

DEFENCE WEEK AUSTRALIAN DEFENCE MAGAZINE SERVING THE BUSINESS OF DEFENCE **PREMIUM EDITION**



Chief Defence Scientist Professor Tanya Monro speaking at Scindicate 2019.

NIGEL PITTAWAY

Shooting for the stars – Scindicate 2019

Nigel Pittaway | DST Edinburgh

The latest in DST's Scindicate (formerly known as Partnership Week) series of events was held at its facility in Edinburgh, SA on August 12 and 13.

The [fifth in the series](#), the theme of Scindicate 2019 was 'Partnering for Impact' and was a huge success and the biggest to date, attracting 890 people (including over 500 from across industry and academia) on the opening day and 821 on the second day. The event was also the first hosted by Chief Defence Scientist Professor Tanya Monro, who assumed the role on March 8 this year.

"Partnerships are critical in meeting Defence's technology challenges and it is equally important to think of the impact that these partnerships are delivering for Defence capability," Professor Monro said.

"Thus, for this year's event we have chosen the Partnering for Impact theme to focus on the end result

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of our collaborative research and development efforts for Defence.”

Professor Monro also highlighted the centrepiece of the new Defence Science and Technology strategy, which is due to be launched in early 2020 and will consist of a number of ‘missions’ aimed at delivering what she called ‘leap-ahead’ capabilities for Defence.

“Our previous strategy was a strategy for DST Group – and that’s pretty typical as an organisational strategy, to work out where you’re going and why you do what you do and how you get there,” Professor Monro explained.

“The missions will address large, ambitious problems which will align talent and investment across the nation”

“However, we recognise that, because of this unprecedented opportunity and this unprecedented appetite from the ADF, we need to do something bolder. And what that something bolder is, is a Science and Technology strategy for Defence.

“We need to make sure that our Defence partners understand how and where they can harness the expertise they need – whether it’s in Artificial Intelligence or Quantum Technologies – we need to be able to play the role of being trusted advisor, to make sure we can actively shape and help co-ordinate and grown and accelerate the science and technology we have nationally to support Defence.”

Professor Monro said her organisation needed to build scale in key areas that are of critical importance to Australia, rather than spreading its resources thinly across a number of technologies and concepts.

“The way we’d like to do that is by developing a suite of national missions; missions that are inspiring, but start to align the investments of our partners in industry and in academia in areas where we can work together in partnership at scale,” she added. “With these missions, we hope that we can really start to build on some areas where Australia is absolutely world-leading.”

Professor Monro said that the missions will address large, ambitious problems which will align talent and investment across the nation and will be used as an opportunity to reshape DST, so its resources are not spread as thinly as they are today and other important elements can be transitioned to places outside the organisation.

DST has coined the term STaRshots (Science Technology and Research shots) to describe the first number of identified missions, which include autonomous undersea surveillance; operations in a CBRN environment; force projection in Anti Access Area Denial (A2/AD) environments; disrupting the Defence space paradigm; a world-leading Quantum Position, Navigation and Timing (PNT) system; assured spectrum exploitation; hypersonic systems; and information warfare.

“They will be specific, they will be inspiring, and they will give us the chance to deliver outcomes,” Professor Monro said.

A *From the Source* interview with Professor Monro will be available in the September edition of *ADM*.

China has plenty of its own problems

Ewen Levick | Sydney

Recent calls for concern by MP Andrew Hastie and new reports from [ASPI](#) and the [US Studies Centre](#) (USSC) have re-ignited fears that Australia is inadequately prepared to defend itself against China's growing power. This fear is sometimes sensationalist: recent headlines have called for Australia to '[ready for war](#)' and outline China's efforts to turn Australia into a '[vassal state](#)'.

"It is equally important not to overestimate Beijing, because doing so means we may fail to prepare for the full range of possibilities"

It is important not to underestimate China – or more specifically, the Chinese Communist Party (an important distinction). Yet it is equally important not to overestimate it, because doing so means we may fail to prepare for the full range of possibilities. The costs of maintaining an authoritarian system of government means Beijing must project most of its power inwards rather than outwards. Beijing is also facing economic and demographic problems with potentially catastrophic outcomes.

To be clear, there is plenty to be concerned about now. CCP influence operations in Australia and elsewhere are well-documented, including methods of '[political warfare](#)' that aim to subvert the West's unity and strategic position. Many of my own

articles have focused on how the CCP's '[left of boom](#)' activities are undermining [US military primacy](#) and Australia's strategic position in the [South Pacific](#) with little resistance. Discussions of China's strategic threat also often reference the CCP's systemic domestic human rights violations and Orwellian methods of governance.

It is also true that the CCP's attempts to grow its power overseas come as Western primacy is appearing to wane. The USSC report argues that the 'US armed forces are ill-prepared for great power competition in the Indo-Pacific'.



Recent events in Hong Kong show the costs of maintaining an autocratic system of government.

JOSEPH CHAN/ UNSPLASH

Meanwhile, ASPI notes that ADF numbers in the NT are at an 11-year low.

Yet there are a number of reasons why our concerns should remain balanced. First, the costs of authoritarianism actually limit the CCP's ability to project power abroad. Beijing spends [20 per cent more](#) on internal security than it does on the military, a cost that has [tripled](#) since 2007. Recent unrest in Hong Kong is evidence of the difficulties of maintaining autocratic control. This raises ques-

tions over whether Beijing will be able to sustain the costs of regional superiority whilst simultaneously projecting the bulk of its power inwards to control its own citizens – a burden that democratic states do not face.

Second, China is facing the very real risk of economic stagnation. The country's stock market was last year's [worst performer](#) globally and the economy is now growing at half the rate of the last two decades. Manufacturing activity is contracting, retail and property sales are slowing, and the country is approaching the middle income trap with a financial sector that has been described as a '[Ponzi scheme](#)'.

Third, the costs of internal security and economic stagnation will both be exacerbated by an impending demographic downturn. China's fertility rates are below replacement and the country is set to be the world's [most aged society](#) by 2030, entering 'unstoppable decline' whilst GDP per capita rates remain low. In other words, the country will get old before it gets rich, placing great strains on social stability.

In short, the CCP is having to project ever more power inwards as China enters a period of economic stagnation and demographic decline. Underneath all this lies a risk that the Chinese people will withdraw the 'mandate of heaven' and enter sustained revolt; something that has occurred a number of times throughout Chinese history when the government has been unable to provide for the people. There would likely be a brutal response from the CCP.

This would have severe consequences. As Mike Scafton [recently wrote](#), the Australian economy would then be 'in tatters' with a 'crumbling' strategic environment as China imploded, probably with catastrophic loss of life. In his words, "the world would be desperate for the 'stability' at which it is so easy to scoff."

We are right to be concerned about the CCP's growing power in Australia and elsewhere. We are also right to prepare as necessary, as Minister Hastie argues. But we should not be blind to alternative possibilities. China may not become the threat we fear – and that could bring equally dire consequences.

"The CCP is having to project ever more power inwards as China enters a period of economic stagnation and demographic decline"

MOST READ ONLINE AT WWW.AUSTRALIANDEFENCE.COM.AU



1. [China documented using Cold War tactics in Australia](#)
2. [Are Navy's fast boats fit for purpose?](#)
3. [Boeing completes ASW upgrades on Kiwi Orions](#)
4. [RAN to get seven anti-mine underwater drones](#)
5. [Port Mac's Birdon secures US contract worth \\$575m](#)

Defence projects have low economic benefits: ASPI

Ewen Levick | Sydney

It's been a busy week over at ASPI. Rob Bourke, a former economic advisor to DMO, followed an earlier report into the security of northern Australia with [a critical examination](#) of what the national economy will gain from the government's much-vaunted investment in Defence and industry.

The answer? Not much. [Bourke argues](#) that the single-customer nature of defence industry means it must outperform other national industries in order to deliver an overall benefit to the economy. This is because government investment is a zero-sum game – what goes into Defence must come from somewhere else.

“Equipment builds must be paid for through higher taxes, reduced government expenditure elsewhere or increased government borrowing—all of which can detract from activity in areas of the economy they affect,” Bourke argues. “And building the equipment can absorb land, labour and capital that's in short supply and that other areas of the economy might use to create economic benefits of their own.

“Consequently, equipment projects undertaken in Australia and extending over a substantial period tend to deliver a net benefit only if they can generate themselves, or help to support in others, higher levels of productivity than most other areas of the economy.”

According to Bourke, there are a number of conditions that must be met if domestic build programs are to make a return on investment, including export potential; but even then, meeting those conditions does not necessarily make defence industry a smarter investment.

“Domestic builds tend to be economically advantageous if characterised by high Australian content, significant spill-overs, a workforce drawn from the ranks



The report argues that the economic advantages of domestic defence industry are lower than we may think.

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of the long term unemployed, opportunities for unassisted exports and, where applicable, low price premiums,” Bourke says.

“Here, an investment by Defence should deliver considerably more to the Australian economy than the nominal value of the investment itself, although not necessarily more than any alternative uses to which the funds for any premiums and the resources for domestic production might be put.”

Bourke also makes the point that greater transparency is needed in Defence’s procurement decisions to understand their economic effects. He recommends referring procurement to the Productivity Commission.

“Defence has been unable or unwilling to explain the economic effects of its procurement decisions—a situation that extends to the defence industry’s broader influence on ‘jobs and growth’,” Bourke argues. “From publicly available data, it’s extraordinarily difficult to assess the impact of any existing vessel or vehicle assembly project in relation to economic benefits.

“Perhaps the only way to rectify the problem is to refer Defence procurement to the Productivity Commission for review. It’s been 25 years since the last dedicated Commission inquiry.”

Overall, Bourke is ambivalent at best about the economic benefits of investing in defence industry.

“The economic advantages of sourcing equipment domestically may be smaller than first impressions suggest,” he writes.

“More money for national defence has become the new catch cry. [Yet] publicly available evidence casts doubt on whether increasing domestic investment in capital equipment attracting significant price premiums—as part of any extension of the Defence budget beyond 2 per cent of GDP—can be readily supported.”

“The economic advantages of sourcing equipment domestically may be smaller than first impressions suggest”

RAAF P-8As to get an extra workstation

Boeing has announced that previously-delivered RAAF and US Navy P-8A Poseidon aircraft will be retrofitted with extra workstations, so that each aircraft will now have six.

The P-8A’s ability to search for submarines, monitor surface ships, or participate in search and rescue operations is due largely to the mission crew workstations on board the aircraft.

[P-8A aircraft](#) currently are delivered with five workstations, all composed of dual monitors (including a touch screen) that can collect and report on data from sensors, sonobuoys, radar and an electro-optical/infrared camera.

These powerful data-crunching systems can support all of the various crew roles so that any station can serve any purpose as required to meet the mission, making the aircraft a formidable intelligence, surveillance and reconnaissance aircraft. Now it will become even more capable.

Boeing has been awarded contracts totalling \$34.5 million to add

“The addition will expand crew size from five active operators to six”



A P-8 Poseidon lands at RAAF Base Edinburgh.

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a sixth mission crew workstation to previously delivered USN and RAAF P-8As, a total of 60 aircraft.

The addition will expand crew size from five active operators to six, increasing mission capability and versatility.

According to Fred Bruner, P-8 program manager, more operators means more functions can be performed, more functions means more data collected, and more data means increased mission effectiveness.

The retrofit also brings existing fleet aircraft up to the same crew configuration as on recent production aircraft, including the four aircraft to be delivered to the RNZAF, which already include a sixth workstation.

"Our ability to continue to enhance the P-8's capabilities is really a reflection of our commitment to give our customers the product they need, when they need it," Bruner said.

"By using this kind of evolutionary approach, we've been able to get the aircraft out there, performing at an incredibly high level, and now will add even more capability to support missions around the world."

Army closing the gap in East Pilbara

The remote East Pilbara community of Jigalong in WA has come together for the Army Aboriginal Community Assistance Programme (AACAP) 2019 Closing Ceremony.

Minister for Defence Senator Linda Reynolds said the AACAP deployment harnesses the skills of the construction, trade and training personnel in the Army.

"This is the 23rd consecutive year the Australian Army has deployed to a remote Indigenous community to deliver infrastructure, vocational skills training and health care services," Minister Reynolds said.

"The 150-strong contingent of Defence personnel, along with teams from Papua New Guinea and Tonga, have spent three months building projects including a

public amenities block and a youth and family centre.”

Minister for Indigenous Affairs Ken Wyatt said AACAP was an important element of the Government’s Closing the Gap initiative.

“The Army has done incredible work during AACAP 2019 to improve health, education and employment outcomes for the Jigalong community,” Minister Wyatt said.

“The Army Dental Clinic made a significant contribution to improving health in the community, treating over 60 residents in Jigalong.

“The Vocational Training Program was also a huge success with four paid positions in the local construction industry created, along with one paid position in the local school, and TAFE qualifications in tourism awarded to three trainees.”

Minister for Defence Industry Melissa Price said Jigalong was the first Pilbara community to benefit from the program.

“On behalf of the people of Jigalong, in my electorate of Durack, I wish to thank the Army for their hard work and involvement in the community over the last three months,” Minister Price said.

“The Jigalong community have thoroughly enjoyed hosting the AACAP members, and have engaged with them through weekly sport, school visits and special events, including a Welcome to Country ceremony and NAIDOC Week celebrations.”

AACAP is a joint initiative between the National Indigenous Australians Agency and the Army, conducted annually since 1997. Planning is already underway for the next AACAP in Pormpuraaw, Queensland.

“The Army Dental Clinic made a significant contribution to improving health in the community”



Sapper Collin Bowley of 6th Engineer Support Regiment, constructing an all-weather creek crossings on the outskirts of Jigalong Community.

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Finalists shortlisted for Pacific 2019 Innovation Awards

Ten Australian innovators from both the defence and civil sector have been shortlisted from 44 entries for the prestigious [Pacific 2019 Innovation Awards](#), worth \$60,000.

In two unique 'firsts', one Australian innovator that submitted multiple entries for a portfolio of related, all-new products has been honoured by being short-listed as a single innovative company. Second, a group of young innovators has submitted a team entry for the Young Innovator Award for their collective work on a new naval technology.

The winners will be announced during the Pacific 2019 International Maritime Exposition at Sydney's International Convention Centre (ICC) at Darling Harbour. The Awards include:

- Pacific 2019 National Defence Innovation Award
- Pacific 2019 National Civil Innovation Award
- Pacific 2019 Defence SME Innovation Grant
- Pacific 2019 Civil SME Innovation Grant
- Pacific 2019 Young Defence Innovator Scholarship
- Pacific 2019 Young Civil Innovator Scholarship

In addition, there are awards in four specialist categories, at the judges' discretion, for innovation in unmanned systems, command and control, platforms and propulsion and maritime operations.

All Award winners will receive a trophy, while the winners of the SME Innovation Grants and the Young Innovator Scholarship will also receive cheques for \$15,000 each. All 10 entries shortlisted for the Innovation Awards will be showcased at the Pacific 2019 International Maritime Exposition in Sydney.

Pacific 2019 CEO Ian Honnery said the Pacific 2019 Awards underline the innovativeness of Australian companies and young engineers, as well as a growing need for 'smart', innovative solutions to emerging operational challenges.

"Australia's naval shipbuilding program will provide a spur for development and innovation for the next five decades," Honnery said. "We want to ensure that Australian organisations are at the forefront of this innovation, commercialising



PACIFIC 2019

the results of research and development as products and services that strengthen both our industry and our national defence capability.”

The shortlisted Innovation Award entries are:

- Advanced Navigation (NSW) – Subsonic acoustic transponder for unmanned underwater systems
- DMTC Limited (VIC) – High-Velocity Oxygen Fuel (HVOF) thermal spray rust-resistant coatings
- Droneshield Limited (NSW) – for a portfolio of five innovative counter-drone products
- EM Solutions (QLD) – Cobra dual-band satellite communications antenna
- Solinnov Pty Limited (SA) – Bluebottle Software Defined Radio (SDR) App
- The Whiskey Project (NSW) – Next-generation high-speed tactical water craft
- Ultra Electronics Avalon Systems (SA) – Naval platform signature management system

The shortlisted Young Innovator entries are:

- Lawrence Marychurch, DroneShield Limited (NSW) – Design and development of counter-drone equipment
- Ryan McGrath, Thomas Churack and Jason Sardi, Thales Australia (NSW) – design and development work on ‘Bluescan’ sonar sensor management system for the HUNTER- class frigate
- Harry Hubbert, RAN (NSW) – design, development and deployment of Unmanned Surface Vessels (USV) for mine warfare

The awards recognise and reward local companies and individuals at the forefront of naval and maritime innovation and carry with them a total of \$60,000 in cash prizes. Since the Awards were first presented in 2013, the Aerospace Maritime Defence and Security Foundation of Australia Limited has presented Young Innovator scholarships and SME Innovation grants worth more than \$350,000.

“The awards recognise and reward local companies and individuals at the forefront of naval and maritime innovation”

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Forthcoming Events

ADM EVENTS

More detail on **ADM** Events can be found on our dedicated website:

- [ADM Defence Estate and Base Services Summit](#) – 12 September 2019
- [ADM North Australian Defence Summit](#) – 23-24 October 2019
- [ADM Outspoken Women Masterclass](#) – 23 September 2019

Hunter Defence Conference 2019

Date 23 August

Location Crown Plaza Hunter Valley

Website www.trybooking.com/book/event?eid=503298

The 2019 10th anniversary Hunter Defence Conference will focus on driving collaboration between Defence Primes, NSW regional SMEs, academia and the Department of Defence. Key presentations at this year's conference will include capability development staff from Army, Navy and Air Force Headquarters, Defence Primes articulating the support requirements they will have over the coming decade from regional SMEs. Former Minister for Defence Christopher Pyne will present a keynote at the dinner.

Sir James Rowland Seminar

Date 28 August 2019

Location ADFA, Canberra

Website www.eventbrite.com.au

The Rowlands Seminar series (named after Air Marshal Sir James Rowland – former Chief of Air Staff 1975-1979) is focused on promoting and developing an understanding of Australian air power via practitioners, academics, Defence members, other government agencies, and students of armed conflict.

ASDEFCON TD/IP Courses

Date 28-29 August

Location: WA, Vic, NSW

Website defence@majortraining.com.au

Defence have begun delivery of its short course on the new Technical Data / Intellectual Property (TD/IP) clauses in its ASDEFCON suite of templates. The new clauses provide far more flexibility and scope to deal with TD/IP issues but require a better understanding from both Defence and Industry. Defence is delivering this course around Australia and offering a number of spaces to Defence Industry: 6-7 August 2019 in WA: 28-29 August 2019 in Victoria: 23-24 September 2019 at RAAF Richmond: 29-30 October 2019 and 24-25 February

2020 in the ACT.

Australasian Simulation Congress

Date 02 – 05 September 2019

Location Gold Coast Convention and Exhibition Centre, Gold Coast

Website www.simulationcongress.com

The Australasian Simulation Congress provides a focused opportunity for industry development, business growth, training, discussion and distribution of information related to Simulation, Modelling, Training and Decision Support. Simulation Australasia can help you directly engage with industry, policy makers, Government and relevant stakeholders to facilitate you and your organisation achieving the success only a truly international Congress can provide.

Synthetic Environment Working Group (SEWG)

Date 06 September 2019

Location Gold Coast Convention and Exhibition Centre

Website www.defence.gov.au

The Synthetic Environment Working Group (SEWG) 2019 is a one-day Conference/Working Group sponsored by the Department of Defence, ADSTC and managed by the Simulation Governance Directorate.

Defence Industry Security Program (DISP)

Date 11 September 2019

Location Darwin

Website www.business.gov.au/Events/Defence-Industry-Security-Program

The Defence Security and Vetting Service will hold a business information session on the new Defence Industry Security Program (DISP) in Darwin on 11 September 2019. It's part of an NT Government Defence and Cyber Ready Briefing. The briefing also features a Centre for Defence Industry Capability and Prime Contractors Panel on local defence supply chain requirements for cyber security.

Australian Naval Institute's Goldrick Seminar

Date 18 September 2019

Location ADFA

Website www.trybooking.com/BDYHF

The 2019 ANI Goldrick Seminar will discuss defence issues associated with the maintenance of Australia's maritime trade. Speakers will be drawn from senior levels of Defence, academia and industry. As in previous years, the theme – Maritime Trade and its Implications for Australia's Defence – was selected by the Chief of Navy; an outcomes report will be provided to the Chief of Navy and it is anticipated that the proceedings will be subsequently published by ACSACS.

Understanding Chinese Strategy for the 21st Century

Date 18 September 2019

Location Victoria Barracks, Brisbane

Website www.rusi.org.au/event-3491733

Join us to hear deeply researched insights into China's strategic calculus in the region and how this will affect Australia's security. Professor Evans is a leading expert in strategy and leadership whose expertise is highly sought-after by international institutions, especially the US military. His command of military history and the extrapolated implications for our strategic considerations are peerless in Australia.

The Future Australian Army: An Evening with Lieutenant General Rick Burr

Date 19 September 2019

Location 215 Queen Street, Brisbane

Website tattersallclub.com.au

Don't miss this opportunity to hear how the future Australian Army is being shaped now by its Chief, Lieutenant General Rick Burr. Listen to General Burr outline the type of Army Australia will need to meet the threats and challenges of a dynamic Indo-Pacific strategic landscape, and how he intends to position the Army satisfy government-directed policy objectives and protect Australia's national interests.

Capability Life Cycle (CLC) Management

Date 23-25 September 2019

Location Canberra, Brisbane, Sydney, Melbourne, Adelaide, Perth

Website unsw.adfa.edu.au

This course provides attendees with an overview of how Australian Defence conducts business with regard to development and management of capability. Attendees from within the Australian Defence Organisation, other government agencies and defence industry are provided with an opportunity to develop an understanding of the principles, processes, practices and artefacts associated with the Australian Defence Capability Life Cycle.

Army Innovation Day 2019

Date 25 September, 2019

Location Adams Auditorium, ADFA

Website www.army.gov.au

AID19 will be held on 25 September and the purpose is for selected respondents to pitch their proposed innovations to assessors, Capability Managers and Defence Innovation Hub personnel. Respondents may also be able to verify, validate and clarify their Request for Proposal response. Request for Proposal submissions closes on 3 September and on 12 October respondents will be notified of outcomes.

2019 SIA Nuclear Seminar

Date 02 October 2019

Location Australian Strategic Policy Institute

Website www.submarineinstitute.com/events/Nuclear-Seminar

The Submarine Institute of Australia (SIA) is Australia's premier organisation for the promotion of submarine matters. The SIA is hosting a single day seminar, aiming to stimulate national discussion on a holistic approach to a nuclear industry.

Australian Cyber Conference 2019

Date 07-09 October 2019

Location Melbourne Convention and Exhibition Centre

Website cyberconference.com.au

The Australian Cyber Conference 2019 will provide business leaders with insights and best practices taught by the industry's top experts through keynotes, panel sessions and live demonstrations. Attending the conference will enable you to network with these practitioners to help you better understand and manage current threats, as well as identify and prepare to meet emerging challenges.

Pacific 2019

Date 08-10 October 2019

Location Sydney Convention Centre

Website www.pacificexpo.com.au

As the only comprehensive international exhibition of its kind in the Indo-Asia-Pacific region, PACIFIC 2019 will again provide the essential showcase for commercial maritime and naval defence industries to promote their capabilities to decision-makers from around the world.

ITAR/EAR/AU Export Control Awareness – Brisbane

Date 15 October, 2019

Location Brisbane

Website www.stickytickets.com.au

Join us for a one-day face-to-face awareness course covering the unique aspects, agreements and regulations for US and Australian Export Controls. Whether you are handling ITAR or EAR controlled technology as a current or prospective contractor, or looking to export your Australian controlled defence article, you must ensure you comply with regulations at all times.

Women in A/AA Melbourne Summit 2019

Date 16 October 2019

Location Level 17, 501 Bourke St.

Website www.aviationaerospace.org.au/events

This year, the summit will focus on how we, both men and women can engage the future through STEM and how we can encourage a more inclusive and diverse workforce. Discussing the barriers and opportunities for women in the industry, we will ask the tough questions and address how we can close the gender gap. What will it take for us to encourage more women to study STEM and what will take for us to encourage more women to pursue a career in STEM?

Williams Foundation Seminar – The Requirements of Fifth Generation Manoeuvre

Date 24 October 2019

Location National Gallery of Australia

Website www.williamsfoundation.org.au/event-3161281

Since 2013, the Sir Richard Williams Foundation seminars have focused on building an integrated fifth generation force. The seminar in October 2019 is titled 'The Requirements of Fifth Generation Manoeuvre' and will examine the differences and potential gaps in how the ADF must equip and organise for multi-domain operations.

2019 Parari Australian Explosive Ordnance Safety Symposium

Date 05-07 November

Location ADFA

Website parari@defence.gov.au

This year's symposium brings together delegates from around the world to discuss the latest innovations and advances in explosives, munitions and weapons safety. International and local experts from industry, academia, military and government will share their research to explore Explosive Ordnance Safety opportunities and challenges as a community.

MilCIS 2019

Date 12-14 November 2019

Location Canberra Convention Centre

Website www.milcis.com.au

In November each year, the Defence Chief Information Officer Group (CIOG) partners with the UNSW Canberra and the Institute of Electronic and Electrical Engineers (IEEE) to present MilCIS. The annual Military Communications and Information Systems (MilCIS) Conference welcomes military and government organisations, academia, and defence industries to contribute to the future direction of military communications and information systems.

SubSTEC 5 Conference

Date 18-21 November

Location Esplanade Hotel, Fremantle

Website www.submarineinstitute.com

The 5th Submarine Science, Technology and Engineering Conference (SubSTEC 5) will be held at the Esplanade Hotel, Fremantle, WA 18th-21st November 2019. The theme of the Conference will be: 'Innovation and Investment in the Sub-Sea Environment'. SubSTEC5 will be held with the support of the Institute of Marine Engineering, Science and Technology (IMarEST).

Corrosion and Prevention 2019

Date 24-27 November

Location Crown Promenade, Melbourne

Website conference.corrosion.com.au

Corrosion and Prevention 2019 will bring together leading researchers and industry practitioners who combat corrosion daily. Diverse technical streams will showcase the latest developments in corrosion, ranging from fundamental corrosion science to hands-on application.

2020

CIVSEC 2020

Date 24-26 April 2020

Location Melbourne Convention and Exhibition Centre

Website www.civsec.com.au

CIVSEC 2020 International Civil Security Congress and Exposition is your gateway event to the growing Indo-Asia-Pacific civil national security environment. CIVSEC 2020 is a premium international event with exceptional opportunities to reach key driver organisations in an evolving, tech-savvy regional marketplace.

Rotortech 2020

Date 16-18 June 2020

Location Royal International Convention Centre, Brisbane

Website www.rotortech.com.au

RotorTech 2020 is the region's premier helicopter and unmanned flight systems showcase and forum, bringing together operators, manufacturers, suppliers, regulators and government across the Indo-Asia-Pacific. With a comprehensive three-day free industry conference program, RotorTech 2020 will also feature manufacturers technical workshops and an industry exhibition showcasing more than 100 helicopter and unmanned flight related companies.

Land Forces 2020

Date 01-03 September 2020

Location Brisbane Convention Centre

Website www.landforces.com.au

The biennial LAND FORCES exposition is an international industry event to showcase equipment, technology and services for the armies of Australia and the Indo-Asia-Pacific. The Land Forces 2020 team is now setting about ensuring the event will achieve its goals of providing an effective platform for the exchange of ideas on key land forces issues and of taking Australian industry to the world.