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

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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

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 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
- 88 members – Soon: CFI
- 118 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

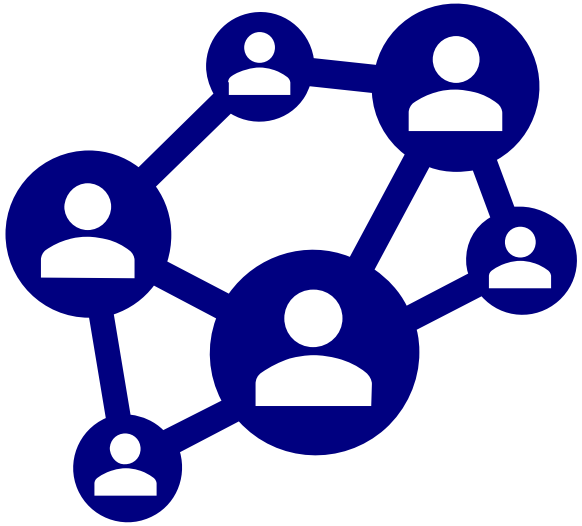
Engage with us!

- 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)

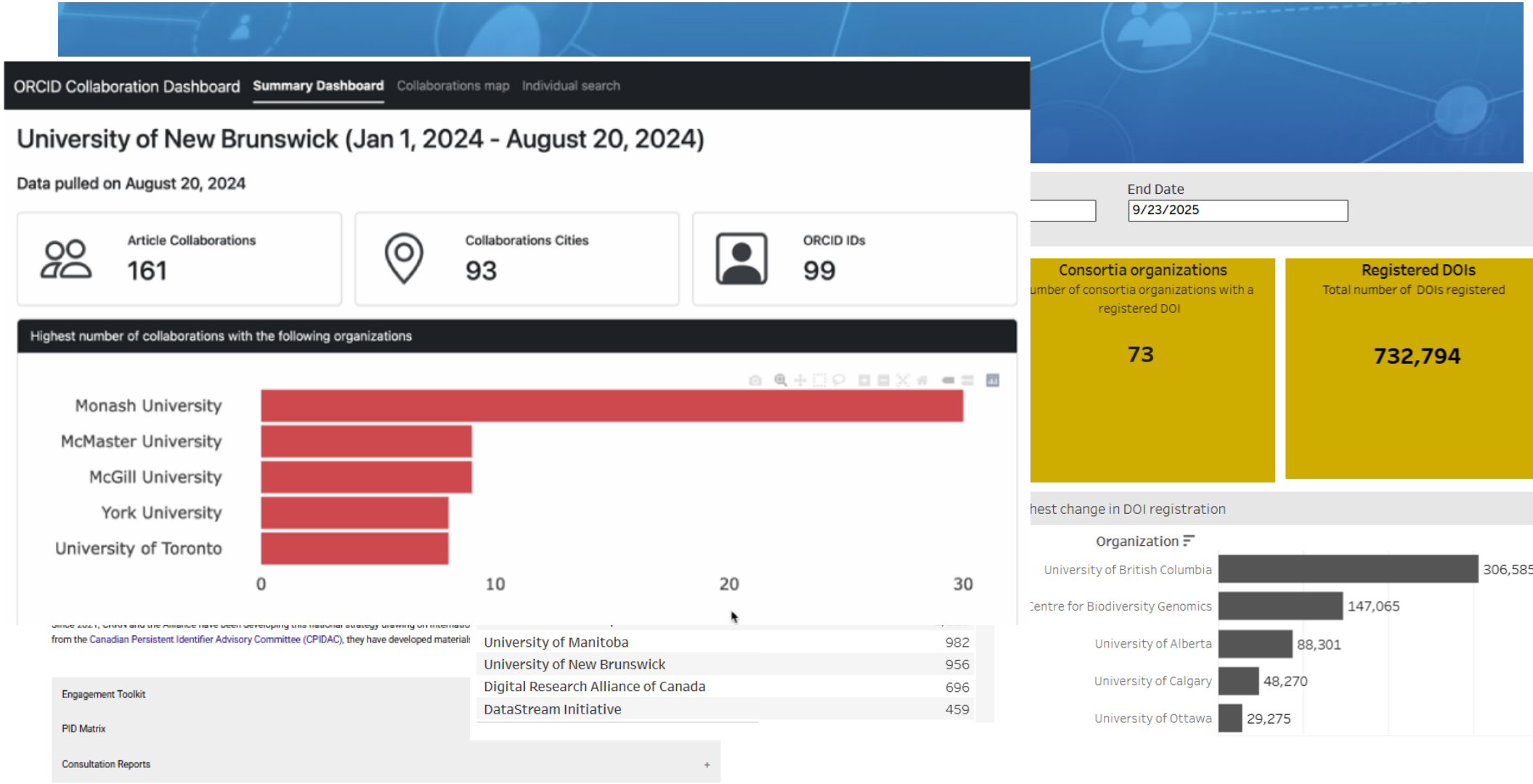


Phase I, II, III

- 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



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

CRKN RCDR

Digital Object Identifiers (DOIs)

- Persistent identifiers for digital object
- Primarily used for identifying research outputs
- An increasingly catchall PID for any*thing* 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

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

02. RAiD Overview

03. Project Overview

04. Role of Governance and Advisory Bodies

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

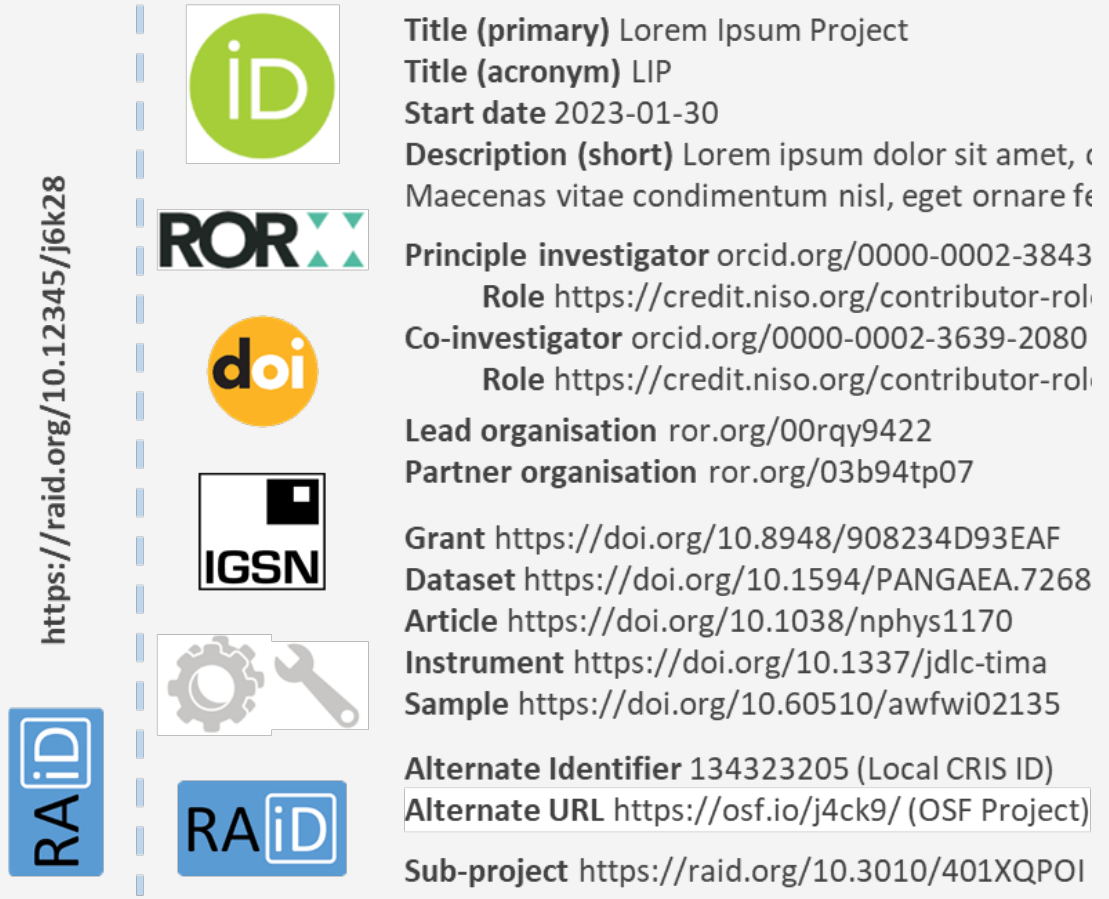
Relationship to National PIDs Strategy

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

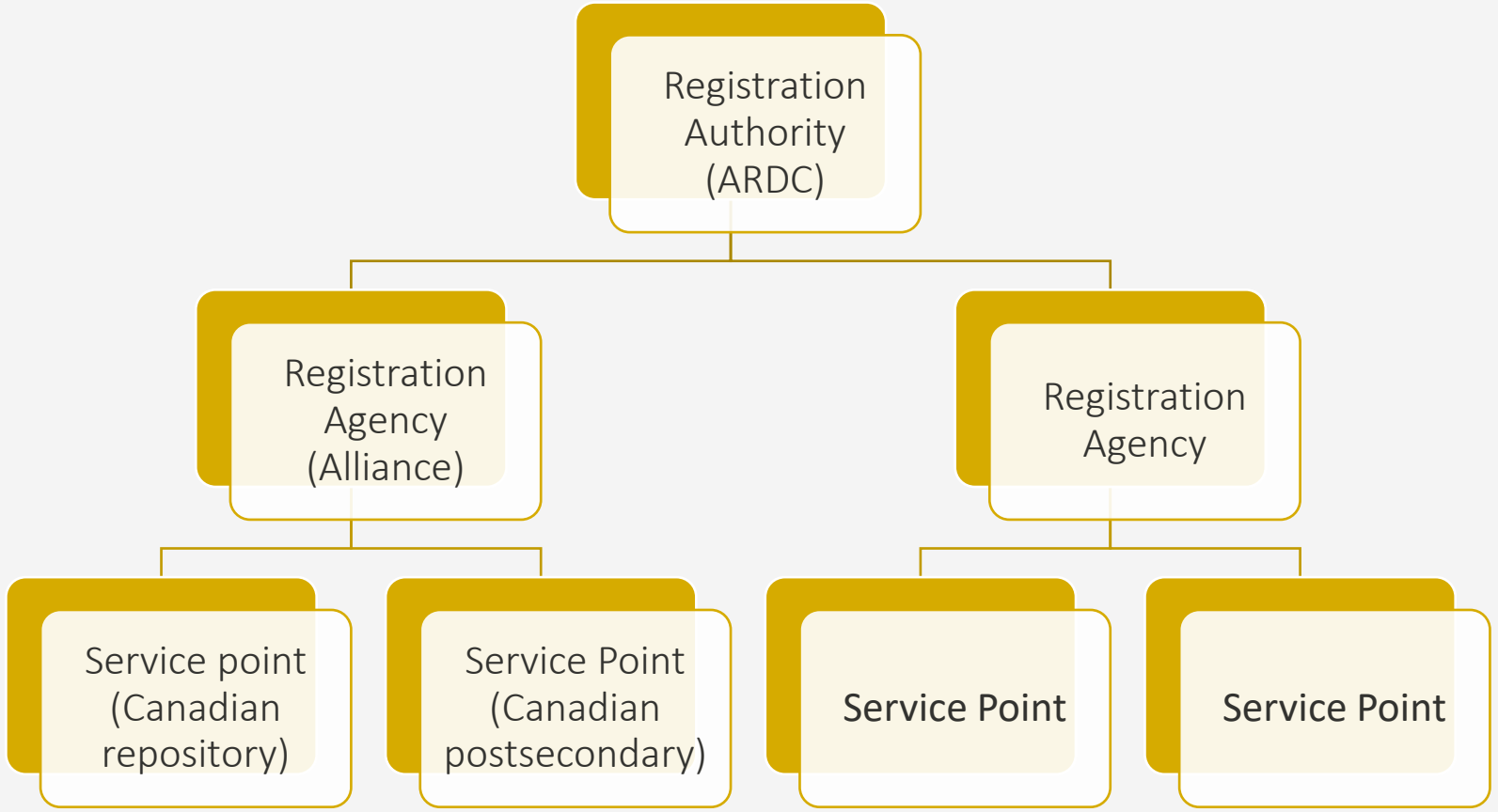
What is RAiD?

What is a Research Activity iD?

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



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

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

Develop training materials and community documentation

Formal launch of national RAiD service

FY 2026

Sept – Dec 2025

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!

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Lee.wilson@alliancecan.ca

Knitting the PID Ecosystem Together

EUGENE BARSKY

Image by: https://flic.kr/p/7u6fGY

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.

Image - http://epicgraphic.com/metaphors/

Metadata power

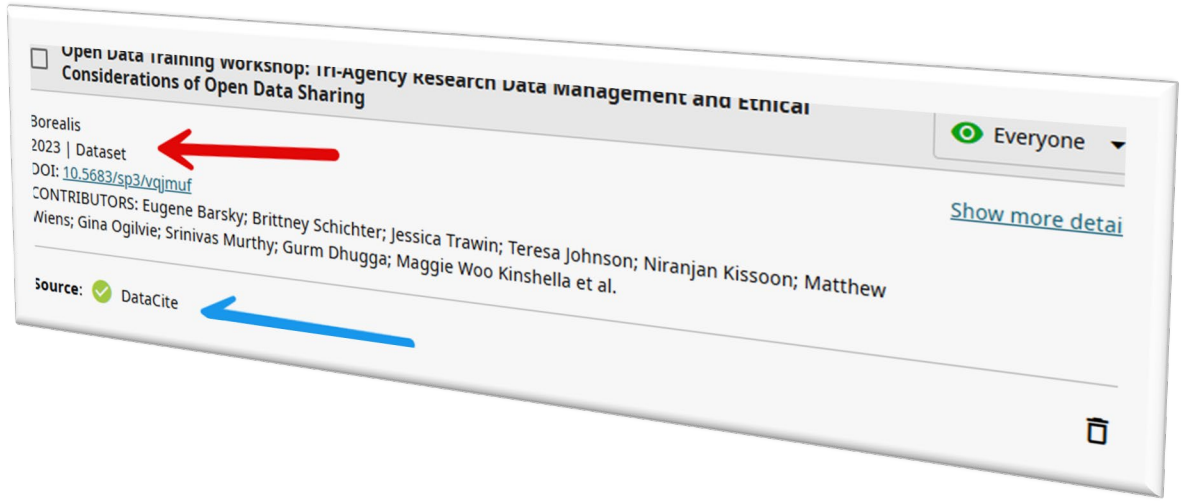
- Datacite API call: https://api.datacite.org/application/vnd.datacite.datacite+json/10.5683/sp3/vqjmuf
- DOI: https://doi.org/10.5683/SP3/VQJMUF

Metadata power: 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

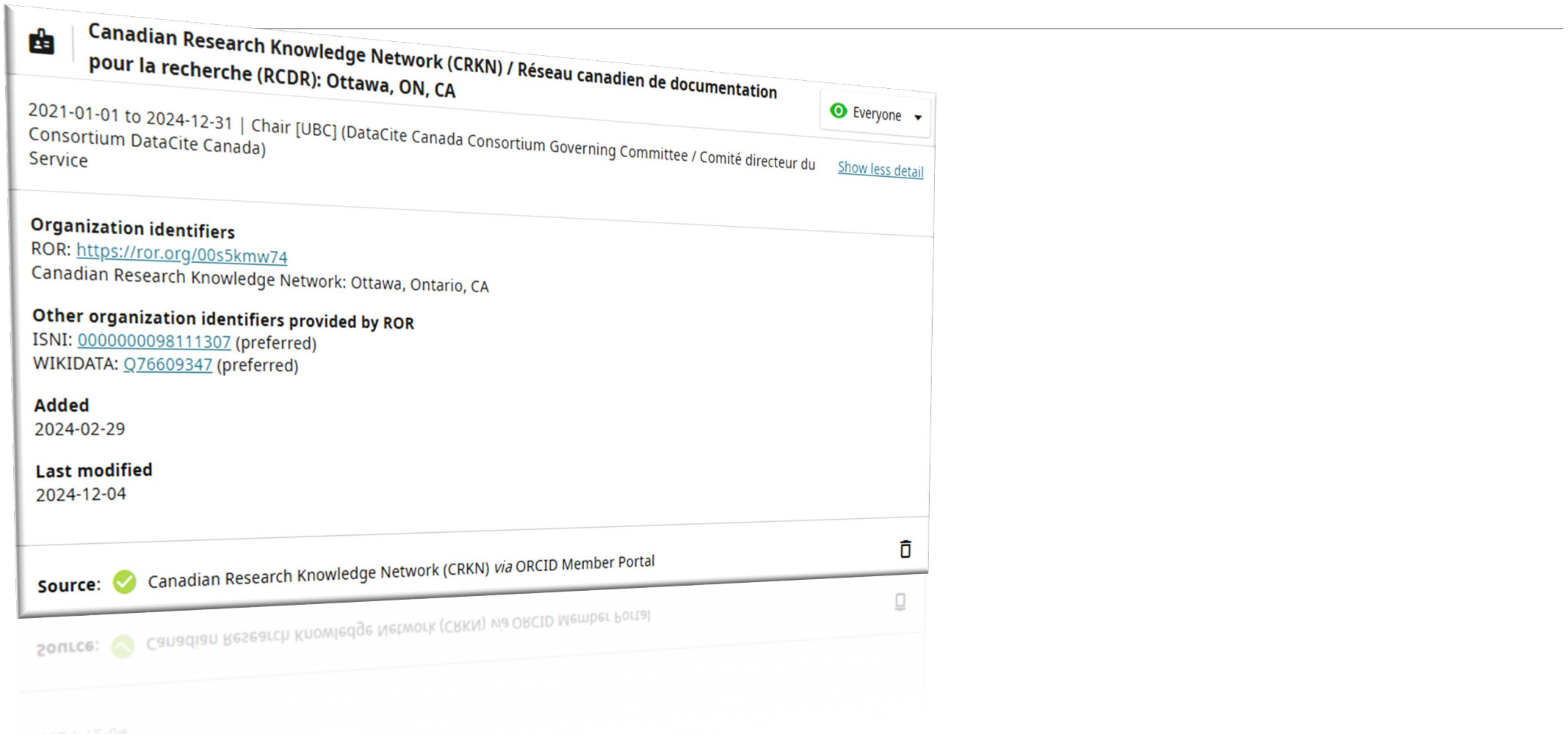
ROR IDs can be included in DOI metadata to identify the organizations that are involved in the existence of the object that the DOI is identifying.

Datacite DOIs

RORs

Metadata power: Publisher or funder to ORCID

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

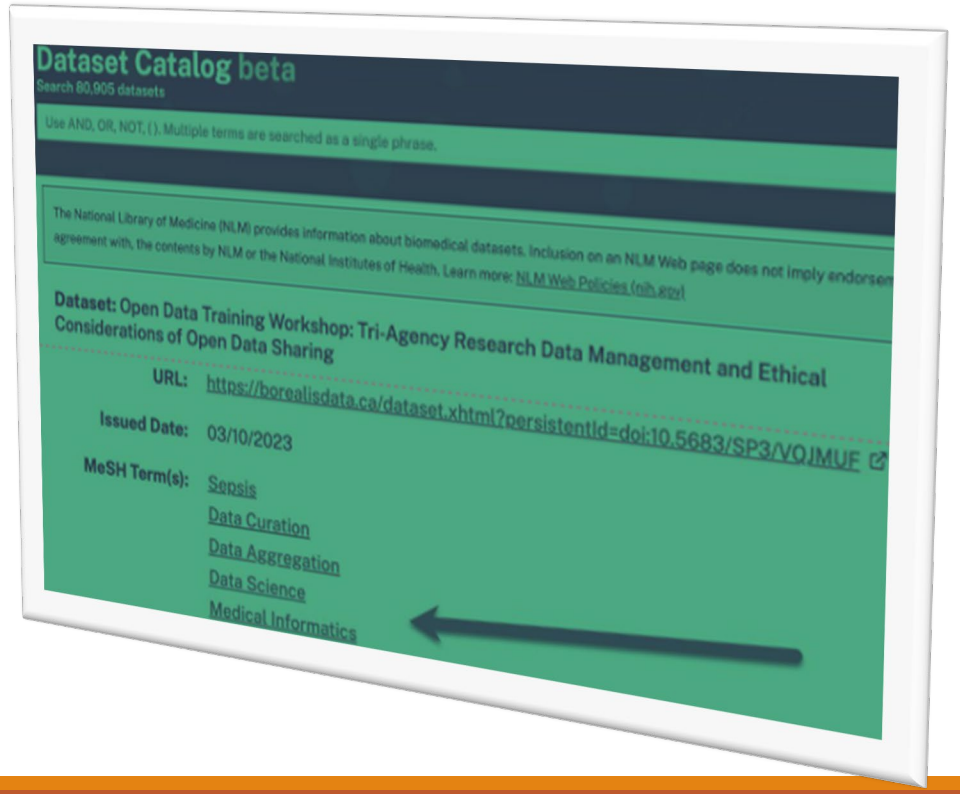


Metadata power: DOIs to Subject Headings!

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

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.

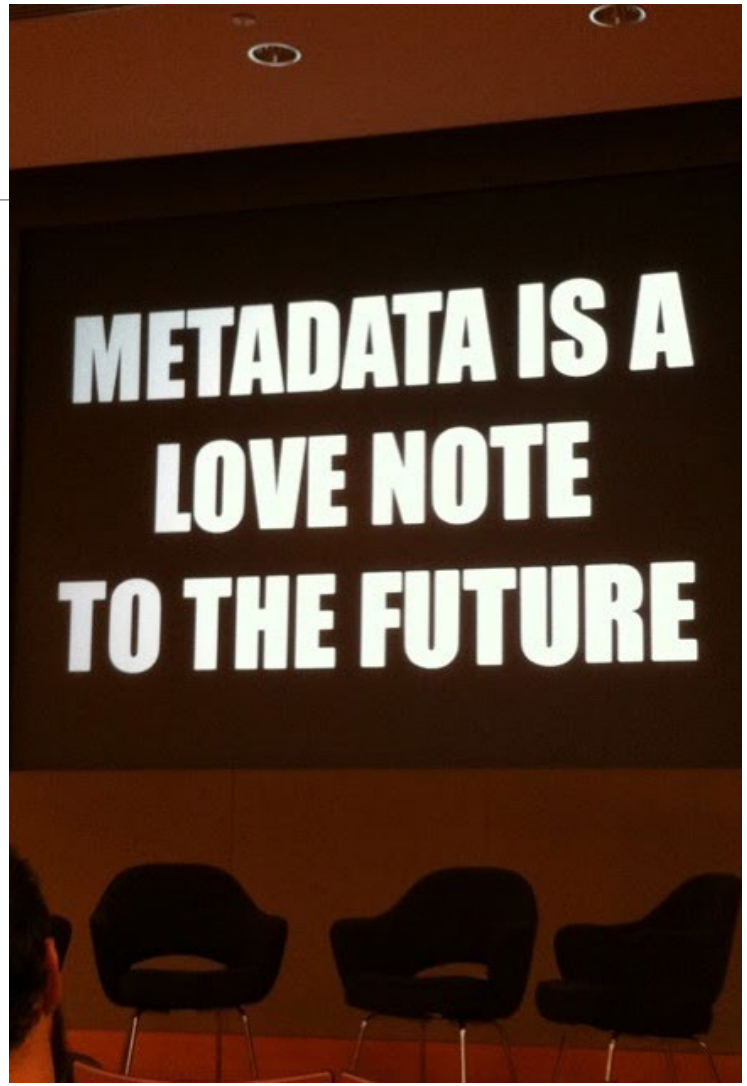


Image - https://www.flickr.com/photos/centralasian/

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.

Image - https://www.flickr.com/photos/wakingtiger

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.

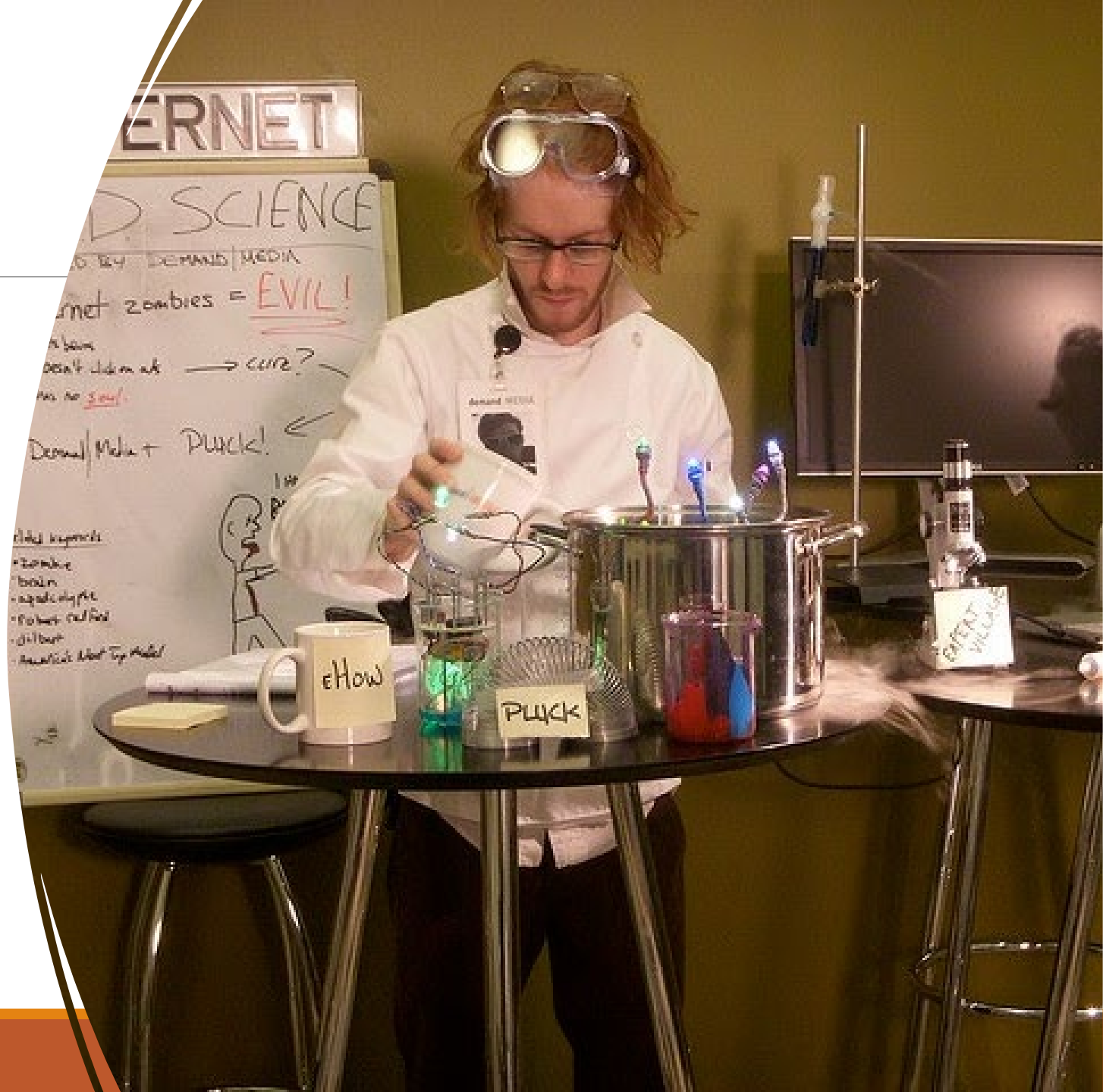


Image - https://www.flickr.com/photos/blprnt/

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

Image - https://www.flickr.com/photos/jwyg/

Conclusion and Next Steps

Susan Haigh

Questions/ Discussion