

University of Lethbridge Research Data Management strategy

1 Overview

1.1 What is research data?

Research data is any information that has been collected, observed, generated, or created to validate original research findings. This includes “facts, measurements, recordings, records, or observations ... [that] may be in any format or medium taking the form of text, numbers, symbols, images, films, video, sound, recordings, pictorial reproductions, drawings, designs or other graphical representations, procedural manuals, forms, diagrams, workflows, equipment descriptions, data files, data processing algorithms, software, programming languages, code, or statistical records.”¹

1.2 Importance of Research Data Management

Research Data Management (RDM) “encompasses the processes applied throughout the lifecycle of a research project to guide the collection, documentation, storage, sharing, and preservation of research data, and allows researchers to find and access data.”² Sound RDM practices increase the efficiency of the research process. Not only does it guide researchers on the effective storage, archival, and disposal of research materials and data; but also facilitates future reuse and sharing of data and/or the replication of research results. In many cases, RDM is necessary to satisfy requirements of granting agencies and research ethics boards. Research data is an asset and its management benefits researchers, collaborators, the academic community, governments, and the public.

1.3 Why now?

In March 2021, the Tri-Agency released the [Tri-Agency Research Data Management Policy](#). This policy seeks to support Canadian research excellence by promoting sound data management and data stewardship practices. As the policy states, “research data collected through the use of public funds should be responsibly and securely managed and be, where ethical, legal and commercial obligations allow, available for reuse by others.”³ Post-secondary institutions eligible to administer Tri-Agency funds must develop and publish an institutional RDM strategy that outlines how the institution will enable and support RDM. This strategy complies with that requirement. It is not a policy or an open-science strategy.

This strategy was developed by an RDM Institutional Strategy Working Group comprised of representatives from key support units (e.g., the Office of Research and Innovation Services, University Library, Information Technology) and research data users.

Abbreviations and terms used in this strategy are defined in Appendix A.

¹ Committee on Data of the International Science Council (n.d.). *Data*. Retrieved January 20, 2023, from <https://codata.org/rdm-terminology/data/>

² Digital Research Alliance of Canada (n.d.). *Research Data Management*. Retrieved January 18, 2023, from <https://alliancecan.ca/en/services/research-data-management>

³ Government of Canada (2021). *Tri-Agency Research Data Management Policy*. Retrieved January 20, 2023, from <https://science.gc.ca/site/science/en/interagency-research-funding/policies-and-guidelines/research-data-management/tri-agency-research-data-management-policy>

2 The Scope and Stakeholders

2.1 Scope

This strategy applies to all research, scholarship, and creative activity undertaken at the University of Lethbridge as defined in the [Research Policy](#).

2.2 Stakeholders

The implementation of this strategy is a collaborative effort among university leaders, administrative support units, and the research community. Each stakeholder plays a unique role in promoting and supporting RDM at the University of Lethbridge.

- *University leadership* (University Librarian, Vice-President Research, Associate Vice-President Information Technology, Faculty/School Deans). These stakeholders provide data leadership by championing the research data management strategy; developing strategies, policies, and procedures to guide RDM; and providing the resources necessary to support the strategy's implementation.
- *Administrative support units* (Office of Research and Innovation Services, University Library, Information Technology Services, Records Management). This stakeholder group plays an important role in the implementation of the RDM strategy. Primary activities revolve around the development of resources and training materials, and the coordination of services and training activities.
- *Research community* (researchers, research staff, students, and postdoctoral fellows). These stakeholders incorporate data management best practices into their research. They provide feedback on their RDM needs, disciplinary standards, and other requirements to inform the institution's strategy. Within this group are the data champions who promote and advocate for RDM best practices.

3 The Strategy

3.1 Guiding Principles

We assert the following:

- Data, in all its forms, is an important research output.
- Researchers are encouraged to adopt RDM practices regardless of funding source.
- Researchers require support to implement RDM practices that address ethical, legal, and commercial obligations, as well as Tri-Agency requirements.
- The University of Lethbridge follows the Tri-Agency RDM Policy and the [Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans – 2nd edition](#) in respecting a distinction-based approach in managing data related to research by and with the First Nations, Métis, and Inuit communities and in accordance with data management principles developed and approved by these communities.
- As much as possible, resources to support implementation of RDM should result from cost recovery via external grants, repurposing existing resources, and collaborative internal and external resourcing.

3.2 The ideal state

The University of Lethbridge wishes to foster a research data management culture where University of Lethbridge researchers are aware of data management planning tools, repositories, and resources but also incorporate them throughout the research process. This strategy will support University of Lethbridge

researchers in adopting responsible and sustainable RDM practices as outlined in the FAIR Data Principles.⁴ This will be achieved by focusing on three overarching goals:

- Establish an organizational framework to support research data management,
- Increase institutional awareness and capacity in RDM, and
- Support RDM practices.

3.3 Goals and strategic initiatives

Goal 1. Establish an organizational framework to support research data management

Initiative	Current Practices & Supports	Activities
1.1 Implement a governance framework to support institutional RDM activities	RDM Institutional Strategy working group established in fall 2021.	Establish an RDM Steering Committee with representation across disciplines and data user types to oversee the development and review of RDM-supporting infrastructure and services. Regularly engage with uLethbridge research community to ensure broad input on policy development, service and infrastructure provision.
1.2 Develop governance documents that support RDM practices	Records Management Policy (2008); Human Research Ethics Policy (2004); Online Ethics training; Tri-Agency Framework Responsible Conduct of Research (2016)	Develop an institutional RDM policy. Ensure existing policies that have an impact on or are impacted by RDM are revised as appropriate.
1.3 Identify gaps in the existing RDM environment	Completed RDM Maturity Assessment Model (MAMIC) in 2022. Significant gaps exist in terms of RDM or DMP specific policies. Gaps in IT support: determine role of IT in providing access to and training for data deposit and institutional repositories.	Identify dedicated staff for RDM policy development and training (Scholarly Communications librarian, support staff). Provide financial support for RDM infrastructure

Goal 2. Increase institutional awareness and capacity in RDM

Strategy	Current Practices & Supports	Initiatives
2.1 Establish a culture of RDM	Primary producers of data are not very aware of policies and procedures.	Recruit data champions to promote the value of RDM and engage with various communities. Foster a culture of accountability and responsibility for Indigenous data sovereignty. Build a culture of good RMD practices through increased communication, workshops, and events to assist researchers meet sponsor RDM requirements.

⁴ Wilkinson, M., Dumontier, M., Aalbersberg, I. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci Data* 3, 160018 (2016). <https://doi.org/10.1038/sdata.2016.18>

Strategy	Current Practices & Supports	Initiatives
2.2 Raise awareness for RDM policies and best practices	<p>The University Library hosts an RDM website. It provides best practices for RDM including a guide for developing RDM plans as well as links to Portage resources.</p> <p>The library also hosts a variety of outreach activities (workshops, webinars, etc.). Outreach done on an ad hoc basis. Some initiatives are shared through departmental newsletters and workshops.</p>	<p>Develop a central repository.</p> <p>Promote RDM-related policies and best practices through institutional channels to engage researchers, staff, students, and postdoctoral fellows.</p>
2.3 Explore best practices at other institutions.	<p>Various members of the working group have participated in consultations and training events hosted by the Tri-Agencies as well provincial research networks.</p>	<p>Participate in communities of practice.</p> <p>Participate in webinars and workshops hosted by provincial and national organizations.</p>
2.4 Provide institutional support and training	<p>Ad-hoc workshops for RDM provided by the library.</p> <p>Gap: In-house training. Lacking personnel with expertise in data curation and training.</p> <p>Gap: Services and supports are not consistently resourced and staffed.</p>	<p>Provide training opportunities through externally sourced online courses and supplemented by uLethbridge generated materials.</p> <p>Host RDM courses and workshops.</p>

Goal 3. Support RDM practices

Strategy	Current Practices & Supports	Initiatives
3.1 Survey institutional data assets and data management practices on campus	<p>The Library's Research Services Group completed a survey on RDM practices at the University of Lethbridge in 2019.</p>	<p>Survey uLethbridge research community on current RDM practices and needs.</p>
3.2 Support data management plans (DMP)	<p>Data Management Plan templates are provided through the Portage DMP Alliance.</p> <p>Training is available through Library workshops or online guide.</p>	<p>Provide researchers with access to resources, guidelines, tools, and expertise to develop high quality DMPs.</p> <p>Evaluate whether branded DMPs are needed.</p>
3.3 Support data storage	<p>Researchers have access to networked storage of sufficient capacity to satisfy most research demands.</p>	<p>Invest in technical infrastructure and ongoing operating costs to provide baseline free-to-use services and equitable access for researchers across all disciplines.</p>

	Networked storage is protected from unauthorized data access.	Develop a process to review requests for additional digital research infrastructure support needed to satisfy exceptional capacity or performance demands. Investigate the necessity for a local version of Dataverse (Borealis).
3.4 Support Indigenous data sovereignty		Develop processes that reinforce responsibility, reciprocity, and accountability. Provide access to Indigenous data sovereignty training and resources.
3.5 Support data ethics and sensitive data		Create and/or update protocols, resources, training, and other supports as necessary for ethical data management. Ensure data security by advising researchers of procedures for data protection, encryption, and de-identification.

4 Oversight and Assessment

This document was written and developed by the University of Lethbridge’s RDM Institutional Strategy Working Group (ISWG). The implementation of the strategy will be a joint venture of the Library, Information Technology, and the Office of the Vice-President Research.

In developing the strategy, the RDM IS Working Group evaluated the current state of RDM at the University of Lethbridge by using the RDM Maturity Assessment Model in Canada (MAMIC) framework and other strategy development documents developed by the Digital Research Alliance of Canada.⁵

The RDM strategy is a living document. Responsibility for further developing and working towards the strategy’s goals and objectives lies with the RDM Steering Committee, the successor to the ISWG. The committee will review and revise the strategy as goals are met, gaps are identified, and new RDM services are developed – either internally or leveraged through external organizations.

⁵ Digital Research Alliance of Canada (n.d.). *Research Data Management*. Training Resources. Retrieved January 23, 2023, from <https://alliancecan.ca/en/services/research-data-management/learning-and-training/training-resources#heading-institutional-strategies-guidance>

Appendix A. Definitions

Abbreviations and terms used in this strategy are listed below.

General Faculties Council Research Planning Committee (GFC RPC) – The primary advisory body to provide advice, recommendations, and feedback to the Vice-President (Research) on a variety of files or issues within the research and innovation portfolio including (but not limited to): the development of policies and procedures, strategic research planning, and initiatives to enhance the research, scholarship and creative endeavours at the University.

Research includes, but is not limited to, pure basic research, applied research, adaptive research, creative activities and knowledge exchange. Research and experimental development comprise:

- Original investigation undertaken to gain and exchange knowledge and understanding;
- Creative work undertaken on a systematic basis to increase the stock of knowledge, including knowledge of humanity, culture and society, and the use of this stock of knowledge to devise new applications, rather than the application of existing knowledge;
- Any activity classified as research and experimental development is characterized by originality; it would have investigation as a primary objective and should have the potential to produce results that are sufficiently general for humanity's store of knowledge (theoretical and/or practical) to be recognizably increased; and
- The development of knowledge and innovation through artistic expression, scholarly investigation, and experimentation.

Research Data - Data that are used as primary sources to support technical or scientific enquiry, research, scholarship, or artistic activity, and that are used as evidence in the research process and/or are commonly accepted in the research community as necessary to validate research findings and results. All other digital and non-digital content have the potential of becoming research data. Research data may be experimental data, observational data, operational data, third party data, public sector data, monitoring data, processed data, or repurposed data⁶.

Research Data Management (RDM) - Data management refers to the storage, access and preservation of data produced from a given investigation. Data management practices cover the entire lifecycle of the data, from planning the investigation to conducting it, and from backing up data as it is created and used to long-term preservation of data deliverables after the research investigation has concluded. Specific activities and issues that fall within the category of data management include file naming conventions; data quality control and quality assurance; data access; data documentation (including levels of uncertainty); metadata creation and controlled vocabularies; data storage, data archiving and preservation; data sharing and reuse; data integrity; data security; data privacy; data rights; and notebook protocols (lab or field)⁷.

Sponsor refers to an external agency, organization, or donor that provides funds to the University in support of the research.

Tri-Agency is the collective term to describe the federal granting agencies: the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council (NSERC), and the Social Sciences and Humanities Research Council (SSHRC). These agencies promote and support research, research training, knowledge transfer and innovation within Canada.

⁶ CASRAI. (2015). *Research data*. Retrieved from https://dictionary.casrai.org/Research_data

⁷ CASRAI (2015). *Research data management*. Retrieved from https://dictionary.casrai.org/Research_data_management