

Navigating the PIDs Landscape

Advancing Knowledge

Xiaoli Chen

September 29 2023

Better Together - The Great Varieties of PIDs and How to Use Them



[@datacite](https://twitter.com/datacite)



[@datacite@openbiblio.social](https://openbiblio.social/@datacite)

Agenda

About DataCite

Landscape of PIDs

Common types of interoperable PIDs

DataCite Metadata Schema and
connection metadata

Interconnected scholarly ecosystem

Best practices

About DataCite



Global non-profit membership organization working with 2700+ repositories in the world to provide DOIs for research outputs and resources.



2800+

Repositories



280+

Members



51

Countries



52m+

DOIs



1200+

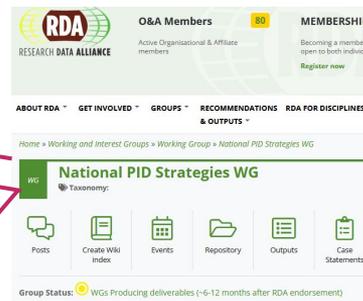
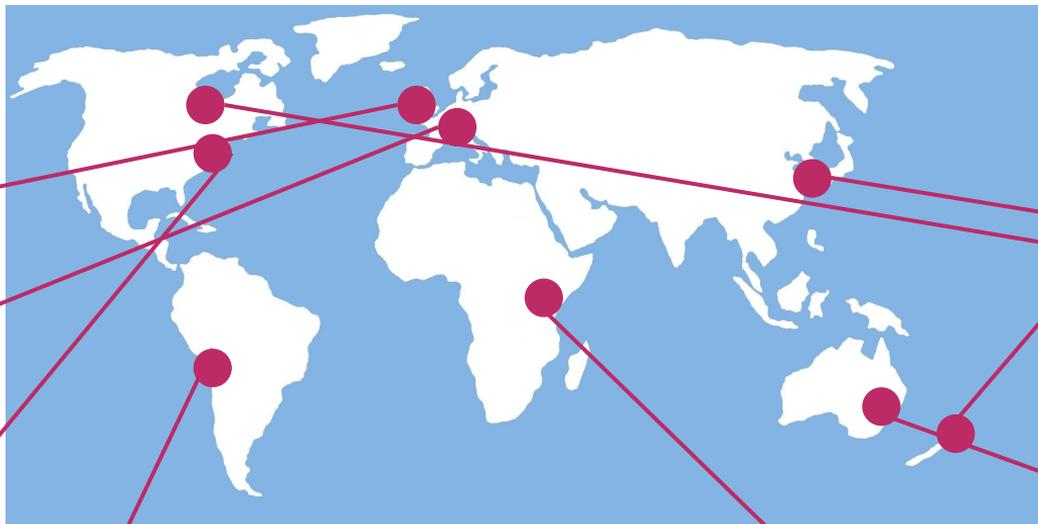
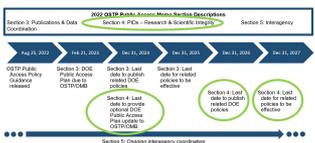
Organizations

The landscape of PIDs

The national and regional approaches



OSTP Public Access Implementation Timeline



ARDC Persistent Identifiers Policy

PIDs improve tracking of research impact, contribute to research integrity and enable research innovation.

Persistent identifiers (PIDs) are key to world-class, global research infrastructure and FAIR data. The ARDC Persistent Identifiers Policy states our rationale, intent and broad course of action regarding PIDs.

DOI: 10.5281/zenodo.6529768



Implementación de PIDs en América Latina

REPOSITORIO DE DATOS ACADÉMICOS RDA-UNR dataverse.unr.edu.ar

Bongiovani, Paola; Salazar, Analia; Freán, Paulina

"Identificadores persistentes (PIDs) y ciencia abierta en Latinoamérica" (#PIDsLATAM23) organizado por DataCite, ORCID y ROR es un evento enteramente dedicado a los identificadores persistentes y la ciencia abierta en la región. Dirigido a directores y gestores de investigación, bibliotecarios y personal técnico, en este encuentro hablamos sobre los beneficios de los identificadores persistentes y cómo su adopción contribuye a la ciencia abierta y a un ecosistema de investigación más abierto y robusto.

Este evento se realiza en colaboración con la [csvconf7](https://www.csvconf7.org/).

Esta presentación de Paola Bongiovani, Paulina Freán y Analia Salazar aborda la implementación de la Universidad Nacional de Rosario de los DOIs de DataCite para la gestión de sus datos de investigación.

May 25, 2023

Roadmap for Implementing PIDs in Africa

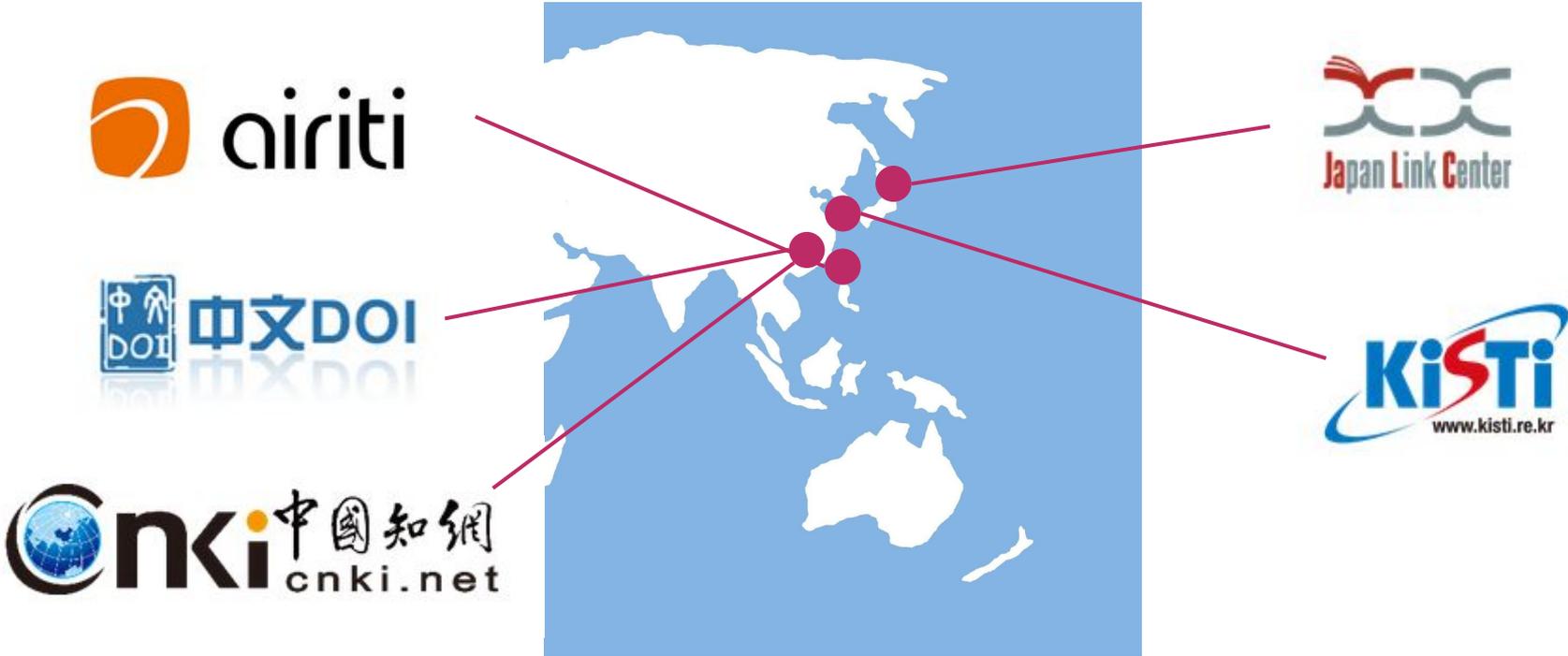
LIBSENSE Working Group on Infrastructure – open access journals, repositories for publications and data and open discovery services

This strategy document prepared by the LIBSENSE Working Group on Infrastructure outlines a roadmap for implementing Persistent Identifiers (PIDs) in Africa. PIDs serve as long-lasting references to digital objects, enhancing the cohesion and discoverability of African scholarly content.

Embracing open infrastructure and prioritising PIDs can increase African scholarly outputs, improve visibility and accessibility, and make research data FAIR. The roadmap recommends selecting open, non-commercial, and community-driven PID systems, developing appropriate governance and finance models, establishing national and regional PIDs consortia, and advocating for flexible fee models. It addresses barriers, fosters collaboration, and ensures sustainable implementation and adoption of PIDs in African research and scholarly communication.

The landscape of PIDs

DOI registration agencies in APAC



The evolving landscape of PIDs

PIDs use cases diverge and overlap

“An entity... can be referred to by several equivalent PID types. For example, ISNI/ORCID iDs for individual researchers; and PMID/PMC/DOI for publications. There are historical and functional reasons for this:

- First, repositories need to manage their own records, not just resolve (point to the location where a specific entry can be found).
- Second, resources may also operate mixed models of identifier assignment.”



Project Name **FREYA**
Project Title **Connected Open Identifiers for Discovery, Access and Use of Research Resources**

EC Grant Agreement No **777523**

D3.1 Survey of Current PID Services Landscape

Common types of interoperable PIDs

What's out there?

People

Outputs

Organization

ORCID

ISNI

ISBN

DOI

Ringgold

ROR

WoS Researcher ID

Handle

ISSN

LEI

KSI

- Use cases
 - By resource type
 - By user group
- Governing model
 - Community driven
 - Institution backed
- Technical capacity
 - Level of interoperability
 - Metadata requirements
- Human infrastructure
 - Collaboration and coordination
 - Workflow integration
 - Continued active engagement

May 28, 2020

Other Open Access

Guides to Choosing Persistent Identifiers - Version 3

 Madden, Frances;  van Horik, René;  van de Sandt, Stephanie;  Lavasa, Artemis;  Cousijn, Helena

The FREYA Project has compiled short guides to help with choosing persistent identifiers for various types of entities. These are the final version. The first versions were released in May 2020 for community feedback and comment throughout June 2020. Revised versions were developed in July 2020 and are published here.

While not intended to be fully comprehensive, these guides are designed to provide a starting point for anyone thinking about using persistent identifiers in their systems. Guides were created for the following entities:

- Publications
- Datasets
- People
- Organizations
- Software

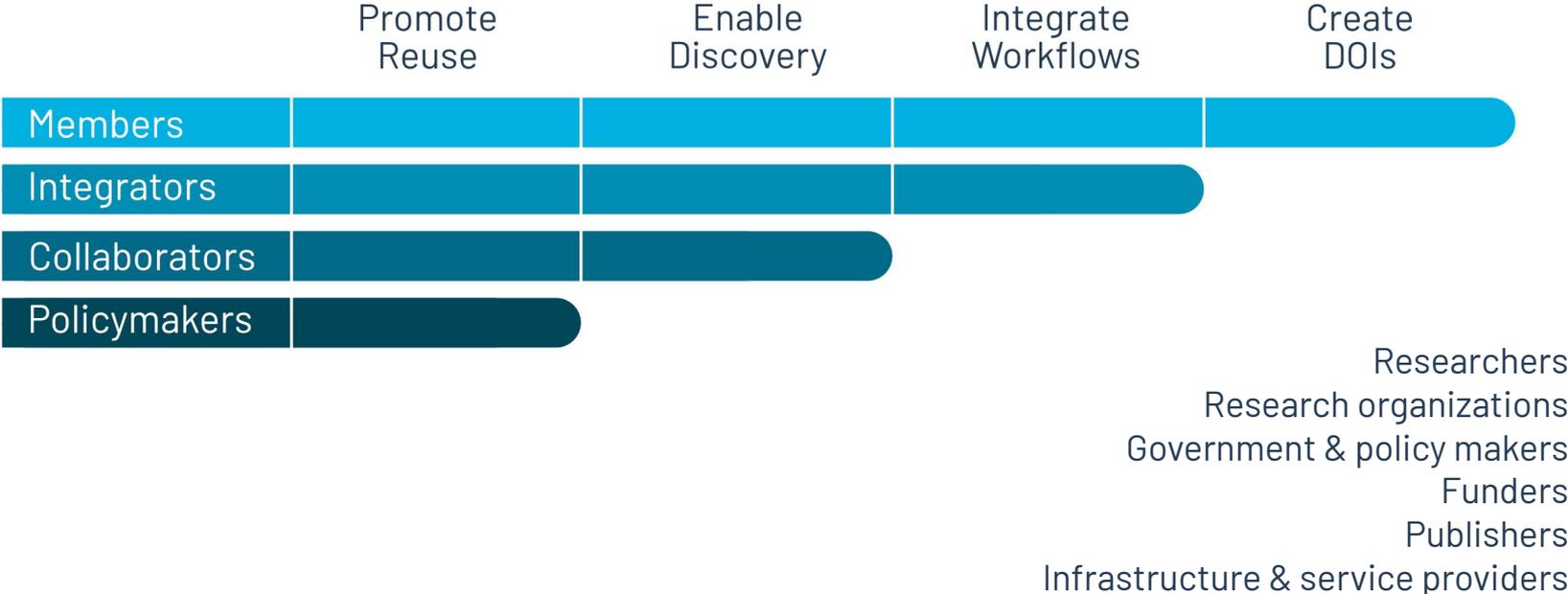
A table summarising all of the guides is also available.

Madden, Frances, van Horik, René, van de Sandt, Stephanie, Lavasa, Artemis, & Cousijn, Helena. (2020). Guides to Choosing Persistent Identifiers - Version 3 (Version 3). Zenodo. <https://doi.org/10.5281/zenodo.4192174>

Common types of interoperable PIDs

Who's engaged and in what capacity?

A DataCite View



Common types of interoperable PIDs

Joint value proposition of PIDs

1. PIDs and metadata are needed to enable FAIR research;
2. PIDs enable global scaling of research through unique and standardized identification of scholarly entities;
3. PIDs improve understanding of research impact through interoperability and connectedness;
4. PIDs help stakeholders save money and time through automation ;
5. PIDs improve trust in research by facilitating recognition and preservation of diverse range of outputs;
6. PIDs improve equity across disciplines and countries by increase recognition of research contributors;
7. PIDs support long-term preservation and sustainability of research outputs through community governance

Project Title	Expanding FAIR solutions across EOSC
Project Acronym	FAIR-IMPACT
Grant Agreement No.	101057344
Start Date of Project	2022-06-01
Duration of Project	36 months
Project Website	https://fair-impact.eu/

1 M3.1 - Joint value proposition by relevant PID providers

Work Package	WPS, Persistent identifiers
Lead Author (Org)	Gabriela Mejias (DataCite)
Contributing Author(s) (Org)	Helena Cousijn (DataCite), Liisa Marjamaa-Mankinen (CSC), Natascha van Lieshout (SURF), Clifford Tatum (SURF), Simon Lambert (STFC-UKRI).
Due Date	2023-03-31
Date	2023-03-30
DOI	https://doi.org/10.5281/zenodo.7798215
Version	V1.0

Dissemination Level

<input checked="" type="checkbox"/>	PU: Public
<input type="checkbox"/>	PP: Restricted to other programme participants (including the Commission)
<input type="checkbox"/>	RE: Restricted to a group specified by the consortium (including the Commission)
<input type="checkbox"/>	CO: Confidential, only for members of the consortium (including the Commission)

DataCite Metadata Schema

And connection metadata

What is in the schema?

- As of schema 4.4, the schema consists of 20 metadata properties (sometimes called “fields” or “elements”).
- Hierarchical structure: some properties have sub-properties.
- Some are mandatory, some recommended or optional.
- Some can be repeated.
- Some have controlled list values, some allow free text.

20 metadata properties

6 mandatory

Identifier, Creator, Title, Publisher,
PublicationYear, ResourceType

6 recommended

Subject, Contributor, Date,
RelatedIdentifier, Description,
GeoLocation

8 optional

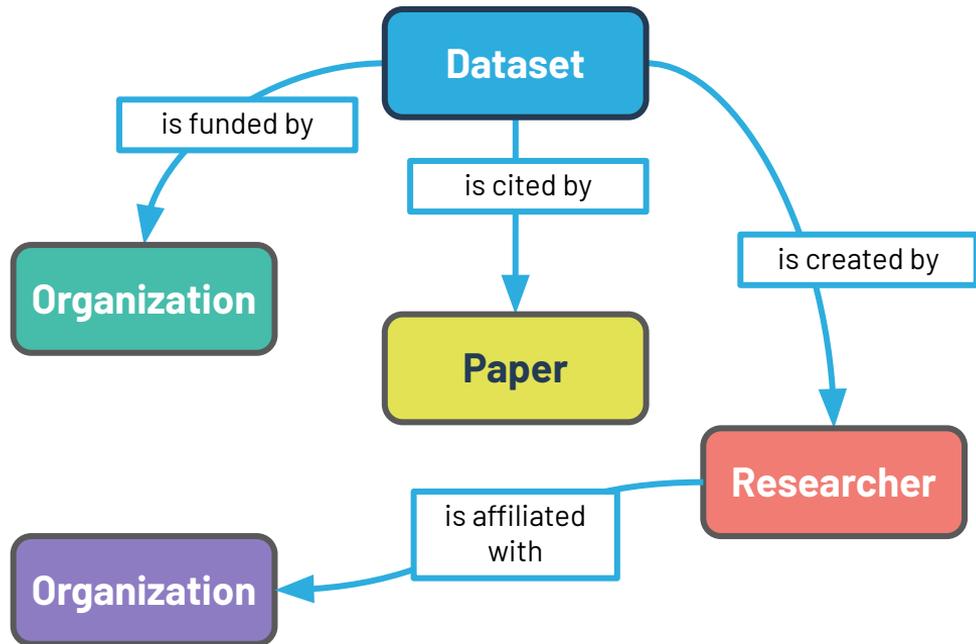
Language, AlternateIdentifier, Size,
Format, Version, Rights,
FundingReference, RelatedItem

DataCite Metadata Schema And connection metadata

Metadata that represents relationships—connections—between entities

Examples:

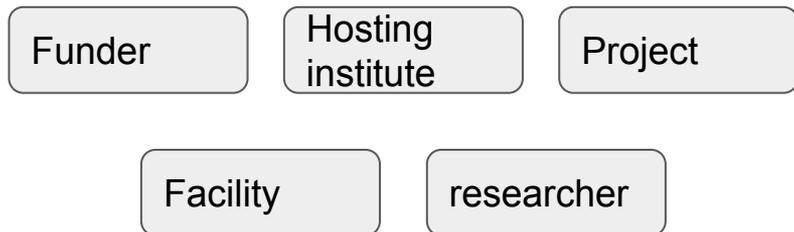
- A paper cites a dataset
- A person authors a paper
- A person is affiliated with an institution
- An institution funds a research output
- A dataset is compiled/created by software



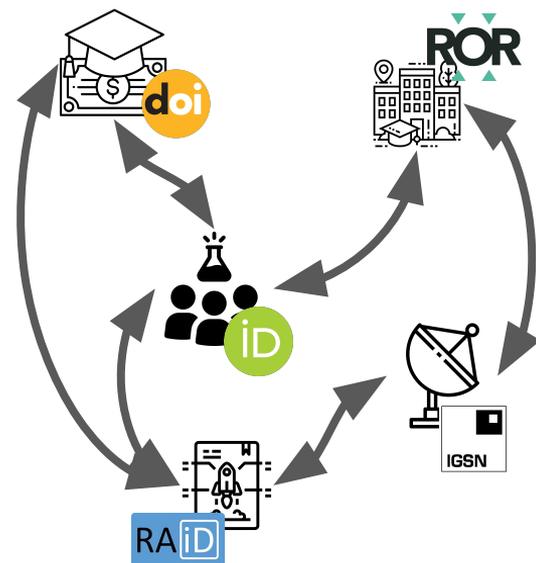
Interconnected scholarly ecosystem

Anchoring the key components of the research ecosystem

Resources associated to a research endeavor.



Uniquely and persistently identifying these long-standing entities help aggregate information over time.



Interconnected scholarly ecosystem

Connecting PIDs through platform integrations



Basic information

Digital Object Identifier 10.5281/zenodo.8289142

Optional. Did your publisher already assign a DOI to your upload? If not, leave the field empty and we will register a new DOI for you. Others can then cite your upload. Please note that it is NOT possible to edit a Zenodo DOI once it is always possible to edit a custom DOI.

Reserve DOI

Publication date 2023-08-29

Required. Format: YYYY-MM-DD. In case your upload was already published elsewhere, please use the date of first publication.

Title Guide for funders to support FAIR workflows & enable research tracking

Authors

Chen, Xiaoli	DataCite	0000-0003-0200-0000
Cousijn, Helena	DataCite	0000-0001-6600-0000
Hendricks, Ginny	Crossref	0000-0002-0300-0000
Sadler, Shawna	ORCID	0000-0002-6100-0000
Stathis, Kelly	DataCite	0000-0001-6100-0000

+ Add another author

Description

This document is presented to the community as a basis for discussion and input from September 1, 2023, and will be revised, and updated the funder guide based on the community feedback.

Please share your thoughts about the role of funders in supporting Open and FAIR research with us by opening a Google doc: https://docs.google.com/document/d/1RLU0m3BvO_v2H7HqKOB#KAKQVap5_vo

FAIR Workflows Project - Attribute Amnesia and Consciousness

Project Details Collaborators Write Plan Research outputs Finalize Download Follow-Up

DMP ID 10.48321/D1MK72

Project title FAIR Workflows Project - Attribute Amnesia and Consciousness

mock project for testing, practice, or educational purposes

Project abstract

The implementing FAIR Workflows project is a 3-year project aimed to build an exemplar FAIR and Open research workflow based on the reality of an entire research lifecycle. An integral part of the project is a neuroscience research study, dedicated to understanding the relationship between consciousness and memory using an attribute amnesia paradigm. Specifically, it aims to investigate the priority of encoding and consolidating a wide range of visual features in consciousness into working memory.

Press Alt 0 or Option 0 for help using the rich text editor with keyboard only.

Research domain Psychology

Project Start **Project End**

Funder

templeton

Templeton World Charity Foundation (templetonworldcharity.org)

John Templeton Foundation (templeton.org)

Templeton Religion Trust (templetonreligiontrust.org)

- Please select one -

Funding opportunity number

Grant number/url

Save

Related Materials

Add a new related material

Related material identifier

Identifier

Add an identifier

Title (optional)

Add a title for the identifier

Select type...

Relation type

Select type...

Show in linkout area

Clear Add material

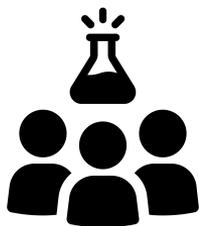
Related materials

No related materials.

Done

Best practices

For different stakeholders



Researchers

- Identify, manage, and share research outputs
- Cite data and other types of resources
- Learn about and utilize existing infrastructure and services
- Engage in Open research agenda setting



Institutes

- Support PID and metadata infrastructure and workflows
- Join or lead a community of practice
- Prioritize openness and interoperability
- Generate rich and comprehensive metadata



Funders

- Set output tracking goals
- Implement funder and grant IDs
- Guide researchers to effectively manage data
- Engage with stakeholders in the community to encourage uptake

References and more



A Persistent Identifier (PID) policy for the European Open Science Cloud (EOSC)

<https://op.europa.eu/en/publication-detail/-/publication/35c5ca10-1417-11eb-b57e-01aa75ed71a1>

Bongiovani, Paola, Salazar, Analía, & Freán, Paulina. (2023, April 18). Implementación de PIDs en América Latina REPOSITORIO DE DATOS ACADÉMICOS RDA-UNR dataverse.unr.edu.ar. Zenodo. <https://doi.org/10.5281/zenodo.7860470>

Simons, N., Brown, C., Bangert, D., & Sadler, S. (2023). National PID Strategies Guide and Checklist (Version 1.0). Research Data Alliance.

<https://doi.org/10.15497/RDA/00091>

LIBSENSE Working Group on Infrastructure – open access journals, repositories for publications and data and open discovery services. (2023). Roadmap for Implementing PIDs in Africa. Zenodo. <https://doi.org/10.5281/zenodo.7970386>

Brown, Christopher, & Brown, Josh. (2021, May 11). National PID Strategies – UK. RDA 17th Plenary Meeting (RDAVP17), Edinburgh (Virtual). Zenodo.

<https://doi.org/10.5281/zenodo.4748422>

Brown, Josh. (2019). Developing a persistent identifier roadmap for open access to UK research. Zenodo. <https://doi.org/10.5281/zenodo.5609266>

Chen, Xiaoli, Cousijn, Helena, Hendricks, Ginny, Sadler, Shawna, & Stathis, Kelly. (2023). Guide for funders to support FAIR workflows & enable research tracking. Zenodo. <https://doi.org/10.5281/zenodo.8289142>

DataCite Support Documentation - Best practices <https://support.datacite.org/docs/doi-basics>



CONNECTING RESEARCH,
ADVANCING KNOWLEDGE



info@datacite.org



pidforum.org



datacite.org
blog.datacite.org



support.datacite.org
support@datacite.org



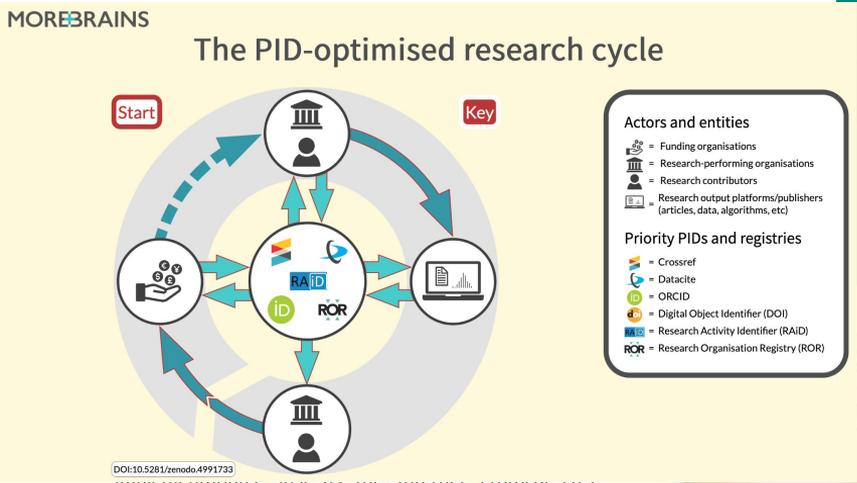
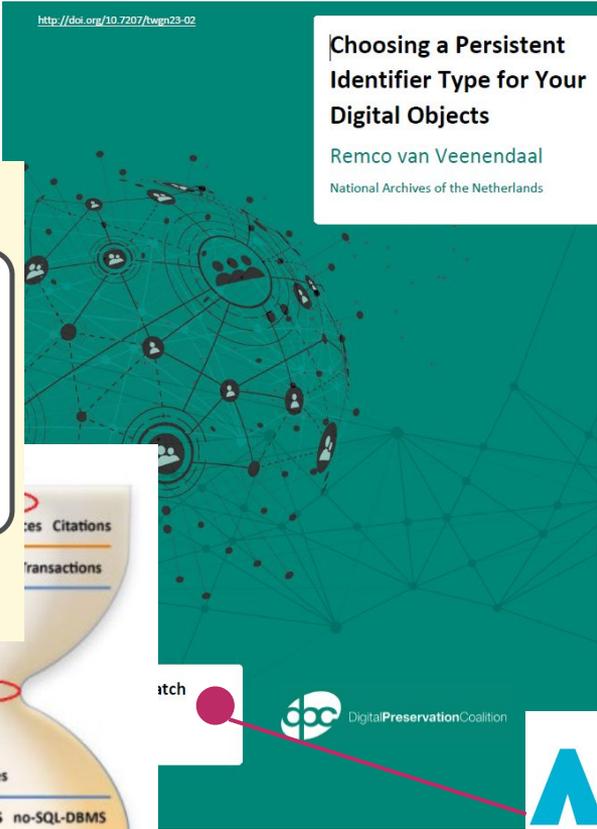
[@datacite](https://twitter.com/datacite)



[DataCite](https://www.youtube.com/DataCite)

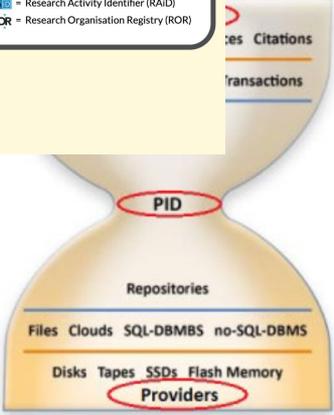


[@datacite](https://www.linkedin.com/company/datacite)



DOI:10.5281/zenodo.4991733

implementations, just as the Internet Protocol (IP) provided a minimal layer - the "waist" of an hourglass - that enabled the creation of a vast array of data provision, consumption, and visualization tools on the Internet".



It is thereby argued that the ability to uniquely identify any digital object constitutes the single most critical point - i.e., the waist of the hourglass. Therefore, Persistent Identifiers (PIDs) are introduced as a crucial infrastructure concept. A well-functioning PID Infrastructure has become one of the most essential generic scientific digital infrastructure elements to pursue.



Persistent identifiers

Unique

“

Functional

- Technically sound

Persistent

- Globally accepted

Open

- Organizationally and economically sustainable

- Politically trustworthy

”

Our value



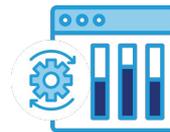
Registering DataCite DOIs makes your research outputs discoverable.

- A DOI makes your research outputs uniquely identifiable.
- Metadata that you register with DataCite is in a central location, harvestable by anyone.
- Metadata for our Members' research outputs appear in other search engines.



DataCite services make it easy to follow best practices.

- We make research data management easy: you register your first DOI in less than 1 minute.
- DataCite DOIs and metadata help you make your research FAIR.
- We connect you to the DataCite Member community, which is full of passionate people who share experience and continue to support best practice.
- Our metadata schema is extensive



DataCite services help you track and report on your research.

- A DOI enables easy tracking of your research outputs through simple user interfaces.
- DataCite services make institutional reporting simple.
- DataCite services support data citation and usage analytics

Our community



2800+

Repositories



280+

Members



51

Countries



52m+

DOIs



1200+

Organizations

The background of the slide is a close-up, slightly out-of-focus image of a microscope's objective lens and eyepiece, rendered in a dark blue color. The text is overlaid on this background.

Connecting Research, Advancing Knowledge

Types of research outputs

DataCite DOIs are suitable for a wide range of research outputs:

1. Research datasets and collections, associated workflows, software, images, and models
2. Grey literature such as theses, dissertations, reports, unpublished conference papers, newsletters, preprint journal articles, technical standards, and specifications for which the institutional repository is the primary publication point.

Create and Manage DOIs

DataCite membership allows you to create and manage DOIs for all of your repositories. You can do this through:

- Our primary REST API that supports JSON and enables automated DOI registration
- Our manual interface that enables you to register DOIs in less than a minute.
- Registered DataCite Service providers that provide a platform where you can register DOIs.

DOI

web interface

One-stop service to create and manage DOIs for your organization

1. Tools to create, manage, and find DOIs and metadata
2. Statistics on DOI activities
3. Link checker information
4. Maintain organization information



DataCite Fabrica is the one place for you to create and find, connect and track every single DOI from your organization. Fabrica complements the REST, MDS, EZ, OAI-PMH, and GraphQL APIs. Fabrica includes all the functionalities needed to manage repositories, prefixes, DOIs and their metadata. Please sign in to use the service.



Repositories
Use Fabrica to manage your repositories.



Prefixes
Use Fabrica to manage your prefixes.



DOIs
Register and manage DOIs and their metadata through Fabrica.

About DataCite

What we do
Governance
Members
Steering groups
Staff
Job opportunities

Services

Assign DOIs
Metadata search
Event data
Profiles
re3data
Citation formatter

Resources

Metadata schema
Support
Fee Model

Community

Members

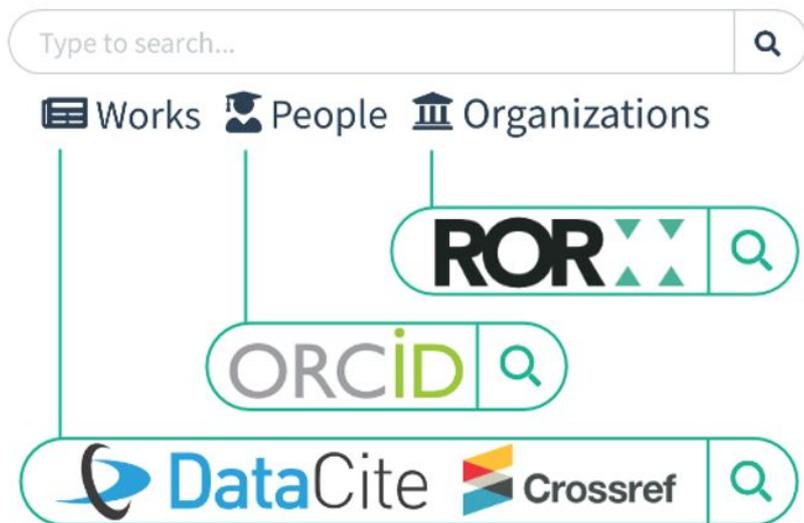
Contact us

✉   
Imprint
Terms and condition
Privacy policy

▶ All Content Owned

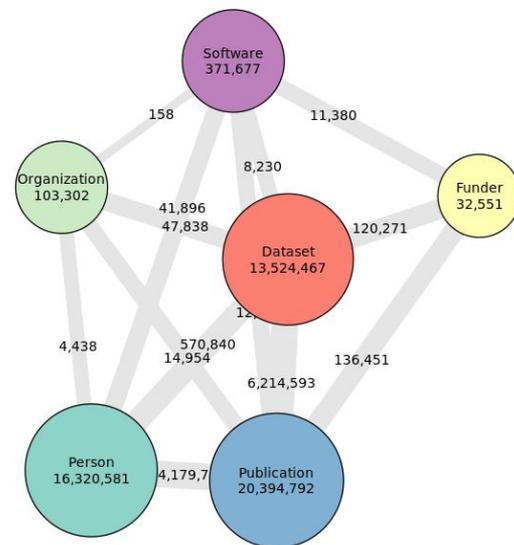
Find and connect research

Find Research with DataCite Commons



PID Graph

Number of nodes and connections (7 March 2023)



Community Interaction



DataCite Roadmap

Stay Informed

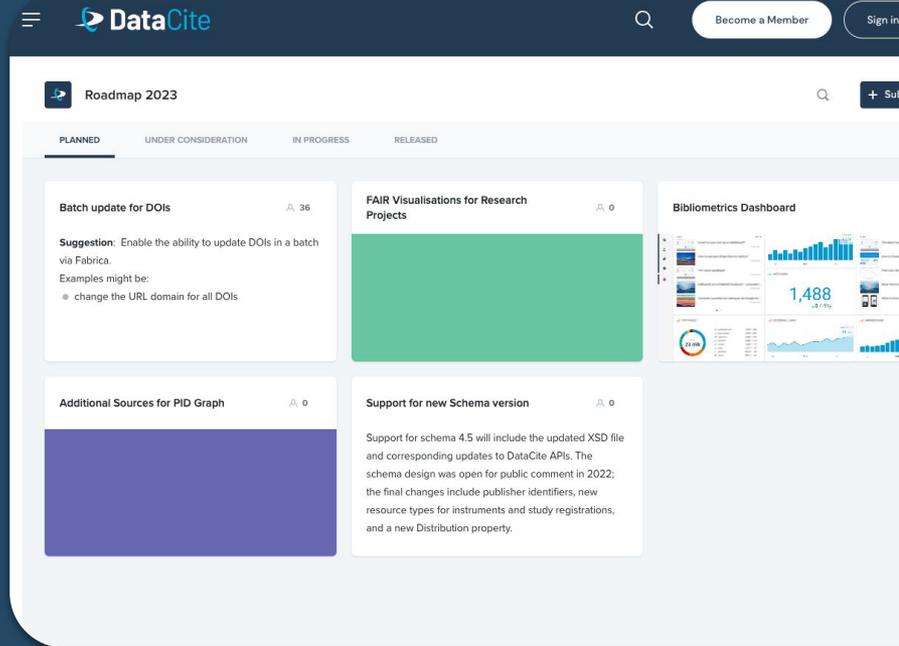
Visit our Roadmap for the latest updates on new products and services.

Share Challenges and User Stories

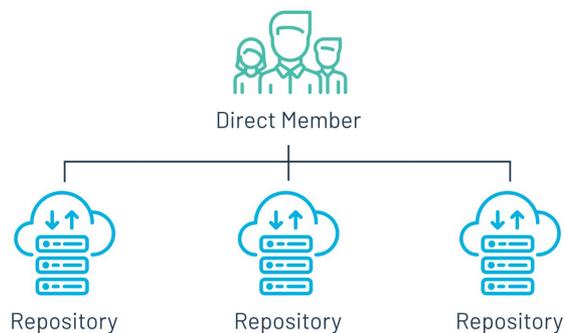
Provide information about challenges, use cases, and user stories

Vote for Important Features

Cast your vote for the features that matter most to you



Direct Membership



Consortium Membership

