

# Open science and research data management in Horizon Europe

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## Key documents

[Standard application form](#) (SAF), p. 33-34. Guidance on completing Part B, section 1.2 (Methodology) on open science and research data management.

[Programme Guide](#) (PG), p. 38-54. Detailed information about open science practices recommended by Horizon Europe, and how these are evaluated in the application.

[Annotated model grant agreement](#) (AGA), p. 152-161. Contains the most detailed information regarding Open Science requirements under Horizon Europe.

[Data Management Plan template](#), recommended when drafting the Data Management Plan deliverable for awarded grants.

## Introduction

### *Who is this for?*

This document provides guidance on addressing the open science requirements of Horizon Europe, with a particular focus on research data management.

It is for use by those applying for EC funding under the Horizon Europe programme, including applicants for European Research Council (ERC) and Marie Skłodowska-Curie Action (MSCA) funding.

For collaborative applications, the open science and research data management sections of the application will normally be completed by the co-ordinating partner. But collaborating partners may input into this part of the application where they have a role in collection and processing of research data in the project.

Projects which do not generate or collect research data are exempt from the requirements specific to data management, but must still consider the open science requirements.

Specific requirements for the application can differ between work programmes. Refer to the section on [programme-specific requirements](#).

## Open science in Horizon Europe

See: [PG](#), p. 39-42.

There are five **mandatory** Open Science practices within the Horizon Europe programme which must be addressed in applications:

- Immediate open access to scientific publications;
- Responsible management of research data in line with the FAIR principles, and open access to research data;
- Open information about the research outputs/tools/instruments needed to validate the conclusions of scientific publications or to validate/re-use research data;
- Open digital or physical access to results needed to validate conclusions;
- Immediate Open Access for all research outputs in case of public emergency.

There is also a list of **recommended** open science practices endorsed by Horizon Europe. Adoption of these, where relevant to your project, will result in a higher evaluation score. These are:

- Measures to increase reproducibility;
- Open peer review;
- Citizen, civil society and end-user engagement;
- Early and open sharing;
- Preregistration;
- Registered reports;
- Preprints.

You can find out more about open science practices and their application by visiting the University of Reading's [Open Research Handbook](#).

## **Application preparation and review**

Where University of Reading applicants are co-ordinating a proposal, the Open science/research data management section must be reviewed by the Research Data Manager prior to submission. Draft application forms can be sent to the Research Data Manager directly or via your Research Development Manager and should be provided no later than 5 working days before the application deadline.

**All applications:** Any costs included in the budget for the data storage, computing and archiving must be approved by the Research Data Manager.

Contact the Research Data Manager if you require preliminary guidance on completing the Open science/research data management section. General guidance on data management planning is available on the [Research Data Management website](#).

## **Contact**

Research Data Manager: [researchdata@reading.ac.uk](mailto:researchdata@reading.ac.uk) / 0118 378 6161.

## **Completing the application**

### ***Section B 1.2: Open science and research data management***

See: [SAF](#), Part B, section 1.2, p. 33-34.

#### **Open science**

In the excellence section of the main proposal you must include a sub-section, up to 1 page in length, detailing how appropriate open science practices will be implemented as part of your methodology, adapted to the nature of your work.

This must explain how you will meet the **mandatory** open science requirements. For example, you should specify how you will fulfil the requirement for [immediate Open Access](#). This could include indicating publication venues for research outputs and the trusted repository you intend to publish in.

In addition, indicating how you will adopt **recommended** practices, as appropriate to your project, will result in a higher evaluation score. For more detailed guidance on completing this section in relation to specific open science practices, see [PG](#), p. 39-54.

**If you believe none of the Open Science practices are relevant to you, you must provide a justification of this in this section.**

### Research data management

In the excellence section of the main proposal you must include a sub-section, up to 1 page, detailing how research data generated and/or collected during the project will be managed.

This section should be kept brief and to the point. You should not need more than half a page, or a page at most if large amounts of data will be involved and/or data management will be complex.

Horizon Europe endorses the [FAIR principles](#) and you should demonstrate how data will be managed in line with these (see below).

You are expected to address each of the points below in this section.

**Types of data:** (e.g. experimental, observational, images, text, numerical) and their estimated size; if applicable, combination with, and provenance of, existing data.

Clearly identify and characterise each type of data and quantify in relevant terms, e.g. by sample size, number of records, digital data volume where it is substantial.

**Findability of data:** types of persistent and unique identifiers (e.g. digital object identifiers) and trusted repositories that will be used.

Refer to University guidance on [choosing a data repository](#). Most data repositories assign unique identifiers in the form of either digital object identifiers (DOIs) or accession IDs.

All University researchers are eligible to deposit data in the University of Reading [Research Data Archive](#) (up to 20 GB free of charge). There may be external services that are more suitable for your data if they serve subject communities or manage specific types of data. For example, the public databases of the [European Bioinformatics Institute](#) are the most suitable repositories for genetic data. The EC also provides its own repository for the outputs of EC-funded research, [Zenodo](#). There is no charge to use this service.

Note: 'Personal websites and databases, publisher websites, as well as cloud storage services (Dropbox, Google drive, etc) are not considered repositories. Academia.edu, ResearchGate and similar platforms do not allow open access under the terms required and are NOT considered repositories' (AGA, p. 156). These services do not satisfy the Horizon Europe requirements.

**Accessibility of data:** IPR considerations and timeline for open access (if open access not provided, explain why); provisions for access to restricted data for verification purposes.

You may wish to provide for protection of data that will be subject to commercial exploitation (e.g. patenting or licensing), or clarify that some personal or commercially-privileged data will not be made available, in order to meet relevant ethical and/or legal obligations.

Provide a timeline for making the data openly available. If you plan to restrict access to the data, explain what provisions will be put in place to enable access for verification purposes.

***Interoperability of data:*** *standards, formats and vocabularies for data and metadata.*

Outline any standards that will be used for curation and documentation of your data. If you will be using specific data formats or metadata standards to describe particular data types, e.g. to comply with specialist data repository requirements or to conform to community standards, identify these and provide relevant information. (For example, the European Nucleotide Archive [specifies data formats for submission](#).) Search for relevant standards at [FAIRsharing](#). For more information about metadata standards, see the [RDA Metadata Directory](#).

***Reusability of data:*** *Licenses for data sharing and re-use (e.g. Creative Commons, Open Data Commons); availability of tools/software/models for data generation and validation/interpretation /re-use.*

Research data should be made available under open licence where there is no reason to restrict access. This can be through the Creative Commons Attribution Licence ([CC-BY 4.0](#)), the Creative Commons Zero Public Domain Declaration ([CC0](#)) or any other suitable [open licence](#).

Information about any tools/software/models instruments used to generate the data, and required to validate, interpret or re-use the data, should be provided in documentation accompanying the data deposited in the repository. Information must include a detailed description of the tool/instrument, how to access it, and any dependencies on commercial products. Where code has been written to generate or analyse the data, this should be archived alongside data or made available under open licence in a suitable online location, such as a code repository platform (e.g. [GitHub](#)). The University provides guidance on [best practice in the management and sharing of code](#).

***Curation and storage/preservation costs;*** *person/team responsible for data management and quality assurance.*

If you will be collecting a large amount of data (as a guide, requiring more than 100 GB of storage capacity at UoR), you may need to include data storage costs in your budget. The amount requested should be consistent with the data volume anticipated under Types of data (above). For guidance on University storage services and costs see the section on [storage and computing](#) below.

Many data centres and data repositories do not charge for the deposit of data, but this is not always the case. It may depend on the volume of the data to be deposited. For example, TB-scale volumes of modelling output generated in climate/weather research

could be deposited in the NERC [Centre for Environmental Data Analysis \(CEDA\) Archive](#), but applicants would need to obtain a quote from CEDA. The [Archaeology Data Service](#) is a rare example of a data centre that levies a deposit charge as standard.

Costs for use of external services are eligible for EC grant funding.

Indicate who will be responsible for data management and quality assurance.

### ***Section B 3.2 Capacity of participant and consortium as a whole***

See: [SAF](#), Part B, section 3.2, p. 40.

Show that your consortium includes expertise and/or track record in open science practices relevant to your project. This is not required if you have provided justification above that open science practices are not relevant for your project.

### ***Table 3.1b/c Deliverables***

Remember to include the DMP in your project deliverables. It must be submitted in the first six months of the award. An updated DMP deliverable must also be produced mid-project (for projects longer than twelve months) and at the end of the project (where relevant).

### ***Section A List of publications and other outputs***

See: [SAF](#), Part A, p. 13.

Publications are expected to be Open Access. If not, contact [centaur@reading.ac.uk](mailto:centaur@reading.ac.uk) to see if you can deposit your publication and provide Open Access retrospectively. Datasets are expected to be FAIR and 'as open as possible, as closed as necessary'.

## **Additional considerations**

### ***Storage and computing***

You should consider any requirements you will have for resources related to the storage and processing of research data, and ensure all eligible costs are included in your budget. You will need to consider:

- how much data you will need to store during the project, where data will be stored, and any associated costs;
- whether any dedicated computing resource is required for computing-intensive proposals, and if so at what specification and cost.

Data collected/held at the University should be stored using University-managed infrastructure, which will provide data security, replication in separate data centres, automated backup and file recovery. For the different options available, and information about costs, please [read the guidance here](#).

If you have computing-intensive requirements, custom specifications of CPU, memory, storage and GPU can be purchased from the University on a pro rata basis. Information is available in the [Academic Computing Team website](#).

## ***Ethics and security***

See: [SAF](#), Part A 4

You are not required to address ethical considerations related to research data in the data management section of the proposal, except in so far as they may prevent you from making some data available.

But you will be required to complete an Ethics Issues table as part of the application and, if you have identified any ethics issues related to aspects of your research (including, but not limited to, management of research data), you must also submit an ethics self-assessment. You can use this section of your application to explain how ethical aspects of data management will be handled, for example the measures you will adopt to ensure the secure storage and communication of sensitive data, or your proposed procedure for obtaining informed consent for long-term preservation of data and data sharing from research participants.

For guidance on completing this part of the application, see the guide [How to complete your ethics self-assessment](#).

## **Programme-specific requirements**

This list is not exhaustive. Some work programmes may specify open science practices which must be followed in addition to the five that are mandatory in Horizon Europe. Refer to the programme-specific guides when completing your project proposal, and contact the Research Data Manager if additional guidance is required.

### ***European Research Council (ERC)***

See: [ERC Work Programme 2021](#)

ERC grant applications are evaluated on the criteria of scientific excellence alone. There is therefore no specific requirement to address data management in the application. The Horizon Europe requirements for open science practices remain in place, including those on research data management. A Data Management Plan must still be submitted as a deliverable within the first 6 months of the project.

### ***Marie Skłodowska-Curie Actions (MSCA)***

See: [Marie Skłodowska-Curie Actions Postdoctoral Fellowships application form](#)

Project proposals for MSCA Postdoctoral Fellowships have a reduced requirement for ½ page section considering both the implementation of Open Science practices **and** Research Data Management in your project. This should be contained in Part B section 1.2 of the project proposal.

## **After the start of your project**

### ***Include a deliverable for an initial DMP at month 6 in the project***

If your grant is awarded, you will be required to submit a first version of a full Data Management Plan (DMP) within the first six months. Horizon Europe provides a [DMP](#)

[template](#) for this purpose. The template includes questions to help you develop your plan with the appropriate level of detail.

The DMP is to be regarded as a living document, and should evolve as the project progresses. The initial deliverable will be a first iteration, which can be expanded in the course of the project. For projects of longer than 12 months an updated DMP deliverable is expected at the halfway point in the project, and a final updated DMP deliverable at the project end.

Where the University is the project co-ordinator or has a substantial role in collection and processing of data, PIs are encouraged to contact the Research Data Manager for assistance in preparing the DMP.

If you anticipate you will not be able to deposit or share your data, a Data Management Plan must still be completed, within which the decision to restrict access to your data must be justified.

If you require support in writing the Data Management Plan deliverable, contact the Research Data Manager.

### ***Deposit your data in an appropriate repository***

Horizon Europe requires that research data be deposited in a data repository as specified and within deadlines set out in the DMP.

This does not necessarily mean data have to be made open, as access can be restricted where this is necessary. Data should be ‘as open as possible, as closed as necessary’. But metadata describing the data should be available where possible, so that the data are findable.

Open data should be licensed by default under the Creative Commons Attribution Licence ([CC-BY 4.0](#)), the Creative Commons Zero Public Domain Declaration ([CC0](#)) or any other suitable [open licence](#). It is standard practice for data to be shared no later than any related results are published. In exceptional cases deposit can be delayed beyond the end of the project.

### ***If data cannot be made available***

If some or all of your data cannot be made openly available, you must have discussed this at the proposal stage, and clearly identified the relevant data and reason for their exclusion in your DMP.

In cases where access to data will be entirely restricted, metadata should still be made openly available where possible, so that the existence of the data can be ascertained.

### ***Make your publications Open Access***

See: [AGA](#), p. 155-158.

You may publish your research outputs in the venue of your choice, whether this is closed (subscription-based), hybrid, or Open Access, providing the conditions below are met.



- Your publication **must** be deposited in a trusted repository, in a machine-readable format. You should deposit your publication in [CentAUR](#), the University of Reading's institutional repository, at the point of acceptance. Open Access to your publication must be provided immediately from the date of publication.
- The version deposited in the repository must be either the author final manuscript (incorporating all revisions following peer review) or the final published version, known as the version of record.
- The deposited version must be licensed under the latest version of a Creative Commons Attribution licence ([CC-BY](#)) or an equivalent licence. Monographs may use more restrictive licences excluding commercial uses and the creation of derivative works.
- Information must be included in your publication about any tools and instruments needed to validate your conclusions. These may include data, software, algorithms, protocols, models, workflows, electronic notebooks and other materials. Information should include a detailed description of the research output/tool/instrument, how to access it, any dependencies on commercial products, version/type, parameters, etc.