

Defence & Security



The University of Adelaide is committed to supporting the defence and security sector for the benefit of the Australian community.

A Strategic Alliance with the Defence Science and Technology Organisation (DSTO) has continued to enhance research at the University, in particular in high technology fields such as photonics and radar systems.

The University has also had success through the Defence Department's Capability Technology Demonstrator Program including working with defence and industry in the development of novel optical fibres, global positioning systems and engine noise abatement.

The University is a member of the Continuing Education Initiative for Defence Personnel, an Associate Member of the Rapid Prototype and Development Environment for Network Enabling Research, and a participant in the Skilling Australia's Defence Initiative.

The University supports research interests of industry, partnering with a range of companies, from small local enterprises to multinationals.

The University of Adelaide also has strong overseas research links, with international universities and defence laboratories, including an affiliation with the Institution of Aviation Medicine at RAAF Edinburgh and a strategic collaboration with the UK's Cranfield University for defence research and education.

Areas of Expertise

- Aerospace
- Acoustics and vibration
- Biomimetics and insect vision
- Blast/explosive detection and protection
- Electronic warfare
- Decision making psychology
- Hypersonics
- Lasers and photonics
- Network centric warfare
- Power generation
- Project and risk management
- Radar (phased array & microwave)
- Robotics and mechatronics
- RFID (secure identification and tracking)
- Systems engineering
- Video surveillance
- Modelling and optimisation
- Defence health

New Strategic Focus

Defence Systems Innovation Centre (DSIC)

The University of Adelaide and the University of South Australia have joined forces in a new defence research and education centre that aims to combat one of the greatest challenges facing the defence industry globally. Under the leadership of its Chief Executive Officer, defence industry identity Mr Lloyd Groves, the new Defence Systems Innovation Centre (DSIC) will focus on the major challenge of systems integration for defence. Systems integration means getting electronic systems to "talk" to each other. As defence involves so many different systems, this is a

major focus for defence and related industries in Australia and worldwide. DSIC brings together university, industry and government stakeholders from across Australia. This initiative has the potential to develop a highly qualified pool of expertise in systems integration for the benefit of Australia's defence community, addressing the nationwide skills shortage in this increasingly important area. The Centre's primary role will be to provide leading-edge advanced engineering and research expertise, advice, and services of direct relevance to the defence community. This will be achieved through collaborative projects, contract-based studies and consultancies, education programs for undergraduate and postgraduate students, and research programs.

Harnessing the power of the wind

The School of Mechanical Engineering was awarded a large grant from the Premier's Science and Research Fund which, along with industry collaboration and contributions, will enable the University to build a large-scale wind tunnel that will support South Australia's defence, aerospace, wind turbine (power-generating) and wind engineering sectors. The wind tunnel will be used for technology development and commercial testing and will provide unique capabilities within the Southern Hemisphere, giving local industry and researchers a competitive edge. It will support local bids for major contracts in defence and naval projects, micro wind turbines and building design.

Services & Facilities

Centre of Expertise in Photonics

The Centre of Expertise in Photonics works closely with DSTO and industry on the development of next generation optical fibre for the distribution of light energy and application to electronics and sensors. A joint venture between the University and the DSTO, it has also been strongly supported by the State government. It is directed by Professor Tanya Monro, who was awarded the 2008 Malcolm McIntosh Prize for Physical Scientist of the Year – presented by the Prime Minister Kevin Rudd to recognise outstanding research of global importance by an early-career scientist. Professor Monro's group works with new classes of optical fibres, containing air holes and made from soft glass. This work is broadening the role of optical fibres from communications and optical power delivery to areas such as diagnostics - detecting trace quantities of chemicals or biomolecules. Its value has been recognised by a range of industry partners locally and internationally, who have partnered with the Centre to further develop ground breaking technologies with important civil as well as defence applications.

Building on the success of the Centre, the Federal Government has now committed to a \$28m program to establish an Institute for Photonics and Advanced Sensing at the University of Adelaide. This will enable the construction of specialised laboratories where researchers from a wide range of fields (including optical fibres, lasers, luminescence, chemistry, proteomics and virology) will work on breakthroughs in areas such as physics, chemistry, biology and environmental science.

Centre of Defence Communications and Information Networking (CDCIN)

CDCIN is devoted to solving defence oriented research and development problems involving modelling, measurement and management in the network warfare space. The Centre consults widely to government and the defence industry on communication systems analysis and systems modelling and simulation.

Australian Centre of Visual Technologies (ACVT)

The Centre aims to promote innovation and education in the use of computer-based technologies for the production and analysis of digital media. Currently technologies include video surveillance and 3D rendering with application in the defence and security industry, as well as the film and entertainment industries.

Centre for Quantification and Management of Risk

This Centre is involved with the analysis and assessment of risks (eg infrastructure) and risk reduction measures for defence-related and security purposes as well as commercial applications.

Centre for Military & Veterans' Health (CMVH)

CMVH brings together military and veterans health experts - researchers, health practitioners and serving Australian Defence Force personnel and reservists – who actively work towards a healthier future for defence personnel and veterans through best practice information sharing, innovative and inclusive research. The University of Adelaide node of the CMVH, directed by Professor Sandy McFarlane, is part of a consortium which harnesses the resources of the University of Queensland, the University of Adelaide and Charles Darwin University, with support from the Department of Defence and Department of Veterans' Affairs.

Human Decision Making and Expertise

The School of Psychology is involved in research on high-order cognitive processes that are responsible for human performance on complex problem solving and decision making tasks. Analysing how we process information and how best to present a complex and rapidly evolving factual situation to decision makers is of critical importance to industries in many sectors, not least defence.

Radar Systems

This group undertakes research on signal processing, electromagnetic, systems integration and networking techniques for radar systems, for both civilian and defence applications. Primary areas of focus are microwave radar, propagation, array signal processing, sensor system networking and GPS.

Image, Control and Signal Processing Group

A research concentration bringing together multiple disciplines in image processing, control and signal processing for applications such as unmanned vehicle management and control (involving remote sensors, sensor integration, sensor management, autonomous systems).

Structures Research Group

The research carried out by this group is mainly focussed on the use of composite materials for structural retrofit of existing structures and the design of new structures to resist blast, wind and earthquake loading, as well as higher dead and live loads.