



Research Data Management Strategy			
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<b>Approver</b>			

## 1. Background

This document is an institutional Research Data Management Strategy, which recognizes that Ambrose University is a small, independent post-secondary institution. In March 2021, the Tri-council released the [Research Data Management \(RDM\) Policy](#), which applies to all post-secondary institutions and research hospitals eligible to administer SSHRC, NSERC, or CIHR funds, and to all researchers holding grants from those agencies. The Tri-council requires all eligible institutions to prepare an institutional strategy, which “must be made publicly available on the institution’s website, with contact information to which inquiries about the strategy can be directed.”<sup>i</sup>

Taking into consideration the Tri-council “recognize[s] that each strategy will reflect the institution’s particular circumstances” such as extant RDM capacity and research intensity, this strategy presents and reflects Ambrose University’s current state-of-affairs and plan for creating an environment conducive to the realization of RDM at Ambrose.

Research data management is the “processes applied through the lifecycle of a research project to guide the collection, documentation, storage, sharing and preservation of research data” and, is a process that “supports the effective and responsible conduct of research and increases the ability to store, find and reuse research data”<sup>ii</sup>.

There are three components to Ambrose’s Research Data Management strategy:

- [Institutional Strategy](#) to support research data management including policies, promotion of the importance of data management to researchers, and providing institutional technology support to access repository services that securely preserve, curate and provide appropriate access to research data.

- [Data Management Plans \(DMPs\)](#) which are formal documents created by researchers that detail strategies and tools to effectively manage data during the active phase of research. DMPs describe how data will be collected, documented, formatted, protected and preserved; use of existing datasets; whether and how the data will be shared, and where data will be deposited. DMPs may be requested by a funding agency as part of a grant eligibility and application process. Researchers revise these living documents throughout their research process.

- Data Deposit: The step that requires researchers to deposit into a digital repository all digital research data, metadata and code that directly support their research conclusions. When relevant, researchers are required to become familiar with the Indigenous Research and Data Sovereignty Protocols of the Tri-Agency.

## 2. Purpose

This strategy serves the following purposes:

- 2.1 Specify Ambrose's commitment to meet the institution facing RDM requirements.
- 2.2 Foster an environment for researchers to meet the researcher facing RDM requirements.
- 2.3 Establish an institutional culture conducive to sound Research Data Management practices.
- 2.4 Create space to encourage discussions about RDM with research participants and partners, including partners from community organizations and Indigenous communities.

## 3. Guiding Principles

At Ambrose University, the Research Data Management Strategy is guided by these principles:

- 3.1. **Support Ambrose researchers:** Ambrose is committed to supporting our researchers in meeting RDM requirements and incorporating best practices in RDM into their work. This will allow researchers to increase in research capacity. Ambrose also affirms that data are an important research output. Thus, the University will strive to provide an environment that supports, equips, and enables researchers in managing data.
- 3.2. **Support researchers partners:** Ambrose researchers work with individuals and community partners. The University is committed to supporting our researchers and research partners to meet the requirements of RDM beyond the confines of the university acknowledging that we have a role to play in supporting the RDM rights of all involved in research.
- 3.3. **Context-based approach:** Ambrose will pursue a context-based approach that reflects our circumstances.
- 3.4. **Cost-recovery and sustainability:** Ambrose will work with researchers to support RDM in a way that lessens the burden on their ability to institute RDM in their research practice. This may mean proper budgeting in grant applications, resource pooling and taking advantage of other sources of finance that will cover the cost of instating RDM and keeping the practice sustainable.

## 4. Scope

This strategy applies to all Ambrose researchers, as defined in the Responsible Conduct of Research policy. It applies to all digital research data generated by our researchers. The support services described in this strategy will be provided to all researchers whether funded by the Tri-Agency, other funders, or unfunded.

This strategy is under the purview of the Vice President Academic through the Research Office. Key institutional stakeholders include the Research Ethics Board, Research GFC Standing Committee, Information Technology, and the Library.

This is an initial effort to establish a RDM strategy at Ambrose and will be in flux over the next decade. It will be implemented for a five-year period, with a formal review in the fourth year and reviews during implementation to address issues as they arise.

## 5. Institutional-Facing Elements of Research Data Management (See appendix II)

### 5.1. Institutional Policies and Processes

At this point, Ambrose has a few but appreciable list of institutional policies that adequately support our current research intensity. The policies are also adequate to support RDM in these preliminary stages. This is an area of growth for the institution. The following policy documents address various aspects of RDM to varying degrees.

- Acceptable Use Policy (related to information technology)
- Ambrose University Research Mandate
- Ethical Research Involving Humans Policy
- Intellectual Property Policy
- Library Collection Development Policy
- Research Equity, Diversity, and Inclusion Policy
- Responsible Conduct of Research Policy

#### **In the first five-year term of this strategy, Ambrose University will:**

- Update (if needed) existing policies, procedures, and standards to address RDM requirements and provisions.
- If needed, develop policies to address gaps as these relate to RDM implementation.
- Develop procedures as they relate to incorporating RDM into research processes.
- Specifically strengthen the Library Collection policy to support the new area of RDM practice.
- Ensure that all RDM-related policies, practices, and procedures are supportive and respectful of Indigenous data sovereignty, governance, and management.
- Ensure that the development of our RDM-related strategy and policies keeps up with the implementation of RDM policies and requirements by funders, publishers, and legislative bodies.

### 5.2. IT Infrastructure

Infrastructure services, which support RDM, are primarily provided by the Information Technology Services department. Ambrose has a solid but developing base of IT infrastructure on which to overlay immediate to short term RDM support services including options for the active and secure storage of research data.

As both the technology and the needs of our researchers evolve, Ambrose will strive to continue to provide both the internal resources and access to external resources to accommodate this evolution.

**In the first five-year term of this strategy, Ambrose will**

- Continue institutional support for, and strong policy in, areas such as identity management and mediated access to research data.
- Continue to ensure hardware refreshes and/or replacements are completed in a timely fashion.
- Ensure researchers have access to long-term data preservation and secure storage for sensitive data.
- Continue to ensure software licenses and service subscriptions are acquired and/or maintained.
- Keep updated on RDM developments and ensure the maintenance of our RDM-related IT infrastructure keeps abreast with the implementation requirements of funders and other key stakeholders.

**5.3. Support Services**

Support services for RDM are provided by a coordinated effort of the Research Office and the Library. The Research Office and Library provide basic training and consultation for key areas of RDM, such as data management plans, basic training for data management and basic guidance on meeting funders' RDM requirements.

**In the first five-year term of this strategy, Ambrose University will**

- Continue to build awareness around RDM in the Ambrose research community including providing updates on RDM-related developments as required by key stakeholders.
- Build the capacity of staff in the Library and Research Office to provide timely, accurate and detailed information for inquiring faculty and researchers in grant applications and for compliance purposes.
- Institute a system where researchers can easily locate and access accurate, current RDM resources and more specific support from library staff.
- Ensure that the development and maintenance of RDM-related support services keep up with the implementation of RDM policies and requirements by funders, publishers, and legislative bodies.
- Support partnerships that we may establish such as with the Digital Research Alliance of Canada and the Federated Research Data Repository (FRDR) service to maximize the availability of digital research infrastructure at Ambrose.

**6. Researcher-Facing Elements of Research Data Management**

**6.1. Data Collection, Documentation & Metadata, Sharing and Reuse**

At Ambrose, data collection refers to the process a researcher uses to create, record, acquire or link to specified data. A description of the process includes specifying file formats, naming conventions, data structure, and provisions made for version control, data re-use, sharing and long-term access to the data. Researchers will provide this information using a Data Management Plan (DMP) for each

research project. The requirement for a DMP will be rolled out incrementally over the next 5 years with the priority groups determined by the Tri-Council grant requirements.

## **6.2. Storage, Backup and Preservation**

Ambrose will use external third-party services for the storage of research data. While researchers may select a repository service, Ambrose recommends the [Federated Research Data Repository \(FRDR\)](#) which is a national platform for researchers to discover, share and preserve Canadian research. FRDR provides secure repository storage and long-term preservation as well as a discovery service that aggregates Canadian research data from more than 90 other repositories. This avails a central location for the discovery and reuse of research data.

## **6.3. Ethics and Legal Compliance**

Researchers are bound by Ambrose's Responsible Conduct of Research Policy and the Ethical Research Involving Humans Policy. Ethical and legal obligations are also articulated in grant funding agreements. This will accord with the institution's "supporting researchers in their efforts to establish and implement data management practices that are consistent with ethical, legal and commercial obligations"<sup>iii</sup>

The institution is responsible for implementing these policies and engaging in the necessary reporting structures.

## **6.4. Responsibilities and Resources**

The researcher is responsible for developing and submitting DMPs with grant applications and ensuring compliance with the third-party repository service for the processes of deposit and long-term preservation of the data. The researcher will also be responsible for determining the nature of the data stored.

Ambrose will support the researcher in the form of information provision but will not be responsible for submitting data to the repository.

## 7. Definitions

Indigenous Data: For the purpose of this Protocol, Indigenous data is any information that is from or about any Indigenous person or their community, territory, or nation, including but not limited to their languages, knowledge, customs or traditions, intellectual property, and ideas.

Institutional Strategy: An institutional strategy describes how the institution will provide its researchers with an environment that enables and supports RDM practices. Developing these strategies will help research institutions identify and address gaps and challenges in infrastructure, resources and practices related to RDM.

Research Data: Data that are used to support technical or scientific enquiry, research, scholarship, or creative practice, and that are used as evidence in the research process and/or are commonly accepted in a given research community as necessary to validate research findings and results. Research data results from work on research materials.

Research Data Management: The range of processes and procedures “applied through the lifecycle of a research project to guide the collection, documentation, storage, sharing and preservation of research data”.

Sensitive Data: Data that must be safeguarded against unwarranted access or disclosure. From a legal/administrative perspective, this can include:

- Personal information
- Personal health information
- Research data about humans (i.e., data that are subject to TCPS2)
- Educational records
- Customer records
- Financial information
- Criminal information
- Confidential personnel information
- Information that is deemed to be confidential
- Information entrusted to a person, organization or entity with the intent that it be kept private, and access be controlled or restricted
- Information that is protected by institutional policy from unauthorized access
- Indigenous data and/or Traditional Knowledge, and
- Certain types of geographic information (e.g., detailed locations of endangered ecosystems or species).

## References

Adapted from Sensitive Data Expert Group. (2020). Sensitive Data Toolkit for Researchers Part 1: Glossary of Terms for Sensitive Data used for Research Purposes. Zenodo.

Based on “1d: What is research data management?”, *Frequently Asked Questions: Tri-Agency Research Data Management Policy*, Available at [https://www.science.gc.ca/eic/site/063.nsf/eng/h\\_97609.html#1d](https://www.science.gc.ca/eic/site/063.nsf/eng/h_97609.html#1d)

Based on “1b: What are research data?” and “1c: How are research materials related to research data?”, *Frequently Asked Questions: Tri-Agency Research Data Management Policy*. Available at: [https://science.gc.ca/eic/site/063.nsf/eng/h\\_97609.html](https://science.gc.ca/eic/site/063.nsf/eng/h_97609.html)

Based on “4a: What is an institutional strategy for RDM?” Tri-Agency Research Data Management Policy - Frequently Asked Questions. Available at: [Tri-Agency Research Data Management Policy - Frequently Asked Questions \(science.gc.ca\)](#)

Indigenous Data available at [Indigenous Data Sovereignty - Indigenous Studies - Research guides at University of Toronto \(utoronto.ca\)](#)

## Appendix I: RDM Inception

Ambrose earnestly began interrogating questions around RDM in January 2022. Since that time, RDM knowledge around Ambrose has grown, our situational awareness of actors in the field such as the Digital Research Alliance, Portage Network, Dataverse (now Borealis), Federated Research Data Repository (FRDR) and other players has improved, and even sharpened. We have made connections with experts in various institutions (e.g., Athabasca University, University of Calgary) as we have worked to build a network to realize RDM at Ambrose.

In February 2022, Ambrose connected with ARMIN, the Alberta Research Data Management Information Network, to grow our capacity in RDM, which worked very well. Based on base of intense research and conversations with RDM experts, Ambrose developed a path forward and followed it to the point of releasing our first Institutional Research Data Management strategy.

In the year since RDM work began Ambrose University:

1. Constituted a Working Group to research and understand the RDM landscape.
2. Connected with ARMIN to deepen our understanding of RDM, clarify questions and learn from similar-sized universities that had embarked on the RDM journey.
3. Following from engagement with ARMIN, we continued to learn through workshops and conferences. We also shared our knowledge with others including at the invitation of ARMIN to present at the May 2022 RDM conference. There we shared on the needs of small and medium sized universities through the lens of Ambrose's experience.
4. Connected individually with experts based in other universities to share with, learn from them, and grow our capacity in RDM.
5. Following guidance from ARMIN, and using the ARMIN Maturity Assessment Model in Canada (MAMIC) tool, conducted an institutional assessment of RDM readiness.
6. Used the MAMIC results to further plan to position RDM at the institutional and researcher level.
7. Studied carefully the best practice suggestions of the Digital Research Alliance to:
  - a. Organize information sessions on RDM at Ambrose;
  - b. Customize the sessions to Ambrose; and
  - c. Identify RDM ambassadors
8. Related to point seven, we developed and administered an Ambrose faculty survey on among other topics RDM awareness, research funding landscape, current data management practices, and history of research collaborations.
9. Used that survey data to provide RDM and Data Management Planning capacity building to faculty.
10. Updated relevant university policies to reflect and accommodate RDM requirements.
11. We are currently designing internal processes (such as applications for research ethics review and research funding) that will change because of bringing in RDM requirements.

These activities represent the tremendous growth around RDM at Ambrose University compared to a year ago. Ambrose will continue on this path according to our circumstances and update this Institutional Strategy periodically to reflect the institution's growth in this area.



## Appendix II: Ambrose MAMIC Results as of February 2023

As referred to above, Ambrose used the MAMIC tool to assess our institutional capacity as we worked through the RDM processes. The MAMIC presents point-in-time information to baseline universities as they work to build capacity and develop processes to ready for institutional alignment with the Tri-council directives. The MAMIC exercise fulfilled this function at Ambrose.

The MAMIC assesses three areas (Institutional Policies and Processes, IT Infrastructure, and Support Services) in terms of **scale** and **level** of maturity. These are discussed as follows:

### A. Institutional Policies and Processes

In terms of assessing for **maturity level**, we used the following guidance:

Not applicable: Skip this element

0: Does not exist OR do not know

1: Element is not formalized or is ad hoc:

- Policies and procedures may be undeveloped, not up to date, and/or inconsistent.
- Some related policies may exist but are insufficient.

2: Element is under development:

- Policies and procedures are being conceptualized and formulated

3: Element is operationalized and launched

- Policies and procedures are defined and standardized.

4: Element is robust and focuses on continuous evaluation.

- Policies and procedures are subject to review and improvement.

To assess for **scale**, we used the following guidance:

Not applicable - if 0 or NA are chosen for *Maturity Level*

1. Offered only to specific users upon request.
2. Available within certain units or cohorts.
3. Available to everyone.

The results are as follows:

**MAMIC Category: Institutional Policies and Processes**

<b>Category: Institutional Policies and Processes</b>				
<b>Element</b>	<b>Definition(s)</b>	<b>Maturity Level March 2022</b>	<b>Maturity level February 2023</b>	<b>Scale</b>
<b>Institutional RDM Strategy</b>	As defined by the Tri-Agency. This includes any Institutional RDM roadmap detailing how the strategy will be implemented.	0	2	3
<b>Institutional RDM-related Policies</b>	Includes all relevant policies at the institution that may address RDM or components related to RDM.	0	3	3
<b>Data Management Planning-related Procedures and Guidelines</b>	Any institutional procedures or guidelines that outline how researchers should address data management plans (e.g., expectations of DMP creation, submission and/or review).	0	2	3
<b>Security and Risk Assessment Policies and Procedures</b>	Any institutional procedures or policies that address security and risk assessment related to research data (e.g., legal and privacy issues, vulnerability assessments, etc.).	0	0	N/A
<b>Communications and Outreach Plan</b>	Any plans for the promotion of RDM. This may include raising awareness of national policies and guidelines that affect RDM (e.g., Tri-Agency policies, funder policies, journal policies), and providing links and resources for best practices and tools.	1	2	3

**MAMIC Category: IT Infrastructure**

Maturity levels for IT Infrastructure:

Not applicable: Skip this element

0: Does not exist OR do not know

1: Element is not formalized.

- Provision is patchy, disorganized and/or poorly publicized.

2: Element is under development.

- There is a base level of investment in technical infrastructure, with commitment to supporting recurring costs.

3: Element is operationalized.

- Roles and responsibilities are defined.
- Processes are established, defined, and documented.
- Your institution coordinates investment in the central technical services it deems a strategic priority for research data life-cycle support.

4: Element is robust and focuses on continuous evaluation.

- Your institution invests in technical infrastructure for all aspects of the research data life cycle, interoperating with tools and workflows at the research group level.
- Metrics and feedback are used to optimize services.

Scale was assessed using this guidance

Not applicable - if 0 or NA are chosen for *Maturity Level*

1: Offered only to specific users upon request.

2: Available within certain units or cohorts.

3: Available to everyone

The results are as follows:

Category: IT Infrastructure				
Element	Definition(s)	Maturity Level March 2022	Maturity Level February 2023	Scale
<b>Access/ Authentication/ Authorization</b>	Availability of infrastructure and associated services covering identity management and verification, and mediated access to research data according to security needs.			N/A
<b>High Performance Computing</b>	Offering aggregate computing power that delivers higher performance than a typical desktop workstation.	0	Unchanged	N/A
<b>Active Storage</b>	Institutionally managed storage space for active projects.	1	Unchanged	
<b>Active Storage - Sensitive Data</b>	Institutionally managed secure storage space for active projects that have sensitive or confidential data requirements.	2	Unchanged	3
<b>Collaborative Digital Workspace</b>	Private digital space for researchers to collaborate on research projects. This may be within the institution or across institutions.	2	Unchanged	3

<b>File Transfer service</b>	Mechanism for securely moving large files within and outside of the institution.	2	Unchanged	3
<b>Repository for Data Deposit</b>	Provided by the institution for data deposit and dissemination upon completion of the research project.	0	Unchanged	N/A
<b>Sensitive Data Deposit</b>	Provided by the institution for secure data deposit and restricted access upon completion of the research project.	0	Unchanged	N/A
<b>Preservation / Archival Storage</b>	Commitment and space to maintain data integrity and access over a specified period of time.	0	Unchanged	N/A
<b>Governance of Enterprise Software</b>	Management of various software packages needed at different stages of the research life cycle.	3	Unchanged	3

### **MAMIC Category: Support Services**

Maturity levels for support services were assessed as shown below:

Not applicable: skip this element

0: Does not exist OR do not know

1: Element is not formalized.

- Services are ad hoc, disorganized, unsupported, inconsistent and/or poorly publicized.

2: Element is under development.

- Could include scoping exercises, needs assessments, stakeholder consultations, program efforts under way, and/or pilot projects.

3: Element is operationalized.

- There has been an investment in skills development for service providers.
- Services and responsibilities are identified, defined and standardized, and staffed.
- Documentation and training are developed.
- Guidance offers relevant advice on how to use RDM services.

4: Element is robust and focuses on continuous evaluation.

- There is a widespread take-up of services.
- Guidance is significantly tailored to support the specific needs of your institution.

The following legend was used to assess for scale:

Not applicable - if 0 or NA are chosen for *Maturity Level*

1. Offered only to specific users upon request.
2. Available within certain units or cohorts.
3. Available to everyone.

The results are as follows:

**MAMIC Category: Support Services**

<b>Category: Support Services</b>				
<b>Element</b>	<b>Definition(s)</b>	<b>Maturity Level March 2022</b>	<b>Maturity level February 2023</b>	<b>Scale</b>
<b>General RDM Training</b>	Builds RDM skills among researchers through workshops, webinars, lectures, etc.	0	2	3
<b>General RDM Consultation</b>	Individual or group sessions relating to RDM needs.	0	2	3
<b>DMP Training</b>	Builds skills for researchers to effectively put together a DMP through workshops, webinars, lectures, etc.	0	2.5	3
<b>DMP Consultation</b>	Individual or group sessions relating to developing a DMP.	0	2.5	3
<b>Data Curation Training</b>	Builds skills for researchers to effectively curate their data through workshops, webinars, lectures, etc.	0	Unchanged	N/A
<b>Data Curation Consultation</b>	Individual or group sessions relating to curating and preparing data for deposit (including metadata and documentation).	0	Unchanged	N/A

<sup>i</sup> <https://science.gc.ca/site/science/en/interagency-research-funding/policies-and-guidelines/research-data-management/tri-agency-research-data-management-policy>.

<sup>ii</sup> <https://science.gc.ca/site/science/en/interagency-research-funding/policies-and-guidelines/research-data-management>

<sup>iii</sup> <https://science.gc.ca/site/science/en/interagency-research-funding/policies-and-guidelines/research-data-management/tri-agency-research-data-management-policy>