

Centre for eResearch and Digital Innovation (CeRDI)





Harnessing the power of big data and technological innovation

The Centre for eResearch and Digital Innovation (CeRDI) at Federation University Australia is a global leader in data interoperability.

CeRDI has developed many award-winning, web-based spatial information and knowledge portals that provide public access to data sets that would otherwise be hidden from view.

CeRDI focuses on multidisciplinary research in the application of advanced information and communications technology (ICT). The Centre aims to bring about digital transformations and practice change, together with enhancements in effectiveness and productivity in industry, government and academia.

The Centre has a growing reputation for:

- the application of ICT and the development of innovative, world-class knowledge management systems
- significantly advancing the digital literacy and knowledge management capabilities of partner organisations
- fostering partnerships for the development and implementation of eResearch with industry, government and academia
- measuring the impact of eResearch and digital innovation through longitudinal research

CeRDI is outcomes-focused, committed to building capacity and engagement with partner organisations and to ensuring the uptake of technologies that benefit and support research partners, their staff and stakeholders, including the broader community.

The Centre delivers world-class innovations in technology by anticipating new technology directions and opportunities based on insights from research and partner engagement. These innovations generate beneficial partner outcomes and attract sustained research investment.

CeRDI'S RESEARCH STREAMS

CeRDI focuses on six research streams supported by our research pillars of data discovery, technology innovation and longitudinal impact:

NATURAL ENVIRONMENT

This stream spans a range of areas, including groundwater, soil health, water and estuary health, natural resource management planning and biodiversity.

AGRICULTURE

This stream is characterised by innovative approaches using advanced spatial mapping, federation of agricultural-related data as well as portal design and visualisation tools.

HAZARD PLANNING AND RESILIENCE

This stream involves initiatives to address the impacts of natural hazards and emergencies. There is also a focus on developing community awareness and resilience building associated with climate change.

HEALTH AND WELLBEING

This stream aims to improve the health and wellbeing of individuals and the community through research and technology advancements.

HERITAGE AND CULTURE

This stream works with regional organisations, local governments and Indigenous groups on important initiatives to support and promote culture and heritage.

REGIONAL DEVELOPMENT

This stream involves working with regional local governments to harness the opportunities of next-generation broadband for their communities.

Research with **real-world impact**

Our focus is on applied research that makes a difference in the communities we serve. The following case studies present just some examples of how this Centre's research is having a positive impact in the world.



Case study: How data could change life down on the farm

The biggest collaborative soil research effort in Australia's history could save the agricultural industry billions of dollars each year by giving farmers unprecedented access to information to help improve the performance of their land.

The Cooperative Research Centre for High Performance Soils (Soil CRC) is a 10-year, \$167-million research initiative that will give farmers and the Australian agricultural industry access to information that could improve their yields and make their businesses sustainable.

CeRDI is leading the Soil CRC's Visualising Australasia's Soils project, joining other universities, farmer groups, state agencies and industry partners. CeRDI, a global leader in data interoperability, is using its expertise in heading up a key component in the project – solving the challenges of making all soil data findable, accessible, interoperable and reusable (FAIR).

The information will eventually be visible with other landscape data like rainfall, terrain or groundwater to provide a clearer understanding of the cause-and-effect relationships across a farming landscape.

Project leader Associate Professor Peter Dahlhaus said more data was being collected than ever and this meant there were large amounts of on-farm information that were difficult to access.

The Visualising Australasia's Soils projects was a finalist in the Interoperability by Design category of the IoT Awards 2021.



Case study: Transforming farming for a carbon-neutral future

Federation University researchers will play a leading role in a \$6.5 million project that aims to revolutionise how rangeland farmers measure, manage and trade carbon.

The project is being led by the Australian Agricultural Company (AACo), Australia's largest integrated cattle and beef producer, and the Food Agility Cooperative Research Centre (CRC).

Researchers from CeRDI and Federation's Future Regions Research Centre (FRRC) will collaborate on the Rangelands Carbon Measurement project with Cibo Labs, FLINTpro (Mullion Group), Carbon Link, University of Technology Sydney and Charles Sturt University.

Among the projects in the collaboration is the development of a tool to accurately and affordably measure soil carbon in Australian rangelands, which make up 75 per cent of the country's land mass. This will reduce reliance on expensive soil tests, which can cost millions and are a major barrier for farmers who want to manage soil health and participate in the growing carbon market.

Federation will also be involved in a data component of the research, with a postdoctoral researcher working with the Mullion Group, which specialises in the measurement and projection of land-based greenhouse gas emissions and removals to improve the carbon estimation and forecasting models.

Food Agility CRC CEO Richard Norton said the data-driven initiative would help the red meat industry and the nation meet net-zero emissions commitments by 2030 and 2050, respectively.

Centre leadership

CeRDI has a director supported by a multidisciplinary team comprising eResearch and digital technology experts.



Associate Professor Helen Thompson

DIRECTOR

CENTRE FOR eRESEARCH AND DIGITAL INNOVATION

Associate Professor Helen Thompson is the Director of Federation University's Centre for eResearch and Digital Innovation (CeRDI).

Dr Thompson's research interests also focus on significantly advancing the digital literacy and knowledge management capabilities and capacity of partner organisations; fostering the development and implementation of eResearch within industry, government and academia; and measuring the impact of eResearch and digital innovation through longitudinal research.

Under Dr Thompson's leadership, CeRDI has developed core research skills in the interoperable federation of data for systems science research, information management and decision support systems.

Dr Thompson has accepted numerous awards for innovative initiatives undertaken by CeRDI. She is an active leader across of the University community and a member on various University and community linked committees and organisations. Dr Thompson provides University-wide leadership for eResearch and is involved in a range of activities which contribute to the economic and social development of regional and rural Australia.

Research team

PRINCIPAL RESEARCH FELLOW

- Associate Professor Peter Dahlhaus

PROFESSOR ENVIRONMENTAL ACCOUNTING

- Dr Francisco Ascui

SENIOR RESEARCH FELLOWS

- Dr Nathan Robinson
- Dr Birgita Hansen

RESEARCH FELLOW

- Dr Alison Ollerenshaw
- Dr Benedikt Fest
- Aakansha Chadha

RESEARCH ASSOCIATES

- Dr Carolyn Staines
- Dr Megan Wong
- Dr Judi Walters
- Bruce Simons
- Rick Pope



Find out more

For research queries and to find out more about CeRDI's research, visit the Centre website: federation.edu.au/cerdi
Or call us on: **+61 3 5327 9418**

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