Portage Business Plan: 2017 and 2018

October 30, 2016 (revised January 2017)
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1. Executive Summary

Portage envisions comprehensive support for research data management at a national scale, contributing to a future in which Canada capitalizes on the trend towards data-intensive research to become a world leader in research and innovation.

The mission of Portage is to contribute actively to research data management in Canada through a sustainable network of library-based services and collaborative infrastructure. Portage will coordinate and expand existing expertise, services, and infrastructure so that all academic researchers in Canada have access to the support they need for research data management. The main focus of Portage is to provide support for service delivery by local library staff.

The Portage Business Plan: 2017 and 2018 is written primarily for the members of CARL, the organization that has facilitated the development of the network and provided its start-up operating funds. The plan provides a record of the consultations and developments leading to the formation of the network, a current situational analysis, and the network’s current goals, services, governance structure and funding model. Full activity reports for the year 2015-16 are provided on the Portage website.

The Business Plan recommends that CARL continue to build on the significant progress of 2015-16 and proposes a budget of $280,000 per year for Portage for the years 2017 and 2018. The budget reflects the central costs of Portage, including leadership, national coordination, engagement, and some of the necessary support for training and communications. Additional project-based funding and support for future costs will be sought by Portage during the period covered by this plan.

Cautious optimism exists that within the next two years funding sources will become available to advance Portage to the next level in providing a strong network of services and tools. At the same time, it will be important to assess progress and to plan for various scenarios. Such plans include the development of an evaluation strategy and discussion of future options if funding is not available or if the network fulfills its mandate and is no longer needed.

The appendices of this Business Plan provide information to support planning discussions. Appendix 1: Project History includes background on consultations leading up to the formation of Portage, and other appendices provide supplemental details regarding Portage services. As well, the Portage website provides current information about Portage. See https://portagenetwork.ca.
2. Portage at a Glance

The mission of Portage is to contribute actively to research data management in Canada through a sustainable network of library-based services and collaborative infrastructure.

Portage is envisioned as a network of coordinated services and infrastructure developed and delivered through multiple institutions and organizations across the country. The power of this federated model is in enabling the sharing of data resources, expertise, and technology locally as well as nationally.

Why is this important?

- Research data are increasingly the starting point for new research. In the digital environment, it is possible for researchers to re-purpose data for use in innovative ways and in combinations not envisioned by those who created them.
- Canada does not yet have a comprehensive digital infrastructure to support the collection, management and reuse of research data.
- The management and interoperability of research data is too big and complex to deal with only at the local or regional level; we must collaborate across regions and with a variety of stakeholders.

Who is Portage?

- The Portage network was launched by CARL in 2015.
- Portage is funded by the research library community (CARL and member institutions), with significant in-kind support from members and other stakeholder organizations and through some contract work.
- Portage is managed by a Director, is accountable to the CARL Board, and receives strategic advice from a multi-stakeholder external Advisory Committee and from the Chairs of its expert groups serving as a Council.

Portage Goals

1. Foster a community of practice for research data management
2. Facilitate and provide leadership in the development of RDM infrastructure
3. Engage and advocate for research data management with stakeholder communities

Portage Services and Activities

Portage is coordinating and expanding existing expertise, services, and infrastructure so that all academic researchers in Canada have access to the support they need for research data management. The main focus of Portage is to provide support for service delivery by local library staff.

Since its inception, Portage has launched a variety of activities to advance its mission and goals. In 2017-2018, Portage plans to further integrate and expand these activities into a more cohesive federated research data service.

The table below provides an overview of the current activities and those planned for 2017-2018. See also the Services section of this Business Plan for details and further activities.
<table>
<thead>
<tr>
<th>Portage Goals</th>
<th>2015-2016</th>
<th>Planned for 2017-2018</th>
</tr>
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<tbody>
<tr>
<td><strong>1. Foster a community of practice for RDM</strong></td>
<td>Launched a Network of Expertise with 6 Expert Groups (see Appendix 4)</td>
<td>Engage the Network of Expertise in a coordinated program of activities to build greater capacity for RDM at Canadian institutions; add an ad hoc group related to data ethics.</td>
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<td></td>
<td>Defined training programs and priorities for various audiences</td>
<td>Deliver training courses for librarians in the area of RDM and workshops with other stakeholder communities</td>
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<td></td>
<td>Signed MOUs with SSHRC and CIHR to develop and deliver training programs to groups of funded researchers, drawing upon Portage experts from various institutions</td>
<td>Continue to work with the Tri-Agencies Work to develop and deliver training programs and to support their deployment of RDM requirements and tools</td>
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<td></td>
<td>Developed a comprehensive website with detailed advice about research data management for researchers and other stakeholders</td>
<td>Maintain, expand, and update website with new products developed by Portage</td>
</tr>
<tr>
<td></td>
<td>Signed an MOU with COPPUL to collaborate more closely and develop shared storage solutions</td>
<td>Establish MOUs with the other three regional library consortia in Canada to coordinate and deliver RDM services</td>
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<td></td>
<td>Contributed to a study of data archiving requirements for the Canadian Space Agency Life Sciences Division (funded by CSA)</td>
<td>Leverage this work in other global data curation requirements</td>
</tr>
<tr>
<td><strong>2. Facilitate and provide leadership in the development of RDM infrastructure</strong></td>
<td>Launched the Portage DMP Assistant, a free bilingual tool for creating data management plans</td>
<td>Further develop the DMP Assistant Participate in training of different communities in the use the DMP Assistant</td>
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<tr>
<td></td>
<td>Jointly developing a data repository and preservation pipeline with Compute Canada (CC) (2.2 million over 2 years, funded by CC) Collaborating with COPPUL, OCUL Scholars Portal and UofT in developing the evolving digital preservation network</td>
<td>Federate the current infrastructure components into a more cohesive data service</td>
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<td></td>
<td>Designed an RDM infrastructure framework that will ensure interoperability and integration of</td>
<td>Develop and implement new functionalities identified in the framework including data and metadata ingest,</td>
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## Portage Goals

<table>
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<tr>
<th>Portage Goals</th>
<th>2015-2016</th>
<th>Planned for 2017-2018</th>
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<tr>
<td>tools</td>
<td></td>
<td>federated storage and data preservation, discovery systems and advanced access control</td>
</tr>
<tr>
<td>Produced a white paper on essential functions for RDM discovery tools</td>
<td></td>
<td>Develop recommendations about metadata and interoperability standards</td>
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<tr>
<td>Adapted the UBC Digital Collections user interface for a federated data repository discovery system</td>
<td></td>
<td>Identify and promote the use of data curation software tools</td>
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<tr>
<td></td>
<td></td>
<td>Implement a federated data discovery system</td>
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<td></td>
<td></td>
<td>Introduce data workflows in research projects and support the adoption of data workflow tools in Canadian institutions</td>
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<tr>
<td></td>
<td></td>
<td>Support greater collaboration across data repositories and assist with the development of new repositories in Canada</td>
</tr>
<tr>
<td>3. Engage and advocate for RDM with stakeholder communities</td>
<td>Delivered presentations and attended meetings and workshops across Canada and internationally</td>
<td>Continue to engage actively with other stakeholders</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Participate and contribute to the Research Data Alliance meeting in September 2017 in Montreal</td>
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<td></td>
<td></td>
<td>Collaborate with other strategic stakeholders in specific projects e.g., CAREB, RDC, Industry Canada, CFI, and ECCC (open science)</td>
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### 3. Situational Analysis

#### Strategic Imperative

For libraries, research data management (RDM) is mission critical in their key role of preserving and providing access to research information.

The needs that led to the formation of Portage are well documented in the reports listed in Appendix 1: Project History. Canada was lagging behind other nations in establishing the policies, services, and infrastructure needed for the stewardship of research data in order to enable access to and re-use of these data in the future. Research libraries, with their long-standing roles in facilitating the discovery, use, and preservation of information, were seen as key stakeholders in the management of research data. It was recognized as well that library services in the area of RDM must be carefully aligned with other related services and infrastructures, such as advanced research computing, data storage services, and high speed networks.
Since those initial planning discussions, several developments have highlighted the strategic importance of moving quickly to develop and deliver RDM services.

The *Tri-Agency Statement of Principles on Digital Data Management* was adopted in June 2016, and is supported by a complementary statement developed by a group of university Vice-Presidents Research. These efforts move the country closer to a policy landscape that recognizes the importance of RDM and requires services and infrastructure to enable compliance.

*Federal government support for policy directions of open government and open science is at an all-time high.* There appears to be recognition that, to accrue the societal benefits of better leveraging research investment and to make scientific data discoverable and reusable in the long-term, Canada needs comprehensive national infrastructure. This is evident in the recent communiqué emerging from the May 2016 G8 summit of science and technology ministers:

> Furthermore, we acknowledged that Open Science can change the way research and development (R&D) is undertaken, with emerging findings leading to far greater global collaboration and encouraging a much broader range of participants and stakeholders. We also recognized the importance of Open Science as a driver for greater inclusion in R&D, for example with the emergence of citizen science.

To address these issues, we decided that the principles of Inclusive Innovation and Open Science should be reflected within each of our specific STI areas of focus: Global Health, Gender and Human Resource Development for STI, The Future of the Seas and Oceans and Clean Energy. To have greatest impact for the benefit of our societies, we also committed to work across G7 ministerial groups and develop our work in close collaboration with other ministries. [http://www.g8.utoronto.ca/science/2016-tsukuba.html](http://www.g8.utoronto.ca/science/2016-tsukuba.html)

*Coordination of digital research infrastructure discussions has increased.* The Leadership Council on Digital Infrastructure has the attention of the federal government and is working to coordinate and support priorities across multiple stakeholder groups. Portage discussions, whether at the LCDI or directly with ISED officials, suggest that the government increasingly understands that sustainable funding will be key to supporting its own objectives. They appear to be poised to invest in digital research infrastructure.

*RDM is now understood as an element of digital research infrastructure.* CARL and Research Data Canada have together made significant inroads in ensuring that RDM is given due consideration as a key component of infrastructure within, for example, the context of the Leadership Council on Digital Infrastructure (LCDI) and the advice that it will be continuing to formulate and provide to the federal government.

*Research information systems are becoming more prevalent.* This provides an opportunity to develop effective connections between RDM and administrative workflows and requires attention to interoperability. It also presents the challenge of ensuring that universities retain control of the data stored in such systems to support the objective of openness and long-term availability of the research record.

**Complementary roles in RDM**

As stated in the *Tri-Agency Statement of Principles on Digital Data Management*, multiple stakeholders within the research system share the responsibilities and costs of ensuring a robust
and open research data environment in Canada. Portage is working with many different organizations and groups. Of those, the ones that intersect most closely can be described as follows:

*Portage*: Providing the development and implementation of RDM services at a national level supporting universities and their partners in the sharing and preservation of research data.

*Regional library consortia*: Funding regional collaborations that may include RDM services contributing to the national RDM network.

*Research Data Canada (RDC)*: Developing directions for RDM national policy and strategic investments, and serving as the international RDM voice for Canada.

*Leadership Council on Digital Infrastructure*: Coordinating a national approach to building an advanced digital infrastructure ecosystem in Canada, one aspect of which is RDM.

4. **Vision, Mission, Principles and Goals**

**Vision**

Portage envisions comprehensive support for research data management at a national scale, contributing to a future in which Canada capitalizes on the trend towards data-intensive research to become a world leader in research and innovation.

**Mission: Shared Stewardship of Research Data in Canada**

Portage contributes actively to research data management in Canada through a sustainable network of library-based services and collaborative infrastructure. Portage will coordinate and expand existing expertise, services, and infrastructure so that all academic researchers in Canada have access to the support they need for research data management. The main focus of Portage is to provide support for service delivery by local library staff.

**Principles**

The following set of principles was developed in 2014 to guide the formation of Portage. These align with subsequent principles that were affirmed by the *Tri-Agency Statement of Principles on Research Data Management* and supported by a complementary statement developed by a group of university Vice-Presidents Research.

- Data are a public good
- Intelligent access: openness, with respect for privacy
- Collaborative approaches: cost savings and sharing expertise
- Inclusiveness: aim to serve all researchers and create a more level playing field
- Commitment to standards and interoperability
- International relationships: liaise internationally and ensure our work is keeping up with international practices
- Respect for differences: flexibility to meet the needs of different regions, institutions, languages and disciplines
- Open source: be contributed back to the community whenever possible
- Stewardship: a sense of responsibility for managing research data over the long term
Goals

1. **Foster a community of practice for RDM**: A primary objective of Portage is to build a network of expertise for research data management. Critical aspects of this are to coordinate and expand on expertise and services within Canadian academic libraries and to build capacity in specific areas of research data management.

2. **Facilitate and provide leadership in the development of RDM infrastructure**: Portage seeks to advance the development of national platforms for planning, curating, preserving and discovering research data. This will require working with infrastructure providers, both in the library community and elsewhere, to develop new tools where gaps exist and to bridge systems where interoperability is needed.

3. **Engage and advocate for RDM with stakeholder communities**: The task of managing data from research across Canada requires community-wide involvement and collaboration. The two major components of the Network described above are based on a thorough understanding of researchers’ needs and on solid working relationships with funding agencies, data stewards, infrastructure providers, regional academic library consortia and international collaborators.

5. **Services**

Portage is envisioned as a network of coordinated services developed and delivered through multiple institutions and organizations across the country. The power of this federated approach is in enabling the sharing of data resources, expertise, and technology locally as well as nationally. It is more than the sum of its parts.

This federated model has been the foundation of Portage from the outset. In the summer of 2016, work began on a funding proposal for a fully implemented federated research data service. This would expand and consolidate the existing services being offered by Portage into a more robust system and would involve funding for additional staff to be located in institutions, supplementing the staff available at the local level and distributing expertise across the network. The funding proposal will build on the directions and services outlined in this Business Plan.

The services described in this section are visually represented in Portage Research Data Management Framework shown in Appendix 2. Furthermore, Appendix 3 provides more detail about each of the subheadings in this section.

1. **Foster a community of practice in research data management**

   **Data management planning**

   - The Portage DMP Expert Group assisted with enhancements to DMP Assistant to allow customized spaces branded by individual institutions. Institutions asking for customized spaces on DMP Assistant will continue to be added.
   - A collaborative help desk ticketing system is being integrated into DMP Assistant.
   - DMP Assistant is being used as a framework for introducing researchers to RDM.

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● The Portage DMP Expert Group is currently working with SSHRC to train groups of funded researchers in the use of DMP Assistant.

● Portage is working in partnership with the Canadian Research Ethics Boards (CAREB) and the Canadian Association of Research Administrators (CARA) to incorporate DMP content relevant to their information requirements for RDM. For example, CARA is interested in incorporating the identification of controlled goods that are used in research.

**Training**

● The Portage Training Expert Group has completed a white paper providing training principles and guidance in training directions.

● The Portage Training Expert Group is planning webinars to introduce RDM topics to library personnel and researchers.

● The Portage Training Expert Group is developing a guide to RDM training resources and is organizing a collection of training materials available through the Portage website.

● An assessment is being made to adapt successful training materials from international sources. Examples include MANTRA from the University of Edinburgh and the University of Utrecht training program for liaison and subject librarians.

**Curation, preservation and discovery advice**

● Portage Expert Groups are developing best-practice resources on curation, preservation, and discovery and will assist institutions providing on-campus support for researchers producing research data.

● The Portage Curation Expert Group is reviewing curation practices employed by data repositories and will recommend a set of best practices in this regard. One software development team wishes to work with this Expert Group on this topic.

● The Portage Discovery Expert Group produced a white paper on essential functions for RDM discovery tools. One software development project adopted this advice for their discovery tool. This Expert Group is now forming two working group to develop a collection development template for data repositories and to recommend metadata practices for data discovery.

● The Portage Preservation Expert Group is preparing a white paper on shared archival storage.

2. **Facilitate and provide leadership in the development of RDM infrastructure**

● Portage is working with infrastructure providers to build a comprehensive set of interoperable RDM platforms. To date, this work has involved OCUL Scholars Portal, COPPUL, University of Alberta Libraries, Compute Canada, and the cooperative development team of the Digital Curation Centre and the California Digital Library. Other partnerships have been discussed with ARL-SHARE, the Open Science Framework, Artefactual Inc., Jisc, and CANARIE.

● The Portage and Compute Canada software development partnership is entering its second year with a project completion date of December 31, 2017. Substantial progress has been
made on repository functionality and discovery capabilities. The integration of preservation processing has undergone detailed planning. UBC became a contributor to this development through its contribution of the UBC Digital Collections user interface, which was adopted by the Compute Canada software team.

- A general RDM infrastructure framework has been adopted to direct the assemblage of platforms supporting the ongoing stewardship of research data. The task is one of integrating existing tools, building bridges between tools that do not interoperate, and developing new tools where gaps exist in the framework.

Planning Tool

- Usage of DMP Assistant has grown throughout the first year of operations both in terms of additional DMP templates and of registered users. Future development of DMP Assistant has been integrated into an internationally collaborative development strategy, merging the codebase of DCC DMP Online and CDL DMP Tool.
- Integrating data management plans with specific administrative operations on campus is a high priority. Examples of this include incorporating DMPs into the funding application process or transferring relevant information from a DMP to a research ethics office.
- Work is being planned to increase interoperability with other online metadata services, such as ORCID for access to researcher profiles and DOIs to attach a permanent identifier to individual data management plans.
- The Portage Data Management Planning Expert Group will provide input into the next round of DMP platform enhancements.

Data workflow tools

- Portage is interested in partnering with developers and integrators of data workflow tools. Introducing data workflow processes and tools increases the likelihood of data surviving beyond the end of a research project.
- The Portage Curation Expert Group is investigating best practices associated with data workflow tools. Initiatives, such as the Open Science Framework and the U.S. National Data Service, are now integrating open source applications to build data workflow systems. This approach to managing research data improves the exchange or handoff of data and metadata to a data repository.

Research data repositories

- A key component of the RDM infrastructure is the research data repository. Portage seeks partnerships with the providers of research data repositories that will support the needs of the Canadian academic research community.
- A research data ecosystem will consist of a mix of data repository types. Portage expects to work with a variety of data repository providers. For example, OCUL Scholars Portal, UBC, and the University of Alberta Libraries all operate separate instances of Dataverse. Furthermore, Portage has been in discussions with Queen's University regarding their initiative around preserving and storing big data.
Portage is engaged in a software project with Compute Canada to develop a federated research data repository. The purpose of this repository is to interoperate easily with other data repositories and to provide specialized services to other data repositories, such as, preservation processing. The Portage Preservation Expert Group has two members sitting on the steering committee of this project.

**Preservation**

- Portage wishes to collaborate with research libraries and other stakeholders to provide the preservation storage required for the long-term, safe retention of research data. CARL and COPPUL recently signed an MOU to secure necessary preservation storage for digital collections, including research data. OCUL Scholars Portal and the University of Toronto have expressed similar interests in preservation storage.
- To achieve a national goal of sufficient preservation storage, a funding mechanism needs to be determined in conjunction with other national digital research infrastructure.
- Preservation processing must be contextualized for the digital content being prepared for archival storage. Portage has identified the need for a Format Policy Registry to assist with the identity of file formats deemed acceptable for preservation. This is a project for which Portage is still seeking a partner.

**Discovery**

- Portage is working with Compute Canada to develop a federated discovery tool that harvests metadata from open data repositories. This platform will need to capitalize on the different metadata standards used to describe research data.
- The Portage Discovery Expert Group is investigating ways of using different metadata schema and also looking at collection development policies for data repositories to help navigate the ever-increasing number of such repositories.

3. **Engage and advocate for RDM with stakeholder communities**

- The Portage secretariat leads, coordinates, and supports six expert groups and ad hoc working groups on special RDM issues.
- For Portage to be a recognized and accepted as a stakeholder in RDM, the Portage Director and leadership must work at an expert level in outreach and communication with stakeholders.
- The development of components of a federated research data service, including data discovery and a preservation network, requires strategic guidance and expert input from Portage leadership.
- The provision of RDM infrastructure requires Portage leadership to nurture trusted relationships with other infrastructure providers. In some instances, this will involve preparing and submitting applications to fund the development of specific tools and services.
- Portage leadership must also be open to international partnerships to develop RDM platforms that adopt or adapt best practices.
• Services must be developed, coordinated, and delivered to fill gaps in RDM at the project, institutional and national levels.

• Portage leadership must oversee and coordinate multiple active projects.

6. Organization and governance

Assumptions

Certain assumptions, most of which were also identified at the outset, will continue to frame the development and ongoing operations of the Portage network.

1. The Portage principles will guide the development and operations of Portage.

2. Research libraries’ roles include the management, discovery, and preservation of research data, working in collaboration with other stakeholders.

3. No single institution is able to manage the development and service needs for RDM alone. This space requires coordinated, trusted, collaborative solutions with RDM stakeholders working together.

4. Portage is one element in a larger digital infrastructure that supports RDM in Canada. It will function within this larger context and collaborate with other stakeholders to develop a sustainable and coherent national RDM environment.

5. Libraries have been investing in RDM to support their researchers and will continue to do so. As such, university libraries will provide significant in-kind contributions. As an element of their operations, participating libraries will provide infrastructure and staff support for both the network of expertise and the national platforms for planning, curating, preserving and discovering research data.

6. Portage will develop partnerships to protect research data, including adequate storage capacity, and to secure funding for the development of the network under a federated model.

7. CARL will provide financial and in-kind management support during the initial start-up years, but funding will be sought to ensure sustainable financial and human resource capacity within three years of start-up.

8. CARL and its members will have governance roles in the Portage network.

Organizational model

Portage operates as a network model facilitated by a lead organization, CARL. There is a small secretariat consisting of the full-time Portage Director and portions of other CARL positions, performing the leadership and coordination roles outlined in section 5 above. Based on the experience of the first year of Portage operations, and as anticipated in the initial planning for Portage, an additional half-time staff position is proposed to support a training program, project work and communications.

As a network model, Portage is relying on collaborative relationships, many of which are formalized in memoranda of understanding. CARL is the legal signatory for these MOUs.

At this point in time there are no plans to establish Portage as an independent legal entity.
Governance

It is anticipated that as the network develops over the next several years, the governance structure will evolve. At this time, it is proposed that the newly implemented governance structure formed in 2016 be revised slightly for 2017 and 2018, as per the diagram below. The change is the addition of a CARL Directors Steering Group to reflect the continuing financial commitments of CARL institutions in this period.

![Governance Diagram]

The CARL Board has oversight for Portage, as it is a program of CARL. The Board may periodically form ad hoc working groups related to specific tasks such as the preparation of funding proposals, with the Portage Director. As well, the Board-approved mandate of CARL’s Advancing Research Committee includes maintaining an ongoing interest in the development of Portage.

The CARL Directors Portage Steering Committee will consist of approximately 5-7 Directors appointed by the CARL Board to provide additional member input into Portage directions. The Chair of this group will be a member of the Portage Advisory Committee.

The Portage Advisory Committee is an advisory body including representatives of each regional library consortia, Portage development partners, national organizations representing RDM interests in Canadian universities, and the UK Digital Curation Centre.

The Network of Expertise Council of Chairs is the Portage Director’s team coordinating the work of the Expert Groups informing the development of services across the network. For a full list of current Expert Groups see Appendix 4.
Administrative deliverables for 2017

- Develop and implement a communications plan to ensure CARL directors, library professionals, and other stakeholders are up-to-date about Portage activities.
- Implement a new governance structure based on the model outlined in the business plan.
- Plan and commence a formative assessment of Portage.
- Recruit and hire a new Portage Director to begin work in September 2017.
- Develop a Portage work plan for 2017-2018.
- Develop a more detailed cost model that reflects both direct costs and in-kind contributions of experts and tool development and build these factors into future funding models.
- Actively seek new funding opportunities to support current Portage services and their expansion.

7. Funding model

Background
The funding model proposed for Portage in May 2015 was a mixed model of institutional membership fees and external funding contributions. The idea was to ensure long-term sustainability of the infrastructure and services over time, while also enabling the network to develop more quickly with targeted investments in priority areas. In addition to these funding sources, it was expected that Portage would depend on in-kind contributions of institutions involved in shaping the network as well as benefiting from it.

When Portage was first conceptualized, CARL member feedback indicated some concerns regarding a membership model or the creation of a new stand-alone organization. With so many organizations in existence already, there is little appetite for another. As well, many institutions are reluctant to take on new membership costs given budget constraints.

CARL Directors expressed a preference to support the start-up of Portage using CARL strategic reserves. CARL's auditors had recommended a draw down on the strategic reserves, and so the Board agreed to fund Portage for the period September 2015 to August 2017. This was with the understanding that during those years there would be further consideration of funding models to sustain Portage over the longer term.

In 2016, the experiences of other similar organizations have been considered, and an exploration of other funding sources has begun. One of the observations from this initial research is that organizations that depend heavily on grant funding often end up seeking revenue through means such as a membership model.

CARL Portage investments
To date, Portage has relied on library investments. Individual efforts within CARL member libraries have been leveraged into national services to level the playing field and to build capacity across the country. Members have supported CARL’s funding of a two-year launch period for Portage that started in the Fall of 2015 that aimed: to provide “quick wins” in critical areas; to test the feasibility
of a collaborative, multi-stakeholder organizational model; and to determine the costs of operation and establish a sustainable funding model.

The investment made has already been leveraged into a $2.2M investment through Compute Canada into the Portage goal of collaborative development of national platforms for RDM infrastructure. And there has been notable cost avoidance for individual institutions through the collective development of such tools as DMP Assistant. This is anticipated likewise from a similar Expert-Group-based development of useful training tools.

**Budget**

CARL committed $200,000 per year for Portage, for the period September 2015 to August 2017.

In fiscal year 2016, it has become clear that a minimum of $220,000 per year is required to support Portage start-up activities at their current levels. However, a higher level of funding is not possible within CARL’s budget, as it would draw CARL’s total assets below the amount required for wind-up reserves to cover financial obligations. As well, funds must be secured now for Portage to continue past August 2017.

The following budget request would sustain current Portage activities and enable a modest growth in critical areas such as training programs. It does not include project funding for the development of particular tools, preservation storage infrastructure, nor the longer-term vision of a more robust federated research data service. It does not include costs already covered by the CARL budget such as the Executive Director’s time on Portage matters, some travel costs, translation costs, etc.

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing expenditures (salaries, benefits, travel, minimal program support)</td>
<td>220</td>
<td>220</td>
</tr>
<tr>
<td>NEW: Salaries - Training/Project Officer @50%</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>NEW: Additional program support (training materials, conference involvement, etc)</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>280</td>
<td>280</td>
</tr>
</tbody>
</table>

**CARL community sponsorships**

As noted above, CARL members have been investing in Portage through the CARL operating budget and in-kind contributions. This Business Plan proposes that CARL members build upon that initial investment by sponsoring Portage for the full calendar years 2017 and 2018. Based on member feedback, the proposed model has varying levels of sponsorship proposed for each CARL member, based on research intensiveness. Distributed across the membership and applied in both 2017 and 2018, this sponsorship provides the required annual budget of $280,000.

**In-kind CARL member contributions**

A survey of CARL members was conducted in September and October 2016 to determine the institutional investments being made in RDM by libraries. Of 29 academic member institutions, answers were received from 19 for three questions: the number of staff dedicated to RDM, the number of staff supporting data repositories or RDM infrastructure, and the number of liaison librarians providing some level of data services to researchers.
<table>
<thead>
<tr>
<th>Number of CARL institution responses</th>
<th>Librarians dedicated to RDM services</th>
<th>Staff supporting data repositories or RDM infrastructure</th>
<th>Liaison librarians who provide some level of data services to researchers</th>
<th>INSTITUTIONAL TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTE</td>
<td>Estimated Cost</td>
<td>FTE</td>
<td>Estimated Cost</td>
<td>FTE</td>
</tr>
<tr>
<td>19</td>
<td>31.31</td>
<td>31.22</td>
<td>16.98</td>
<td>79.51</td>
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<tr>
<td>3,228,808</td>
<td>3,932,567</td>
<td>1,589,753</td>
<td>8,751,128</td>
<td></td>
</tr>
</tbody>
</table>

The level of in-kind contribution suggested by these data can reasonably be expected to continue or grow in 2017 and 2018.

**Partner contributions**

As a network model, Portage builds upon the in-kind contributions of institutions and organizations that have the capacity to provide services at a local or regional level that can be leveraged for the national good. Those contributions are formalized through a Memorandum of Understanding and acknowledged through means such as a seat on the Portage Advisory Committee. Those institutions or organizations are considered Portage “partners.”

**Funding opportunities**

CARL is exploring funding opportunities in coordination with the Leadership Council on Digital Infrastructure, to ensure alignment with other national asks. CARL has had discussions with representatives of the Canada Foundation for Innovation (CFI) and the Ministry of Industry, Science and Economic Development (ISED), and maintains close contact with Research Data Canada (RDC) and CANARIE.

While indicators seem positive, challenges remain. At present, RDM infrastructure and horizontal RDM practices are largely out-of-scope for most current funding programs, whether those of CFI, the research granting agencies, ISED, or CANARIE. The scope of potential investment and the relative profile of RDM within the digital infrastructure landscape remain uncertain. Furthermore, there is still work to be done in clarifying an overall RDM vision, needs, and costs across the stakeholder community. The timeframe for any large-scale future investment is unknown, but unlikely before 2018 at the earliest.

**Fee-based services**

To date, Portage has contracted with three external agencies to provide consulting and training programs. Further consideration is needed regarding when such revenues would be distributed to institutions contributing to network operations. A potential example would be when Portage contracts with external agencies to provide training programs and calls upon members of expert groups to deliver that training.

**8. Evaluation**

Although the full impact of Portage will not be measurable for several years, it will be important to have periodic assessments that will inform any “course corrections” and future plans. A plan for formative assessment will be developed in early 2017. The initial assessment will subsequently be
conducted as an internal review, engaging at a minimum the Expert Groups, CARL Directors and Portage partners, and informing the goals of the Portage Director past August 2017. The second assessment will be a broader review involving input from international experts external to the Portage stakeholder community. This external review will help to inform the period beyond this Business Plan.

9. Risk assessment and mitigation

<table>
<thead>
<tr>
<th>Risk</th>
<th>Probability</th>
<th>Mitigating activities</th>
</tr>
</thead>
</table>
| Unable to fill Portage director’s position adequately                | Medium      | - Identify key competencies required for the next phase of Portage and ensure they match the skills of the incoming director  
- Engage widely with the community to ensure a variety of candidates apply for the position |
| Unable to secure sufficient funding for Portage budget post-2018     | Medium      | - Develop a sustainability plan.                                                      
- Actively seek funding from other potential external funders        
- Consult with library directors regularly to ensure that they are engaged in Portage funding planning and to ensure that services are meeting the needs of participating libraries around local support for RDM |
| Services launched by another stakeholder organization or commercial enterprise deflect interest from Portage | Medium      | - Ensure Portage is well recognized by national and provincial funders, government agencies, and within the university community  
- Focus Portage activities on building expertise and on supporting the library community at the institutional level, where Portage has a competitive advantage  
- Coordinate with other RDM stakeholder organizations and the LCDI to ensure the complementarity and completeness of services |
| Low uptake of Portage services by researchers                       | Low         | - Work with funders and research communities to develop pilot projects that can evolve into services valued by researchers  
- Conduct a regular survey of RDM needs and requirements of the research community |
10. Succession

The appointment of the current Portage Director ends August 31, 2017. This Business Plan provides a strategy that would allow CARL to appoint a Portage Director for the period of September 1, 2017 to December 31, 2018. Planning for that appointment process will begin in early 2017.

For the years beyond 2018, it is understood that external funding will need to be identified and that there are three possible scenarios:

1. Expanded funding, allowing Portage to develop into a robust network of expertise and infrastructure that supports the delivery of services and expertise across the country. This initial development of infrastructure and capacity requires special investment. At a future point, ongoing research data management services may become a mainstreamed cost for research institutions and governments.

2. Continuation of current funding levels, providing support for the Portage secretariat and continued progress, although with a less robust set of services than would ideally be in place.

3. If current funding levels are not available after December 2018, CARL will continue to play a facilitative role in the Canadian data landscape through the in-kind work of CARL staff and committees, building on the foundation laid by Portage.
11. Appendix 1: Project History

The Canadian Association of Research Libraries (CARL) has been taking progressive steps towards developing a national, library-based research data management network in Canada since 2012. A deliberate “grass roots” approach began following the exploration in 2010 and 2011 of the potential for submitting a CFI proposal focused on the provision of data management and preservation services. In that exploration it became clear that the project could not succeed without a greater common national understanding of research data management and its relation to other digital research infrastructure. It was also clear that CARL could play a catalyst role for collaborative engagement in research data management at the national level.

This incremental approach is bearing fruit: the Portage research data management network is now developing thanks to the collaborative work of numerous research stakeholders. This Business Plan builds on the experiences of 2015-16, the first year of Portage operations, and sets a direction for the next two years with a view to the longer term.

This appendix provides a summary of CARL activities, papers and consultations leading to the launch of Portage.

Portage history at a glance

- **2010 and 2011**: CARL’s CFI Advisory Steering Committee was formed to investigate the potential for submitting a CFI proposal focused on the provision of data management and preservation services (see CARL CFI Proposal for a Canadian National Collaborative Data Infrastructure Project: Final Report, January 2012).

- **January 2012**: The CARL Board received the document CARL Research Data Management Initiatives: Next Steps, from the CARL Data Management Working Group. It was agreed that CARL would work to identify and support activities serving as models for data management and preservation services, and to facilitate information sharing and collaboration with various stakeholder groups, including the Research Data Strategy Working Group (subsequently Research Data Canada), national IT partners, Vice-Principal’s Research and federal funding agencies.

- **May 2012**: CARL Directors had a briefing session on research data management, which included a proposal for a multi-day CARL data management training institute aimed at Canadian librarians managing data curation services. The CARL Board approved the proposal. (See Briefing Session of Research Data Management, May 12, 2012.)

- **January 2013**: The course Introduction to Research Data Management Services was held January 22 to 25, following a webcast for participants in December 2012. The course was developed and taught by a program committee of individuals from seven different institutions. Participants learned about the range of library services available in the area of RDM, considered their unique institutional environments, and left with a plan for developing entry-level RDM services at their institutions over a 3-4 year period.

- **May 2013**: CARL launched an informal Canadian Community of Practice for Research Data Management in Libraries, with the objective of developing and sharing knowledge about research data management in libraries. This CoP merged into the subsequent paths leading to Portage. CARL Directors had a Research Data Briefing presentation and discussed a
proposal that "CARL facilitate the creation of a collaborative network for collecting, preserving and providing access to valuable research data produced in Canada, a network that builds upon emerging initiatives." The CARL Board requested a final draft of the proposal discussion paper.

- **September 2013**: The CARL Board approved *Facilitation, Coordination and Cooperation: A Proposal for a Canadian Research Data Management Network* and the planning of a meeting of interested stakeholders.

- **December 2013**: Representatives of CARL, each of Canada’s four regional library consortia, the Canadian Research Knowledge Network, Research Data Canada, Canadian Research Data Centres Network, and the Tri-Agency met at the ARC Hotel in Ottawa. They discussed: Canadian research data management gaps, lessons and vision; common ground amongst academic libraries in the RDM ecosystem; why an RDM network should exist and what it could look like, and its core values. There was agreement to proceed with a project to develop a national coordinating network on a relatively small scale and in such a way that it could provide a framework for larger-scale RDM services in the future. (See *A Canadian Research Data Management Network, December 2, 2013, Summary.*)

- **March 2014**: CARL held the first meeting of the Project ARC Working Group, launching a one-year project to lay the foundation for implementing a national library-based research data management network. Project participants represented each of Canada’s four regional library consortia and members of multiple RDM stakeholder groups in other sectors, including those involved with Research Data Canada. Project ARC had a one-year mandate to confirm the vision, goals and principles for the network, and to accomplish several concrete objectives. (See [https://cancoprdm.wordpress.com/project-arc/](https://cancoprdm.wordpress.com/project-arc/)) By the end of the pilot period, the goals were successfully met.

- **November 2014**: CARL Directors received the brief *Portage: Supporting Canadian innovation through shared expertise and stewardship of research data, November 2014*, a mid-point report on Project ARC.

- **April 2015**: The Project ARC Working Group issued *Portage: Organizational Framework*, a document outlining the proposed operations, service model staffing, budget, funding model and governance for the Portage network. It recommended a three-year transition period to build Portage services to full operations, under the leadership of a full-time Director.

- **May 2015**: CARL Directors received the final report on Project ARC and the proposed transition to Portage: *Portage: Supporting Canadian innovation through shared expertise and stewardship of research data, May 5, 2015*. The Directors proposed that CARL provide start-up support for Portage through CARL’s strategic reserve, and the CARL Board agreed to fund a full-time director for Portage for a period of two years. This position would advance the goals of Portage, define its parameters, scope and governance, seek the resources for it, and oversee the initial stages of development. One of the goals of this phase was to create a foundation of expertise as well as a business model that would sustain the network in years to come.

- **September 2015**: With the cooperation of the University of Alberta, Chuck Humphrey, one of Canada’s most preeminent data experts, was seconded to become the Director of Portage.
12. Appendix 2: Portage Framework

The services described in Section 5 of the Business Plan sit within the framework shown in Figure 1. The Portage Network of Expertise is organized along broad stages of the research data lifecycle, and is associated with the RDM infrastructure tools and platforms assembled through collaborative partnerships with other RDM stakeholders.

Figure 1: Portage Network Research Data Management Framework
13. Appendix 3: Description of the Network of Expertise and Platforms for RDM

1. Foster a community of practice in research data management

   Data management planning

   The DMP Assistant is a core platform for establishing best practices in the management of research data at the project level and for integrating research services vital for the ongoing stewardship of data after a project concludes. This DMP platform is available to any researcher to use and to any institution to brand as they wish. A collaborative help desk ticketing system is in the final stages of implementation. DMP Assistant also provides a useful framework for researchers to learn about RDM. Portage is currently working with SSHRC and CIHR to develop and deliver training programs to groups of funded researchers, drawing upon Portage experts from various institutions.

   Training

   The Portage Training Expert Group recently conducted an environmental scan of RDM training in Canada revealing that libraries are the source of most of these training activities. The work of the Portage expert groups will continue to be collaboratively developed with intentional training opportunities. Institutions wishing to build upon the RDM knowledge and skills of their librarians, support staff, and researchers can draw on Portage training tools and programs. Individuals will also have direct access to training materials available on the Portage website.

   Curation, preservation and discovery advice

   Institutions delivering data curation services to their researchers may draw on the Portage Network of Expertise for an understanding of best practices. Funding for a fully implemented federated research data service will increase the capacity of Portage to support institutions in providing on-campus support for researchers. Coordination among institutions providing data repository services will be facilitated through Portage as RDM platform services are organized to support researchers across Canada. Particular attention is being given to the processing of research data for digital preservation and to coordinating data repositories with supporting infrastructure, including archival storage. The goal of data-intensive research – where data are actively reused – is dependent on the integration of best practices for describing research data through metadata with well-designed discovery platforms. The Portage Discovery Expert Group produced a white paper on essential functions for RDM discovery tools. One software development project quickly adopted this advice for their discovery tool. Expertise in the areas of curation, preservation, and discovery is vital for libraries supporting their research community, the researchers themselves, and those building RDM infrastructure.

2. Facilitate and provide leadership in the development of RDM infrastructure

   Portage is working with infrastructure providers to build a comprehensive set of interoperable RDM platforms. These partnerships align with the Portage principle to engage in collaborative solutions and have been with member libraries as well as outside stakeholders. To date, this work has involved OCUL Scholars Portal, COPPUL, University of Alberta Libraries, Compute Canada, and the cooperative development team of the Digital Curation Centre and the California Digital Library.
Other partnerships have been discussed with ARL-SHARE, the Open Science Framework, Artefactual Inc., Jisc, and CANARIE.

A general RDM infrastructure framework has been adopted to direct the assemblage of platforms supporting the ongoing stewardship of research data. The task is one of integrating existing tools, building bridges between tools that do not interoperate, and developing new tools where gaps exist in the framework. The functional framework helps identify the requirements for planning the RDM workflow in data production and use and in the subsequent transfer of the data and metadata for curation, preservation, and discovery for reuse. Cumulatively, a framework of combined platforms fulfills all RDM functions without requiring one system to perform everything. This architecture allows interchanging pieces of the infrastructure without having to disassemble the whole structure as new technology comes along. Furthermore, the framework supports a diversity of platform solutions, allowing partnerships with a variety of infrastructure providers.

**Planning Tool**

DMP Assistant is undergoing further development through a new cooperative software project by the Digital Curation Centre, the California Digital Library, and the University of Alberta Libraries. A high priority is to introduce functionality that will integrate data management plans with specific administrative operations on campus. Examples of this include incorporating DMPs into the funding application process or transferring relevant information from a DMP to a research ethics office. Work also is planned to increase interoperability with other online metadata services, such as ORCID for access to researcher profiles and DOIs to attach a permanent identifier to individual data management plans. As DMPs become better integrated into the research process, functions will be added that increase their value as standard products of research. The Portage Data Management Planning Expert Group will provide input into the next round of DMP platform enhancements.

**Data workflow tools**

The point in the data lifecycle when data are at greatest risk of being lost is when a project is being shut down. Introducing data workflow processes and tools increases the likelihood of data surviving beyond the end of a project. Initiatives, such as the Open Science Framework and the U.S. National Data Service, are now integrating open source applications to build data workflow systems. This approach to managing research data also improves the exchange or handoff of data and metadata to a data repository. Portage is interested in partnering with developers and integrators of data workflow tools. To facilitate this, the Portage Curation Expert Group is preparing guidance on the features for such tools and is developing the terms of such partnerships.

**Research data repositories**

Research data repositories are a key component of the RDM infrastructure. These platforms support the management of research data as collections and provide all the functionality required to protect and disseminate datasets within these collections. Data repositories are similar to institutional repositories in that they both manage digital collections. However, data repositories have additional functionality to support the diversity found in research data types, their formats, metadata, and their dissemination. Furthermore, some data repositories only serve a specific field of study, such as GenBank for genetic sequence data, while others perform an omnibus function for an institution, hosting data from all areas of research. Some data repositories offer temporary
support by holding research data until arrangements are made to transfer the data to a permanent repository. A research data ecosystem will consist of a mix of these data repository types.

Portage seeks partnerships with the providers of research data repositories that will support the needs of the Canadian academic research community. This will entail working with a variety of data repositories to support the diversity of the research community and, in some instances, engaging in collaborations to build new data repository infrastructure. For example, Scholars Portal, UBC, and the University of Alberta Libraries all operate separate instances of Dataverse, which is a data repository recognized to support what has been called “the long tail of data,” that is, the large volume of smaller sized datasets. These organizations have begun discussions about how they might collaborate as a network and Portage is interested in joining these discussions. Furthermore, Portage has been in discussions with Queen’s University regarding their initiative in preserving and storing big data. This unique project extends the range of support for research data exceeding today's data repositories.

Portage is also engaged in a software project with Compute Canada to develop a federated research data repository. The Portage Preservation Expert Group has two members sitting on the steering committee of this project, along with two members from Compute Canada. Working together, they are overseeing the progress of this two-year initiative. In general terms, this project is integrating the Globus Publisher repository with Archivematica’s preservation processing and incorporating a federated search engine for research data. A significant design feature of this platform is its integrative functionality with other platforms. Individual institutions or organizations can deploy storage locally and can federate their local repository into a national system. It is intended to complement existing data repositories and to fill specific gaps in functionality. For example, it will support the preservation processing of other data repositories, thus, offering a service to other platforms missing this capability. Data storage will be distributed and the system will scale as adoption by researchers and the volume of data grows. The repository will be suitable for managing diverse datasets from a broad spectrum of fields. Furthermore, the repository will be capable of ingesting whole collections of data in bulk or just the files from an individual research project. Access control mechanisms will allow fine-grained control over each dataset. The federated research data repository has adopted the UBC Digital Collections user interface for its discovery window. Any enhancements made to this interface will be returned to UBC and the wider community.

**Preservation**

A primary mandate of research libraries is to preserve information, enabling its future use. However, current digital research infrastructure in Canada fails to provide the preservation storage required for the long-term, safe retention of research data. Portage wishes to collaborate with research libraries and other stakeholders to build this capacity. CARL and COPPUL recently signed an MOU regarding their collective support of Portage. Part of this agreement is to secure necessary preservation storage for digital collections, including research data. OCUL Scholars Portal and the University of Toronto have similar interests in preservation storage. One consequence has been cross-regional library consortia discussions between COPPUL and OCUL on this topic. Portage would welcome joining forces to pursue a preservation storage solution. To achieve a national goal of sufficient preservation storage, a funding mechanism will need to be determined in conjunction with other national digital research infrastructure.
Preparing research data for digital preservation involves processes that evaluate characteristics of the data and metadata. Depending on the outcomes, files may have to be migrated to formats and metadata standards that have been identified by a community of practice as having the greatest likelihood of long-term survival. A platform to provide preservation processing was described above in the discussion about a federated research data repository. This type of processing must be contextualized for the digital content being prepared for archival storage. Portage has identified the need for a Format Policy Registry to assist with the identity of file formats deemed acceptable for preservation. In a submission to the CANARIE software development competition, Portage proposed to build such a registry called PREFER. This would be a web service that preservation services could query regarding acceptable formats. For a file in an unacceptable format, the service would suggest a replacement format. This registry would support the format policies of individual data repositories as well as the preferred formats for a community of practice. While funding was not obtained through CANARIE, this is a project for which Portage is still seeking a partner.

**Discovery**

Accompanying the vision of a federated research data service is RDM infrastructure where the various platforms making up the component pieces of a national digital research infrastructure interoperate. Even though different data collections are hosted on different data repositories, with different access controls, and employing different metadata, all of these datasets should be discoverable through a federated search tool. The Compute Canada and Portage software development project described in the section on research data repositories is implementing a discovery platform that harvests metadata from open data repositories. As mentioned earlier, the UBC Digital Collections user interface has been incorporated in this development. The challenge remains to capitalize on the different metadata standards used to describe research data. The Portage Discovery Expert Group is investigating ways of using different metadata schema and also looking at collection development policies for data repositories to help navigate the increasing number of such repositories.
Appendix 4: Expert Groups (as of October 30, 2016)

A full complement of expert groups has been organized and the current group membership consists of individuals who have expressed interest in serving or who have been approached by the Portage Director to add a specific skill set at this stage of the Network’s development.

Data Management Plan Expert Group (DMPEG)
- Eugene Barsky, University of British Columbia
- Jay Brodeur, McMaster University
- John Brosz, University of Calgary
- Jane Burpee, McGill University
- Talia Chung, University of Ottawa
- James Doiron, University of Alberta
- Carla Graebner, Simon Fraser University
- Alex Guindon, Concordia University
- James MacKenzie, University of New Brunswick
- Jeff Moon, Queen’s University (Chair)
- Carol Perry, University of Guelph

Technical support:
- Chuck Humphrey, Portage
- Jeff Moon, Queen’s University
- Diane Sauvé, Université de Montréal
- Weiwei Shi, University of Alberta
- Marie-Hélène Vézina, Université de Montréal

Data Curation Expert Group (CEG)
- Jay Brodeur, McMaster University (Chair)
- Chuck Humphrey, Portage
- Joanne Paterson, Western University
- Leanne Trimble, University of Toronto
- Jessica Gallinger, Simon Fraser University

Data Preservation Expert Group (PEG)
- Corey Davis, COPPUL
- Chuck Humphrey, Portage
- Steve Marks, University of Toronto (Chair)
- Umar Qasim, University of Alberta

Data Discovery Expert Group (DEG)
- Eugene Barsky, University of British Columbia (Chair)
- John Brosz, University of Calgary
- Alex Garnett, Simon Fraser University
- Chuck Humphrey, Portage
- Amber Leahey, Scholars Portal
- Berenica Vejvoda, McGill University

Data Training Expert Group (TEG)
- James Doiron, University of Alberta
- Jane Fry, Carleton University (Chair)
- Chuck Humphrey, Portage
• Danny Létourneau, Université de Montréal
• Laure Perrier, University of Toronto
• Carol Perry, University of Guelph
• Wendy Watkins, Carleton University Retired

Research Intelligence Expert Group (RIEG)
• Dylanne Dearborn, University of Toronto (Chair)
• Melissa Cheung, University of Ottawa
• Chuck Humphrey, Portage
• Lyne Da Sylva, Université de Montréal
• Kathy Szigeti, University of Waterloo
• Tatiana Zaraiskaya, Queen’s University

<table>
<thead>
<tr>
<th>Expert Group Acronym</th>
<th>Number of Individuals</th>
<th>Number of Unique Institutions</th>
</tr>
</thead>
<tbody>
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<td>DMPEG</td>
<td>16</td>
<td>14</td>
</tr>
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<td>6</td>
</tr>
<tr>
<td>RIEG</td>
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<td>6</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>44†</strong></td>
<td><strong>19</strong></td>
</tr>
</tbody>
</table>

† Seven of the members serve on multiple expert groups, including the Portage Director, who is an ex officio member of all groups. Thirty-three individuals are currently serving in the 44 positions.