

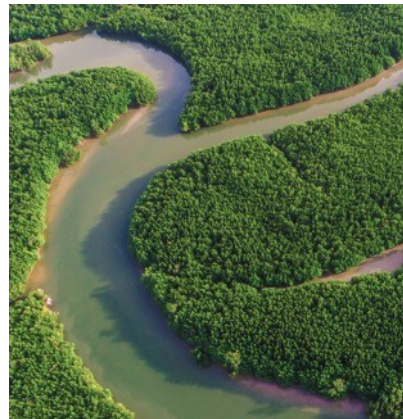


Australian Research Data Commons

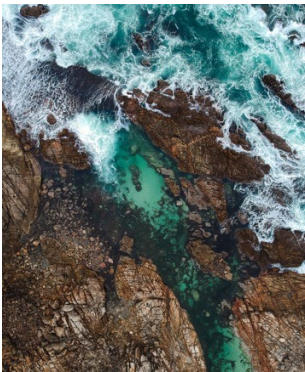
Delivering Enduring Infrastructure: the Planet Research Data Commons

21 October 2025

Kerry Levett, Jonathan Smillie and Hamish Holewa
ARDC



ARDC is enabled by NCRIS



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 and present.



About the ARDC

The ARDC is Australia's leading research data infrastructure facility.

Our Purpose

To provide Australian researchers with competitive advantage through data.

Our Mission

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

The Thematic Research Data Commons



PEOPLE

Research Data Commons



PLANET

Research Data Commons



HASS & INDIGENOUS

Research Data Commons

What is a Research Data Commons?

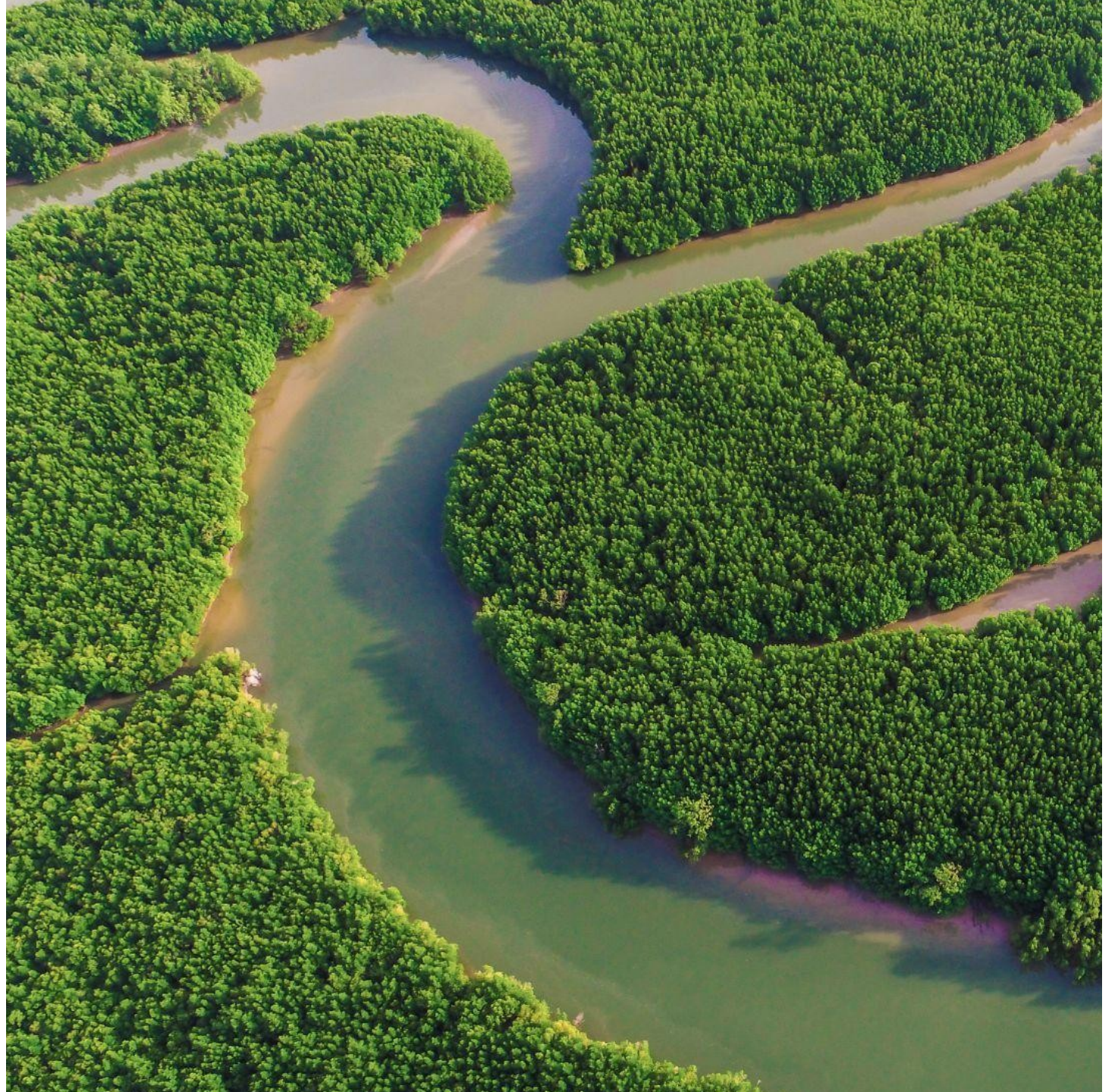
A research data commons brings together people, skills, data, and related resources such as storage, compute, software, and models to enable researchers to conduct world class data-intensive research.



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Research Data Commons

National-scale data infrastructure for earth and environmental science research and decision making

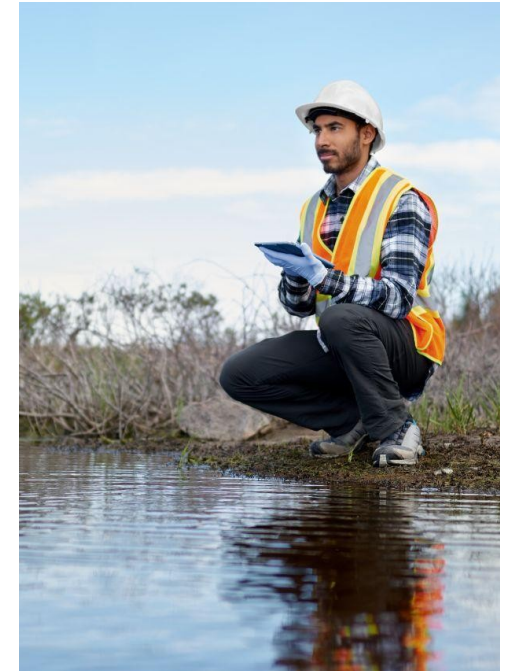
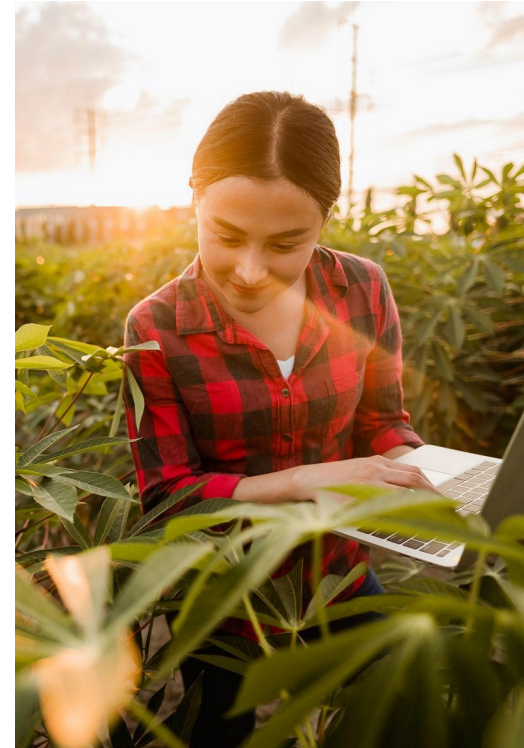


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Research Data Commons

Sustainable, enduring infrastructure for earth and environmental sciences:

- Co-design, strategic investment, coordination and expertise.
- Collaboration with research, government and industry.
- Informatics and computing services and service providers.

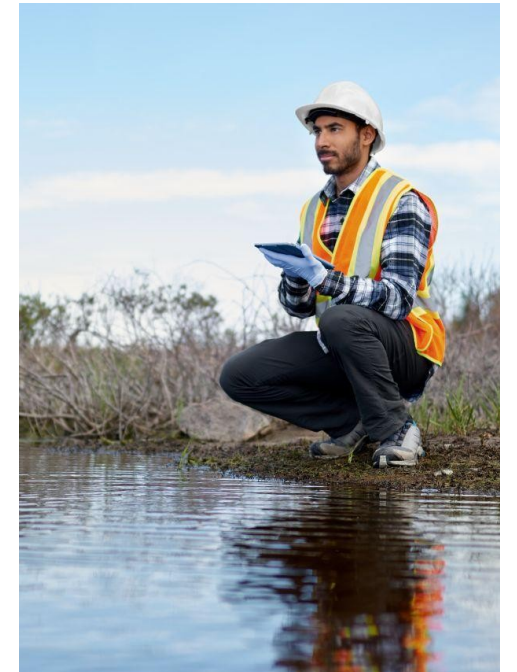
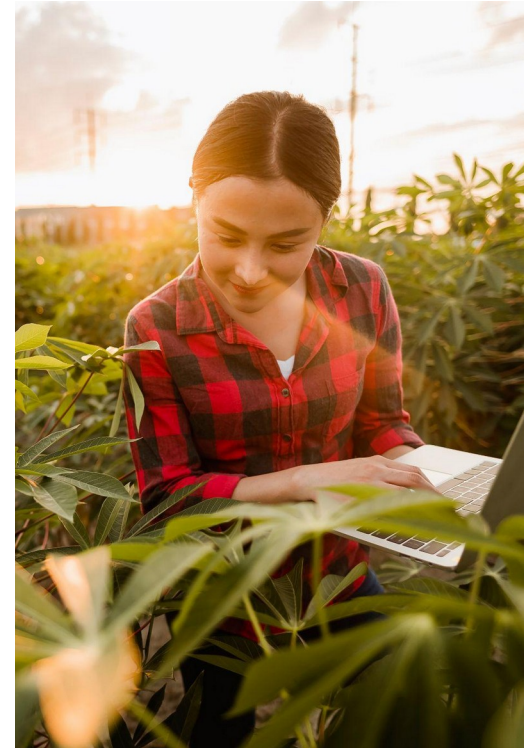


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Research Data Commons

Focus areas:

- Trusted Environmental Data and Information Supply Chains.
- Integrated FAIR Datasets and Services.
- Infrastructure for Modelling, Analytics and Decision Support, and Automated Observation and Sensor Data.
- Governance of Indigenous Data, and Skills.



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Partner Projects



**Open
Eco**acoustics



AusTraits



EcoCommons



Bio**security**
COMMONS



and more ...

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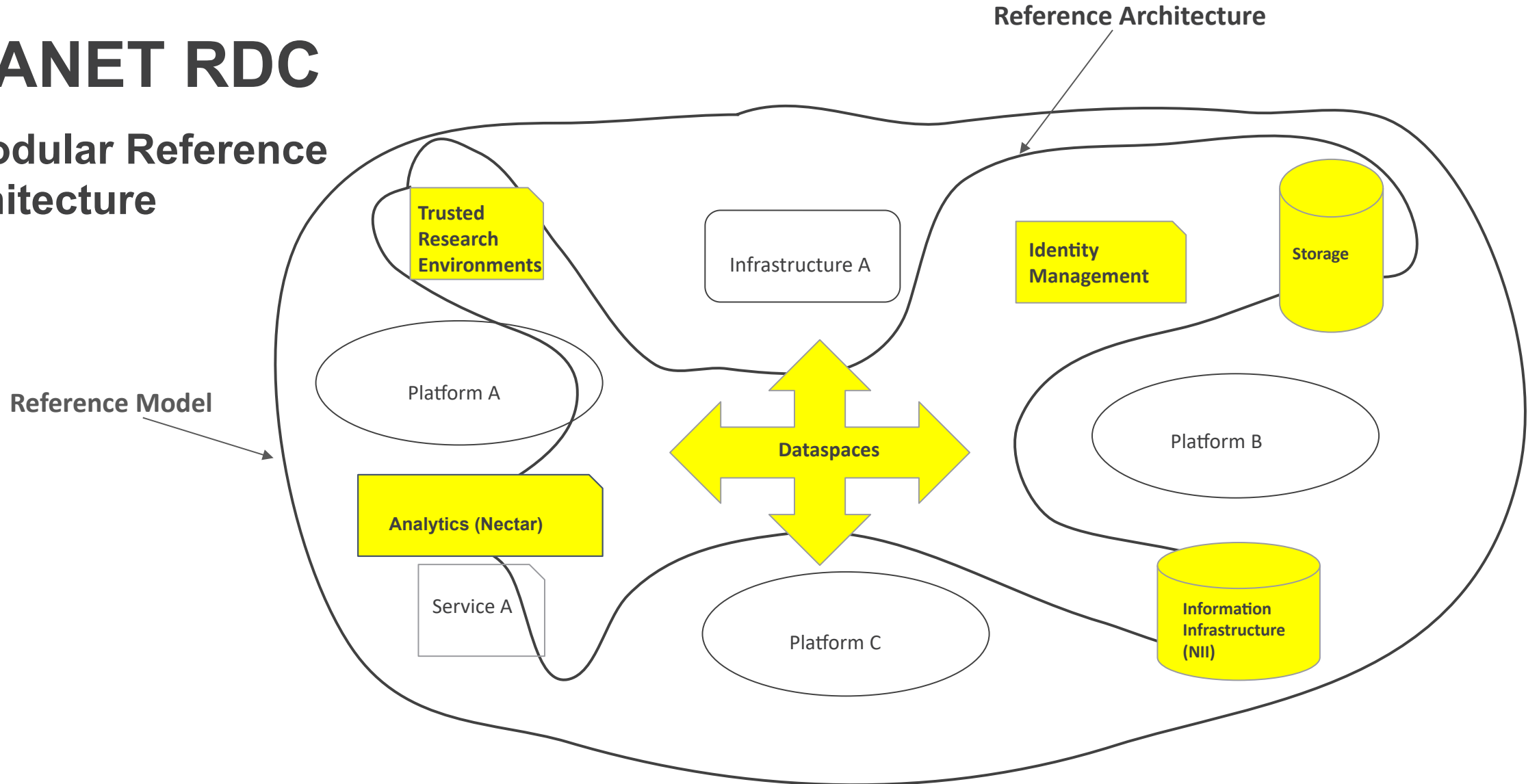
A Standardised Reference Model

Shared Analytic Framework for the Environment

Layer	Capability Categories				
USE	DECISION SUPPORT TOOLS		REPORTING	RESEARCH	
ANALYSE	Explanatory and predictive modelling.	Standards for models and model linkage.	Model traceability, reproducibility and stewardship.	Assurance and uncertainty methods.	
INTEGRATE	Trusted data on drivers, pressures, state, impacts and responses.	Conceptual frameworks and methods for modelling.	Standards and systems for data sharing and exchange.	Provenance and lineage.	
CURATE	Data quality and fitness for purpose.	Vocabularies and conventions.	Identifiers.	Data and software publishing.	Managed datasets, layers and products.
COLLECT	Observations and measurements.	Collection systems and protocols.	Reference samples.	Metadata and data standards.	Data discovery and reuse.
CULTURE	Legal, policy and program incentives.	Data governance and access.	Culture of FAIR data and software.	Indigenous Knowledge and CARE Principles.	Communication and communities of practice.

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A Modular Reference Architecture



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Architecture Working Group

- Partner project system architects and tech leads.
- ARDC systems analyst, Planet solution architect and program managers.
- Guest technical experts.
- Considers common challenges, solution patterns, and practical experience.
- Leverages communities such as **ARCOS** and the **ARDC Tech Talks**.

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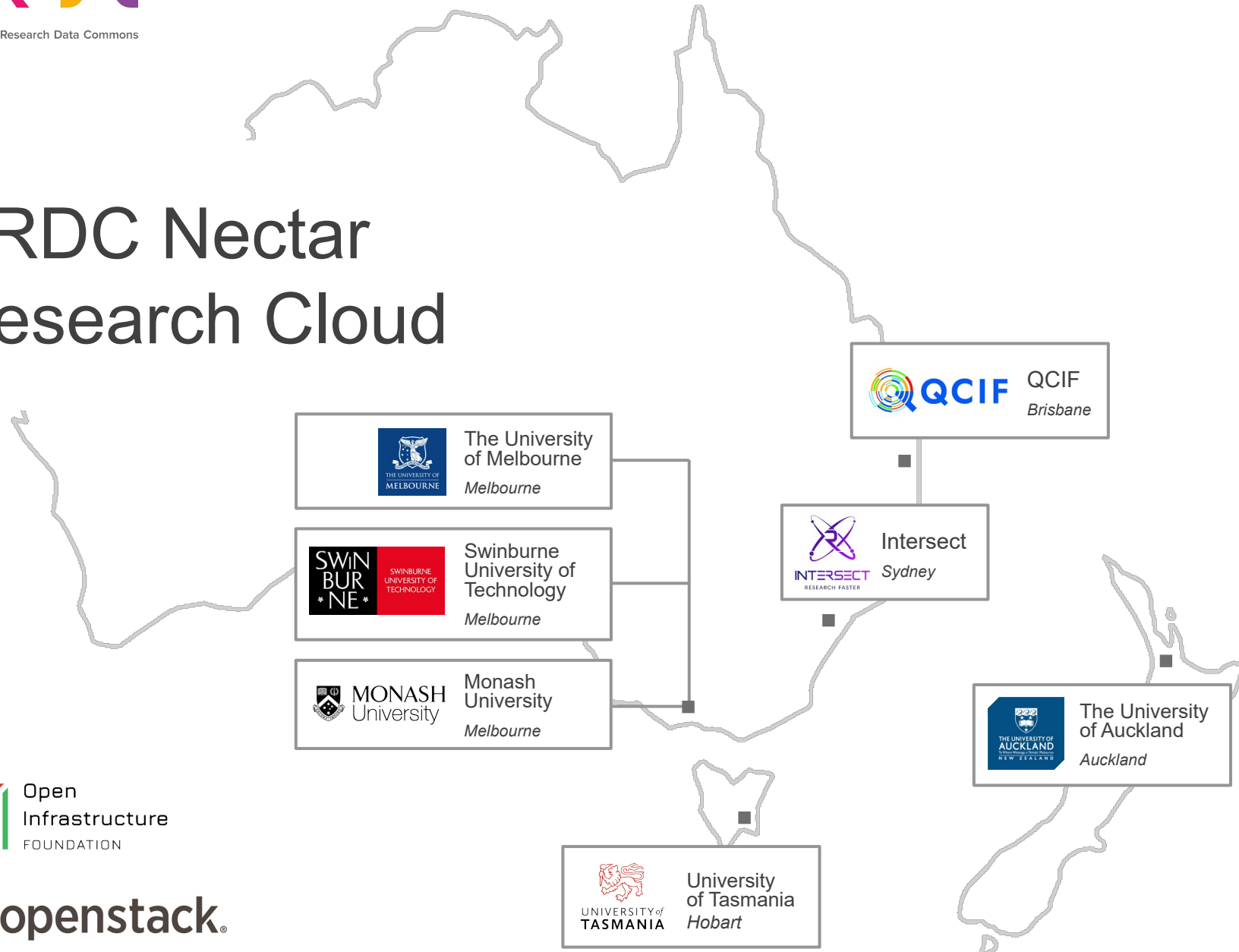

Component Infrastructures Include (not exhaustive ...)

- Nectar Research Cloud
- Nectar Analytics Services
- ARDC National Information Infrastructure (NII)
 - RDA, RVA and PIDs
- National Trusted Research Environments
- Australian Dataspaces
- National Communities of Expertise
 - ARCOS
 - ARDC Tech Talks




Australian Research Data Commons


ARDC Nectar Research Cloud


8,700+
Virtual Machines



34,000
Physical CPU Cores



150,000+
Virtual CPU Cores



248
VGPUs



2PB
Object Storage



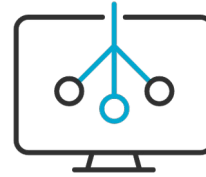
5PB
File Storage



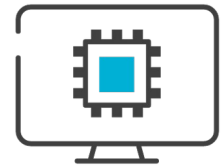
Services Powered by ARDC Nectar Research Cloud



**ARDC Nectar
Research Cloud**
Compute & Storage



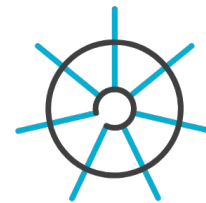
**Virtual Desktop
Service**



**National GPU
Service**



**Jupyter Notebook
Service**



**Kubernetes
Services**

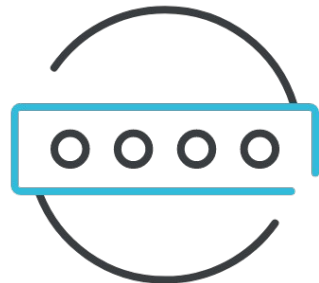


**BinderHub
Service**

National Information Infrastructure



**ARDC
Research
Vocabularies
Australia**

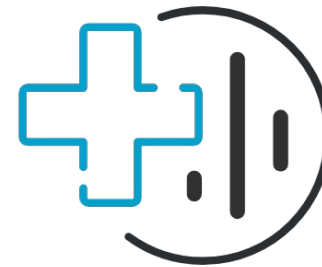


**Identifier
Services**



**ARDC Research
Data Australia**

*Specialist
platforms,
including*



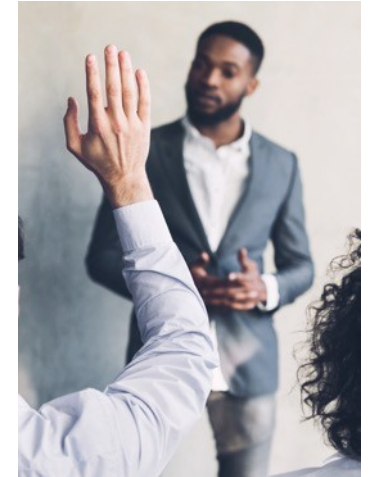
**Health Data
Australia**



**Research
Link Australia**

Communities of Practice

- ARDC Tech Talks
- Australian Research Containers Orchestration Service (ARCOS)
- Dataspaces Implementers Network
- Trusted Research Environments
- <https://ardc.edu.au/resources/communities-of-practice/>





Australian Research Data Commons

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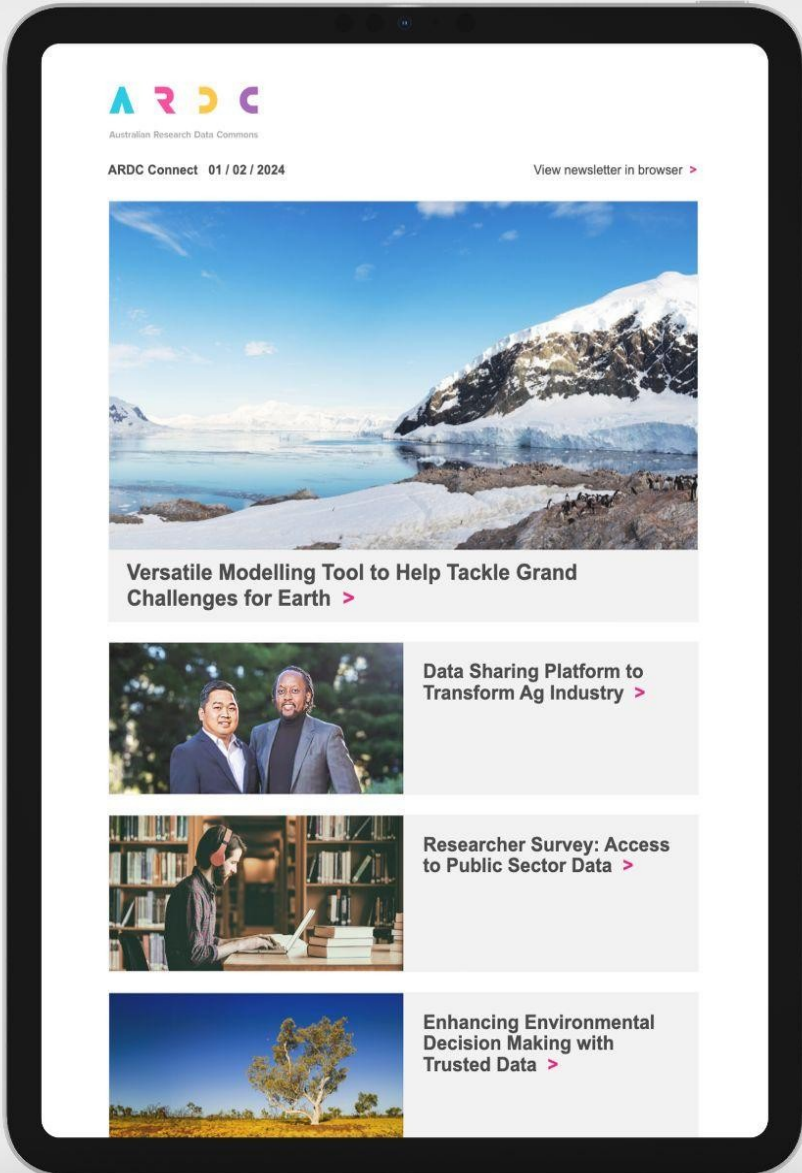
Research Data Commons

National-scale data infrastructure for earth and environmental research and decision making



Find Resources for Researchers
Explore datasets, free tools and upskilling materials we've curated for data-intensive research in earth and environmental sciences

Get Involved
Learn more about and register your interest in the Planet Research Data Commons.



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CONTACT

-  ardc.edu.au
-  contact@ardc.edu.au
-  +61 3 9902 0585
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