DAIRNet

2025 DAIRNet Annual Report

PARTNERS

Australian Government
Defence

NEXT GENERATION TECHNOLOGIES FUND

University of South Australia

The DAIRNet office is located on the lands of the Kaurna people. DAIRNet acknowledges the Kaurna people and the Traditional Owners of Country throughout Australia and the continuing connection to lands, waters and communities. We pay our respect to Aboriginal and Torrens Strait Islander cultures; and to Elders both past, present and emerging leaders.

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Director’s Report

Dear colleagues, supporters, and members of the Defence AI ecosystem, it is my pleasure to present our Annual Report for 2025.

At one of our final events of the year, a speaker made a telling observation: “Skynet” (aka Terminator) was mentioned only once throughout the day. Just five years ago, references to Skynet featured in the majority of presentations at Defence AI forums.

So, what has changed?

We now live in a world where foundation models are integrated into many aspects of daily life—from helping draft emails to recommending the next TV show to binge. As AI use has increased, fear of the technology has decreased, or at least shifted. Concerns about “killer robots” have largely been replaced by anxieties about AI replacing us in the workforce.

In the Defence context, AI has become a genuine game changer: enabling the analysis of vast datasets, supporting decision-making, powering autonomous platforms such as Ghost Shark, and accelerating capability delivery through software factories and agile DevSecOps. Importantly, this progress is accompanied by a clear acknowledgement that humans will always remain in the loop. However, as with all emerging technologies there remains a critical need for checks and balances—guardrails, constant review, and, most importantly, a multi-sector and multi-disciplinary approach.

Those who have attended a DAIRNet event will be familiar with my analogy of AI as a car. Just as a car requires mechanics to build and maintain it, it also relies on fuel (data), infrastructure, legal and ethical frameworks, education, research and development, and a clear understanding of its limitations and appropriate use. All of these elements are essential for the “car” to function safely and effectively.

In 2025, DAIRNet once again brought together experts, end-users, and decision-makers to optimise the driving and performance of “cars”:

- DAIRNet hosted 12 Defence AI seminars, with a total of 1,213 participants. Speakers came from across Defence, academia, government, and industry, covering a wide range of topics.
- We hosted or supported four additional events, including networking functions and co-design workshops.
- DAIRNet was invited to speak at eight external events, including the Defence and Security Equipment International conference in the UK, and a panel discussion on data hosted by the Australian American Leadership Dialogue and moderated by ABC’s Michael Rowland.
- We supported five early- to mid-career researchers through new collaboration initiatives and conference travel grants.
- Our community continued to grow significantly, reaching more than 1,400 LinkedIn followers and over 1,500 contacts on our mailing list.

Finally, when DAIRNet was established in 2021, one of its architects, Paul Heuer, used the Alan Turing Institute (UK) as our guiding star, with the goal of establishing a formal relationship. In February 2025, that goal was realised with the signing of a Memorandum of Understanding between the Turing, UniSA/Adelaide University, and the Department of Defence. Since then, we have seen multiple face-to-face engagements across the partnership, with further collaborative projects planned for the future.

So, what does 2026 hold?

As global approaches to AI regulation and governance continue to evolve, we are seeing a diverse range of strategies and controls shaping AI implementation across both civilian and Defence contexts. This diversity extends across allies and adversaries alike, making careful navigation of this landscape increasingly critical. Equally important is the continued education and up-skilling of the workforce to improve AI literacy—not only in how to use AI, but in understanding its limitations and recognising where it can deliver genuine benefit.

Thank you for your engagement, trust, and ongoing support. The “Net” in DAIRNet stands for “network”, and it is an honour that we have played even a small role in connecting people and enabling new relationships and collaborations.

Dr Mel McDowall
DAIRNet Director

DAIRNet

Sponsor Statement

Mr Andrew Seedhouse
Chief of Division
Space, Intelligence, National Security and Cyber Division
Defence Science and Technology Group
Department of Defence

May I first recognise the tremendous efforts of the DAIRNET leadership team in guiding the network through an impressive set of engagements. By bringing together the Network's community with experts across Artificial Intelligence and Machine Learning, Mining, ICT, Sport, and both national and international intelligence communities, DAIRNET is demonstrating the spirit of the Defence IS&T strategy of "More Together", well done to all involved.

The world remains in a period of significant turmoil, with ongoing global conflicts and profound discussions about changes to the world order dominating the headlines. In this environment, Defence continues its two-yearly strategic review cycle, and this year is no exception. As we prepare for the launch of the National Defence Strategy 26 (NDS26), many capability issues have been discussed on the path to delivering this strategy, however one technology stands above the parapet and that is AI.

Defence is no longer asking whether we should use AI, but rather how best to employ it, and how quickly we can do so safely. These are fundamentally different questions from those of the past. DAIRNet, and its evolving relationships across what we now refer to as the National AI Ecosystem, is well positioned to help accelerate Defence's AI ambitions.

In response to Government legislation, Defence has established a "Responsible Use of AI Policy", which is now driving the development of a new Defence AI Strategy. Together, these initiatives reinforce the reality that AI is rapidly becoming business as usual within Defence.

Looking ahead to 2026, the message is clear: AI is here to stay. It is business as usual. We must use it responsibly, but we must also ask ourselves a critical question, how do we move faster?

DAIRNet

Sponsor Statement

The Defence Artificial Intelligence Research Network (DAIRNet) is a nationally significant initiative that brings together leaders from Defence, Academia, and Industry to provide strategic insight and deliver innovative artificial intelligence solutions in support of Australia's Defence capability. DAIRNet plays a critical role in strengthening collaboration across the Defence AI ecosystem while fostering the next generation of Defence focused AI researchers.

Throughout 2025, DAIRNet continued to drive meaningful collaboration and innovation by delivering a diverse program of high impact engagements. These included Defence AI seminars and symposiums, workshops, conferences, travel scholarships, and the establishment of strategic partnerships. As research and technology rapidly evolve, DAIRNet has maintained a strong emphasis on the responsible, ethical, and secure application of AI to enhance decision-making and operational effectiveness within Defence.

Bringing together and supporting the Defence AI community continued to be a significant focus for DAIRNet. A key highlight of 2025 was the signing of a Memorandum of Understanding (MOU) with The Alan Turing Institute UK (the Turing), Department of Defence, and the University of South Australia (UniSA), with the first activity a joint workshop held in February at the UniSA City West campus.

Recognising the shared priorities of the Commonwealth, the Turing, and UniSA, the MOU establishes a framework for information exchange and the development of joint research initiatives. The inaugural workshop provided an important platform for discussion across shared areas of interest and marked a significant first step towards future collaborative activities and long-term partnership.

In 2025, DAIRNet also launched the Defence AI Register, a national platform designed to connect Defence with Australian academic subject matter experts interested in contributing to Defence AI challenges. This initiative strengthens visibility and accessibility of expertise, enabling increased collaboration across the sector. DAIRNet further facilitated Defence workshops, hackathons, industry engagements, and business development meetings at the Mawson Lakes campus, supporting the translation of research into practical outcomes.

Specifically, the Defence AI Industry Symposium, held in December in Canberra, focused on the theme *AI Adoption: From Concept to Capability*. The symposium explored pathways to accelerate the responsible, effective, and secure integration of AI across Defence operations and featured keynote addresses from the Turing and the Defence Artificial Intelligence Centre, alongside a Defence panel discussion.

DAIRNet remains strongly committed to driving research impact for Defence and supporting the full concept to capability journey. To date, DAIRNet has supported over $13 million in Defence related research funding across 59 projects, resulting in 41 prototypes, 35 publications, 17 peer-reviewed journals, 35 Defence AI seminars, 14 research events and co-design workshops, and 12 travel scholarships.

As a vital network for idea exchange and technological collaboration, DAIRNet is proud of its 2025 achievements and looks forward to expanding its impact in 2026. Through the Research Innovation Portfolio and the Defence and National Security signature research theme at Adelaide University, DAIRNet will continue to advance collaboration across Defence, Academia, and Industry, strengthening Australia's Defence AI capability into the future.

Professor Peter Murphy
Deputy Vice Chancellor: Research and Enterprise
University of South Australia

DAIRNet Strategy

DAIRNet is an initiative of the Department of Defence and managed in partnership with the University of South Australia. Activities are driven by our mission and vision statements, and our objectives.

Our mission

Connecting Defence opportunities with next generation AI solutions

Our vision

By empowering innovation and collaboration across diverse national AI capabilities, we will develop safe and secure AI solutions to provide advantages for Defence

People & talent

Strategy: sustain a talent pipeline to grow domestic AI capabilities and Defence AI-ready specialists

Research impact

Strategy: supporting R&D and providing the platform in which AI-users work alongside researchers and developers

Integration & evolution

Strategy: bringing together and supporting the broader Defence and AI ecosystems

DAIRNet

DAIRNet Achievements

A summary of DAIRNet achievements since establishment in 2021.

- **59** research projects supported
- **28** organisations funded
- **45** prototypes developed
- **34** publications, including **17** peer-review journals
- **16** projects provided data for follow-on projects
- **14** DAIRNet hosted research events and co-design workshops
- **35** Defence AI Seminars
- **2,300+** total attendees at the Defence AI Seminar Series
- **12** travel scholarships
- **$13M+** research funding awarded
- **1,400+** LinkedIn followers
- **1,500+** active subscribers

DAIRNet

2025 Snapshot

February

3rd
DAIRNet & The Alan Turing Institute Workshop, Adelaide

10th
DAIRNet & Assistant Minister for AI & Digital Economy meeting, Adelaide

19th
ADM AUKUS Pillar II Conference, Canberra

27th
Inaugural Defence AI Seminar Series, online

March

18th
Jericho AI & Digital Technologies workshop, Canberra

April

4th
DAIRNet, Defence & Industry (BHP) meeting, Adelaide

14th
DAIRNet & IBM Business Development meeting, online

May

29th
Launched Defence AI Expert Register, online

June

10th
DSTG Machine Learning Hack-a-thon, Adelaide

26th
DAIRNet & DAIC meeting, Canberra

30th
ADM DAIRNet Defence AI Industry Symposium, Adelaide

July

1st
ADM SA Defence Summit, Adelaide

24th
AI4HER Summit, Sydney

25th
Women in AI APAC Awards, Sydney

August

1st - 3rd
Science Alive!, Adelaide

14th
CDC Dine-Around at Adelaide Oval (Data & High-Performance Sport), Adelaide

19th
Tuesday Morning AI, CSIRO, online

September

9th - 12th
DESI Conference, UK

8th - 18th
DAIRNet & The Alan Turing Institute meetings, UK

November

11th - 12th
Secure Australia, Canberra

20th
AI & National Resilience workshop, Adelaide

December

1st
AJCAI & DAIRNet Defence AI Symposium, Canberra

3rd - 5th
DICTA, Adelaide, DAIRNet student travel scholarship

4th - 5th
NIC, Canberra

DAIRNet

People & talent

Defence AI Seminar Series

In alignment with DAIRNet's strategic pillars of research impact, integration, and evolution and as an initiative of the Key Stakeholder Group, DAIRNet continued to host the Defence AI Seminar series. These seminars aim to develop a community of AI researchers and practitioners by promoting the exchange of innovative ideas, insights, and expertise.

2025 statistics:

13 seminars on the field of AI

11 different organisations including Defence, University and Industry

65% average conversion rate from registrations to attendees

93 average online attendees per seminar

Facilitated networking between Defence, Academia and Industry

DAIRNet

Defence AI Seminar Series - continued

Presenter/s	Organisation	Presentation title	Conversion rate from registrations to attendees	Attendee organisations		
				Defence	Academia	Industry
Dr Sanat Bista	Defence AI Centre (DAIC)	Defence AI Centre.	62%	56%	15%	29%
Prof Hanna Kurniawati	Australian National University	Sequential Decision-making for Robots Operating in Non-Deterministic and Partially Observable Worlds.	61%	58%	20%	22%
Dr Joshua Krook	University of Southampton	Anthropomorphic AI's Risk to Cybersecurity and Defence.	70%	57%	13%	30%
WGCDR Mike Moroney	Royal Australian Air Force	Artificial Intelligence Integration (AI2) for RAAF.	70%	66%	12%	22%
Anna Knack	The Alan Turing Institute, UK	Applying AI to Strategic Warning.	53%	42%	11%	47%
Prof Paul Salmon	University of the Sunshine Coast	Managing the risks associated with artificial intelligence: a sociotechnical systems perspective.	69%	65%	12%	23%
Dr Bill Murari	University of South Australia	What if AI could help us discover next-generation materials not in decades, but in months?	64%	48%	29%	23%

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Defence AI Seminar Series - continued

Presenter/s	Organisation	Presentation title	Conversion rate from registrations to attendees	Attendee organisations		
				Defence	Academia	Industry
Dr Sharif Abuadbba	CSIRO, Data 61	Emerging Technologies and AI Risks: Understanding the Threat of Deepfakes and How to Respond.	58%	67%	13%	20%
Dr Sara Webb	Swinburne University	AI use bridging astronomy and space domain awareness.	70%	60%	11%	29%
LTCOL Adam J Hepworth	Robotic and Autonomous Systems Implementation and Coordination Office (RICO)	Accelerating Army's Adoption of AI and Autonomy.	68%	52%	15%	33%
Ross Farrelly	IBM ANZ	Unlocking the Promise of AI with Governance.	61%	68%	11%	21%
Dr Claire Mason	CSIRO, Data 61	Generative AI upskilling.	62%	62%	15%	23%
Distinguished Professor Marnie Hughes-Warrington AO	University of South Australia	AI Safety with Histories.	66%	60%	23%	17%

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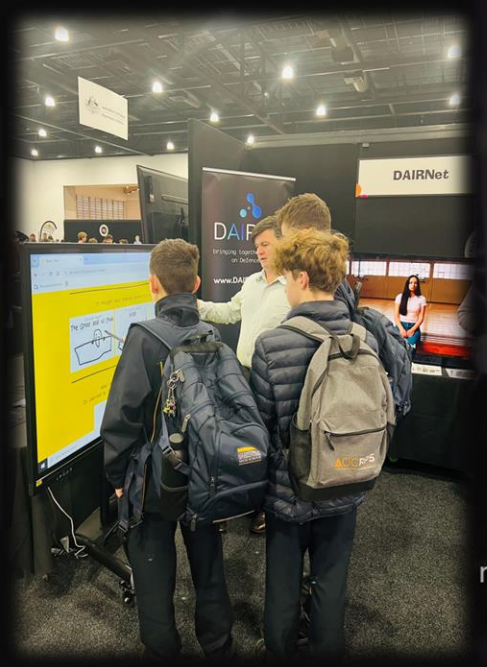
Science Alive!

In August, DAIRNet hosted an interactive booth in the Defence outreach area at Science Alive, using gamification to engage and educate school children and their families about AI and data science. A crowd favourite was *Quick Draw*, an interactive game that combines Pictionary with machine learning, captivating visitors of all ages.



SCIENCE ALIVE!

All kinds of awesome

QUICK, DRAW!

By Google

Think Pictionary meets machine learning. You draw, and a neural network tries to guess what you're drawing. The more you draw, the more it will learn.

DAIRNet

New Collaborations Travel Scholarships

The Early–Mid Career Researchers (EMCRs) Collaboration Travel Scholarship supported the development of new interdisciplinary and inter-institutional collaborations across the Defence and AI sectors. Four EMCRs were awarded funding of up to $2,000 each to support research visits to interstate universities, Defence organisations, and other government research agencies. Following their travel, recipients reported on the outcomes of their visits through a written summary outlining key outcomes, proposed next steps, and opportunities for future collaboration, and presented their work at an EMCR Collaboration Showcase event for a Defence audience.

EMCRs undertook one-week visits to their host institutions in Q4 2025. The travel scholarships delivered several significant outcomes, including:

- 7 participating organisations, including 2 Defence and 5 Universities
- 1 Minimum Viable product (MVP) in late-stage development
- 2 joint publications currently in development
- 3 funding proposals in preparation
- 1 infrastructure funding application in development
- 2 potential co-supervision arrangements for PhD candidates

New Collaborations Showcase

Outcomes of the EMCR visits were presented using a bottom line up front (BLUF) format, outlining the problem addressed, the proposed research, and the broader relevance for Defence. EMCRs showcased a diverse range of topics, including Green AI, asset management, Defence-aligned LLM steering, and behaviour-aware AI systems. The showcase audience primarily comprised of Defence stakeholders, including potential end users, collaborators, and future supporters of the projects.

35 registrations

60% conversion rate from registration to attendee

4 presenters from Curtin University, RMIT University and Macquarie University

73% of attendees from Defence

27% of attendees from Universities

"Artificial Intelligence is a broad and fast moving field that calls for many forms of expertise. To turn complex mathematical ideas into practical capability across the air, land, sea and cyber domains, Defence must draw on the strengths of a diverse community domestically and internationally. Our history shows that Australia achieves its best when we work together. Defence will not succeed in adopting AI through government effort alone. Success will come through shared purpose and partnership.

When the Defence AI Research Network was first established, AI was only beginning its most recent period of rapid advancement, marked by the rise of large language models and significant international investment. Since that time, DAIRNet has helped Defence connect with Australian and international specialists. Together we have worked through the opportunities and dilemmas that accompany each new wave of disruptive AI technology. This spirit of collaboration reflects the long tradition of Australians stepping forward to meet emerging challenges with discipline, initiative and teamwork.

In 2025, Defence made important progress in adopting AI. One of the most significant achievements was the first flight of AI enabled systems on an operational ADF aviation platform during Exercise Talisman Sabre. This milestone demonstrated what can be achieved when Defence works closely with trusted allies through the AUKUS partnership. Defence also saw a major increase in enterprise AI use with the introduction of Microsoft Copilot on the Defence Protected Network. More than 40,000 Defence personnel now use this capability each month, with many already finding new ways to work more effectively.

The Defence AI Research Network has helped lay the foundations for these advances. Its support for the development of Defence's Responsible Use of AI policy has ensured that AI adoption remains grounded in human centred design and risk managed approaches. By bringing together Australian subject matter experts and shaping the evolution of Responsible AI principles, the Network has strengthened trust and enabled Defence to adopt AI in a manner that reflects our values, our duty of care and our commitment to operational excellence.

Looking ahead, Defence will continue to rely on a strong ecosystem of AI expertise across industry, academia, government and our allies. Even with the progress achieved so far, Defence's mission continues to demand more from us. The momentum that the Defence AI Research Network has created gives us confidence for the future. With continued collaboration and a clear focus on Defence's mission, together we can help Defence adopt AI at scale in ways that serve our people and make us worthy of the trust placed in us by Defence's key stakeholders."

Mr Mike Moroney,
Executive Director of the Defence Artificial Intelligence Centre (DAIC)
Department of Defence

DAIRNet

Integration & evolution

DAIRNet and The Alan Turing Institute MOU

The Alan Turing Institute (the Turing), the UK's national institute for data science and AI, drives progress in innovative research, talent development, and public engagement, providing expert advice to policymakers, industry, and civil society.

In October 2023, a delegation from the Turing's Centre for Emerging Technology and Security (CETaS) visited Australia to promote international collaboration with government and academic institutions. CETaS focuses on the regulation and responsible use of AI, particularly in response to emerging threats such as cyber, disinformation, and malicious AI capabilities.

Recognising the shared priorities of the Turing, the Commonwealth, and the University of South Australia, the parties entered into a Memorandum of Understanding (MOU) in February 2025 to support information exchange and the development of joint research initiatives.

DAIRNet and The Alan Turing Institute Workshop

The partnership's inaugural event was an invitation only event held on Monday, 3 February 2025. Designed to encourage discussions around shared areas of interest, the event marked the first step towards planning future collaborative initiatives. Attendees included subject matter experts from the Turing, UniSA, and the Commonwealth, alongside potential end-users and dignitaries representing all three organisations.

45 attendees from 6 different organisations

14 speakers from the Turing, Defence and UniSA

46% of attendees from Defence

44% of attendees from Universities

10% of attendees from Industry and Government agencies

Defence AI Industry Symposium

In June, DAIRNet hosted a Defence AI Industry Symposium as part of the ADM South Australian Defence Summit in Adelaide. The symposium centred on the theme of Responsible AI (RAI), bringing together thought leaders from Defence and Industry to explore ethical and legal considerations in the evolving RAI landscape. Highlights of the event included three keynote addresses offering diverse perspectives, a panel discussion on standardisation and the pathway to implementing RAI, an interactive case study activity, and valuable networking opportunities.

81 registrations from 16 different organisations

3 presentations with representation from Royal Australian Air Force, Defence and Industry

75% of attendees from Defence

23% of attendees from Industry

2% of attendees from Universities

DAIRNet

Defence AI Symposium

In December, DAIRNet hosted a Defence AI Symposium as part of the 38th Australian Joint Conference on Artificial Intelligence (AJCAI) at the Australian National University (ANU), Canberra. The symposium focused on the theme of AI Adoption: From Concept to Capability, inviting discussions on how to accelerate the responsible, effective, and secure integration of AI across Defence operations. Highlights included keynote address' by Dr Sacha Babuta from the Turing and Mr Mike Moroney from DAIC, as well as a Defence panel discussion on the theme of *Accelerating the responsible, effective, and secure integration of AI across Defence*, with panellists CAPT Adam Allica, LEUT Jessica Craig and FLTLT Jorge Alvarino Diaz from Defence and Natasha Karner from the Turing.

95 registrations, from 30 organisations

83 face to face attendees

2 keynote presentations, 4 presentations and 1 panel discussion

40% of attendees from Universities

33% of attendees from Defence

27% of attendees from Industry

DAIRNet

Engagement and Events

DAIRNet primarily engages with stakeholders through three main channels: website, direct email campaigns and LinkedIn. The statistics below reflect engagement levels for 2025.

7,702
unique visitors

86,457
emails sent

517
unique visitors

7,998
users

1,511
subscribers

1,419
followers

13,691
page views

39%
open rate

941
page views

DAIRNet

"In June 2025, I launched Article 36 Legal, a specialist legal advisory focused on the defence sector. The practice provides advice to defence industry, States, and non-government organisations on the legal review of new military technologies, including AI-enabled decision-support systems and autonomous weapons. As a former member of the Australian Defence Force, I was already familiar with DAIRNet's important role in connecting defence industry, researchers, and Defence. Accordingly, following the launch of my business, I engaged with DAIRNet in my capacity as Director of Article 36 Legal.

I was delighted by the enthusiasm and support shown by Dr Mel McDowall and Ms Jacinta Lamacchia, who immediately created opportunities for me to engage with the DAIRNet community. This included invitations to present at DAIRNet symposia and to participate in online events. These platforms provided valuable opportunities both to present the work and services of Article 36 Legal and to engage directly with representatives from industry, Defence, and academia.

The networking facilitated through DAIRNet events has been particularly valuable. It has led to new client engagements and the establishment of research partnerships that would not have been possible without DAIRNet's support. In addition, DAIRNet has actively promoted my business initiatives through its social media channels, further amplifying their reach and impact. I am confident that DAIRNet has played an instrumental role in the successful launch of Article 36 Legal and I greatly value the relationship. I look forward to continuing and strengthening this collaboration in the future."

Dr Damian Copeland
Director of Article 36 Legal

DAIRNet

Research impact

Defence AI Expert Register

Launched in May, the Defence AI Expert Register was established to maintain a comprehensive list of Australian academic subject matter experts interested in collaborating with Defence. Defence may use the register to identify and engage with relevant experts as required. Registration is voluntary and does not guarantee engagement or ongoing support from Defence.

DAIRNet manages the online registration portal in partnership with the Department of Defence. Participation is voluntary, and all information collected is shared exclusively with authorised Defence personnel. All responses are provided at the OFFICIAL: Sensitive classification level.

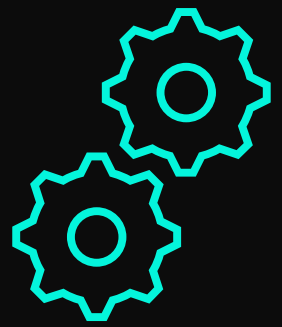
The portal is regularly updated, with information shared with Defence on an ongoing basis. To date, 89 subject matter experts from Academia, Industry, and Defence have registered through the Defence AI Expert Register.

Research Programs

DAIRNet continued to support research impact for Defence, assisting with the concept to capability journey.

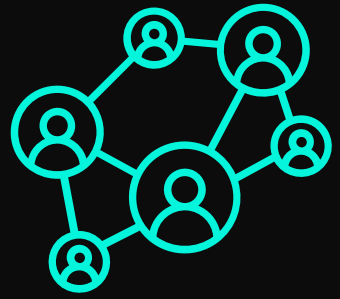
Since 2021, DAIRNet have supported **five research programs,** funded through the Next Generation Technology Fund (NGTF), AI for Decision Making and several current state reports for Defence. This amounts to **$13+ million** in funding, supporting **59** Defence-related projects. A full list of DAIRNet-supported projects can be found in the appendices.

In addition, DAIRNet supported Defence workshops and hackathons, speaker recommendations, and advertising initiatives.

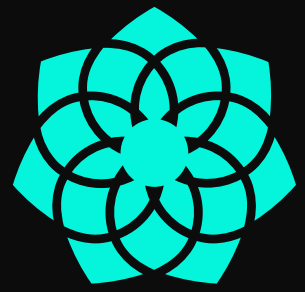


Autonomous processing & reasoning

Human-AI interaction



Distributed multi-domain networks



Patterns in noisy & dynamic data

AI for Decision Makers

Next Generation Technology Fund (NGTF)

DAIRNet

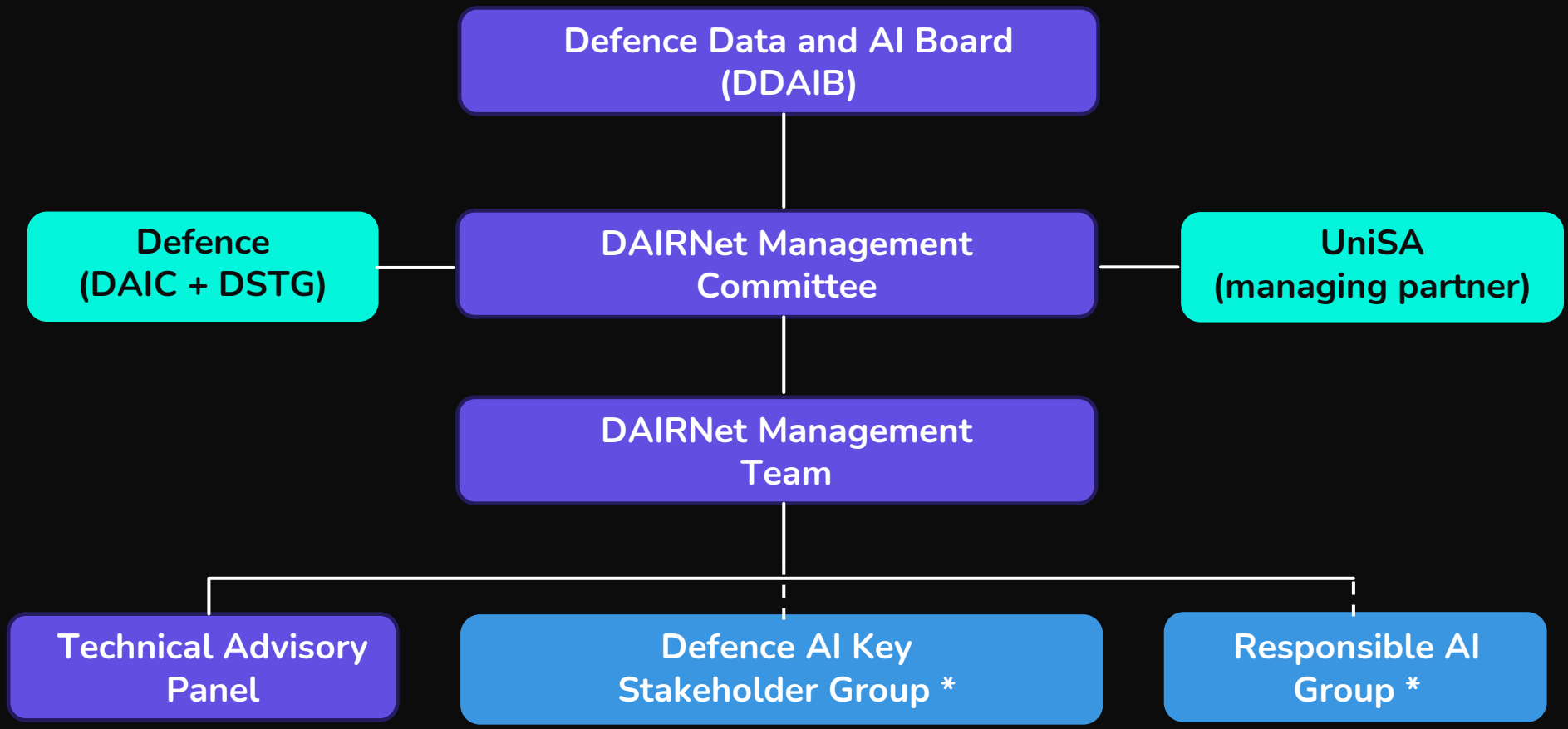
“DAIRNet hosted a two-day Defence Science and Technology Group run machine learning hack-a-thon at our offices at the University of South Australia in June 2025. This hack-a-thon supports helping Defence become AI-ready, especially in priority areas of Trusted Autonomy, Automated Intelligence and the uplift of the Defence workforce. The DAIRNet space and support enabled the ability for Defence personnel to interact seamlessly with various industry partners and evaluate important technical factors of AI test and evaluation.”

Defence Science and Technology Group

Governance

Governance

The governance and management of DAIRNet ensure inclusive representation from all key stakeholders, including Defence and the DAIRNet Management Team. As the network expands, its committees and membership structures will continue to evolve to reflect and represent the interests of our broader stakeholder community.



* *Working groups that have transitioned out of DAIRNet*

Governance – continued

Management Committee

The Management Committee oversees the implementation of strategic direction and governance. It receives reports from the Management Team, as well as from DAIRNet panels, committees, and working groups. Serving as the primary liaison, the Management Committee maintains the key connection between DAIRNet and the Department of Defence.

Chair: Dr Mel McDowall, Director of DAIRNet
Members:

- Mr Ryan McClenaghan, Director Defence and Space, UniSA
- Dr Sebastien Hebert, Senior Manager: Business Development Enterprise Partnerships Unit, UniSA
- A/Prof Belinda Chiera, Research Lead, UniSA
- Mx Jacob Irving, DAIRNet Project Manager
- Ms Jacinta Lamacchia, DAIRNet Project Manager Communications and Events
- Dr Ralph Gailis, Director of AI Innovation, DAIC/DSTG and Associate Director of DAIRNet
- Dr Gary Hanly, DSTG Liaison to DAIRNet, DSTG
- Mr Philip Keane, Assistant Director Strategic Programs, Science Partnerships, DSTG
- Ms Emily Clarke, Director AI Strategy, Policy and Engagement, DAIC
- Ms Tanya Stockton, Deputy Director AI Strategy, Policy and Engagement, DAIC
- Dr Sebastien Wong, AI Strategy and Leadership, DSTG

Management Team

The Management Team is responsible for implementing decisions made by the Management Committee and for coordinating the network on behalf of the Department of Defence. Comprised of members from the University of South Australia (UniSA) and the Defence Science and Technology Group (DSTG), the team serves as the primary point of contact for universities, researchers, and other stakeholders.

Members:

- Dr Mel McDowall, Director of DAIRNet
- Associate Professor Belinda Chiera, Research Lead, UniSA
- Dr Ralph Gailis, Director of AI Innovation, DAIC/DSTG and Associate Director of DAIRNet
- Dr Gary Hanly, DSTG Liaison to DAIRNet, DSTG
- Mx Jacob Irving, DAIRNet Project Manager
- Ms Jacinta Lamacchia, DAIRNet Project Manager: Communications and Events

Technical Advisory Panel

The Technical Advisory Panel (TAP) plays a vital role in shaping and evaluating research calls and activities within DAIRNet, including education, outreach, and trend identification. TAP's initiatives are designed to support the development of a streamlined and effective ecosystem.

Government (Federal, State)

Building strong relationships with key government agencies and stakeholders by providing expertise, resources, and support to help them identify, understand, and address their most pressing AI-related challenges.

Industry (Primes, SMEs)

Provide support and resources to help industry partners develop their AI capabilities, along with training and education to keep them informed of the latest AI technologies and best practices.

Research Organisations and Universities

A strong emphasis on research and development, leveraging AI technologies and methodologies to create cutting-edge solutions, while collaborating with leading research organisations to stay aligned with global trends and best practices in the field.

Department of Defence

Demonstrating tangible results and real-world impact in addressing AI challenges, thereby establishing the organisation as a trusted and reliable partner for the defence industry in the field of AI.

DAIRNet

Appendices

DAIRNet

Engagement and Events

Date	Objective(s)	Name	Organiser	Location	Involvement	Attendee	Audience
5/02/2025	Research Impact Integration & Evolution	Alan Turing Institute, Defence and UniSA workshop	DAIRNet	Adelaide	Organiser	DMT	Defence, academia
19/02/2025	Research Impact Integration & Evolution	ADM AUKUS Pillar II Conference	Australian Defence Magazine Informa	Canberra	Invited Speaker	Mel McDowall	Defence, academics, industry
18/03/2025	Integration & Evolution	Jericho AI and Digital Technologies event	Jericho	Canberra	Attendee	Mel McDowall Belinda Chiera	
4/04/2025	Integration & Evolution	Army-BHP Strategic Partnership - Innovation Stream AI Deep Dive	Army	Adelaide	Attendee	Mel McDowall	BHP, Defence
30/06/2025	Research Impact Integration & Evolution	ADM & DAIRNet: Defence AI Industry Symposium	DAIRNet	Adelaide	Organiser	DMT	Defence, academics, industry
1/07/2025	Research Impact Integration & Evolution	ADM SA Defence summit	Australian Defence Magazine Informa	Adelaide	Invited Speaker	Mel McDowall	Defence, academics, industry
24/07/2025	Research Impact Integration & Evolution	AI4HER Summit	Women in AI APAC	Sydney	Invited Speaker	Mel McDowall	Civilian AI audience
25/07/2025	Research Impact Integration & Evolution	Women in AI APAC Awards	Women in AI APAC	Sydney	Invited guest/award presenter	Mel McDowall	Civilian AI audience
1/08/2025	People & Talent	Science Alive!	National Science Week	Adelaide	Exhibitor	DMT	General Public
14/08/2025	Research Impact Integration & Evolution	CDC Dine-Around at the Adelaide Oval (Data and High-Performance Sport)	Australian American Leadership Dialogue	Adelaide	Invited speaker	Mel McDowall	
9/09/2025	People & Talent	Defence and Security Equipment International (DSEI) UK	DSEI UK	London, UK	Invited speaker	Mel McDowall	Defence and Defence industries
11/11/2025	Research Impact Integration & Evolution	Secure Australia	Secure Australia	Canberra	Chair and MC	Mel McDowall	Defence, academics, industry
20/11/2025	Research Impact Integration & Evolution	AI Resilience and National Security	Adelaide University DSTG	Adelaide	Organiser	Mel McDowall Jacinta Lamacchia	Defence, academics, industry
1/12/2025	Research Impact Integration & Evolution	AJCAI	AJCAI	Canberra	Organiser	Mel McDowall Jacinta Lamacchia	Defence, academics, industry
3/12/2025	Research Impact Integration & Evolution	DICTA	DICTA	Adelaide	Sponsor	Mel McDowall Jacinta Lamacchia	Defence, academics, industry

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Defence AI Seminars

Date	Presenter	Title	Attendees	Conversion
27/02/2025	Dr Sanat Bista, DAIC	Introduction to the Defence AI Centre (DAIC)	145	67%
13/03/2025	Prof Hanna Kurniawati, ANU	Sequential Decision-making for Robots Operating in Non-Deterministic and Partially Observable Worlds	68	61%
27/03/2025	Josh Krook, University of Southampton	Anthropomorphic AI's Risk to Cybersecurity and Defence	96	60%
5/05/2025	Anna Knack, The Alan Turing Institute	Applying AI to Strategic Warning	97	53%
8/05/2025	WGCDR Michael Moroney, Jericho	Artificial Intelligence Integration (AI2) for RAAF	160	70%
16/06/2025	Prof Paul Salmon, University of the Sunshine Coast	Managing the risks associated with artificial intelligence: a sociotechnical systems perspective	85	69%
3/07/2025	Dr Bill Murari, UniSA	What if AI could help us discover next-generation materials not in decades, but in months	59	64%
14/08/2025	Dr Sharif Abuadbba, CSIRO	Emerging Technologies and AI Risks: Understanding the Threat of Deepfakes and How to Respond	89	58%
28/08/2025	Dr Sara Webb, Swinburne University of Technology	AI use bridging astronomy and space domain awareness	76	70%
11/09/2025	LTCOL Adam J Hepworth, RICO	Accelerating Army's Adoption of AI and Autonomy	129	68%
25/09/2025	Ross Farrelly, IBM	Unlocking the Promise of AI with Governance	69	61%
23/10/2025	Dr Claire Mason, CSIRO, Data61	Generative AI upskilling	94	62%
20/11/2025	Distinguished Professor Marnie Hughes-Warrington, UniSA	AI safety with histories		66%

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Research Projects (NGTF)

Researcher	Organisation	Funding call	Project title
Adrian Bishop	University of Technology Sydney	Autonomous processing and reasoning	
Horden Wiltshire	Acacia Systems	Autonomous processing and reasoning	
Anton Van Den Hengel	University of Adelaide	Autonomous processing and reasoning	Design of exploratory artificial intelligent systems for interactive sense making in collaboration with human decision makers
Ted Goranson	Griffith University	Autonomous processing and reasoning	
Vera Chung	University of Sydney	Autonomous processing and reasoning	
	Downer Defence	Autonomous processing and reasoning	
Yuan-Fang Li	Monash University	Autonomous processing and reasoning	RUSH: Reasoning and Learning under Soft and Hard Data
Matt Duckham	RMIT University	Autonomous processing and reasoning	NEXUS: Explainable and Unified Spatial Reasoning and Sensor Fusion
Jamie Sherrah	University of Adelaide	Autonomous processing and reasoning	Intelligent Decision Superiority through Vision and Language Technology
Leon Clark	Lockheed Martin Australia Pty Ltd	Human - AI interaction	
Haifeng Shen	Catholic University	Human - AI interaction	
Karl Sammut	Flinders University	Human - AI interaction	
Penny Kyburx	Australian National University	Human - AI interaction	
Anna Ma-Wyatt	University of Adelaide	Human - AI interaction	Modelling, Monitoring and Moderating Human-AI Interaction
Christopher Fluke	Swinburne University of Technology	Human - AI interaction	Artificial Intelligence as the Most Valuable Player: Enabling cyber-human teams to achieve decision superiority

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Research Projects (NGFT)

Researcher	Organisation	Funding call	Project title
Arkady Zaslavsky	Deakin University	Distributed multi-domain networks	
Lina Yao	University of New South Wales	Distributed multi-domain networks	
Nour Moustafa	University of New South Wales	Distributed multi-domain networks	
Rajkumar Buyya	University of Melbourne	Distributed multi-domain networks	
Hung Nguyen	University of Adelaide	Distributed multi-domain networks	Machine learning solutions for BGP-based software defined combat clouds
Frank den Hartog	UNSW Canberra	Distributed multi-domain networks	Use of SDN for Multi-Bearer Time-Sensitive Distributed Systems in the Combat Cloud
Matt Selway	University of South Australia	Distributed multi-domain networks	Advanced Integrated Modelling Environment for Self-Adaptive Software Systems (AIME)
Belinda Chiera	University of South Australia	Patterns in noisy and dynamic data	Towards the real-time robust identification of online malicious information campaigns using open source intelligence
Matt Duckham	RMIT University	Patterns in noisy and dynamic data	INDEX: Intention and Explanation for Fusion of Uncertain, Noisy, and Dynamic Spatial Data
Simon Williams	University of Melbourne	Patterns in noisy and dynamic data	Multi-agent coordination for undersea surveillance
Leon Clark	Lockheed Martin Australia Pty Ltd	Patterns in noisy and dynamic data	Graphical interaction representations aiding prognostic health management (GIRaPHMan)
Truyen Tran	Deakin University	Patterns in noisy and dynamic data	Coupled self-supervised learning and deep reasoning for improved processing of noisy and dynamic multimodal data from multiple sources
Siobhan Banks	University of South Australia	Patterns in noisy and dynamic data	Statistical machine learning algorithm for early detection of infection using data from consumer wearables

Research Projects (AI for Decision Makers)

Researcher	Organisation	Project title
Paul Black	Federation University Australia	Security Patch Identification Using Compiled Updates and Release Notes
Markus Hagenbuchner	University of Wollongong	Explainable Graph Neural Network via explicit causality modelling - a proof-of-concept study
Keshav Sood	Deakin University	Accurate Decision-making for Network Security with Compromised Data
Colm Flanagan	Hiroco	Mapping agent capability to objective for multi-agent planning
Yu Xin	University of Technology Sydney	Dynamic vessel pulsations and eyeball movements-based liveness detection
Xin Yu	University of Technology Sydney	An automatic deepfake technology integration pipeline for benchmarking deepfake detection methods
Maiken Ueland	University of Technology Sydney	Using AI for real-time victim detection in mass disasters
Rolf Schwitter	Macquarie University	Bi-directional translation from written English to probabilistic logic programs
Nayyar Zaidi	Deakin University	Discretization Inspired Defence Methods for Adversarial Attacks on Cyber Security Domain Data
Jingge Zhu	University of Melbourne	Generalisation of learning algorithms: theory and efficient implementations from an information-theoretic point of view
Charles Martin	Australian National University	Open-Form Music Composition for Synchronised and Coordinated Action
Ravinesh Deo	University of Southern Queensland	Sequential field tokenisation and type classification
Clinton Fookes	Queensland University of Technology	A Multi-Modal Deep Generative Framework for Video Based Identification
Sebastien Miellet	University of Wollongong	The influence of trust in the algorithm on AI explanations use and decision-making
Aneta Neumand	University of Adelaide	Applying machine learning techniques to games on graphs for the detection and concealment of spatially defined communication networks
Yuan-Fang Li	Monash University	Cross-lingual text summarisation with a plan
Nabin Sharma	University of Technology Sydney	Sequential Monte Carlo methods for TTCP CAGE
Sajib Mistry	Curtin University	Resource Allocation using Multi-agent Distributed Collaborative Learning in a Contested Environment
Flora Salim	University of New South Wales	Online learning based forecasting with irregular time-series data
Guoxin Su	University of Wollongong	Temporal Objective Modelling, Reasoning and Learning for Multi-Agent Systems
Son Lam Phung	University of Wollongong	New Deep Networks for Iris-based Post-Mortem Identification
Mohd Fairuz Shiratuddin	Murdoch University	Multi-Layered Adaptive FCMs for High- and Low-Level Decision Making
Mingyu Guo	University of Adelaide	Abstract Game Prototype for Cyber Attack/Defence
Mingyu Guo	University of Adelaide	Tackling the TTCP CAGE challenge using Monte-Carlo planning for large-scale POMDPs
Josephine Plested	Perceptrix	Zero shot learning and domain adaptation for direct neural speech translation
Flora Salim	University of New South Wales	A general time-series representation learning pipeline with self-supervised learning
Richard Dazeley	Deakin University	Application of Generic Actual Argument Model to represent complex decisions and generate narratives
Jihong Park	Deakin University	Federated Subgraph Learning for Fast, Robust and Communication-Efficient Low Probability Detection
Paul Conyngham	Core Intelligence Technologies Pty Ltd.	Reward isn't Enough: combining promising techniques into a significantly stronger state-of-the-art agent
Thanh Thi Nguyen	Deakin University	Holonic-based Deep Reinforcement Learning for Multi-Agent Systems
Nhat Nguyen	University of Adelaide	A Decentralised Combined and Hybrid Approach for Multi-agent Decision Making

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Prototypes and Products

Researcher	Organisation	Funding	Partners	Summary	TRL
Maiken Ueland	UTS	AI For Decision Makers	Non-Defence	Software prototype developed that allows us to map and monitor sensor responses of electronic nose in real-time	1-3
Rolf Schwitter	Macquarie University	AI For Decision Makers	Non-Defence	I developed a small prototype together with Dr. Jonathan Legg (sensemaking team at DST) in the context of an illegal fishing scenario to demonstrate the usefulness of (probabilistic) answer set programming for temporal reasoning using a linguistically motivated version of the event calculus	1-3
Jingge Zhu	University of Melbourne	AI For Decision Makers	Defence	A transfer-learning algorithm that outperforms the state-of-the-art methods	1-3
Ravinesh Deo	University of Southern Queensland	AI For Decision Makers	Defence	This set of experiments has focused primarily on determining whether the sequence-to-sequence model variants demonstrate capacity to infer the structure of novel-protocols which have been withheld from the training dataset. The experimentation has focused on a constrained setting where the model is trained on three "known" protocols (ARP, DNS and NTP) and generalisation is evaluated on an "unknown" protocol (ICMP). Protocol examples are generated first through simulation and second via filtering packet capture files. In both scenarios the sequence-to-sequence model variants demonstrate the capacity to accurately infer byte-boundary and type information from the "known" and "unknown" protocol sets	1-3
Clinton Fookes	Queensland University of Technology	AI For Decision Makers	Defence	We developed a software prototype to quantitatively evaluate the utility of auxiliary feature modalities in video to conduct person reidentification (ranging from logos in the possessions or clothes on the subject through to his or her behavioural trajectories). Furthermore, we developed software for a generative adversarial learning-based feature anticipation pipeline that aims to address domain discrepancies when associating diverse feature modalities	1-3
Sebastien Miellet	University of Wollongong	AI For Decision Makers	University	Our prototype pertains to explainable AI. Our package Face-XAI visualises which information an algorithm did and did not rely on, and how it weighted this information when making face verification decisions. Face-XAI offers the user considerable flexibility in deciding which information is displayed and how it is shown in order to aid their understanding of the algorithm scores, judge their validity and mitigate errors. Face-XAI can display multiple sources of algorithm information simultaneously and clearly. Current investigations are testing how human users interpret, use, and are influenced by various AI explanations. Our system could be extended beyond Defence (e.g. radiology)	1-3
Yuan-Fang Li	Monash University	AI For Decision Makers	Defence	A software prototype based on deep reinforcement learning and textual entailment techniques to improve the faithfulness of cross-lingual text summarisation	1-3
Sajib Mistry	Curtin University	AI For Decision Makers	Non-Defence	We have developed a simulated dynamic environment that emulates Autonomous Vehicles (AVs) to encounter specific points of interest in a real contested environment. We have incorporated a Multi-Agent Deep Deterministic Policy Gradient Framework for autonomous exploration. A Multi-Agent Proximal Policy Optimizer Framework has been implemented for optimising communications in a contested environment	1-3

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Prototypes and Products - continued

Researcher	Organisation	Funding	Partners	Summary	TRL
Flora Salim	UNSW	AI For Decision Makers	Defence	We have designed a framework that can conduct time series representation learning in a self-supervised learning manner. The implementations provide the data processing modules, scripts for pre-training the representation encoder. The framework supports the processing of data in batches	1-3
Son Lam	University of Wollongong	AI For Decision Makers	Defence	Two prototypes have been developed. The first prototype segments the iris region from a large post-mortem iris image. The second prototype recognises the person's identity from the segmented post-mortem iris region	1-3
Mohd Fairuz	Murdoch University	AI For Decision Makers	Defence	This project investigates the novel use of FCM and explores its extension for modelling adaptive complex decision-making processes at different levels of abstractions. The use of hierarchical FCM could enhance the modelling. To better understand the modelling, we also explore the visualisation of such a system in a client-server desktop environment. A client-server desktop computer environment is developed to simulate the behaviours of the behaviour and modelling abilities of the proposed multi-layered adaptive FCMs for use with high- and low-level decision-making. A case study on the Civilian Emergency Services: Wildfire Natural Disaster is used to feature the development outcome	1-3
Flora Salim	UNSW	AI For Decision Makers	Defence	We have designed a general framework that is suitable for the representation learning of time series data from diverse domains in a self-supervised learning manner without leveraging large-scale well-labelled data in the training process. The learned representation features can be used for different downstream tasks. The prototype pipeline was tested with air flight traffic and maritime vessel trajectory data	1-3
Thanh Nguyen	Deakin	AI For Decision Makers	Defence SME	This prototype has been developed based on the Microsoft CyberBattleSim environment (an OpenAI Gym) to simulate the interactions between agents in an enterprise network environment. The attacking agents are controlled by deep reinforcement learning algorithms to explore the vulnerabilities of the network. The agents communicate and cooperate within a holonic (hierarchical) architecture to maximize their exploration capabilities. This prototype will enable network defense personnel to understand the characteristics of complex large-scale coordinated machine learning-based attacks. The lessons learned from the simulation results will provide useful knowledge for the blue team to develop better automated defense strategies for enterprise networks	1-3
Yuan-Fang Li	Monash University	Autonomous processing and reasoning	Defence	A software prototype that utilises deep learning and neural network techniques for few-shot event extraction from multimodal data	1-3
Yuan-Fang Li	Monash University	Autonomous processing and reasoning	Defence	A paper titled "Paraphrasing Techniques for Maritime QA system" has been accepted at 25th International Conference on Information Fusion, 2022	1-3

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Prototypes and Products - continued

Researcher	Organisation	Funding	Partners	Summary	TRL
Christopher Fluke	Swinbourne University	Human - AI interaction	University	We are developing data collection and analysis tools to provide a dashboard for monitoring individual and team-based decision-making performance. The dashboard integrates data from a variety of biometric sensors (e.g. galvanic skin response, electrocardiogram) and eye-tracking (e.g. point of gaze, blink rate). The next stage will incorporate machine learning methods to indicate decision-making status based on development of individualised cognitive performance profiles	1-3
Hung Nguyen	University of Adelaide	Distributed multi-domain networks	SME	We have been working with a defence contractor (Swordfish) to develop a prototype of the research output via our DST leads	1-3
Matt Selway	UniSA	Distributed multi-domain networks	University	Improve the agility and resilience of infrastructure, C2, development, etc., systems by improving the speed at which changes to those system can be made in response to changes in their environments (real and/or virtual). By observing the relevant environments and situations, the prototype will be able to orient itself with respect to desired goals (such as maintaining or improving capability), decide on which actions to take (e.g., recover from failures, enhance protections, deploy new or updated services), and initiate those actions	1-3
Jingge Zhu	University of Melbourne	AI For Decision Makers	Non-Defence	It is an algorithm implemented in software that can be further modified or improved	1-3
Yuan-Fang Li	Monash University	AI For Decision Makers		We developed a multilingual text summarisation model based on the PPO algorithm	1-3
Guoxin Sun	University of Wollongong	AI For Decision Makers	University	It is mainly a research software tool which advances the technology of software verification. It uses GPU and multiple CPU cores to accelerate the verification algorithms	1-3
Matt Duckham	RMIT	Autonomous processing and reasoning	Other		1-3
Hung Nguyen	University of Adelaide	Distributed multi-domain networks	Defence	We developed a prototype of a multi-bearer management solution using machine learning. Our solution autonomously manages traffic on multiple communication bearers to maintain high throughput in disruptive and contested environments	1-3
Matt Selway	UniSA	Distributed multi-domain networks	Defence University	PoC graphical modelling environment and runtime environment demonstrating the goal-oriented, context-driven management of systems to support self-integration. The architecture is broadly applicable allowing the modelling of a variety of scenarios. Example scenarios included the re-configuring of software systems on Kubernetes (or similar), dynamic and model-driven integration of new sensors (extensible to other data sources). The PoC was also partially translated into the future systems architectures being developed by DST Group	1-3
Truyen Tran	Deakin	Patterns in noisy and dynamic data	Non-Defence	The prototype is capable of processing multiple temporal data channels (up to 5,000) and performs a variety of downstream tasks such as event annotation, forecasting, anomaly detection and classification.	1-3
Guoxin Sun	University of Wollongong	AI For Decision Makers	University	It is a prototype software tool to verify and analyse temporal objectives for agents	1-3

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Prototypes and Products - continued

Researcher	Organisation	Funding	Partners	Summary	TRL
Siobhan Banks	UniSA	Patterns in noisy and dynamic data	SME	Algorithms to track physiology	1-3
Truyen Tran	Deakin	Patterns in noisy and dynamic data	Defence industry	UNITED is an AI system that can learn on its own and reason about complex temporal noisy data. It can handle different types of information like text, videos, and sensor data all at once. The system uses three main parts: one that organizes information in layers, another that helps with complex reasoning, and a third that handles different kinds of data separately. UNITED is designed for analysing information that changes over time, making it useful for detecting cyber threats, understanding what's happening in real-time, and helping make smart decisions. It can be used in Defence, business, and research	1-3
Guoxin Su	University of Wollongong	AI For Decision Makers	University	A model checking tool has been developed for verifying switch controllers for deep reinforcement learning systems. GitHub reposition of the software tool: https://github.com/gxshub/mopmc	1-3
Truyen Tran	Deakin University	Patterns in noisy and dynamic data	Defence	The prototype will help Defence systems analyze and predict cyber-physical threats. It processes different types of data, including incomplete datasets, to perform three key functions: identifying network security events, predicting when events will occur, and detecting unusual activities. The framework automatically handles various data types and fills in missing information to make accurate predictions. Advanced models built on this framework can spot subtle anomalies with high precision, helping operators understand complex systems, reduce downtime, and maintain reliable operations for critical Defence missions. Essentially, it provides early warning and better situational awareness for cyber-physical security	1-3
Colm Flanagan	Hiroco	AI For Decision Makers	SME	The prototype demonstrates how different agents with different capabilities can be optimally mapped to actions in a plan they are most suited to executing	4
Yu Xin	University of Technology Sydney	AI For Decision Makers	SME	Dynamic vessels pulsations and eyeball movements are involuntary biological evidence to evaluate liveness. They are almost impossible to be fabricated, while iris recognition, regarded as one of the most secure biometric information, can be used for further improving identity verfication. This project investigates the reliablity of using such biometric features to determine liveness and it also opens another gate for unifying hihgly-secured ID authentification and liveness detection	4
Nayyar Zaidi	Deakin University	AI For Decision Makers	Defence	We have been able to develop an effective methods for adversarial defence on tabular datasets. We have been able to develop a framework that successfully leverages generative models as a defence	4
Charles Martin	ANU	AI For Decision Makers	University	Our prototype system includes a web-based musical instrument application that can be used for collaborative musical performances	4
Mingyu Guo	University of Adelaide		In-house	We created a competition entry	4

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Prototypes and Products - continued

Researcher	Organisation	Funding	Partners	Summary	TRL
Matt Duckham	RMIT	Autonomous processing and reasoning	Defence	The NEXUS prototype is a system-of-systems able to take streaming spatial data as input (such as marine AIS data streams), perform real-time spatial reasoning on data (such as identify anomalies such as suspected location spoofing), as part of reconfigurable workflows and analytics chains, and output human-usable intelligence to analytics dashboards with associated queryable explanations for output.	4
Yuan-Fang Li	Monash	Autonomous processing and reasoning	Defence	We developed a proof-of-concept system for constructing probabilistic knowledge graphs from text and applied it to the maritime events domain. The source code, system and accompanying report/manual have been delivered to the DST Group. Accompanying the system, we have published the following paper:	4
Yuan-Fang Li	Monash	Autonomous processing and reasoning	Defence	We developed a proof-of-concept system for answering complex natural-language questions over knowledge graphs. The source code, system and accompanying report/manual have been delivered to the DST Group.	4
Christopher Fluke	Swinbourne University	Human - AI interaction	Non-Defence	Human performance in time-critical decision making is influenced by a combination of mental workload, stress, situational awareness and expertise. Our prototype human performance monitoring system combines biometrics and eye-tracking to support real-time monitoring of task performance and cognitive load with team environments.	4
Sebastien Miellet	University of Wollongong	AI For Decision Makers	Defence	Sequence to sequence models for internet protocol transfer.	4
Jamie Sherrah	University of Adelaide	Autonomous processing and reasoning	University	Allow user to search through overhead imagery using text queries about the image content.	5
Sebastien Miellet	University of Wollongong	AI For Decision Makers	University	We are developing an evidence-based prototype of software supporting Human-AI teaming for optimal decision-making, taking into account both AI biases and human cognitive biases.	5
Frank den Hartog	UNSW	Distributed multi-domain networks	University	The aim of our work was to show that Time-Sensitive Networking (TSN) can be deployed in a heterogeneous multi-domain software-defined network, and that such a network can support traffic with a high granularity of different security requirements. For this, we developed a range of proof-of-concepts: 1) In Mininet, we built a trust management system for secure data plane communications in a network that incorporates both wired and wireless pathways, 2) In Mininet-WiFi, we managed to implement and test TSN on wireless pathways, 3) OpenFlow will not work, so we programmed a real SDN switch using P4.	5
Nayyar Zaidi	Defence industry	Deakin University	SME Defence industry	This project presents a Deepfake integration platform that can continuously integrate data generated by newly invented Deepfake techniques into a benchmark while balancing the ratio between real and Deepfake data. This platform also provides an interface, significantly easing evaluation of current deepfake generation and detection methods. Moreover, this platform not only supports image-based data but also are extendable to audio, text based deepfake data, thus forming an ideal benchmark for evaluating multi-modality deepfakes.	6

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Follow-On Projects

Researcher	Organisation	Project name	Student involvement
Paul Black	Federation University	Classifying Security Patches in Compiled Programs: A Study Utilizing Pseudocode Features and Source Code	
Maiken Ueland	University of Technology Sydney	Electronic nose for mass disasters	Post graduate student
Maiken Ueland	University of Technology Sydney	Electronic nose technology for forensic purposes	Post graduate student
Maiken Ueland	University of Technology Sydney	Development of electronic nose technology for disaster events	Post graduate student
Nayyar Zaidi	Deakin University	Leveraging Generative Models for defence against Adversarial Attacks	
Charles Martin	ANU	Studying coordinated performance with a touch screen musical interface	Post graduate student
Clinton Fookes	Queensland University of Technology	Advanced Spatio-Temporal Modelling for Multimodal DeepFake Detection	
Sebastien Miellet	University of Wollongong	Human-AI teaming in facial recognition for rapid and reliable person identity decisions	
Sebastien Miellet	University of Wollongong	How Attention and Semantics Drive Face Recognition in Humans and AI	Post graduate student
Sajib Mistry	Curtin University	Secure Distributed Machine Learning for Adaptive Autonomous Systems	Post graduate student
Flora Salim	UNSW	Online learning-based forecasting with irregular time-series data	Post graduate student
Guoxin Su	University of Wollongong	Fault-Tolerant Design and Multi-Objective Model Checking for Real-Time Deep Reinforcement Learning Systems	Post graduate student
Son Lam	University of Wollongong	Multi-modal satellite-based vessel surveillance via optical and synthetic aperture radar imaging	3 PhD students
Son Lam	University of Wollongong	Robust Defences against Adversarial Machine Learning for UAV Systems	Post graduate student
Flora Salim	UNSW	A general time-series representation learning pipeline with self-supervised learning	Honours student
Matt Duckham	RMIT	INDEX: Intention and Explanation for Fusion of Uncertain, Noisy, and Dynamic Spatial Data Phase 1	

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Publications – peer reviewed journal articles

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