CFI Cyber-infrastructure Initiative

June 2014
Context

- **Budget 2013** made reference to the fact that a portion of the CFI interest-generated income would be allocated to support cyber-infrastructure.
- **Digital Canada 150** makes reference to the CFI investment of $50M in support of cyber-infrastructure.
Lots of interest in cyber-infrastructure

• June 2013 – STIC was asked to provide advice to the Minister of State on Science and Technology

• TC$^3+$ : Consultation Paper on Digital Scholarship

• Digital Infrastructure Leadership Council (28$^{th}$ and 29$^{th}$ Jan. 2014) - Roadmap
Lots of interest in cyber-infrastructure

• Research Data Canada Webinar on Feb. 5\textsuperscript{th}, 2014 on research data management. \textit{Defining and Deploying an Institutional Data Repository Service at Purdue University} – Michael Witt

• CFI held a one-day workshop in Toronto with 15 researchers on Jan. 23, 2014 to understand the needs of the research community in 5 to 7 years.
What we’ve heard … (Jan 2014 Workshop)

• The nature of research computing is changing
• Data are getting larger and more complex
• We’re reaching the limits of our current capacity
• Need for experimentation and technology development
• Potential for working with industry … cultural barriers exists
• Challenges in coordinating funding, expertise and systems development
• CC has limited capacity to integrate specialized, project level equipment
• Tension exists between excellence and building common resources
• Periodic, uneven funding limits consistent and well coordinated capacity building
• Upgrade the common backbone and let more specialized initiatives operate on top of it
• Let competition drive the selection of fundable initiatives
Key Parameters

“science will drive the investments”

• Excellence is the key driver. Seeking to enable:
  – globally competitive,
  – data-intensive and
  – computationally challenging research

• Competitive element

• Maintain commitment to shared resources
CFI investments in cyber-infrastructure

To date, the CFI has invested close to $300 million in HPC facilities and in Compute Canada for both capital and O&M (i.e., 5% of the CFI budget)

Let’s not forget the investments of our partners
• Provinces
• Universities
• Private sector partnerships

Approx. $700 M over the past 16 years (~$43 M/yr) of CFI-enabled investments
The Cyber-infrastructure Initiative
Objective of the Cyber-infrastructure initiative

Provide Canadian institutions and their researchers with the cyber-infrastructure required to enable ground-breaking, data-intensive and computationally challenging research in areas of strategic importance.
Cyber-infrastructure

Following the CFI definition of research infrastructure:

• Common or shared resources for data intensive and computationally challenging research. This includes:
  – the design and development of integrated information databases and analytical tools to exploit these resources;
  – the creation of specialized software tools required to effectively use the data resource;
  – personnel for the development and integration of federated databases, and the development of software tools.

• Intended for resources that require computational and data storage capacity beyond what can be provided by individual institutions
Two-pronged challenge

• **Communities of researchers:** to come together to create tailored and shared integrated datasets, data repositories or research data centres that will enable cutting edge research on significant scientific, social or economic questions.

• **Compute Canada:** to propose a set of capabilities and services to meet:
  - immediate pressing needs for renewal of the platform
  - the needs of researchers conducting data-intensive and computationally challenging research over medium term.
Compute Canada National Platform

Domain-specific data project

Comput Canada National Platform

Westgrid
Compute Ontario
Calcul Québec
ACENet

CANARIE Network
Funds available

• At least $50 million, inclusive of operation & maintenance costs (O&M)

• Competition outcomes will determine the distribution of funds between the two inter-related prongs

• O&M costs for Compute Canada are already supported under the CFI’s Major Science Initiatives (MSI) Fund

• Some O&M support for domain-specific data projects may be requested, subject to merit review
Review process

- Domain-specific data projects and the Compute Canada renewal plans will be assessed on the basis of:
  - Quality of the science enabled by the infrastructure;
  - Need for the infrastructure;
  - Benefits that will result from the enabled research.
Review process (continued)

- In addition, domain-specific data projects will also be assessed on the basis of:
  - Generalizability (e.g. interoperability, scalability) of the data resources;
  - Plans to maintain the relevance, usability and sustainability of the data resources;
  - Adopt, adapt, develop.

- Review by Expert Committees followed by Multi-disciplinary Assessment Committee (MAC)
# Timelines

<table>
<thead>
<tr>
<th>Key date</th>
<th>Compute Canada</th>
<th>Domain-specific proposals</th>
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<tbody>
<tr>
<td>October 2014</td>
<td>Call for a renewal plan</td>
<td>Call for Proposals released</td>
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<tr>
<td>January 2015</td>
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<td>NOI deadline</td>
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<td>April 2015</td>
<td>Submission of the renewal plan</td>
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<tr>
<td>June 2015</td>
<td><strong>CFI DECISION</strong></td>
<td>Full proposal deadline</td>
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<td>October 2015</td>
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<td>November 2015</td>
<td>Submission of a second plan to support funded domain-specific data projects.</td>
<td><strong>CFI DECISIONS</strong></td>
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<tr>
<td>March 2016</td>
<td><strong>CFI DECISION</strong></td>
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Questions?

• Have we overlooked anything that is required to ensure the success of data-intensive, computationally-challenging research?

• Will communities of researchers have sufficient time to come together to develop domain-specific data projects by January 2015?
Questions?

• Should the Notices of Intent be subject to merit review?
• What will be the main recurring or incremental costs of the domain-specific data projects?