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#### INTRODUCTION

The University of Ottawa is committed to conducting cutting-edge research, taking on real-world problems, and engaging in impactful interdisciplinary research. Fostering excellence in research data management is an important contributor to this goal.

In 2021, the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council of Canada (NSERC), and the Social Sciences and Humanities Research Council of Canada (SSHRC) issued the Tri-Agency Research Data Management Policy to position research data management (RDM) as a necessary part of research excellence by ensuring that research is performed ethically and makes good use of public funds. The objectives of the policy require that all institutions eligible for Tri-Agency funding comply with three requirements: the development of an institutional strategy for research data management, the preparation of data management plans for all grant applications, and the deposit of research data into a digital repository.

As defined in uOttawa Policy 115 - Responsible Conduct of Research, it is the "collective responsibility of all members of the University community to promote a culture of high integrity standards in research activities, to ensure responsible conduct of research, and to abide by applicable laws for the conduct of research and research sponsors' policies and/or requirements". While the impetus for the development of an institutional strategy arises from the Tri-Agency's Research Data Management Policy, the University of Ottawa recognizes its responsibility to provide an environment that supports and promotes the responsible conduct of research, including supporting researchers in their efforts to establish and implement data management practices. The University also recognizes the importance of upholding FAIR Data principles² to ensure high-quality, securely and sustainably stored research data, and where possible and appropriate, continued accessibility and reusability of this data.

The University of Ottawa has established a Research Data Management Advisory Group, with pan-University expertise and representation, to serve as the key champion for RDM on campus. The RDM Advisory Group aims to foster excellence in the management of research data at the University of Ottawa. Its primary mandates are: to make relevant and timely recommendations; to create and stimulate the critical dialogue that will lead to better and more informed decisions; and to increase transparency and collaboration between the uOttawa research community, the Office of the Vice President Research and Innovation, the Library, Information Technology, Information and Archives Management, faculties, and other research

<sup>1</sup> https://www2.uottawa.ca/about-us/policies-regulations/policy-115-responsible-conduct-research

<sup>&</sup>lt;sup>2</sup> FAIR Data Principles (Findable, Accessible, Interoperable, and re-usable): https://force11.org/info/the-fair-data-principles/

partners. The Group's strategic goals and action items account for national and international developments in RDM, and their implementations will happen gradually, based on an action plan.

#### Why does uOttawa need a RDM strategy?

The development of this RDM strategy aims not only to comply with the Tri-Agency Research Data Management Policy, but also to further enhance uOttawa's position as a leading research institution that is committed to excellence in the management of all research elements, including RDM. As our researchers take on national and international research initiatives, it is imperative that we support them by following international standards and best practices in research data management.

This strategy will support enabling measures that provide researchers with clear RDM policies, procedures, and practices that are regularly updated to meet their needs. Furthermore, we will support researchers in their efforts to establish and implement data management practices that are consistent with ethical, legal, and commercial obligations, as well as with Tri-Agency requirements and other relevant policies.

Finally, this strategy supports the broader missions of the University and aligns with uOttawa's Transformation 2030, the Digital Campus Transformation plan, and uOttawa's Indigenous action plan. The strategy aims to outline how the RDM landscape at the University of Ottawa will be developed and improved in the coming years, and how to provide researchers with an environment that enables and supports world-class research data management practices.

#### Indigenous research data and commitment to EDI

The University of Ottawa recognizes that data created in the context of research by and with First Nations, Métis, and Inuit communities, collectives, and organizations must be managed according to principles developed and approved by those communities, collectives, and organizations, and in partnership with them. For this reason, this strategy includes a strategic objective specific to Indigenous research data.

Furthermore, the University of Ottawa is committed to fostering equity, diversity, and inclusion in academic and leadership environments. Notably, the RDM Advisory Group aims to develop a strategy that reflects the diverse needs of our research community. Early in the development of the strategy, materials were translated into French to allow for engagement with the uOttawa research community. Initial engagements were held bilingually and were open to members of each faculty, ensuring that a multiplicity of voices, challenges, and needs were captured, and allowing for direct and anonymous feedback.

## Vision for research data management

The vision for effective research data management (RDM) at uOttawa foresees a state in which researchers have access to RDM support throughout the lifecycle of a research project and are readily able to meet requirements for RDM best practices. This includes the development of effective data management plans, access to appropriate technological infrastructure during the active research phase, and the ability to deposit data in a recognized data repository.

#### CONTEXT

#### About uOttawa

Located in the heart of Canada's capital, the University of Ottawa is the largest bilingual (English-French) university in the world. Research generated by the University of Ottawa is founded on excellence, relevance, and impact. One important way to ensure research integrity and to contribute to the University's research goals is to equip our researchers so that they can apply data management practices.







Among Canada's top 10 research universities

10 faculties with over 1200 regular professors (as of 2020)

Over \$122.7 M in research funding awarded by CIHR, NSERC, and SSHRC (2021)<sup>3</sup>

The University of Ottawa offers a wide variety of undergraduate and graduate programs within its 10 faculties. The University is a dynamic research community that includes research centres, institutes, and affiliated research hospitals, all of which provide valuable platforms for cross-disciplinary collaboration. The University also propels research by providing services, analysis, instrumentation, technology access, and expertise through its 25 core facilities.

#### Current state and institutional readiness

The University of Ottawa is a research-intensive university that boasts a robust network of research planning practices, data management support, data management technology, and tools for data deposit. This RDM strategy builds on existing success and aims to address gaps. An evaluation of RDM practices at uOttawa revealed that awareness of best practices, and access to RDM tools and platforms, varies across campus. In a survey undertaken in 2016-2017<sup>1</sup>, researchers in some faculties reported that they sometimes find it time-consuming to identify

<sup>&</sup>lt;sup>3</sup> Research grants (in \$ millions) from federal funding agencies (provided by Institutional Research and Planning, University of Ottawa)

the appropriate policies and procedures that apply to their RDM needs, and that it is not always readily apparent which technology and technical support are available to them.

In 2018, the Office of the Vice-President Research and Innovation (OVPRI) surveyed researchers about how they manage and share their research data. The responses to the survey questions and feedback culminated in <u>a brief to the Tri-Agencies</u> in 2019 as part of the public consultation on the Draft Tri-Agency Research Data Management Policy.

A further analysis of policies and guidelines revealed that existing University policies on information management and research administration do not specifically focus on research data and are not necessarily appropriate to the needs of researchers in all instances.

#### Stakeholders

An effective RDM strategy requires that all stakeholder communities be aware of best practices in research data management and understand their roles, responsibilities, and support available to them. Key stakeholders in the RDM landscape are:

- Researchers
- Graduate students
- Faculties
- OVPRI: Research Management Services
- OVPRI: Office of Research Ethics and Integrity
- Library
- Central IT (Research and Security Architect)
- Information Management
- Core Facilities, Research Centres and Research Institutes

#### Consultations

To move towards recognizing data as an important research output and to share thoughts on the challenges and opportunities that an RDM strategy presents for uOttawa, we have undertaken, and will continue to hold, various consultation activities. The strategy was developed through an interactive process: it was refined with feedback and input from the uOttawa community and other stakeholders.

The voices of researchers are critically important in developing this institutional strategy. In April 2022, the RDM Advisory Group held a consultation workshop with participants from various faculties. The workshop aimed to discuss how uOttawa could provide its researchers with an environment that enables and supports RDM. The workshop featured a panel of local campus service providers and experts, who highlighted the services currently available to the research community. Participants had the opportunity to provide critical input to help draft the strategy's goals, vision, and action items. Beyond formal consultation campaigns, Advisory

Group representatives spoke to members of their faculties or services to validate specific goals within the strategy.

To ensure that the strategy continues to meet the needs of its community, we must continuously engage with and listen to the research community, campus partners, and community stakeholders.

## Commitment to continuous improvement and engagement

The uOttawa RDM community is committed to fostering a culture of ongoing assessment and continuous improvement. We recognize that the RDM landscape is ever-changing: continuously evolving infrastructure, new technologies, improved policies, and evolving practices require agility and adaptability, both now and in future. As such, this policy will be reviewed on a regular and ongoing basis, and changes will be made as needed. The tools and platforms viewed as cutting-edge today may be obsolete tomorrow. Guidelines and policies currently in draft form may be finalized, implemented, altered, or replaced in future. This strategy document is not meant to be static, but will evolve and shift in much the same way as does the RDM landscape.

## University of Ottawa Research Data Management Strategy Framework

#### VISION

A state in which researchers have access to RDM support throughout the lifecycle of a research project and are readily able to meet requirements for RDM best practices. This includes clear policies, the development of effective data management plans, access to appropriate technological infrastructure during the active research phase, and the ability to deposit data in a recognized data repository.

#### GUIDING PRINCIPLES

- Recognize data as an important research output
- Support researchers in establishing RDM practices
- Promote FAIR Data principles
- Commit to adopting established best practices
- Facilitate access to services and tools
- Acknowledge Indigenous data sovereignty

#### PILLAR: FOSTERING A CULTURE OF RESEARCH DATA MANAGEMENT

- 1. Develop, adopt, and promote compliance with policies, standards, procedures, and guidelines that advance best practices in RDM
- 2. Developing RDM practices and infrastructure that respect Indigenous data sovereignty and honour Indigenous values, ways of knowing, and needs.

#### PILLAR: IMPROVING ACCESS AND DISCOVERABILITY OF TOOLS AND SERVICES

- 3. Promote the importance of data management and raise awareness of the tools, guidance, and standards that are available to the uOttawa research community and essential to effective data management practices.
- 4. Enable and support researchers' access to tools and infrastructure to securely manage, preserve, curate, and provide continued access to research data.

#### PILLAR: BUILDING ORGANIZATIONAL CAPACITY

- 5. Develop and sustain an organizational structure to ensure an ongoing dialogue and consultations on RDM.
- 6. Improve support, guidance, and consultation services for the development of data management plans and data stewardship at all stages of the research cycle from planning to data deposit.

#### PILLAR: FOSTERING A CULTURE OF RESEARCH DATA MANAGEMENT

#### Strategic objectives

- 1. Standardize, develop, adopt, and promote compliance with policies, standards, procedures, and guidelines that advance best practices in RDM and the development of data management plans.
- 2. Support RDM practices and infrastructure that respect Indigenous data sovereignty and honour Indigenous values, ways of knowing, and needs.

#### **Expected outcomes**

- 1.1 The University and its research community works together to ensure that research data is properly managed, retained, and made accessible to the broader community while respecting ethical, legal, and commercial obligations.
- 2.1 The University becomes an exemplar of Indigenous data stewardship. First Nations, Métis and Inuit communities, collectives, and organizations trust the RDM processes and know that their ownership and management of research data will be upheld and respected. Indigenous research governance prioritizes the needs and interests of First Nations, Métis and Inuit peoples while optimizing data management supports and services for individual researchers.

#### Action items

- In consultation with the uOttawa research community, develop, adopt, and promote a governance framework (policies, standards, procedures, guidelines) that advances best practices in research data management.
- Establish data management plan (DMP) workflows for grant submissions
- Engage campus partners and Indigenous communities to find ways to foster a culture that respects Indigenous data sovereignty and enables and advances the objectives of the RDM strategy.
- Continue to develop and implement an assessment framework to ensure that uOttawa meets the needs of its research community and continues to build towards a RDM culture.

# PILLAR: IMPROVING ACCESS AND DISCOVERABILITY OF TOOLS AND SERVICES

#### Strategic objectives

- 3. Promote excellence in data management and raise awareness of the tools, guidance, and standards available to the uOttawa research community that are essential to effective data management practices.
- 4. Enable and support researchers' access to tools and infrastructure to securely manage, preserve, curate, and provide continued access to research data.

#### **Expected outcomes**

- 3.1 Researchers have easy access to guidance and are aware of the tools they need for effective research data management. They connect with the resources they need in ways they find convenient and appropriate. The University leverages and contributes to resources created by national and international entities serving in the RDM space. The University has a website dedicated to available RDM services and provides guidance on best practices for data management plans.
- 4.1 Researchers easily understand, access, and use the required storage and data management tools. This includes storage that is not only always available and easy to manage, but also well suited for the requirements in terms of performance, security, privacy, access/sharing, and long-term retention. This data is protected appropriately from unauthorized access and accidental loss or destruction.

#### Action items

- Participate and continue to leverage and contribute to RDM resources via national and international entities, including the Digital Research Alliance of Canada, among others.
- Develop a communication hub on research data management to create a single point to access services, relevant policies, standards, and information on current tools.

#### PILLAR: BUILDING ORGANIZATIONAL CAPACITY

#### Strategic objectives

- 5. Develop and sustain an organizational structure to ensure ongoing dialogue and consultations on RDM requirements between the uOttawa research community, decision-makers, policy leads and service providers.
- 6. Improve support, guidance, and consultation services for data management practices, including the development of data management plans, at all stages of the research cycle from planning to data deposit. Administrative systems incorporate RDM requirements to ensure compliance with University and funder policies.

#### **Expected outcomes**

- 5.1 The organizational structure engages with stakeholders to: make relevant and timely recommendations; stimulate the critical dialogue that leads to better and more informed decisions; and increase transparency and collaboration between campus and research partners. Service providers and decision-makers understand and agree to their roles and responsibilities with regard to research data management.
- 6.1 Researchers receive support to develop data management plans and can access appropriate and accurate information for their grant proposals. Internal grant management systems are optimized to ensure that PIs can comply with grant requirements.

#### **Action items**

- Continue the ongoing work of the uOttawa Research Data Management Advisory Group and support its mandate to foster excellence in RDM at the University.
- Develop customized, institutional templates for data management plans that include guidance and promote local solutions.

## **Implementation**

We aim to implement the Research Data Management strategy in three phases (see below). This phased approach will allow the RDM Advisory Group to focus on early successes, build on solutions, and better understand shifting prioritizes.



An action plan, focused on delivering Phase 1, will guide the implementation of the strategy, which identifies actions, deliverables, responsible leads, and timeframes. We will monitor the progress of the strategy's implementation and report our findings to uOttawa senior management committees.

## Definitions from the federal funding agencies

**Data management plan:** A data management plan (DMP) is a living document, typically associated with an individual research project or program that consists of the practices, processes, and strategies that pertain to a set of specified topics related to data management and curation.

**Data deposit:** Refers to when the research data collected as part of a research project are transferred to a research data repository.

**FAIR Data principles:** FAIR principles for scientific data management and stewardship are an international best practice for improving the findability, accessibility, interoperability. and reuse of digital assets.

**Indigenous data sovereignty**: Refers to data related to research by and with Indigenous communities that must be managed in accordance with data management principles developed and approved by these communities.

**Research data:** Research data are data that are used as primary sources 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 the research community as necessary to validate research findings and results.

**Research data management:** Research data management (RDM) refers to the processes applied through the lifecycle of a research project to guide the collection, documentation, storage, sharing, and preservation of research data.

For additional definitions, please refer to the <u>Tri-Agency Research Data Management Policy-Frequently Asked Questions</u><sup>4</sup>.

<sup>&</sup>lt;sup>4</sup> Tri-Agency Research Data Management Policy - Frequently Asked Questions <a href="https://www.science.gc.ca/eic/site/063.nsf/eng/h">https://www.science.gc.ca/eic/site/063.nsf/eng/h</a> 97609.html

## Responsible department

Inquiries about this strategy may be directed to:

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For more information, please visit the uOttawa RDM strategy website