

**REVISED VERSION**

<b>Question</b>	<b>Template Guidance</b>
<b>Introduction</b>	<p>This data management plan (DMP) template was collaboratively developed by the Digital Research Alliance of Canada Data Management Planning Expert Group (DMPEG). The template has been designed specifically to support researchers in meeting DMP requirements at the funding opportunity application stage.</p> <p>Given the purpose of this DMP template, it includes questions and guidance that are deemed most relevant at the funding opportunity stage. It is recognized that a more detailed DMP may be required to optimally support research projects moving forward and across the research data lifecycle.</p>
<b>Introductory Guidance</b>	<p>Before beginning to develop your data management plan (DMP) you should always consider as applicable:</p> <p><b>Policies &amp; requirements:</b> Ensure that you are familiar with, and that your proposed research data management practices abide by, any relevant and applicable policies and requirements, including funder and organizational requirements, ethical requirements (such as TCPS2), and publisher or journal policies.</p> <p><b>Guiding Principles:</b> Consider how your data management practices will appropriately support the tenets of open science, including <a href="#">FAIR</a>, a set of guiding principles focused towards making data findable, accessible, interoperable, and reusable. Information and resources relating to the FAIR principles can be found at the GOFAIR website at: <a href="https://www.go-fair.org/fair-principles/">https://www.go-fair.org/fair-principles/</a></p> <p><b>Indigenous data governance:</b> If your research engages with or involves Indigenous communities in any way, be aware of and consider your obligations under policy and ethical guidelines, including best practices and requirements for conducting Indigenous research as outlined by Tri-Agency frameworks and, as applicable, institutional policies. Ideally, a data management plan should be co-developed with the Indigenous communities that your research involves.</p> <p>Some notable guiding principles and resources that you may find useful to refer to include:</p> <ul style="list-style-type: none"><li>- <a href="#">CARE</a>, an overarching set of principles highlighting the need for research involving Indigenous communities to have collective benefit, while the communities themselves have the authority to control their data, with the goal of conducting responsible and ethical research</li></ul>

	<ul style="list-style-type: none"> <li>- <a href="#">OCAP</a>, a set of principles set forth by the <a href="#">First Nations Information Governance Centre (FNIGC)</a> which asserts the need for First Nations communities to have ownership, control, access, and possession of data involving them.</li> </ul> <p>Other community specific resources may be available as they relate to your research. Connecting with Indigenous communities and consulting resources early will help to ensure your project incorporates best practices relating to Indigenous data sovereignty from the start.</p> <p><b>Responsibilities &amp; resources:</b> Consider who will be responsible for various aspects of research data management, including such things as data collection and/or acquisition, analysis, storage and security, and long-term data stewardship. Depending upon your project’s needs, responsibilities may be assigned to specific individuals or be shared, including by the principal investigator, co-investigators, research staff, trainees, another individual, or an organization.</p> <p>You should also consider what resources may be required in order to meet your project’s data management needs, including if dedicated positions or outsourcing of tasks is required, and how these costs will be met. Building data management support into your research budget will help to ensure that your project’s needs are met.</p>
<p><i>What considerations will you take into account with respect to ethical, legal, or commercial issues?</i></p> <p>Describe any applicable ethical, legal, or commercial considerations related to your project and data. This includes research involving Indigenous communities and knowledges, human</p>	<p>Consider how you will manage data throughout the lifecycle of the project, including how you will safeguard information, protect potentially sensitive data, support potential long-term data stewardship, and meet requirements, including those set forth by funders, research ethics boards, or other obligations, as applicable. If needed, contact key areas at your institution or organization for guidance and to find out what resources and support are available.</p> <p>Some notable key considerations include:</p> <ul style="list-style-type: none"> <li>● How will you support long-term data stewardship, including data deposit and appropriate sharing? Note - research involving human participants will very often require both informed consent and ethics approval with respect to data sharing.</li> <li>● How will data deemed as being sensitive be effectively safeguarded and protected across the lifecycle of your research project?</li> <li>● Depending upon the nature of your project, you may want to consider how parts will be shared through knowledge translation/mobilization or through <a href="#">technology transfer</a> if you develop new technology.</li> </ul>

<p>subjects, legal and commercial considerations/agreements, partnerships or data with a high level of risk associated with it</p>	
<p><i>What data will you collect or otherwise bring into your project under this plan?</i></p> <p>Describe the data that will be collected, generated, and/or acquired.</p>	<p>Research data refers to any information that is collected, observed, generated, or acquired to validate your research findings.</p> <p>Notable examples of research data may include data files, questionnaires, transcripts, samples, physical collections, software, models, algorithms, lab notebook, codebooks, methodologies, workflows, and other materials to be produced during the course of the project.</p> <p>When describing your data be sure to:</p> <ul style="list-style-type: none"> <li>● Describe the data types (e.g., image data, textual data, numerical data, audiovisual, etc)</li> <li>● Briefly explain how the data will be collected or generated - if already existing data will be acquired, describe the source of the data (e.g., citations, URL, persistent identifiers linked to the data, acquisition requests) and specify what data will be used.</li> <li>● Indicate if your data is, or may possibly be, considered as sensitive (e.g., health, administrative and/or clinical records, participant interviews, involving sensitive topics, etc).</li> <li>● Indicate if your data involves Indigenous communities and/or knowledges and information.</li> <li>● Describe if your data are in proprietary vs. non-proprietary formats</li> <li>● As best able, provide an estimate of the size of the data, taking into account multiple versions of data needed (e.g., raw, master, analytic). This will additionally help when considering storage data storage needs for the project.</li> </ul>
<p><i>How will you document data for future re-use or validation?</i></p>	<p>Structured documentation allows for your research and data to be understood, reproduced, and, potentially, reused by others. Notable examples of data documentation may include such things as data dictionaries, codebooks, readme files, lab and/or field notes, code and syntax, user guides, etc.</p>

Describe how you will document your data to ensure that it is easily read and interpreted correctly throughout the research process.

If applicable, specify any data and/or metadata standards that are being used to support your research project.

[Metadata standards](#) provide a set list of descriptive fields (similar to a vocabulary) for providing relevant contextual information to describe data. Most metadata standards use open and machine-readable formats (e.g., JSON; XML), which facilitates opportunities for interoperability, including future exchange and reuse of metadata between systems and software used for analysis, as well as for supporting data sharing and indexing in a repository or database for search and discovery purposes.

Consider at the funding application stage how you will ensure that your data is efficiently documented and captured through out your project (e.g. scripting, tool-generated, user-documented), including by whom, can help to identify needs, including staffing resources and expertise, that may possibly be built into your application and supported through grant funds.

As needed, connect with local expertise at your institution or organization, including the Library, for assistance when considering your project's metadata needs, including identifying if there are existing metadata standards that can be used.

<p><i>How will data be stored, accessed and worked with?</i></p> <p>Describe both where and how data will be stored, accessed, and worked with during the <u>active phases</u> of your research including as applicable:</p> <ul style="list-style-type: none"> <li>- all versions of data (e.g., raw, master, analytic)</li> <li>- All activities (e.g., data collection, processing, analysis, dissemination)</li> <li>- All software and platforms</li> <li>- Who requires access, including security measures (e.g., Investigators, research staff, collaborators, partners)</li> <li>- How data will be backed up to prevent data loss</li> </ul>	<p>Consider and identify both <i>where</i> and <i>how</i> data will be stored, accessed, and worked with across the active phases of your research. Projects involving multiple people (e.g., co-investigators, research staff, trainees, partners) need to consider who requires access, as well as how they will work with data.</p> <p>If you are working with sensitive data, you will require secure storage. Contact your institution's IT services to discuss options. If you are working with data from human participants, you will need to follow any directions from your local research ethics board.</p> <p>Many server and cloud based environments, such as the Digital Research Alliance of Canada's freely available <a href="#">Rapid Access Service</a>, can support projects' active data storage and access needs, including for geographically dispersed teams, greatly reducing the need for data transferring and storing data on personal computers and mobile devices.</p> <p>Notable things to consider and describe as able at the funding application stage include:</p> <ul style="list-style-type: none"> <li>● <u>Where and how all versions of data will be stored and worked with</u> - this includes data that are unprocessed and identifiable (raw data), those that are processed and de-identified (master data), as well as analytic files.</li> <li>● <u>Who needs access and to what versions of data</u> - Consider if, for instance, co-investigators, trainees, and/or research staff may require access to data. Should your project move forward, in some instances, individuals may require ethics approval in order to access raw or sensitive data.</li> <li>● <u>How people will access and work with data</u> - will you utilize a server or cloud based environment and, if so, will all team members be able to access</li> </ul> <p>If for any reason data are being worked with or stored on personal computers or mobile devices, describe how you will ensure that data are backed up to prevent data loss, including if to an external hard drive, a server, and/or a cloud solution. You may also want to contact your institution's data library or IT divisions to ensure you are compliant with local policies.</p>
<p><i>How will data be managed, discoverable,</i></p>	<p>Describe the steps you will take to ensure your data will remain, as appropriate, discoverable and accessible over time while considering:</p>

*and accessible for the long term?*

Describe plans for long-term management of your data after the active phases of your research have concluded including data deposit and sharing.

Consider and describe as applicable plans for:

- all versions of data deposited (raw, master, analytic, published)
- All activities (e.g., curation, preservation, ethical compliance, publishing etc.)
- All software and platforms (e.g., data repositories)

- Any obligations from funders, publishers, or your own institution's policies
- If any data will be destroyed and, if so, under what conditions.
- If any data are sensitive and if ethics approval and/or de-identification is required prior to sharing
- If any software is needed for continued access to the data, as well as if code, scripts, or metadata are required to interpret the data

Will you deposit any versions of your data into a digital research data repository for open discovery, appropriate access, and potential reuse by others?

- If yes, provide details including, as best able, where you will deposit your data
- If no, include an explanation as to why your data will not be deposited.

When planning to deposit data, consider repositories that assign a persistent identifier as these support both its discovery and citability.

Two free-to-use generalist (not discipline specific) data repositories in Canada are:

- [Borealis](#), the Canadian Dataverse Repository: Check the Borealis website to see if your institution supports the delivery of this repository service and to learn more about it and its key features.
- [Federated Research Data Repository \(FRDR\)](#): Hosted by the Digital Research Alliance of CanadaFRDR, is a national repository service and data discovery platform that can additionally support very large data deposits.

Some repositories and institutions may provide support for curation activities. Curators can work with you to help ensure your data are appropriately formatted and documented, which contributes to its long term value.

Connect with local expertise at your institution or organization, including the Library, for assistance when considering your project's long-term management and deposit needs, including if there are resources, expertise, and/or repository solutions that can be leveraged.