

Bimodal imaging of cells, via fluorescence and magnetic resonance, using new types of inorganic-organic nanocomposites alias application of luminescent nanoprobe with magnetic contrast

Organization	DSW (researchers)
Created by	Karolína Šišková (karolina.siskova@upol.cz)
Based on	Common DSW Knowledge Model, 2.7.0 (dsw:root:2.7.0)
Project Phase	Before Submitting the DMP
Created at	28 Dec 2025

Summary Report

Summary

Answered (current phase)	183 / 184	
Answered	212 / 256	

Metric	Score	
Findability	0.79	
Accessibility	0.80	
Interoperability	0.80	
Reusability	0.87	
Good DMP Practice	0.88	
Openness	1.00	

I. Administrative information

Summary

Answered (current phase)	18 / 18	
Answered	32 / 37	

Questions

1

Contributors

[Horizon 2020 DMP](#) [maDMP](#) [Science Europe DMP](#) [Horizon Europe DMP](#)

Each person contributing to creating or executing the data management plan should be added as a contributor. A project probably should have a Contact Person, and a Data Curator.

Answers

1.a.1

Name

[Horizon 2020 DMP](#) [maDMP](#) [Science Europe DMP](#) [Horizon Europe DMP](#)

✓ Karolína Šišková

1.a.2

E-mail address

[Horizon 2020 DMP](#) [maDMP](#) [Science Europe DMP](#) [Horizon Europe DMP](#)

✓ karolina.siskova@upol.cz

1.a.3

ORCID Identifier

Horizon 2020 DMP

maDMP

Science Europe DMP

Horizon Europe DMP

You will be presented with suggestions from [ORCID](#), but you also have the option to manually enter the ORCID identifier.

✓ 0000-0003-1417-0919

1.a.4

Affiliation

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

You will be presented with suggestions from [ROR](#), but you also have the option to manually enter the affiliation that is not listed there.



[Palacký University Olomouc](#)

type

education

type

funder

1.a.5

Role

Horizon 2020 DMP

maDMP

Science Europe DMP

Horizon Europe DMP

Roles in a project should be given as they are defined by [datacite](#).

You should specify at least one "Contact Person". If your project has a work package for data management, identify the leader of that work package as "Data Curator". At least one "Creator of the DMP" must be specified to ensure they are listed as a creator in the final DMP.

- ☒ Contact Person
- ☒ Data Collector
- ☐ Data Curator
- ☒ Data Manager
- ☐ Data Protection Officer
- ☐ Data Steward
- ☐ Distributor
- ☐ Editor
- ☐ Producer
- ☒ Project Leader

- ☐ Project Manager
- ☐ Project Member
- ☒ Researcher
- ☐ Rights Holder
- ☐ Sponsor
- ☒ Supervisor
- ☒ Work Package Leader
- ☒ Creator of DMP
- ☐ Other

1.b.1

Name

Horizon 2020 DMP

maDMP

Science Europe DMP

Horizon Europe DMP

✓ Daniel Jiráček

1.b.2

E-mail address

Horizon 2020 DMP

maDMP

Science Europe DMP

Horizon Europe DMP

✓ daji@ikem.cz

1.b.3

ORCID Identifier

Horizon 2020 DMP

maDMP

Science Europe DMP

Horizon Europe DMP

You will be presented with suggestions from [ORCID](#), but you also have the option to manually enter the ORCID identifier.



Daniel Jirak ORCID: [0000-0001-6834-3462](#)

1.b.4

Affiliation

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

You will be presented with suggestions from [ROR](#), but you also have the option to manually enter the affiliation that is not listed there.



[Institute of Clinical and Experimental Medicine](#) (IKEM) type [healthcare](#)

1.b.5

Role

Horizon 2020 DMP

maDMP

Science Europe DMP

Horizon Europe DMP

Roles in a project should be given as they are defined by [datacite](#).

You should specify at least one "Contact Person". If your project has a work package for data management, identify the leader of that work package as "Data Curator". At least one "Creator of the DMP" must be specified to ensure they are listed as a creator in the final DMP.

- ☒ Contact Person
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- ☒ Project Manager
- ☐ Project Member
- ☒ Researcher
- ☐ Rights Holder
- ☐ Sponsor
- ☒ Supervisor
- ☒ Work Package Leader
- ☐ Creator of DMP
- ☐ Other

2

Research Project(s)

Horizon Europe DMP

ELSI

Horizon 2020 DMP

maDMP

Science Europe DMP

Add each of the research project(s) that you are (or will be) working on and for which the data and work are described in this DMP. Give each project a small identifying name for yourself.

Answers

2.a.1

Project name

Horizon 2020 DMP

maDMP

Science Europe DMP

Horizon Europe DMP

✓ Bimodal imaging of cells, via fluorescence and magnetic resonance, using new types of inorganic-organic nanocomposites alias application of luminescent nanoprobe with magnetic contrast

2.a.2

Project acronym

Horizon 2020 DMP

Horizon Europe DMP

✗ *This question has not been answered yet!*

2.a.3

Project number

Horizon Europe DMP

Science Europe DMP

Project number is a unique number assigned to the project by the authority that is undertaking the project.

✓ NW25-08-00113

2.a.4

Project abstract

Horizon 2020 DMP

maDMP

Science Europe DMP

Horizon Europe DMP

✓ This proposal is focused on cell imaging using novel types of nanocomposites that enable, due to their unique inorganic-organic composition and characteristic properties, both fluorescence imaging and magnetic resonance imaging. Our preliminary data show that the combination of luminescent nanoprobe (e.g., gold nanoclusters embedded within a protein matrix) and nanoparticles providing magnetic contrasts (e.g., superparamagnetic ferric oxide nanoparticles) integrated into one type of nanocomposite enables effective dual/bimodal imaging (<https://doi.org/10.3390/nano13061027>; <https://doi.org/10.1016/j.jcis.2024.02.116>). Bimodal imaging exploiting two independent material characteristics based on two different physical phenomena expands the potential applications in biomedical research, as nanocomposites allow for cell detection with higher sensitivity and accuracy than monomodal imaging. Engineering and development of nanoprobe for high-efficiency in vivo imaging and clinical translation are currently hot research topics. Within the scope of this project, we anticipate achieving dual cell imaging not only in vitro, but also in vivo, in animal models, significantly contributing to the application of nanoprobe in biomedicine. The results (with dedication to the project) will be published in international scientific journals with high impact factors and presented on prestigious international conferences.

2.a.5

Link to a project proposal or another description of the methods used in the project

✗ *This question has not been answered yet!*

2.a.6

Starting date of the project

Horizon 2020 DMP

Science Europe DMP

maDMP

Horizon Europe DMP

✓ 2025-05-01

2.a.7

Ending date of the project

Horizon 2020 DMP

Science Europe DMP

maDMP

Horizon Europe DMP

✓ 2028-12-31

2.a.8

Funding

Horizon 2020 DMP

maDMP

Science Europe DMP

Horizon Europe DMP

Add all the funding that are part of this project.

Answers

2.a.8.a.1

Funder

Horizon 2020 DMP

Science Europe DMP

maDMP

Horizon Europe DMP

Specify the name of the funder that you ask for funding for your project. You will be presented with suggestions from [Crossref](#), but you also have the option to manually specify a complete URL to the funder web site.



[Ministerstvo Zdravotnictví České Republiky](#) (Czechia)

2.a.8.a.2

Funding status

Horizon 2020 DMP

Science Europe DMP

maDMP

Horizon Europe DMP



c. Granted

2.a.8.a.3

Grant number

Horizon 2020 DMP

maDMP

Science Europe DMP

Horizon Europe DMP



This question has not been answered yet!

2.a.9

Costs

Horizon 2020 DMP

Horizon Europe DMP

maDMP

Science Europe DMP

List all costs connected with reusing, producing, storing, and distributing data. Also, list any extra costs, such as those associated with making the data FAIR or using specialized tools, if applicable.

Answers

2.a.9.a.1

Title

Horizon 2020 DMP

Horizon Europe DMP

maDMP

Science Europe DMP

- ✓ Bimodal imaging of cells, via fluorescence and magnetic resonance, using new types of inorganic-organic nanocomposites alias application of luminescent nanoprobe with magnetic contrast

2.a.9.a.2

Description

Horizon 2020 DMP

Horizon Europe DMP

maDMP

Science Europe DMP

- ✓ granted research project

2.a.9.a.3

Currency

Horizon 2020 DMP

Horizon Europe DMP

maDMP

Science Europe DMP

You will be presented with suggestions from [ISO 4217](#), but you also have the option to manually enter the currency.



Czech Republic Koruna, CZK

2.a.9.a.4

Amount

Horizon 2020 DMP

Horizon Europe DMP

maDMP

Science Europe DMP

✓ 11468000

2.a.9.a.5

Cost allocation

Horizon 2020 DMP

Horizon Europe DMP

maDMP

Science Europe DMP

✗ *This question has not been answered yet!*

2.a.9.a.6

How this cost will be covered?

Horizon 2020 DMP

Horizon Europe DMP

maDMP

Science Europe DMP

✗ *This question has not been answered yet!*

2.a.10

Does the project require ethical approval?

Science Europe DMP

Horizon Europe DMP

Horizon 2020 DMP

ELSI

If the project involves testing on animals or processing of personal data, an approval is likely needed. It is the responsibility of the Researcher to make sure that the project and associated data is in agreement with current legislation.

✓ a. No

3

To execute the DMP, is additional specialist expertise required?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

✓ a. No

4

Do you require hardware or software in addition to what is usually available in the institute?

Science Europe DMP

Horizon 2020 DMP

Horizon Europe DMP

✓ a. No

5

Describe national / funder / sectorial / departmental policies and procedures for data management that you will be using.

Science Europe DMP

Horizon Europe DMP

Answers

5.a.1

Name of the policy or process

Science Europe DMP

Horizon Europe DMP

✓ research and development

5.a.2

Give a link/reference to the policy or process

Science Europe DMP

Horizon Europe DMP

✓ <https://mzd.gov.cz/category/veda-a-lekarska-povolani/veda-a-vyzkum/verejna-soutez-2022-2025/>

5.a.3

Description of how and why you are using this policy or process

Science Europe DMP

Horizon Europe DMP

✓ We are granted by the Ministry of Health of the Czech Republic and therefore, I am obeying their policy and process.

II. Re-using data

Before you decide to embark on any new study, it is good practice to check all options to re-use existing available data, either collected or generated by yourself in an earlier project, or data from others (Barend Mons calls this "Other PEOple's Data And Services" or OPEDAS). This can include reusable data that have been created for an earlier study, and also so-called "reference data" which is used by many projects.

It is not because we can generate massive amounts of data that we always need to do so. Creating data with public money is bringing with it the responsibility to treat those data well and (if potentially useful) make them available for re-use by others. And the circle is only complete if such data is actually re-used.

Summary

Answered (current phase)	26 / 26	
Answered	33 / 39	
Metric	Score	
Reusability	1.00	

Questions

1

Do you need guidance to find existing data?

Research funding organisations more and more demand that you search for existing data sets that could have information that you need, before assuming you need to collect all data yourself. You are asked to list what you have been able to locate, and whether you have found it suitable to use in your research. Do you need pointers to find such existing data sets?

✓ b. Yes

There are data set search engines that can help you find diverse data on the web, such as:

- [Google Dataset Search](#)
- [OpenAIRE](#)
- [FAIRsharing](#)

Also, many governments run their own "government data portals".

1.b.1

Will you need existing data from Natural Sciences?

✓ b. Yes

We are interested to receive your expertise on this topic. You can use the feedback button if you have resources that we could list here

1.b.1.b.1

Will you need existing data in particle physics?

✓ b. Yes

A great resource for particle physics data:

- [CERN Open Data Portal](#)

1.b.2

Will you need existing data from Engineering and Technology

✗ *This question has not been answered yet!*

1.b.3

Will you need existing data from Medical and Health Sciences

✓ b. Yes

There are pointers to resources in life sciences at:

- [ELIXIR Data resources](#)
-

1.b.3.b.1

Will you need existing data for toxicology research

🔗 External Links: [RDMkit on Toxicology](#)

✓ b. Yes

You can find information on resources for human assays in the [Toxicology page of RDMkit](#)

You can find information on resources for animal assays in the [Toxicology page of RDMkit](#)

You can find information on resources for ecotoxicology in the [Toxicology page of RDMkit](#)

1.b.4

Will you need existing data from Agricultural Sciences

✗ *This question has not been answered yet!*

1.b.5

Will you need existing data from Social Sciences

✗ *This question has not been answered yet!*

1.b.6

Will you need existing data from Humanities

✗ *This question has not been answered yet!*

2

Is there any pre-existing data?

ELSI

Horizon Europe DMP

Horizon 2020 DMP

maDMP

Science Europe DMP

Are there any data sets available in the world that are relevant to your planned research?

☰ Resource Pages: [Data Stewardship for Open Science - Is there pre-existing data?](#)

🔗 External Links: [Google dataset search](#), [Datacite Search](#), [RDMkit on Reusing Data](#), [RDMkit on Existing Data](#), [DMEG on Data Discovery](#), [DMEG on Access to Data](#)

✓ b. Yes

2.b.1

What existing openly available standard reference data did you consider re-using?

ELSI

Horizon Europe DMP

Horizon 2020 DMP

Science Europe DMP

Much of today's data is used in comparison with reference data. You may be comparing your own data with a "standard set" which is maintained as a collection by someone else. Or you could be determining differences to a standard (for example in bioinformatics, a genome is often compared with a reference genome to identify genomic variants). If you use reference data, there are several specific issues that you should consider. What are the reference data sets that you will use?

☰ Resource Pages: [Data Stewardship for Open Science - Will you use Reference Data?](#)

Answers

2.b.1.a.1

Reference data set

Science Europe DMP

Horizon Europe DMP

Horizon 2020 DMP

Provide the name of the dataset.

✓ [https://datasetsearch.research.google.com/search?](https://datasetsearch.research.google.com/search?src=0&query=Bimodal%20imaging%20of%20cells%20using%20nanocomposites%20&docid=L2cvMTFyMmp6M)

[src=0&query=Bimodal%20imaging%20of%20cells%20using%20nanocomposites%20&docid=L2cvMTFyMmp6M](https://datasetsearch.research.google.com/search?src=0&query=Bimodal%20imaging%20of%20cells%20using%20nanocomposites%20&docid=L2cvMTFyMmp6M)

2.b.1.a.2

Provide PID for this reference data set

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Specify a persistent identifier (e.g., a DOI) or a URL for the dataset. If possible, refer exactly to the version that you are using.

✓ <https://datasetsearch.research.google.com/search?src=0&query=Bimodal%20imaging%20of%20cells%20using%20nanocomposites%20&docid=L2cvMTFyMmp6N>

2.b.1.a.3

Will you be using this reference data set?

ELSI Horizon 2020 DMP Horizon Europe DMP Science Europe DMP

✓ b. Yes

2.b.1.a.3.b.1

Name and contact details of the owner of this data

Horizon 2020 DMP Science Europe DMP Horizon Europe DMP

✗ *This question has not been answered yet!*

2.b.1.a.3.b.2

What are the conditions of use for this database or dataset?

Horizon Europe DMP ELSI Horizon 2020 DMP Science Europe DMP

Although there is no world-wide rule for the application of copyright on data sets (copyright only applies to things that require a so-called "creative step"), it is wise to check for an explicit permission to use a data set and not to assume that data can be used freely just because you can access it. Note that copyright laws explicitly *forbid* the use of a copyrighted work, *except* if you get permission. Such a permission is called a "licence". So: if you can not find a licence, you have to assume you can not use the data.

🔗 External Links: [Wikipedia on Copyright](#)

✓ b. They are freely available with obligation to quote the source (e.g. CC-BY)

2.b.1.a.3.b.3

Do you know in what format the reference data is available?

Horizon 2020 DMP Science Europe DMP Horizon Europe DMP

Do you know the data format of the reference data? Is this suitable for your work? Does it need to be converted?

☰ Resource Pages: [Data Stewardship for Open Science - What format?](#)

✓ b. I need to convert it before using

2.b.1.a.3.b.4

Is the reference database or dataset versioned?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Many reference datasets and databases evolve over time. If the reference data changes, this may affect your results. If different versions of a reference data exist, you need to establish your "version policy".

☰ Resource Pages: [Data Stewardship for Open Science - Is the data resource versioned?](#)

✓ a. No

2.b.1.a.3.b.5

How will you make sure the same reference data will be available to reproduce your results?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Will the reference data in the version you use be available to others?

✓ c. It will be available both from the provider and together with my data

2.b.1.a.3.b.6

What will you use this reference data set for?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

✓ The given reference article and data describe Efficacy of Nano- and Micro-Sized Magnetic Particles as Contrast Agents for MRI Cell Tracking. Since our nanocomposite contain magnetic nanoparticles (connected with luminescent nanoclusters embedded in a protein matrix), we can directly use it as a referent system.

2.b.2

What existing non-reference data sets did you consider re-using?

ELSI

Horizon Europe DMP

Horizon 2020 DMP

maDMP

Science Europe DMP

Even if you will be producing your own data, you often will also be relying on existing data sets (e.g. from your own earlier projects). You may need to integrate your new data with an existing data set or retrieve additional information from related data bases. Will you be doing such things?

 Resource Pages: [Data Stewardship for Open Science - Will you be using any existing \(non-reference\) data sets?](#)

Answers

2.b.2.a.1

Non-reference data set

maDMP

Science Europe DMP

Horizon Europe DMP

Horizon 2020 DMP

Give a name for the data set.

✓ any other publications on Web of Science

2.b.2.a.2

Provide PID for this non-reference data set

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Specify a persistent identifier (e.g., a DOI) or a URL for the dataset. If the data set is versioned, try to refer to the exact version you will use.

✓ www.webofscience.com/wos/woscc/basic-search

2.b.2.a.3

Will you be using this non-reference data set?

maDMP

ELSI

Horizon 2020 DMP

Horizon Europe DMP

Science Europe DMP

✓ b. Yes

2.b.2.a.3.b.1

Name and contact details for the rightsholder of this data

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

✗ This question has not been answered yet!

2.b.2.a.3.b.2

What are the conditions of use for this data set?

Horizon Europe DMP

ELSI

Horizon 2020 DMP

Science Europe DMP

Although there is no world-wide rule for the application of copyright on data sets (copyright only applies to things that require a so-called "creative step"), it is wise to check for an explicit permission to use a data set and not to assume that data can be used freely just because you can access it. Note that copyright laws explicitly *forbid* the use of a copyrighted work, *except* if you get permission. Such a permission is called a "licence". So: if you can not find a licence, you have to assume you can not use the data.

🔗 External Links: [Wikipedia on Copyright](#)

✓ c. They are available under some restrictions, which we will follow in our project

2.b.2.a.3.b.2.c.1

What conditions?

Horizon Europe DMP

ELSI

Horizon 2020 DMP

Science Europe DMP

Please describe the conditions.

✓ In some cases, articles are for subscribers only. On the other hand, many articles are currently available in open access mode.

2.b.2.a.3.b.3

Will the rightsholder of this dataset work with you on this study?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

ELSI

📖 Resource Pages: [Data Stewardship for Open Science - Will owners of that data work with you on this study?](#)

✓ a. No

2.b.2.a.3.b.3.a.1

Do you need to request access to the data

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

ELSI

✓ b. Yes

2.b.2.a.3.b.4

Does the data set include personal data?

maDMP

Science Europe DMP

Horizon Europe DMP

ELSI

✓ a. No

2.b.2.a.3.b.5

Is a new approval or extension of any existing approval under research ethics laws needed for re-use of the data?

maDMP

Science Europe DMP

Horizon Europe DMP

ELSI

If the data that you will re-use is coupled to people, the ethical approval that was originally obtained may not be covering your current research. In that case an extension of the original approval, or a new approval, may be necessary.

✓ a. Not applicable

2.b.2.a.3.b.6

Can you use the data in a format that is available?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Do you know the data format of the data? Is this suitable for your work? Does it need to be converted?

✓ b. I need to convert it before using

2.b.2.a.3.b.7

How will you be accessing the data?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

- ✓ b. Will download or get a copy

2.b.2.a.3.b.8

Is the data set fixed, or will it be updated in the future?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Is the data set you will reuse a fixed data set (with a persistent identifier), or is it a data set that is being worked on (by others) and may be updated during your project or after?

- ✓ b. It may change

Make sure a copy of the version of the input data you use will be available with the results

2.b.2.a.3.b.9

Can you and will you use the complete existing data set?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

If you use any filtering, how will you make sure that your results will be reproducible by yourself and others at a later time?

- ✓ b. Any filtering or selection will be well documented

2.b.2.a.3.b.10

What will you use this non-reference data set for?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

- ✓ We will use it to demonstrate the uniqueness of our nanocomposites.

2.b.3

Do you need to harmonize different sources of existing data?

Science Europe DMP

Horizon Europe DMP

If you are combining data from different sources, harmonization may be required. You may need to re-analyse some original data.

Resource Pages: [Data Stewardship for Open Science - Do you need to harmonize different sources of OPEDAS?](#)

✓ b. Yes

2.b.3.b.1

Will you be making your harmonization results available to others?

Science Europe DMP

Horizon Europe DMP

By publishing either exactly what you did or (better) make sure that the harmonized data is available for reuse, you may save others the effort.

✓ b. Yes

2.b.4

Will you be using data that needs to be (re-)made computer readable first?

Science Europe DMP

Horizon Europe DMP

Some old data may need to be recovered, e.g. from tables in scientific papers or may be punch cards.

Resource Pages: [Data Stewardship for Open Science - Will you need to add data from literature?](#)

✓ a. No

III. Creating and collecting data

In this chapter we describe all the sources of data: they can e.g. come from instruments or from questionnaires; data can be newly collected as part of the current project, but it can also be pre-existing data that may need proper contracts with the maintainer, some pre-processing, and quality checks. It can also be reference data that is part of curated resources and (public) databases.

For more information see [Collecting in RDMKit](#)

Summary

Answered (current phase)	46 / 47	
Answered	51 / 62	

Metric	Score	
Findability	0.75	
Accessibility	1.00	
Interoperability	1.00	
Reusability	0.91	
Good DMP Practice	1.00	

Questions

1

Are you running the project in a collaboration between different groups or institutes?

Horizon Europe DMP

Horizon 2020 DMP

Science Europe DMP

ELSI

✓ b. Yes

1.b.1

Is there a collaboration agreement in the project that describes who can have access to what data?

Horizon Europe DMP

Horizon 2020 DMP

Science Europe DMP

🔗 External Links: [See also description of Data Sharing in RDMkit](#)

✓ b. Yes

2

Will you be collecting physical samples?

Will you be collecting artefacts like specimens, minerals, biological samples?

📖 Resource Pages: [Data Stewardship for Open Science - Will you be storing physical samples?](#)

✓ b. Yes

2.b.1

Do your samples need to be submitted to a public repository?

In some fields, it is considered good practice to deposit samples to a public repository before deriving any digital data from them.

✓ a. No

2.b.1.a.1

Will the samples be stored in a local repository such as a biobank?

✓ a. No

2.b.2

How will the samples be identified?

✗ *This question has not been answered yet!*

2.b.3

Where will the physical samples be stored

✗ *This question has not been answered yet!*

2.b.4

Will you make explicit cross-reference between physical samples and your digital data?

Is the identifier of your physical sample present in the metadata for the digital data that associates to it? Will you be able to locate the physical sample if you have the digital data? And how about the reverse?

🔗 External Links: [RDMkit on Identifiers](#)

✗ *This question has not been answered yet!*

3

How will you do file naming and file organization?

Horizon 2020 DMP

Horizon Europe DMP

Putting some thoughts into file naming can save a lot of trouble later.

🔗 External Links: [RDMkit on data organisation](#), [DMEG on File Naming and Folder Structure](#)

✓ a. Explore

3.a.1

Did you make appointments in the project on how to name files and folders?

Horizon 2020 DMP

Horizon Europe DMP

It can help if everyone in the project uses the same naming scheme.

✓ b. Yes

3.a.1.b.1

How do you name files in the project?

Horizon 2020 DMP

Horizon Europe DMP

Describe how everyone in the project will be naming files and folders, and what folder structure you will use.

✓ Files will be named based on the sample name and date.

3.a.2

Will you be keeping the relationships between data clear in the file names?

Horizon 2020 DMP

Horizon Europe DMP

Advice: Use the same identifiers for sample IDs etc throughout the entire project.

✓ b. Yes

3.a.3

Will all the metadata that is embedded in the file names also be available in the proper metadata?

Horizon 2020 DMP

Horizon Europe DMP

The file names are very useful as metadata for people involved in the project, but to computers they are just identifiers. To prevent accidents with e.g. renamed files metadata information should always also be available elsewhere and not only through the file name.

Also note that if metadata could need to change, embedding it in the file names may require renaming files during the project; and this may have implications for references to those files.

✓ b. Yes, all metadata is also explicitly available elsewhere

3.a.4

Will you be using persistent identifiers to refer to data within the project?

Horizon 2020 DMP

Especially for large projects, referring to data internally via a persistent identifier system can be helpful as such a system can help to keep track of data that moves to a new location.

✎ External Links: [The Handle System](#), [Handbook on Persistent Identifiers](#), [FAIRCookbook on creating resolvable identifiers](#)

✓ a. No

4

What existing data formats/types will you be using?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Have you identified types of data that you will use that are used by others too? Some types of data (for example "images" or "tables") are used by many different projects. For such data, often common standards exist (in our example "JPG" and "CSV" [comma separated values]) that help to make these data reusable. Are you using such common data formats?

Please make sure you list all the data types that are important for your project. You should make sure also to list the formats used in any data sets that you are re-using.

☰ Resource Pages: [Data Stewardship for Open Science - Are you using data types used by others too?](#)

✎ External Links: [DMEG on Formats and Conversion](#)

Answers

4.a.1

Data format/type

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

You will be presented with suggestions from [FAIRSharing](#), but you also have the option to manually enter the data format/type that is not listed there.

✓ CSV files; images; other formats

4.a.2

Is this a standard data format widely used by researchers in this field?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

✓ b. Yes

4.a.3

Does this data format enable sharing and long term archiving?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Complicated (binary) file formats tend to change over time, and software may not stay compatible with older versions. Also, some formats (e.g. DOC, XLS) hamper long term usability by making use of patents or being hampered by restrictive licensing.

Ideally a format should be simple, text only, completely described, not restricted by copyrights, and implemented in different software packages.

✓ b. Yes

4.a.4

What volume of data of this type will you be working with?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

✓ b. I can specify the total amount

4.a.4.b.1

Data volume in Gigabytes

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Specify an approximation of the expected data volume

✓ 500

4.a.5

Is this data format completely described?

Formats like XLS or SQL are very flexible; they can be adapted to many different uses, and this makes them good for interoperability. However, their flexibility also makes that it is not immediately obvious from the file structure how it can be used. The data needs a proper *description* in order for others (or yourself at a later time) to be able to unambiguously understand what it contains.

✓ b. Yes

5

What existing encodings/terminologies/vocabularies/ontologies will you be using?

Horizon 2020 DMP

Horizon Europe DMP

If you want to facilitate interoperability of your data with data you get from elsewhere, and facilitate re-use of your own data later, it is handy if you use standard ways to encode certain data. Such standard encodings are sometimes called terminologies or ontologies.

🔗 External Links: [FAIRCookbook introduction to terminologies and ontologies](#), [FAIRCookbook on selecting terminologies and ontologies](#), [FAIRCookbook on Selecting an ontology lookup service](#)

✗ This question has not been answered yet!

6

Will you be using new types of data?

Horizon 2020 DMP

Horizon Europe DMP

Sometimes the type of data you collect can not be stored in a commonly used data format. In such cases you may need to make your own, keeping interoperability as high as possible.

☰ Resource Pages: [Data Stewardship for Open Science - Will you be using new types of data?](#)

✓ a. No, all of my data will fit in common formats

7

How will you be collecting and keeping your metadata?

Horizon Europe DMP

ELSI

Science Europe DMP

Horizon 2020 DMP

For the re-usability of your data by yourself or others at a later stage, a lot of information about the data – for example how it was collected and how it can be used – should be stored with the data. Such *data about the data* is called **metadata**, and this set of questions are about this metadata.

☰ Resource Pages: [Data Stewardship for Open Science - How will you be storing Metadata?](#)

🔗 External Links: [RDMkit on documentation and metadata](#), [Metadata Standards Catalogue \(RDA\)](#), [FAIRCookbook on FAIR and the notion of Metadata](#), [DMEG on Metadata](#)

✓ a. Explore

There are many kinds of metadata, each serving their own purpose. Some key metadata that you should consider:

- There is metadata that helps identify where the data is coming from (e.g. who created it, title). For this the [Dublin Core](#) is often used.
- There are different ways of adding metadata to make the data "discoverable" for other researchers. This requires either keywords or ontology terms describing what is in the data.
- There is metadata describing how the data can be re-used, such as license information and, for data about people, the extent of their consent for data reuse.
- There is metadata that makes the data understandable, e.g. linking to the exact processes used to collect them (is a *body temperature* measured under the tongue or in the rectum?) and units (is a temperature given in Celsius or Fahrenheit?).
- There is metadata describing where the data comes from and what it is useful for. For frequently used data types, there are often very well defined metadata standards, in other cases you may need to think about this yourself. For each of these kinds of metadata there are specific standards. There is no single standard that will get you all the metadata needed to make the data as FAIR as possible.

7.a.1

What standard(s) will you use to specify author/title/keyword information?

Horizon Europe DMP

Horizon 2020 DMP

Science Europe DMP

There are a few different standards that are often used to give basic information about your dataset. Which ones of these will you be using?

✓ a. Explore

7.a.1.a.1

Will you document the data with Dublin Core metadata?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Dublin Core is a standard documenting domain independent aspects of a resource; including who has created it, audience, function, formatting and licensing. Does your documentation follow the Dublin Core standard?

🔗 External Links: [Dublin Core Metadata Terms](#), [Dublin Core Initiative](#)

✓ b. Yes

7.a.1.a.2

Will you document the data with DataCite metadata

Science Europe DMP

Horizon 2020 DMP

Horizon Europe DMP

🔗 External Links: [DataCite metadata schema](#)

✓ a. No

7.a.1.a.3

Will you document the data with DDI metadata

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

DDI metadata is more extensive than Dublin Core and DataCite, it details more of what is in the data and really can help other researchers locate your data set as an interesting source.

🔗 External Links: [DDI metadata documentation](#)

✓ a. No

7.a.1.a.4

Will you be including keywords or relevant ontology references to optimise the possibility for discovery and potential reuse?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

✗ *This question has not been answered yet!*

7.a.2

Will you be creating a data/variable dictionary?

If anyone wants to see whether they can re-use your data, it must be possible to see what information it contains. For this, a data dictionary can play an important role.

🔗 External Links: [FAIRCookbook on creating a data/variable dictionary](#)

✗ *This question has not been answered yet!*

7.a.3

Do suitable 'Minimal Metadata About ...' (MIA...) standards exist for your experiments?

Horizon 2020 DMP

Horizon Europe DMP

Many research fields have worked together to define what kind of metadata should really be collected when an experiment of a certain kind is performed and described. That information is described in a Minimal Metadata Standard. Often, these standards describe both what kind of information needs to be collected as well as the format in which it is expected.

🔗 External Links: [FAIRsharing repository of standards](#)

✓ b. Yes

7.a.3.b.1

Which "Minimal Information" standards will you use?

Horizon 2020 DMP

Horizon Europe DMP

Answers

7.a.3.b.1.a.1

Minimal Information Standard

Horizon 2020 DMP

Horizon Europe DMP

You will be presented with suggestions from [FAIRSharing](#), but you also have the option to manually enter the metadata standard that is not listed there.

✓ synthetic protocols; physico-chemical characterization; cell-interaction data

7.a.4

Do you know how and when you will be collecting the necessary metadata?

Often it is easiest to make sure you collect the metadata as early as possible.

🔗 External Links: [FAIRsharing repository of standards](#)

✓ b. Yes

7.a.5

Will you consider re-usability of your data beyond your original purpose?

Adding more than the strict minimum metadata about your experiment will possibly allow more wide re-use of your data, with associated higher data citation rates. Please note that it is not easy for yourself to see all other ways in which others could be reusing your data.

✓ b. Yes, I will add "optional" metadata where I can

7.a.5.b.1

How will you balance the extra efforts with the potential for added reusability?

✓ a. I will see what I can do

7.a.5.b.2

Do you need to exchange your data with others?

✓ b. Yes

7.a.6

Will a license be assigned to your datasets?

It is not always clear to everyone in the project (and outside) what can and can not be done with a data set. It is helpful to associate each data set with a license as early as possible in the project. A data license should ideally be as free as possible: any restriction like 'only for non-commercial use' or 'attribution required' may reduce the reusability and thereby the number of citations. If possible, use a computer-readable and computer actionable license.

🔗 External Links: [RDMkit on Licensing](#), [DMEG on Licensing](#)

✓ b. Yes

7.a.6.b.1

Will you store the licenses with the data at all time?

It is very likely that data will be moved and copied. At some point people may lose track of the origins. It can be helpful to have the licenses (of course *as open as possible*) stored in close association with the data.

📖 Resource Pages: [Data Stewardship for Open Science - Will you store licenses with the data?](#)

✓ b. Yes

7.a.7

Where do you keep any applicable restrictions on the usage of the data?

🔗 External Links: [Data Use Ontology](#)

✗ *This question has not been answered yet!*

7.a.8

How will you be keeping track of the "provenance" of the data?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Data analysis is normally done step-by-step. It is important that for all data the origin and all processing and filtering steps are documented, otherwise results will not be reproducible.

Re-users of the data also need this information to decide whether the data can be used for their purpose.

In computing, systems like Galaxy and (Jupyter) notebooks often automatically keep provenance information.

✓ b. We use an electronic lab notebook

7.a.9

Will you be documenting the data with W3C PROV provenance?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

The W3C Prov standard documents processes (workflow) that were used to produce a resource. This can be used to document e.g. the software (including version) and parameters you use to analyze the data. Will your documentation follow the W3C Prov standard?

🔗 External Links: [FAIRCookbook on Provenance information](#), [W3C Prov primer](#)

✗ *This question has not been answered yet!*

7.a.10

Will you use a workflow system that automatically keeps track of the steps in the analysis?

Some workflow systems automatically keep track of which steps were done in data analysis and what options were selected. This can help document the data for reproducibility.

✓ b. Yes

8

Will you be acquiring data using measurement equipment?

Horizon Europe DMP

ELSI

Horizon 2020 DMP

Science Europe DMP

✓ b. Yes

8.b.1

Specify what data sets you will acquire using measurement equipment

Horizon Europe DMP

ELSI

Horizon 2020 DMP

Science Europe DMP

You can use any name for the data set, make sure that it identifies the data set to yourself.

Answers

8.b.1.a.1

Data set:

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

✗ *This question has not been answered yet!*

8.b.1.a.2

Who will do the measurements? And where?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Are there easily accessible specialized service providers for data capture?

✓ a. Experts in the project, with our own equipment

8.b.1.a.3

Instruments used for data collection

Science Europe DMP

Specify what technical instruments you are using to collect the data.

✗ *This question has not been answered yet!*

8.b.1.a.4

Is the equipment completely standard and well described?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

If the technology is very much under development, you may want to come back later to understand exactly how the measurements have been made. Is the measurement equipment and protocol sufficiently standard that you will be able to explain how it is done or refer to a standard explanation?

✓ a. Very well described and known

8.b.1.a.5

Is special care needed to get the raw data ready for processing?

ELSI

Where does the data come from? And who will need it? Sometimes the raw data is measured somewhere else than where the primary processing is taking place. In such cases the ingestion or transport of the primary data may take special planning. You also need to make sure that data is secure and that data integrity is guaranteed.

✓ a. No, this is all fine

8.b.1.a.6

Will you be using quality processes?

Science Europe DMP

Horizon Europe DMP

Specify how you guarantee that measurements measure what you think they should measure, and how you establish completeness and correctness of data and metadata.

🔗 External Links: [RDMkit on Data Quality](#)

✗ *This question has not been answered yet!*

8.b.1.a.7

Who else could be interested in using this data?

Science Europe DMP

Horizon 2020 DMP

Horizon Europe DMP

✓ b. Other researchers working in the same field of research

9

Do you have any non-equipment data capture?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Does the data you collect contain non-equipment captured data such as questionnaires, case report forms, electronic patient records?

📖 Resource Pages: [Data Stewardship for Open Science - Do you have non-equipment data capture? \(questionnaires, free text etc.\)](#)

✓ a. No

10

Is there a data integration tool that can handle and combine all the data types you are dealing with in your project?

✓ a. No

10.a.1

Can all data be brought into the same format, e.g. RDF?

🔗 External Links: [FAIRCookbook on tools to convert data to RDF](#)

✓ b. Yes

11

Will you collect any data connected to a person, "personal data"?

Science Europe DMP

Horizon 2020 DMP

Horizon Europe DMP

ELSI

Very many kinds of data are connected to people. If there could be a way for someone, including yourself, to find out who that person is, that is considered personal data.

Simple examples are name, birth day or address; but there are many other data that can be personal: for example a voice recording, a combination of a location and a time (traffic flow), genetic information, or an X-ray of the skull.

🔗 External Links: [RDMkit about Data Sensitivity](#), [RDMkit on Human Data](#), [RDMkit on GDPR Compliance](#), [DMEG on Data Protection](#), [DMEG on Personal Data](#)

✓ a. No

12

Is the data collection subject to ethical legislation?

Science Europe DMP

Horizon 2020 DMP

Horizon Europe DMP

ELSI

✓ a. No

13

Data use restrictions

ELSI

Are there any limitations on the data use e.g. only for research on certain types of diseases, sharing only within certain geographical boundaries, etc.?

Describing data use in a formalised way by using the data use ontology (DUO) greatly improves the data reusability.

🔗 External Links: [Data Use Ontology](#), [FAIRCookbook on permitted uses of data](#)

✓ a. There will be no use restrictions

14

How are the rights of the collected data arranged?

Horizon Europe DMP

Horizon 2020 DMP

Science Europe DMP

🔗 External Links: [DMEG on Copyright](#)

✓ c. The institute will be the rightsholder

15

Will you monitor data integrity once it has been collected?

Working with large amounts of heterogenous data in a larger research group can have implications for the data integrity. How do you make sure every step of the workflow is done with the right version of the data? How do you handle the situation when a mistake is uncovered? Will you be able to redo the strict minimum data handling?

📖 Resource Pages: [Data Stewardship for Open Science - Did you consider how to monitor data Integrity?](#)

🔗 External Links: [RDMkit on Data Quality](#), [DMEG on Data Quality](#), [DMEG on Data Integrity](#)

✓ b. Yes

15.b.1

Will you be keeping a master list with checksums of certified/correct/canonical/verified data?

Data corruption or mistakes can happen with large amounts of files or large files. Keeping a *master list* with data checksums can be helpful to prevent expensive mistakes, because it will help detect early when data files are damaged or mixed up. It can also be helpful to keep the list under version control so that all changes are well documented.

🔗 External Links: [FAIRCookbook on creating checksum files](#)

✓ b. Yes

15.b.2

Will you define a way to detect file or sample swaps, e.g. by measuring something independently?

✓ b. Yes

IV. Processing data

In the processing phase, the data will be undergoing the mostly automated steps for processing, before the analysis and interpretation.

In this chapter, many questions are focusing on the compute environment that is used to process the data and make it available for interpretation by project partners. Some of those questions (e.g. on workflow systems and data provenance) are also relevant for the work in the interpretation phase.

Summary

Answered (current phase)	28 / 28	
Answered	28 / 30	

Metric	Score	
Accessibility	0.50	
Reusability	0.79	
Good DMP Practice	0.80	

Questions

1

Will you be using a shared working space to work with your data?

Horizon Europe DMP

Horizon 2020 DMP

Science Europe DMP

Will you be using a working space containing data and software specific to the project that is shared between all the people working on the data in the project? Sometimes such a system is called a *Virtual Research Environment*.

- ✓ a. No, participants in the project each have different collections of data and tools

1.a.1

Are data that project members and partners store themselves adequately backed up and traceable?

Science Europe DMP

✓ b. Yes, protected against both equipment failure and human error

2

Data storage systems and file naming conventions

Science Europe DMP

It is a good idea to pre-define how data will be organised in the project work space, and to set conventions for how any data files and folders will be named.

🔗 External Links: [RDMkit on data organisation](#), [RDMkit on data storage](#), [DMEG on Storage](#)

✗ *This question has not been answered yet!*

3

Workflow development

It is likely that you will be developing or modifying the workflow for data processing. There are a lot of aspects of this workflow that can play a role in your data management, such as the use of an existing work flow engine, the use of existing software vs development of new components, and whether every run needs human intervention or whether all data processing can be run in bulk once the work flow has been defined.

✓ a. This has been arranged

4

How will you make sure to know what exactly has been run?

🔗 External Links: [RDMkit on Data Analysis](#)

✓ a. Explore

4.a.1

Will you keep results together with all processing scripts or workflows including documentation of the versions of the tools that have been run?

✓ b. Yes

4.a.2

Will you make use of the metadata fields in your output data files to register how the data was obtained?

File formats like VCF (for genetics) and TIFF (for images) have possibilities to document metadata in the file header. It is a good idea to use work flow tools that use these fields to document what was done to obtain the data.

✓ b. Yes

4.a.3

Will you use a central repository for all tools and their versions as used in your project?

Especially if analysis and processing of data in the project is done on multiple different computers by different people, it is a good idea to have your own repository of tools and their blessed versions.

📖 Resource Pages: [Data Stewardship for Open Science - Tools and data Directory \(for the experiment\)](#)

🔗 External Links: [RDMkit on Package management systems](#)

✓ b. Yes

4.a.4

Will you use a central repository for reference data used in your project?

Especially if analysis and processing of data in the project is done on multiple different computers by different people, it is a good idea to have your own repository of reference data versions.

📖 Resource Pages: [Data Stewardship for Open Science - Tools and data Directory \(for the experiment\)](#)

✓ b. Yes

4.a.5

Will you make use of standard workflow engines and automatic work flows for all data analysis in the project?

It is much easier to guarantee consistency and reproducibility if all data processing is done using automated work flows, especially if the workflow engine automatically keeps adequate provenance data.

✓ b. Yes

4.a.6

Are all software tools in the work flow professionally maintained, with version control?

Will you be able to find and reproduce exactly which version was used for any analysis? Not only for the major tools in the workflows, but also for all 'glue' code and small tools you created especially for the project?

✓ b. Yes

5

How will you validate the integrity of the results?

Horizon 2020 DMP

Horizon Europe DMP

✓ a. Explore

5.a.1

Will you run a subset of your jobs several times across the different compute infrastructures you are using?

Horizon 2020 DMP

Horizon Europe DMP

There are surprisingly many complications that can cause (slight) inconsistencies between results when workflows are run on different compute infrastructures. A good way to make sure this does not bite you is to run a subset of all jobs on all different infrastructure to check the consistency.

✓ a. No

5.a.2

Will you be instrumenting the tools into pipelines and workflows using automated tools?

Horizon 2020 DMP

Horizon Europe DMP

Surrounding all tools in your data processing and analysis workflows with the 'boilerplate' code necessary on the computer system you are using is tedious and error prone. Especially if you are using the same tools in multiple different work flows and/or on multiple different computer architectures. Automated instrumentation, e.g. by using a workflow management system, can prevent many mistakes.

✓ a. No

5.a.3

Will you use independently developed duplicate tools or workflows for critical steps to reduce or eliminate human errors?

Horizon 2020 DMP

Horizon Europe DMP

Validation of results without a golden standard is very hard. One way of doing it is to develop two solutions for a problem (two independent workflows or two independently developed tools) to check whether the results are identical or comparable.

✓ b. Yes

5.a.4

Will you run part of the data set repeatedly to catch unexpected changes in results?

Horizon 2020 DMP

Horizon Europe DMP

Running a small subset of the data repeatedly can be useful to catch unexpected problems that would otherwise be very hard to detect.

📖 Resource Pages: [Data Stewardship for Open Science - Verify repeatedly on the same data](#)

✓ b. Yes

6

Do you need to do compute capacity planning?

If you require substantial amounts of compute power, amounts that are not trivially absorbed in what you usually have available, some planning is necessary. Do you think you need to do compute capacity planning?

✓ a. No

7

Is the risk of information loss, leaks and vandalism acceptably low?

Horizon Europe DMP

ELSI

Horizon 2020 DMP

Science Europe DMP

There are many factors that can contribute to the risk of information loss or information leaks. They are often part of the behavior of the people that are involved in the project, but can also be steered by properly planned infrastructure.

✓ a. Explore

7.a.1

Do project members store data or software on computers in the lab or external hard drives connected to those computers?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

When assessing the risk, take into account who has access to the lab, who has (physical) access to the computer hardware itself. Also consider whether data on those systems is properly backed up

✓ b. Yes

7.a.2

Do project members carry data with them?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Does anyone carry project data on laptops, USB sticks or other external media?

✓ a. No

7.a.3

Do project members store project data in cloud accounts?

Think about services like Dropbox, but also about Google Drive, Apple iCloud accounts, or Microsoft Office 365.

✓ b. Yes

Make sure your users are aware of the risks of cloud storage (not so much that the cloud is unreliable, but there is no protection against "accidentally" sharing a cloud folder with people outside the project).

7.a.4

Do project members send project data or reports per e-mail or other messaging services?

✓ b. Yes

7.a.5

Do all data centers where project data is stored carry sufficient certifications?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

✓ b. Yes

7.a.6

Are all project web services addressed via secure http (https://)?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

✓ a. No

7.a.7

Have project members been instructed about the risks (generic and specific to the project)?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Project members may need to know about passwords (not sharing accounts, using different passwords for each service, and two factor authentication), about security for data they carry (encryption, backups), data stored in their own labs and in personal cloud accounts, and about the use of open WiFi and HTTPS.

✓ b. Yes

7.a.8

Did you consider the possible impact to the project or organization if information is lost?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

✓ c. Yes; the risk is acceptably low

7.a.9

Did you consider the possible impact to the project or organization if information leaks?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Your institute may have a generic risk assessment; you should be informed about this.

✓ c. Yes; the risk is acceptably low

7.a.10

Did you consider the possible impact to the project or organization if information is vandalized?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

✓ b. Yes; the effect is small

7.a.11

Are personal data sufficiently protected?

Horizon Europe DMP

ELSI

Horizon 2020 DMP

Science Europe DMP

🔗 External Links: [RDMkit on Data Sensitivity](#), [RDMkit on Human Data](#)

✗ *This question has not been answered yet!*

8

Do you have a contingency plan?

What will you do if the compute facility is down?

✓ b. We have an alternative

V. Interpreting data

The interpretation of the data consists of the last steps of processing (often with manual interventions), visualisation, and data integration. In this chapter many questions about data interoperability will come up.

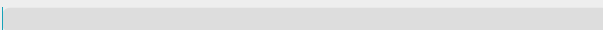
Summary

Answered (current phase) 18 / 18 

Answered 18 / 19 

Metric

Score

Interoperability 0.00 

Good DMP Practice 1.00 

Questions

1

List the data formats you will be using for interpretation and describe their structure

Give each type of data a name that you recognise.

If you have data in many different structures, integrating the data may be more challenging.

🔗 External Links: [RDMkit on Machine Actionability](#), [RDMkit on Data Processing](#)

Answers

1.a.1

Data type

You will be presented with suggestions from [FAIRSharing](#), but you also have the option to manually enter the data type that is not listed there.



[FAIRsharing.org](#)
standards, databases, policies

Comma-separated Values (<https://tools.ietf.org/html/rfc4180>, DOI: [10.25504/FAIRsharing.1943d4](#))

A comma-separated values (CSV) file is a delimited text file that uses a comma to separate values. Each line of the file is a data record. Each record consists of one or more fields, separated by commas. The use of the comma as a field separator is the source of the name for this file format. A C...

1.a.2

How is this data structured?

✓ a. A structured domain specific file with data and metadata fields

1.a.2.a.1

Can all of the data you want to couple be captured in that format?

✓ a. No

1.a.2.a.2

Does the domain specific format come with its own suite of integration tools that you will use?

✓ a. No

2

Will you be doing integration or linking of different data types?

If you are getting different types of data from different sources and want to use them together it is likely that you will need to match items and glue everything together. This can be done with traditional table database technology, but it is also possible to use Linked Data and RDF.

You may also need to use "mappings" to match data together.

🔗 External Links: [FAIRCookbook on Interlinking data using mappings](#)

✓ b. Yes

2.b.1

What will be your approach?

Linked data is very suitable to integrate data, especially if the data sources are already represented as linked data.

🔗 External Links: [Linked data \(wikipedia\)](#)

✓ d. We have another approach

2.b.1.d.1

What approach?

✓ each sample has its own folder with description of synthetic protocol, physico-chemical characterization, date of preparation, repetition etc.

3

Will you be using common ontologies?

🔗 External Links: [FAIRCookbook on selecting an ontology lookup service](#)

✓ a. No

4

Will there be potential issues with statistical normalization?

✓ a. No

5

Will you be integrating different data sources to get more samples or more data points?

✓ a. No

6

Will you be integrating different data sources in order to get more information for each sample or data point?

ELSI

✓ b. Yes

6.b.1

Did you already select the variables on which you will join the data sets?

✓ b. Yes

6.b.2

Will you make sure that you do not inadvertently create a biased subset?

Some parameters you select on may have been collected only for a subset of the subjects or data points. An obvious example is if you match on secondary education type, you will bias to people over 18 years old because younger people do not have this field. In many cases the selection bias may be a lot less obvious and special measures exist to verify that the diversity of the sample is not reduced by the integration step.

✓ b. Yes

6.b.3

Could the coupling of data create a danger of re-identification of pseudo- or anonymized personal data?

ELSI

🔗 External Links: [RDMkit on Data Sensitivity](#)

✓ a. No

6.b.4

Did you make a conscious decision to be either accurate or complete?

If the coupling parameters are lenient, you will find more connections than when they are strict. But you may find that they are less accurate. This is a balance.

✓ b. We can balance the two

7

Do you have all tools to couple the necessary data types?

✓ b. Yes

8

Will you be using a federated analysis approach?

In some cases it is not practical to bring all data together:

- It may be legally hard to collect the data in one place for analysis
- It may be technically hard to transport data to a single place for analysis

In such cases, a Federated analysis approach may be applicable. Examples of such techniques are DataShield and the Personal Health Train. Secure multi-party computation may be useful too to prevent information leaking between parties.

✗ *This question has not been answered yet!*

9

Will you be doing (automated) knowledge discovery?

📖 Resource Pages: [Data Stewardship for Open Science - Will you be doing \(automated\) knowledge discovery?](#)

✓ a. No

VI. Preserving data

In this chapter, issues regarding data publication and long term archiving are addressed.

Summary

Answered (current phase)	40 / 40	
Answered	43 / 59	

Metric	Score	
Findability	0.83	
Accessibility	0.82	
Reusability	1.00	
Good DMP Practice	1.00	

Questions

1

Specify a list of data sets you will be producing

[Horizon Europe DMP](#) [ELSI](#) [Horizon 2020 DMP](#) [maDMP](#) [Science Europe DMP](#)

Add all the data sets you will be producing. Give each a short name, sufficient for yourself to know what data it is about. It is useful to think about a data set as some collection of data that will be ending up in the same place.

🔗 External Links: [RDMkit on Collecting Data](#), [RDMkit on Data Preservation](#)

Answers

1.a.1

Data set:

[Horizon 2020 DMP](#) [maDMP](#) [Science Europe DMP](#) [Horizon Europe DMP](#)

✓ csv data; images; synthetic protocols

1.a.2

Description of the data set

Science Europe DMP

maDMP

What type of data is in this data set? Examples could be "Field observations", "raw instrument data", "genomic variants".

✓ there will be raw instrument data, followed by data treatment and analysis

1.a.3

What type of data is in this data set?

✗ *This question has not been answered yet!*

1.a.4

Identifier of the data set

Horizon 2020 DMP

Science Europe DMP

maDMP

Horizon Europe DMP

Please add all "formal" identifiers you have for this data set: these can be handles or DOIs or any other type. One important purpose of these identifiers is to be able to find the dataset back.

A good identifier is *persistent* (i.e. it does not change, and also the same identifier will never be used for another data set), *globally unique* (nobody else uses the same identifier for a different data set) and *resolvable* (you can actually locate the data set if you only know the identifier).

Note that if you will be publishing the dataset in a repository, the repository may also assign a persistent identifier. You will be able to specify such additional identifiers under the "publication"-questions. Specify one main identifier here.

✗ *This question has not been answered yet!*

1.a.5

Will this data set be published?

Horizon Europe DMP

ELSI

Horizon 2020 DMP

maDMP

Science Europe DMP

Will you publish the data set somewhere? Will it be findable for other people, even if not the whole world? What is not meant here is a paper about the interpretation of the data, but the data itself.

Note that this does not necessarily mean that the data set becomes openly available, conditions for access and use may apply.

🔗 External Links: [RDMkit on Data Preservation](#)

✓ b. Yes

1.a.5.b.1

Specify where you will distribute this data from

Horizon 2020 DMP

Science Europe DMP

maDMP

Horizon Europe DMP

Add each of the locations where this data set will be made available. Give each of these a short name that identifies it to yourself.

Answers

1.a.5.b.1.a.1

What repository will this data be stored in?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Domain repositories often have the best functionality to make the data findable and reusable: even though it may look like a database that could be reused in a completely different field would be better findable in a generic repository, the limited availability of domain-specific metadata make that less valuable.

Many repositories are listed in <https://fairsharing.org/>

If a repository offers to give your data set a DOI or alternative persistent identifier it is a good idea to use that option.

🔗 External Links: [FAIRSharing](#), [Registry of Research data Repositories](#), [FAIRCookbook on depositing to a generic repository like Zenodo](#)

✓ d. Our institutional repository

Disadvantage of a general purpose repository is the lack of data-specific features (e.g. 'play' instead of 'download' for an audio file) and limited findability

1.a.5.b.1.a.2

Who will the data in this place be shared with?

Horizon 2020 DMP

maDMP

Science Europe DMP

Horizon Europe DMP

✗ *This question has not been answered yet!*

1.a.5.b.1.a.3

Licenses under which this distribution of the data set will be available

Horizon 2020 DMP

Science Europe DMP

maDMP

Horizon Europe DMP

Please add each license that this data set will be available as. For each license you will be able to specify when it starts being applicable, so that you can e.g. specify that the data is restricted for a few months and open afterwards.

🔗 External Links: [RDMkit on Licensing](#), [FAIRCookbook on licensing](#)

✗ *This question has not been answered yet!*

1.a.5.b.1.a.4

Will this data be assigned a persistent identifier?

Science Europe DMP

Horizon Europe DMP

Datasets can be assigned persistent identifiers. Just like journal articles get assigned DOIs, these are often also used for data sets. Note that the DOI of a paper is not a persistent identifier for its supplementary information.

Many repositories make sure that your data get a persistent and resolvable identifiers. In other cases, you should take care of this yourself.

🔗 External Links: [RDMkit on Identifiers](#), [FAIRCookbook on creating resolvable identifiers](#)

✓ b. Yes

1.a.5.b.1.a.4.b.1

Who assigns the persistent identifier?

Science Europe DMP

Horizon Europe DMP

✓ c. The repository

1.a.5.b.1.a.4.b.2

Will the repository make sure the persistent identifier can be resolved to a digital object?

Science Europe DMP

Horizon Europe DMP

Often a persistent identifier will be put as the last part of a URL to *resolve* it to either a page with metadata or directly to the data itself.

✓ b. Yes

1.a.5.b.2

Will you be adding a reference to the published data to at least one data catalogue?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Data is sometimes difficult to locate, especially if it is not in a domain-specific repository. Data catalogues may increase findability: they put the metadata for data sets that are located in different places together in one location that is well known to researchers in a particular field.

Data sets can be mentioned in multiple data catalogues without the need for duplicating the data: the data catalogues point to where the actual data can be found.

An example is [Narcis](#) (for research data in the Netherlands).

🔗 External Links: [What is a data catalog \(Dataversity\)](#)

✗ *This question has not been answered yet!*

1.a.5.b.3

Will there be different versions of this data over time?

Horizon 2020 DMP

Horizon Europe DMP

✗ *This question has not been answered yet!*

1.a.5.b.4

Will a user of this data need specific software to be able to use it?

Science Europe DMP

Horizon 2020 DMP

Horizon Europe DMP

Some data types may be closely coupled to specific software packages. If that is the case for this data set, please name and point out the required software.

✓ a. No

1.a.5.b.4.a.1

Why isn't specialized software required?

✗ *This question has not been answered yet!*

1.a.5.b.5

When will the data set be published?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

🔗 External Links: [RDMkit on Data Sharing](#)

✗ *This question has not been answered yet!*

1.a.5.b.6

Are there qualified references to other data sets?

Science Europe DMP

Horizon Europe DMP

Horizon 2020 DMP

A qualified reference is a cross-reference that explains its intent. For example, X is regulator of Y is a much more qualified reference than X is associated with Y, or X see also Y. The goal therefore is to create as many meaningful links as possible between (meta)data resources to enrich the contextual knowledge about the data.

🔗 External Links: [FAIR principle "I3"](#)

✗ *This question has not been answered yet!*

1.a.6

How long will this data set be kept?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

For optimum reusability data needs to be available for as long as possible. There may be financial reasons why you can't keep the data any longer; there may be legal, contractual or regulatory reasons requiring you to delete the data.

🔗 External Links: [RDMkit on Storage](#)

✗ *This question has not been answered yet!*

1.a.7

Will the metadata be available even when the data no longer exists?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

This is a one of the FAIR principles.

🔗 External Links: [RDMkit on Documentation and Metadata](#)

✗ *This question has not been answered yet!*

1.a.8

Does this dataset contain personal data?

Horizon Europe DMP

ELSI

Horizon 2020 DMP

Science Europe DMP

maDMP

Is there anything in this dataset that could be tied to a person? This could be a physical characteristic, but also behavior of a person, movements, communications. Note that e.g. readouts about the performance of an airplane are considered to contain personal data of the pilot!

The GDPR states that the processing (including storing) of personal data should stop when the intended purpose of the processing is done. There are, however, exemptions to this e.g. when the processing is done for research purposes. Also, from a research ethics point of view, research data should be kept to make it possible for others to validate published research findings and reuse data for new discoveries. This is also governed by what the data subjects have been informed about regarding how you will treat the data after project completion. The recommendation is to deposit the sensitive data in the appropriate controlled access repositories if such are available, but this requires that the data subjects are informed and have agreed to this.

🔗 External Links: [RDMkit on Data Sensitivity](#)

✓ a. No

1.a.9

Does this dataset contain sensitive information?

Horizon Europe DMP

ELSI

Horizon 2020 DMP

Science Europe DMP

maDMP

Personal information can be sensitive if it is for instance about the health, sexual orientation, religion of a person. But there are also other classes of sensitive information: e.g. locations of rare species in biodiversity could be sensitive and should not leak to poachers.

🔗 External Links: [RDMkit on Data Sensitivity](#)

✓ a. No

2

Will you be archiving data (using so-called 'cold storage') for long term preservation already during your project?

Science Europe DMP

Horizon Europe DMP

ELSI

Horizon 2020 DMP

Much of the raw data you have will need to be archived for your own later use somewhere. This is often done off-line on tape, not on the disks of the compute facility. Please note that this does not refer to the data publication.

📖 Resource Pages: [Data Stewardship for Open Science - Will you be archiving data for long term preservation?](#)

🔗 External Links: [DMEG on Storage](#)

✓ b. Yes

2.b.1

Is the archived data changing over time, needing re-archival?

Horizon 2020 DMP

📖 Resource Pages: [Data Stewardship for Open Science - If your data changes over time, how frequently do you do backups?](#)

✓ a. No

2.b.2

Will the archive be stored on disk or on tape?

✓ c. Other

2.b.3

Will the archive be stored in a remote location, protecting the data against disasters?

Horizon 2020 DMP

Horizon Europe DMP

✓ b. Yes

2.b.4

Will the archive need to be protected against loss or theft?

Horizon 2020 DMP

Horizon Europe DMP

✓ b. Yes

2.b.4.b.1

Will the archive be encrypted?

Horizon Europe DMP

Horizon 2020 DMP

✓ b. No, the data does not need protection

2.b.4.b.2

Is it clear who has physical access to the archives?

Horizon 2020 DMP

Horizon Europe DMP

✓ b. Yes

2.b.5

Will your project require the archives to be available on-line?

 Resource Pages: [Data Stewardship for Open Science - Re-use considerations: Will the archive need to be online?](#)

✓ b. Yes

2.b.5.b.1

Will data integrity be guaranteed?

If the 'master copy' of the data is available on line, it should probably be protected against being tampered with.

✓ b. Yes

2.b.5.b.2

Is there an interface and a defined process for people to request access to the data?

✓ b. Yes

2.b.6

Has it been established who has access to the archive, and how fast?

✓ b. Yes

2.b.6.b.1

Has it been established who can ask for a restore during the project?

✓ b. Yes

2.b.6.b.2

If the data is voluminous, will the project be able to cope with the time needed for a restore?

✓ a. No

2.b.6.b.3

Has authority over the data been arranged for when the project is finished (potentially long after)?

✓ a. No

2.b.7

Has it been established how long the archived data need to be kept? For each of the different parts of the archive (raw data / results)?

☰ Resource Pages: [Data Stewardship for Open Science - How long does the data need to be kept?](#)

✓ b. Yes

2.b.8

Will the data still be understandable and reusable after a long time?

Horizon 2020 DMP

Horizon Europe DMP

See also all questions about keeping metadata and data formats. Make sure the metadata is kept close to the data in the archive, and that community supported data formats are used for all long term archiving.

☰ Resource Pages: [Data Stewardship for Open Science - Will the data be understandable after a long time?](#)

✓ b. Yes

3

Will you be archiving your data in 'cold storage' after the project finishes?

Horizon 2020 DMP

Horizon Europe DMP

Will you be storing (in cold storage) copies of your own data for a longer period after the project has ended? Possibly as a continuation of archival as part of data storage strategy during the project? Data archival is distinct from data publishing, an archive is usually strictly limited in who can access the data.

📖 Resource Pages: [Data Stewardship for Open Science - How and where will you be Archiving/Cataloging?](#)

✓ b. Yes

3.b.1

Who will be paying for the long term storage?

Horizon Europe DMP

✓ c. This is a service budgeted by one or more of the participating institutes

3.b.2

What is the minimum lifetime of the archive?

Horizon Europe DMP

✓ e. It is arranged in a different way

3.b.2.e.1

How is the archival period arranged?

Horizon Europe DMP

✓ The representative told us that the archive will be maintained over the time required by the project.

3.b.3

Can the archival period be extended?

Horizon Europe DMP

✓ b. Yes

3.b.3.b.1

Who will decide whether the archival period is extended?

Horizon Europe DMP

✓ a. One of the principle investigators involved in the project will decide

3.b.3.b.2

What will the decision whether or not to extend the renewal be based on?

Horizon Europe DMP

- ☐ It will be based on the actual use of the archived data
- ☒ It will be based on the predicted use of the archived data
- ☐ It will be based on available budget

3.b.4

Will data formats of data in cold storage be upgraded if they become obsolete?

Horizon Europe DMP

✓ b. Yes

3.b.5

Will data be migrated regularly to more modern storage media (e.g. newer tapes)?

Horizon Europe DMP

✓ b. Yes

4

Will any of the repositories you use charge you for their services?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

✗ *This question has not been answered yet!*

5

Are there any other recurring fees to keep data or documents available?

Are you using any commercially licensed products to keep data, software or documents available, for which a regular fee must be paid?

✓ a. No

6

Did you budget for the time and effort it will take to prepare the data for publication?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

✗ *This question has not been answered yet!*

7

Will you be making sure that blocks of data deposited in different repositories can be recognized as belonging to the same study?

✗ *This question has not been answered yet!*

8

Will reference data be created?

Will any of the data that you will be creating form a reference data set for future research (by others)?

Much of today's data is used in comparison with reference data. You may be comparing your own data with a "standard set" which is maintained as a collection by someone else. Or you could be determining differences to a standard (for example in bioinformatics, a genome is often compared with a reference genome to identify genomic variants). Will you be creating any data that will be reference data for other researchers?

☰ Resource Pages: [Data Stewardship for Open Science - Will reference data be created?](#)

✓ b. Yes

8.b.1

Who will own the reference data? Who will be allowed to use it?

It is important to think early about ownership and permissions. Who will have the authority to decide later about the use of the reference data? Will a single person or single organisation be responsible for this?

Please note as well that many kinds of data can not be "owned"; you can only have copyrights on specific data collections, and those data base rights are not as universal as creative rights on other works.

📖 Resource Pages: [Data Stewardship for Open Science - What will the IP be like?](#)

✓ Based on Czech legislation, the reference data are own by the institution where the research was done.

8.b.2

How will you maintain it?

How will maintenance be paid for in the long run? Will you host it yourself or deposit it with a repository? How will you deal with requests for help? And with requests for adding data?

📖 Resource Pages: [Data Stewardship for Open Science - How will you maintain it?](#)

✓ There will be a contact person for the particular data. Data could be made available upon reasonable request.

8.b.3

How will the release schedule be?

Will you be updating the reference data at regular intervals?

✓ Reference data will be stored and if needed then updated.

8.b.4

Will the reference data be made available under a standard license?

🔗 External Links: [FAIRCookbook on Data Licenses](#), [FAIRCookbook on Licensing](#)

✗ *This question has not been answered yet!*

8.b.5

Will the reference data be available from an existing repository?

✓ b. Yes

8.b.5.b.1

Which repository?

You will be presented with suggestions from [FAIRSharing](#), but you also have the option to manually enter the repository name that is not listed there.

✗ *This question has not been answered yet!*

VII. Giving access to data

This chapter deals with the information needed by people who will re-use your data, and with the access conditions they will need to follow.

Summary

Answered (current phase)	7 / 7	
Answered	7 / 8	

Metric	Score	
Reusability	1.00	
Openness	1.00	

Questions

1

Will you be working with the philosophy 'as open as possible' for your data?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

The FAIR principles do not contain any direction towards "Openness". This is done on purpose, because there can be compelling reasons not to make data "Open", such as privacy, other sensitive data, or intellectual property protection.

The true goal of funding agencies is to create the maximum value for society from their investments. They therefore often add "As open as possible, as closed as necessary" to the requirements for funding.

 Resource Pages: [Data Stewardship for Open Science - How much will be Open data/access?](#)

✓ b. Yes

2

Will the data be accessible through a free and standardized access protocol?

✗ *This question has not been answered yet!*

3

Can all of your data become completely open over time?

Horizon Europe DMP

ELSI

Horizon 2020 DMP

maDMP

Science Europe DMP

Some data may be subject to a temporary embargo, or need to stay closed for specific reasons.

✓ b. Yes

4

Will you use temporary restrictions on the reuse of the data (embargo)?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

✓ d. Yes, data without legal restrictions will be released openly after a fixed time period

4.d.1

What embargo period are you using?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

After what period will restrictions on the reuse of data (except ethical and legal restrictions) fall away?

✓ until we validate the data

5

Will metadata be available openly?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Horizon Europe demands that metadata is completely open, e.g. provided under a CC0 license, and that any deviation from this is clarified.

✓ b. Yes

5.b.1

Will metadata contain instructions how to get access to the data?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

✓ b. Yes

5.b.2

Will the metadata be available in a form that can be harvested and indexed?

Horizon 2020 DMP

Science Europe DMP

Horizon Europe DMP

Repositories often allow search engines and catalogues to index the metadata in an automated way. Will this be the case for your data?

✓ b. Yes, by the repository / repositories

VIII. Other outputs

Summary

Answered (current phase)	0 / 0	
Answered	0 / 2	

Questions

1

How do you decide which additional research outputs should be retained?

Horizon Europe DMP

This question refers to research outputs beyond datasets, such as code, documentation, lab protocols, questionnaires, reference data, software, or workflows. Please explain how you decide which of these outputs are important to keep — for example, because they are necessary for reproducibility, reuse by others, legal compliance, or future reference. You can also describe any criteria, policies, or team practices used to make these decisions.

✗ *This question has not been answered yet!*

2

Are there any other outputs of your project that might be valuable to some other entities (researchers, researcher groups, institutes)?

Horizon Europe DMP

✗ *This question has not been answered yet!*