**National Science Foundation**

**NSF-ENG: Engineering**

**[**Replace Header with ‘Data Management Plan’ prior to submission]

**Roles and responsibilities**

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**Guidance:**

The Data Management Plan should outline the rights and obligations of all parties as to their roles and responsibilities in the management and retention of research data. It must also consider changes to roles and responsibilities that will occur should a principal investigator or co-PI leave the institution.

Explain how the responsibilities regarding the management of your data will be delegated. This should include time allocations, project management of technical aspects, training requirements, and contributions of non-project staff - individuals should be named where possible. Remember that those responsible for long-term decisions about your data will likely be the custodians of the repository/archive you choose to store your data. While the costs associated with your research (and the results of your research) must be specified in the Budget Justification portion of the proposal, you may want to reiterate who will be responsible for funding the management of your data. Consider the following:

* Outline the staff/organizational roles and responsibilities for implementing this data management plan.
* Who will be responsible for data management and for monitoring the data management plan?
* How will adherence to this data management plan be checked or demonstrated?
* What process is in place for transferring responsibility for the data?
* Who will have responsibility over time for decisions about the data once the original personnel are no longer available?

**Expected data**

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**Guidance:**

The Data Management Plan should describe the types of data, samples, physical collections, software, curriculum materials, and other materials to be produced in the course of the project. It should then describe the expected types of data to be retained.

Provide a description of the data you will collect or re-use, including the file types, dataset size, number of expected files or sets, and content. Data types could include text, spreadsheets, images, 3D models, software, audio files, video files, reports, surveys, patient records, etc. Consider the following:

* What data will be generated in the research?
* What data types will you be creating or capturing?
* How will you capture or create the data?
* If you will be using existing data, state this and include how you will obtain it.
* What is the relationship between the data you are collecting and any existing data?
* How will the data be processed?
* What quality assurance & quality control measures will you employ?

**Period of data retention**

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**Guidance:**

The Data Management Plan should describe the period of data retention. Minimum data retention of research data is three years after conclusion of the award or three years after public release, whichever is later. Public release of data should be at the earliest reasonable time. A reasonable standard of timeliness is to make the data accessible immediately after publication, where submission for publication is also expected to be timely. Exceptions requiring longer retention periods may occur when data supports patents, when questions arise from inquiries or investigations with respect to research, or when a student is involved, requiring data to be retained a timely period after the degree is awarded. Research data that support patents should be retained for the entire term of the patent. Longer retention periods may also be necessary when data represents a large collection that is widely useful to the research community. For example, special circumstances arise from the collection and analysis of large, longitudinal data sets that may require retention for more than three years. Project data-retention and data-sharing policies should account for these needs.

Estimate how long your data will be kept after the completion of your research. Describe any institutional or project-based policies on data retention that might apply.

**Data formats and metadata**

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**Guidance:**

The Data Management Plan should describe the specific data formats, media, including any metadata.

Describe the format of your data, and think about what details (metadata) someone else would need to be able to use these files. Metadata may entail descriptions of research details such as: experiments, apparatuses, computational codes, etc. Consider these questions:

* Which file formats will you use for your data, and why?
* What form will the metadata describing/documenting your data take?
* How will you create or capture these details?
* Which metadata standards will you use and why have you chosen them? (e.g. accepted domain-local standards, widespread usage).
* What contextual details (metadata) are needed to make the data you capture or collect meaningful?

**Data dissemination and policies for public access, sharing and publication delays**

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**Guidance:**

The Data Management Plan should clearly articulate how "sharing of primary data" is to be implemented. It should describe dissemination approaches that will be used to make data available to others. Policies for public access and sharing should be described, including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements. Research centers and major partnerships with industry or other user communities must also address how data are to be shared and managed with partners, center members, and other major stakeholders. Publication delay policies (if applicable) must be clearly stated. Investigators are expected to submit significant findings for publication quickly that are consistent with the publication delay obligations of key partners, such as industrial members of a research center.

It is very important, the reason a DMP is required, that you specify how you will share your data with non-group members after the project is completed. You must explain how and when the data will become available. Will data be accessible on a web page, by email request, via open-access repository, etc.? If the data is of a sensitive nature – privacy or ecological endangerment concerns, for instance – and public access is inappropriate, address here the means by which granular control and access will be achieved (e.g. formal consent agreements, anonymization of data, only available within a secure network, etc.). Consider these questions:

* How and when will you make the data available? (Include resources needed to make the data available: equipment, systems, expertise, etc.)
* What is the process for gaining access to the data?
* Will any permission restrictions need to be placed on the data?
* Are there ethical and privacy issues? If so, how will these be resolved?
* What have you done to comply with your obligations in your IRB Protocol?
* Who will hold the intellectual property rights to the data and how might this affect data access?
* Which bodies/groups are likely to be interested in the data?
* What and who are the intended or foreseeable uses/users of the data?
* Do you plan on publishing findings which rely on the data? If so, do your prospective publishers place any restrictions on other avenues of publication?
* How long will the original data collector/creator/principal investigator retain the right to use the data before opening it up to wider use?
* Explain details of any embargo periods for political/commercial/patent or publisher reasons.

**Data storage and preservation of access**

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**Guidance:**

The DMP should describe physical and cyber resources and facilities that will be used for the effective preservation and storage of research data. In collaborative proposals or proposals involving sub-awards, the lead PI is responsible for assuring data storage and access.

Describe your long-term strategy for storing, archiving and preserving the data you will generate or use. Consider the following:

* What is the long-term strategy for maintaining, curating and archiving the data?
* Which archive/repository/database have you identified as a place to deposit data?
* What procedures does your intended long-term data storage facility have in place for preservation and backup?
* How long will/should data be kept beyond the life of the project?
* What data will be preserved for the long-term?
* On what basis will data be selected for long-term preservation?
* What metadata/documentation will be submitted alongside the data or created on deposit/transformation in order to make the data reusable?
* What related information will be deposited?