NAIT Research Data Management Strategy

Background and Context

The tri-council research agencies (CIHR, NSERC, SSHRC) have developed a [data management policy](#), requiring institutions to develop their own research data management (RDM) strategies, policies, procedures and plans. The Tri-Agencies consider research data management a necessary part of research excellence. In addition, it is important to demonstrate responsible stewardship of research data collected using public funds, and where possible, made available for use and reuse by others.

NAIT is committed to supporting researchers' ongoing development of good research data management practices and skills. Our research data management approach are guided and informed by Tri-Agencies policies, including:

- [Tri-Agency Research Data Management Policy](#)
- [Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans](#)
- [FAIR (Findable, Accessible, Interoperable, and Reuseable) guiding principles](#)

And principles related to Indigenous data sovereignty such as:

- [The First Nations Principles of OCAP®](#)
- [The CARE Principles for Indigenous Data Governance](#)

This institutional research data management strategy is a living document and reflects a first draft of the path forward for RDM at NAIT. The strategy has been developed with a cross-functional working group including members from NAIT Applied Research, Research Ethics Board, Information and Technology Services, General Counsel Services, Library, and academic units. Initial assessments of NAIT's current state of research data management were conducted using the Digital Research Alliance of Canada's [RDM Maturity Assessment. Model in Canada (MAMIC)](#) and [institutional strategy development](#) templates.

Additional consultation on the institutional strategy will continue with stakeholders and feedback will be sought as the strategy is implemented and as policies, procedures, and training are developed. We anticipate that the initial implementation of the following objectives will take place over the next 18-24 months.

What are Research Data and Research Data Management

The Tri-Agencies provide the following definitions for RDM and research data:

> **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 data. Data management should be practiced over the entire lifecycle of the data, including planning the investigation,

conducting the research, backing up data as it is created and used, disseminating data, and preserving data for the long term after the research investigation has concluded.

Research data: 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, observational, operational, third-party, public sector, monitoring, processed, or repurposed. What is considered relevant research data is often highly contextual and determining what counts as such should be guided by disciplinary norms.

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 and can include 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.

NAIT's Data Governance Policy (IT 2.0) currently excludes research data from its scope, however, it does provide the following institutional definitions:

Data Management: Control over the creation, acquisition, confidentiality, integrity, accessibility, definition, quality, storage, maintenance, sharing, and strategic value of data.

Data: Information in a specific representation, usually as a sequence of symbols that have meaning.

Institutional data: Data created, acquired, stored, maintained, or transmitted by or for the institution to conduct business in any form, whether structured, unstructured, detailed, or aggregated.

Implementation

The draft version of NAIT's RDM strategy will be posted on the [Research Ethics Board website](#) on March 1, 2023 with ongoing consultation with stakeholders throughout the spring and summer of 2023. The development of policies, procedures, and practices to meet the objectives within this strategy will occur over a period of 18 – 24 months following the posting of this strategy document.

Resourcing for RDM at NAIT will have several touchpoints within the institution, however, work will require consultation with Applied Research, Research Ethics Board, Data Governance, and the library as appropriate. This will ensure that data is organized, stored, accessed, and reusable in consistent and appropriate manners.

A continuous feedback process will be implemented to ensure that this institutional strategy remains relevant to the institution's research data needs and reflects RDM best practices. It will be revisited on an annual basis, so that the institution can assess the state of RDM maturity and update the strategy as needed. The assessment process will include qualitative and quantitative methods (e.g. surveys, consultation sessions) to evaluate successful implementation of each objective.

Strategy

Objective 1: Research Data Management at NAIT: Building Awareness

Current State: RDM at NAIT is in its nascent stages, with minimal awareness across the institution of how to apply RDM principles to research projects. The following will address current gaps in knowledge about RDM and allow NAIT to develop robust communication plans and materials as well as provide a single source of institutional knowledge that will facilitate awareness and best practices in the RDM lifecycle. The pursuit of these objectives will be iterative in nature, and improve as the RDM program matures.

Goals:
> **1.1** Promote NAIT's institutional RDM strategy to researchers and embed RDM awareness in onboarding of all new research staff
> **1.2** Provide consultation sessions on the institutional RDM strategy to build awareness and collect feedback to inform RDM practices at NAIT
> **1.3** Develop communication plans and materials about RDM in general and RDM at NAIT
> **1.4** Create a RDM at NAIT portal that researchers can access to find up to date RDM related materials and training in a single location
> **1.5** Determine current baseline metrics for which measures of success can be evaluated against as part of the annual assessment of this strategy

Timeline: Anticipated completion – August 2023

Areas Responsible: Applied Research, Data Governance, Marketing and Communications

Measures of Success:
- Increased awareness and knowledge of NAIT's Institutional RDM strategy
- Increased understanding of RDM and how it applies to research projects
- Researcher satisfaction with ability to access information about RDM

Objective 2: Capacity Building and Training on RDM

Current State: NAIT currently does not have the resources or capacity to offer internal RDM training to researchers. If interested, researchers are directed to external online training resources such as those offered by the Digital Research Alliance of Canada. Data Governance is developing data management policies, procedures and resources that may apply and support RDM practices but is not specific to it.

Goals:

2.1 Create resources page within the RDM at NAIT portal to direct researchers to existing materials and supports
- o [Digital Research Alliance of Canada](#) webinars and materials
- o [RDM course for Canadian Association of Research Ethics Boards](#)

2.2 Provide consultation and feedback sessions with researchers to determine RDM training needs

2.3 Make available RDM training opportunities (e.g. workshops, lunch and learns, online courses) for researchers to gain and share RDM knowledge.
- o Develop training on Data Management Plans (DMPs)
- o Develop training on data deposit, sharing and preservation
- o Develop training on working with Indigenous partners and Indigenous data sovereignty

2.4 Provide resources to support RDM at NAIT
- o Hiring staff to develop and provide RDM expertise and training
- o Determine IT resources to meet data deposit and sharing needs

Timeline: 2.1 and 2.2 completion – September 2023. Anticipated completion for all goals – August 2024.

Areas Responsible: Applied Research, Data Governance, Library

Measures of Success:
- Researcher satisfaction with RDM training available
- Researchers reporting an increase in RDM knowledge
- Researchers reporting an Increase in ability to incorporate RDM principles and best practices into a research project

Objective 3: Policy and Procedures Development

Current State: NAIT has developed a Data Governance Policy and Procedure ([IT 2.0](); [IT 2.1]()), however RDM is currently excluded from this policy. NAIT Data Governance Program is implementing several data management structures that may also extend to RDM practices. These include defining the data lifecycle from collection through to storage and disposition, data retention schedules, data sharing guidelines, a data dictionary, data classification and associated protections, management of sources of truth for data, and data ethics and privacy guidelines. The Data Governance program also provides an operational model for oversight of NAIT institutional data through a steering committee, defined roles and responsibilities towards data in the form of data stewardship, and the development of data literacy training for the institute on data management principles, which may help bolster RDM training. All Data Governance tools and standards will be available to the Institute through a Data Governance Portal.

Goals:

3.1 Develop RDM specific policies and procedures under NAIT's overarching Data Governance Policy
- o Ongoing maintenance and assessment of policies and procedures until NAIT's current review schedule
- o Ensure that RDM best practices are used to inform policies and procedures

3.2 Identify and develop other policies and procedures that will influence RDM
- o Records management policy
- o Data lifecycle management procedure
- o Data security procedure
- o Data classification procedure

Timeline: Anticipated completion – December 2024

Areas Responsible: Data Governance, Applied Research, General Counsel Services

Measures of Success:
- Creation of RDM specific policy and procedures
- Approval of RDM policy and procedures for inclusion under NAIT's policies and procedures

Objective 4: Institutional Support

Current State: NAIT institutional support for RDM is limited and available on an ad-hoc basis. Several areas are able to provide information and support on RDM, but there is no singular point of contact, which can lead to researchers receiving inconsistent information and support. NAIT IT infrastructure is operationalized and robust in terms of access authorization (single sign on), active storage, collaborative work spaces, and governance of enterprise systems and software. NAIT ITS is also in ongoing development of an institutional Data Warehouse, which is meant to provide source of truth data to the organization. The Data Warehouse provides a repository of integrated data from disparate sources across in the institute, and helps ensure integrity, quality, and protection of data properly maintained for use in data analysis. The Data Warehouse is currently a large part of NAIT's Data Architecture Strategy and is steadily growing as the organization matures in its data management practices, with successful onboarding of student, HR, and Finance data to date.

Goals:
4.1 Provide staff resourcing to develop and deliver training, and provide support to researchers as they incorporate RDM into their research project life cycle
4.2 Provide IT infrastructure and support for research data
- o Data warehousing
- o Secure data deposit for sensitive research data
- o Preservation storage for research data
4.3 Consolidate institutional contact information in RDM at NAIT portal including:
- o Applied Research
- o Research Ethics Board
- o Data Governance
- o Library
4.4 Develop communication plans about institutional support available and how researchers can access support

Timeline: Anticipate completion – March 2025

Areas Responsible: ITS, Data Governance, Applied Research

Measures of Success:
- Resources are brought online and available for use
- Researcher satisfaction with institutional support provided
- Researcher satisfaction with consistency of information provided