Research Data Management (RDM) Strategy

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1. Overview

In response to a growing awareness on the value of managing, sharing, and preserving research data, the Tri-Agency adopted the following policy [Tri-Agency Research Data Management Policy](#) on research data management (RDM) to ensure good data management planning and practices throughout the research lifecycle. This Tri-Agency policy requires each post-secondary institution and research hospital eligible to administer Canadian Institutes of Health Research (CIHR), Natural Sciences and Engineering Research Council of Canada (NSERC) or Social Sciences and Humanities Research Council (SSHRC) funds to create an institutional RDM strategy and notify the agencies of its completion. The Tri-Agency RDM policy outlines both institutional and researcher requirements for the management of research data. To support the adoption of the Tri-Agency Research Data Management Policy and to enhance current research data management planning and practices, Lambton College has established a data governance team dedicated to creating the Lambton College RDM strategy. This strategy aims to support the College, administrators, researchers, research support staff, and faculty to promote and implement research data management planning and practices throughout the lifecycle of their research. Lambton College recognizes that this is an essential component to ensuring research excellence and will actively engage in activities to raise awareness, promote training and support to all College members, particularly, researchers and staffs at all career stages. We will ensure that access to useful RDM resources, tools, and expertise are readily available and expanded on as we continue to learn and grow our RDM best practices. Throughout the development and implementation of this strategy, Lambton College will engage its broader Lambton College Research & Innovation community and stakeholders to obtain feedback on the strategy and its implementation.

2. Importance of Research Data Management (RDM)

An institutional Research Data Management (RDM) strategy is required by all post-secondary institutions and research hospitals eligible to administer CIHR, NSERC, and SSHRC funds by March 2023. The Tri-Agency policy outlines the agencies expectation surrounding the research they fund, including research that is conducted to the highest professional and disciplinary standards, domestically and internationally. Ensuring these standards support research excellence by performing ethical research that makes good use of public funds, experiments with replicable studies, and research results are as accessible as possible. The agencies require data management plans (DMPs) and data deposits for certain funding opportunities. The agencies will require DMPs and data deposits to be submitted with grant applications and included in journal publications. The agencies recognize that all institutions RDM strategy will be reflective of their institution size, research intensity, and existing RDM capacity, thus Lambton College's RDM strategy aims to be reflective of its current research activities, environment, infrastructure, intensity, and capacity, while ensuring the implementation of a high-quality strategy that provides ongoing support to researchers and research staff.

3. Scope

The adoption of this strategy will support all Lambton College researchers, students, administrators, staff, and faculty in all discipline areas. We recognize that technology has enabled the expansion of the scale and scope of research data which in turn has increased the considerations required to ensure the appropriate handling of these data. As an institution, we aim to provide the necessary resources, tools, training, and services to everyone involved in each stage of the research project, ensuring the use of strong research data management practices throughout the research lifecycle. The development of this

strategy will lead to the ongoing implementation of data management practices across all disciplines and will continue to evolve this strategy as we transition to RDM best practices.

4. Principle of an RDM

Whenever data is collected for research purposes, there needs to be a research data management plan and research data management practices put in place. This is an overall strategy intended to help manage research data in more efficient ways, more sustainable over the long term, or that help take better advantage of data tools in research.

4.1 What is RDM and its Key Components?

4.1.1 Research Data Management (RMD)

Research Data Management (RDM) describes the activities researchers carry out as they organize and maintain data throughout the research process. It can include (but is not limited to):

- Setting up plans and processes before starting data collection
- Keeping track of, documenting, and backing up data during the research project
- Archiving or publishing data after the project has completed

The Digital Research Alliance of Canada (aka the Alliance) serves Canadian researchers, with the objective to advance Canada's position as a leader in the knowledge economy on the international stage. Alliance outlines that the development and implementation of a research data management plan can have the following impacts:

- Help to identify both strategies and potential challenges in advance,
- Support the development of sound data practices for your research team,
- Help to prepare data for effective use during your project,
- Ensure the reliability and accuracy of data through careful documentation of your data collection including handling and stewardship practices,
- Improve the discoverability, accessibility, and reusability of your data by planning for sharing in a repository,
- A DMP will satisfy requirements set forth by specific granting agencies (Portage, Brief Guide for Creating an Effective Data Management Plan).

In addition, the Alliance states that good research data management considers the FAIR Principle, which stands for Findable, Accessible, Interoperable, and Reusable. This set of principles is designed to ensure that data are stewarded in a way that enables and enhances the reuse by humans and machines.

4.1.2 Key Components of RDM

Data Management Plans (DMPs) should include research methodologies that reflect best practices for managing research data throughout the research lifecycle. DMPs are living documents that can be modified to accommodate changes throughout the course of a research project and the content or length of the DMP is dependent on the research project. Planning of the research data is an important initial step in Research Data Management and some key components that need to be considered are:

- The institution's and funding agency's expectations and policies
- Whether raw data is collected or reused
- The kind of data collected and its format
- The quantity of data collected

- Whether versions of the data need to be tracked
- Storage of active data and backup policy and implementation
- Storage and archiving options and requirements
- Organizing and describing or labeling the data
- Data access and sharing
- Privacy, consent, intellectual property, and security issues
- Roles and responsibilities for data management of the research team
- Budgeting for data management

In addition, all DMPs should describe:

- How data will be collected, documented, formatted, protected, and preserved;
- How existing datasets will be used and what new data will be created over the course of the research project;
- How and whether data will be shared;
- Where and the data will be deposited.

Data Deposits refers to the place where researchers deposit their data into a recognized data repository, including all digital research data, metadata and code that directly support research conclusions in journal publications and pre-prints that arise from agency-supported research. Researchers should consider the following points (Refer to Appendix B for more questions to consider):

- What counts as relevant research data and which data should be preserved. This is often highly contextual and should be guided by disciplinary norms and grant recipients own judgement,
- Appropriate access to the data where ethical, cultural, legal, and commercial requirements allow, and in accordance with the FAIR principles and the standards of the discipline.
- Is there a domain-specific repository supported by your discipline. If so, this may be the best place to deposit your data.
- If no domain-specific repository exists, consider one of two-multi-disciplinary repository options.

5. Institutional Support

Lambton College provides variety of internal supports to researchers with respect to RDM:

- Data Governance Team: The data governance team will establish the policies and overall strategy for data management at the college and the RDM will be a part of that strategy.
- Library: The Lambton College Library will provide research data management resources to support researchers in meeting the grant requirements. This includes providing helpful guides, resources, and links on RDM.
- Research & Innovation Office: The Research & Innovation Office will provide support, advice, and where appropriate guidance on guidelines and templates available for researchers and research staff for research data management and data management plans. Current resources can be found in section 12 of this document. The Research & Innovation office will provide support for storage, initiation, gathering, and destruction.
- IT: The Lambton College IT department will provide support to researchers and research staff for data deposit and repository. This includes providing mechanisms and services for storage, backup, registration, deposit and retention of research data assets in support of current and future access to research data both during and after completion of research projects. This is in collaboration with the Lambton College Library.

- Outside Support: Alliance's Data Management Plan (DMP) Assistant is a bilingual tool for preparing data management plans. The tool follows best practices in data stewardship and walks researchers step-by-step through key questions about data management. Lambton College also has an MOU with WorlDiscoveries at Western Universities to receive Technology Transfer support.

In addition, the Research Data Management Overview knowledgebase provides an overview of what RDM is and thoughtful guidance on the various stages of research data planning and management. The Research Data Management Storage Options knowledgebase identifies the various options available and helps researchers determine which storage option is the most appropriate for the type of data they plan to collect.

- Oversight refers to proper management and review of the data at a high level
- Set out the foundational principles and rules to be applied by the oversight committee when considering requests for the disclosure of protected information for research purposes
- Intended to ensure that requests are evaluated in an objective and consistent manner that facilitates timely researcher access to data while appropriately addressing security and confidentiality considerations

6. Stakeholders

A stakeholder in any data governance program is an individual or group that could affect or be affected by the data governance process.

- Examples of stakeholders are institutional researchers, data managers, data architects, and business intelligence staff.
- Specific Stakeholders
    - Clients
    - College Personnel
    - Students
    - Governmental Agencies

7. Ethics

Lambton College supports researchers in adopting and complying with ethical, legal, and commercial obligations.

The Lambton College Research Ethics Board (REB) is committed to ensuring that research involving humans conducted at or under the auspices of Lambton College is executed with the highest ethical standards. The REF reviews research projects to ensure adherence the federally mandated Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans -TCPS 2 (2018) and College Research Policy.

All research involving human participants must undergo an REB review before participant recruitment and data collection may begin. Researchers must follow the application process prior to engaging in any research activity involving human participants at or under the auspices of Lambton College. This includes:

- Complete the TCPS-2 Tutorial on Research Ethics – This is helpful; training resource for researchers to consider ethical conduct when conducting research that involves human participants,
- Review the Ethical Conduct and Policy for Research Involving Humans,
- Obtain Institutional Approval for the Research Project,

- Complete the appropriate application for multi-site and external, Lambton, or course-based research,
- Compile all supporting documents such as recruitment material, consent form, letter of information, research methods (survey tools, interview guide and protocols), TCPS-2 certificates for all researchers, among others),
- Submit all documents in an organized electronic package to the REB Chair for review and approval.

In addition, if applicable, ethical obligations surrounding informed consent should be consider before the research project begins, including:

- If applicable, how will researcher handle informed consent with respect to communicating to respondents that the information they provide will remain confidential when data are shared or made available for secondary analysis? Protection of human subjects is a fundamental tenet of research and an important ethical obligation for everyone involved in research projects. Disclosure of identities when privacy has been promised could result in lower participation rates and a negative impact on science
- *Informed consent*: Informed consent statements, if applicable, will not include language that would prohibit the data from being shared with the research community.
- *Disclosure risk management*: Once deposited, the data will undergo procedures to protect the confidentiality of individuals whose personal information may be part of archived data. These include: (1) rigorous review to assess disclosure risk, (2) modifying data if necessary to protect confidentiality, (3) limiting access to datasets in which risk of disclosure remains high, and (4) consultation with data producers to manage disclosure risk. A qualified data manager certified in disclosure risk management will be assigned to act as steward for the data while they are being processed. The data will be processed and managed in a secure non-networked environment using virtual desktop technology.

8. Indigenous Data

Lambton College recognizes the unique considerations necessary for conducting research in each, distinct Indigenous Peoples context. In addition, Lambton College is aware of the concerns of many Indigenous Peoples about the ways research has been done in the past and is taking place in their communities as it was not always conducted respectfully and with the permission and consultation/collaboration of the communities. In response to the experiences of Lambton College researchers collaborating with Indigenous Peoples or contexts, considering the Truth and Reconciliation Act, and in light of the Tri-Council Policy Statement, 2nd Edition, Lambton College Research & Innovation developed and implement the Guideline for Research In collaboration with Indigenous Peoples. In addition, the Tri-Council Policy: Ethical Conduct for Research Involving humans outlines in detail the considerations in research with Indigenous Peoples in Chapter 9. Following are important factors to consider for RDM with respect to Indigenous Data:

Indigenous data sovereignty refers to the right of Indigenous peoples to control data from and about their communities and lands, articulating both individual and collective rights to data access and to privacy.

Lambton College will follow below strategies, policies, principles and guidelines to handle Indigenous data.

OCAP® (Ownership, Control Access, Possession)

The First Nations principles of OCAP® indicate how First Nations' data will be collected, protected, used, and shared. It is a set of principles designed to protect First Nations' ownership and jurisdiction over their information and data.

- **Ownership**: The relationship of First Nations to their cultural knowledge, data, and information. A community or group owns information collectively in the same way that an individual owns his or her personal information.
- **Control**: First Nations, their communities, and representative bodies are within their rights in seeking control over all aspects of the research and information management processes that impact them. Can include all stages of a particular research project from start to finish. The principle extends to the control of resources and review processes, the planning process, management of the information and so on.
- **Access**: First Nations must have access to information and data about themselves and their communities regardless of where it is held. This also refers to the right of First Nations' communities and organizations to manage and make decisions regarding access to their collective information.
- **Possession**: The physical control of data. Possession is the mechanism by which ownership can be asserted and protected.

The CARE Principles **(Collective Benefit, Authority to Control, Responsibility, Ethics)** for Indigenous Data Governance guide appropriate use and reuse of Indigenous data. This set of principles indicates the significant and crucial role of data in advancing Indigenous innovation and self-determination.

- **Collective benefit**: Data ecosystems should be designed and function in ways that enable Indigenous Peoples to derive benefit from the data.
- **Authority to control**: Indigenous Peoples' rights and interests in Indigenous data must be recognized and their authority to control such data should be empowered. Indigenous data governance enables Indigenous Peoples to determine how they are represented within data.
- **Responsibility**: Those working with Indigenous data have a responsibility to share how this data is used to support Indigenous Peoples' self-determination and collective benefit.
- **Ethics**: Indigenous Peoples' rights and wellbeing should be the primary concern at all stages of the data life cycle

Indigenous Data and the Tri-Agency

Canada's Tri-Agency Research Data Management Policy affirms that data related to research by and with First Nations, Métis, or Inuit must be managed in accordance with principles developed and/or approved by these communities. Data management plans (DMPs) should recognize Indigenous data sovereignty and include options for renegotiation of the DMP.

1. Research Data Management - 2. Indigenous Research: How the Tri-Agency Policy relates to the management of Indigenous research, knowledge and data.
2. Strengthening Indigenous Research Capacity: A strategic plan for the development of an Indigenous research and research training model.

Other Relevant Strategies and Policies

1. College policy (data governance policy)
2. EDI strategy

9. Timeline/Roadmap for the Development of Data Management Plan (DMP)

   a. Secure: Ensure that proper steps are taking to secure data before a project or research is started.
   b. Plan: Develop a plan to securely collect, store, utilize and transfer data during and after a project.
   c. Find: Ensure that all relevant data is examined and thorough searches for relevant studies and previous work are completed.
   d. Organize: Properly organize the data sets to ensure that they can be recalled in the future.
   e. Store: Use the proper data repository to store relevant, sensitive or important data that can be kept secure and allow access to people who need it.
   f. Publish/Tech Transfer: When the data is complete the information needs to be transferred to the partner for use and commercialization.
   g. Archive: When the research is complete ensure that all relevant data is archived for future review.

10. Looking Ahead

Lambton College's RDM Strategy will be a dynamic document that is continuously edited and updated by the Data Governance team along with the Research and Innovation department. This strategy will be reviewed annually or as required to ensure compliance with Tri-Agency standards and to ensure it is meeting researcher needs across the research centres at the College. We also would like to acknowledge the University and College institutions who supported sharing resources and strategies with Lambton College throughout the development of this strategy. Lambton College looks forward to evolving this strategy and continuing education on RDM best practices. The following appendices outlines various resources available both in and outside the College. Additional resources, tools, technologies, and service supports will be added to this ongoing list as the strategy continues to evolve.

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Appendices

Appendix A: Research Data Management Key Definitions

1. **Data:** At a broad level, data are facts, measurements, records, recordings or observations considered collectively for reference or analysis (Adapted from: Tri-Agency 204 RDM Policy FAQ). Data can occur in a variety of formats that include but are not limited to:
   - Notebooks
   - Text
   - Numbers
   - Symbols
   - Survey responses
   - Software and code
   - Measurements from laboratory or field equipment (such as IR spectra or hygrothermograph charts)
   - Images (such as photographs, films, scans, or autoradiograms)
   - Audio recordings
   - Physical samples

2. **Data Deposit:** is a form of data preservation. It refers to the transfer of collected research data to a research repository. Data deposits often include accompanying information such as documentation, code, software, metadata, and any supplementary material that provide additional information about the data and context in which the data was collected and used to inform the research project. The preservation of research data is highly contextual and should be guided by disciplinary norms. If you submit your data to a repository, or deposit it, this can help ensure that it is preserved. A good repository has stable digital storage backed up on servers so that the items within can last.

3. **Data Repository:** Refers to a recognized repository where all digital research data, metadata, and code that directly support the research conclusions in journal publications and pre-prints that arise from agency-supported research is stored. The repository should have easily accessible policies that describes the deposit and user licensing, access control, preservation of data procedures, storage and backup practices, and sustainability and succession plans. This supports ongoing data retention and, where appropriate future access to data.

4. **Data Storage** occurs at every stage of the research process. No matter what kind of data you have, it must be stored somewhere! When you are still using and working with your data, this may be referred to as active storage.

5. **Data Preservation** is a long term consideration for after your project is complete. Where will the data live? How long will you store it? How will you ensure that it is stable and secure? This might be called long-term storage.

6. A repository is an online collection of materials that is stored, managed, and preserved. They can be for an institution (for example, TRUSpace), for a specific discipline (for example, BioModels), or for data generally (for example, FRDR). Many repositories are Open Access, so keep that in mind when choosing a place to deposit your data.

7. **Data Management Plan (DMPs):** A living document that is associated with an individual research project or program consisting of strategies, processes, and practices related to data management and curation on a set of specified topics. DMPs can and should be modified throughout the course of a research project or program to reflect changes that may take place in the design, methods, conduction, and other considerations during the research project. The DMP is a guide for researchers to articulate their plans for managing data and do not necessarily compile researchers to manage data differently (Adapted from Tri-Agency Research Data Management Policy, Frequently Asked Questions, Government of Canada 2021).

8. **Research Data Management:** Refers to "the storage of access to and preservation of data produced from one or more investigations, or from a program of research. Research 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 preserving data for the long term after the research has concluded. It also includes data-sharing, where applicable" (Social Sciences and Humanities Research Council, Definition of Terms, Government of Canada 2021).

9. **Technology Transfer:** is the process of transferring (disseminating) technology from the person or organization that owns or holds it to another person or organization, in an attempt to transform inventions and scientific outcomes into new products and services that benefit society.

10. **Publishing:** if a company wants to publish the work completed the college will assist with this endeavor.

11. **Patents**: the responsibility of filling and applying for a patent is the sole responsibility of the partner company, the college can assist in this but only as an advisor.

12. **Spin off companies:** development of a separate company to commercialize the technology.

Appendix B: Data Deposit

1. When Data Should Be Deposited?

1.1 Need to Deposit

Original datasets and raw data that cannot be regenerated. Non-original datasets that are not easily available online and you have permission to share. Codebooks, study descriptions, summary statistics (especially for social science data)

1.2 Possibly Deposit

Intermediate versions of analyses that were used in theses or publications and/or may be useful to others. Output files from analyses that are difficult or time consuming to recreate from the original data

1.3 Not Necessary to Deposit

Incomplete, non-functional, or intermediate versions of code that would be of marginal usefulness to others. Charts and graphs that can be easily created from original data. Output files from analyses easily recreated from original data

1.4 Do Not Deposit

Do not deposit any data containing personal identifying information of human subjects

2. Questions for Researchers to Considers

1. What kind of research do you do? (General research questions, approaches, methodologies, etc.)
2. Are you the principal investigator?
3. What kind of data do you collect/create? (e.g. qualitative, quantitative, models, code, etc.)
4. What formats are involved? (e.g. transcripts, numeric data)
5. How much data do you have? (in MB/GB/TB)
6. Do you have any existing documentation files (readme.txt, lab notebooks) that provide a description of the data, file naming conventions, and methodology of how the data was collected?
7. Do you have an existing metadata files with a key or reference to each data field?
8. Is the data archiving and/or sharing mandated by a grant or journal submission?
9. If data archiving and/or sharing is grant-mandated, what type of grant do you have?
   Are you part of a research network?
   Are there existing constraints or requirements placed on your data archiving and/or sharing? (Grants, journal data policies, research networks, etc.)?
10. May the data be shared? If so, with whom (fellow researchers, policy makers, public, etc.)? Are there specific restrictions on the data (legal, ethical, intellectual property)?
11. Where is the data currently stored? (e.g. hard drive, departmental server)
12. Did you collect the primary data, or was the data obtained from another source? (e.g. a government department) Or are there ownership restrictions based on funding requirements or publication requirements?

3. Different types of Repositories

Canada has a rich data repository landscape operating at national, regional, and local/institutional levels. Data repositories are many and varied, but can be categorized broadly as domain-specific, government, and generalist.

1. Is there a domain-specific repository supported by your discipline?

o If yes, this may be the best place to store your data as these are often purpose-built to serve specialized disciplinary needs.

2. Is your research being conducted on behalf of government, including federal or provincial agencies and departments, as well as municipalities?

o If yes, then you could consider either an academic or domain-specific repository, or a government repository, if appropriate.

3. If no domain-specific option is appropriate, then you should consider using a generalist repository that typically accepts any and all types of research data.
4. There are many generalist repositories to choose from -- some of which operate on a fee-for-service model and others at no direct cost to researchers. This guide will walk you through two general repository options available to Canadian researchers at no cost through partnerships in the academic library community.

3.1 Generalist or College Specific Repository

At Lambton College the repository will be the Microsoft Teams server that is run through the IT department. This repository is secure, user specific and has the capacity to store all Research Data gathered as a department.

3.2 Federated Research Data Repository (FRDR)

FRDR leverages Canada's national Digital Research Infrastructure, through a partnership between CARL Portage and Compute Canada, to offer robust, cos teffective repository storage at scale.

3.3 Dataverse North

Dataverse North is a community of practice that brings together providers and users of Dataverse in Canada. Dataverse is an open source data repository platform for publishing research data, developed and maintained by Harvard University and contributors from around the world.

3.4 Borealis

Borealis, the Canadian Dataverse Repository, is a bilingual, multi-disciplinary, secure, Canadian research data repository, supported by academic libraries and research institutions across Canada. Borealis supports open discovery, management, sharing, and preservation of Canadian research data.

4. Storage Best Practices

Early in your research process, create a plan to safely store and regularly back up your research data. Data loss can be disastrous and take time and money to recreate if possible. Here are a few simple steps to mitigate the risks of data loss:

Estimate how much storage space you will need and determine who will need access, what type of access will each team member need, and how they will access the data

Keep the number of researchers who can manipulate the data as small as possible to reduce the risk of human error

Follow the 3-2-1 backup rule

3 - Have at least 3 copies of your data,

2 - Stored on 2 different secure and reliable media (e.g. cloud storage, hard drive, etc.),

1 - With 1 backup copy offsite

Backup regularly and, preferably, automatically.

We can separate data storage platforms into 3 major categories to discuss their pros and cons:

4.1 Local Storage

These are storage devices that are built in to your computer or that you directly connect to your computer. This includes laptop or desktop hard drives or SSDs, external hard drives, USB flash drives, DVDs or other storage media, etc. Local has a few strong advantages:

it's easy to use – external drives can be simply plugged in and data transferred to them with no need to sign up for services or set up programs. Data transfer is fast. The cost can be low for moderate amounts of storage (up to 10 TB or so). External storage devices are easily portable. Data can be accessed when internet is not available. Access to the data is limited to only those who physically are given access to the drive.

4.2 Network Storage

These are storage devices that are connected to your local network – typically the university network. They can be run by IT units on campus or independently by a researcher. These include departmental servers, RHPCS servers, faculty servers, and smaller NAS devices. NAS stands for "network-attached storage". These are small data storage devices that can connect to your network rather than directly to your computer via a cable. Network storage is great when you need:

Secure access – storage is limited only to those authorized to join the server and join the network.

Centralized storage and access – Network storage devices can be used by multiple members of a research project or research group to store data that can then be easily accessed by all team members.

Backups – network storage devices are a good choice for automated backups – there are several software applications that can back up your computer to a networked storage device.

4.3 Cloud Storage

Online storage platforms that you access over the internet. They are typically run by third parties including corporate entities or non profits. Cloud storage platforms include Dropbox, Google Drive, OneDrive, and open source platforms like SeaFile, OwnCloud, and NextCloud that may be run by research organizations or institutions. Cloud storage has some extremely compelling features which make it amazing for research like:

Version control and file recovery – most cloud platforms track changes to individual files and those changes (including file deletion) can be reverted.

File sharing – files can easily be shared with collaborators and worked on together.

Access from anywhere – no matter where you are or what computer you're using, you can access your files as long as you have internet.

It comes with some tradeoffs as well though:

Speed of access – data stored only in the cloud can be slower to access and analyze since it may have to be downloaded before it can be worked with.

Security – like other online platforms, you must create a strong unique password and be diligent about protecting your cloud storage account from hostile actors. There is a risk of the platform being compromised and your data being accessed by a hacker or deleted.

Appendix C: Links to Lambton College Research Policies and Procedures

1. [Lambton College Research Data Security Policy](#)
2. [Intellectual Property for Research Activities](#)
3. [Ethical Conduct and Policy for Research Involving Humans](#)
4. [Responsible Conduct of Research](#)
5. [Research Conflict of Interest](#)
6. [Indigenous Research Guiding Principles](#)
7. [Administration of Research & Scholarly Activity](#)
8. [Authorship in Scholarly or Scientific Publications or Presentations](#)
9. [Student Research Training Manual](#)
10. Research Student Training Plan (Will link when available for distribution)

Appendix D: Digital Research Alliance of Canada

The Digital Research Alliance of Canada serves Canadian researchers, with the objective of advancing Canada's position as a leader in the knowledge economy on the international stage. New digital technologies are creating massive quantities of data at an explosive rate, which is having a profound impact on the capacity of Canadian researchers to generate and contribute research that will be critical to Canada's future. To embrace this new world of possibility, Canada must build and sustain a strong and vibrant Digital Research Infrastructure (DRI) ecosystem. The Digital Research Alliance of Canada integrates, champions, and funds the infrastructure and activities required for advanced research computing (ARC), research data management (RDM), and research software (RS), providing the platform for the research community to access tools and services faster than ever before. The Alliance mandate is to transform how research across all academic disciplines is organized, managed, stored, and used. They work collaboratively with their partners and stakeholders to provide Canadian researchers with the help and support needed for leading-edge research in excellence, innovation, and advancement. The organization is a non-profit and is funded by the Government of Canada.

Under the Digital Alliance of Canada, they offer services for Research Data Management including the Data Management Plan (DMP) Assistant, which is a national, online, bilingual data management planning tool. It was developed by the Alliance in collaboration with the institution of University of Alberta. This is a useful tool to assist researchers in preparation of their data management plans (DMPs). The tool is freely available to all researchers and supports with the development of a DMP through a series of key questions in relation to data management. It is further supported by best practices guidance along with helpful examples. The Alliance provides these helpful resources and tools at Welcome to DMP Assistant. (portagenetwork.ca). A list of additional resource links through Alliance and DMP Assistant are included below.

1. Research Data Management Learning and Training
2. Brief Guide – Data Management Plans
3. Brief Guide – Create an Effective Data Management Plan
4. Introduction to Data Management Plans (DMPs)
5. Introduction to DMP Assistant
6. Managing Data Management Plans with DMP Assistant
7. Support Your Research with DMP Assistant 2.0!
8. Support Your Research with Data Management Planning