

BoF - From Awareness to Application: Exploring Researcher's Skills Needs for Using Digital Research Infrastructure

21 October 2025



Digital Research
Alliance of Canada

Alliance de recherche
numérique du Canada



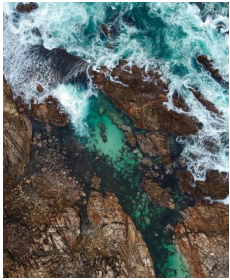
THE UNIVERSITY OF
SYDNEY



Australian Government

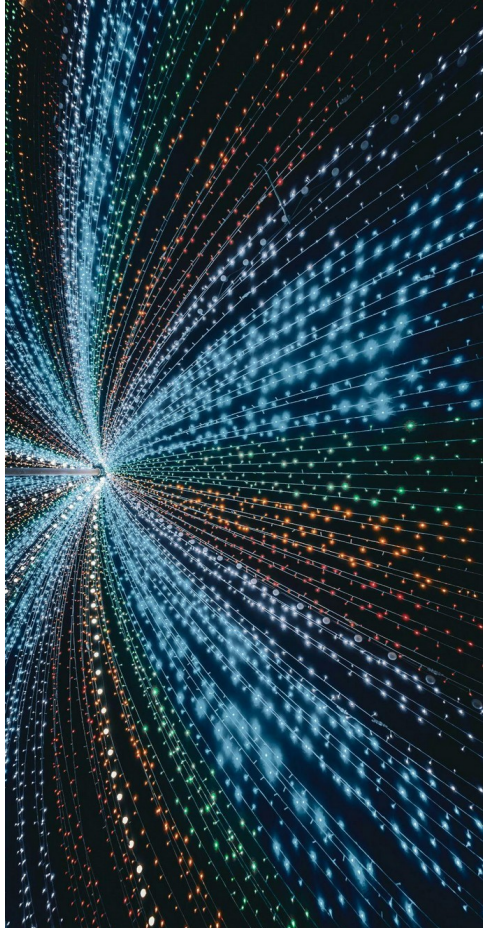


ARDC is enabled by NCRIS



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.



Research in a complex digital era

- DRI landscape is growing in complexity and scale
- Digital skills are now as critical as domain expertise
- Persistent gaps: limited awareness, insufficient training, unclear learning pathways

Aim of today's session

- Pinpoint the critical digital skills researchers need
- Map current training, highlight disconnects and surface opportunities
- Bring our collective expertise together to identify potential solutions and collaborations



Agenda

- What are the skills?
- Challenges
 - International, university and infrastructure provider perspectives
- Interactive group activity
 - Skills gap mapping
- Report back and wrap up



Presenters



Kathryn Unsworth

Skilled Workforce
Development Manager, Skills
& Workforce, ARDC



Catherine Di Vita

National Training
Coordinator, *Digital Research
Alliance of Canada (the
Alliance)*



Darya Vanichkina

Research Community
Specialist, *University of Sydney-
Sydney Informatics Hub*



Masoud Rahimi

Lead Data Scientist,
*Australian Urban Research
Infrastructure Network
(AURIN)*

Facilitators



Ellen Lyrtzis

Skills Development Lead
(NCRIS), *ARDC*



Sarah Thomas

Portfolio Manager, *Australian
Access Federation*



Sara King

Training and Engagement Lead,
AARNet

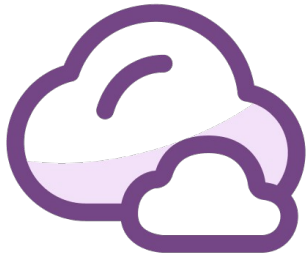
Slido

- Join at slido.com
- Enter the code: **2824633**



Or use QR code





What's the biggest challenge you see in digital research skills development for researchers?

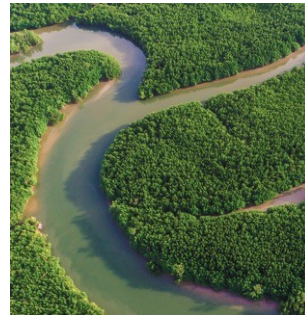
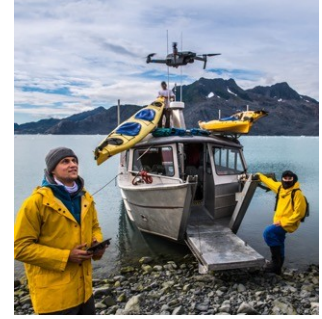


Australian Research Data Commons

What Digital Research Skills Do Researchers Really Need? Well, it depends...

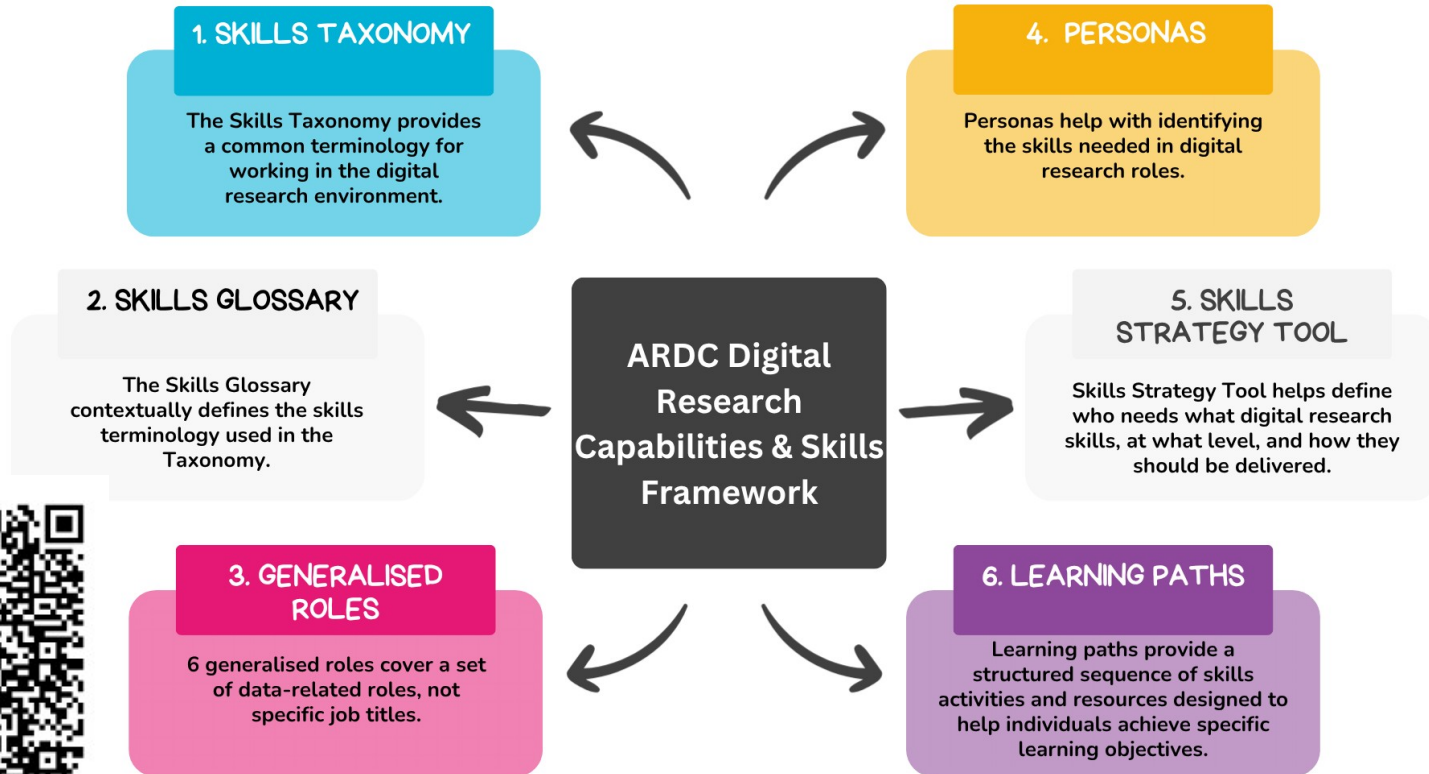
21 October 2025

Kathryn Unsworth, Manager - Skilled Workforce Development, ARDC



ARDC is enabled by NCRIS

ARDC Digital Research Capabilities & Skills Framework



Skills Terminology

GOVERNANCE CAPABILITIES



DATA CAPABILITIES



SOFTWARE CAPABILITIES



DIGITAL RESEARCH INFRASTRUCTURE MANAGEMENT CAPABILITIES



ARDC Digital Skills Taxonomy

Unsworth, K. (2024). ARDC digital research capabilities and skills framework: The framework and its components (Versions v1 - Consultations (2021-2023)). Australian Research Data Commons. <https://doi.org/10.5281/ZENODO.14188836>

Data- Capability family (pg 1)					
CAPABILITY CLUSTER	CAPABILITY	SKILL FAMILY	SKILL CLUSTER	SKILL	
Data Management	Foundational - Research methodologies and practices				
		Working with data	Planning for data management		
	Handling sensitive data				
	Accessing & storing data				
	Data versioning				
	Data engineering			Structured data	
				Text	
				Image	
			Data cleaning		
			Sampling data		
			Data pre-processing	Data transformation	
	Data quality				
	Data integration & interoperability				
	Categorising & classifying				
	Data flows				
	Citing & tracking				
			Metadata schema & standards		

Dean the Data Scientist



Role

- Postdoctoral-level researcher supporting multiple research projects with data science expertise
- Discipline: Cross-disciplinary

Typical data task

- Advanced coding in Python/R, SQL, and cloud-based analytics
- Machine learning and AI model development

Goals and Motivations

- Solve complex research problems using advanced data methods
- Develop transferable tools and pipelines that can be reused across projects.

Skills acquisition preferences

- Prefers self-directed, deep learning through online courses, documentation, and experimentation
- Engages well with hackathons, datathons, and code sprints where he can test skills in real-world challenges
- Enjoys community-driven learning (open-source projects, GitHub collaborations)
- Values advanced workshops or masterclasses led by experts (rather than beginner-focused training)

Skills pain points and challenges

- Communication gaps with domain researchers
- Rapidly evolving tools/technologies require constant upskilling
- Time spent cleaning and integrating messy datasets before analysis



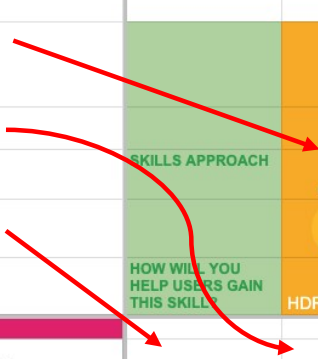
Digital Research Skills Framework Strategy Tool

	A	B	C	D	E	F	G	H	I
2	 <small>Australian Research Data Commons</small>								
3	<h2>Skills roles mapped to the ARDC Digital Research Skills Taxonomy</h2>								
4	<small>Unsworth, K. (2024). ARDC digital research capabilities and skills framework: The framework and its components (Versions v1 - Consultations (2021-2023)). Australian Research Data Commons. https://doi.org/10.5281/ZENODO.14188836</small>								
5									
6								Phyllida	Raj
7									
								HDR pre-start	SS Researcher
35	Data - Capability family								
36	CAPABILITY CLUSTER	CAPABILITY	SKILL FAMILY	SKILL CLUSTER	SKILL				
37		Foundational - Research methodologies and practices							
38			Planning for data management				Refer to existing	Working	Practitioner
39			Handling sensitive data				Refer to existing	Working	Practitioner
40			Accessing & storing data				Create self service	Awareness	Working
41			Data versioning				Assume skills	N/A	Working
42					Structured data		Deliver live	Awareness	Working
43					Text		Create self service	Working	Practitioner
44				Data engineering	Image		Create self service	Awareness	Working
45							Deliver live	Awareness	Practitioner
46				Data cleaning			Create self service	Awareness	Expert
47				Sampling data	Data transformation		Assume skills	Awareness	Working
48				Data pre-processing			Refer to existing	N/A	Working
49				Data quality			Refer to existing	Awareness	Practitioner
50				Data integration & interoperability			Refer to existing	N/A	Working
51				Categorising & classifying			Deliver live	N/A	Expert
							Create self service	N/A	
				Data flows			Refer to existing	N/A	Working
							Assume skills	N/A	

1

2

3



The Alliance: Who We Are



National Scope
& Mandate



Member-Based



Non-Profit



Federally Funded

Quick facts:

- We work with over 26,000 researchers across Canada
- We are a neutral allocator of public compute
- We manage a national DRI Workforce



**Digital Research
Alliance** of Canada 

Challenges: A National Perspective

- **Communication:** Ensuring training messages are timely, inclusive, and engaging for diverse audiences amid numerous competing communications
- **Coordination:** Managing dynamic priorities while building and maintaining consensus and buy-in
- **Capacity:** Varying individual workloads and requirements; limited organizational capacity for new talent
- **Funding:** Navigating a co-funded environment; spending and reporting requirements

Challenges & Opportunities: *An University Perspective*



Incentive Structure & Recognition

Promotion & future funding heavily dependent on publications & grants.



Support Roles

Sustained funding for dedicated digital research support roles.



Diversity

Researchers are not one cohesive group - training that supports one cohort can alienate another.



Pace of Change & Just-in-Time Training



Infrastructure

Data science, ML & AI require costly computing resources to access cutting edge developments - these are not one size fits all

Challenges: AURIN Perspective

- Fragmented Research Infrastructure Landscape
- Skills Gap in Data Stewardship and Validation
- Operationalising FAIRness
- Bridging Research Skills and Infrastructure Readiness
- Time and Incentive Barriers

Scenario-based activity

1. Choose your persona
2. Identify key challenges
3. Identify digital research skills



Online copy of personas

Raj the Social Sciences Researcher



Role

- Mid-career academic responsible for independent research, teaching and supervising PhD students
- Discipline: Social Sciences

Typical data task

- Cleaning and preparing data for analysis

Goals and Motivations

- Potential promotion
- Research publication
- Help HDR students gain skills

Skills pain points and challenges

- Lack of institutional support for learning new skills
- Rigidity - relying on methods and tools that worked in the past
- Time demands - hard to find time to learn

Skills acquisition preferences

- As fast as possible
- Timed to fit in with academic year - short, intense bursts
- Self-paced learning that can be picked up during irregular space in daily schedule
- Values case studies and real-world examples demonstrating practical applications in social science

Online version of ARDC skills taxonomy: <https://zenodo.org/records/16892111>

Scenario-based activity

1. Find training opportunities
2. Highlight gap
3. Consider collaboration



Online copy of personas

Raj the Social Sciences Researcher



Role

- Mid-career academic responsible for independent research, teaching and supervising PhD students
- Discipline: Social Sciences

Typical data task

- Cleaning and preparing data for analysis

Goals and Motivations

- Potential promotion
- Research publication
- Help HDR students gain skills

Skills acquisition preferences

- As fast as possible
- Timed to fit in with academic year - short, intense bursts
- Self-paced learning that can be picked up during irregular space in daily schedule
- Values case studies and real-world examples demonstrating practical applications in social science

Skills pain points and challenges

- Lack of institutional support for learning new skills
- Rigidity - relying on methods and tools that worked in the past
- Time demands - hard to find time to learn

Report back

Share 1-2 key highlights from your discussion

Examples

- An important skill or challenge
- A clear gap in training
- An innovative idea for collaboration





Next Steps

- Use key insights as a foundation for a national DR skills landscape analysis
- Share findings with the training community to inform future initiatives



Let's stay connected

ARDC National Skills Forums

- Monthly meet up for the training community
- Facilitate knowledge exchange between trainers
- Share training resources & best practices
- Register your interest:



<https://eresearch.gov.au/ardcskillsforums>