NIIN

National Industry
Innovation Network

Outcomes from the National Industry Innovation Network Research Chair Summit

Canberra, March 2025

Cisco · University of Canberra · UniSC · Flinders University · The University of Adelaide

QUT · The University of Queensland · Curtin University · UTS · RMIT · La Trobe University

Forewords

Message from the Chair of NIIN Research Chair Advisory Committee

The NIIN Research Chair Program is a new model for industry-driven, large-scale research translation. It bridges the gap between academic research, curriculum, and industry needs, ensuring that innovation moves from theory into real-world application.

What sets this program apart is its collaborative approach, bringing together Researchers, DVCRs, and industry leaders to create a more agile, impactful research ecosystem.

Universities play a crucial role in shaping the future of industry, but to do so, we must invest in new ways of thinking, collaborating, and translating innovation into practice. The NIIN Research Chair Program is a proven pathway to turning research into tangible, large-scale solutions that drive economic and societal impact.

Prof Ross Young
Deputy Vice Chancellor (Research and Innovation), UniSC

Message from the NIIN founder

At Cisco, we believe in investing in innovation and collaboration. The world is changing too fast for us to sit back and wait for traditional research structures to solve digital challenges. That's why we created the NIIN – a network that brings together industry, universities, and government to accelerate innovation and digitisation.

What started as an experiment has evolved into one of the most effective and largest industry-university collaboration models in Australia. The NIIN Research Chair Program is a key part of this success, embedding world-class researchers into projects that address national priorities and industry needs head-on.

Through the NIIN we're delivering solutions in cybersecurity, AI, IoT, future networks, digital health, and critical industries and infrastructure, proving that when research and industry work together, we can create real, scalable, and lasting change. The NIIN is more than just a partnership, it's a catalyst for transformation.

Reg Johnson
Director, Education & Strategic Industries, Cisco ANZ

Message from the inaugural NIIN Research Chair

The NIIN Research Chair Program is reshaping how research translates into impact. For researchers, the NIIN model provides structured engagement with industry, incentives to focus on translation, and a framework for delivering measurable outcomes. It's not just about funding projects – it's about creating a pipeline of innovation that moves swiftly from research to practice, with industry adoption at its core.

My motivation as a Research Chair is to work on projects that genuinely change practices, improve efficiency, and advance digital transformation. The NIIN is proving that by fostering deep collaboration between researchers and industry, we can accelerate the adoption of digital solutions, enhance competitiveness, and drive meaningful change across multiple sectors.

Prof Trish Williams
NIIN Research Chair in Digital Health, Flinders University

Acknowledgement of Host

The NIIN would like to thank the University of Canberra for its hosting of the Research Chair Summit and continued commitment to the broader program.

The NIIN Research Chair Ecosystem

The NIIN was established in 2020 to leverage the power of digital technology, collaboration and innovation to benefit Australia.

The Research Chair program is a critical element of the NIIN. It was established to bridge the gap between cutting-edge research and industry application, ensuring that digital innovation translates into real-world impact.

Australia has world-class research capabilities, but historically, much of this expertise has struggled to connect with industry needs. The NIIN Research Chair Program directly embeds leading researchers within industry collaborations, creating a dynamic ecosystem where academia, business, and government work together to solve national challenges.

Each NIIN Research Chair leads projects in key areas such as cybersecurity, digital health, AI, and critical infrastructure, focusing on high-impact, scalable solutions that drive economic and societal benefits. With a presence across multiple universities, the program fosters national collaboration, ensuring that research doesn't just generate knowledge – it delivers practical solutions that shape Australia's digital future.

A/Prof. Alison Craswell
Digital Health & Aging
Uni Sunshine Coast, QLD

Dr. Nadine Ostern
Trusted Retail
QUT, QLD

Prof Marius Portmann
Network Security
Uni of Queensland, QLD

In Recruitment
Renewable Tech & Sustainability
UTS, NSW

Prof. Frank den Hartog
Critical Infrastructure
Uni of Canberra, ACT

In Recruitment
Defence, Uni of Canberra, ACT

Prof. Trish Williams
Digital Health
Flinders University, SA

Prof Reza Nejabati
Head of Quantumm Research
Cisco

Prof. Wei Xiang
AI & IoT
La Trobe University, VIC

Non Research Chair role

Challenges the Research Chair program was set up to address

The NIIN Research Chair Program was created to tackle critical gaps in industry-university collaboration, economic complexity, and digital transformation. While Australia has world-class research capabilities, structural challenges have limited its ability to translate knowledge into industry impact and national economic growth.

1. Static Industry-University Collaboration

Universities produce the majority of Australia's R&D output, however this research must be more strongly connected to industry needs.

The Research Chair Program directly embeds leading academics into high-impact industry collaborations, ensuring that research efforts are aligned with real-world challenges and industry demand.

- Australia ranks last among OECD nations for industry-research collaboration (OECD 2021).
- The current research funding model is unsustainable and needs to consider ways to increase industry investment.
- Competitive research funding has not increased in real terms, over recent years, except for the introduction of the MRFF (Department of Education 2023).

2. Low and Declining Economic Complexity

Australia's economy remains heavily reliant on resource extraction and low-complexity industries, limiting its ability to drive innovation led growth and productivity.

The Research Chair Program strengthens Australia's knowledge economy, ensuring that research contributes directly to high-value industries such as cybersecurity, AI, and digital health – sectors that will define future economic resilience.

- The Harvard Economic Complexity Index (2022) ranks Australia at 102, between Senegal and Yemen.
- Few R&D staff are employed within Australian industry (OECD 2020), reducing opportunities for innovation.
- SMEs provide the majority of private-sector R&D investment (ABS 2022) yet lack the scale to drive national transformation.

3. Gaps in Digital Transformation & Research Translation

Despite investment in digital infrastructure and technology, research often fails to translate into a commercial application and large-scale industry adoption. One emerging area of concern relates to the adoption of AI where Australia is lagging comparator countries.

The Research Chair Program accelerates research translation and digital adoption, embedding researchers within industry to ensure that innovation leads to tangible economic and societal impact.

- Australia's innovation indices remain poor, dragged down by sub-par industry partnerships.
- Workforce and digital skills gaps slow the adoption of emerging technologies.
- Data are collected but underutilised, with AI-driven decision support still in its early stages.
- The proportion of Australian organisations that are leaders in AI has declined from to 17% to 7% from 2023 – 2024.[+]

[+] https://www.cisco.com/c/dam/m/en_us/solutions/ai/readiness-index/2024-m11/documents/cisco-ai-readiness-index-au.pdf

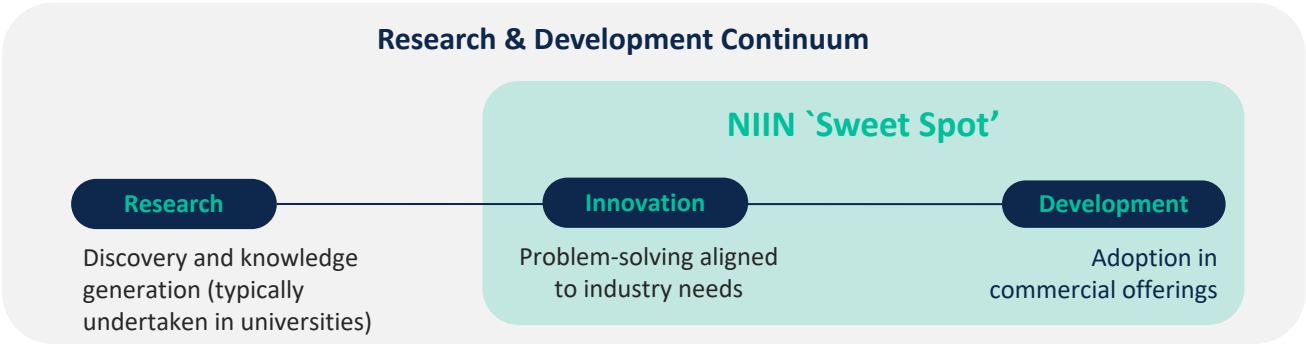
The NIIN `Sweet Spot': I&D

NIIN moves beyond traditional Research and Development (R&D) by focusing on Innovation and Development (I&D) — driving ideas from the lab into industry applications.

This is a critical distinction: Research is focused on discovery and generating new knowledge, while Innovation responds directly to industry needs, shaping research towards practical applications.

Hallmarks of the NIIN model include:

- **Bridging the research-to-industry gap:** Chairs work directly with businesses to shorten the innovation lifecycle.
- **From papers to prototypes:** Every Research Chair delivers tangible outcomes like proof-of-concepts, software, or validated frameworks.
- **Matched funding:** Industry and universities co-invest, ensuring research is aligned with market needs rather than purely grant-driven.



NIIN is characterised by its focus on:

1. Industry-led Research

NIIN Research Chairs are designed for real-world impact and embedded in universities that actively collaborate with industry. This ensures research is demand-driven and translates into real solutions, not just papers.

- **Industry-first approach:** Research is shaped by commercial and societal needs, not just academic curiosity.
- **Universities selected for industry engagement:** Chairs are in institutions that actively work with businesses, government, and technology leaders.
- **Applied focus:** Research projects must have demonstrable industry impact, whether through prototypes, new policies, or improved business practices.

2. Accelerating and De-Risking the Adoption of Digital Technologies

Many industries hesitate to invest in emerging technologies due to high costs, uncertain ROI, and lack of expertise. NIIN Research Chairs help remove these barriers by providing:

- **Safe environments to trial new technologies:** Companies can test AI, cybersecurity, and IoT solutions in a controlled setting.
- **A pipeline of skilled talent:** Research Chairs work closely with students and professionals to develop in-demand digital skills.
- **Policy influence:** Research outputs shape government and industry regulations, ensuring innovation is both scalable and responsible.

3. Scale and Reach

The NIIN Research Chair Program is designed for scalability, ensuring that innovations developed within the program can be applied across industries and markets.

- **National and global reach:** Projects are designed to be transferable across different sectors and international markets.
- **Scalable models, not one-offs:** Research Chairs focus on repeatable, scalable solutions rather than isolated projects.
- **Proven success model:** The NIIN approach is being recognised globally, setting a new standard for research-industry collaboration.

The difference Research Chairs can make

The NIIN Research Chair Program plays a crucial role in transforming how research connects with industry, shapes workforce skills, changes practice and drives real impact. By embedding researchers directly into industry collaborations, Research Chairs ensure that knowledge is applied, not just published.

This model strengthens academic-industry partnerships, accelerates digital adoption, and positions research as a driving force for innovation and economic growth.

Creating More Porous Boundaries Between Industry and Academia

- Co-designed projects with industry partners ensure research addresses real commercial and societal challenges.
- Faster translation of research into practice by working inside industry rather than in academic silos.
- A feedback loop between research and industry, where companies actively shape research priorities, and researchers influence industry best practices.

Preparing the Next Generation Workforce

- Research Chairs teach and mentor undergraduate and postgraduate students, PhD students and early-career researchers – embedding them in high-impact industry collaborations.
- Bridging the gap between education and employment by providing hands-on exposure to emerging technologies and industry challenges.
- Ensuring students graduate with skills that are immediately applicable in cybersecurity, AI, digital health, and infrastructure innovation.

Changing Practice

- Transforming how industries work by embedding research-backed methodologies into business operations.
- Embedding digital transformation at scale, ensuring companies are not just aware of emerging tech but can apply it effectively.
- Leading policy conversations, ensuring research findings inform government and industry regulations.

Creating Impact

- Using innovation to improve practice – Ensuring research findings lead to better workflows, efficiencies, and new models of working.
- De-risking adoption of digital technologies – Providing proof-of-concepts and testbeds that allow industries to experiment safely before large-scale rollout.
- Shaping key debates and conversations – Influencing industry standards, government policy, and public understanding of critical digital challenges.

Key 2025 Research Chair projects

Advancing Private 5G for Industry

Prof Frank den Hartog, University of Canberra

Problem: Limited industry awareness of 5G's potential for interference-free spectrum, low-latency data, and large-scale data transfer.

Solution: Establish a Private 5G/6G Lab at Innovation Central Canberra (ICC) to validate and showcase industry use cases in Defence and Mining.

Deliverables:

- Reference architecture
- Demonstration of Private 5G capabilities

AI to Combat Loneliness in Young Adults

Dr Nadine Ostern, QUT

Problem: Rising loneliness among young adults, with many seeking social connection through digital interactions.

Solution: Co-develop AI-driven chatbots to foster meaningful digital interactions.

Deliverables:

- AI chatbot prototype
- Impact evaluation
- Business case

Zero Trust Security for Healthcare

Prof Trish Williams, Flinders University

Problem: Healthcare is a prime target for cyber-attacks, but traditional security models struggle to protect increasingly complex, interconnected systems.

Solution: Develop a Zero Trust cybersecurity blueprint to enhance security in healthcare.

Deliverables:

- Academic paper and implementation blueprint
- Whitepaper & blog
- Teaching collateral

Exploring Automation Opportunities in Nursing

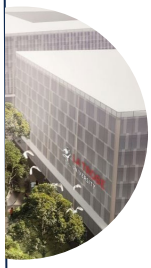
A/Prof Alison Craswell, UniSC

Problem: Nursing shortages and rising demand require automation to free up time for patient care.

Solution: Develop a digital automation strategy for care of older adults in acute and aged care, mapping inefficiencies and assessing automation's potential.

Deliverables:

- Report on clinician attitudes toward automation
- Strategic implementation roadmap
- Proof of Concept



3D Digital Twin for La Trobe University City

Prof Wei Xiang, La Trobe University

Problem: Universities face infrastructure management challenges due to fragmented data, outdated models, and inefficiencies in space utilisation and planning.

Solution: Build an AI-powered digital twin platform to enhance decision-making, optimise resources, and improve campus operations.

Deliverables:

- Research paper
- Proof of concept Digital Twin
- Smart Campus use case

Strategic Research Projects within the NIIN

CMMC Compliance for Australian Industry

Prof Frank den Hartog, University of Canberra

Problem: Companies selling to the US military must meet Cybersecurity Maturity Model Certification (CMMC), creating challenges for Australian businesses navigating both CMMC and Australian Defence Industry Security Program (DISP) requirements.

Solution: Develop a systematic comparison of CMMC and DISP to simplify compliance for industry.

Deliverables:

- Comparative analysis of CMMC and DISP
- Mapping against other cybersecurity standards

INFRAM for Health – Expanding to Other Industries

Prof Trish Williams, Flinders University

Problem: Assessing IT system maturity is complex and time-consuming, making self-assessment frameworks essential.

Solution: Adapt the infrastructure Maturity Assessment Model (INFRAM) framework from healthcare to develop an Infrastructure Maturity Assessment for other industries, starting with higher education.

Deliverables:

- Cross-platform digital Digital Infrastructure Maturity Assessment for Higher Education (DIMAHE) framework
- Academic papers & whitepaper
- Proof of Concept (POC) case study

Resilient Platform Interfaces for Defence Cybersecurity

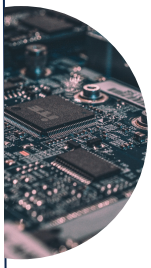
Angelo Puglielli, Cisco ANZ

Problem: As Operation Technology/Information Technology (OT/IT) systems converge, cybersecurity gaps emerge, increasing risks in Defence applications.

Solution: Develop a Resilient Platform Interface using Cisco security tools & ML-based threat detection to enhance visibility and cyber threat mitigation.

Deliverables:

- Concept demonstrator
- Technical documentation
- Operational reports



Secure Digital Stack for OT/IT Convergence

John Curtin Distinguished Professor Iain Murray AM

Problem: OT and IT integration requires secure monitoring and risk management to prevent cyber threats.

Solution: Develop a Secure Digital Stack to enable traceability and cybersecurity controls in converged environments.

Deliverables:

- Simulated OT environment for testing
- Cybersecurity framework & roadmap
- Documentation & training programs

The NIIN footprint

Perth
- Curtin University
- Innovation Central Perth
- Networking Academy

Adelaide
- Flinders University
- The University of Adelaide
- Cyber Range
- Australian Cyber Collaboration Centre
- Innovation Central Adelaide
- Digital Health Research Chair
- Cisco-Flinders Digital Health Design Lab
- Networking Academy

Melbourne
- RMIT
- La Trobe University
- Innovation Central Melbourne
- IoT & AI Research Chair
- Centre for AI and IoT
- Cisco-RMIT Health Transformation Lab
- Networking Academy

Sunshine Coast
- UniSC
- Digital Health and Ageing Research Chair
- UniSC Health Productivity Lab
- Networking Academy

Brisbane
- QUT
- The University Of Queensland
- Innovation Central Brisbane
- Trusted Retail Research Chair
- Securing Future Networks Chair
- UQ Centre for Future Networks
- Networking Academy

Sydney
- UTS
- Innovation Central Sydney
- Renewable Technology and Sustainability Chair
- Networking Academy

Canberra
- University of Canberra
- Innovation Central Canberra
- Critical Infrastructure Research Chair
- Networking Academy

Policy Impact

Securing Australia's Critical Infrastructure

Smart Zero: Using advanced networks to accelerate progress towards Net Zero

Smart Campus Living Lab – Transforming the University

Smart Base: Reimagining Network Security in Defence

Using Digital to Create Better Healthcare and More Resilient Communities

A vision for secure digital precincts and regions

Higher Education Study Tours

Australia's Semiconductor Moonshot

Driving adoption of technology by industry

Priorities emerging from the Research Chair Summit

Focus on industry need

1 Target nationally significant initiatives

Align Research Chair projects with high-impact areas such as Sustainable AI, Quantum Networks, and Semiconductors to maximise national economic and technological benefits.

2 Embed Specialist Centres and Innovation Centrals in the Research Chair program

Strengthen the integration of existing specialist centres and Innovation Centrals, ensuring that they support applied research and industry partnerships.

Network enhancement and sustainability

3 Strengthen Cross-Chair Collaboration

Identify opportunities for collaboration between Research Chairs, focusing on key projects like Private 5G – Mining Trailblazer and CMMC – Defence Trailblazer. Ensure that successful Research Chair projects can also be adapted to other industries, such as applying INFRAM for Health to Education and Mining.

4 Provide Chairs with access to more tools and expertise

Expand support beyond technology access, incorporating greater program management resources and access to the Alumni Program, and structured mentoring.

Strong engagement and communication

5 NIIN Submission to Australian Government R&D Review

Develop a coordinated response to the Strategic Examination of Australia's R&D System, showcasing Research Chair impact and advocating for greater industry-research collaboration and funding support.

6 Develop an annual Research Chair Impact Report

Standardise impact metrics and document key achievements, industry collaborations, and policy influence to demonstrate tangible outcomes and scalability of the Research Chair Program.

7 Develop case studies that demonstrate the NIIN's value

Showcase Research Chair successes in de-risking and accelerating digital technology adoption, using real-world examples to demonstrate industry impact.

8 Lift and maintain engagement with government

Work with government to shape industry and innovation policy, particularly in emerging fields like quantum skills.

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