

# Data Management Planning in Canada

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## Current Issue: Increasing Demand for Data Management Planning

Data management planning is a foundational aspect of the research enterprise, with data management plans (DMPs) emerging not only as an international best practice but also as a funder requirement. The latter is illustrated by the inclusion of DMPs as a core pillar of the forthcoming Tri-Agency Research Data Management Policy.<sup>1</sup> As the demand for data management planning increases, so does the need for accessible, easy-to-use, national and bilingual tools, services and resources to help guide researchers in meeting funder requirements, achieving the best possible research results, and ensuring research data are FAIR (Findable, Accessible, Interoperable, and Reusable).<sup>2</sup>

The use of DMPs is integral to research excellence. Better planning inherently makes for better research, and in turn better FAIRness of resulting data and publications. Improved FAIRness in data also lends itself to the principles and pursuit of Open Science, as enabled by people, technology and infrastructure. By enabling FAIRness, data management planning aligns with the vision described in Canada's Roadmap for Open Science, which outlines next steps for making federal science open to all while respecting privacy, security, ethical considerations and appropriate intellectual property protection.<sup>3</sup>

While the importance of data management planning and demand for DMP-related tools, guidance, and support show only signs of increasing, there are still sizable gaps to be addressed and emerging best practices to keep up with. NDRIO has the opportunity to support and enhance existing DMP tools, services and resources, and to drive innovation in data management planning. From a researcher's perspective, the easier, more interoperable, and integrated we can make the data management planning process, the better. We want the process of writing a DMP to be seen as a boon rather than a burden to researchers, and to achieve this, continued investment in platform maintenance and development, training, and integration is needed.

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<sup>1</sup> Government of Canada. (2018). *DRAFT Tri-Agency Research Data Management Policy For Consultation*. Retrieved from [https://www.ic.gc.ca/eic/site/063.nsf/eng/h\\_97610.html](https://www.ic.gc.ca/eic/site/063.nsf/eng/h_97610.html)

<sup>2</sup> Wilkinson, M., Dumontier, M., Aalbersberg, I. et al. (2016). The FAIR Guiding Principles for scientific data management and stewardship. *Scientific Data*, 3(160018). <https://doi.org/10.1038/sdata.2016.18>.

<sup>3</sup> Government of Canada. (2020). *Roadmap for Open Science*. Retrieved from [https://www.ic.gc.ca/eic/site/063.nsf/eng/h\\_97992.html](https://www.ic.gc.ca/eic/site/063.nsf/eng/h_97992.html).

## Future DRI State: Robust, Diverse & Multilingual Support for DMPs

A prominent existing tool for data management planning in Canada is the DMP Assistant<sup>4</sup>, which uses the internationally-recognized DMP Roadmap software platform<sup>5</sup>, and which has been deployed by the University of Alberta in partnership with the Canadian Association of Research Libraries (CARL) Portage Network. The DMP Assistant is a national, online, bilingual platform that is freely available to Canadian researchers to assist them in preparing DMPs. Using this tool, researchers can create project plans, receive institution-, discipline-, or methodology-specific guidance, collaborate with other researchers, and connect to local guidance and support. Institutions can customize templates for their researchers, create institution-specific guidance, and view information about usage.

The first version of the DMP Assistant was launched in October 2015, with the second version scheduled to be launched in early 2021. Version 2.0 will include the ability to ‘clone’ DMPs for reuse in similar projects, more flexible DMP templates, and new usage statistics dashboards for institutional administrators. Portage, through its Data Management Planning Expert and Training Expert Groups, has developed a suite of bilingual resources to support use of the DMP Assistant. These include a brief guide to creating an effective DMP<sup>6</sup>, an updated institutional customization guide, and a series of discipline- and methodology-specific DMP Exemplars (sample DMPs for researchers to consult).<sup>7</sup> Additionally, community-developed discipline- and methodology-specific templates were commissioned by Portage, and will be ‘baked into’ the DMP Assistant 2.0 to address the needs of a broad range of researchers.

A cohesive Canadian DRI ecosystem would incorporate internationalization and diversity by design. A major challenge for nationally integrated DRI tools, services and resources, including the DMP Assistant and all other DMP-related resources, is the provision of consistently high-quality bilingual services to all Canadian researchers. Bilingualism is manifestly part of the delivery of national state-of-the-art services that are inclusive and accessible to all users; content and functionality in both official languages is of primary importance, and must be comprehensive, precise, and verified by the linguistic community being served. Considerable resources have been devoted to this effort in all national research data management (RDM) spheres, but with DMPs soon to be formally required by federal funding agencies, the highest quality bilingual support for Canadian researchers in this space is more important than ever. It is important to note that Canadian efforts have contributed to improved internationalization of the DMP Roadmap platform -- and we should continue to be leaders in this area going forward.

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<sup>4</sup> <https://assistant.portagenetwork.ca/>

<sup>5</sup> This is the result of collaboration between the UK’s Digital Curation Centre and the California Digital Library, each of whom contributed to the merged DMP Roadmap codebase.

<sup>6</sup> Portage Network, *Create an Effective Data Management Plan* (EN | ER)

<sup>7</sup> <https://portagenetwork.ca/news/new-exemplar-dmps-2/>

## How to Bridge the Gap: Addressing Existing and Emerging Needs

New and emerging developments in the data management planning sphere include machine-actionable DMPs (maDMPs) and persistent identifiers (PIDs) -- innovations that will help integrate data management planning into other aspects of the research process, such as ethics approval and grant administration. These innovations will also enhance the interoperability of DMPs, ensuring they are developed and maintained in such a way that they are fully integrated into the systems and workflows of the wider research data management environment. Enhanced support from NDRIO would allow Canadian DMP service providers to keep pace with these emerging international best practices, and ensure Canadian researchers are provided with cutting-edge data management planning tools.

Additionally, we see increased demand for more DMP Exemplars and Templates to better reflect and support the diversity of research in Canada. Enhanced flexibility in the utility of DMP-related tools, services, and resources will better allow Canadian researchers to see their unique perspectives, needs, and priorities represented and addressed in the national DRI ecosystem that serves them. An example of addressing disciplinary diversity would be supporting the development of targeted and tailored DMP resources for the Arts and Humanities, which we perceive as a present gap that would be well served by improved flexibility in the utility of existing tools and services. Of key importance as well will be addressing gaps in services for Indigenous research and researchers -- and directly involving First Nations, Inuit, and Métis organizations and individual communities in these ongoing and essential conversations.

Finally, the key to bridging these gaps by supporting innovation and better reflecting and serving the diversity of research in Canada will ultimately be generating national awareness of existing tools and resources and providing sufficient training opportunities. As the provider of a national infrastructure, NDRIO will play an integral role in communicating to Canadian researchers the breadth of data management planning tools and services available to them, and making those resources as easily accessible as possible. Similarly supporting the maintenance, improvement, and development of DMP-related training resources is essential to ensure Canadian researchers are equipped with the knowledge and skills necessary to write effective DMPs.

## Summary

We propose that NDRIO engage in sustained support for the maintenance and improvement of existing data management planning tools and services, with an emphasis on bilingualism, interoperability, and integration of emerging DMP best practices, machine-actionability, and persistent identifiers into these efforts. In addition, we see NDRIO supporting work to address gaps, such as the need for enhanced services for First Nations, Inuit, and Métis research. Finally, we recommend NDRIO complement the support of existing and emerging DMP-related tools, services, and resources with generation of national awareness and training opportunities.

*This proposal is endorsed by the Canadian Association of Research Libraries (CARL) and the CARL Portage Network.*