

2024 Community Roadshow

January - March 2024



Digital Research
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Agenda

1. 2025-30 Mandate Renewal Overview
 - a. Analysis Results: Canada's DRI Current State
 - b. Vision for DRI in Canada 2025-30+
 - c. DRI Funding Model
2. Next steps

Three distinct roles for the Alliance:

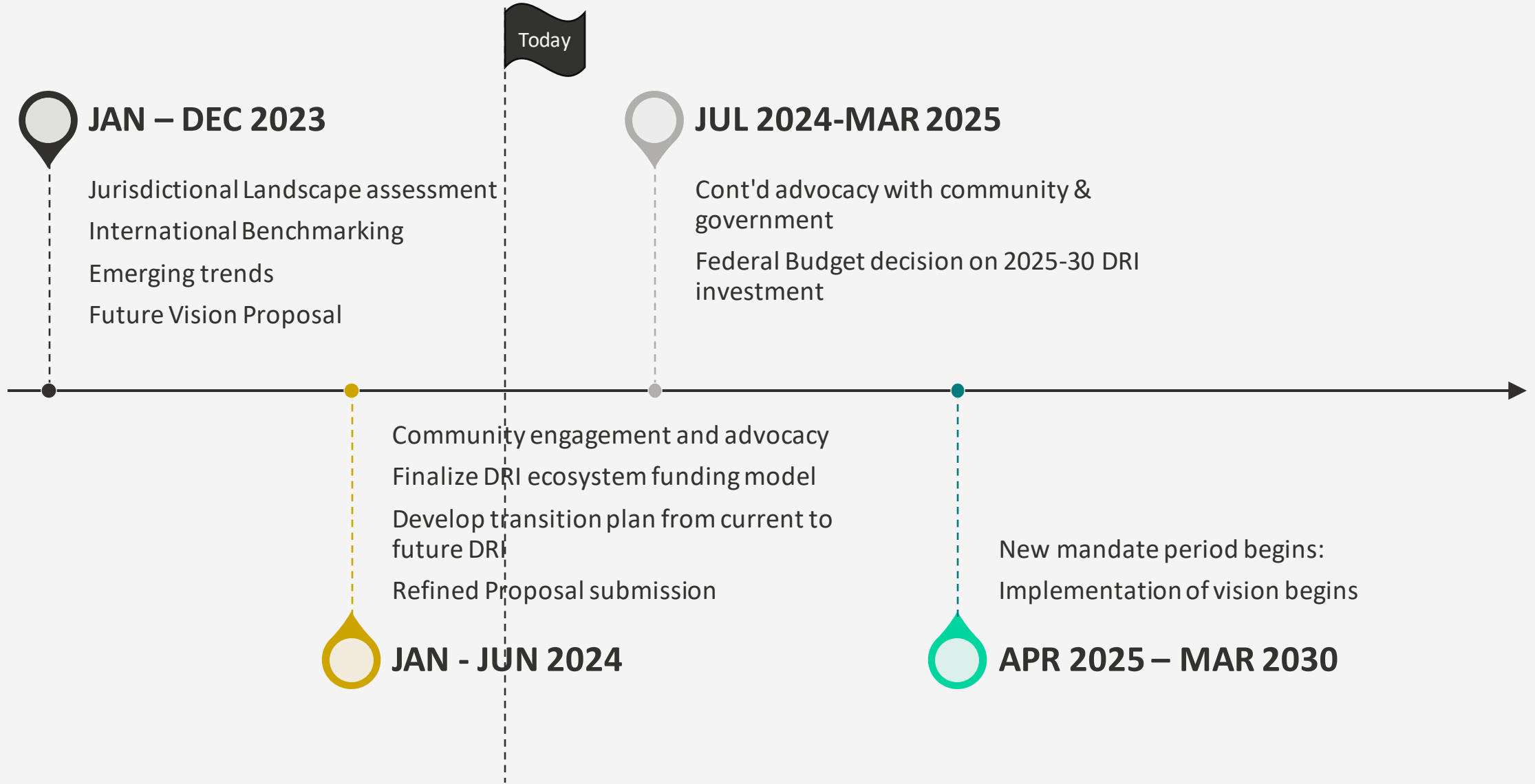
1. Provide and coordinate national DRI services.
2. Fund DRI investments and services.
3. Set the strategy for DRI in Canada.



The future of DRI in Canada.

Our approach and the results of the analysis conducted to develop the future state of DRI in Canada

2025-30: Process Timeline



Process to develop a future state of DRI in Canada.



Re-review the analysis from broad consultations and inputs from 2019-2022



Focus on benchmarking and jurisdictional analysis



Open call for input on emerging trends in DRI (July-Aug 2023)



Focused input from key stakeholders from the Alliance Researcher Council and 2025-30 Advisory Committee



Targeted engagement to gain alignment with national research organizations



Next steps: validate the conclusions towards a new future state of DRI in Canada



Results of Analysis, Findings, and Benchmarking.



Current State of Canada's DRI.



Recognized for
integrating DRI under
single leadership



Fragmented
service model



Inequity between
provinces &
institutions



Episodic funding for
infrastructure,
services & personnel



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How We Measure Against Our Global Peers.

| Area | EU | US | FR | AU | JP | DE | CA |
|-----------------------------|----|----|----|----|----|----|----|
| Advanced Research Computing | ● | ● | ● | ● | ● | ● | ● |
| Research Software | ● | ● | ● | ● | ● | ● | - |
| Data Management | ● | ● | ● | ● | ● | ● | ● |
| Training | ● | ● | ● | ● | ● | ● | - |
| Security | ● | ● | ● | ● | ● | ● | ● |

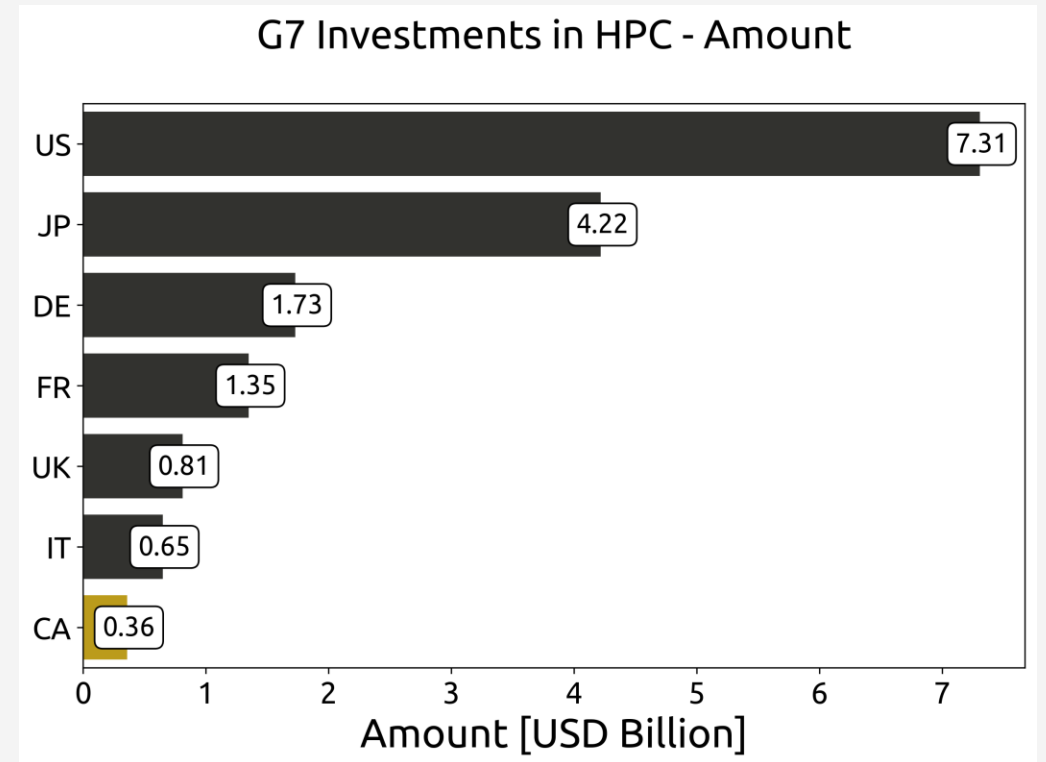
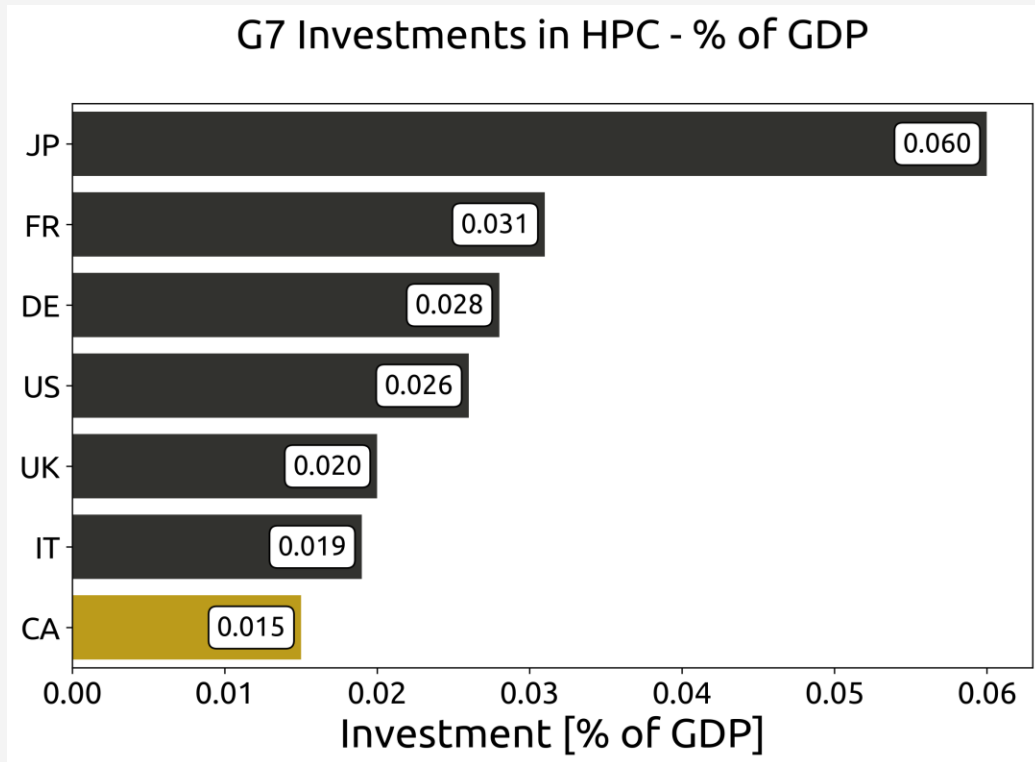
G7 Peer Comparison: DRI Strategy Components

Summary of Jurisdictional Priorities in DRI.

| | European Union | United Kingdom | Australia | United States |
|-----|---|--|---|---|
| ARC | 1.9+ billion EUR for <u>exascale supercomputers</u> | 1.2+ billion GBP for <u>exascale supercomputer</u> by 2025 | Expand computing capacity across AUS, including <u>exascale</u> , and <u>green HPC</u> | Department of Energy will have 4 <u>exascale</u> super computers by the end of 2023. |
| RS | Innovation with digital twins <u>software</u> and their reliance on <u>ARC and data</u> | Interdisciplinary <u>RSE community formed</u> to respond to <u>exascale training</u> and skill challenges. | ARDC leading strategy on <u>upskilling/training software developers</u> and researchers. | <u>Upskilling RSE workforce on exascale software</u> acceleration, system resilience, and optimization. |
| RDM | An open cross-border and <u>multi-disciplinary data space</u> that maintains autonomy of resource/data providers. | Highly secure platform for access to <u>sensitive data</u> for approved researchers. (Data Classification) | 9x <u>thematic data commons</u> , established data curation standards, and classification scheme for data | <u>Collaborations with university, industry, and state partners</u> on best practices & barriers (regulatory, structural, administrative) |

Benchmarking.

G7 Peer Comparison: Investment in HPC



From: OECD and Hyperion



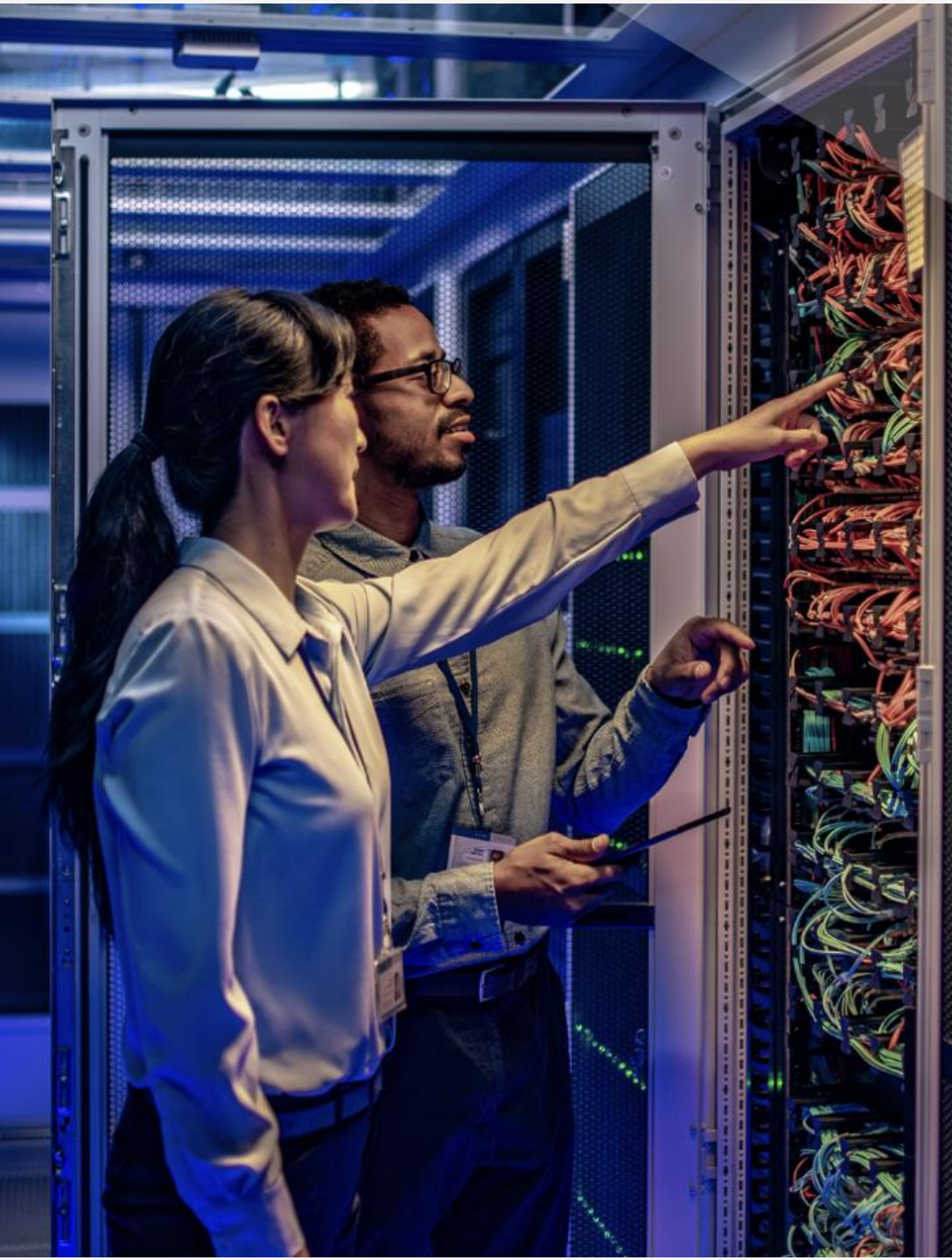
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“Transformation Drivers” shaping the future state of DRI in Canada.





Emerging trends.

1. Exponential Growth in Data and Compute

- Data is increasing in complexity and volume resulting in more compute and storage capacity.

2. Artificial Intelligence is here and now

- Canada needs to provide access to compute capacity and high-quality, data sets (LLMs) while supporting AI across research disciplines.

3. Security and Sovereignty

- In this digital world, securing Canada's research assets while balancing the importance of open science is critical.



Conclusion: Our Competitive Barrier.

Aspects of the current model is a barrier to enhancing Canada's G7 position, and responding to the emerging trends due to:



Limiting ability to scale compute capability and capacity



Insufficient focus on Industry-Academic and Government research



Complicated funding model



Lack of national research data strategy



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Our conclusion: What Canada's Future of DRI needs.



Future vision for Canada's DRI:



DRI support and services for academic, government, and industry-academic research



A national data and software platform that optimizes access to research outputs



Significant investment in training for researchers and DRI workforce development



Integrated DRI service catalogue for researchers to access the tools they need.



Enhanced security to protect DRI and research outputs while enabling data sovereignty and open science



Exascale compute capacity supporting multiple ARC & Cloud capabilities with distributed storage model

DRI Ecosystem Funding Model

Funding Model: Current Issues

The utilization and reliance on DRI capacity and services requires on-going and committed funding for Canada's research ecosystem. The current funding formula, greatly hampers the ability to maintain a commitment to deliver services to Canada's researchers.

1. There is a large inequity between the provinces and institutions that contribute to the costs of DRI.
2. Infrastructure refresh of large renewals are proceeding without an agreed upon provincial / institutional funding commitment causing delays and risk of service disruption.
3. Funding is episodic and project-based instead of based on value, life-cycle and progress toward specific national goals.

Principles for the new Funding Model

- Differentiate the funding model options between capital infrastructure expenditures and operating expenditure costs.
- Equity in funding contributions and access to National DRI services.
- The funding model incents efficient and equitable use of National systems and tools.
- Simplify and improve access to the National DRI Services platform (more researchers, less process).

Next Steps

1. Continued engagement with the DRI research community on the 2025-30 vision.
2. Strengthen advocacy and support for the future vision and investment.
3. Refine the 2025-30 proposal:
 1. Solidify a new DRI Ecosystem Funding Model
 2. Develop an implementation plan that considers how to achieve the 2025-30 vision.



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