

# Persistent Identifiers for Instruments: i4iOZ and the Australasian experience



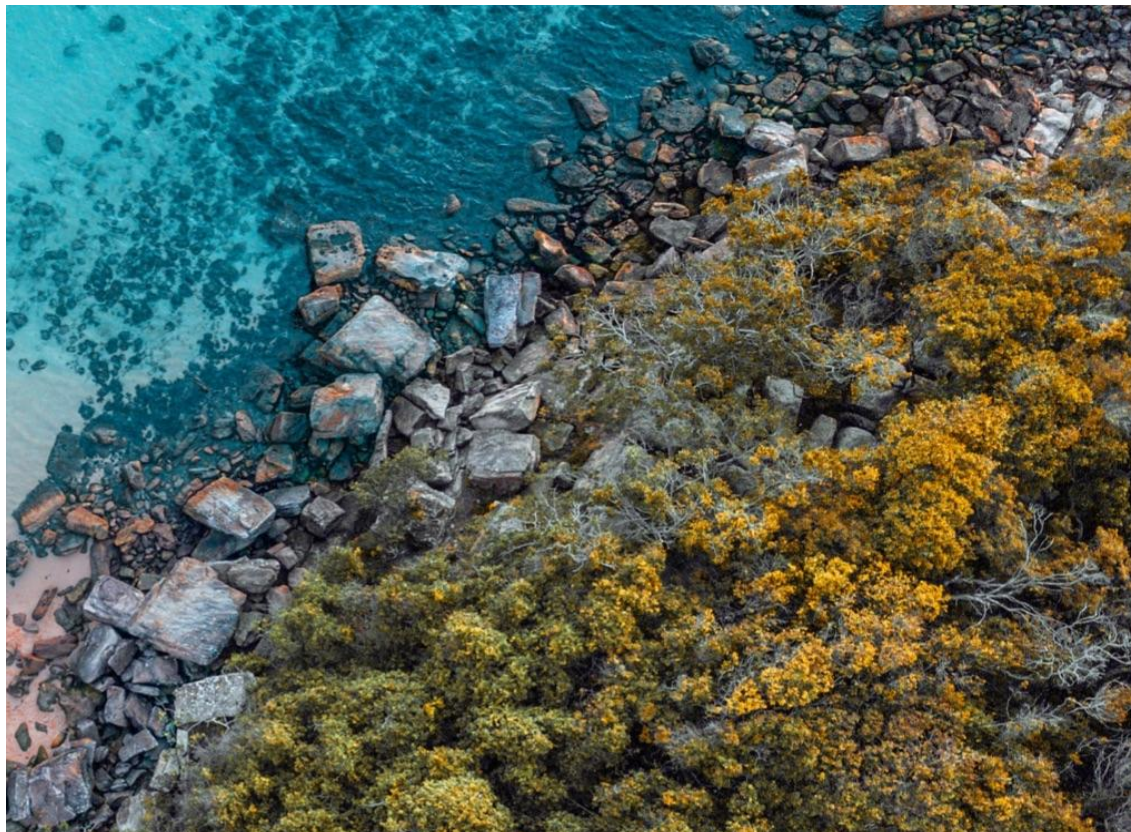
## PRESENTED BY

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ARDC

 <https://orcid.org/0000-0002-2491-0995>

## ACKNOWLEDGEMENT OF COUNTRY

We acknowledge and celebrate the First Australians on whose traditional lands we meet, and we pay our respect to their elders past, present and emerging.





Australian Research Data Commons

## Purpose

To provide Australian researchers with competitive advantage through data.

## Mission

To accelerate research and innovation by driving excellence in the creation, analysis and retention of high-quality data assets.

# ARDC SERVICES



ARDC Nectar Research Cloud



ARDC Research Vocabularies Australia



ARDC Research Data Australia



Persistent Identifiers



Communities of Practice



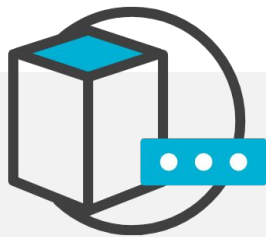
Engagement, Expertise  
and Support

# PERSISTENT IDENTIFIERS (PIDs)

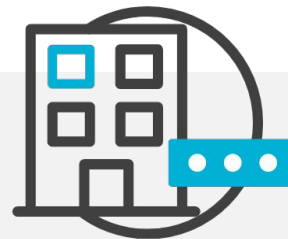
## Linking the Elements of the Research Community



**PIDs for People**



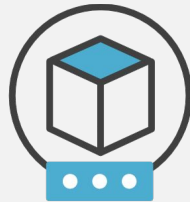
**PIDs for Data & Research  
Outputs**



**PIDs for Organisations &  
Institutions**



Digital Object  
Identifier Service



Handle  
Service



International  
Generic Sample  
Number



Research Activity  
Identifier

## IDENTIFIER SERVICES

We provide research organisations and institutions with access to create and manage Persistent Identifiers (PIDs) for research data, samples, files, documents, projects and other digital objects.

Our identifier services provide globally unique PIDs at no cost to Australian research organisations and institutions.

PIDs enable the citation, linking and discovery of research.



Platforms for information exchange,  
problem solving, peer support and  
development of best practice

## COMMUNITIES OF PRACTICE

- Sensitive Data Community
- Machine Learning Community of Practice for Australia (ML4AU)
- Identifiers for Instruments in Australia
- Australian Research Data Management Community
- Data Management Plans Interest Group
- Australian Research Containers Orchestration Service (ARCOS)

# i4iOZ: An Australasian Community of Practice

Powered by  | i4iOz

## Identifiers for Instruments in Australia

### Objectives

- Support and develop best practice for instrument PIDs
- Share current identification practices and developments
- Connect activities in Australasia with international activities
- Raise awareness of technical requirements for instrument identifiers

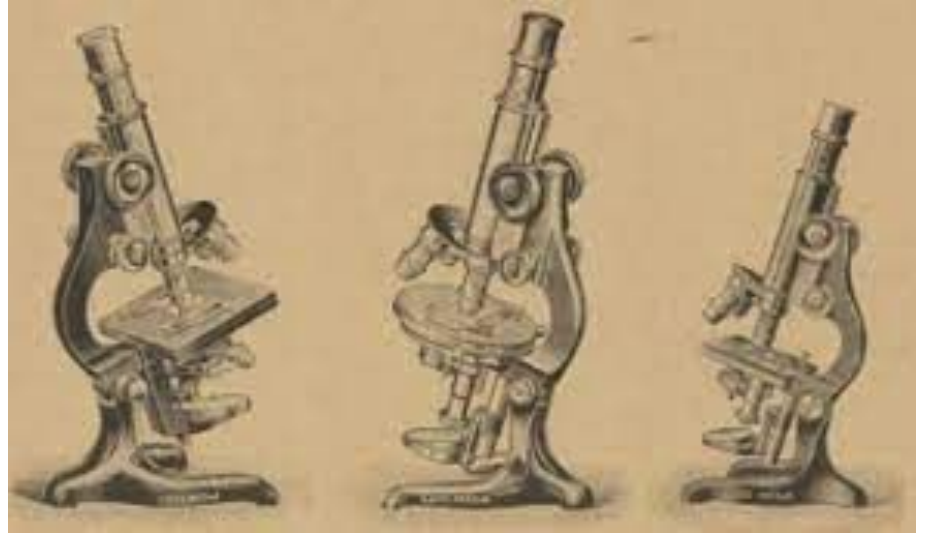
### Activities

- Monthly Community of Practice Meetings
- Harmonisation and standardisation activities
- Developing guidance for implementing Best Practices (including the RDA PIDInst IG Schema)



Or....

1. **The Business Case for Instrument PIDs**
2. **Best Practices**
3. **Implementation strategy**



# First: What is an instrument?

“...an instrument may be any and all of the following:

A single instance of a tool, sensor or a device

Eg: Rigaku SmartLab 9kW X-Ray Diffractometer

- A sensor or individual measuring component on a single, complex instrument.

Eg: The 9kW Cu rotating anode source (component of the Rigaku Smartlab)

- A network, system or group of separate instruments that may be co-located or geographically distributed in space, but are connected through a single observation epoch.

Eg: Sensor array system



[PIDInst Schema](#)  
[DataCite Schema 4.4](#)

# 1. The Business Case for Instrument PIDs

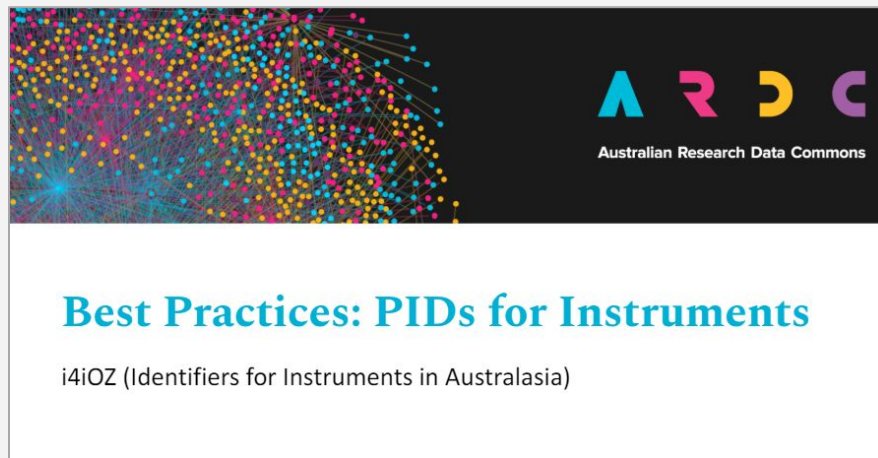
- PIDs facilitate the linking of research components
  - Instruments are a key component of research activities
  - An instrument PID can link inputs and activities (instruments, data, people, organisations, funding, projects) with outputs (metadata, publications, data sets, software, workflows, calibrations)
- PIDs for Instruments support FAIR
  - FAIR enabled instruments make FAIR enabled data
  - FAIR data is connected data
- PID yield Operational benefits
  - Booking, auditing and asset management are administrative activities that PIDs can assist in
  - PIDs support reporting and improve the accuracy of ROI metrics

## 2. Best Practices for Instrument PIDs

### Best Practices: PIDs for Instruments

McCafferty, S., Poger, D., Yvette, W., Seal, C., Burgess, R., & Kenna, E. (2023). Best Practices: PIDs for Instruments (1.0). Zenodo.

<https://doi.org/10.5281/zenodo.7759201>



# Best Practices for Instrument PIDs ctd

## **Use a DOI**

The recommended PID for instrument description is a Digital Object Identifier (DOI)  
or  
Where is it not possible to mint a DOI a Handle should be used

## **Use the PIDINST metadata schema**

Where a crosswalk or similar is needed please refer to the DataCite Mapping resources

## **Use Handles for calibration data**

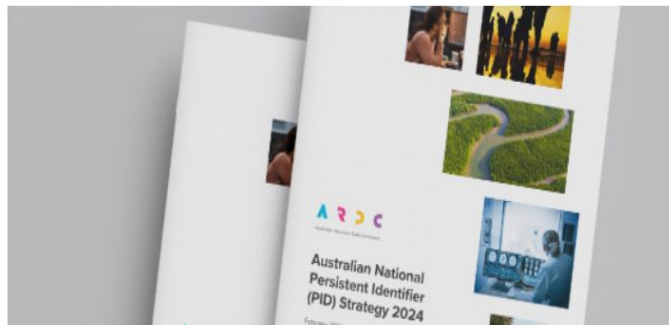
Calibration data for instruments should be stored appropriately and identified by a Handle due to its working data nature.

## 3. Best Practice Implementation

### **Implementation requires**

- Agreed Technical and Metadata Standards
- A National (or similar) PID Strategy
- Maturity Model assessment tools

# Australian National Persistent Identifier (PID) Strategy and Roadmap



## Australian National PID Strategy

- National PID Strategy
- Strategic Advisory Group
- National Collaborative Roadmap
- Stakeholder Action Plans
- Priority PIDs
- PID Principles

<https://pidroadmap.ardc.edu.au/pids/?l=en>

# Principles and Priority PIDs

## PID Principles

1. Create rich metadata when minting PIDs
2. Integrate PIDs into research and research management workflows
3. Use PIDs early in research workflows and apply to any appropriate entity
4. Use internationally recognised leading practice for PID minting and management
5. Where possible, manage PIDs well at the institutional level by:
6. Establishing an institutional PID policy and/or ensuring relevant policies reference PIDs
7. Creating a 'Stakeholder Action Plan' outlining the goals and implementation plan for the adoption and use of PIDs and contributing the Plan to the National PID Roadmap
8. Choose systems that offer PID creation, integrations, ongoing management

## ARDC Five Priority PIDs

1. ORCID for identifying researchers and contributors to research
2. ROR for identifying research organisations and organisations that are part of the research ecosystem such as funders or research infrastructure providers
3. DOI for identifying research grants, data, publications, instruments and other types of research outputs in scope for the DOI service provider
4. RAiD for identifying research projects and activities
5. IGSN for identifying research physical sample



# PID Maturity Model Assessment Tool

5	PID-integrated workflows - enabled by shared, rich metadata that enable automated tracking and reporting of research entities to derive insights - an optimised research ecosystem
4	Institutional workflows take advantage of PIDs System-level PID integrations PID Enabled Enterprise Systems
3	Software integrations enabling machine-to-machine operations for automated exchange of metadata Discrete systems capable of machine-to-machine PID collection and application
2	Manually collecting and applying PIDs to research entities. PID collection and assignment mediated
1	Data and metadata structured to relevant standards using local identifiers - no machine-to-machine exchange possible
0	Data and metadata unstructured and not fit for applying PIDs



# INTERNATIONAL DATA WEEK

**13-16 October 2025**  
**Brisbane, Australia**



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[internationaldataweek.org/idw-2025/](https://internationaldataweek.org/idw-2025/)

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