070780d8b4001532b4c776689b611965073?sender=u3c40c3a9bfdad409f6224314>

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Room 1

Organization & Documentation of Research Data

sharing and reuse

FAIR

How to prepare reasonable meta-data (content, extent)

besides specificities in fields. It would be helpful to have a collection of general rules/ principles

How "fixed" is the documentation going to be? Ontologies? Will it be searchable?

Policy for RTG

Linked data

non-repeatable experiments

internal/external RDM

recommendations for preparing data and metadata e.g. biomedical domain

storing data for using data

issues w/ publishing data or code

Inventory for metadata e.g. Open Biz

Data Curation Continuum <https://doi.org/10.2218/jocv.14.1.643>

Room 2

Tools for data/process handling

Technical Data Infrastructure

Data guidelines for storage/ documentation

data backup repository

Integration of tools

DataVerse exchange Team <https://dataverse.org>

Repository for Medical Faculty

Digital documentation of Lab work

Git exchange, training

Room 3

Data management plan

Funder requirement

Living Document

Tools (RDMO)

Collecting samples (domain-specific)

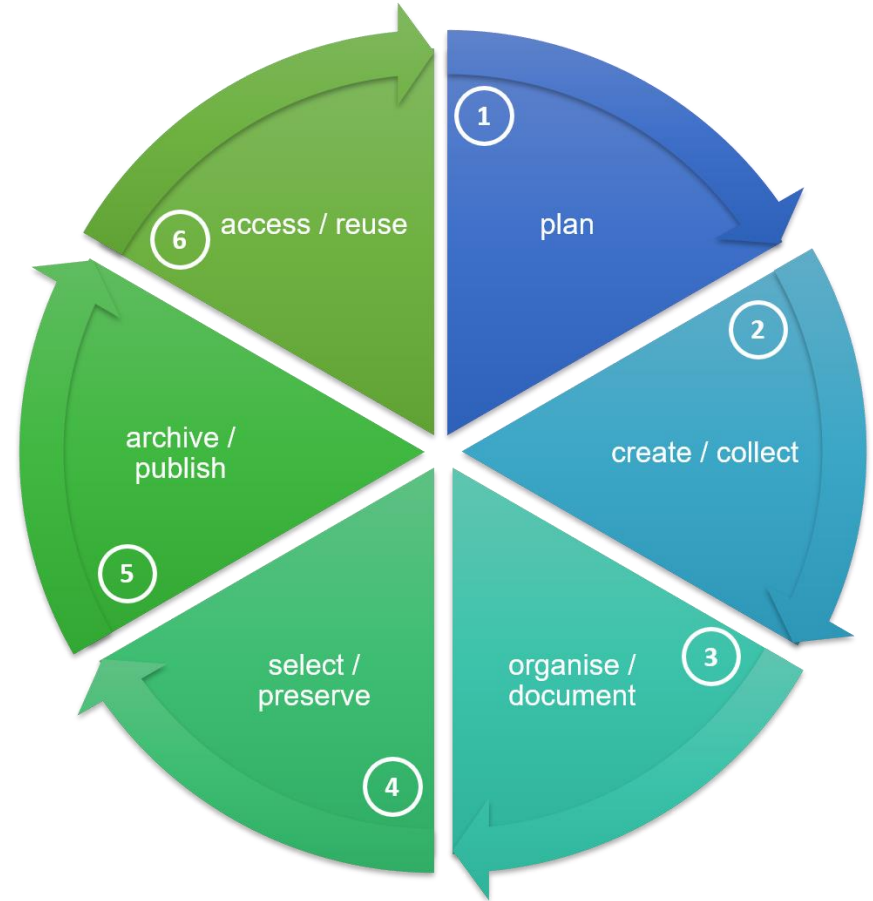
Identify experts who share their experience with feedback from funders

Agenda

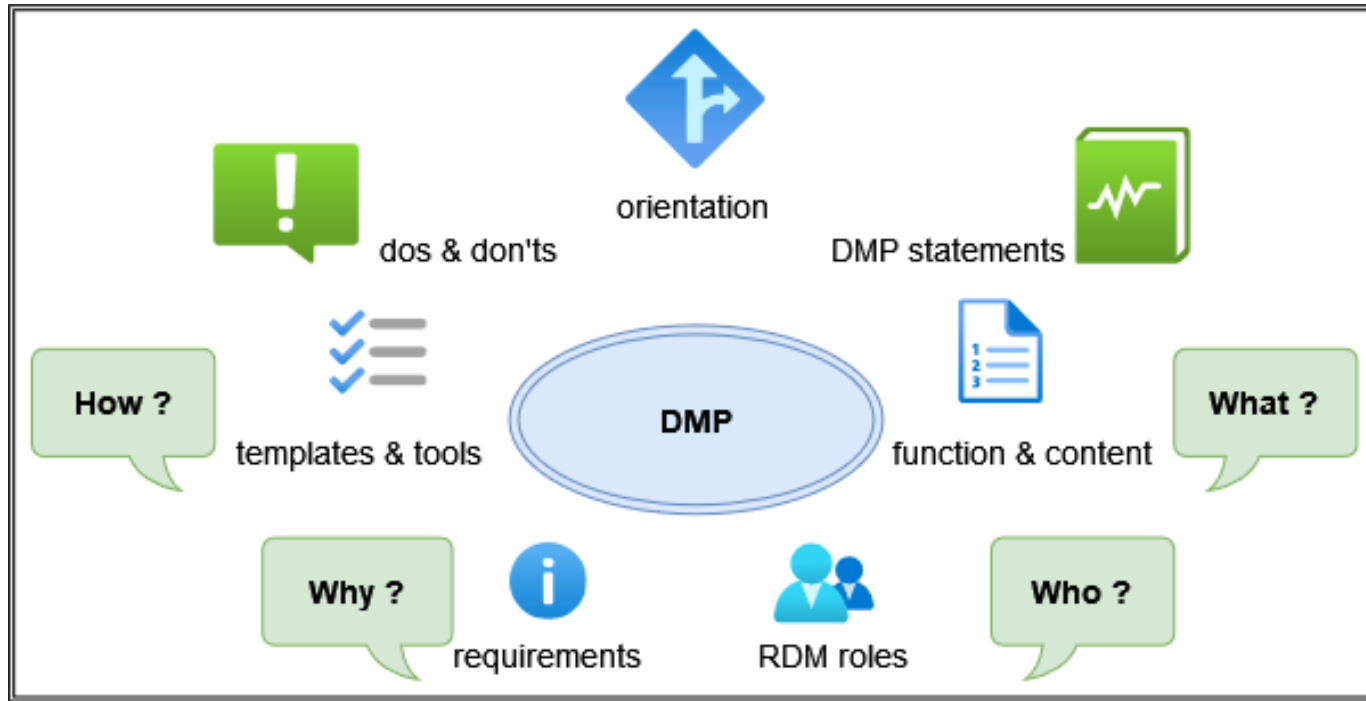
1. Recap Meet-Up #1
- 2. How to write a Data Management Plan (DMP)?**
Input + Q&A
3. Further activities & discussion

Agenda

- ✓ Function and components of a DMP
- ✓ Reasons and requirements for DMP
- ✓ Templates, tools and tips
- ✓ C³RDM services / DMP support



Orientation



Statement 1: **DMPs save time**

"Early planning is half the battle!"

- ✓ Responsibilities clarified
- ✓ Uniform conventions established
- ✓ Conflicts avoided
- ✓ Data loss prevented

Statement 2: **DMPs save money**

Initial effort pays off!

- ✓ Targeted deployment of resources
- ✓ Acquire specific FDM resources
- ✓ Budget external services

Statement 3: DMPs become mandatory

Example: EU Guidelines & DFG Proposal Form

DFG form 54.01 – 09/22

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Concepts and starting points for quality-promoting measures that specifically contribute to the validity or plausibility of your research results are welcome here. For more in-depth and subject-specific recommendations, see the "[Research Integrity](#)" portal.

2.4 Handling of research data

If your project uses, generates and/or processes data, use this section to record key information on the handling of this data (and any underlying objects). Please ensure your descriptions substantively follow the points in the corresponding questionnaire (www.dfg.de/forschungsdaten/checkliste) and use the checklist to address the following aspects in particular:

- Characteristics and scope of data
- Documentation and data quality
- Storage and technical archiving
- Legal obligations and conditions
- Enabling subsequent reuse and long-term accessibility
- Responsibilities and resources

EU: Open Research Europe. Data Guidelines:

<https://open-research-europe.ec.europa.eu/for-authors/data-guidelines>

DFG-Vordruck 54.01 DE:

https://www.dfg.de/formulare/54_01/54_01_de.pdf

DFG form 54.01 EN:

https://www.dfg.de/formulare/54_01/54_01_en.pdf

Statement 4: DMPs are sustainable

Example 2: Journals - Data Availability Statement

Citation: Wu X, Yu H, Yang R, Zhou Y, Zhu X, Wang Y, et al. (2019) Evaluation of suitable reference genes for gene expression analysis in the northern root-knot nematode, *Meloidogyne hapla*. PLoS ONE 14(6): e0218610. <https://doi.org/10.1371/journal.pone.0218610>

Editor: Haitao Shi, Hainan University, CHINA

Received: April 3, 2019; **Accepted:** June 5, 2019; **Published:** June 19, 2019

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Data Availability: The raw data for this paper has been uploaded to Figshare: Raw data of all treatments (DOI: [10.6084/m9.figshare.8246066](https://doi.org/10.6084/m9.figshare.8246066)), Raw data of target gene (DOI: [10.6084/m9.figshare.8246063](https://doi.org/10.6084/m9.figshare.8246063)), Raw data of standard curve (DOI: [10.6084/m9.figshare.8246054](https://doi.org/10.6084/m9.figshare.8246054)).

Citation: Wiik J, Nilsson S, Kärrberg C, Strander B, Jacobsson B, Sengpiel V (2021) Associations of treated and untreated human papillomavirus infection with preterm delivery and neonatal mortality: A Swedish population-based study. PLoS Med 18(5): e1003641. <https://doi.org/10.1371/journal.pmed.1003641>

Academic Editor: Jenny E. Myers, University of Manchester, UNITED KINGDOM

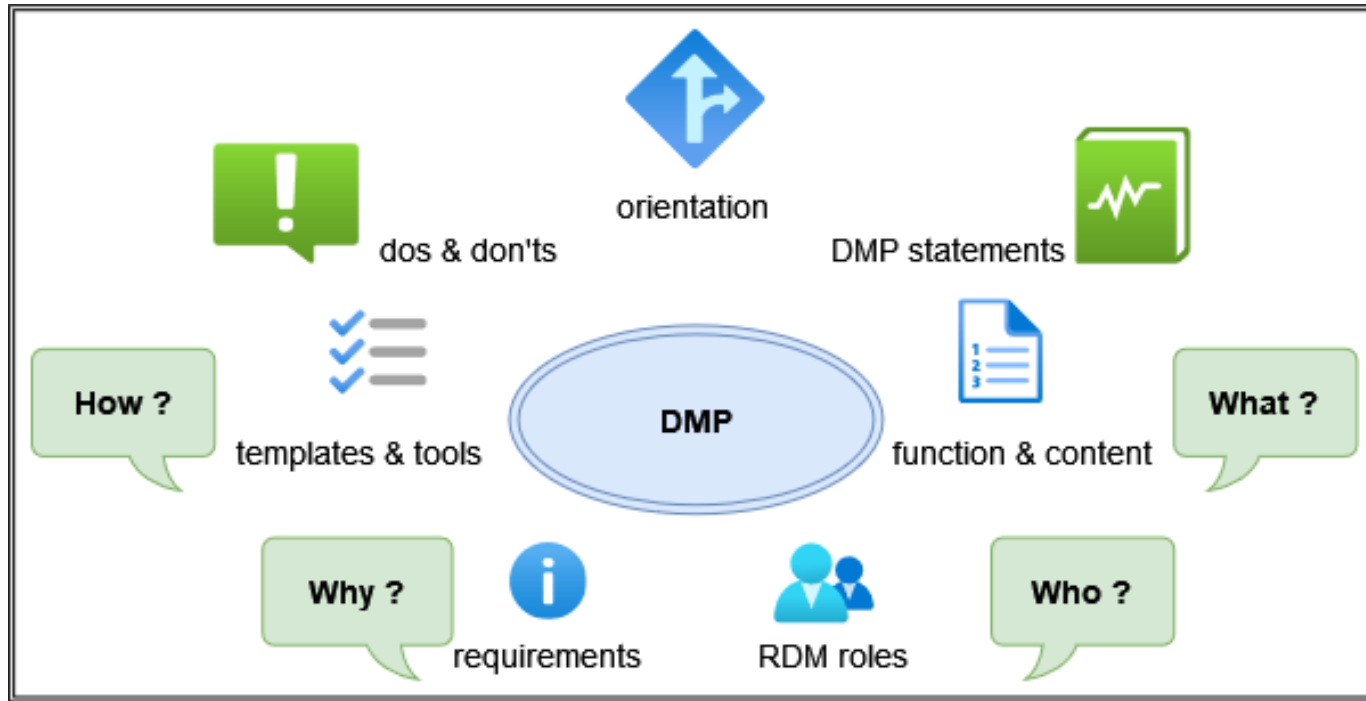
Received: December 27, 2020; **Accepted:** April 29, 2021; **Published:** May 10, 2021

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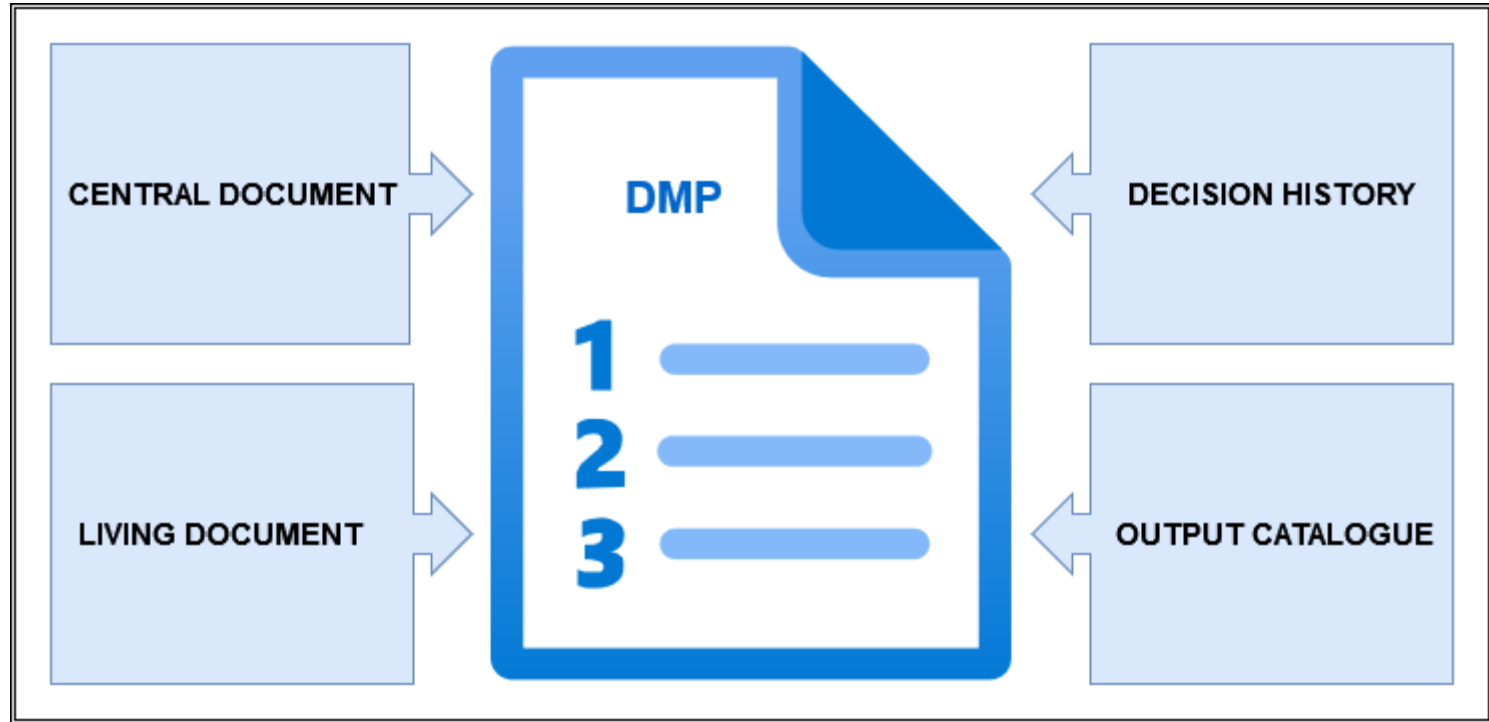
Data Availability: Data cannot be shared publicly because the dataset is a collection of data from several Swedish national registers and we are not allowed to share it. The mandatory Swedish Medical Birth Register and the Swedish Cancer Registry are national datasets and therefore considered to be public property. Access to the data is given only to researchers with permission from a Swedish regional ethical review board (see <https://www.etikprovningssmyndigheten.se>) and after approval of the research plan by the data managers. Data access requests may be sent to the Swedish National Board of Health and Welfare (<https://www.socialstyrelsen.se>). After permission from a Swedish regional ethical review board, data researchers can also apply to access data from Statistics Sweden (<https://www.scb.se>) and the Swedish National Cervical Screening Registry (<http://www.nkcx.se/>).

PLOS ONE: Data Availability <https://journals.plos.org/plosone/s/data-availability>

What is a DMP?



What is a DMP ? - function and content



Administrative data

Data for identification

- Name of the funding organization
- Project grant number
- Project title / acronym
- Principal Investigator / Researcher
- Researcher ID (e.g. ORCID)
- Contact details for DMP responsible person
- Date of first DMP version
- Date of last update

Administrative data

Relevant guidelines / policies

- Funder requirements
- Institutional guidelines
- Subject-specific recommendations
- Project or institute specific policy on handling research data

Data description

Type of research data

- Which data types & formats are reused or generated?
- What tools or software tools will be used?
- Are existing data suitable for re-use in terms of choice of technology, formats, usage rights, licenses and metadata?

Data description

Volume

- Estimate the amount of data to be expected: during data analysis as well as after selection of data for permanent archiving.
- Of what size are the largest individual files?

Data documentation & quality control

- Folder and file naming conventions
- Versioning
- Metadata standards
- Controlled vocabularies / ontologies
- Supporting documentation
- Virtual research environments / databases / ELABs

Storage & backup

- Storage and data sharing during the project
- Backup strategy
- Access control according to protection requirements
- Long-term storage according to GRP

Legal aspects

- Data protection / General Data Protection Regulation
- Copyright and rights of use
- Licensing law
- Patent law

Depping, R. (2021). Rechtliche Aspekte des Forschungsdatenmanagements (Zweite überarbeitete und erweiterte Fassung). Arbeitspapier. <http://nbn-resolving.de/urn:nbn:de:hbz:38-537450>

Lauber-Rönsberg, A., Krahn, P., Laumann, P. (2018). Kurzfassung : Gutachten zu den rechtlichen Rahmenbedingungen des Forschungsdatenmanagements im Rahmen des DataJus-Projekts. Version 1, Stand Juni 2018. Dresden: Technische Universität [Link](#)

Kreutzer, T., Lahmann, H. (2019). Rechtsfragen bei Open Science. Ein Leitfaden. Hamburg UP. [Link](#)

Data publication

- Selection of datasets
- Name of the (subject-specific) repository
- Timeline of data transfer to the archive
- Time of publication (embargo, if applicable)
- Reason for restrictions
- Selection of usage licenses

Responsibilities & resources

- Who is responsible for RDM?
 - Regulation of responsibilities
 - Access control
 - Training of project participants
 - Data curation / quality control
- Budget: What does RDM cost?

What? – Budgeting RDM

👉 Budget at least 5% for RDM costs!

Infrastructure

- Computing Capacity
- Storage Space
- Back-Up Space
- Software Licenses
- Hardware

Archiving and Open Access

- Open Access Publication costs
- Data Archiving per GB
- Copyright and IPR for your data

Research Data Management

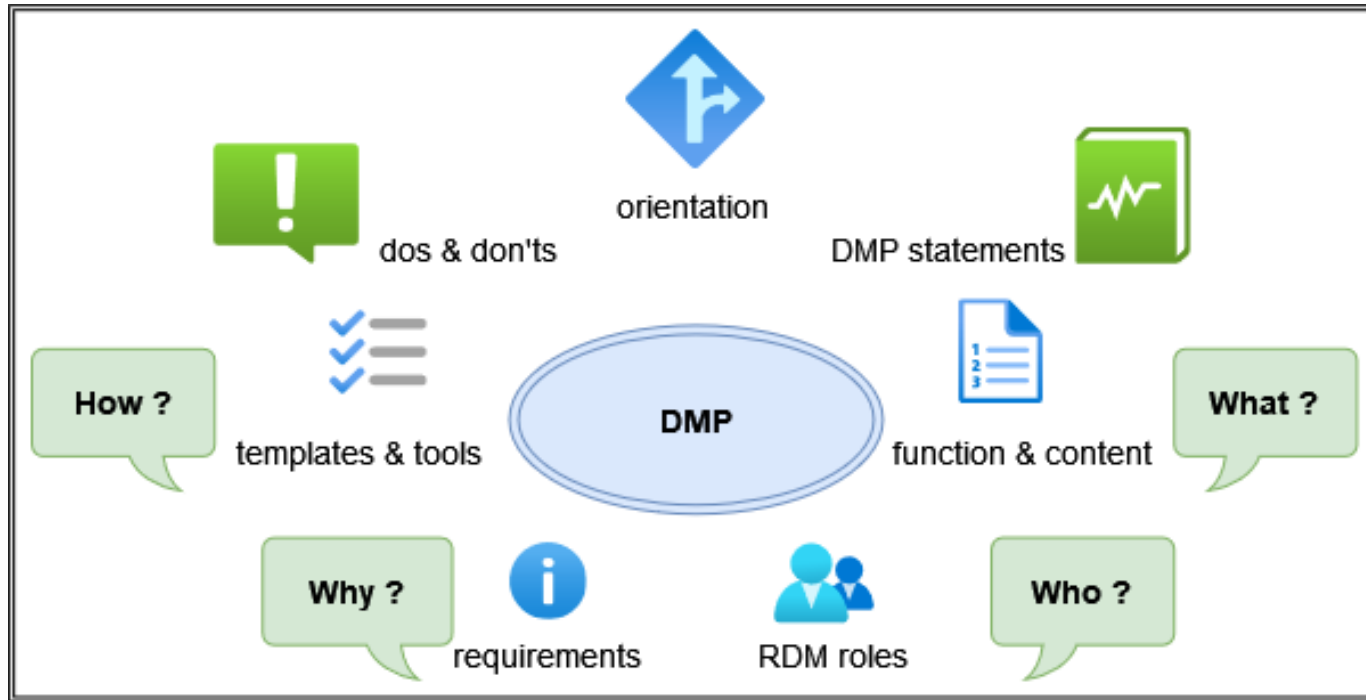
- Data and material reuse licenses
- Data cleaning and preparation
- Data Management Planning

RDM Support Staff

- Data Manager
- Data Steward
- Bioinformatician
- Technical / Laboratory staff

See: Jasmin Böhmer. (2019, September).
UBC RDM Workshop 1 - Data Management
Planning (Version V2). Zenodo.
<http://doi.org/10.5281/zenodo.3469953>

Who ? – RDM roles



Who ? – RDM roles

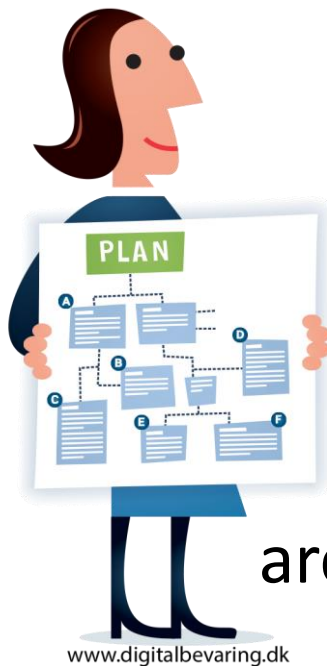
Data manager:in

RDM-coordinator

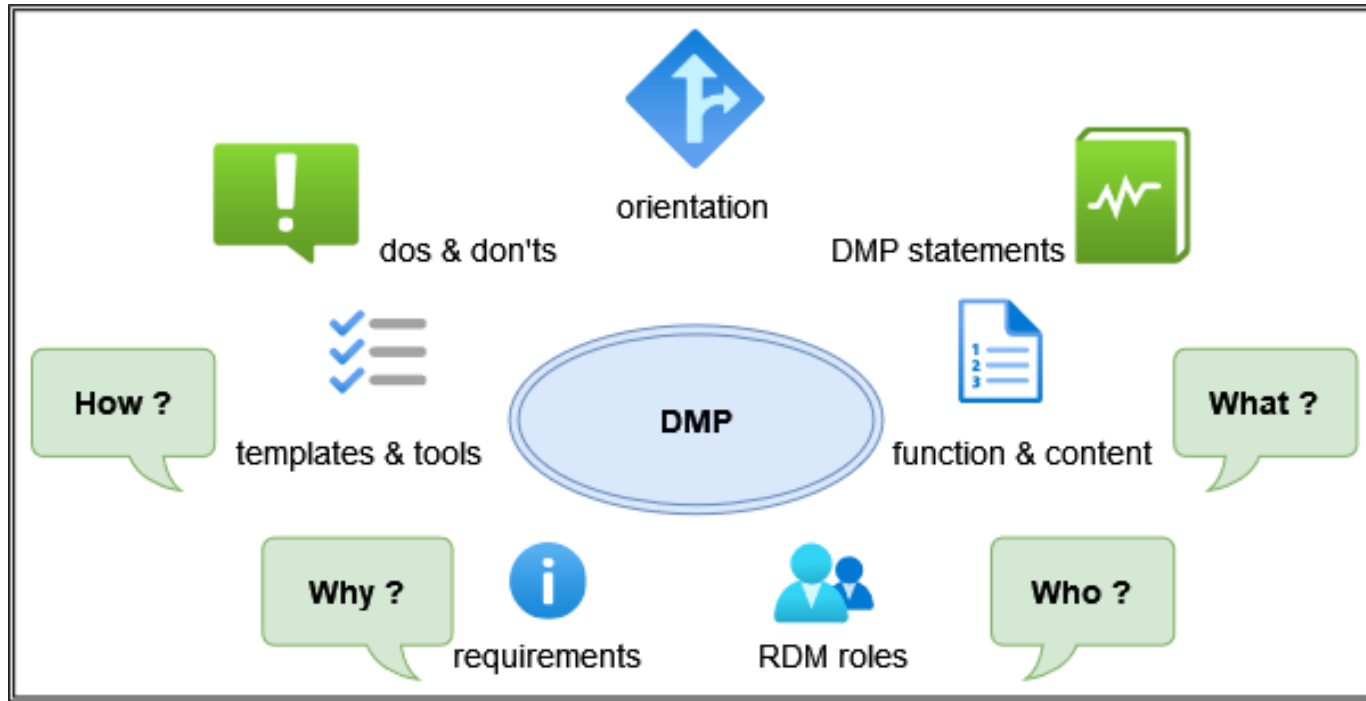
Data steward

Data curator

archivists / service provider



Why? – guidelines & requirements



Why? – guidelines & requirements

- University of Cologne: [Guideline on the handling of research data](#)
- DFG: [Guidelines for Safeguarding Good Research Practice. Code of Conduct.](#)
- DFG: [Guidelines on the Handling of Research Data](#)
- Subject-Specific Recommendations ([DFG-overview](#))
- BMBF: Individual Funding Criteria ([Aktionsplan FD](#) german only)
- Horizon Europe
 - [HE Programme Guide, S.40](#)
 - [EC: Open Research Europe. Data Guidelines](#)

Good research practice

DFG: Code of Conduct

Guideline 13 – providing public access to research results

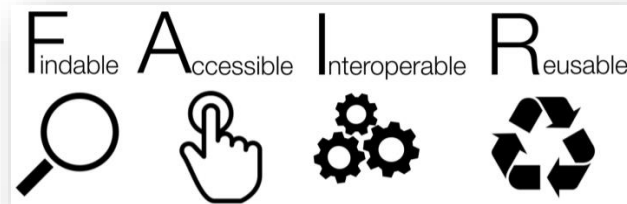
- Transparency and reproducibility
- Reusability (FAIR)

Code of Conduct:

https://www.dfg.de/en/research_funding/principles_dfg_funding/good_scientific_practice/index.html

Guidelines for Safeguarding Good Research Practice. Code of Conduct. <https://doi.org/10.5281/zenodo.3923602>

FAIR principles



FAIR concentrates on how to prepare data in a sustainable way that it can be found and used by others.

Research data are **FAIR** if they are made - **f**indable, - **a**ccessible (i.e., at least metadata can be accessed), - **i**nteroperable, - and **r**eusable.

FAIR-checklist:

Jones, Sarah, & Grootveld, Marjan. (2017, November). How FAIR are your data?. Zenodo.

<http://doi.org/10.5281/zenodo.3405141>

Why? – Budgeting RDM

👉 Budget at least 5% for RDM costs!

Infrastructure

- Computing Capacity
- Storage Space
- Back-Up Space
- Software Licenses
- Hardware

Archiving and Open Access

- Open Access Publication costs
- Data Archiving per GB
- Copyright and IPR for your data

Research Data Management

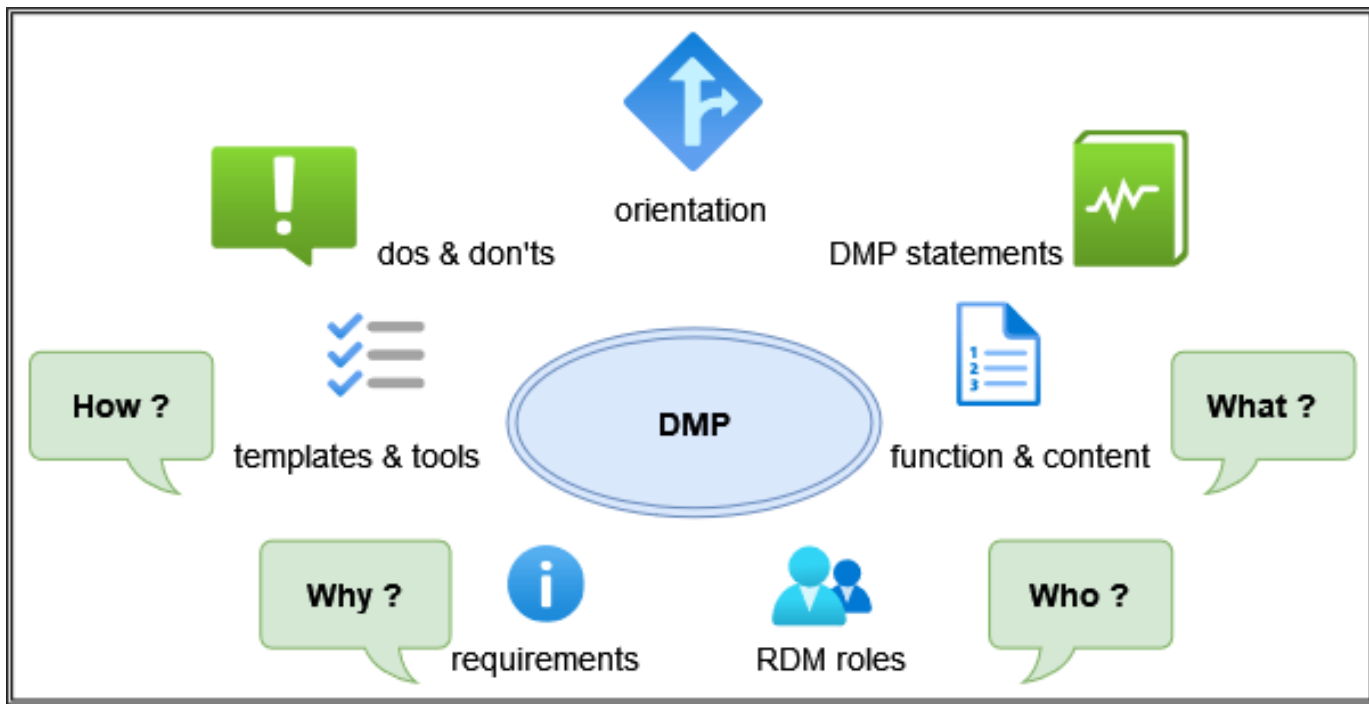
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See: Jasmin Böhmer. (2019, September).
UBC RDM Workshop 1 - Data Management
Planning (Version V2). Zenodo.
<http://doi.org/10.5281/zenodo.3469953>

How? – templates & tools



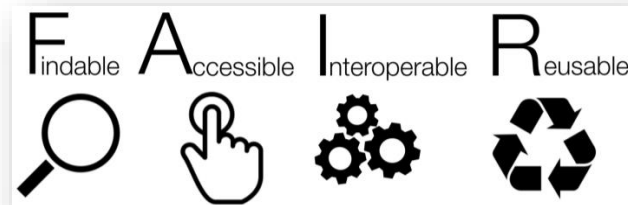
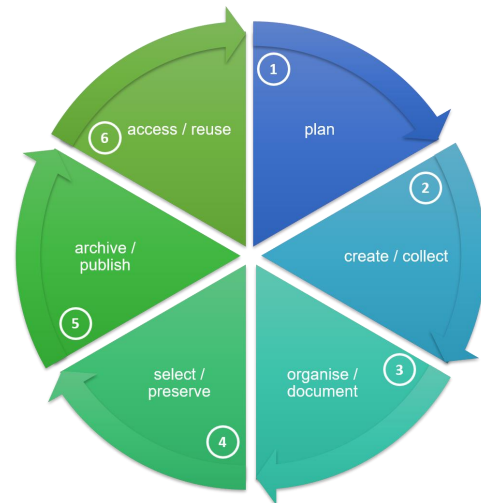
How ? – DMP templates

Based on the Research Data Lifecycle

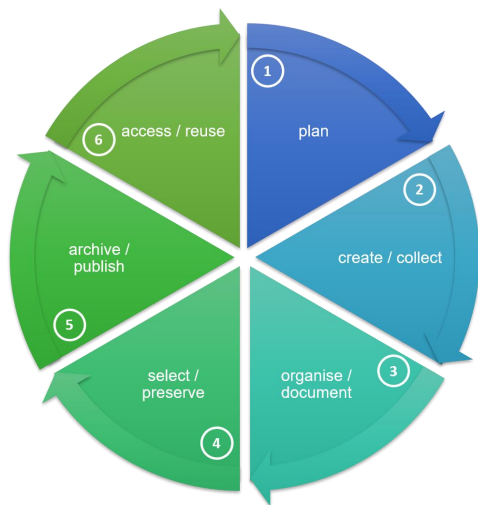
- [DFG Checkliste](#)
- [Science Europe Template](#) (engl.)

Based on the FAIR-Principles

- EU [Horizon Europe-Template](#)



DMP- Example UoC



UoC-Template

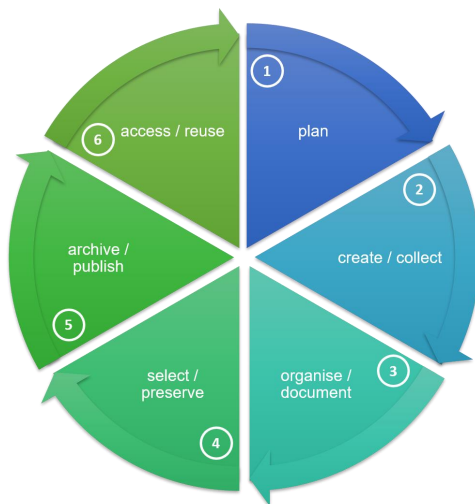
DE: https://fdm.uni-koeln.de/sites/FDM-UzK/Templates/DMP_UzK_20180201.docx

EN: https://fdm.uni-koeln.de/sites/FDM-UzK/Templates/DMP_UoC_20190211.docx

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DMP- Example Science Europe



Science Europe Template & Practical Guide
<https://www.scienceeurope.org/our-priorities/research-data/research-data-management/>

TEMPLATE: RESEARCHER GUIDANCE FOR DATA MANAGEMENT PLANS

Introduction

This example of a data management plan template is based on the Science Europe core requirements for DMPs.¹ These core requirements should be considered as a minimum standard, leaving the flexibility to formulate additional guidelines according to the needs of specific domains or to national or local legislation.

The template presented below refers to the 15 questions covering six core requirements for good data management in the Science Europe RDM Guide. Additional guidance and explanations are provided to help researchers fill out such a template and to assure that all relevant aspects of research data management are covered. The below table can be adapted by individual organisations and disciplines to develop templates that fit their needs.

Researchers' Guidance for Data Management Plans

When developing solid data management plans, researchers are required to deal with the following topics and answer the following questions:

General information

Administrative information such as name of applicant, project number, funding programme, and version of DMP

1 Data description and collection or re-use of existing data

1a How will new data be collected or produced and/or how will existing data be re-used?

- Explain which methodologies or software will be used if new data are collected or produced.
- State any constraints on re-use of existing data if there are any.
- Explain how data provenance will be documented.
- Briefly state the reasons if the re-use of any existing data sources has been considered but discarded.

1b What data (for example the kind, formats, and volumes), will be collected or produced?

- Give details on the kind of data: for example numeric (databases, spreadsheets), textual (documents), image, audio, video, and/or mixed media.
- Give details on the data format: the way in which the data is encoded for storage, often reflected by the filename extension (for example pdf, xls, doc, txt, or rdf).
- Justify the use of certain formats. For example decisions may be based on staff expertise within the host organisation, a preference for open formats, standards accepted by data repositories, widespread usage within the research community, or on the software or equipment that will be used.
- Give preference to open and standard formats as they facilitate sharing and long-term reuse of data (several repositories provide lists of such 'preferred formats').

¹ The core requirements for data management plans were developed as part of the initiative for the voluntary international alignment of research data management requirements, led by Science Europe and the Dutch Research Council (NWO). Detailed information about the initiative is available at <https://www.scienceeurope.org/rdm>.

Science Europe
 Rue de la Science 14, 1040 Brussels, Belgium
 Tel: +32 (0)2 226 03 00 | Email: office@scienceeurope.org | <https://scieur.org/rdm>

TEMPLATE: RESEARCHER GUIDANCE FOR DATA MANAGEMENT PLANS

- Give details on the volumes (they can be expressed in storage space required (bytes), and/or in numbers of objects, files, rows and columns).

2 Documentation and data quality

2a What metadata and documentation (for example the methodology of data collection and way of organising data) will accompany the data?

- Indicate which metadata will be provided to help others identify and discover the data.
- Indicate which metadata standards (for example DOI, TEI, EML, MARC, CMDI) will be used.
- Use community metadata standards where these are in place.
- Indicate how the data will be organised during the project, mentioning for example conventions, version control, and folder structures. Consistent, well-ordered research data will be easier to find, understand, and re-use.
- Consider what other documentation is needed to enable re-use. This may include information on the methodology used to collect the data, analytical and procedural information, definitions of variables, units of measurement, and so on.
- Consider how this information will be captured and where it will be recorded for example in a database with links to each item, a 'readme' text file, file headers, code books, or lab notebooks.

2b What data quality control measures will be used?

- Explain how the consistency and quality of data collection will be controlled and documented. This may include processes such as calibration, repeated samples or measurements, standardised data capture, data entry validation, peer review of data, or representation with controlled vocabularies.

3 Storage and backup during the research process

3a How will data and metadata be stored and backed up during the research?

- Describe where the data will be stored and backed up during research activities and how often the backup will be performed. It is recommended to store data in at least two separate locations.
- Give preference to the use of robust, managed storage with automatic backup, such as provided by IT support services of the home institution. Storing data on laptops, stand-alone hard drives, or external storage devices such as USB sticks is not recommended.

3b How will data security and protection of sensitive data be taken care of during the research?

- Explain how the data will be recovered in the event of an incident.
- Explain who will have access to the data during the research and how access to data is controlled, especially in collaborative partnerships.
- Consider data protection, particularly if your data is sensitive for example containing personal data, politically sensitive information, or trade secrets. Describe the main risks and how these will be managed.
- Explain which institutional data protection policies are in place.

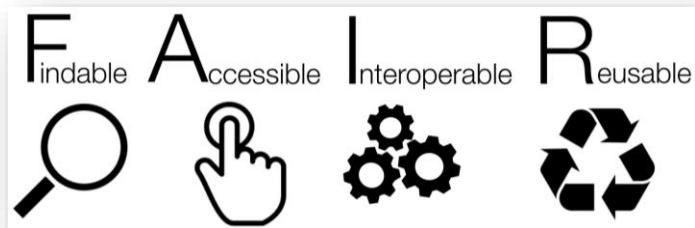
4 Legal and ethical requirements, codes of conduct

4a If personal data are processed, how will compliance with legislation on personal

- Ensure that when dealing with personal data protection laws (for example GDPR) are complied with:
 - Gain informed consent for preservation and/or sharing of personal data.

Science Europe
 Rue de la Science 14, 1040 Brussels, Belgium
 Tel: +32 (0)2 226 03 00 | Email: office@scienceeurope.org | <https://scieur.org/rdm>

DMP- Example Horizon Europe



Usually linked in the EU Funding & tenders portal.

Alternative LINKs:

https://fdm.uni-koeln.de/sites/FDM-UzK/Templates/data-management-plan-template_he_en-2.docx

<https://enspire.science/wp-content/uploads/2021/09/Horizon-Europe-Data-Management-Plan-Template.pdf>

EU Grants: Data Management Template (HE):V1.0 – 05.05.2021

The Horizon Europe Model Grant Agreement requires that a data management plan ("DMP") is established and regularly updated. The use of this template is recommended for Horizon Europe beneficiaries. In completing the sections of the template the requirements for research data management of Horizon Europe as described in article 17 and analysed in the Annotated Grant Agreement, article 17, must be addressed.

1. Data Summary

Will you re-use any existing data and what will you re-use it for? State the reasons if re-use of any existing data has been considered but discarded.

What types and formats of data will the project generate or re-use?

What is the purpose of the data generation or re-use and its relation to the objectives of the project?

What is the expected size of the data that you intend to generate or re-use?

What is the origin/provenance of the data, either generated or re-used?

To whom might your data be useful ('data utility'), outside your project?

2. FAIR data

2.1. Making data findable, including provisions for metadata

Will data be identified by a persistent identifier?

Will rich metadata be provided to allow discovery? What metadata will be created? What disciplinary or general standards will be followed? In case metadata standards do not exist in your discipline, please outline what type of metadata will be created and how.

Will search keywords be provided in the metadata to optimize the possibility for discovery and then potential re-use?

Will metadata be offered in such a way that it can be harvested and indexed?

2.2. Making data accessible

Repository:

Will the data be deposited in a trusted repository?

Have you explored appropriate arrangements with the identified repository where your data will be deposited?

Does the repository ensure that the data is assigned an identifier? Will the repository resolve the identifier to a digital object?

Data:

Will all data be made openly available? If certain datasets cannot be shared (or need to be shared under restricted access conditions), explain why, clearly separating legal and contractual reasons from intentional restrictions. Note that in multi-beneficiary projects it is also possible for specific beneficiaries to keep their data closed if opening their data goes against their legitimate interests or other constraints as per the Grant Agreement.

How ? – DMP-templates & samples

- UoC-template ([DE](#) & [EN](#) version)
- [Template](#) Volkswagen Stiftung
- EU [Horizon Europe-Template](#)
- [Science Europe Template](#)
- [DFG](#) Sample (CMS / HU Berlin)
- [BMBF](#) Sample (CMS / HU Berlin)



#1
MY DOG HAS
EATEN MY
DMP!

Top 10 Excuses for not having a data management plan
Franziska Helbing @FranziMachtDas
CC BY-SA 4.0

How ? – DMP tools

Generic DMP-Tools

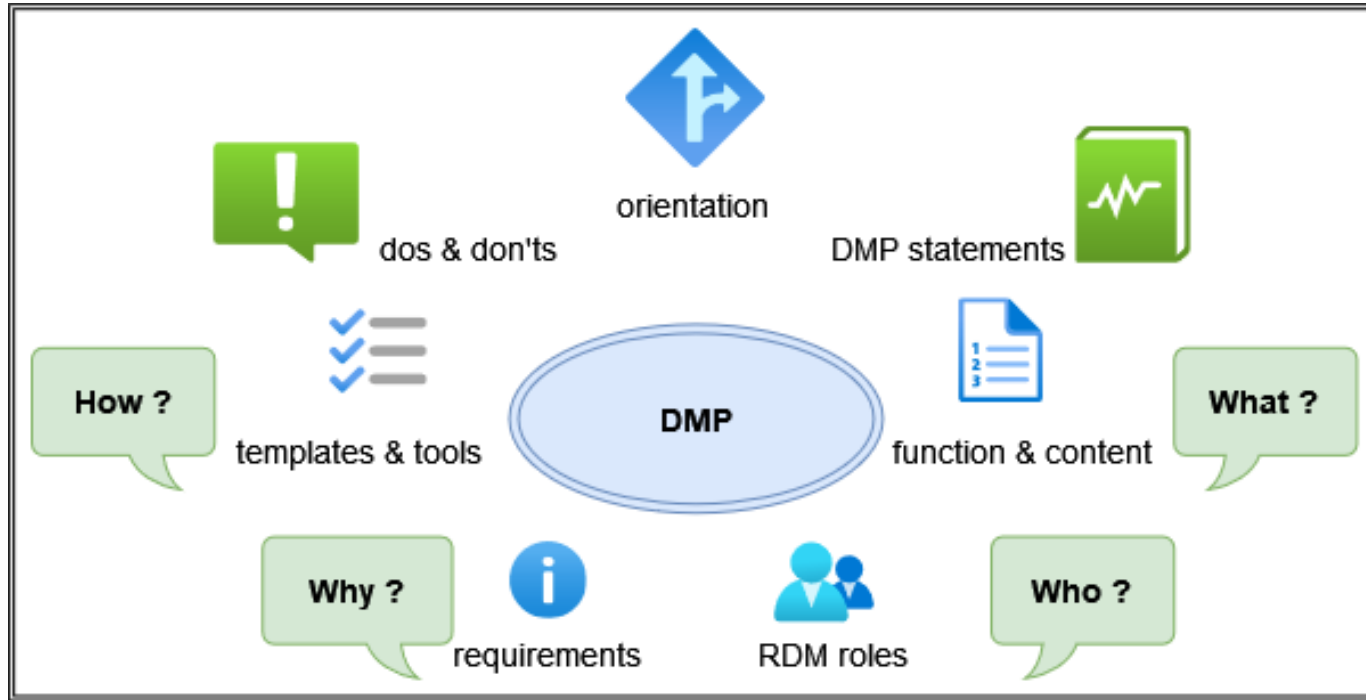
- [Research Data Management Organizer \(RDMO\)](#) - DFG-funded
- [DMPonline](#) - Digital Curation Centre (DDC), hosted by University of Edinburgh
- [DMP Tool](#) - California Digital Library

How ? – DMP tools

Fachspezifische DMP-Tools

- Biodiversitäts- und Umweltforschung: [GFBio DMP-Tool](#)
- Geistes- und Sozialwissenschaften / Sprachdaten: [CLARIN-D Wizard](#)
- Geowissenschaften: [MOSES DMP tool](#) - Prototyp in Entwicklung
- Psychologie: [DataWiz](#)
- Bildungsforschung: Standardisierte DMPs ([STAMP](#) in Kürze verfügbar mit RDMO-Tool oder pdf-Datei)

Dos & Don'ts



Dos & Don'ts - DMP exercise

2. FAIR data

2.1. Making data findable, including provisions for metadata

In our field it is highly uncommon to reuse published data sets, and therefore no metadata standards exist. However, I will publish the raw .csv files as supplementary files **wherever possible**. I will provide clear headers for all tables and a custom **description of the data and metadata in the methods sections**. Only raw data of published experiments will be provided and therefore version numbers are not necessary.

2.2. Making data openly accessible

The data will be published as .csv files and can be used for follow-up analysis via any programming language. There are no restrictions to sharing for any legal reason. **The data will be made available as supplementary files wherever possible. Given the small size of our data sets (<1 mb), this should typically be possible.** In case of the timelapse .tif files, .csv files of low-level image analysis will be published together with all other .csv files and the raw images will be **available upon request**. Analysis scripts will be detailed in the methods section and will be **available upon request**. There are no restrictions on use and there is no need for a data access committee.

2.3. Making data interoperable

The data are interoperable as everything will be published in a .csv format; however, it is highly unlikely that our data sets will be combined with other data sets as the settings of our experiments are different from what other labs do. As there are currently no laboratory tools for studying [REDACTED] [REDACTED] there is no other data to combine it with.

2.4. Increase data re-use (through clarifying licences)

The data will be freely available for anyone to reuse after publication **without any form of licensing**.

3. Allocation of resources

Dos & Don'ts

Common mistakes in DMP writing:

- 1. Lack of accuracy**
- 2. Reuse of text blocks**
- 3. Terminological inaccuracies**
- 4. Lack of resource calculation**

DMP-Checklist

1. Determine the Research Sponsor Requirements
2. Identify the Data to Be Collected
3. Define How the Data Will Be Organized
4. Explain How the Data Will Be Documented
5. Describe How Data Quality Will Be Assured
6. Present a Sound Data Storage and Preservation Strategy
7. Define the Project's Data Policies
8. Describe How the Data Will Be Disseminated
9. Assign Roles and Responsibilities
- 10. Prepare a Realistic Budget**

Michener WK (2015) Ten Simple Rules for Creating a Good Data Management Plan. PLoS Comput Biol 11(10): e1004525.
<https://doi.org/10.1371/journal.pcbi.1004525>

C³RDM services

Consultation



Training



RDM Infrastructure



Network@UoC



Website: <https://fdm.uni-koeln.de>

Service catalogue:
<https://fdm.uni-koeln.de/en/rdm-services/service-catalogue>

Email: fdm-support@uni-koeln.de

Mailinglist: <https://lists.uni-koeln.de/mailman/listinfo/c3rdm-network>

Chat: #Data_Champions_Network

Agenda

1. Recap Meet-Up #1
2. How to write a Data Management Plan (DMP)?
Input + Q&A
3. **Further activities & discussion**

Further activities & discussion

Suggested Formats:

Workshop



Coffee Lecture



Hands On Sessions



Mentoring



- **Virtual Coffee Lecture series „33 Minuten für...“ by USB**
- **Starts 13.10.2022, weekly at 14:00h**
- **14 topics around scholarly communication and e-research, e.g.:**
 - Exploring literatur w/ AI,
 - File/ information organization
 - Open Access: IP and funding
 - Digital collections– easyDB@USB
 - Referencing, citing: Orcid, PID, DOI
 - Scientific writing

Further activities & discussion

- **15.11.2022:** [Tag der Forschungsdaten in NRW](https://fdm.uni-koeln.de/netzwerkuzk/tag-der-forschungsdaten) „Leuchtturm FDM: Orientierung im Datenmeer“
 - Contributions by the University of Cologne (virtual)
<https://fdm.uni-koeln.de/netzwerkuzk/tag-der-forschungsdaten>
 - 13:00-13:45h Cologne Competence Center for Research Data Management (C³RDM)
 - 14:00-15:00h FDM Services im Fokus: Sammlungserschließung mit easyDB
 - 15:00-17:00h DCN Meet-Up #3, NFDI@UoC