Facilities funded through the MSIF, in the context of the National Data Governance Framework

Installations financées par le FISM, dans le contexte du cadre de gouvernance des données scientifiques canadiennes

David Castle
Moderator
Chair of the **SuperDARN**
National Advisory Committee

Natalie Harrower
Executive Director
CRDCN

Benoît Pirenne,
Chief Innovation and
Technology Officer
ONC

National Data Governance Framework Advisory Committee

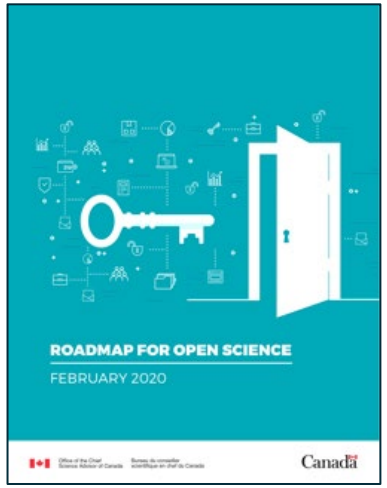
2025 CFI Major Science Initiatives Fund Workshop

David Castle

February 5_2025

Office of the Chief Science Advisor of Canada
Bureau du conseiller scientifique en chef du Canada
Canada

Roadmap for Open Science (Feb 2020)



5. Federal departments and agencies should develop strategies and tools to implement FAIR data principles to ensure interoperability of scientific and research data* and metadata standards by January 2023, with a phased plan for full implementation by January 2025.

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Advisory Committee on Canadian Scientific Data Governance

At the end of 2023, the Chief Science Advisor of Canada assembled a committee of experts to advise her on the development of a scientific data governance framework as part of a coherent open science approach for Canada.

In February 2020, the Office of the Chief Science Advisor (OCSA) released the Roadmap for Open Science. The Roadmap has contributed to stimulating and coordinating the federal science community's progress towards open science, with results that include the development of departmental action plans, guidance on implementing open-by-default, and creating a federal open science repository.

The Roadmap (in Recommendation 9) also led to considerations of open science for federally funded, extramural research, especially matters pertaining to open access publications, article processing charges, supports to researchers, and transformative agreements with publishers. These topics were considered in round tables completed in December 2021 and published in the 2022 report, "The Open Science Dialogues: Summary of Stakeholders' Round Tables".

As intended in the Roadmap, after attention was put on advancing open access publishing, attention is now moving to data, with a special focus on the implementation of FAIR principles to maximize the benefits of openness (Recommendation 5).

Canada's progress on developing a coherent national approach to scientific data urgently needs exploration. A fully functioning scientific data ecosystem is a requirement for Canadian researchers to attract and maintain global collaborations and international research funding, for example, Horizon Europe projects. Canada risks falling behind in open science implementation and being less competitive as a result.

Committee Members

Amy Buckland (co-chair)
University Librarian
Concordia University

David Castle (co-chair)
Professor, University of Victoria
Researcher in Residence, OCSA

Mark Daley
Chief AI Officer and Professor
Western University

Monica Granados
Assistant Director, Open Climate
Creative Commons

Natalie Harrower
Executive Director, Canadian
Research Data Centre Network

Kevin Kasa
MASc student University of Guelph and
Vector Institute

Lee Wilson (replaces Mark Leggott)
Director of Research Data Management
Digital Research Alliance of Canada

Kim McGrail
Professor, School of Population
and Public Health, UBC

Benoit Pirenne
Director, user engagement
Ocean Networks Canada

Eric Rancourt
Assistant Chief Statistician and Chief
Data Officer, Statistics Canada

Sujeevan Ratnasingham
Director, Informatics
Centre for biodiversity genomics

Kathleen Shearer
Executive Director, Confederation of
Open Access Repositories

Reda Tafirout
Senior Research Scientist and
Department Head for Scientific
Computing, TRIUMF

Bo Wandschneider (retired)
Chief Information Officer
University of Toronto

Peter Wilenius (retired)
Vice-President, Cybersecurity
Programs
CANARIE

Data types and domains

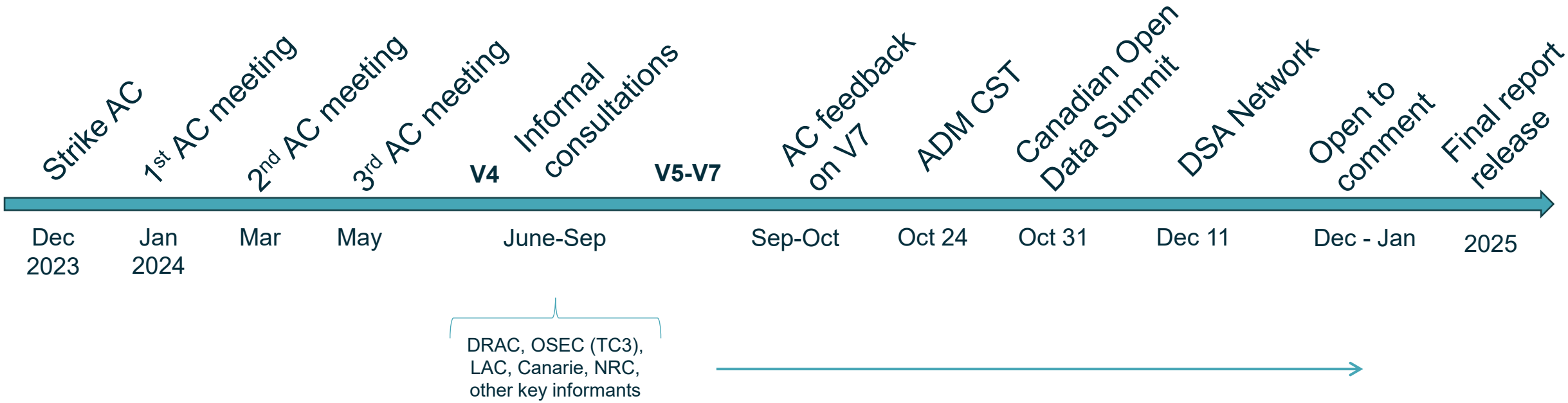
Office of the Chief Science Advisor and Library and Archives Canada:

- regulatory or other government science activities;
- legacy data, objects and documents; and
- academic research

Scientific data types: real-world data; established knowledge; and experimental data

Scientific data domains (spaces): data production in well-bounded domains characterized by subject matter and communities of practice.

Timeline


Strike AC
1st AC meeting
2nd AC meeting
3rd AC meeting
V4
Informal consultations
V5-V7
AC feedback on V7
ADM CST
Canadian Open Data Summit
DSA Network
Open to comment
Final report release
Dec 2023
Jan 2024
Mar
May
June-Sep
Sep-Oct
Oct 24
Oct 31
Dec 11
Dec - Jan
2025
DRAC, OSEC (TC3), LAC, Canarie, NRC, other key informants

Why care about data?

- Science, technology and innovation (STI) are critical for Canadians' collective wealth, well-being, and security

- Data governance improves STI performance in a digital world
  - Digitalization of science – science data production and use are changing rapidly
  - FAIR data standards are key for AI to leverage data to create value

- National security – data governance is necessary ensure valuable information and Canada's interests are protected

What is limiting our success?

- Fragmentation across data domains
- Sector and disciplinary silos
- Lacking or not enforcing consistent principles and standards
- Low national and international interoperability
- Suboptimal prioritization of scarce resources
- Workforce capacity and skills are difficult to assess
- Need for security enhancements

Report - Table of Contents

National Data Governance Framework

- Recognize data as a national asset
- Systemwide comprehensive approach for both the primary data collection process and the secondary consolidation and reuse
- Complementary with existing data governance initiatives and practices
- Supports existing organizations' efforts
- Promotes the aims of open science
- Framework lays the groundwork for the evolution of a roadmap, consultation processes, organizational strategies or action plans

Summary of principles

Principle 1 – Data Centricity
Principle 2 – Data Domains
Principle 3 – Focal Point
Principle 4 – Organizational Mandates

Organizational Coherence

Principle 5 – Data Domain Leadership
Principle 6 – Data Stewardship Principles
Principle 7 – Common Tools and Metrics
Principle 8 – Security

Practice Coherence

Summary of principles

Principle 1 – Data Centricity – Data is its own entity and can be followed through lifecycle models and value chains. A data-centricity establishes data as the throughline for interpreting how data governance framework variables can be configured to achieve best system outcomes.

Principle 2 – Data Domains – Identified and organized by subject matter and communities of practice involving data producers and users, should cluster as much as possible under shared governance to benefit from the mutualisation of resources and expertise, and foster practice coherence within data domains.

Principle 3 – Focal Point – A Focal Point for data governance should be created to foster coherence across data domains and related organizations united by a common vision of the value of data to Canada.

Principle 4 – Organizational Mandates – Funding roles and other system-level responsibilities should be clear and aligned with respective organisation mandates. Together system-level actors should foster strong incentives for data producers and users to operate within the proposed framework logic

Summary of principles

Principle 5 – Data Domain Leadership – Domains should lead on the evolution of practices, working towards the development of standards, workforce capacity and skills to address with practice fragmentation within each data domain.

Principle 6 – Data Stewardship Principles – A commitment to data stewardship and consensus on minimal practice and performance standards should underpin national data governance.

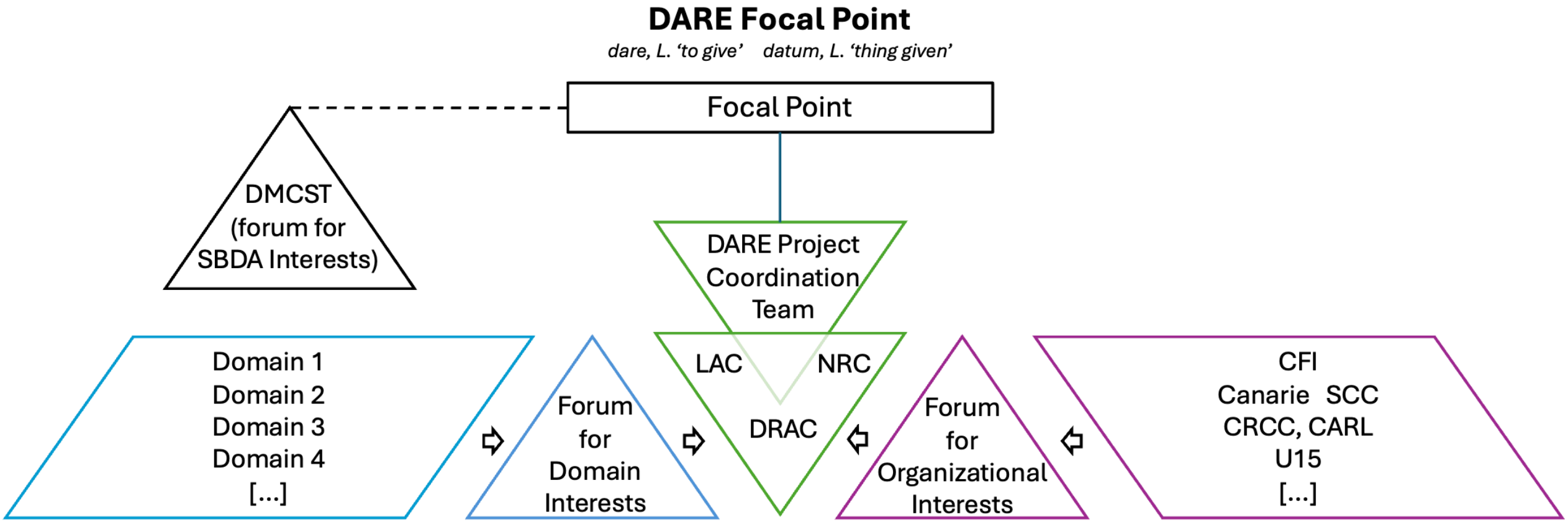
Principle 7 – Common Tools and Metrics – Data domains and related organizations should establish, through the Focal Point, which tools and metrics are necessary enable practical aspects of data governance.

Principle 8 – Security – Data is a national asset for Canada and requires securitization commensurate with the significant investment in data production and broad social reliance on data for continued national prosperity.

Vignettes of Data Domains

- Polar Data Search (WDS ITO)
- Pan-Canadian Health Data Strategy
- Canadian Astronomy Data Centre
- Barcode of Life Database (BOLD) and mBRAVE
- Ocean data: ORCA; CIOOS; ONC Oceans 3.0
- Cultural heritage data: CRKN, Scholars Portal, CHIN, NIKLA, LAC

Possible Focal Point structure



Roadmap

- Two year process
- Convene the two *fora*
  - Organizations are easier to assemble than data domains (criteria?)
- Promulgation of the principles-based narrative on governance
  - 'trusted research environments' for data
  - FAIR implementation profiles (FIPs)
  - Machine actionable; AI-ready
- Advance the mission of creating 'data infrastructures'
  - Domain-responsive and generic services
  - Workforce capacity and skills
- Reorientation of MSIs/MRFs to a data-centric governance model

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Practice Coherence