Western University

Scholarship@Western

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Fall Town Hall on Research Data Management

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Research Data Management at Western University

Findings & Recommendations from the Gap Analysis

October 2023

Athenæum21

RDM Support Gap Analysis

RDM Support Gap Analysis

- Athenaeum21 conducted interviews with researchers, conducted an online survey to gather further feedback, and researched RDM solutions at comparative universities in order to inform the recommendations.

- The gap analysis looked broadly at "research" and was structured around the identified RDM activities which included:
  - Researcher On-boarding
  - Research Funding
  - Research Process
  - Research Data Publication
  - Research Data Preservation and Archiving
  - Researcher Off-boarding

- A second, parallel strand looked at the Governance of RDM and included:
  - Indigenous Data Sovereignty
  - RDM Strategy
  - RDM Policy
  - RDM Guidance
  - RDM Best Practices
  - RDM Incentives
  - RDM Communications

RDM Gap Analysis: Distinct Researcher Types

- In eliciting the RDM needs of researchers at Western, we have included **faculty, staff researchers, and students**.

- These different researchers have **different ideal channels of communications**, and different **motivations and incentives** during their research processes, each of which have been considered during the gap analysis research.

- Reaching each of these types of researchers at their **best points of contact** requires coordination with multiple departments and stakeholders across the campus ecosystem. For example, reaching undergraduate researchers will be best coordinated with existing undergraduate orientations, curricula, and courses spanning multiple faculties and departments.

Researchers' Ideal RDM Workflow @ Western (Simplified)

On-boarding	Research Funding	Research Process	Publication	Preservation / Archiving	Off-boarding

- Orientation and training of new faculty and students.

- Orientation of students to research teams/projects.

- Application process

- Data Management Planning (DMPs)

- Ethics Approval (Human or animal subjects)

- Participant Recruitment

- Data Acquisition

- Data Collection/ Creation

- Active Data Storage

- Collaboration tools

- Data publication / sharing / dissemination

- Repositories

- Hand-off process

- Data destruction

Priority RDM Support Gaps

Prioritizing RDM Support Gaps

- Gaps were identified according to whether the University currently met the following criteria for each of the areas:

    - Does it exist University-wide?
    - Do people know about it?
    - Do people use it?
    - Are they happy with it?
    - Is it secure?
    - Does it respect Indigenous Data Sovereignty?

- Gaps were further prioritized based on whether, and how much, filling the gap would positively impact researchers' RDM capabilities, and the relative level of effort required to fill them.

- Once the following highest priority gaps are filled, medium-priority gaps (not represented here), should be addressed.

Highest Priority RDM Support Gaps

The following areas were identified as the highest priorities for the University to address:

- **Indigenous Data Sovereignty Support**

- **RDM Guidance, Best Practices & Communications**

- **Researcher RDM On-boarding & Off-boarding**

- **RDM Software Infrastructure**

How to Fill the Highest Priority RDM Support Gaps

Priority Gap Themes

- Guidance & Best Practices
- Clear Policies
- Consistent Coordination & Communications
- University Research Participant Strategy
- Support Staff & Expertise
- Software

Priority Gap: Support for Indigenous Data Sovereignty

CURRENT STATE

For Researchers

Researchers do not consistently have awareness of, or follow, [CARE Principles of Indigenous Data Sovereignty](). Compliance is also challenging due to the limited infrastructure and technical support available to Indigenous communities. Researchers seek support, training, and infrastructure for compliance and ethical handling of data owned by Indigenous communities.

For the University

"Western is committed to increasing Indigenous voices and presence across all levels of work, study and research."[1] One Indigenous Research Officer works "in collaboration with the Western community to advance the respectful inclusion of, and capacity for, Indigenous research, methods, data and/or research involving Indigenous people, communities and organizations."[2] Researcher needs in this area exceed the capacity of a single Research Officer.

1. https://indigenous.uwo.ca/
2. https://uwo.ca/research/about/directory/index.html

RECOMMENDED TO FILL GAP

Engagement with Community and Scholars with expertise in both RDM and data sovereignty.

Clear Policies are needed about University stewardship/hosting of Indigenous data.

Specialized Staffing is necessary to meet Indigenous data-specific needs. Further staffing may be required if the University agrees to host Indigenous data.

Hardware and Software solutions with specific access permissions and restrictions will be required if the University agrees to host Indigenous data.

IDEAL FUTURE STATE

For Researchers

Researchers recognize when they are collecting and creating Indigenous data and work closely with Indigenous communities to ensure adherence to CARE (or similar) principles. Researchers have a person they can contact if they need assistance. They know where Indigenous data can be archived safely, and in compliance with the CARE principles for Indigenous Data Governance.

For the University

The organization is able to deliver on its commitment to increase Indigenous voices and presence across all levels of research, including in the ethical collection, use, and stewardship of Indigenous research data. Support for Indigenous Data Sovereignty is integrated into existing support for Indigenous research. The University's capabilities and support (or non-support) of hosting Indigenous data is clearly articulated for, and understood by, researchers and Indigenous Communities alike.

Priority Gap: Support for Indigenous Data Sovereignty Recommendations to Fill the Gap

- **Engagement with Community and Scholars** with expertise in both RDM and data sovereignty.
- **Clear Policies** are needed about University stewardship/hosting of Indigenous data.
- **Specialized Staffing** is necessary to meet Indigenous data-specific needs. Further staffing may be required if the University agrees to host Indigenous data.
- **Hardware and Software** solutions with specific access permissions and restrictions will be required if the University agrees to host Indigenous data.

Priority Gap: RDM Guidance, Best Practices, and Communications

CURRENT STATE

For Researchers
Many researchers are challenged to understand and adhere to RDM best practices. A majority are not confident in their abilities to create data management plans (DMPs), and face multiple obstacles to re-use of their own or others' data. Top requests from researchers for further assistance include technical support, training, simplified processes, simple guidelines and coordinated and consistent communications.

For the University
Western Libraries currently provides support for Data Management Plans and training around specific RDM software and methods. Current staff includes an RDM Librarian and a Data Librarian. Many of the solutions to researchers' RDM concerns do exist, but are not well-coordinated or communicated. This means existing services and trainings are under-utilized.

RECOMMENDED TO FILL GAP

Clear Policies, Coordination, and Communications are needed to ensure a seamless researcher experience in accessing RDM resources.

Guidance & Best Practices should be documented for core self-serve, asynchronous, and in-person trainings including "organisation of my data", "sharing with colleagues", "storage" and "security".

Staffing with technical and research expertise and experience is necessary to provide one-on-one support for researchers and to produce and disseminate additional guidance and training and to coordinate with other departments.

IDEAL FUTURE STATE

For Researchers
Researchers know what the University expects them to do with their research data, how to do it, and why. Researchers have one place they can go—a centralized website—to find RDM solutions, including guidance, best practices and recommendations. That central resource is heavily communicated, disseminated, and promoted. That guidance is organized based on key points in the research lifecycle and described using language that is familiar to researchers. If these resources do not answer a researcher's need or question, there is a single point of contact for finding and requesting further RDM support.

For the University
Researchers are RDM-savvy, adhere to best practices, and respect research security. Researchers are largely self-sufficient, finding the help they need through the RDM website, but there is adequate—and sufficiently expert—staff available to support researchers, when required.

Priority Gap: RDM Guidance, Best Practices, and Communications Recommendations to Fill the Gap

- **Clear Policies, Coordination, and Communications** are needed to ensure a seamless researcher experience in accessing RDM resources.

- **Guidance & Best Practices** should be documented for core self-serve, asynchronous, and in-person trainings including "organisation of my data", "sharing with colleagues", "storage" and "security".

- **Staffing** with technical and research expertise and experience is necessary to provide one-on-one support for researchers and to produce and disseminate additional guidance and training and to coordinate with other departments.

Priority Gap: Researcher On- and Off-Boarding

CURRENT STATE

For Researchers
Researchers' knowledge of RDM best practices and related services is uneven, which may slow research funding, processes, or increase data loss or security risks. New faculty, research staff, and students undergo different on-boarding processes based on their departments or schools. Researchers are seldom provided basic RDM training, unless it is actively sought by them. Training rarely involves best practices for research data when leaving the University.

For the University
Researchers' knowledge of RDM best practices and related services is uneven across the institution, which may increase data risks for the University and for researchers. Departing researchers (including students) often take data with them when they leave, creating security risks for the University. Researchers also may lose access to data that they have rights to. This also raises important questions about University policies around ownership of data.

RECOMMENDED TO FILL GAP

Clear Policies are needed about data ownership, and data handling/processes during researcher off-boarding.

Staffing for coordination and communications will be required to liaise with departments, faculties, and schools.

IDEAL FUTURE STATE

For Researchers
Researchers are introduced to all of the tools, services and support available to them at the University shortly after they arrive (and ideally within the context of their specific research project). Researchers become fully aware of the University's policies and preferences around RDM. Policies, checklists, and guidance are in place to support departing researchers' RDM needs and to ensure that research teams (PIs) can appropriately manage access permissions for departing staff and students.

For the University
All incoming researchers (including students) have a "baseline" understanding of RDM best practices, including the preferences and policies of the University. Procedures and policies are in place and guide the off-boarding of researchers and appropriately secure handover of data.

Priority Gap: Researcher On- and Off-Boarding
Recommendations to Fill the Gap

- **Clear Policies** are needed about data ownership, and data handling/processes during researcher off-boarding.

- **Staffing** for coordination and communications will be required to liaise with departments, faculties, and schools.

Priority Gap: RDM Software Infrastructure

CURRENT STATE

For Researchers
Researchers (particularly those not bound by ethical requirements for human research subjects) are often unsure about how to appropriately secure sensitive data. Researchers spend time and resources selecting and licensing data-related software that may not be their best options. Individual or departmental installations of some software (like RedCap) leave many outside those departments without access. For projects involving human subjects, researchers struggle to ensure their data is sufficiently anonymised and secure. Researchers encounter obstacles to re-using their own data or to combining it across research studies.

For the University
Western has 1,054 PIs with 3,792 active studies recruiting human participants. Many are failing to recruit their targeted numbers. Researchers are unsure about the security and privacy of sensitive data, posing security and ethical risks for the University.

RECOMMENDED TO FILL GAP

Site Licences for relevant software would be well-received by researchers across the University.

A University-wide Research Participant Strategy can coordinate institutional participant recruitment and build awareness, engagement with the public, and support outreach.

Staffing is necessary to liaise with the research community, external stakeholders, and participants. Further staff resources can optimize the recruitment of participants, providing marketing and communications support.

IDEAL FUTURE STATE

For Researchers
Researchers have clear and readily accessible guidance to help them select the right tools for their data collection and participant management needs. They can easily contact someone who can set up an account for them and provide or point them to concise user instructions. When a research project "finishes", there are clear instructions on how to manage, move, or archive their data.

For the University
The University centrally manages access to research participant recruitment and management softwares. This centralized approach saves the University money and facilitates the re-use of data. The availability of participant management support facilitates human subject research, and clinical trials, which in turn attracts and retains researchers and large grants.

Priority Gap: Support for RDM Software Infrastructure Recommendations to Fill the Gap
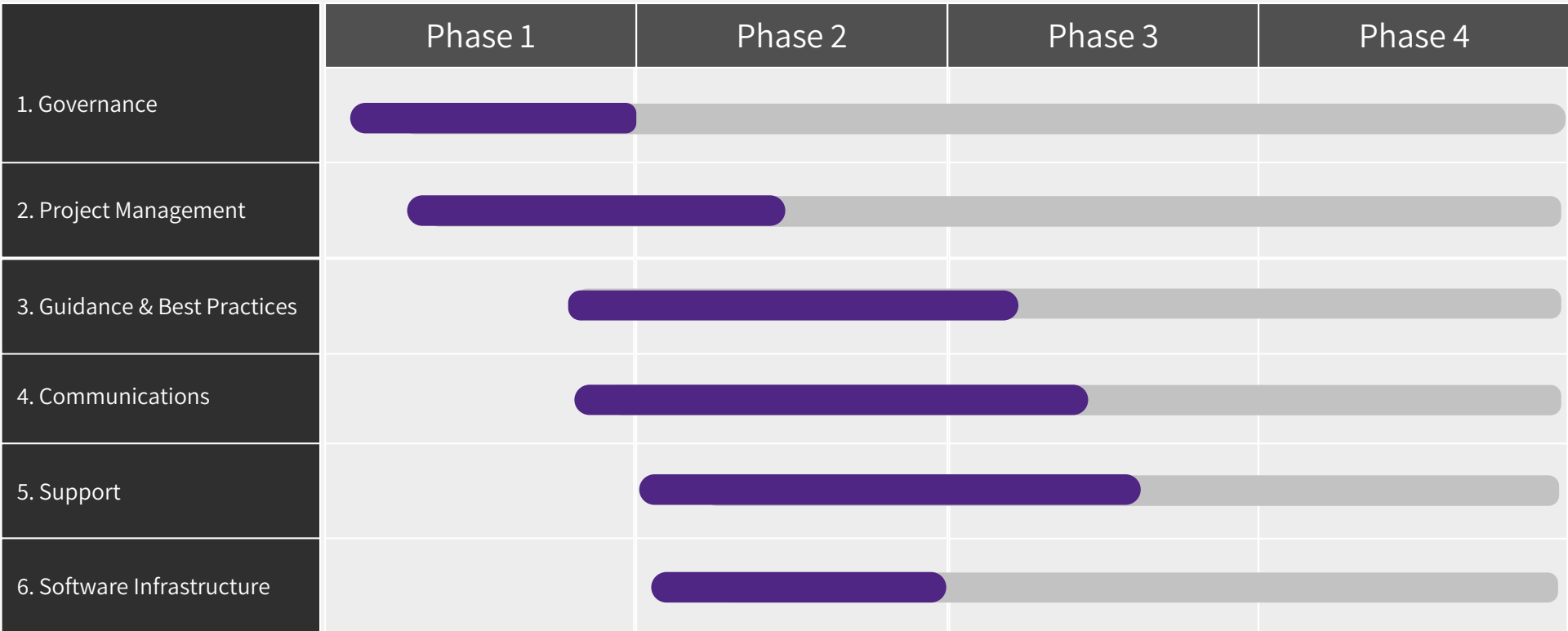
- **Site Licences** for relevant software would be well-received by researchers across the University.

- **A University-Wide Research Participant Strategy** can coordinate institutional participant recruitment and build awareness, engagement with the public, and support outreach.

- **Staffing** is necessary to liaise with the research community, external stakeholders, and participants. Further staff resources can optimize the recruitment of participants, providing marketing and communications support.

Recommended Phasing and Timeline

High-Level RDM Roadmap Phasing

1. Governance	Ensuring the decision-making structure and resources are in place.
2. Project Management	Setting up people and planning for "RDM Projects." Establishing the mechanisms for continuous improvement.
3. Guidance & Best Practices	Documenting and describing RDM guidance, best practices, and University preferences. Includes researcher on-boarding & off-boarding guidance.
4. Communications	Ensuring that RDM guidance, best practices, and University preferences are widely and well-communicated.
5. Support	Establishing the "service points" for RDM support.
6. Software Infrastructure	Implementation of a few key software projects

High-Level RDM Roadmap Timeline and Phasing

	Phase 1	Phase 2	Phase 3	Phase 4
1. Governance				
2. Project Management				
3. Guidance & Best Practices				
4. Communications				
5. Support				
6. Software Infrastructure				

KEY: Start-up phase   Ongoing effort

Broader Western Research Ecosystem: Possibilities

Broader Western Research Ecosystem: Possibilities

There are several aspects of research under discussion at the University that could provide meaningful opportunities to integrate with RDM support and services. These would better meet the needs of researchers and serve as strategic and competitive differentiators for the University:

1. **Open Science /Open Access Publishing** - Closely coordinating / collaborating with RDM support would amplify each of these efforts. FAIR principles are highly relevant to each.

2. **Research Security** - Any work that provides permissions and access controls for security in research collaborations could be aligned with collaborative sharing of research data.

3. **Indigenous Data** - Improvements in research security infrastructure at Western, especially around permissions and access, may provide the required infrastructure to store Indigenous data on behalf of Indigenous Communities.