Australian National PID Strategy Benchmarking Toolkit BOF

eResearch Australasia

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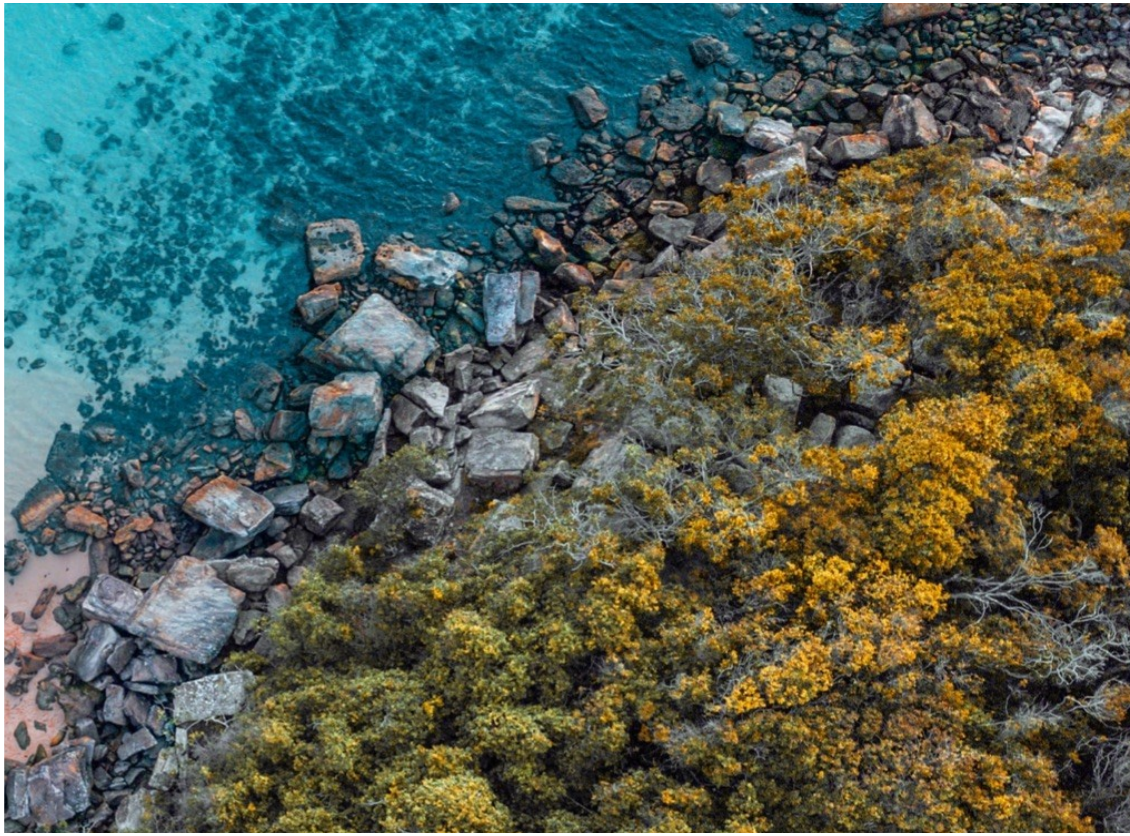
ACKNOWLEDGEMENT OF COUNTRY

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.



What will this session look like?

What are we hoping to achieve today?

Insights -> Action (Informing 2026 Strategy)

- **Brief outline of the Toolkit:**
  - What's in it
  - How to read it
  - What did it Recommend?
- **Breakout groups**
- **Report back and discussion**
- **Next Steps (lets scheme!)**

What is in the Benchmarking Toolkit?

Inline with the Australian National PiD Strategy, this report provides.

- A set of methodologies for benchmarking Australia's use of persistent identifiers inline with the 2024 National PID strategy
- A reusable toolkit of queries, enabling repeat analysis
- A set of recommendations for consideration -based on the observations in the report

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Summary of Consultation (so far…)

Benchmarking Toolkit: Consultation Process & Timeline

- **Project Kick-off (February 2025)**
  - The project began as a key activity to support the Australian National Persistent Identifier (PID) Strategy 2024.
  - An "initial assessment" was developed, which reviewed the impact of the 2017 "Vision 2020 Australia's ORCID Aspirations".
- **Initial Feedback (March 2025)**
  - Findings were presented to universities at an event hosted by Digital Science in Sydney on March 5.
  - Critical feedback was gathered in a dedicated workshop with the National PID Strategy Advisory Group and the Australian ORCID Steering Committee on March 6.
- **Broad Sector Consultation (June-July 2025)**
  - A consultation draft was widely distributed for sector review in early June.
  - A major consultation workshop was held on July 8 with representatives from institutions, funders, NCRIS facilities, and advisory groups.
  - The open feedback period concluded at the end of July.
- **Finalisation and Dissemination (September-October 2025)**
  - Recommendations were developed and reviewed by key ARDC personnel in September.
  - The final version of the report will be presented at International Data Week and workshopped at the eResearch Australasia conference in October. (that's us!)
- **Moving from insights to 2026 strategy** (that's you!)

Methodology

Focusing of persistent identifier uptake as represented by DOIs

- Crossref
- DataCite
- ROR (Research Organisation Registry)
- RAiD

Where possible, Open Datasets have been used and hosted on Google bigquery

Where additional information/context is required, Dimensions is used

Australian National PiD Benchmarking

As part of the Digital Science report on benchmarking the Australian persistent identifier landscape commissioned by the ARDC (doi: https://doi.org/10.6084/m9.figshare.29281667), the following snapshots have been made available.

+ Subscribe

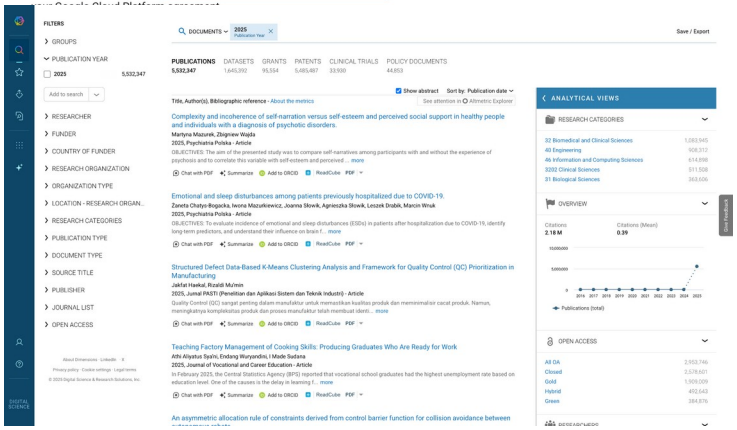
Static Datasets for the Australian National PiD Benchmarking Project - October 2025

As part of the Digital Science report on benchmarking the Australian persistent identifier landscape commissioned by the ARDC (doi: https://doi.org/10.6084/m9.figshare.29281667), the following snapshots have been made available.

- (Snapshot of the Crossref dataset as at September 2025) Note that abstracts have been removed as they have a different copyright licence. (https://www.crossref.org/documentation/retrieve-metadata/)
- DataCite (BigQuery representation of the DataCite 2024 yearly data file doi: 10.14454/tjpc-9m93)
- Research Organisation Registry doi: 10.5281/zenodo.16950727 (August 2025)
- R3Data : doi: doi.org/10.17616/r3d (August 2025)
- DBLP: doi: 10.4230/dblp.xml (August 2025)

Terms of access

Sharing (Analytics Hub) in BigQuery is subject to the corresponding service-specific terms (available at https://cloud.google.com/terms/service-terms) under



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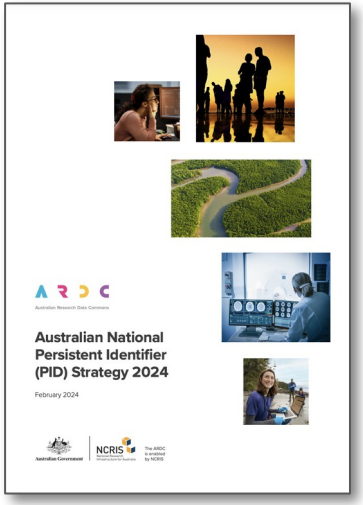
Methodology

Analysis follows the structure of the National PID strategy



Improve Research Quality and Efficiency

1. **Increase the Findability, Accessibility, Interoperability and Reuse of inputs to research**

Inputs to research include potential research partners, related research projects, grants, facilities, data, samples and observations. By increasing a researcher's ability to discover relevant inputs, we will reduce duplication, increase research productivity and create opportunities for impactful partnerships.

2. **Increase the Findability, Accessibility, Interoperability and Reuse of research outputs.**

Outputs from research include data, reports, methods, non-traditional research outputs and publications. By increasing the discoverability of these outputs, we can improve future research, create new kinds of research, reduce duplication and improve the timeliness of translating research into impact.

3. **Improve research reproducibility, provenance and attribution while minimising administrative burden, enabling researchers to spend more time on research**

By linking researchers to projects, grants, organisations and equipment, we can improve research reproducibility, provenance and attribution. Through the use of PIDs, researchers can minimise the amount of time they spend on reproducing the same data many times over, releasing valuable time back into research.

Optimise the National Research and Innovation Ecosystem

1. **Improve our ability to understand the impact of research inputs and evaluate research quality, impact and evidence of public benefit.**

By linking elements across the research and innovation ecosystem through PIDs, we can better understand the relationship between the elements of the ecosystem, including investment, use, outputs, outcomes and impact. We can more efficiently assess our research institutions' performance with respect to research quality thresholds, better trace the impact of the research and through this, more readily explain the public benefit of the research.

2. **Improve our ability to map Australia's research capability.**

Australia needs the research capability to address our national priorities. PIDs for people, organisations, research services and infrastructure would enable us to map our research capability against national priorities and invest appropriately to address gaps.

How to read the report…

Inputs: Research Partners

Strategy Measurement Motivation
Most research partners should be represented in ROR. This includes universities, research centres, and key infrastructure bodies.
International Engagement/Dependencies
The engagement of international publishers is critical. Without their support, persistent identifiers like ROR will not be fully adopted in the scholarly ecosystem.

Expected Maturity	Emerging
Senior Stakeholder	

Benchmarks

Findability	Representation of Australian Research Partners in ROR. Measures: coverage rate, inclusion lag time.
Accessibility	ROR data is openly available with no restrictions. Usability across platforms is in progress.
Interoperability	Use of Australian ROR IDs by publishers, crosswalks with other metadata. *Note: some disciplines underrepresented.*
Reuse	Ongoing measurement of ROR presence in full-text submissions. Potential vs actual use highlights gaps and opportunities.

dimensions organisation type	number or orgs	publications
Company	251	1,602
Education	5	150
Facility	7	671
Government	11	138
Healthcare	18	2,443
Nonprofit	9	414
Other	230	2,584

Figure 1: Missing Australian organisations by dimensions organisation type (TK 4.1.1)

Year	affiliation links
2020	115
2021	204
2022	589
2023	668
2024	1,415

Figure 2: Directly asserted ROR affiliations by year (toolkit query 4.1.2)

publisher	
eLife Sciences Publications, Ltd	874
John Benjamins Publishing Company	357
American Physical Society (APS)	303
Australasian Association of Writing Programs	228
Springer Science and Business Media LLC	195
Bond University	152
Optica Publishing Group	151
International Union of Crystallography (IUCr)	117
Center for Open Science	109
Rockefeller University Press	69

Figure 3: Publishers with Australian ROR Assertions (toolkit query 4.1.3) The number of participating publishers is small

Inputs: Research Partners

resourceTypeGeneral	ROR affiliation	all works	percentage affiliation	Australian affiliations	percentage inc Aus aff
Dataset	10,820,054	28,318,211	38	11,191	0
Text	411,954	13,930,328	3	31,571	8
PhysicalObject	231,694	13,537,117	2	19	0
Image	49,789	4,836,859	1	2,472	5
JournalArticle	43,008	1,426,411	3	238	1

Figure 5: ROR Assertions in DataCite records 2020-2024 (toolkit query 4.1.5)

Recommendations

Recommendation 2.2.1: Review the representation of commercial Australian research organisations in ROR. With the consent of new commercial organisations identified in Dimensions (or another appropriate resource,) provide details of these institutions to ROR. The additional institutions to be reviewed can be identified using (toolkit query 4.1.2)

Recommendation 2.2.2: Engage with international publishing community to ensure ROR affiliations are being directly asserted onto publication records where available. The International publishing community is far less engaged with implementing ROR than would benefit the community. International advocacy will be required to highlight why this should be a priority for publishing systems.

Recommendation 2.2.3: Engage with repository vendors and review internal workflows to ensure that ROR affiliations are added to all creators. Progress towards implementing ROR affiliations within DataCite is comparatively strong, but remains inconsistent. Engaging with vendors and reassessing current workflows to capitalise on this strength is recommended.

ROR ids are better represented in DataCite than they are in Crossref

Research Partners: Toolkit query

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Other	230	2,584

Figure 1: Missing Australian organisations by dimensions organisation type (TK 4.1.1)

Research Input 1: Research Partners (ROR)

toolkit query 4.1.1: Number of Australian Insititutions with a ROR id. Query Explanation

- This query calculates the potential number of Australian research organizations that could be represented in ROR by identifying all Australian organizations that have authored publications between 2020 and 2024. It uses the Dimensions dataset as a comprehensive source of publication and affiliation data to establish this baseline.

Tables Used

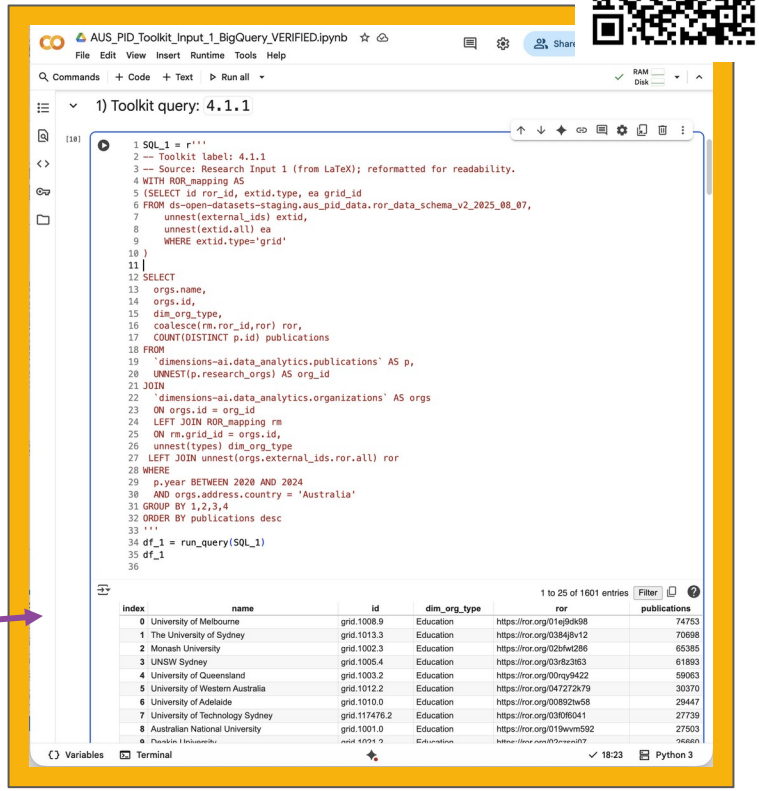
- `aus_pid_data.ror_data_schema_v2_2025_08_07` (Open)
- `dimensions-ai.data_analytics.publications` (Licensed)
- `dimensions-ai.data_analytics.organizations` (Licensed)

Justification for Licensed Tables

- The Dimensions tables are used to provide a comprehensive list of publications and their associated organizational affiliations, which serves as a baseline to measure the coverage of ROR against real-world research output.

Notebook

- executable notebook



Key recommendations (a mixed scorecard…)

Key Strengths Identified

- **High ORCID adoption**: Australia has been very successful in embedding ORCID into research publication workflows across institutions. This creates a strong foundation for linking grants, projects, and outputs to researchers.
- **Integration potential**: The strong ORCID base allows for creating grant records that connect to ORCIDs, enabling downstream creation of research activity (RAiD) records.
- **Trusted workflows**: Publisher–institution–ORCID integrations are mature enough to support new forms of comparative evaluation.
- **Dissertations and theses**: Australia is a global leader in using DOIs for theses, supporting early-career researcher tracking. However, practices vary across institutions, suggesting room for national coordination.

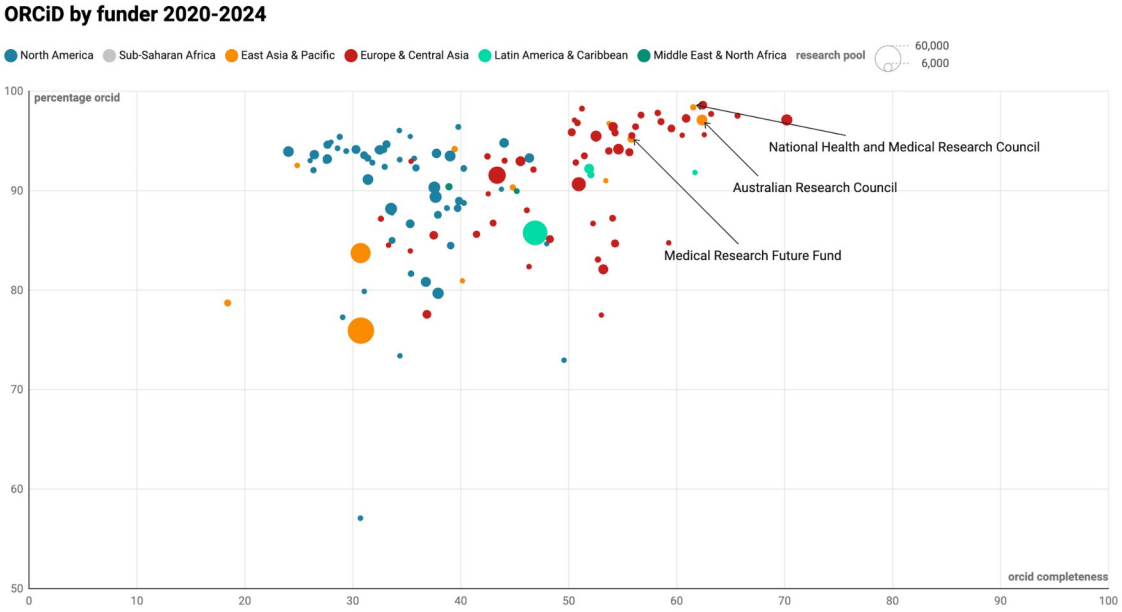
Key recommendations (a mixed scorecard…)

Areas Needing Improvement

- **Data citation**: While Australians cite data more than the global average, they lag behind Europe and the UK. Improving data citation literacy is needed.
- **Broader ORCID use**: ORCIDs are common in journal publications but rarely attached to other outputs (datasets, theses, grey literature). Institutions as publishers should adopt the same standards as journals.
- **Sample integration (IGSN)**: Over 5.8 million IGSN samples are registered in Australian repositories, but most are disconnected from the wider PID graph, limiting their impact.

Recommendations: ORCID (Open Researcher and Contributor ID)

- **Mandatory Use**: ORCID adoption is advanced enough to make authenticated ORCIDs **mandatory** for grant applications. Institutions should also require ORCID registration within their research information management systems.
- **Encouraged Researcher Practice**: All Australian researchers should be required to include their ORCID in their publication metadata, regardless of their role as corresponding author. They should also be encouraged to enable automatic updates from Crossref and DataCite to keep their records current.



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Recommendations: ORCID (Open Researcher and Contributor ID)

International Advocacy: Australia should join international efforts to ensure all publishers record ORCIDs and push the associated metadata into Crossref.

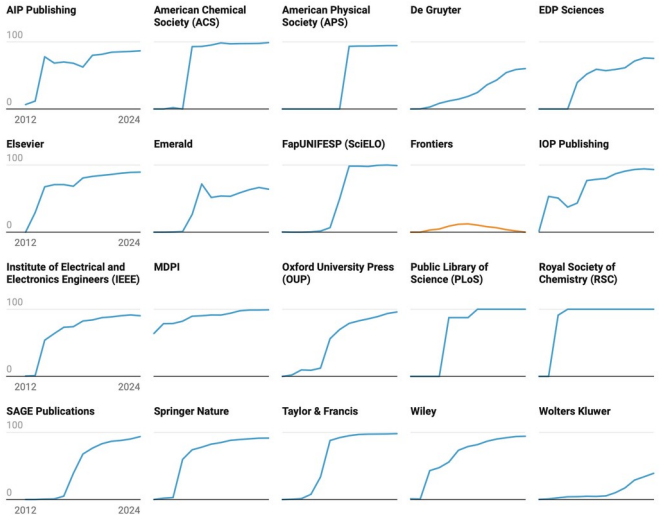

Figure 46: The journey from initial to best practice. The yearly percentage of journals by publisher for which at least one record can be found in Crossref containing ORCID records. (Click on the figure for an interactive version)

Most publishers are doing at least the bare minimum…

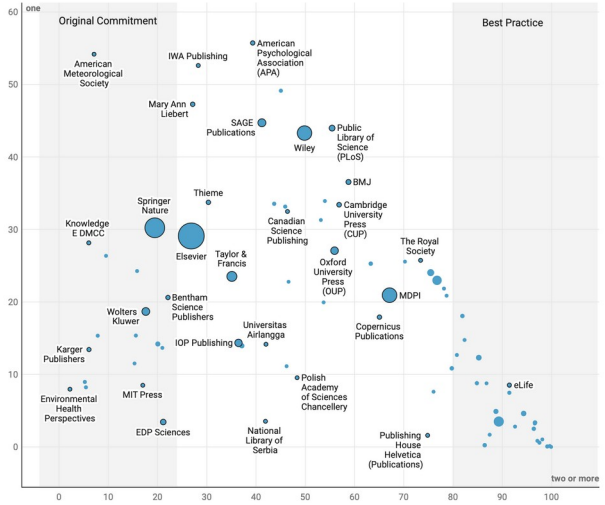

Figure 45: The journey from initial to best practice. The chart above looks at the percentage of journal articles with more than one author by publisher in 2024. On the y axis is the percentage of articles that have only one ORCID, and on the x axis is the percentage of articles that have two or more

Some publishers are doing more than others…

Recommendations: ORCID (Open Researcher and Contributor ID)

Australian ORCID records have the capacity to form the basis of a trusted national comparative analytics framework:

Figure 52: ORCID adoption and completeness by Australian Research Institution

name	Scopus - Elsevier	Crossref	Web of Science Researcher Profile Sync	ResearcherID	Europe PubMed Central	Metadata Search	institution
University of Western Australia	44,517	15,840	5,447	8,593	2,742	3,097	87,401
Macquarie University	38,012	12,037	1,658	2,609	1,269	2,753	72,172
University of Technology Sydney	32,243	14,159	2,712	3,099	965	4,200	49,312
Monash University	102,830	39,258	8,024	9,250	8,630	7,705	40,609
Griffith University	48,066	17,159	5,510	7,693	3,060	5,605	25,818
University of Melbourne	117,533	41,054	8,707	12,054	13,053	25,653	24,514
University of Queensland	**277,585**	**62,620**	**189,148**	**32,084**	**9,355**	**10,654**	**23,552**
UNSW Sydney	109,229	36,300	7,879	8,002	7,368	6,734	22,823
Charles Sturt University	7,087	4,305	1,572	1,095	236	770	17,454
La Trobe University	22,314	10,490	1,529	1,731	1,557	2,001	13,710
Flinders University	22,639	9,287	3,219	2,394	1,712	1,718	13,365
University of Tasmania	24,560	11,302	1,970	4,748	858	2,497	9,836
University of Canberra	7,222	3,157	207	491	376	623	8,251
Bond University	4,554	2,021	363	231	213	573	6,890
Southern Cross University	8,016	3,088	1,115	592	225	993	5,526
Charles Darwin University	6,002	2,202	159	800	346	652	2,704
Torrens University Australia	1,251	803	509	7	82	56	1,092
Victoria University	8,740	3,002	604	276	173	873	344
University of Southern Queensland	12,748	4,325	1,369	283	86	784	125
The University of Sydney	120,608	38,493	19,720	11,690	8,576	8,482	98

Figure 53: Publication assertions in ORCID records by source.

Australian Institutions know how to implement institution wide adoption

Australian Institutions know how to create triple trusted researcher assertions with minimal administrative overhead

Recommendations: ORCID (Open Research

ORCIDs are common in journal publications but rarely attached to other outputs (datasets, theses, grey literature). Institutions as publishers should adopt the same standards as journals.

repository id	repository name	institution	works with institution affiliation	all works	percentage	multi type	works with orcids
swin.repo2	Swinburne University of Technology	Swinburne University of Technology	12,475	35,941	35%	True	2,159
latrobe.repo	La Trobe University	La Trobe University	8,236	29,164	28%	True	1,199
figshare.rmit	RMIT	RMIT University	4,875	14,030	35%	True	1,449
unimelb.repo1	University of Melbourne data repository	The University of Melbourne	1,397	5,722	24%	True	2,137
unsw.repo	University of New South Wales	UNSW Sydney	4,950	4,960	100%	True	2,198
ardcx.cqu	Central Queensland University	Central Queensland University	954	2,334	41%	True	167
uniwa.repo	The University of Western Australia	The University of Western Australia	1,646	1,904	86%	True	59
adelaide.repo	The University of Adelaide	The University of Adelaide	542	1,755	31%	True	866
ardcx.torrens	Torrens University	Torrens University Australia	441	986	45%	True	86
jcu.repo	James Cook University	James Cook University	417	759	55%	True	607
ardcx.usq	University of Southern Queensland research data collection	University of Southern Queensland	280	650	43%	True	323
ardcx.wsu	Western Sydney University ResearchDirect	Western Sydney University	424	553	77%	True	238
uq.repo	The University of Queensland	The University of Queensland	38	463	8%	False	458
ardcx.deakin	Deakin University	Deakin University	61	412	15%	True	313
figshare.flinders	Flinders University	Flinders University	104	351	30%	True	210
ardcx.ecu	Edith Cowan University	Edith Cowan University	276	299	92%	True	247
griffith.figshare	Griffith University Figshare	Griffith University	208	244	85%	True	5
ardcx.uc	University of Canberra Research Portal	University of Canberra	29	228	13%	True	1
ardcx.usyd	University of Sydney Library	The University of Sydney	155	221	70%	True	62
ardcx.federation	Federation University Australia	Federation University	48	174	28%	True	62

Additional 3 rows not shown.

Figure 14: Australian Institutional Repositories. Work counted between 2020-2024 (toolkit query 4.1.17)

Expanding Australia's adoption of other identifiers

Grants & Research Activities (RAID): Funders should create persistent identifiers for all grants, with complete metadata including researcher ORCIDs and institutional RORs. The creation of a grant should trigger the creation of a Research Activity Identifier (RAID).

Grants are the missing puzzle piece to join together already established research information

With Grant records inplace, we have the information in place to readily created **RAiD records for every active grant.**

Funding Acknowledgements + ORCID Adoption

granting body	active grants	acknowledged grants
Australian Research Council	39,229	37,187
National Health and Medical Research Council	4,597	4,541
Medical Research Future Fund	1,813	762
Department of Industry, Science and Resources	755	4
Department of Health and Aged Care	499	0
Fisheries Research and Development Corporation	258	61
Australian Centre for International Agricultural Research	201	132
Australian Renewable Energy Agency	160	0

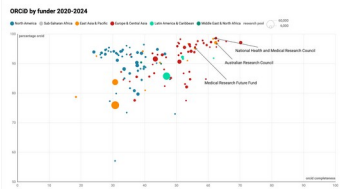

Figure 9: Number of active grants from Australian funders in 2025 as represented in Dimensions (toolkit query 4.1.9) A grant is counted as having been acknowledged if at least one publication uses its grant id in either the text of the document, or its associated Crossref record

id	name	count
ardcx.raid-ygcuhh	The University of Notre Dame Australia	66
ardcx.raid-yschfy	RAiD Australia and New Zealand	2
ardcx.raid-ynhroz	Australian Research Data Commons	1
datacite.services	PID Services Registry	1

Figure 7: Number of RAiDs that have been created as at January 2025

Expanding Australia’s adoption of other identifiers

Samples & Instruments: New minimum standards for sample (IGSN) records should be determined to integrate them better with other PIDs. The report also recommends encouraging links between instruments and research outputs and reinforcing instrument citation as a best practice.

location	samples	creators	name identifiers	affiliation identifiers
Australia	5,814,951	5,814,951	0	0
Rest of World	1,787,055	1,936,802	424,663	18,988

Figure 19: Comparison of affiliation and person linkages between Australian IGSN records and the rest of the world (toolkit 4.1.22)

name	repository id	location	text	AutralianInstrument
Pawsey Supercomputing Centre	pawsey.repo	references_titles	10.48569/18sb-8s43	True
Pawsey Supercomputing Centre	pawsey.repo	acknowledgement_senteces	This work was supported by resources provided by the Pawsey Supercomputing Research Centre's Setonix Supercomputer (https://doi.org/10.48569/18sb-8s43),	True
Pawsey Supercomputing Centre	pawsey.repo	acknowledgement_senteces	The simulations suite QED and the mock data discussed in this paper were generated with the assistance of resources from the National Computational Infrastructure (NCI Australia), an NCRIS enabled capability supported by the Australian Government, and from the Pawsey Supercomputing Research Centre's Setonix Supercomputer (https://doi.org/10.48569/18sb-8s43),	True
Pawsey Supercomputing Centre	pawsey.repo	funding_sentences	The high-performance computing aspect of this work was supported by the Adaptor grants scheme, with computational resources provided by NCI Australia, an NCRIS-enabled capability supported by the Australian Government, and by the Pawsey Supercomputing Research Centre's Setonix Supercomputer (https://doi.org/10.48569/18sb-8s43),	True

Instrumentation registration in datacite is just starting, but best practice citation practice has already been established

Improving Research Outputs & Community Practice

Data Citation: Research community data citation literacy should be increased to meet the levels of peer countries.

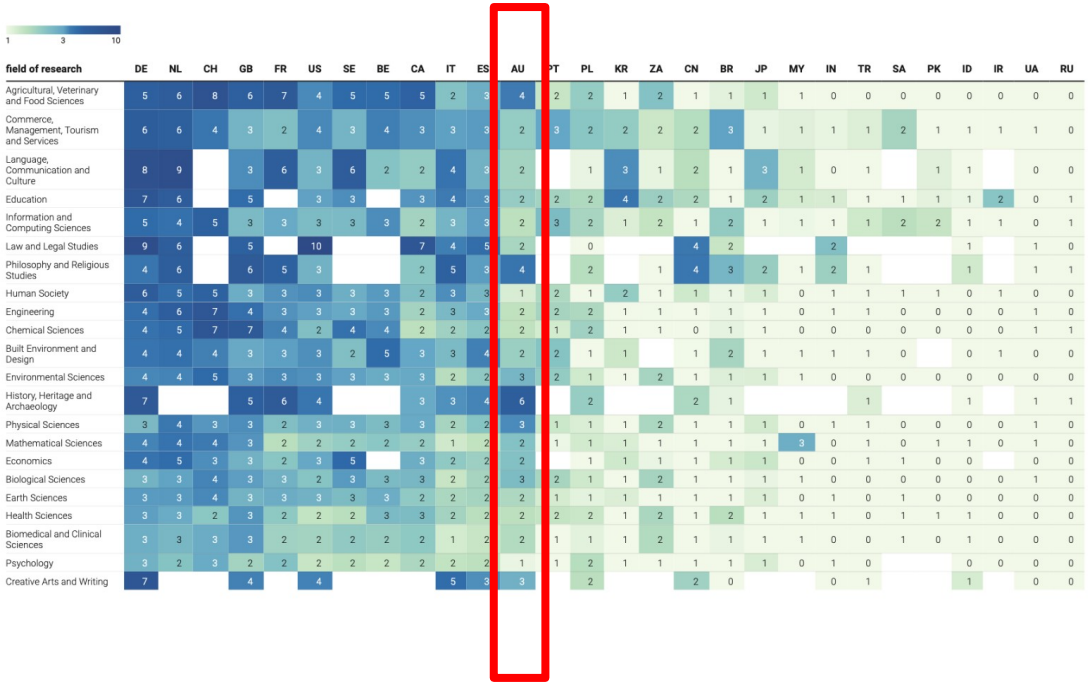

Figure 17: Data citation engagement by country 2024 as a ratio of the percentage of global papers with data set citations by country over the global percentage of papers for that country (toolkit query 4.1.19)

Improving Research Outputs & Community Practice

Reports & Dissertations: The report advises encouraging the practice of publishing reports in institutional repositories and linking them to people (ORCID) and affiliations (ROR). It also suggests considering a national policy for publishing dissertations with DOIs and formalizing the use of ORCIDs for authors and their supervisors.

country_code	Dissertations
BR	128,058
US	123,360
AU	75,210
DE	40,918
GB	37,935
NL	16,315
CO	13,800
AT	12,134
ES	11,639
CH	11,425

Figure 31: Dissertations by Country 2020-2024 top 10 (toolkit query 4.2.10)

id	all dissertations	with ORCID	with ROR	percent ORCID	percent ROR
monash.repo	19,886	23	51	0%	0%
University of Queensland Library	15,888	3,930	0	25%	0%
ardcx.utas	10,291	1,056	1,441	10%	14%
ardcx.mqu	6,602	3	657	0%	10%
figshare.rmit	5,603	91	1,206	2%	22%
unsw.repo	3,568	860	0	24%	0%
latrobe.repo	3,498	9	852	0%	24%
swin.repo2	3,196	1	362	0%	11%
Queensland University of Technology	2,023	209	0	10%	0%
uniwa.repo	1,621	0	1,467	0%	91%
ardcx.cqu	1,050	31	582	3%	55%
ardcx.usq	562	82	81	15%	14%
jcu.repo	421	296	406	70%	96%
ardcx.ecu	230	191	221	83%	96%
ardcx.wsu	220	0	217	0%	99%
ardcx.uc	219	0	24	0%	11%
ardcx.acu	158	19	0	12%	0%
cdu.repo	106	1	98	1%	92%

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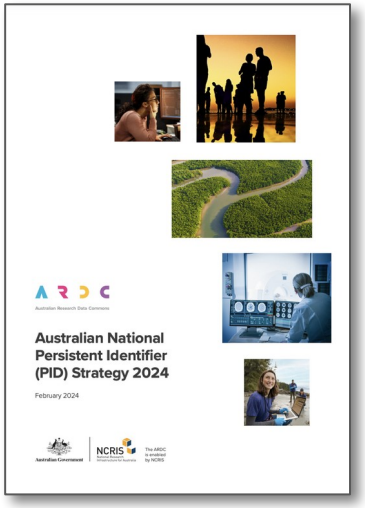
We have the data, but just need to get over the last hurdle

https://research-repository.rmit.edu.au/articles/thesis/A_Numerical_Study_of_Particle_Collision_Dynamics_and_Charge_Transfer_in_Microchannel_Suspension_Flows/30110281?file=57947530

https://unsworks.unsw.edu.au/entities/publication/3fd36d8f-285e-44ff-add4-ab894858750a

Working Groups



http://bit.ly/3L0OXXw

RAiD adoption

PID Dissertations

Grant PIDS

National ORCID Based Reporting

Getting connected: From things to networks

Improve Research Quality and Efficiency

1. **Increase the Findability, Accessibility, Interoperability and Reuse of inputs to research**

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2. **Increase the Findability, Accessibility, Interoperability and Reuse of research outputs.**

Outputs from research include data, reports, methods, non-traditional research outputs and publications. By increasing the discoverability of these outputs, we can improve future research, create new kinds of research, reduce duplication and improve the timeliness of translating research into impact.

3. **Improve research reproducibility, provenance and attribution while minimising administrative burden, enabling researchers to spend more time on research**

By linking researchers to projects, grants, organisations and equipment, we can improve research reproducibility, provenance and attribution. Through the use of PIDs, researchers can minimise the amount of time they spend on reproducing the same data many times over, releasing valuable time back into research.

Optimise the National Research and Innovation Ecosystem

1. **Improve our ability to understand the impact of research inputs and evaluate research quality, impact and evidence of public benefit.**

By linking elements across the research and innovation ecosystem through PIDs, we can better understand the relationship between the elements of the ecosystem, including investment, use, outputs, outcomes and impact. We can more efficiently assess our research institutions' performance with respect to research quality thresholds, better trace the impact of the research and through this, more readily explain the public benefit of the research.

2. **Improve our ability to map Australia's research capability.**

Australia needs the research capability to address our national priorities. PIDs for people, organisations, research services and infrastructure would enable us to map our research capability against national priorities and invest appropriately to address gaps.

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