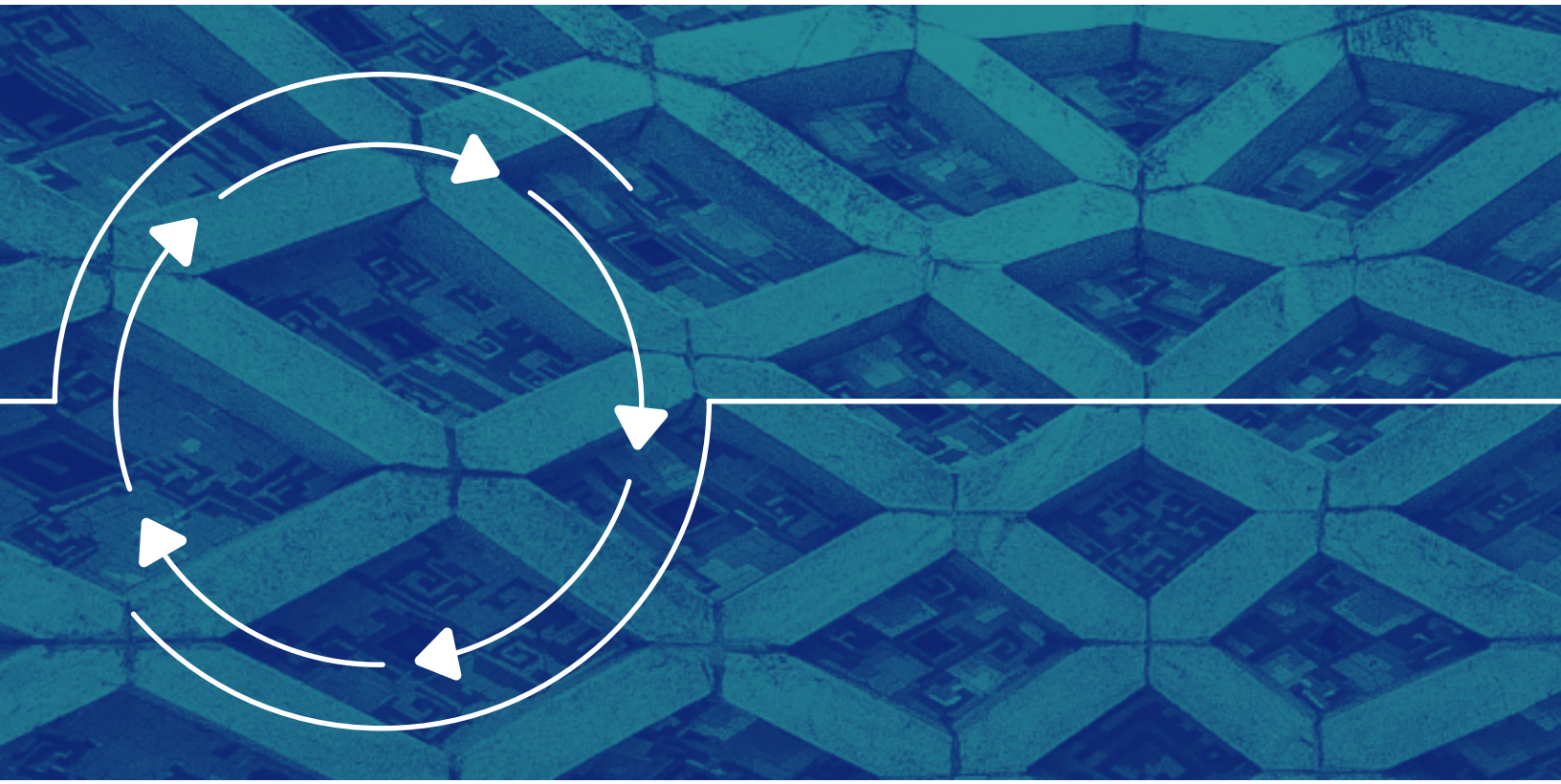
McMaster University Research Data Management (RDM) Institutional Strategy 2023-2025



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This document was written and developed by McMaster's Institutional Strategy Working Group (ISWG) under the governance of the Research Information Technology Committee (RITC). The Strategy is issued by Dr. Karen Mossman, Vice President Research, and its implementation is a joint responsibility of the Office of the Vice President Research, the Office of the Provost and Vice-President (Academic), the Office of the Assistant Vice President and Chief Technology Officer, the University Library, and the Deans of McMaster's Faculties.

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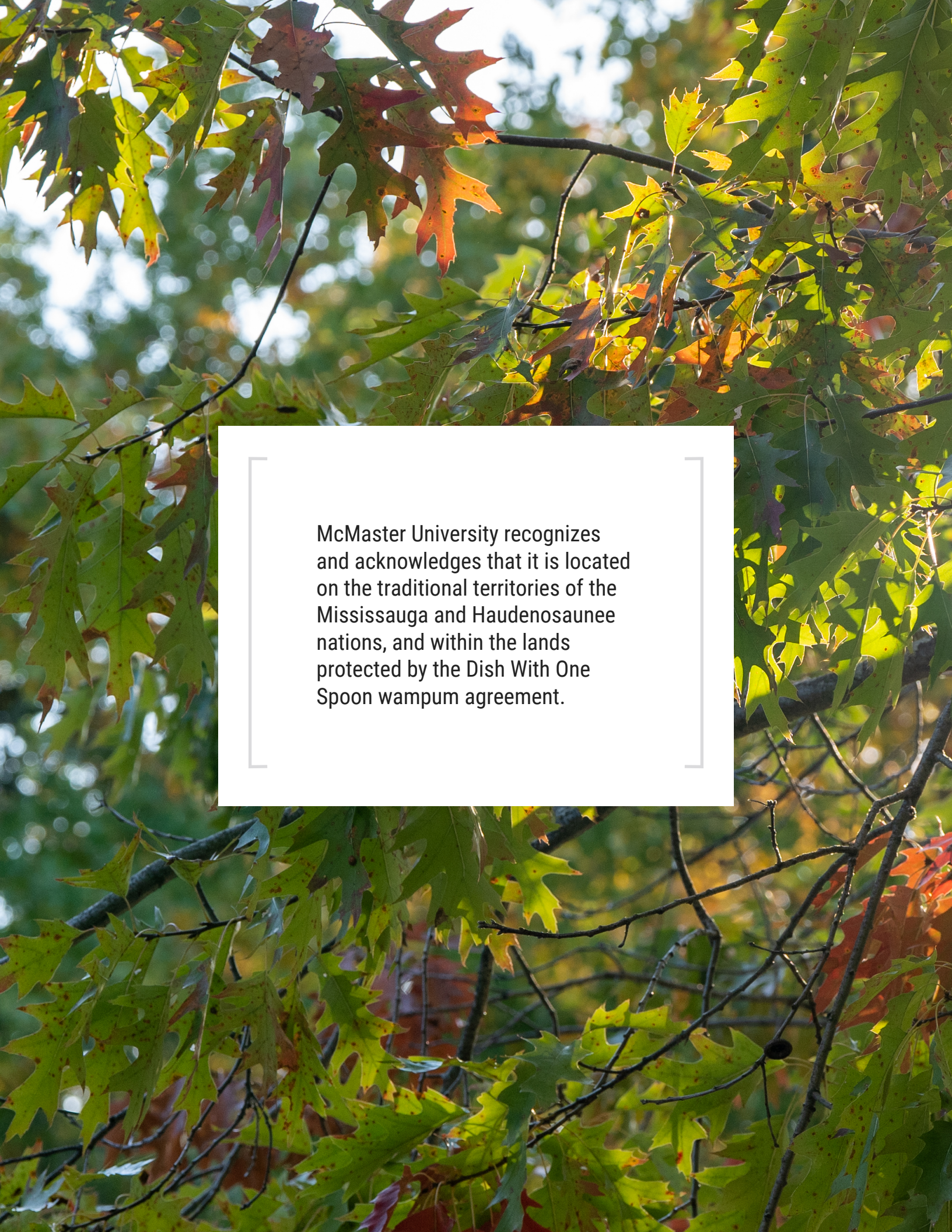
Research Data Management
Institutional Strategy
Working Group

McMaster University



McMaster University recognizes and acknowledges that it is located on the traditional territories of the Mississauga and Haudenosaunee nations, and within the lands protected by the Dish With One Spoon wampum agreement.

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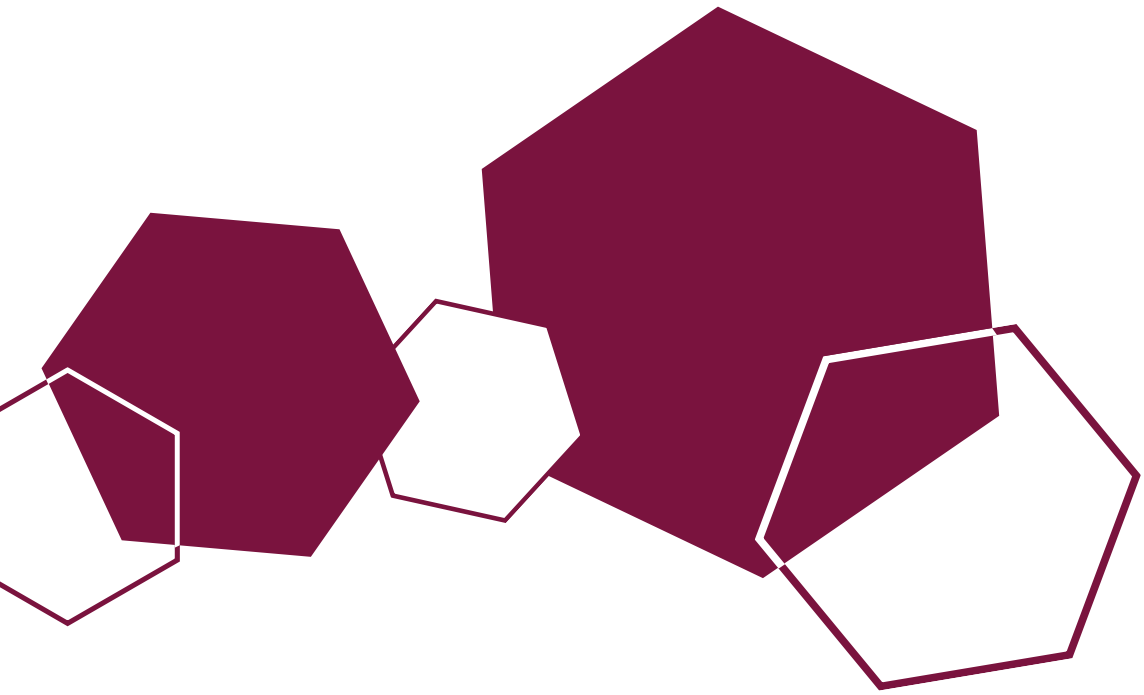

Data are valuable research outputs; their good management enables new and innovative scholarship and supports transparency and reproducibility. McMaster's RDM Strategy supports our researchers in producing the highest quality research, meeting disciplinary and funder expectations, and leading the adoption and development of RDM best practices.

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1. Introduction

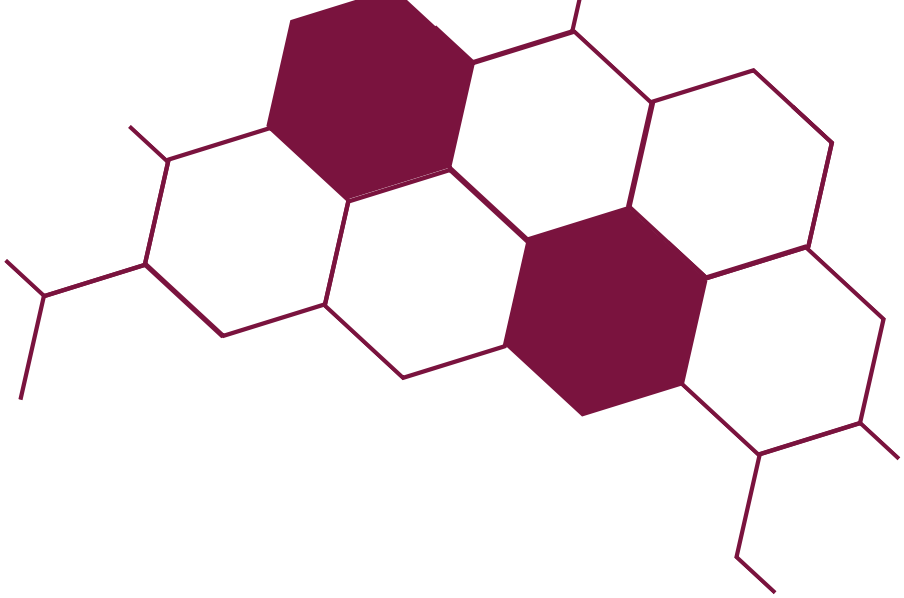
Data are a fundamental element of the research process, as they form the evidentiary basis upon which analyses, syntheses, and creative processes are carried out and knowledge is gained. Research data[1] are used as primary sources to support a wide range of activities, including technical and scientific inquiry, research, scholarship, and creative practice. Good management and stewardship of research data supports research excellence by improving efficiency and integrity, enabling new types of exploration, and supporting research transparency and reproducibility. Research data are an asset to the research enterprise, and their management is important to researchers, institutions, governments, and the public.

Grounded in an extensive research process and informed by broad engagement and consultation with the institution's research stakeholder communities, this Strategy has been co-developed by McMaster's Institutional Strategy Working Group[2], which comprises representatives from the faculties, research and IT support units, research centres and institutes, and affiliated research hospitals.

A note on acronyms: This document uses an assortment of acronyms for institutional groups and RDM-related terms. Where not explained in the text, expansions can be found in the appendices of this document.

What is Research Data Management (RDM)?

Research Data Management is a suite of connected processes and practices applied throughout the research lifecycle—i.e., as data are planned for, collected, organized, documented, stored, preserved, shared, and reused—in support of analysis, research, creative works, and dissemination that benefit society. It is a critical component of the digital research infrastructure (DRI) that supports scholarship and innovation within and beyond McMaster University. Applying good RDM practices improves the efficiency and impact of research, increases research visibility, facilitates collaboration, protects intellectual property, enables reuse and verification of research results, and supports a culture of reproducibility. Developing, learning, and implementing good RDM practices are the shared responsibilities of researchers (whether faculty, students, staff, or community collaborators), their communities of practice, institutions, governments, and funding agencies.



The Tri-Agency RDM Policy and Institutional Strategy development

In March 2021, CIHR[3], NSERC[4], and SSHRC[5] released the Tri-Agency Research Data Management Policy[6] to advance Canadian research excellence and ensure that publicly funded research is supported by sound RDM and data stewardship practices. The policy asserts that "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." Each postsecondary institution eligible to administer Tri-Agency funds is required to develop an institutional RDM Strategy that outlines "how the institution will provide its researchers with an environment that enables and supports RDM." This Strategy document serves as McMaster's submission to the Tri-Agency to satisfy this requirement.

The Tri-Agency Policy also calls for RDM strategies and practices to align with Indigenous self-determination, stating that "data related to research by and with the First Nations, Métis, or Inuit whose traditional and ancestral territories are in Canada must be managed in accordance with data management principles developed and approved by these communities."

In collaboration with McMaster's Indigenous research leadership, this Strategy document addresses the specific responsibilities for research by and with Indigenous communities, while also integrating principles of Indigenous data sovereignty into general RDM practices.

Expanding outwards from satisfying Tri-Agency Policy requirements, this Strategy document is also an opportunity to engage in broad dialogue and synthesize information about RDM needs and challenges across McMaster University.

We aim to develop a cooperative and coordinated approach to supporting research and scholarship—in alignment with institutional priorities and plans, as well as services at a provincial and national level.

This document is not a policy; rather, it is a framework within which future collaboration and development can take place. It will be revisited and revised regularly as requirements, needs, services, and associated initiatives evolve.

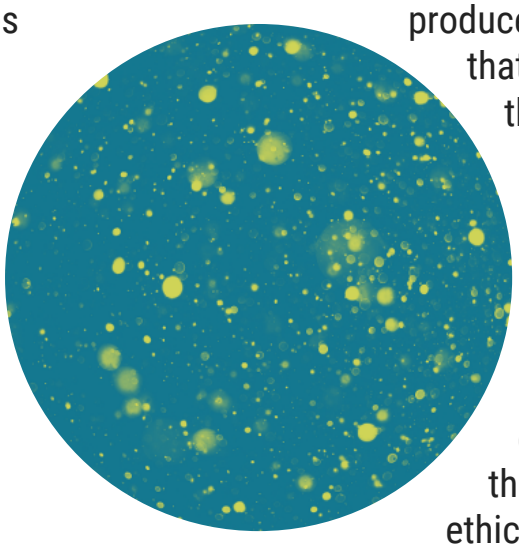
Like the Tri-Agency RDM Policy, our Institutional Strategy is not an open data policy, and recognizes the importance of protecting ethical, legal, and commercial responsibilities and agreements.

2. Vision and principles

McMaster will support our researchers in producing the highest quality research, meeting disciplinary and funder expectations, and leading the adoption of RDM best practices. To do this, McMaster commits to providing a researcher-focused and integrated framework of interconnected and complementary guidelines, infrastructure, policies, practices, supports, technologies, tools, training, and services. Our vision is to enable McMaster researchers to adapt and thrive in a research environment that places increasing emphasis on data, its good management, and its reuse.

Research excellence and integrity

McMaster commits to supporting research excellence by promoting sound RDM and data stewardship practices. Recognizing that implementing best practices in alignment with emerging institutional, funder, and disciplinary expectations requires varying degrees and types of effort, the University strives to provide sufficient resources to meet the needs of its researchers. We recognize data sharing (in alignment with the FAIR principles[7] as an important component of scholarship, and we commit to supporting researchers in making their data as open as possible, but as restricted as necessary. McMaster also reaffirms its commitment to research integrity: To the fullest extent possible, we will foster a culture where research data, the methods and computer code that produced them, and the metadata that describes and connects them are compiled, archived, and sharable to allow research verification and reproduction. According to the Tri-Agency RDM Policy, RDM practices support research excellence by "ensuring that research is performed ethically and makes good use of public funds, experiments and studies are replicable, and research results are as accessible as possible. Research data management is a necessary part of research excellence."



Strategic alignment: Aligned with **Priority 3: Research and Scholarship** and **Priority 5: Operational Excellence** from the McMaster Institutional Priorities and Strategic Framework 2021-2024[8], as well asthe McMaster Strategic Plan for Research 2018-2023[9], and the McMaster Research Integrity Policy[10].

Indigenous data sovereignty

McMaster affirms that Indigenous peoples and communities have the right to control data from and about them. According to the Tri-Agency, "data related to research by and with the First Nations, Métis, and/or Inuit whose traditional and ancestral territories are in Canada must be managed in accordance with data management principles developed and approved by these communities, and on the basis of free, prior and informed consent." McMaster research by and with Indigenous researchers and by and with Indigenous researchers and communities will embody and exemplify Indigenous data management practices that support Indigenous data sovereignty, such as the First Nations Information Governance Centre's OCAP[11] principles, the OCAS[12] principles endorsed by the Manitoba Métis Federation, the principles of Inuit Qaujimajatuqangit[13], ᐃᓄᐃᑦ ᑕᐱᓴᑦ ᑲᓇᑕᒥ (Inuit Tapiriit Kanatami) National Inuit Strategy on Research[14], and Global Indigenous Data Alliance's CARE[15] principles.

Strategic alignment: Aligned with **Priority 4: Engaging Local, National, Indigenous, and Global Communities** from the McMaster Institutional Priorities and Strategic Framework[16] and the **Indigenous Knowledge and Research** Strategic Initiative from the McMaster Strategic Plan for Research 2018-2023[17], as well as the Indigenous Education Council McMaster Indigenous Research Institute's Indigenous Strategic Directions[18] (2021).

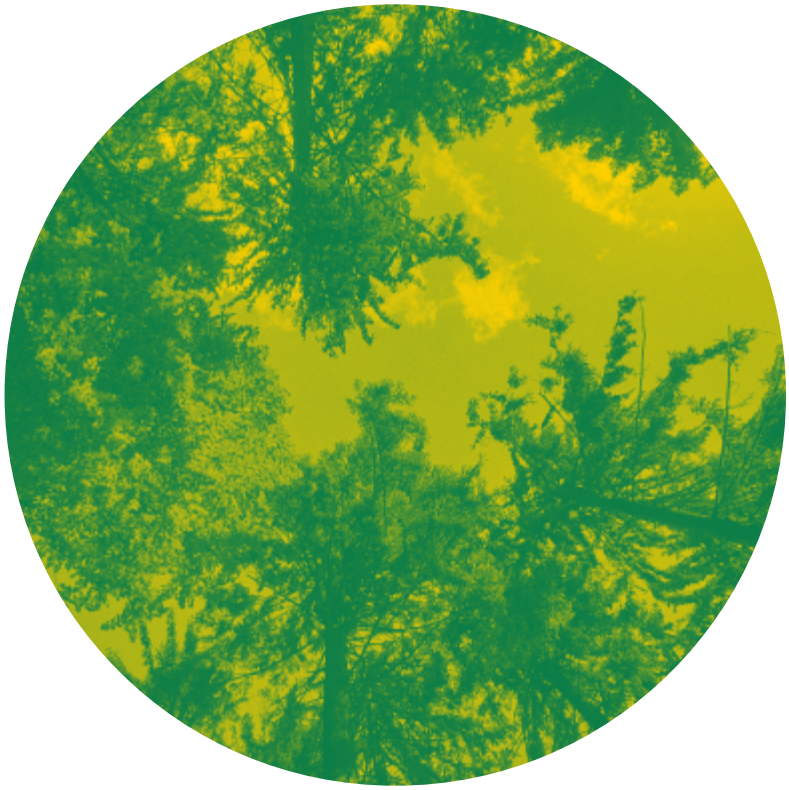
Collaboration and coordination

Developing and implementing RDM best practices requires the collective efforts of the researchers and research groups who apply them, as well as the academic, research, and IT services that provide advice, support, and infrastructure. McMaster is committed to building a culture that promotes effective and lasting partnerships and knowledge sharing between RDM stakeholders across campus, including researchers, administrators, RDM service providers (RDM Services, faculty supports) , IT service providers (UTS, Faculty IT, ISS, RHPCS), Indigenous research leadership (IHLL, MIRI), research administration offices (HRS, MILO, OVPR, ROADS), research ethics boards (MREB, HiREB, AREB), the libraries (HSL, MUL), and other service units that support McMaster's digital research infrastructure.

Strategic alignment: Aligned with **Priority 5: Operational Excellence** from the McMaster Institutional Priorities and Strategic Framework 2021-2024[19].

Researcher-centered support

To meet the emerging and dynamic digital research support needs of McMaster researchers and scholars, a core set of RDM services will be freely available to all members of the institution who require them, regardless of their role or discipline. Service development and delivery will be guided by and responsive to researcher needs and will be done in concert with a suite of digital research infrastructure services being developed at McMaster, as well as provincial and national scales. RDM service providers will coordinate to balance consistency of service delivery with the need to be flexible to meet varying disciplinary expectations and needs. McMaster will ensure that services are appropriate for and available to researchers from less traditionally data-intensive disciplines.



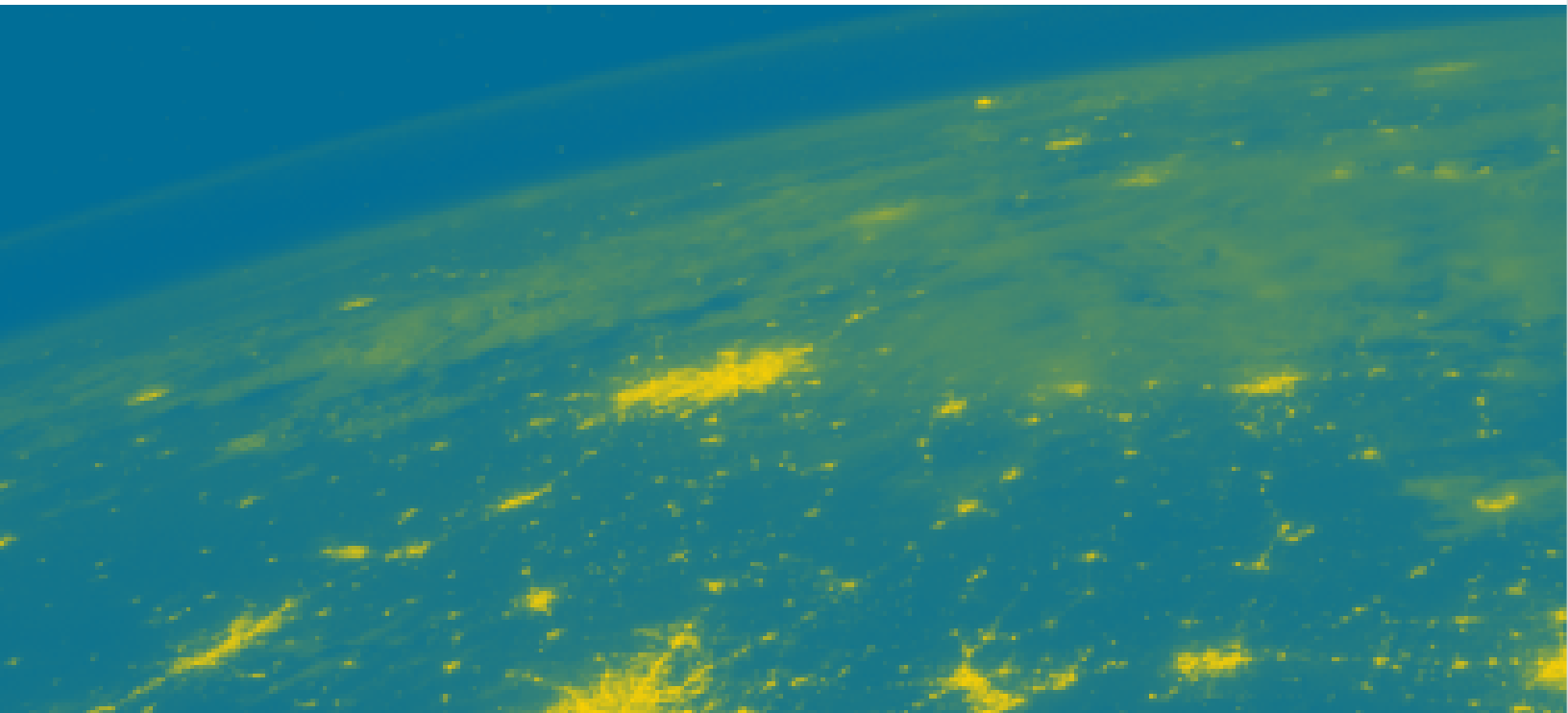
Strategic alignment: Aligned with **Priority 3: Research and Scholarship** and **Priority 5: Operational Excellence** from the McMaster Institutional Priorities and Strategic Framework 2021-2024[20] and the McMaster Strategic Plan for Research 2018-2023[21].

Global research leadership and impact

McMaster is recognized as a global research leader that ranks among the world's top universities in terms of its research intensity and impact. Internationally, federal governments and funders[22] are prioritizing open scholarship, data management planning, and data sharing to support broad reuse of data and enable increased interdisciplinarity and international collaboration. To ensure McMaster remains a global leader and to support international partnerships, we will strive to be an innovator and leader in RDM practices, support, and training.

Our research enterprise will foster a collaborative research data environment that aligns with Tri-Agency expectations[23] of acknowledgement and citation; ethical, legal, and commercial obligations; findability and accessibility; timeliness; and international best practices.

Strategic alignment: Aligned with **Priority 3: Research and Scholarship** from the McMaster Institutional Priorities and Strategic Framework 2021-2024[24] and the McMaster Strategic Plan for Research 2018-2023[25].



Research security

McMaster recognizes the value of research data and the increased threat environment in which research is conducted, which increases risk for all types of research and introduces implications for privacy and ethics, intellectual property, and commercial agreements. McMaster will ensure that researchers have access to the knowledge, infrastructure, and support to protect their research instruments and data from unwarranted access, compromise, and loss. Through partnerships between researchers and groups such as IT service providers, Indigenous research leadership (IHLL, MIRI), research ethics boards (MREB, HiREB, AREB), sensitive data will be managed throughout the research lifecycle to preserve individual and community anonymity, and commercial and intellectual property rights where agreements exist. With support from digital research services and research administration offices (HRS, MILO, OVPR, ROADS), researchers will receive guidance and support to create information security plans that help protect their research infrastructure and data.

Strategic alignment: Aligned with the **Major Research Platforms Strategic Initiative** from the McMaster Strategic Plan for Research 2018-2023[26], McMaster's IT Security Roadmap[27] and IT Strategic Plan[28].

3. Scope and stakeholders

Our Strategy guides the work of the institution in supporting data management best practices and improving McMaster's digital research infrastructure and services; it is relevant to McMaster researchers—whether faculty, students, staff, or community members—and the individuals and units who support these efforts. Strategy development and implementation is focused specifically on RDM activities, which enable, support, and improve research. While RDM is inherently connected to many other data-related research activities (including data access, data analysis, data visualization, etc.), they are considered outside of this Strategy's scope. Also out of scope are activities and assets related to McMaster's administrative data, which are addressed by McMaster's Data Governance policy and processes[29], supported through the Office of the Provost and Vice-President (Academic).

Implementing this Strategy and realizing its goals requires collaboration between McMaster researchers, university leadership, research support and other service units that support McMaster's digital research infrastructure, as well as affiliated research hospitals, funding agencies, research communities, community organizations, and industry partners. Building on the responsibilities articulated in the Tri-Agency Statement of Principles on Digital Data Management[30], each stakeholder group plays an important role in promoting, supporting, and applying best RDM practices.

Roles of university leadership

e.g., Vice President Research[31], Chief Technology Officer[32], University Librarian[33], IT Executive[34], Faculty Deans[35]

- **Data leadership:** Recognizing data as an important research output; incentivizing and fostering excellence in data management; advocating on behalf of McMaster researchers and research support units in RDM conversations and decision-making at the provincial, national, and international levels.
- **Governance:** Leading the development of policies, procedures, strategies, and assessment to guide RDM at the institution; championing the efforts of institutional RDM working groups and committees.
- **Support:** Providing the resources (financial, staffing, infrastructural, cultural, etc.) necessary for sufficient RDM services at McMaster, as identified during Strategy implementation.

Roles of researchers, research organizations, and research communities

e.g., Faculty members, research staff, students, postdoctoral fellows, Research Centres and Institutes[36], Core Research Platforms

- **Data champions:** Promoting and supporting existing and emerging best practices within the McMaster research community and sharing discipline-specific RDM practices with colleagues.
- **Research excellence:** Following institutional and funding agency RDM requirements and incorporating data management best practices into their research.
- **Engagement:** Providing feedback related to needs, disciplinary standards, requirements, and practices to inform our evolving Institutional RDM Strategy and the activities it generates.

Roles of research support staff

e.g., Indigenous research leadership (IHLL[37], MIRI[38]), **McMaster libraries** (HSL[39], MUL[40]), **RDM Services, Research administration offices** (HRS[41], MILO[42], OVPR[43], ROADS[44]), **Faculty research offices, Research ethics boards** (AREB[45], HiREB[46], MREB[47], **IT units** (Faculty IT, RHPCS[48], UTS[49]), University Secretariat[50], **etc.**

- **Coordination of services:** Participating in knowledge-sharing activities to improve coordination of services, training activities, and resource development.
- **Internal knowledge transfer:** Collaborating to develop and deliver user-centered services and infrastructure that support this Strategy and meet the evolving data management needs of researchers.
- **Service innovation:** Staying abreast of regional and national RDM initiatives, services, and resources with an intention of delivering complementary offerings and growing support models to share with other data services.

For a fuller picture of McMaster's stakeholder network, please see Appendix 4 in our Current State Document[51].

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4. Goals and objectives

To inform this Strategy, McMaster RDM Services (on behalf of the ISWG) conducted an in-depth data collection and consultation process involving researchers, research service providers, and other stakeholders on campus. The consultation process involved four major projects: an environmental scan of RDM-related services provided by McMaster, an online survey of researchers' RDM needs, a series of focus groups, and a maturity assessment of RDM services.

Together these efforts gathered feedback from over 250 members of the McMaster's research community, which has been compiled into two summary documents: The Current State of RDM at McMaster (2022)[52] and A Vision for RDM at McMaster (2022)[53].

The information gathered throughout this process has informed the initial goals and objectives of McMaster's RDM Strategy.

To ensure this Strategy is co-developed and responsive to researchers, leadership, and research support units, these recommendations represent a starting point for supporting RDM at McMaster. An RDM Working Group will lead more formal and collaborative operational activity development during the first year of Strategy implementation (see Implementation process and timelines, section 7).

Goals and objectives have been grouped into two types: those related to broader organizational frameworks that support RDM and those pertaining to more specific RDM practices, tools, and infrastructure.

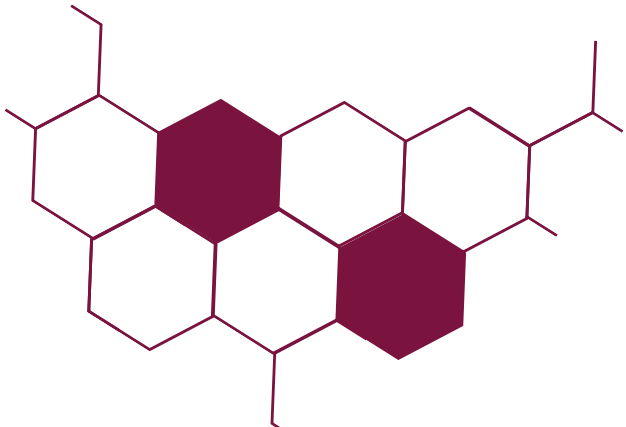
Organizational frameworks

Governance and policy

- Develop and implement a governance framework to oversee the development, provision, and assessment of RDM-supporting infrastructure and services.
- Develop an easy-to-understand McMaster RDM Policy that aligns with the evolving digital research infrastructure landscape, funder and journal requirements, Indigenous data sovereignty principles, data governance practices, and data privacy legislation.
- Lead conversations examining the intersections of RDM with inclusion, diversity, equity, and accessibility principles; make recommendations and implement interventions that reinforce equitable RDM practices.
- Engage with the McMaster research community regularly to ensure broad stakeholder input and representation in decisions on governance, policy development, and service and infrastructure provision.

Funding and support

- Expand RDM services to provide free baseline services, training, and software that is accessible by researchers across all disciplines and roles. Ensure RDM resources are available to support unfunded research and researchers in all fields.
- Identify additional resources required to support RDM as part of operational planning and consider budget proposals This could include additional staffing, grants for active data management support, Indigenous research training and review, data storage, IT security solutions, research computing, and research software.



Culture, community, and collaboration

- Implement an outreach and engagement program to raise awareness of services, build community, and facilitate information and expertise sharing between researchers and service providers.
- Build a culture of good RDM practices through increased communication, training, workshops, and events.
- Build an inclusive community of practice and provide venues/support for campus-wide resources and knowledge sharing around data management principles (technical, operational, organizational, ethical, social, etc.).
- Foster a culture of accountability and responsibility for Indigenous data sovereignty.
- Identify and support academic “data champions” to help promote RDM principles and best practices in academic units and disciplines.
- Develop incentives and provide recognition and support for researchers who undertake initiatives that advance RDM practices.

Services and training

- Build out central services, infrastructure, and tools that are scalable and responsive to the needs of individual researchers and groups. Ensure service offerings are complementary to and coordinated with those offered at provincial/regional and national levels.
- Ensure that researchers have the training, tools, and resources they need to access national and international research funding.
- Augment existing initiatives into a formalized open McMaster-wide RDM training program for all researchers (students, staff, faculty) across a range of levels from introductory to specialized. This could encompass a credentialed webinar series, modules and classroom presentations for existing undergraduate and graduate courses, and an asynchronous baseline RDM training course. Where possible, training resources should be made available to stakeholders such as hospital partners, collaborators in other countries, and non-academic community partners.
- Expand expertise of research support staff to ensure they are equipped to guide researchers and make informed recommendations.
- RDM Services will collaborate with Indigenous research leadership to facilitate RDM workshops for Indigenous communities who work with McMaster researchers. Budget proposals should include development of Indigenous research training in expanded RDM services.

RDM practices, tools, and infrastructure

Data management planning

- Provide researchers with the necessary resources, guidelines, training, and support to develop high-quality Data Management Plans (DMPs) that meet grant application and disciplinary requirements and facilitate application of best practices throughout their studies. Where possible, develop these resources in collaboration with other institutions and organizations, including the Tri-Agencies, to improve access to resources for all Canadian researchers.
- Develop resources and rubrics for evaluating DMPs for researchers and research support staff.
- Incentivize and promote the use of DMPs as a critical part of the research planning process.
- Build integrations between DMP tools and university digital research infrastructure such as REB applications, internal grant forms, other research compliance processes, and computing resource allocation requests. Support and promote machine-actionable DMPs that enable automated integrations between DMPs and other systems.

Data storage

- Ensure researchers have access to data storage and transfer solutions (local, networked, cloud), which integrate with tools that provide support through the research data lifecycle (planning, analysis, deposit and sharing, archival and preservation). These tools may include collaboration and productivity software, secure file transfer, sensitive data management, and auditing capacity.
- Provide guidance and resources on data storage best practices to help researchers discover, assess, and choose between the storage options available to them within and beyond McMaster.
- Support RDM and IT service providers in addressing a demand for affordable large file management for researchers whose needs aren't currently met by standard resource allocations for compute and storage, allowing for easy collaboration across departments.

Indigenous data

- Develop processes to foster Indigenous data sovereignty through systems that reinforce responsibility, reciprocity, and accountability and weave it into our entire research structure.
- Support the work and capacity of the McMaster Indigenous Research Institute (MIRI), Indigenous Health Learning Lodge (IHLL), McMaster's Indigenous researchers, and Indigenous research partners.
- Support collaboration between Indigenous research leadership and research support units to establish roles and funding for Indigenous RDM support staff who support RDM Indigenous communities, researchers, and research projects.
- Sponsor access to external Indigenous data sovereignty training and resources for researchers, support staff, service providers, and Indigenous research partners.
- Support an Indigenous Data Sovereignty Community of Practice with other institutions to co-develop resources, guidance, and approaches and alleviate workload of Indigenous researchers and research support staff.
- Develop solutions/guidance to meet diverse scenarios for data access, ownership, and stewardship.
- Support Indigenous research leadership and others to explore options for data storage and repositories that follow Indigenous data sovereignty principles.

Data ethics and sensitive data

- Create resources, training, and support for ethical data management, including clear and consistent guidance for researchers, REBs, and IT service providers for sensitive data storage and management (e.g., de-identification, deposit, controlled access, secondary data analysis, undergraduate research) that are easy to find and understand.
- Develop resources, examples, and guidance to help researchers ensure their RDM practices meet ethics approval. RDM Services, REBs, Indigenous research leadership, research administration offices, IT units, and the OVPR will collaborate to align research ethics reviews with McMaster policies on data management and governance.
- Expand the Research Data Storage Finder[54] to include comprehensive documentation for institutionally managed secure storage and deposit solutions, providing information about data privacy, security, and data hosting and backup locations.

Data deposit, sharing, and curation

- Develop resources, training, and infrastructure for researchers sharing data, including repository guidance, metadata creation, replication packages, creating and using PIDs (Persistent Identifiers) such as ORCiDs and DOIs, and creating FAIR[55] (Findable, Accessible, Interoperable, and Reusable) datasets.
- Coordinate REBs, research administration offices, Indigenous research leadership, and digital research infrastructure services to ensure researchers with sensitive data are supported and guided in sharing data securely, in a timely manner, and in compliance with legal, commercial, and ethical requirements.
- Expand the definition of Accessibility ('A') in FAIR by developing and disseminating guidance for creating, sharing, and depositing accessible datasets, in alignment with the Accessibility for Ontarians with Disabilities Act (AODA) and Web Content Accessibility Guidelines (WCAG) guidelines. Ensure that platforms for data sharing and collaboration are accessible and usable for all users.
- Facilitate conversations and partnerships between REBs, partner hospitals, and other stakeholders to address researchers' need for sharing and archiving solutions for sensitive data (including Personal Health Information) via initiatives like the FRDR Sensitive Data Project[56].

Data documentation, management, and access

- Promote and exhibit the many research datasets that are available for use by McMaster researchers, including special recognition for McMaster-created datasets and datasets published in McMaster Dataverse.
- Develop template data sharing and data transfer agreements to cover a range of common data sharing use cases.
- Investigate a McMaster-licensed Electronic Lab Notebook solution and provide training for electronic lab notebooks and other software to capture and store metadata during data collection and analyses.
- Ensure that researchers have access to software and tools for data collection, analysis, management, description, and deposit that are compliant with data security, licensing, privacy, ethics, and accessibility requirements; as well as evolving disciplinary RDM practices.

Data security

- Facilitate collaboration between IT services, Indigenous research leadership, research administration offices, REBs, University Secretariat, and RDM Services to co-develop guidance and services for researchers on protecting research data/digital assets and developing Information Security Plans.
- Build data security training modules for researchers and service providers that align with best practices and meet funder and institutional reporting requirements. Integrate data security training into larger RDM training initiatives.
- Develop robust processes to validate the implementation and effectiveness of data security controls for systems, practices, and procedures.
- Maintain infrastructure for identity management and verification, as well as mediated access to research data.

5. Institutional support

McMaster is committed to supporting the implementation and maturation of this Strategy, concordant with development of broader DRI support and services. McMaster made initial investments into RDM support through the establishment of Research Data Management Services[57] in Fall 2020 and recognizes that the extant and evolving needs of researchers will require additional investments into staffing, infrastructure, training, communications, and services across the institution.

The stakeholder groups identified in scope and stakeholders (section 3) will work together through RDM governance processes to develop an action plan to implement the Strategy's goals and objectives. This will also include co-developing a detailed roles and responsibilities document for each stakeholder group as it intersects with RDM.

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6. Governance and assessment

This document was written and developed by McMaster's Institutional Strategy Working Group (ISWG) under the governance of the institution's Research Information Technology Committee (RITC). The Strategy is issued by Dr. Karen Mossman, Vice President Research, the Office of the Provost and Vice President (Academic), the Office of the Assistant Vice President and Chief Technology Officer, the University Library, and the Deans of McMaster's Faculties.

Further development and work toward the Strategy's goals and objectives will be carried out by the institution's **RDM Strategy Implementation Committee**, which shall be created as a successor to the ISWG in early 2023. This group will meet regularly throughout the initial commitment period of three years to develop and implement an RDM action plan that aligns with the principles outlined in this document and expands upon the stated goals and objectives (section 4). Under the guidance of the RITC, this group will also review and revise the Strategy document on an annual basis by assessing and documenting progress, identifying gaps and resource needs, and preparing reports for governing groups and co-sponsors.

In developing this RDM Strategy, the ISWG carried out an evaluation of policy, procedure, infrastructure, services, and funding landscape using the Research Infrastructure Self Evaluation (RISE)[58] and the Maturity Assessment Model in Canada (MAMIC)[59] frameworks. Because the MAMIC model provides a specific, contextually relevant, and standard tool for evaluating the maturity and scale of RDM supports within Canadian institutions, it will be used as the basis for annual evaluations of RDM services and support at McMaster by the **RDM Strategy Implementation Committee**. Within the first year of implementation, the Committee will develop key metrics for annual assessment. A full review of the Strategy will be initiated in the third year of implementation.

7. Implementation process and timeline

This Strategy has undergone multiple rounds of review and revision by McMaster's research community in 2022-23 and now guides our collective work over the subsequent three years, with each year focused on a different primary objective. Specific goals, objectives, and assessment metrics for the implementation period will be co-developed by the **RDM Strategy Implementation Committee** early in Year 1. The outcomes of this activity will inform further governance, infrastructure, and service development work during Years 1 through 3. A formal, comprehensive assessment and review of the Strategy and its initiatives will be carried out in Year 3; results will be combined with feedback obtained through broad re-engagement with McMaster stakeholders to develop a new Strategy document for 2026 and beyond. While the primary objective might shift from year to year, governance, services, infrastructure, and communities of practice to support RDM outlined in this Strategy will be actively developed and practiced from inception to Year 3.

Milestones and critical activities

Pre-initiation

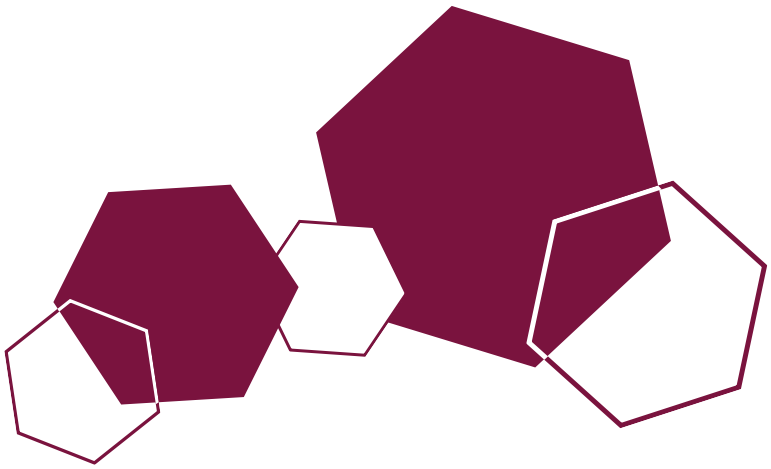
DATE	ACTIVITY
Aug-Sep, 2022	Public release and feedback for Current State and Ideal State documents
Aug-Sep, 2022	Strategy Draft – Working Group development and review
Sep, 2022	Strategy Draft – RITC and OVPR review
Oct, 2022	Public release and feedback
Oct-Dec, 2022	Campus engagement sessions (focus groups, faculty town hall sessions)
Jan, 2023	Strategy Draft – internal review
Feb, 2023	Strategy final review (RITC, VPR)
Mar, 2023	Publication of Strategy

Year 1

DATE	ACTIVITY
Q2, 2023	Assembly of RDM Strategy Implementation Committee
Q2-Q3, 2023	Co-development of goals, objectives, and assessment metrics
Q4, 2023	Campus engagement and needs evaluation (integrated with the Digital Research Commons Pilot, DRCP60)
Q1, 2024	Annual assessment and report to RITC
Q1, 2024	Campus update

Year 2

DATE	ACTIVITY
Q4, 2024	Campus engagement and needs evaluation (integrated with the DRCP)
Q1, 2025	Annual assessment and report to RITC
Q1, 2025	Campus update



Year 3

DATE	ACTIVITY
Q2, 2025	Initiation of Strategy review
Q2-Q3, 2025	Campus consultation
Q3-Q4, 2025	New RDM Strategy development and community engagement (integrated with the DRCP)
Q1, 2026	Annual assessment and report to RITC
Q1, 2024	New RDM Strategy released

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8. Integration with relevant resources, strategies, and policies

This RDM Strategy document is intended to connect with and augment existing resources, strategies, and policies that exist at the institutional, provincial, national, and international levels. Its outcomes will also integrate with and reinforce other existing institutional activities, including Information Security for Researchers, and other strategies relating to IT Security, Research Software Development, Advanced Research Computing, etc., as well as the Digital Research Commons Pilot (DRCP)[61].

Relevant internal resources

- Data and Information Classification Policy for non-research data - https://u.mcmaster.ca/datainfoclass (PDF) (2022), Office of the AVP & CTO
- Data Deposit Guidelines for McMaster Dataverse - https://u.mcmaster.ca/datadeposit (PDF) (2021), RDM Services
- McMaster Information Security Policy - https://u.mcmaster.ca/infosecpol (2016), Office of the AVP & CTO
- Indigenous Strategic Directions - https://u.mcmaster.ca/ind-strategic (PDF) (2021), Indigenous Education Council McMaster Indigenous Research Institute (MIRI)
- IT Security Roadmap - https://u.mcmaster.ca/it-sec-roadmap & IT Security Strategy for Researchers (2021), Office of the AVP & CTO
- McMaster Data and Information Classification Policy Matrix for non-research data - https://u.mcmaster.ca/infoclass (PDF) (2022), UTS
- McMaster Document Storage Guidelines for non-research data - https://u.mcmaster.ca/docstorage (PDF) (2020), UTS
- McMaster Institutional Priorities and Strategic Framework 2021-2024 - https://u.mcmaster.ca/priorities (PDF) 2021-2024, Office of the President
- McMaster University Library Strategic Plan - https://u.mcmaster.ca/stategic-plan 2020-2023 (2020), McMaster University Library
- MREB Data Storage & Security Guide - https://u.mcmaster.ca/mreb (2020), McMaster Research Ethics Board
- Policy for the Handling of Personal Health Information - https://u.mcmaster.ca/personal-health (PDF) (2015), University Privacy Officer
- Policy for the Handling of Personal Information - https://u.mcmaster.ca/personal-info (PDF) (2015), University Privacy Officer
- Policy on Research Ethics at McMaster University - https://u.mcmaster.ca/res-ethics (PDF) (1993), VP Research
- Policy on Research Involving Human Participants - https://u.mcmaster.ca/policy-human (PDF) (2002), Office of the President

- Research Integrity Policy - https://u.mcmaster.ca/research-int (PDF) (2017), VP Research
- Strategic Plan for Research 2018-2023 - https://u.mcmaster.ca/strategicplan (2018), Office of the VP Research
- University Identity and Access – Password Standard - https://u.mcmaster.ca/passwrd-standard (PDF) (2019), Chief Information Officer

Relevant external resources

- Bill C-15: An Act respecting the United Nations Declaration on the Rights of Indigenous Peoples - https://u.mcmaster.ca/bill-c15 (2020), Government of Canada
- CARE Principles for Indigenous Data Governance - https://u.mcmaster.ca/care-principles (2020), Global Indigenous Data Alliance
- Freedom of Information and Protection of Privacy Act (FIPPA) - https://u.mcmaster.ca/fippa (2006), Government of Ontario
- Guidance on Depositing Existing Data in Public Repositories - https://u.mcmaster.ca/depositing-data (2021), Government of Canada
- Indigenous Health Primer - https://u.mcmaster.ca/indigenous-health (PDF) (2019)
- Manitoba Network Environment for Indigenous Health Research - Webinars - https://u.mcmaster.ca/mbneihr-webinars (ongoing)
- National Inuit Strategy on Research - https://u.mcmaster.ca/inuit-strategy (PDF) (2018), ᐃᓄᐃᑦ ᑕᐱᓴᑦ ᑲᓇᑕᒥ (Inuit Tapiriit Kanatami)
- National Security Guidelines for Research Partnerships - https://u.mcmaster.ca/secguidelines-researchpartners (2021), Government of Canada
- Ontario Research Fund: Research Infrastructure - McMaster Training - https://u.mcmaster.ca/research-infra
- Principles of Ethical Métis Research - https://u.mcmaster.ca/ethical-metis-research (PDF) (2010), Métis Centre @ NAHO

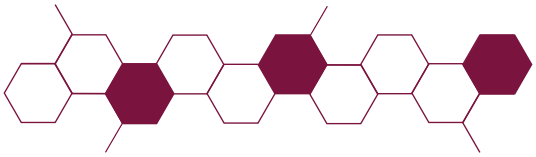
- The FAIR Guiding Principles for scientific data management and stewardship - https://u.mcmaster.ca/fair-guiding (2016), Wilkinson, Dumontier, Aalbersberg et al. Sci Data
- SSHRC Research Data Archiving Policy - https://u.mcmaster.ca/sshrc-dataarchiving (1990), Government of Canada
- The First Nations Principles of OCAP - https://fnigc.ca/ocap-training/ (1998), First Nations Information Governance Centre
- Tri-Agency Research Data Management Policy - https://u.mcmaster.ca/triagency-rdm (2021), Government of Canada
- Tri-Agency Statement of Principles on Digital Data Management - https://u.mcmaster.ca/triagency-ddm (2016), Government of Canada
- Tri-Agency Framework: Responsible Conduct of Research - https://u.mcmaster.ca/triagency-resp-conduct (2021), Government of Canada
- Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans – TCPS 2 - https://u.mcmaster.ca/tricouncil-ethicalhumres (2018), Government of Canada

Appendices

Glossary

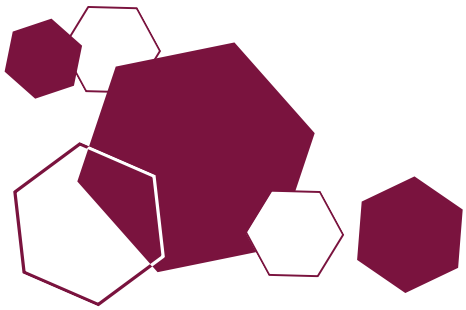
This glossary builds on those of Queen's University's RDM Institutional Strategy and McGill University's RDM Strategy.

Archiving - https://u.mcmaster.ca/define-archiving: "a curation activity that ensures that data are properly selected, stored, and can be accessed, and for which logical and physical integrity are maintained over time, including security and authenticity."
RDM Terminology Working Group. (2021). Research Data Management Terminology. CODATA. Retrieved June 30, 2022.



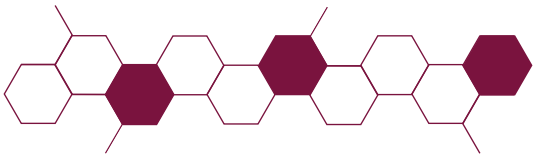
Data - https://u.mcmaster.ca/define-data: "facts, measurements, recordings, records, or observations collected by researchers and others, with a minimum of contextual interpretation. Data may be in any format or medium taking the form of text, numbers, symbols, images, films, video, sound recordings, 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." Innovation, Science and Economic Development Canada. (2021). Frequently Asked Questions - Tri-Agency Research Data Management Policy—Science.gc.ca. Government of Canada. Retrieved June 30, 2022. Tri-Agency Definition adapted from CODATA.

Data Deposit - https://u.mcmaster.ca/define-datadeposit: “when the research data collected as part of a research project are transferred to a research data repository. The repository should have easily accessible policies describing deposit and user licenses, access control, preservation procedures, storage and backup practices, and sustainability and succession plans. The deposit of research data into appropriate repositories supports ongoing data-retention and, where appropriate, access to the data. Ideally, data deposits will include accompanying documentation, source code, software, metadata, and any supplementary materials that provide additional information about the data, including the context in which it was collected and used to inform the research project. This additional information facilitates curation, discoverability, accessibility and reuse of the data.”
Innovation, Science and Economic Development Canada. (2021). Frequently Asked Questions - Tri-Agency Research Data Management Policy—Science.gc.ca. Government of Canada. Retrieved June 30, 2022.



Data Management Plan (DMP) - https://u.mcmaster.ca/define-dmp: "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. DMPs should be modified throughout the course of a research project to reflect changes in project design, methods, or other considerations. DMPs guide researchers in articulating their plans for managing data; they do not necessarily compel researchers to manage data differently.”
Innovation, Science and Economic Development Canada. (2021). Frequently Asked Questions - Tri-Agency Research Data Management Policy—Science.gc.ca. Government of Canada. Retrieved June 30, 2022.

Data Stewardship - https://u.mcmaster.ca/define-datastewardship: “ensuring effective control and use of data assets and can include creating and managing metadata, applying standards, managing data quality and integrity, and additional data governance activities related to data curation. It also may include creating educational materials, policies, and guidelines around data at an institution.”
National Library of Medicine. (n.d.) Data Stewardship. Network of the National Library of Medicine. Retrieved June 30, 2022.



Digital Research Infrastructure - https://u.mcmaster.ca/define-dataresinfra: The suite of interrelated equipment, computer hardware and software, and data collections required to carry out scientific enquiry, research, scholarship, or creative practice, as well as the complementary expertise, services, and resources that enable their sharing, adoption, use, and reuse. The four key elements of DRI identified by ISED are: Data Management, Digital Network for Research, Research Software, and Advanced Research Computing.
Adapted from Innovation, Science and Economic Development Canada. (2019). Digital Research Infrastructure Contribution Program: Program guide. Government of Canada. Retrieved September 9, 2022.

Indigenous Research - https://u.mcmaster.ca/define-indigresearch: “research in any field or discipline that is conducted by, grounded in or engaged with First Nations, Inuit, Métis or other Indigenous nations, communities, societies or individuals, and their wisdom, cultures, experiences or knowledge systems, as expressed in their dynamic forms, past and present.”
Social Sciences and Humanities Research Council. (2021, May 4). Definitions of Terms. Government of Canada. Retrieved June 30, 2022.

Industry Partner Organization - https://u.mcmaster.ca/define-indpartorg: “A for-profit organization, or an organization that assists, supports, connects and/or represents the common interests of a group of for-profit, incorporated organizations, such as an industry association or a formal or informal consortium.”
Social Sciences and Humanities Research Council. (2021, May 4). Definitions of Terms. Government of Canada. Retrieved June 30, 2022.

Intellectual Property - https://u.mcmaster.ca/define-ip (PDF): “databases, audio-visual material, electronic circuitry, biotechnology and genetic engineering products, computer software recorded in any format, inventions, discoveries and all other products of research (which inventions, discoveries or other products are capable of protection pursuant to any law of Canada or any other country or which may be otherwise licensable) where any of the foregoing are created, whether by discovery, invention or otherwise by an IP Creator as hereinafter defined.”
University Secretariat. (2018). Joint Intellectual Property Policy. McMaster University. Retrieved June 30, 2022.

Persistent Unique Identifier (PID) - https://u.mcmaster.ca/define-pid: “a string of letters and numbers used to distinguish between and locate different objects, people, or concepts. A well-known example of a PID is a Digital Object Identifier (DOI) which is used to locate specific digital objects, frequently a journal article. Another example is ORCiD, a PID for researchers.”
National Library of Medicine. (n.d.) Persistent Unique Identifier. Network of the National Library of Medicine. Retrieved June 30, 2022.

Preservation - https://u.mcmaster.ca/define-preservation: “An activity within archiving in which specific items of data are maintained over time so that they can still be accessed and understood through changes in technology.”
RDM Terminology Working Group. (2021). Research Data Management Terminology. CODATA. Retrieved June 30, 2022.

Researcher - https://u.mcmaster.ca/research-int (PDF): “[someone] involved in an undertaking to extend knowledge through a disciplined inquiry or systematic investigation.”
University Secretariat. (2017). Research Integrity Policy. McMaster University. Retrieved June 30, 2022.

Research Data - https://u.mcmaster.ca/define-resdata: “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 may be experimental data, observational data, operational data, third party data, public sector data, monitoring data, processed data, or repurposed data. What is considered relevant research data is often highly contextual, and determining what counts as such should be guided by disciplinary norms.”
Innovation, Science and Economic Development Canada. (2021). Frequently Asked Questions - Tri-Agency Research Data Management Policy. Government of Canada. Retrieved June 30, 2022.

Research Data Management - https://u.mcmaster.ca/define-datamanagement: “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. (2021, May 4). Definitions of Terms. Government of Canada. Retrieved June 30, 2022.

Research Institution - https://u.mcmaster.ca/define-resinstitution: “An institution with a research mandate and qualified research staff and/or research facilities.”
Social Sciences and Humanities Research Council. (2021, May 4). Definitions of Terms. Government of Canada. Retrieved June 30, 2022.

Institutional acronyms

ADR	Associate Dean, Research
AREB	Animal Research Ethics Board
AVP & CTO	Assistant Vice President & Chief Technology Officer
DRCP	Digital Research Commons Pilot
HiREB	Hamilton Integrated Research Ethics Board
HRS	Health Research Services
HSL	Health Sciences Library
IHLL	Indigenous Health Learning Lodge
ISS	Information Security Services
ISWG	McMaster RDM Institutional Strategy Working Group
MILO	McMaster Industry Liaison Office
MIRI	McMaster Indigenous Research Institute
MREB	McMaster Research Ethics Board
MUL	McMaster University Library
OVPR	Office of the Vice President Research
RHPCS	Research & High-Performance Computing Support
RITC	Research Information Technology Committee
ROADS	Research Office for Administration, Development & Support
UL	University Librarian
UTS	University Technology Services
VPR	Vice President Research

RDM-related acronyms

AODA	Accessibility for Ontarians with Disabilities Act
CARE	Collective benefit, Authority to control, Responsibility, Ethics
CIHR	Canadian Institutes of Health Research
DOI	Digital Object Identifier
DMP	Data Management Plan
DRI	Digital Research Infrastructure
FAIR	Findable, Accessible, Interoperable, Reusable
ISED	Innovation, Science and Economic Development Canada
MAMIC	Maturity Assessment Model in Canada
NSERC	Natural Sciences and Engineering Research Council of Canada
OCAP	Ownership, Control, Access, and Possession
OCAS	Ownership, Control, Access, and Stewardship
ORCID	Open Researcher and Contributor Identifier
PID	Persistent Identifier
REB	Research Ethics Board
RISE	Research Infrastructure Self Evaluation
SSHRC	Social Sciences and Humanities Research Council
WCAG	Web Content Accessibility Guidelines

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- Pg. 9 | Susan Blight, We Will Be Heard (2018), uv plant light, vinyl lettering, wood plinth, potted bearberry plant. In enawendewin/relationships curated by William Kingfisher, McMaster Museum of Art. Photo by Georgia Kirkos, McMaster University, Hamilton, Ontario, Canada.
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