

Data Management Annex (Version 1.4)

Why the Belmont Forum requires Data Management Plans (DMPs)

The Belmont Forum supports international transdisciplinary research with the goal of providing knowledge for understanding, mitigating and adapting to global environmental change. To meet this challenge, the Belmont Forum emphasizes open sharing of research data to stimulate new approaches to the collection, analysis, validation and management of data, thus increasing the transparency of the research process and robustness of the results. However, the Belmont Forum fully recognizes that there are legitimate reasons to constrain access, for example, when an individual's privacy would be at risk from sharing data containing (or derived from) personally identifiable information.

The Belmont Forum considers that the development and implementation of project-specific Data Management Plans is essential to enable the sharing of research data. Research data includes:

- digital information created directly from research activities such as experiments, analysis, surveys, measurements, instrumentation and observations; and
- data resulting from automated or manual data reduction and analysis including the inputs and outputs of simulations and models.

Project-specific Data Management Plans should adhere to relevant standards and community best practice, which may vary by subject and disciplinary area. Research data should normally be open by default, unless there are legitimate reasons to constrain access, and the data must be made available with minimum time delay, including being discoverable through catalogues and search engines. Data with acknowledged long-term value should be preserved, protected from loss and remain accessible and usable for future research in sustainable and trustworthy repositories.

To enable research data to be discoverable and effectively re-used by others, including those outside the discipline of origin, sufficient metadata must be recorded and made openly available to enable other researchers to understand the research and re-use potential of the data. Published results must always include information on how to access the supporting data and other research materials. Researchers must ensure that metadata created to support research datasets retained for the long-term is sufficient to allow other researchers a reasonable understanding of those datasets, thereby minimising unintentional misuse, misinterpretation or confusion.

In the development of data infrastructures, it is important that there is solid use and evolution of existing resources, platforms, standards, and recognized practices. Projects that propose to develop data infrastructures are asked to work closely with, and support relevant international networks, infrastructures, and standards organisations. They should make use of existing data repositories, such as those certified by the World Data System (WDS) and those brokered by the Group on Earth Observations (GEO). Projects should also coordinate with, and make use of, products and practices developed by recognized research and operational data policy and sharing organisations such as the Committee on Data for Science and Technology (CODATA) and the Research Data Alliance (RDA). For a more comprehensive list of repositories that may be appropriate for your data, see also re3data.org.

Belmont Forum Data Management Planning Process

It is important to consider data management issues from the inception of a Belmont Forum Collaborative Research Action (CRA) proposal in order to plan and budget appropriately for data

sharing, management and curation. This section explains the expectations for Data Management Plans (DMPs) at the stages of Expressions of Interest, Full Proposal, and Awarded Projects.

Expressions of Interest/Pre-Proposal Stage - Preliminary Data Management Information

In the data management section, please address the following questions:

- Who on your team will be responsible for developing, implementing, overseeing and updating the data management plan?
- What data sets of long-term value do you expect that the project will produce? “Long-term” means those data sets that, over time, will or may be of value to others within your research community and/or the wider research and innovation community. Data of long-term value should meet the FAIR principles; i.e. they should be findable, accessible, interoperable and reusable.
- How have you accounted for the costs required to manage the data and other materials to ensure long-term availability?

Full Proposal - Proposed Data Management Plan Approach

Responses should be in a pdf uploaded as an Annex in the application portal. Please address the following questions (those that are repeated from the earlier stage should be elaborated on as appropriate):

- What data sets of **long-term value** do you expect that the project will produce? “Long-term” means those data sets that, over time, will or may be of value to others within your research community and/or the wider research and innovation community. Data of long-term value should meet the FAIR principles; i.e. they should be findable, accessible, interoperable and reusable.
- How do you intend to **manage these data** during the life of the project to ensure their long-term value is protected? For example, where will the data be held during the project, who will have access, and will a specialised data manager be part of the project team?
- How will the data be **managed after the project ends** to ensure their long-term availability? For example, will the data be published with a Digital Object Identifier (DOI) and/or be placed in a recognised long-term repository or data centre, and when will this take place?
- What **supporting documentation and other information** do you plan to make publicly available to support the longer-term re-use of the data?
- Do you expect there will be any **restrictions** on how the data can be accessed or reused? Belmont Forum policy is that the data should be as open as possible, though with restricted or closed access where appropriate and necessary; for example, if there are sensitive data involving human subjects.
- Will there be **other types of material** (e.g., samples, physical collections, software, curriculum materials) of long-term value produced? If so, what are your plans for ensuring these are also available over the long-term?
- How have you accounted for the **costs** required to manage the data and other materials to ensure long-term availability?

Awarded Projects - Full Data Management Plan

A full Data Management Plan (DMP) for an awarded Belmont Forum CRA project is a living, actively updated document that describes the data management life cycle for the data to be collected, processed and/or generated. As part of making research data findable, accessible, interoperable and reusable (FAIR), the DMP for a funded project should include information on:

- the types of data, samples, physical collections, software, curriculum materials, and other materials to be collected, processed and/or generated in the course of the project;

- the standards to be used for data and metadata format and content (where existing standards are absent or deemed inadequate, this should be documented along with any proposed solutions or remedies);
- the handling of research data during and after the end of the project
- policies for broad access and sharing including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements;
- policies and provisions for reuse, re-distribution, and the production of derivatives;
- plans for archiving data, samples and other research products, and for preservation of access to them via an institutionally-supported repository; and
- contact information for the person(s) responsible for updating the DMP as needed to comply with these guidelines.

A more detailed data management plan template for funded Belmont Forum projects will be made available at the Award Stage.

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