This guidance document will help you write a DMP for your project. Usually, you will write several versions of your DMP. The first version, as you are starting your project, will usually not be complete and detailed. Do not despair, you can update and expand your DMP as the project progresses.

1. Administrative information

1.1 Please give the title of the project

1.2 Please give the funding program(s) your project belongs to.

1.3 If known, please give the project number

2. Data description and collection or reuse of existing data

2.1 Describe how you plan to collect new or use existing data.*
You should include the methodologies and software that you plan to use and any constraints the data are subject to. Also, include how you plan to document the provenance of the data. If existing data exists please include a reason why the existing data is not sufficient.

Note from NTNU:
If your project includes personal data (any information relating to an identified or identifiable person), you should use the NSD DMP tool (https://nsd.no/arkivering/en/data_management_plan.html), according to the DMP guidelines (https://innsida.ntnu.no/wiki/-/wiki/English/Data+management+plan).

Give a brief description of the data, including any existing data or third-party sources that will be used, in each case noting its content, type and coverage.

Questions to consider:
Are there any existing data that you can reuse?

Search for existing data:
- BASE: https://www.base-search.net/about/en/index.php
- Registry of Research Data Repositories: www.re3data.org

2.2 Describe how much data and the type of data you plan to collect or produce.*
You should include the type (e.g. databases, spreadsheets), the volume and formats you intend to use. You should justify your choice if the formats you intend to use are proprietary. The quantity of data should be in the amount of space required (e.g. in GigaBytes) or the number of files.

Note from NTNU:
Briefly describe the categories of datasets your plan to generate or use, and their role in the project. You should include the type, format and the volume you intend to use. Examples: interviews, measurements, surveys, sensor logs etc.

Type and format: Clearly note what format(s) your data will be in. Explain why you have chosen certain formats. You should justify your choice if the formats you intend to use are proprietary. NTNU format preferences are based on enabling long-term availability and access.

Volume: Consider the implications of data volumes in terms of storage, access and preservation. Keep in mind whether the scale of the data will pose challenges when sharing or transferring data between sites; do you need to include additional costs? How will you address these challenges? If you have large volumes of data, please contact the IT department at NTNU.

The quantity of data should be in the amount of space required. Please note what volume of data you will create in MB/GB/TB. Indicate the proportions of raw data, processed data, and other secondary outputs (e.g., reports).

3. Documentation and data quality

3.1 Describe how you will organise and document your data.*

You should include what metadata standards you plan to use, what data will be covered and how the arrangement of your data will help others to find and use your data. You should also describe any additional documentation (such as electronic log-books and user-guides or examples of how to use the data), how it will be captured and where it will be stored.

Note from NTNU:

Describe the types of documentation that will accompany the data, to help your project as well as secondary users understand and reuse it. This should at least include basic details that will help people to find the data, including who created or contributed to the data, its title, date of creation and under what conditions it can be accessed.

Documentation might for instance include details on the methodology used, lab protocols, codebook, analytical and procedural information, definitions of variables, vocabularies, units of measurement, any assumptions made, and the format and file type of the data. Consider how you will capture this information and where it will be recorded. Wherever possible you should identify and use existing community standards.

Indicate how the data will be organised during the project, mentioning for example conventions, version control, and folder structures. Consistent, well-ordered research data will be easier to find, understand, and re-use.

Questions to consider:

- What information is needed for the data to be read and interpreted?
- How will you capture / create this documentation and metadata?
- Are there any metadata standards used in your field? (Metadata standards directory: https://rdamsc.dcc.ac.uk/) If not, how will you ensure that the data will be findable and possible to interpret in the future?

3.2 Describe how you will control the consistency and quality of your data.*

You should include calibration processes or control samples, data entry validation, peer-review of data samples etc.

Note from NTNU:
What data quality control measures will be used?

Question to consider:

- How will the consistency and quality of data collection be controlled and documented? This may include processes such as calibration, repeated samples or measurements, standardised data capture, data entry validation, peer review of data, or representation with controlled vocabularies.

4. Storage and backup during the research process

4.1 Describe how you will store and back-up your data during your project.*
You should describe where your data will be stored and backed-up and the number of replicas. If you do not plan to use institutional or national storage you can refer to the organisation's procedures for back-up and replication. You should consider robust, managed storage for your data (laptops and personal USB drives should be avoided).

Note from NTNU:
Describe where your data will be stored. Use this guide to decide (https://innsida.ntnu.no/wiki/-/wiki/Norsk/Lagringsguide). We recommend using NTNU's standard storage solutions.

For specific information about procedures for back-up for the solution you choose for your project, contact the IT support at NTNU.

Storing data on laptops, stand-alone hard drives, or external storage devices such as USB sticks is not recommended. Be sure to consider information security as well as data integrity and accessibility.

4.2 If your project uses sensitive data describe how you will take care of data protection and security.
You should describe how access will be controlled and who will be allowed access. You should describe how you plan to conform with data protection rules, how you will satisfy institutional data protection policies, the main risks and recovery procedures.

Note from NTNU:
If your project includes personal data (any information relating to an identified or identifiable person), you should use the NSD DMP tool (https://nsd.no/arkivering/en/data_management_plan.html), according to the DMP guidelines (https://innsida.ntnu.no/wiki/-/wiki/English/Data+management+plan).

How will data security and protection of sensitive data be taken care of during the research?

Questions to consider:

- How will the data be recovered in the event of an incident?
- Who will have access to the data during the research and how will access to data is controlled, especially in collaborative partnerships?

- Consider data protection, particularly if your data is sensitive for example containing, politically sensitive information, or trade secrets. Describe the main risks and how these will be managed.
- Explain which institutional data protection policies are in place (https://innsida.ntnu.no/wiki/-/wiki/English/Policy+for+information+security)

5 Legal and ethical requirements, codes of conduct.

5.1 If your project uses personal data describe how you will ensure compliance with legislation on personal data and security.
You should include how you plan to obtain consent, how you will manage the data (e.g. anonymisation of the data, access, transfer - if applicable, and destruction). You should include documentation on approved procedures that you plan to adopt.

Note from NTNU:
If your project includes personal data (any information relating to an identified or identifiable person), you should use the NSD DMP tool (https://nsd.no/arkivering/en/data_management_plan.html), according to the DMP guidelines (https://innsida.ntnu.no/wiki/-/wiki/English/Data+management+plan).

5.2 Describe how you plan to address other legal issues such as intellectual property rights and ownership.*
You should describe who will own the data (who has access rights) and intellectual property rights and what license you will apply to the data. You should consider an internationally recognised license to maximise data reuse. If you are reusing data you should describe any restrictions imposed by this data.

Note from NTNU:

How will legal issues, such as intellectual property rights and ownership, be managed?

Questions to consider:
- Who will be the owner of the data, meaning who will have the rights to control access? In general, if the research project is conducted by NTNU employees, NTNU will be the owner of the data sets.
- Will the data be openly accessible after the project is finalized, or will there be access restrictions? In the latter case, which?
- Consider the use of data access and re-use licenses.
- If there are external partners, how will this affect ownership and sharing of data and other intellectual property rights (IPR)? Make sure to cover these matters of rights to control access to data for multi-partner projects and multiple data owners, in the consortium agreement. Information about NTNU guidelines and resources: https://innsida.ntnu.no/wiki/-/wiki/English/Intellectual+property+rights
- Indicate whether there are any restrictions on the re-use of third-party data.

5.3 If your data are impacted by ethical issues and codes of conduct describe how you will take account of them.
You should describe how the issues impact your data management. You should include a reference to international, national or institutional ethical guidelines.

Note from NTNU:
What ethical issues and codes of conduct are there, and how will they be considered?

Questions to consider:

- Are there ethical issues that can affect how data are stored and transferred, who can see or use them, and how long they are kept? Demonstrate awareness of these aspects and respective planning.
- Is an ethical review (for example by an ethics committee) required for data collection in the research project?

6 Data sharing and long-term preservation

6.1 Describe how and when you will share your data including data you intend to preserve.*
You should describe how you plan to make the data discoverable (e.g. by depositing the data into a trustworthy data repository). You should describe when the data will be made available and any access restrictions. You should cover the criteria you will use to identify preservable data. You should also describe how you will ensure the data remain usable during the data's lifetime (e.g. by providing access to supported tools, documentation on data use and support resources).

Note from NTNU:
How will data be archived and shared? Which parts of the data will be shared? When will the data be made available? Are there possible restrictions to data sharing or embargo reasons? What licence will the data be published under? https://ufal.github.io/public-license-selector/

Questions to consider:

- Are there any relevant community specific repositories (www.re3data.org)? If there are no relevant community specific repositories, data can be published through NTNU Open Data or BIRD (https://innsida.ntnu.no/wiki/-/wiki/English/Research+data+repository
- NTNU encourages sharing data openly (https://innsida.ntnu.no/c/wiki/get_page_attachment?p_l_id=22780&nodeId=24646&title=NTNU+Open+Data&fileName=NTNU%20Open%20Data_Policy.pdf).
- Indicate whether potential users need specific tools to access and (re-)use the data. Consider the sustainability of software for accessing the data.

6.2 Describe how you will assign persistent identifiers to your data.*
You should describe who will provide persistent identifiers. In many cases, the long-term repository will provide the identifiers. If you plan to provide the identifiers yourself, you should choose a service that is mandated to maintain the identifiers for the long-term (such as DOI issued by Bibsys).

Note from NTNU:

Explain how the data might be re-used in other contexts. Persistent identifiers should be applied so that data can be reliably and efficiently located and referred to. Persistent identifiers also help to track citations and re-use.

7 Data management responsibilities and resources

7.1 Describe who will be responsible for the management of your data.*
You should consider the roles and responsibilities (naming individuals if possible) for data management/stewardship activities for example data capture, metadata production, data quality, storage and backup, data archiving, and data sharing. For collaborative projects, explain the coordination of data management responsibilities across partners. Indicate who is responsible for implementing the DMP, and for ensuring it is reviewed and, if necessary, revised. You should consider regular updates of the DMP.

Note from NTNU:

7.2 Describe the resources that will be dedicated to the management of your data such that it follows the FAIR (Findable, Accessible, Interoperable, Reusable) principles.*
You should consider the resources (time, personnel, money) necessary to preserve and share the data. You should cover where the resources will come from.

Note from NTNU:
For more information about the FAIR principles:
https://www.force11.org/group/fairgroup/fairprinciples

Many funders consider costs related to research data management as a legitimate addition to the project budget. Consider whether you should include costs such as these when applying for research grants, and contact the financial officer at your faculty/institute (https://innsida.ntnu.no/wiki/-/wiki/Norsk/Prosjektst%C3%B8tte+for+prosjekt%C3%B8konomer).