

Research Data Management

Data Management Planning and Plans

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Research Data Management

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- DMPlanning vs. DMPlans
- Why to do DMP – motivation
- DMP – what it should contain
- Tools
- Examples



Research Data Management

DMPlanning vs. DMPlan

Data Management Planing

The process

of planning, describing, and communicating the lifecycle of data and activities related to its management during research (planning, organizing, storing preserving/archiving, sharing)

Data Management Plan (DMP)

A document (tool)

describing these activities (such documents are often required by subsidy or grant providers).



DMPlanning/ DMPlan

Motivation – why to do it at all?

Meeting the requirements of funding providers – a necessary evil



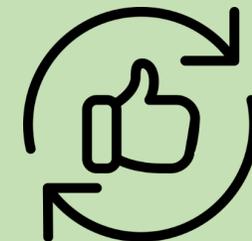
OR

Setting up processes leading to:

- securing data **against damage/loss**
- **greater efficiency** in research

Well-managed data leads to greater:

- willingness to **share** data
- willingness of others to **use your data**
- **increased credibility** of conclusions based on data



DMPlanning/ DMPlan



Mandatory DMPs:

Funders:

- [Horizon Europe](#), [Poland/National Science Centre Poland](#), in the Czech Republic: [Programme Johannes Amos Comenius](#) or the [Technology Agency of the Czech Republic](#); *Slovakia–[National Strategy for Open Science](#)–a mandatory DMP for publicly funded research is planned for,*
- some funders (e.g. [ERC](#)) have their **specific DMP templates**.

RPOS:

- many **research performing institutions (RPOs)** require a mandatory DMP in their internal directives (e.g. [the Slovak Academy of Sciences](#) will require mandatory DMPs from 2027 for projects partly or completely publicly or institutionally funded.



DMPlanning/ DMPlan



It is important to **think about data** (and make decisions) **BEFORE, DURING** and **AFTER** the research is conducted.

DMP = a process and a tool that can help researchers **plan and manage** their research and research data **during the whole data lifecycle**.

DMP allows researchers to:

- think systematically about data management,
- make strategic decisions at the right time,
- clarify with collaborators the expectations for the project,
- agree with collaborators the procedures and method of documentation,
- specify what data and how will be generated during research + information about data availability and use during and after research.



Data Management Plan

- **a formal document** (*not in the sense of formality, but in the sense of drawing-up a document*),
- **does not evaluate** the research; **it is not** a in-depth documentation,
- developed at the very beginning, but **may be modified in the course of the research according to the actual development of the situation**,
- researchers may use **templates** (institutional or provided by funders, RPOs), create a shared document (Google Docs, Office 365 Word), or use specialised software (web applications)
- may focus only on **several specific topics** or follow a complete research lifecycle
- meets funders' requirements

Data Management Plan



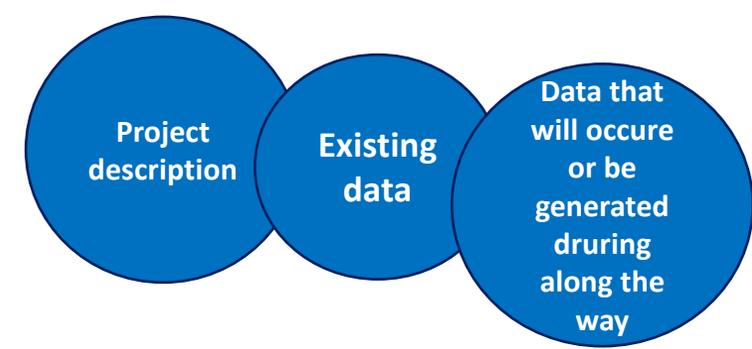


DISCOVER, REUSE & CITE

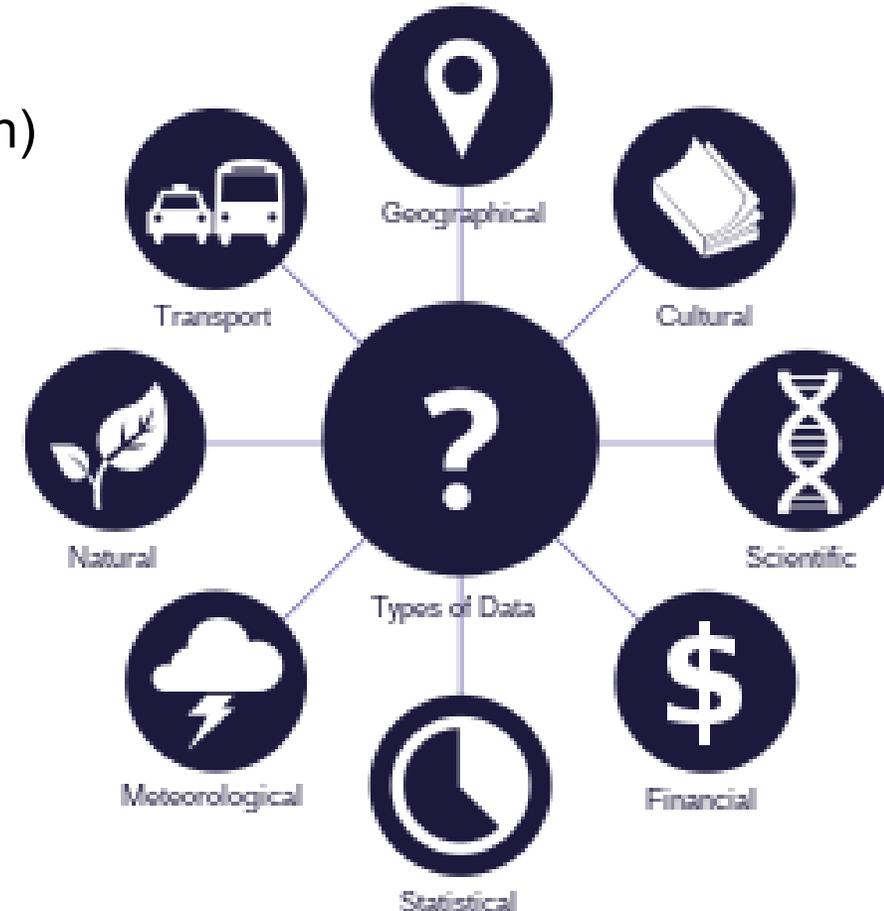


PLAN & DESIGN

Data Management Plan



- **Administrative data/Project description**
-a project name, name & ID of a principal investigator and co-investigators etc., research description (basic information)
- **Are there already any data** that you can use?
- **What kind of data** will be collected during the research?
-questionnaires, measurements, photographs, scans...
- **Will you collect any special or sensitive data?**
-personal data, biological samples, commercial data...

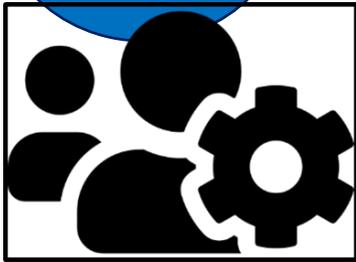


Data Management Plan



PLAN & DESIGN

Responsibilities and duties



- **Who will be responsible for what? Way of communication?**
 - identification of roles and responsibilities within data management, including for development of DMP

- **Costing**

The financial cost of the resources needed to ensure good practice in research data management, e.g.:

-staff time,

-equipment,

-infrastructure (e.g. repositories) and **tools** (e.g. software for documenting, organizing, processing, storing and accessing data (during research, after its completion)...

Cost and resources





PLAN & DESIGN

Data Management Plan



- **Ethical and legal aspects**

Do you have to ask for any consents before starting a project?

-people such as patients or any organizations such as the State Veterinary and Food Administration of the Slovak Republic, or ethical committee...

Do you have to meet any legal duties before starting a project?

-e.g. **GDPR, copyright, Act of the National Council of the Slovak Republic on Free Access to Information, No. 211/2000, ethical...**

Are you aware of rights and obligations when using the third party data?

-e.g. from **commercial databases**—their contracts may prohibit sharing of underlying data after the end of the project or limit the amount of data that can be extracted by the researcher

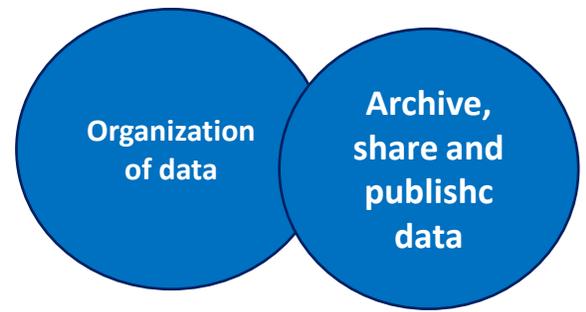


Digitalbevaring.dk

Data Management Plan



COLLECT & CAPTURE



- How will data be **collected and processed/curated**?
 - data cleaning and processing, creation and archiving of the master version
- What **formats** will data be stored/preserved in?
 - data reuse
 - common usage in scientific discipline
- What is estimated **volume of data acquired**?
 - think about it in advance—it will allow you to choose the most suitable place to store your

Formats

- **Archive/Container file:** TAR, GZIP, ZIP
- **Database:** XML, CSV
- **GIS/Geospatial data formats:** SHP, DBF, GeoTIFF, NetCDF
- **Video:** MOV, MPEG, AVI, MXF
- **Audio:** WAVE, AIFF, MP3, MXF
- **Statistical analysis:** ASCII, DTA, POR, SAS, SAV
- **Images:** TIFF, JPEG 2000, PDF, PNG, GIF, BMP
- **Spreadsheets/Tabular files:** CSV
- **Text:** XML, PDF/A, HTML, ASCII, UTF-8
- **Web archives:** WARC

Data Management Plan



- **Versioning**

- the way we manage multiple versions of the same document

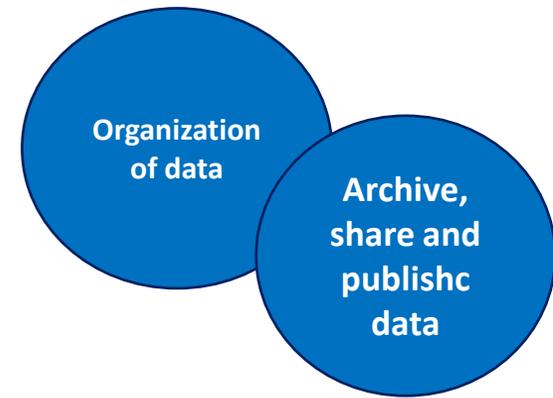
- **What is a File Naming Convention (FNC)?**

- a framework for naming your files in a way that describes what they contain and how they relate to other files

- helps you stay organized and quickly identify your files

- helps others more easily navigate your work—in a shared or collaborative group file-sharing setting¹

FILE NAMING: NO SPECIAL CHARACTERS/SYMBOLS, NO DIACRITICAL MARKS, CONSISTENT



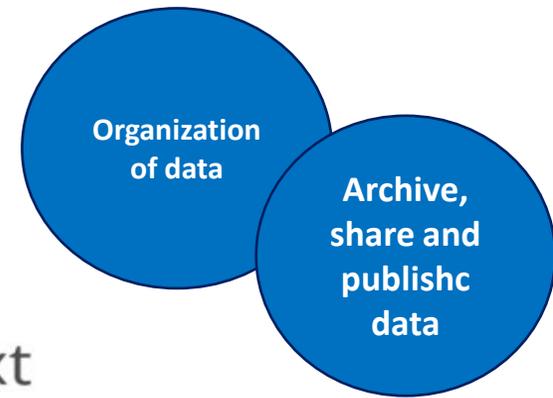
¹ <https://datamanagement.hms.harvard.edu/plan-design/file-naming-conventions>



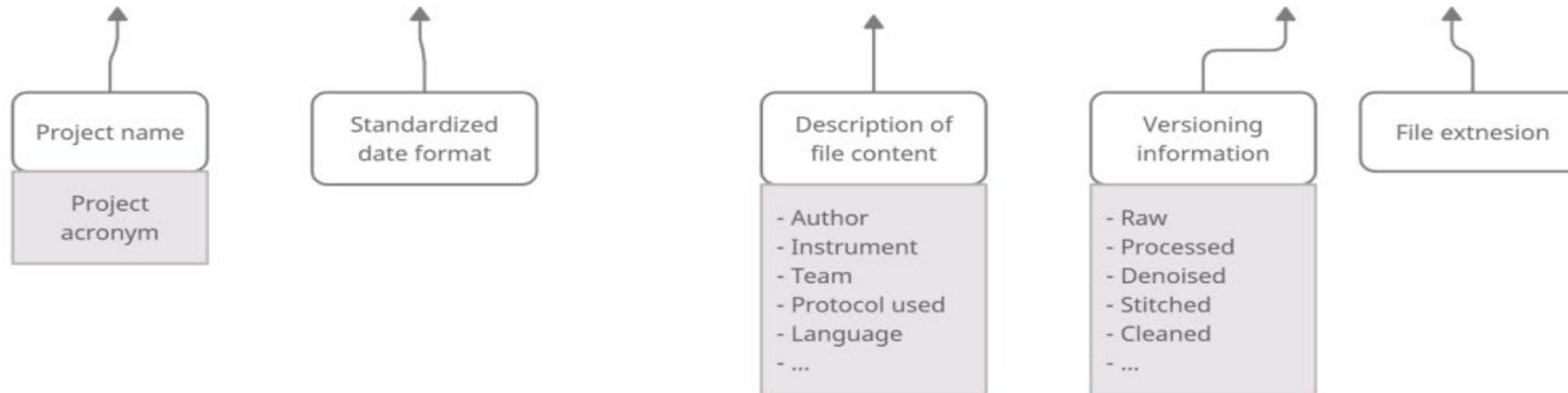
COLLECT & CAPTURE

Data Management Plan

• File Naming Convention (FNC)



Project_YYYYMMDD_ContentDescription_Version.ext

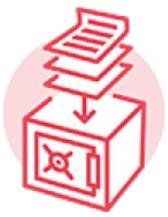


Files with FNC

- 20170503_BIOProject_DesignDocument_Jones_v1-01.docx
- 20170709_BIOProject_MasterData_Smith_v1-00.xlsx
- 20170825_BIOProject_Test1_Data_Gonzalez_v1-01.xlsx
- 20170825_BIOProject_Test2_Data_Gonzalez_v2-01.xlsx
- 20171023_BIOProject_MeetingNotes_Kramer_v1-00.docx

Files without FNC

- Test_data_2017
- Research_Data_2016
- Project_Design_2017
- Observations_2016
- Notes_2016



MANAGE, STORE, PRESERVE

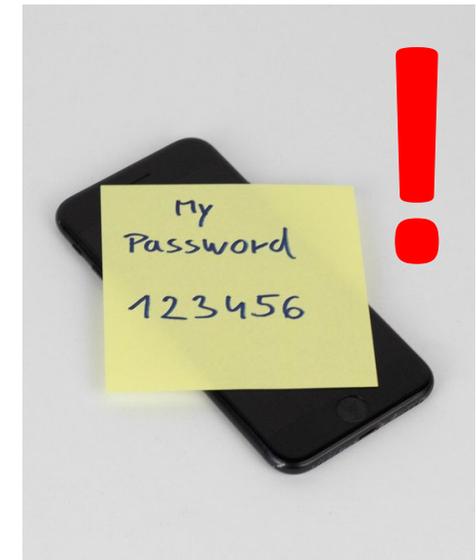
Data Management Plan



- **Data security**—How will you protect/secure your data?
 - from unauthorised access to data—to prevent unauthorised manipulation or deletion of files
 - personal, confidential and sensitive data protection

Technical and organisational measures, e.g.:

- protecting data by a password on the university server,
- locking sensitive data in paper form in a locking storage cabinets.





SHARE & PUBLISH



DISCOVER, REUSE & CITE

Data Management Plan



- How will you make your **data understandable to others?**
 - description of the standards and methods used** will help others understand how you have implemented the project (*documentation provides contextual information*)

- How will you **document/describe your data?**

Metadata—Which metadata are essential for your research?

-uniform **standardised metadata**

(*key words, project name, author/s, file version, formats...*)

-**metadata standards**, e.g. [Dublin Core](#), **disciplinary metadata standards**, e.g. [DDI](#), Darwin Core, EML, VRA Core...

-**controlled vocabularies**

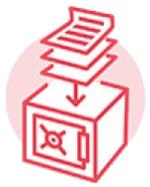
-*readme* file



Metadata Standards Catalog

<https://www.dcc.ac.uk/guidance/standards/metadata>

<https://guides.lib.utexas.edu/metadata-basics/controlled-vocabs>

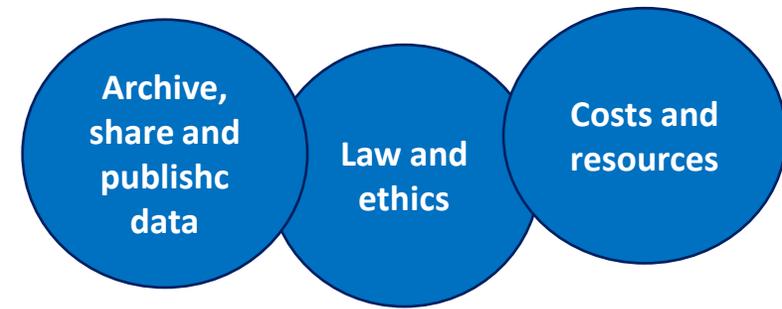


MANAGE, STORE, PRESERVE



SHARE & PUBLISH

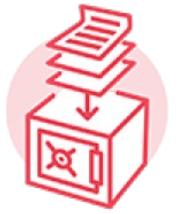
Data Management Plan



- How will you **store and back up your data along the way?**
 - the strategy **where & how to store your active data** will depend on the **type of data, how often and where you will back them up** (*another university server, cloud such as Dropbox, Google Drive, your own device such as laptop, the memory stick...*)
- How will you **share the data** that should be published?
 - which data** will be shared, **where** (e.g. in a **data repository**, data journal); how other people find your data (**metadata**), data reuse – **licences**: CreativeCommons(CC), GNU General Public License(GPL), MIT, Apache)



Data Management Plan



MANAGE, STORE, PRESERVE

- **Which data should be preserved in the long-term?**

Assess **the value of your data**, **preserve only the data with high value**, **i.e.:**

- all underlying data** linked to the publication (an article/book)
- data that were **difficult** or **costly to collect**
- data that **cannot be replaced** or **produced again**

- **Which data should be destroyed/deleted?**

- biological material** that can deteriorate/degrade over time
- sensitive, confidential or personal data** that cannot be anonymised

- **How long and where to keep data in the long-term after completion of the project?**

- for a **minimum period of time** for the data that are linked to publications;
- comply with legislation, regulations** applicable to your data type, with rules or guidelines of the institution...



Data Management Plan

Tools to create a DMP:

- **OpenAIRE–Argos:**

<https://argos.openaire.eu/splash/>

<https://argos.openaire.eu/splash/about/how-it-works.html>

- **DMPOnline - DCC (DigitalCurationCentre, UK):**

<https://www.dcc.ac.uk/dmponline>

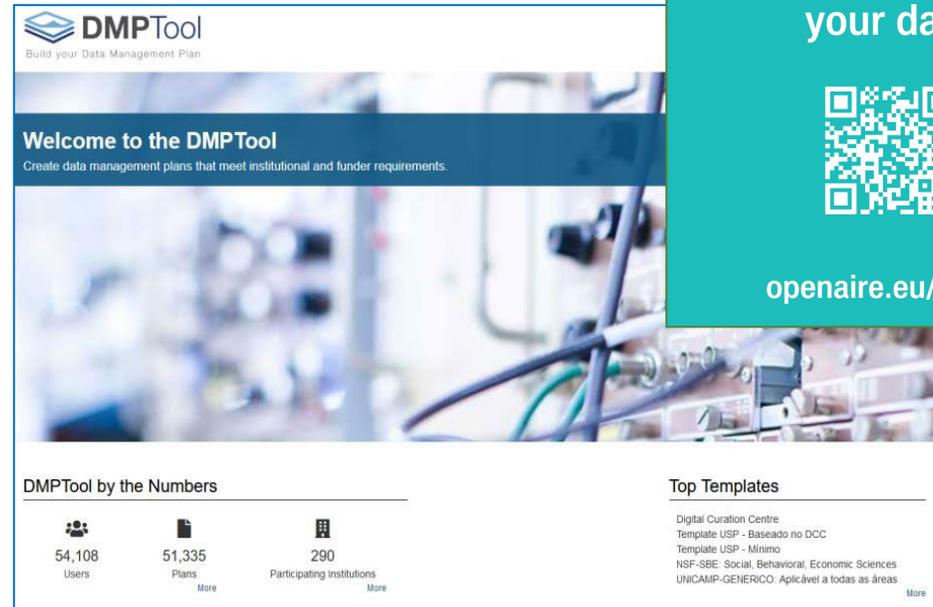
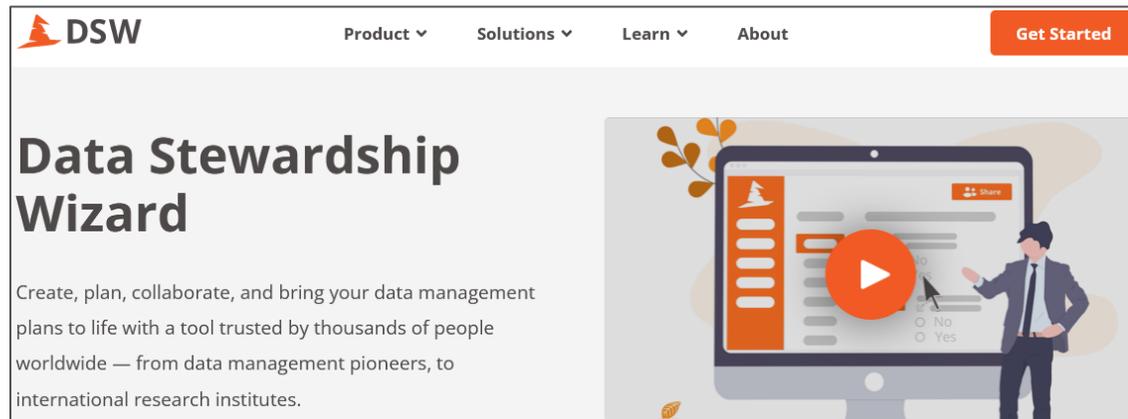
- **DMPtool (USA univerzity):**

<https://dmptool.org/>

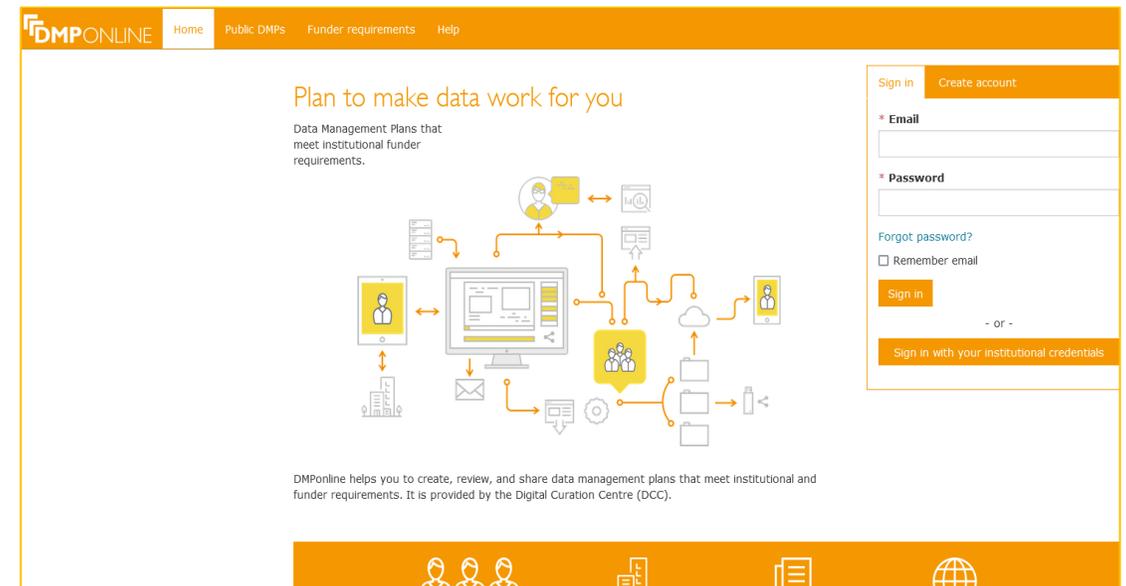
- **Data Stewardship Wizard:**

<https://ds-wizard.org/>

videopresentation: <https://www.youtube.com/watch?v=pvN0gPqBMzk>



- Get familiar with the **DMP Lifecycle** and excel in **Open and FAIR RDM planning**
- **Co-create DMPs** and manage workload
- **Publish and cite** DMPs as living documents
- **Configure** DMPs to tailored community needs
- **Link** DMPs to research outputs, EOSC services and the **OpenAIRE Research Graph**



Data Management Plan–Argos

× **argos**

Start new DMP FAQ EN LOG IN

- Home
- Public DMPs
- Public Dataset Desc.
- Co-Branding
- Support
- Send feedback

About Terms Of Service
Glossary User Guide

Sign in to account

OpenID iD EUDAT
Google Facebook Twitter

<https://argos.openaire.eu/user-guide>

Krátky návod na vytvorenie DMP pre projekt Horizont Európa:
<https://www.youtube.com/watch?v=FNQ88o1VX1c>

Data Management Plan–Argos

× **argos**

Start new DMP FAQ SK

Home

My DMPs

My Datasets

Public DMPs

Public Dataset Desc.

About Terms Of Service

Glossary User Guide

Contact Support

Editing DMP
(Unsaved changes) Discard Save

Guide steps

1. Main info (7)
2. Funding info (3)
3. License info
4. Dataset info

1.1 Title of DMP*

Title of DMP

1.2 Description

Briefly describe the context and purpose of the DMP

Fill with description

← Previous > Next

Data Management Plan example–DMPonline: Public DMPs

Info:

As part of our routine maintenance, we have upgraded our SSO login to enhance security.

- If your account was not linked to your institutional credentials, please log in as normal.
- If your account was linked to your institutional credentials, you will now need to re-link your account as part of this upgrade. To do this, please log in using your **DMPonline** email and password.
- Next, go to **Edit profile** > scroll down to the point **Institutional credentials**, and select the **Link your institutional credentials** option.
- After re-linking your account, you need to refresh your browser to complete the process. Remember to save your updated settings.

Public DMPs

Public DMPs are plans created using the DMPonline service and shared publicly by their owners. They are not vetted for quality, completeness, or adherence to funder guidelines.

Project Title	Template	Organisation	Owner	Download
Copy of NTU Psychology - Culture Survey Service Evaluation	NTU Data Management Plan	Nottingham Trent University	Mike Marriott	
Predicting Children Running Away using Risk Factors	Nottinghamshire Healthcare Foundation Trust (NHCFT / NHS)	University of Nottingham	Jessica Eaves	
Personalized follow-up in HPV-related oropharyngeal cancer patients using liquid biopsies	UMC Utrecht DMP with DPIA	UMC Utrecht	Imke Demers	
Study of non carbon fuels for marine transportation	DCC Template	Other	Terese Lovas	
Spring ACT Community Engagement Consulting Programme	Data Management Plan for masters & undergraduate students	London School of Economics and Political Science	Yi Jiang	
Cholesteatoma disease recurrence after the endoscopic approach or canal wall up tympanomastoidectomy with versus without bony obliteration	UMC Utrecht DMP	UMC Utrecht	Sanne Westerhout	
Urban Expansion and Standard of Living in Nigeria	University of Manchester Generic Template	University of Manchester	Muhammad Uthman	

Data Management Plan example–DMPonline: Public DMPs

Plan Overview

A Data Management Plan created using DMPonline

Title: Study of non carbon fuels for marine transportation

Creator: Terese Lovas

Principal Investigator: Terese Lovas

Affiliation: Other

Template: DCC Template

ORCID ID: 0000-0003-2010-394X

Project abstract:

The objectives of this project is to study two alternative novel concept engines for maritime application, addressing both technical/scientific and social/economical/regulatory aspects, and to develop guidelines for development of ammonia/hydrogen marine engines. By combining complementary expertise from four universities in Nordic countries (Lund Univ, Sweden, WU, Sweden, Aalto Univ, Finland and NTNU, Norway) and having support from marine engine companies based in Nordic region (Wärtsilä and MAN), Stolt Tankers and ForSea to build a Nordic network in ammonia/hydrogen by sharing chemical kinetics modelling, computational fluid dynamics engine experiments, and social/economical/regulatory assessment. By contributing to enhancing scientific excellence, creating social impacts, and contributing to based policymaking.

ID: 144043

Start date: 01-01-2022

End date: 31-12-2023

Last modified: 09-02-2024

Grant number / URL: 333383

Copyright information:

The above plan creator(s) have agreed that others may use as much of the text of this plan as they would like in their own plans, and customise it as necessary. You do not need to credit the creator(s) as the source of the language used, but using any of the plan's text does not imply that the creator(s) endorse, or have any relationship to, your project or proposal

Plan Overview

▼ Study of non carbon fuels for marine transportation

Data Collection

Documentation and Metadata

Ethics and Legal Compliance

Storage and Backup

Selection and Preservation

Data Sharing

Responsibilities and Resources

Data Management Plan template–ERC

Open Research Data and Data Management Plans

Information for ERC grantees
by the ERC Scientific Council



European Research Council
Executive Agency

Established by the European Commission



European Research Council (ERC)

ERC Data Management Plan
Template



ERC OPEN RESEARCH
DATA MANAGEMENT PLAN (DMP)

European Research Council
Established by the European Commission

Project Acronym	Project Number

Template for the ERC Open Research Data Management Plan (DMP). The following sections should describe how you plan to make the project data Findable, Accessible, Interoperable and Reusable (FAIR). Each of the following five issues should be addressed with a level of detail appropriate to the project.

SUMMARY (dataset¹ reference and name; origin and expected size of the data generated/collected; data types and formats)

Súhrn (názov daného súboru dát; pôvod a očakávaný objem vygenerovaných/zobieraných dát, typy a formáty dát), jeden DMP môže združovať informácie o viacerých súboroch dát.

¹ Several datasets may be included into a single DMP.

Page 2 of 5

ERC OPEN RESEARCH DATA MANAGEMENT PLAN (DMP)

1. MAKING DATA FINDABLE (dataset description: metadata, persistent and unique identifiers e.g., DOI)

Vyhľadateľnosť (popis súboru dát: metadáta, trvalé a jedinečné identifikátory, napr. DOI)

2. MAKING DATA OPENLY ACCESSIBLE (which data will be made openly available and if some datasets remain closed, the reasons for not giving access; where the data and associated metadata, documentation and code are deposited (repository?); how the data can be accessed (are relevant software tools/methods provided?))

Prístupnosť (Ktoré dáta budú voľne prístupné, ak niektoré dátové súbory ostatnú zatvorené, uviesť dôvody; kde budú dáta + súvisiace metadáta, dokumentácia a kódy uložené; ako sa dá dostať k dátam, sú prístupné softvérové nástroje, metódy?)

Data management Plan–ERC

ERC OPEN RESEARCH DATA MANAGEMENT PLAN (DMP)

3. **MAKING DATA INTEROPERABLE** (which standard or field-specific data and metadata vocabularies and methods will be used)

Interoperabilita (Ktoré štandardy a odborovo špecializované metadátové slovníky a metódy sa budú používať?)

4. **INCREASE DATA RE-USE** (what data will remain re-usable and for how long, is embargo foreseen; how the data is licensed; data quality assurance procedures)

Opakované použitie (Ktoré dáta bude možné použiť opakovane a ako dlho; predpokladá sa embargo; pod akými licenciami sa dáta sprístupnia; postupy na zaistenie kvality dát)



European Research Council
Established by the European Commission

ERC OPEN RESEARCH DATA MANAGEMENT PLAN (DMP)

5. **ALLOCATION OF RESOURCES and DATA SECURITY** (estimated costs for making the project data open access and potential value of long-term data preservation; procedures for data backup and recovery; transfer of sensitive data and secure storage in repositories for long term preservation and curation)

Alokácia zdrojov a bezpečnosť dát (odhad nákladov na sprístupnenie dát v otvorenom režime a potenciálna hodnota dlhodobého uchovávania dát; postupy na zálohovanie dát a obnovu dát; transfer citlivých dát a bezpečné uchovávanie v repositároch pri dlhodobom uchovávaní a spracovaní)

DISCLAIMER. Please note that the ERC Data Management Plan is not a part of the Ethics Review. It is the responsibility of the Principal Investigator to inform the ERCEA Ethics Team of any ethics issues/concerns regarding the collection, processing, sharing and storage of data in relation to the project.

Etické otázky

Data management Plan–example

FUDGE-5G - FULLy DisinteGrated private nEtworks for 5G verticals (957242)

Project Partners. (2021). Data Management Plan (1.0). Zenodo. <https://doi.org/10.5281/zenodo.5666716>

zenodo Search Upload Communities Log in Sign up

February 26, 2021

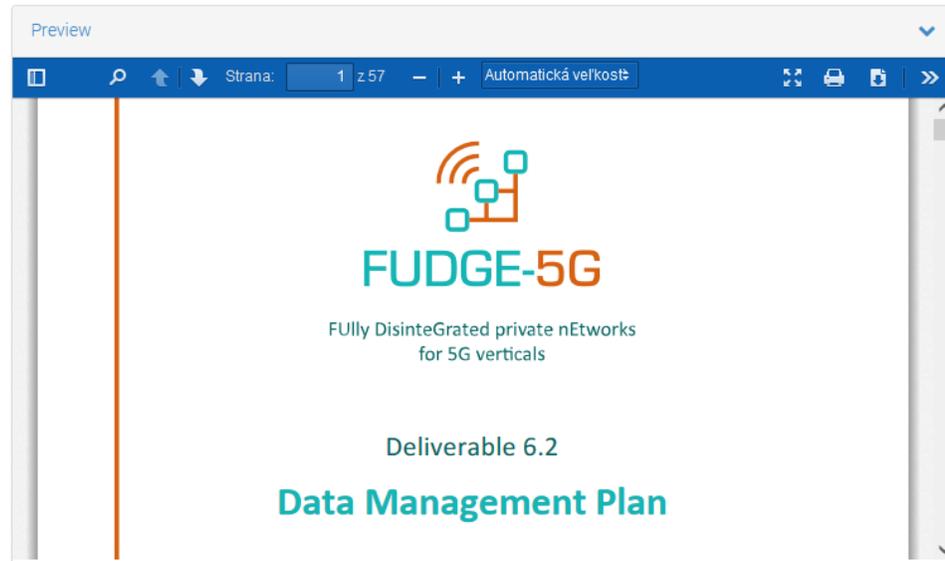
Project deliverable Open Access

Data Management Plan

Project Partners

The present document covers the underlying issues related to data management in FUDGE- 5G, both for qualitative and quantitative data generated during the project. It encompasses the methodology and procedures that FUDGE-5G has put in place to generate, store and publish results, which include deliverables, open-source contributions, scientific publications and datasets. Furthermore, the document covers ethics and privacy issues, describing how the project follows GDPR principles and how personal data is handled during the project.

Preview



Files (1.4 MB)

Name	Size	Preview	Download
FUDGE-5G-D6_2_v1.0_interim.pdf	1.4 MB		

41 views 47 downloads
See more details...

Indexed in
OpenAIRE

Publication date:
February 26, 2021

DOI:
DOI: [10.5281/zenodo.5666716](https://doi.org/10.5281/zenodo.5666716)

Grants:
[European Commission:](#)

- FUDGE-5G - FULLy DisinteGrated private nEtworks for 5G verticals (957242)

Communities:
FUDGE-5G

License (for files):
[Creative Commons Attribution 4.0 International](#)

Versions

Version 1.0 Feb 26, 2021
[10.5281/zenodo.5666716](https://doi.org/10.5281/zenodo.5666716)

<https://zenodo.org/record/5666716#.Y-Sj4K2ZOUk>

Compliant with a DMP template for Horizon 2020

The Horizon Europe template at:

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

Data Management Plan–examples

University of Vienna's Phaidra repository–many public DMPs (Horizon 2020): <https://hdl.handle.net/11353/10.1140797>

DMPonline: https://dmponline.dcc.ac.uk/public_plans

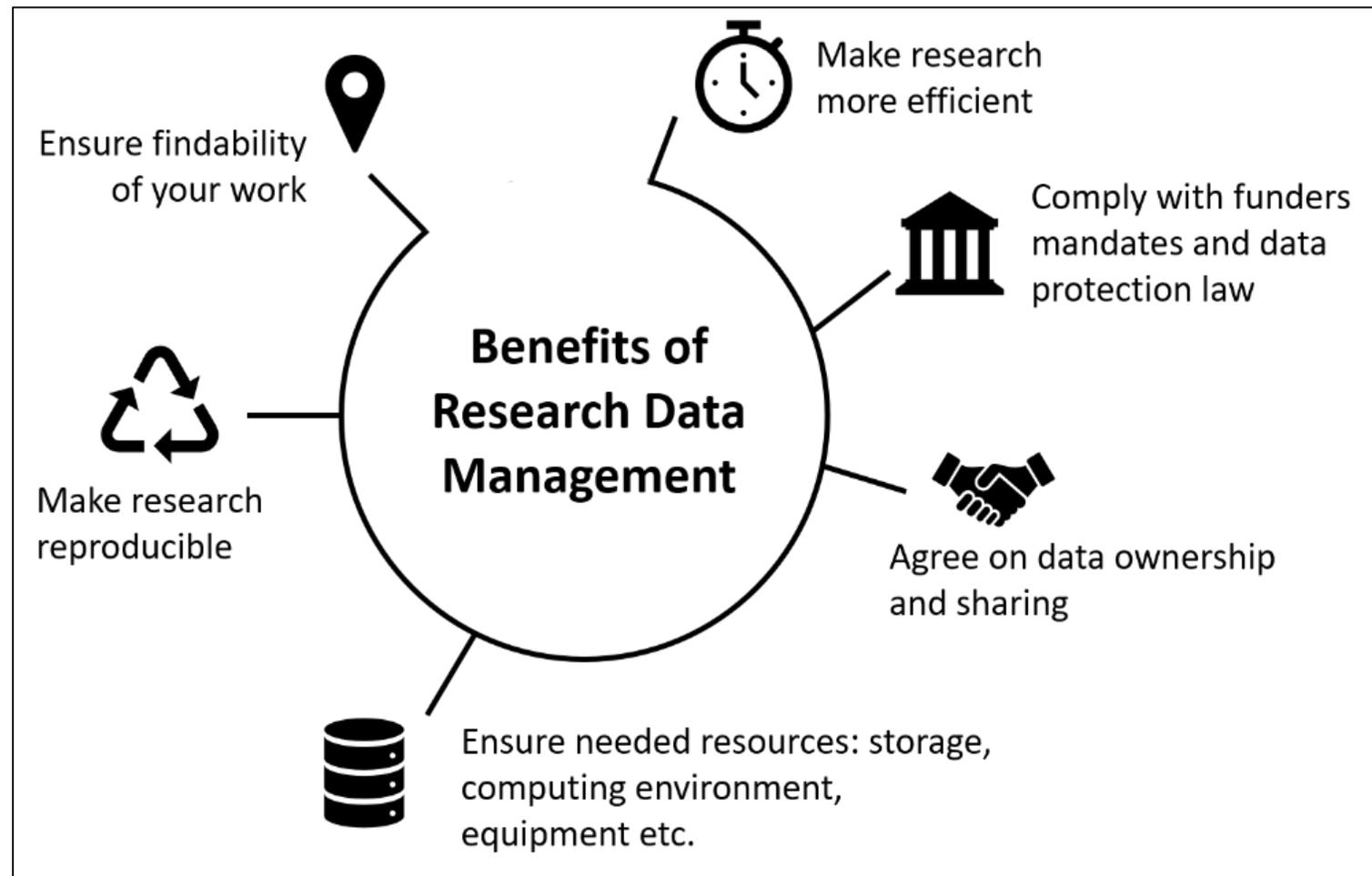
Argos:

DMP: <https://argos.openaire.eu/explore-plans>

Datasets: <https://argos.openaire.eu/explore>

Benefits of Responsible Research Data Management

- **increased impact** of research and prestige of researchers and the research organisation for which they work
- **increased cost-effectiveness of research** (*added value of resharing & possibility of avoiding unnecessary duplication*)
- **increased transparency and reproducibility** of research
- **prevention of *sloppy science***



REFERENCES & RECOMMENDED SOURCES

List of References if not given directly in the slides

1. Archivácia a manažment výskumných dát, Zuzana Stožická. CVTI SR. <https://eiz.cvtisr.sk/kurzy/eiz-pre-vedu-publikacny-poradca/>
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5. https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2023/wp_horizon-erc-2023_en.pdf
6. ARGOS Janíček, Milan. (2020, November 7).
7. Moderní Data Management Plánování (DMP), včetně praktické ukázky. OpenAIRE český národní workshop 2020. Zenodo. <https://doi.org/10.5281/zenodo.4263217https://catalogue.openaire.eu/service/openaire.argos/overview>
8. Versioning: article „3 dôvody, prečo začať s verziovaním“, <https://www.websupport.sk/blog/2013/02/3-dovody-preco-zacat-s-verziovanim/>; article „4 Principles to Follow about Document Version Control and how to maintain it without going mad“, <https://medium.com/agileinsider/4-principles-to-follow-about-document-version-control-d9116b21f05e>

Recommended sources for further study

1. [EOSC CZ – training and webinars \(in Czech and English\)](#)
2. [NTK – Research Data Management Guide \(in Czech and English\)](#)
3. [RDMkit \(in English\)](#)
4. [OpenAIRE \(in English\)](#)
5. otvorenaveda.cvtisr.sk/ (in Slovak)
6. [Danish online course](#) – 3 modules consisting of 20-minute videorecording, including animations and interviews. A target group: postdoctoral students, researchers and research support. Danish National Forum for Data Management: doi: 10.11581/dtu:00000048, doi: 10.11581/dtu:00000049, doi: 10.11581/dtu:00000050
7. MANTRA Research Data Management training (Edinburskej univerzity): <https://mantra.edina.ac.uk/>
8. [FAIR Data Management/Data Management Plan – EC, HE 2021-2027](#). <https://webgate.ec.europa.eu/funding-tenders-opportunities/display/OM/Online+Manual>
9. [Managing and Sharing Data](#) (UK DataArchive): <https://dam.ukdataservice.ac.uk/media/622417/managingsharing.pdf>
10. [Creating a Data Management Plan/Document](#) (OpenScienceFramework): <https://help.osf.io/hc/en-us/articles/360019931133-Creating-a-data-management-plan-DMP-document>
11. [Research Data Alliance](#) <https://rd-alliance.org/>
12. [CODATA](#) – Committee on DATA of the International Science Council (<https://codata.org/about-codata/>)
13. [FAIRsharing](#) – standards, databases, politics: <https://fairsharing.org/>
14. [Citovanie dát](#) – a non-profit organisation [DataCite](#): <https://datacite.org/>
15. [Make Data Count](#): <https://makedatacount.org/>
16. [OASPA webinar](#): <https://oaspa.org/oaspa-endorses-make-data-count-join-our-webinar-to-find-out-more/>
17. [OASPA: Guest post](#): OASPA & Make Data Count Workshop Report: What are publisher experiences of data citation and what can we do to help? <https://oaspa.org/guest-post-oaspa-make-data-count-workshop-report-what-are-publisher-experiences-of-data-citation-and-what-can-we-do-to-help/?highlight=data>
18. [Open Data Metrics: Lighting the Fire](#). Lowenberget al. 2019: <https://zenodo.org/record/3525349#.Yh3k6lk1Xb0>
19. Webinars: <https://eiz.cvtisr.sk/eiz-webinare/>
20. [Manažment vedeckých dát a príklad dobrej praxe na Slovensku: digitálny repozitár Katedry mediamatiky a kultúrneho dedičstva na Žilinskej univerzite](#). Presentation available in [Zenode](#).
21. [Research Data Management – RDM – Maastricht University](#).
22. <https://otvorenaveda.cvtisr.sk/manazment-vyskumnych-dat/>
23. <https://otvorenaveda.cvtisr.sk/plan-manazmentu-dat/>

Images–sources if not given directly in the slides: Logá organizácií, stránok, ukážok sú oficiálne logá dostupné na stránkach organizácií alebo printscreeny.

Thank you.

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