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National Persistent Identifier Strategy: Building an Interconnected and Open Research Ecosystem

John Aspler, Manager, Canadian PID Community, CRKN

Eugene Barsky, Research Data Management Librarian, UBC

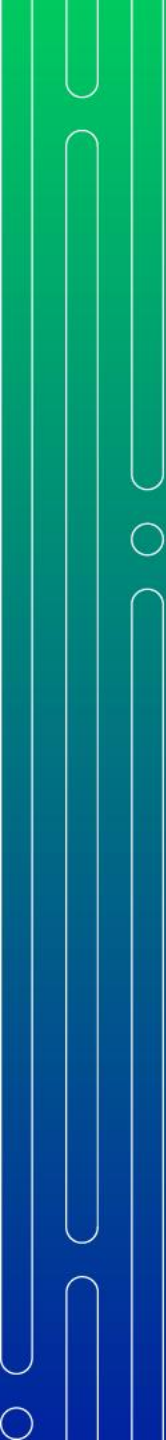
Susan Haigh, Executive Director, CARL

Lee Wilson, Director of Research Data Management, the Alliance

crkn-rcdr.ca

Session Schedule

1. Introduction – Susan Haigh
2. National PID Strategy Update – John Aspler
 - PIDs and Canadian Funders
3. A National Research Activity Identifier (RAiD) Registration Agency for Canada– Lee Wilson
4. Knitting the PID Ecosystem Together – Eugene Barsky
5. Conclusion and Next Steps – Susan Haigh
6. Questions

The left side of the slide features a series of vertical white lines of varying heights and widths, some ending in small circles, creating a modern, abstract border.

Introduction

Susan Haigh

PID Governance in Canada



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**ORCID Canada
Governing
Committee**



**DataCite Canada
Governing
Committee**

Canadian Persistent Identifier Advisory Committee: CPIDAC

- [CPIDAC](#): PID Strategy Development and Implementation
 - Shared advisory committee, advising bilingual PID consortia
- Committee composed of 28 organizations:
 - Funders (e.g., SSHRC, NSERC, CIHR, TGMS, FRQ, CFI)
 - Library Consortia and Associations (e.g., OCUL, CAAL, CARL)
 - Digital Research Infrastructure (e.g., Alliance, Scholars Portal)
 - Others (e.g., CUCCIO, Research Administrators – CARA)
- Funding from Digital Research Alliance of Canada



**Digital Research
Alliance** of Canada

**Alliance de recherche
numérique** du Canada

National PID Strategy Update

Persistent Identifiers (PIDs) in Canada



ORCID Canada Consortium

- 55 members (U15, Funders)
 - NSERC, SSHRC, FRQ, CFI
- 86 integrations
- 170K/260K active iDs (.ca)



DataCite Canada Consortium

- 87 members – Soon: CFI
- 117 repositories
- >725,000 DOIs



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Governing Committee Nominations

- ORCID-CA Governing Committee
 - 2 members: Seeking Atlantic Canada and non-University organizations
 - Deadline: October 31, 2025, 5PM ET
- DataCite Canada Governing Committee
 - 1 member: Seeking a non-University organization
 - Deadline: October 31, 2025, 5PM ET

Engage with us!

- orcid@crkn.ca
- datacite@crkn.ca

Canadian PID Strategy

Why a national strategy?

- Collaborative and Community-driven
- National funding to support centralized initiatives
- National policies (Open Science)



Phase I, II, III

- CRKN, Alliance, CPIDAC
- Community Consultations
- [Initial Report](#) (Phase I)
- [Comms Toolkit](#) (Phase II)
- Priority PID Entities (Phase II)
- [PID Selection Matrix](#) (Phase III)
- [Vision, Mission, Principles](#) (Phase III)
- Entity-by-Entity Action Plan (Phase III)
- [Final Report/Recommendations](#) (Phase III)
- Forthcoming (in translation)
 - Canadian PID Strategy
 - Checklist for Success
 - Stakeholder Actions

Canadian PID Strategy: Website Updates

Persistent Identifiers

Advancing the adoption of persistent identifiers in
open, connected pathways to
knowledge.

Principles



Open

Open systems will be prioritized wherever feasible.



Inclusive and Equitable

The strategy, the activities it shapes, and their outcomes must be inclusive and equitable.



Collaborative

Community engagement and collaboration will be a central component of the strategy.



National and International

The national strategy will be international in scope.



Transformative

The goal of the strategy is effective, tangible change.



Trust

The strategy will support high-quality, trustworthy, and verifiable data.

Resources

Since 2021, CRKN and the Alliance have been developing this national strategy drawing on international expertise from MoreBrains Cooperative. With guidance from the Canadian Persistent Identifier Advisory Committee (CPIDAC), they have developed materials to support PID adoption in Canada.

Engagement Toolkit

PID Matrix

Consultation Reports

Canadian Persistent Identifier Advisory Committee

In 2020, the Canadian Persistent Identifier Advisory Committee (CPIDAC) replaced the ORCID-CA Advisory Committee. The CPIDAC acts in the interests of the Canadian scholarly and research communities by providing expertise and advice to both the ORCID-CA Governing Committee and the DataCite Canada Consortium Governing Committee on leveraging maximum benefits through national adoption and use of PIDs. Since 2021, the CPIDAC has steered the development of a national PID strategy for Canada.

MEMBER

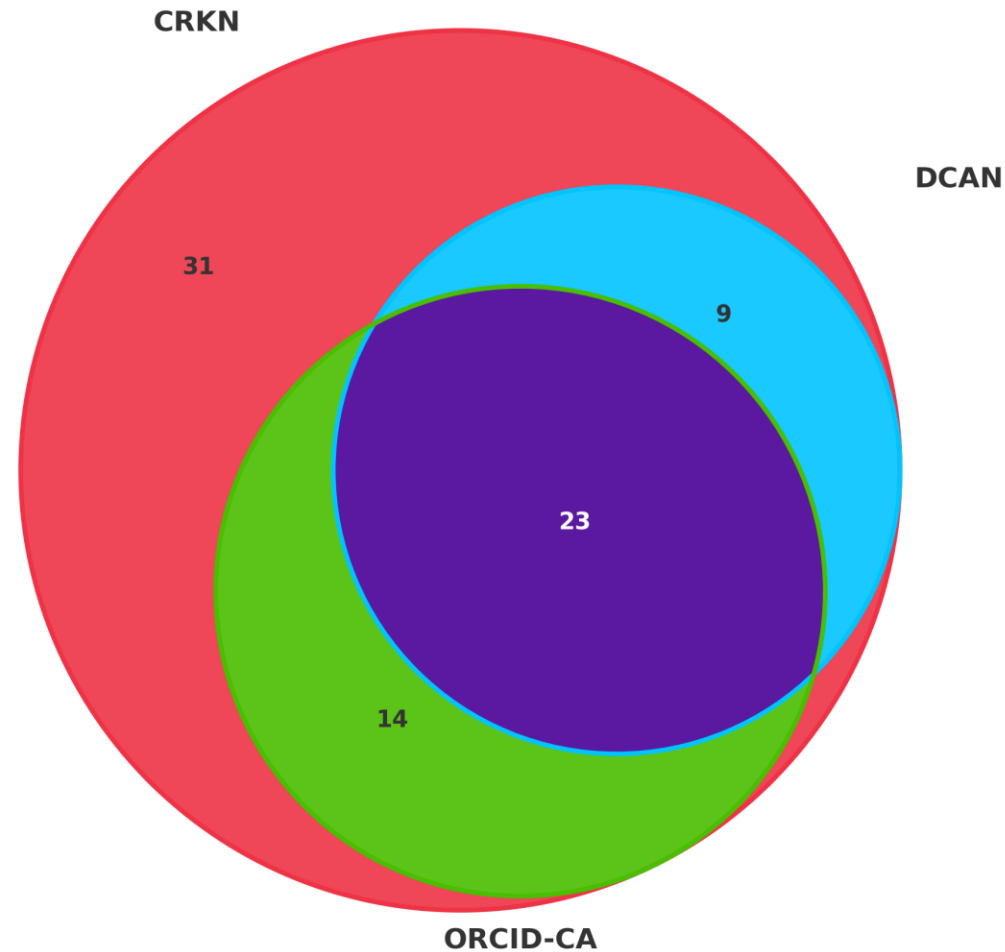


Susan Haigh
Chair

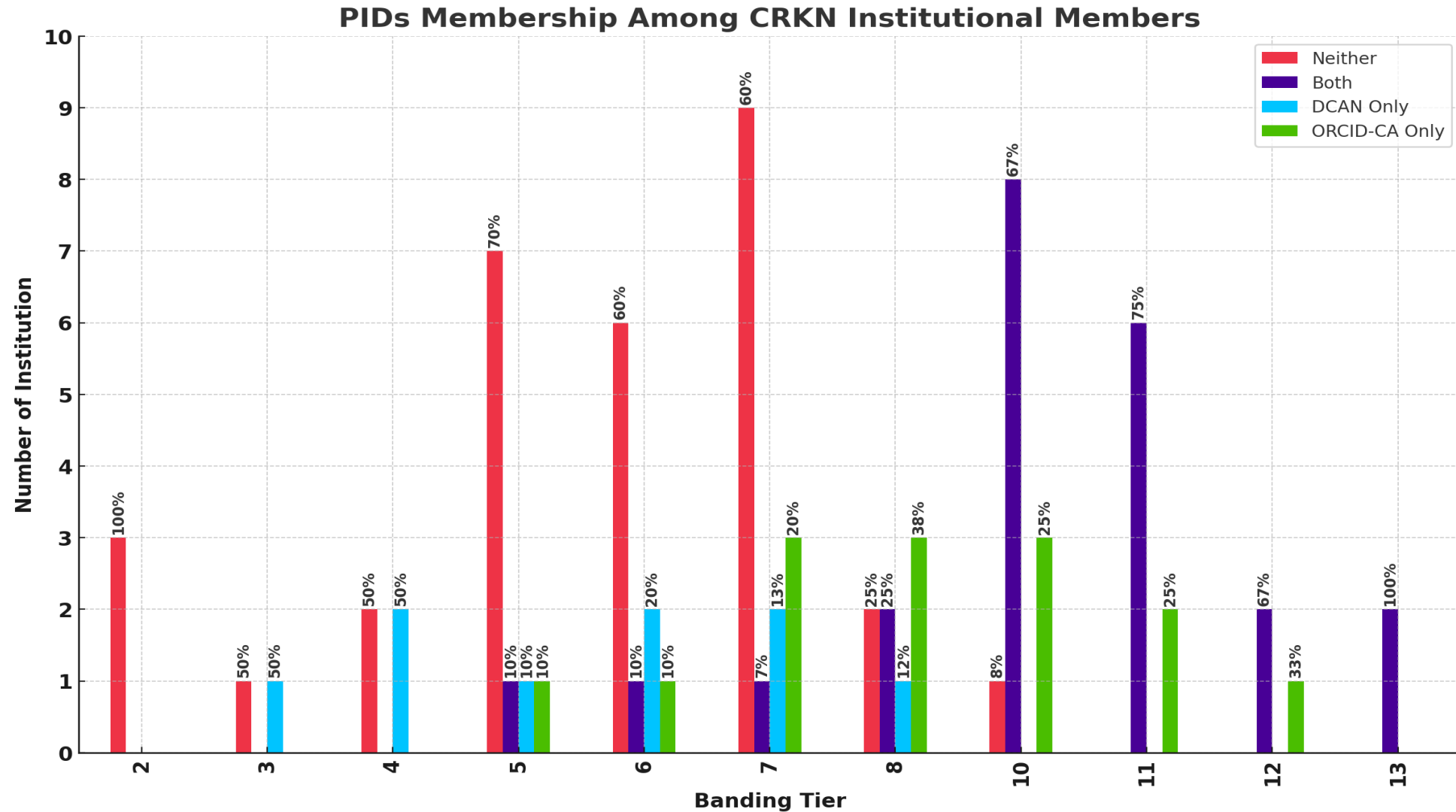
Executive Director
Canadian Association of Research Libraries (CARL)

Gap Analysis: Overlap of PID Memberships Among CRKN Institutional Members

Overlap of CRKN, DCAN, and ORCID-CA Membership



Gap Analysis: PID Membership Breakdown by CRKN Institutional Member Bands



Entity-by-Entity Action Plans

Priority Entities	Candidate PIDs	Maturity	Next Steps: PIDs Recommended in Report
People	ORCID ISNI	Established Established	Recommend the use of ORCID IDs for current scholars – we do this already. ISNI might be a helpful use case for historical or cultural figures – to study. Scopus does not respond to the PID Matrix Selection Criteria/Principles.
Outputs	Crossref DOIs DataCite DOIs ARKs	Established Established Established*	Metadata schema should guide the choice of DataCite vs Crossref . *ARKs depend on resolver context. Evaluate ARKs with DOIs to see when needed.
Organizations	ROR ISNI	Emerging Established	ROR is an emerging PID, but likely the candidate of choice. ISNI requires study. Ringgold does not respond to the PID Matrix Selection Criteria/Principles.
DMPs	DataCite DOIs	Established	Recommend the use of DataCite DOIs .
Grants	Crossref DOIs DataCite DOIs	Established Emerging	Careful comparison of use cases; Crossref used by some CA funders.
Projects	RAiD	In Development	RAiD is the only candidate, but still in early stages of development. To watch.
Software	SWIHDs	Emerging	SWIHDs show promise, but low maturity and adoption. To watch and study.
Facilities, Instruments, Equipment, Resources	ROR DataCite DOIs RRIDs	N/A	Too much complexity in this space – some options exist (RRIDs for biological resources, ROR for some facilities, DOIs for some instruments), so it is recommended to watch and study.

PIDs and Canadian Funders

PIDs and Canadian Funders

ORCID-CA

NSERC, SSHRC, FRQ, CFI, and the Canadian Cancer Society

NSERC/SSHRC

Tri-Agency [integrated ORCID into the Convergence platform](#)

3,764 Connected ORCID iDs = #1 connected system in Canada already

FRQ

FRQ launched a full ORCID integration in FRQNet

2,395 Connected ORCID iDs = #3 connected system in Canada; 32 Records Updated

Digital Object Identifiers (DOIs)



- Persistent identifiers for digital object
- Primarily used for identifying research outputs
- An increasingly catchall PID for *anything* in research
- Make outputs Findable, Accessible, Interoperable, and Reusable (FAIR)

DOI Registration Agencies

- Not one, but many, in different contexts
- National approaches (e.g., JaLC, KISTI)
- Metadata/use case approaches
 - Crossref: Publications (and more)
 - DataCite: Datasets (and more)

Responsibility – Institutional!

- Individuals can't register DOIs



Digital Object Identifiers (DOIs) for Grants/Awards

Entity: Grants/Awards

PID of Choice: DOIs

PID Provider: Crossref vs DataCite

- Crossref (direct member): FRQ
- DataCite Canada: CFI (forthcoming)

Maturity: Early stage PID use case

- 175K DOIs with Crossref since 2019; 44 organizations
- 8K DOIs with DataCite since late 2024; 6 organizations

Crossref vs DataCite: DOIs for Grants/Awards

Cost/Business Model

DataCite is more affordable

- Crossref is \$2.00 USD for new Grants, \$0.30 USD for retroactive grants
- DataCite Canada is 600 EUR for up to 100,000 DOIs in one year

Member Services

Direct with Crossref vs through DataCite Canada

Exposure

Crossref is more widely used, especially by publishers

Metadata

Both metadata schemas have pros and cons to consider

- Crossref's schema is built to purpose: Consistent, Solid, Slow, Rigid
- DataCite uses its general schema with a new Award type: Awkward, Flexible, Rich

Note: Open ecosystems – Can shift from one service to the other

FRQ Experience with ORCID and Crossref

- Testimonial: Fantastic experience, excellent service

Crossref	
Publisher Name	Registered Grant IDs
Publications Office of the European Union	53,925
Fonds de recherche du Québec	25,102
Wellcome	19,929
Austrian Science Fund (FWF)	19,577
Fundacao para a Ciencia e a Tecnologia (unidadeFCCN)	17,422
Office of Scientific and Technical Information (OSTI)	14,252
Japan Science and Technology Agency (JST)	11,866
American Heart Association (AHA)	2,836
Dutch Research Council	1,517
American Cancer Society	1,252
American Institute for Cancer Research	806
Children's Tumor Foundation	737
James S. McDonnell Foundation	688
Asia-Pacific Network for Global Change Research	599
The ALS Association	589

DataCite	
Publisher Name	Registered Grant IDs
California Digital Library	7,931
National Oceanic and Atmospheric Administration (NOAA) - NOAA Central Library	31
ARDC Co-investments	20
DataCite	19
The Navigation Fund Open Science Program	12
Australian Government Department of Education	1
Total	8,014

National RAiD Registration Agency for Canada.

CPIDAC Meeting
Sept 23, 2025



Digital Research
Alliance of Canada

Alliance de recherche
numérique du Canada

Agenda.

01. Background & Context

04. Role of Governance and
Advisory Bodies

02. RAiD Overview

03. Project Overview

The Alliance: Who We Are



National Scope
& Mandate



Member-Based



Non-Profit



Federally
Funded

The Digital Research Alliance of Canada: a public-oriented not-for-profit organization with a national mandate to coordinate, operate and fund activities in advanced research computing, research data management and research software.

Our mandate includes advancing the national Digital Research Infrastructure (DRI) strategy and enabling secure, scalable, and cost-effective computing for researchers and universities across Canada.

Quick facts:

- We work with over 26,000 researchers across Canada.
- We are a neutral allocator of public compute through the annual Resource Allocation Competition.
- We manage a national DRI workforce.
- We deployed new compute infrastructure and upgrades across four national host sites, with partners



Alliance receives \$85M to advance Canada's digital research infrastructure

Announced today within the 2024 Fall Economic Statement, the Digital Research Alliance of Canada is set to receive \$85M of the newly announced federally-funded \$2B [Canadian Sovereign AI Compute Strategy](#).

This groundbreaking \$2B investment is aimed at strengthening domestic AI compute capacity to position the country to emerge as a global leader in artificial intelligence and is crucial to advancing research and innovation across various sectors from health care to the environment.

The \$85M investment, starting in 2025, and lasting to 2027, is directly related to the important work undertaken by the Alliance of building public supercomputing infrastructure (\$1B of the total \$2B) to meet the growing and ever-evolving needs of researchers, government, and industry. Sovereign public AI infrastructure is also crucial for ensuring Canada's competitive edge and sovereignty in the global AI space.

Why RAiD?



Why it matters

- Provides a consistent, unique way to track research activities
- Improves interoperability across systems and services
- Enables compliance with open science and funder mandates

Relationship to National PIDs Strategy

- RAiD identified as a key 'PID to watch' in national PID strategy
- Represents a gap in the current ecosystem

What is RAiD?

What is a Research Activity iD?

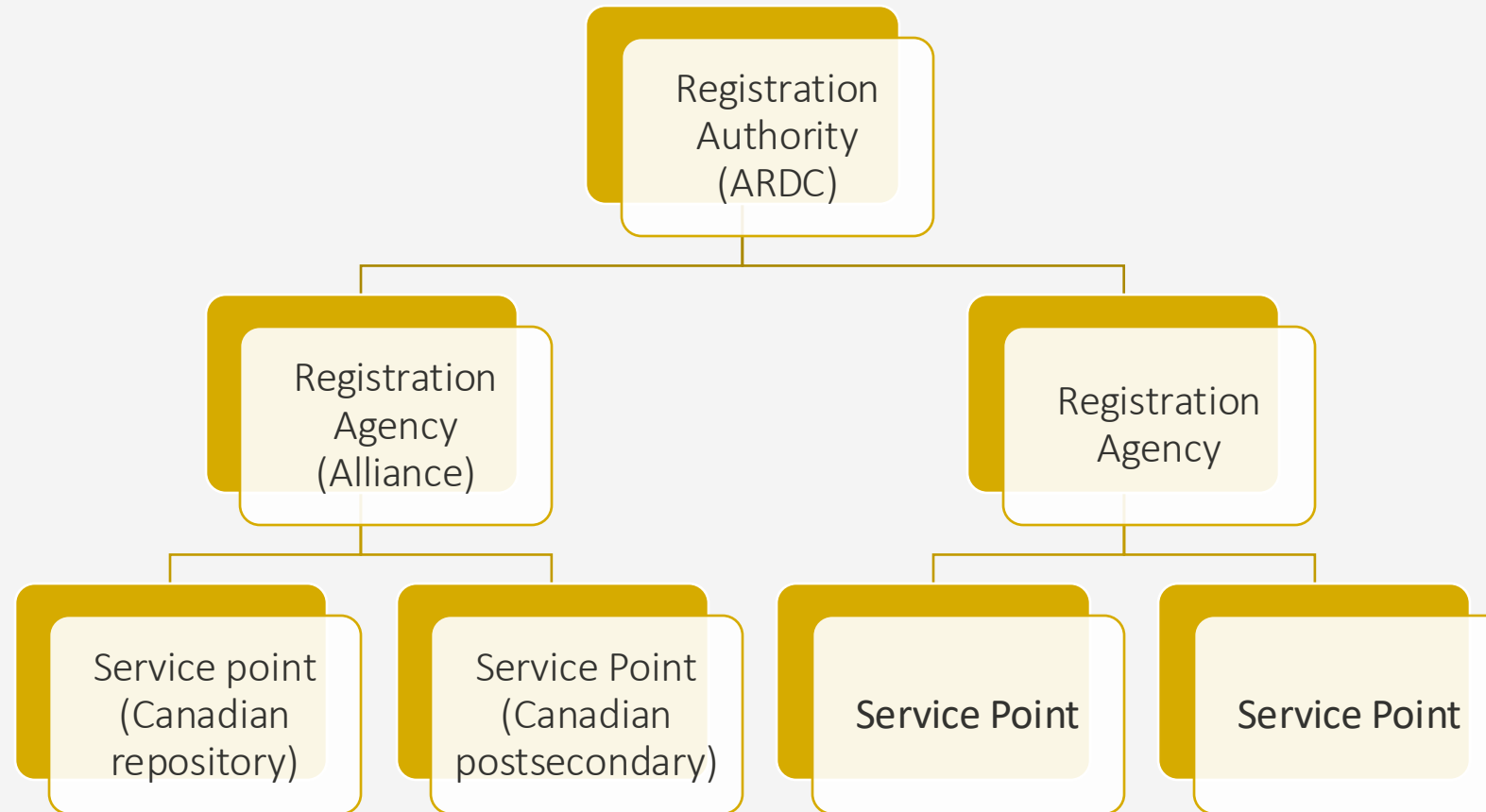
- Persistent identifier (PID) for research projects
- Links people, outputs, institutions, and funders



<https://raid.org/10.12345/j6k28>

Title (primary) Lorem Ipsum Project
Title (acronym) LIP
Start date 2023-01-30
Description (short) Lorem ipsum dolor sit amet, Maecenas vitae condimentum nisl, eget ornare fe
Principle investigator orcid.org/0000-0002-3843
Role <https://credit.niso.org/contributor-rol>
Co-investigator orcid.org/0000-0002-3639-2080
Role <https://credit.niso.org/contributor-rol>
Lead organisation ror.org/00rqy9422
Partner organisation ror.org/03b94tp07
Grant <https://doi.org/10.8948/908234D93EAF>
Dataset <https://doi.org/10.1594/PANGAEA.7268>
Article <https://doi.org/10.1038/nphys1170>
Instrument <https://doi.org/10.1337/jdlc-tima>
Sample <https://doi.org/10.60510/awfwi02135>
Alternate Identifier 134323205 (Local CRIS ID)
Alternate URL <https://osf.io/j4ck9/> (OSF Project)
Sub-project <https://raid.org/10.3010/401XQPOI>

RAiD Registration Agency model.





Project Overview: Purpose.

- Establish a national RAiD Registration Agency for Canada
- Strengthen Canada's leadership in promoting and supporting Persistent Identifier (PID) services
- Improve interoperability nationally and internationally
- Work with the PID community to define the appropriate structure/business model for a national RAiD service
- Identify and work with interested partners to pilot test RAiD functionality within data services
- Introduce RAiD within the context of Canada's national data services



Project Overview: Scope.

- Deploy ARDC RAiD software on Canadian community cloud infrastructure
- Customize software & APIs to function in open-source environments
 - Leverage work happening in other jurisdictions
- Align approach with existing ORCID-CA and DataCite Canada Consortia
- Pilot testing with early partners
- Embed RAiD within national data services
- Launch national service by project's end



Project Overview: Resourcing.

- Three Year Project, aligned with the \$83.5M Short-term AI funding (FY 2025-2027)
- Project to be fully funded by the Alliance (no matching funds required)
- Resourcing
 - Developer (0.5 FTE)
 - Cloud Ops Support (0.5 FTE)
 - Metadata Specialist (0.5 FTE; starting in Year 2)
- Funding to support engagement with community and pilot partners
- Licensing fees for ARDC

Proposed Timeline & Milestones.



Initiation & Setup – hire and onboard new staff

Initiate community engagement

Identify pilot partners and community cloud provider

Sept – Dec 2025

FY 2026

Delivery & Rollout – Finalize business & service models, and sustainability and governance frameworks

Develop training materials and community documentation

Formal launch of national RAiD service

FY 2027 (end date March 31, 2028)

Implementation & Pilot Phase – Software development & customization

Deploy Canadian RAiD service in staging environment

Launch pilots with partner organizations

Initiate business and service model working groups

Support RAiD integration into Alliance supported national data services

Potential Roles for PID Governance and Advisory Bodies



- Provide strategic guidance on alignment with National PID Strategy
- Advise on stakeholder engagement and adoption strategies
- Help to identify service partners for pilot
- Help develop operational and business models for a new PID service
- Advise on sustainability options for long-term operation

Thank you!



Digital Research
Alliance of Canada

Alliance de recherche
numérique du Canada

Lee.wilson@alliancecan.ca



alliancecan.ca



/AllianceCan



Knitting the PID Ecosystem Together

EUGENE BARSKY

How do PIDs work together

Connecting Research: PIDs link people, organizations, and outputs in a machine-actionable way, enabling accurate discovery, identification, referencing, citations, and credit.

Powered by Metadata: Each PID carries metadata, and different PIDs can be embedded in one another's metadata, creating rich, interconnected research records.

Data



Information



Presentation



Knowledge



EpicGraphi

Open Data Training Workshop: Tri-Agency Research Data Management and Ethical Considerations of Open Data Sharing

Version 2.0



Barsky, Eugene; Schichter, Brittney; Trawin, Jessica; Johnson, Teresa; Kissoon, Niranjana; Wiens, Matthew; Ogilvie, Gina; Murthy, Srinivas; Dhugga, Gurm; Kinshella, Maggie Woo; Ansermino, J Mark, 2023, "Open Data Training Workshop: Tri-Agency Research Data Management and Ethical Considerations of Open Data Sharing", <https://doi.org/10.5683/SP3/VQJMUF>, Borealis, V2

Cite Dataset ▾

Learn about [Data Citation Standards](#).

Access Dataset ▾

Contact Owner

Share

Dataset Metrics ⓘ

70 Downloads ⓘ

Description ⓘ

Objective(s): Momentum for open access to research is growing. Funding agencies and publishers are increasingly requiring researchers make their data and research outputs open and publicly available. However, this introduces many challenges, especially when managing potentially sensitive clinical data.

The aim of this 1 hr virtual workshop is to provide participants with foundational knowledge that supports planning for open data in future research projects.

Specifically, participants will:

- Datacite API call:
<https://api.datacite.org/application/vnd.datacite.datacite+json/10.5683/sp3/vqjmuf>
- DOI: <https://doi.org/10.5683/SP3/VQJMUF>

Metadata power

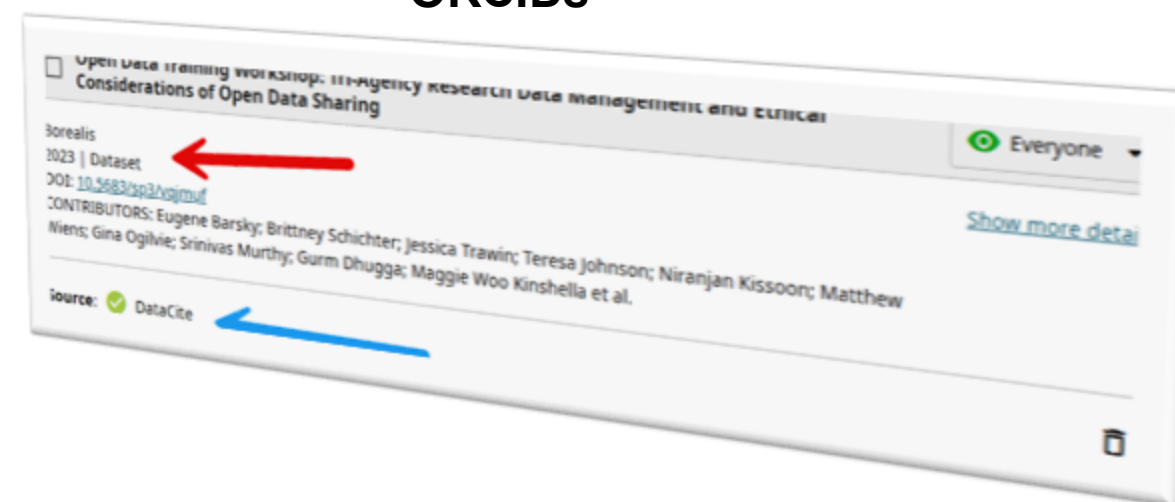
Metadata power: DOIs to ORCIDs

ORCIDs can be included in DOI metadata to identify the people involved in the existence of the object that the DOI is identifying.

Datacite DOIs



ORCIDs



Metadata power: DOIs to RORs

ROR IDs can be included in DOI metadata to identify the organizations that are involved in the existence of the object that the DOI is identifying.

Datacite DOIs



RORs



Metadata power: Publisher or funder to ORCID

- Publisher enabling peer review or funder enabling grant information in ORCID:



Canadian Research Knowledge Network (CRKN) / Réseau canadien de documentation
pour la recherche (RCDR): Ottawa, ON, CA

2021-01-01 to 2024-12-31 | Chair [UBC] (DataCite Canada Consortium Governing Committee / Comité directeur du Consortium DataCite Canada)
Service

Everyone

Show less detail

Organization identifiers

ROR: <https://ror.org/00s5kmw74>
Canadian Research Knowledge Network: Ottawa, Ontario, CA

Other organization identifiers provided by ROR

ISNI: [0000000098111307](#) (preferred)
WIKIDATA: [Q76609347](#) (preferred)

Added

2024-02-29

Last modified

2024-12-04

Source:  Canadian Research Knowledge Network (CRKN) via ORCID Member Portal

Source:  Canadian Research Knowledge Network (CRKN) via ORCID Member Portal

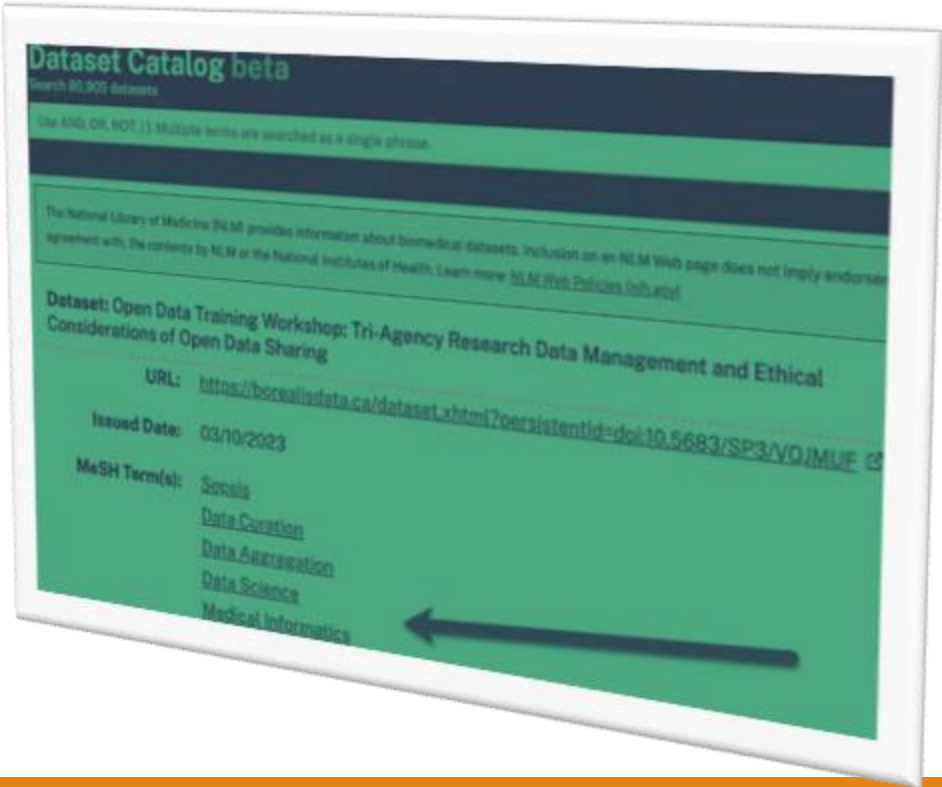
Metadata power: DOIs to Subject Headings!

Subject Headings (e.g. MeSH) can be included in DOI metadata to enhance discovery and usability in systems that can read and use that controlled metadata.

DOIs

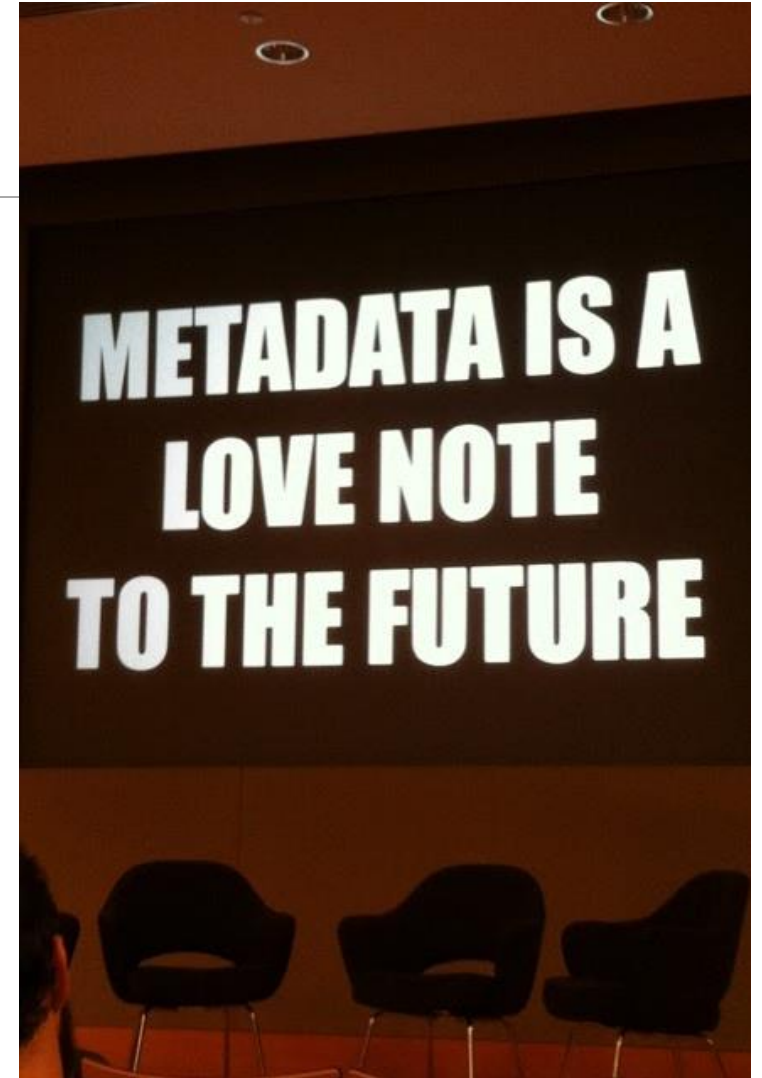
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MeSH – The US National Library of Medicine



What can funders do to make this ecosystem function better

- Request researchers to use their ORCIDs. This saves time when disclosing information in grant applications.
- Use grants management systems that are ROR-enabled to ensure researchers' home organizations are correctly and consistently identified.
- Assign a Grant DOI to the award, then use it as a tool to track outputs associated with the grant.
- Add funding information, including the Grant DOI, to the researcher's ORCID record to confirm that the researcher received funding from the organization.



What can publishers do to make this ecosystem function better



- Assign a DOI to the publication, so that it can be accurately found and cited in future works.
- Ask for the researchers' ORCIDs, to be included in the publication DOI metadata.
- Use RORs to standardize researcher affiliations in manuscript submission systems and in DOI metadata.

What can researchers do to make this ecosystem function better

- Identify and cite sources using the DOIs assigned.
- Identify contributors involved in the research by including each person's ORCID.



What can libraries do to make this ecosystem function better (without killing ourselves financially)

- Join ORCID-CA and Datacite-CA, it is very affordable (thanks to the Alliance's sponsorship).
- Ensure that all built-in integrations that are available to you: OJS, DSpace, Borealis have PIDs modules installed (e.g. OJS) or enabled/used (e.g. Borealis).
- If you mint PIDs locally, keep the schemas up to date
 - For example when Datacite schema was upgraded from 3.X to 4.X, a new element to include RORs was introduced and "resourceType" property was changed from optional to mandatory, allowing to ensure that datasets are reported as datasets and movies are reported as movies



Conclusion and Next Steps

Susan Haigh

Questions/ Discussion