

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



The conference covered the range of challenges and opportunities in the STEM recruitment space.

ADM

Workforce in the spotlight at STEM in Defence

Ewen Levick and Katherine Ziesing | Canberra

ADM's annual STEM in Defence summit took place in Canberra this week, attracting a range of speakers and delegates to look in depth at the opportunities and challenges facing Defence as it competes for a small pool of STEM workers.

The challenges to growing a STEM workforce are well-documented, but a few speakers gave new numbers that highlight the extend of the public relations problem Defence is facing amongst STEM-qualified graduates.

"Women hold a quarter of STEM-related jobs and are under-represented in high level research," Air Commodore Sue McGready, Head of Defence Recruiting, said. "STEM is critical to our warfighting advantage. This is too important to leave to market forces.

"Females account for 12.4 per cent of student engineers, yet 20,000 migrant engineers arrive each year. We're not [growing our own](#)."

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Maree Mahoney from the Australian Space Agency also noted that Australia's ability to engage women in STEM is far lower than other countries in the Asia Pacific, suggesting that the problem is a local one.

"In 2016, Australia had the lowest percentage of girls electing to engage in STEM (27 per cent) in the Asia Pacific," Mahoney noted. "China manages 76 per cent."

According to AIRCDRE McGready, Defence is also struggling to attract STEM graduates because many do not want to design weapons or contribute to combat. Others are wary of the physical and social requirements, or do not see the advantage of a career in Defence when that career demands mobility sacrifices that civilian industry does not (and often for less pay).

"How do we excite people, but also give a realistic picture of what the jobs are?"

"We're not viewed as an employer of first choice for STEM-qualified people and will be competing with Defence industry," AIRCDRE McGready said. "The possibility of contributing to combat turns off STEM-qualified people."

This 'public relations' problem was also highlighted by Luke Brown, Assistant Secretary of Defence's Space and Communications branch. Brown noted that whilst exciting endeavours attract people into STEM careers, not all those careers live up to expectations.

"Neil Armstrong's small step was supported by 400,000 people," Brown said. "So how do we excite people, but also give a realistic picture of what the jobs are?"

Yet all hope is not lost. Anntonette Dailey of the Australian Space Agency spoke of their efforts to engage in 'moon shot' projects and inspire conversations at dinner tables around Australia.

"Defence spends our yearly budget in 10 days," Dailey said. "So we're not NASA. But we like to run under the legs of giants – we're fast, we're agile."

Teresa Janowski, CEO and founder of [STEM Fast Track](#), spoke of her organisation's efforts to expose young girls and boys to a career in the field. Janowski brought program alumni Summer Till, now in her first year of university studying to become a naval architect, on-stage.

"The networking in STEM Sista was really new to me," Till said. "I didn't know a lot about STEM, but meeting people was really impactful."

ADF UAS 'cheerleader' Lieutenant Colonel Keirin Joyce also gave the audience an overview of everything Army is doing in this space, with his drone racing team on hand to demonstrate some of the drones currently flown by the Army Drone Racing Team and others.

"Being a pilot these days isn't about Top Gun and guys in flight suits," LTCOL Joyce said. "I can make someone a pilot for \$300. Now that's rad."

STEM Strategic Vision

ADM's STEM Summit came the day after Chief Defence Scientist Professor Tanya Monro launched Defence's STEM Workforce Strategic Vision 2019-2030.

Professor Monro said Defence is expanding its STEM cadetship program from 50 interns to 200 cadets within this year, across the whole organisation, not just DST. This creates new opportunities for students to start developing exciting defence careers even before finishing their studies.

DST scientists Dr Olivia Samardzic and Dr Robert Hunjet spoke about their areas of expertise and journeys from school, to university, to research roles and

then to DST. From lasers to AI and swarming, the two ambassadors engaged with the dozens of high school students in the room about where science can take you and what inspired them to work in the field.

"We don't have enough Australian students taking STEM subjects, and of those few, we need to encourage more female and indigenous students," Prof Monro said at the launch. "We need to be ready for the jobs that don't exist yet to create the future we are building. This pathway needs to be easy for students and their support network of parents, teachers and careers advisors to access and understand."

With this in mind, a Defence STEM website portal is also under development that can act as a 'front door' to STEM careers in defence across the board.

"We'll only do it if we deliver it together," Prof Monro concluded.

Keep an eye out for Prof Monro's *From the Source* interview in the September edition of *ADM*.

WA pushes to move Collins full cycle docking

Katherine Ziesing | Canberra

Two independent studies into the Collins class submarine Full Cycle Docking (FCD) maintenance program have found 'significant' strategic and economic benefits of moving this work to WA, according to WA premier Mark McGowan.

The PriceWaterhouseCoopers study found relocating Collins class FCD to WA will "de-risk the [Attack class submarine](#) and Hunter class frigate programs." It would also 'reduce the workforce pressure on SA', freeing up workers to concentrate on shipbuilding.

The study also found the Osborne Naval Shipyard will face significant constraints while Henderson in WA has room for an expanded ASC facility, and that the WA economy would 'benefit significantly' from FCD.



Crew stand on the bridge of HMAS *Dechaineux* to welcome HMAS *Collins* as she returns to Fleet Base West.

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"Moving FCD to WA will grow the defence industry's capabilities and it is considered best practice to conduct sustainment activities alongside where the submarines are based," WA Premier McGowan said.

"It is expected to result in hundreds of new direct jobs and will create thousands of jobs at the peak of the program – and will generate billions of dollars for our state over the life of the program."

"PwC's key findings demonstrate a strong case that moving FCD is in the national interest," WA Defence Issues Minister Paul Papalia said.

The program of works is expected to contribute an extra \$600 million to the WA economy each year and bring on thousands of jobs, according to the research.

Senator Rex Patrick of SA (and a former submariner himself) is a vocal opponent of moving FCD, saying the move makes 'little sense' on numerous fronts.

"Shifting the task to WA makes little sense," Sen Patrick said. "Adelaide is the national repository of submarine build and sustainment knowledge. Adelaide sits halfway between the east and west coast, where both Collins and Future Submarines will be based. It is likely most of the skilled workers at ASC would not move west, which would result in a great loss of Collins submarine corporate knowledge.

"Shifting FCD work to WA would damage the SA economy, impose an unnecessary and heavy additional cost on taxpayers and be damaging to national security."

ADM Comment: Copies of the report commissioned by the WA Government were not made available to see what assumptions were taken into account. Without this data it is hard to judge the exact details of the impacts of moving the FCD work from Adelaide to the west is. But there is no doubt it would be a boost to the WA economy.

It must be noted at this point that the ASC submarine facility in the west has been operating for more than a decade now and has had substantial investment in its capital facilities. The part of the puzzle missing of course is the skilled and experienced workforce.

The Collins enterprise has moved ahead in leaps and bounds since the Coles review that saw extensive work done by the entire submarine enterprise (ASC, Navy, DMO/CASG) to make huge gains in increasing the capability and reliability of the orphan fleet.

"Is moving this work, at this critical point, really in the national interest or delivering Navy materiel ready days?"

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. [Government declines to host US missiles but wants fuel](#)
4. [Defence moves quietly on Greek warship sale](#)
5. [Supashock opens new facility in Adelaide](#)

ADM has some sympathy for the points expressed by Sen Patrick in that the maintenance workforce in Adelaide is best suited to undertake the work and the chances of these workers moving west is limited. If work is moved to the west, these SA workers left behind will not be in want of opportunities; the Future Submarine and Future Frigate programs would likely snap them up without blinking.

The other concern is that the next generation of FCD for the Collins class will include Life of Type Extension (LOTE) program elements; it will not be a straight FCD with substantial work being done to all major systems, ADM suspects. This will be complex and expensive.

Is moving this work, at this critical point, really in the national interest or delivering Navy materiel ready days? Of course it can be done; throw enough time and money at a problem and you can do practically anything. It will come down to a decision at the Federal level as to how it wants to trade off SA/WA jobs vs cost and capability to Navy. In the long run, the move probably does need to happen, but the short term pain will be substantial regardless of timing.

RAN to get seven anti-mine underwater drones

Julian Kerr | Sydney

The RAN's anti-mine capability will be boosted next year with the delivery under Project Sea 1778 Phase 1 of four General Dynamics Bluefin-9 unmanned underwater vehicles (UUVs) and three larger Bluefin-12s, a Defence spokesperson has confirmed.

The UUVs, to be based at HMAS *Waterhen* in Sydney, will search for, classify and identify sea mines, providing a maritime task group with an "initial, interim, mine countermeasures capability," the spokesperson said.

According to the manufacturer, the Bluefin-9 combines high navigational



The Bluefin-9 delivers mission endurance of up to eight hours at three knots and dives to 200 metres.

GD

“The UUVs, to be based at HMAS Waterhen in Sydney, will search for, classify and identify sea mines”

accuracy, outstanding sonar resolution, and precision manufacturing to deliver highly-detailed subsurface data via a removable data storage module.

This stores high-definition images, video and sonar data that can be accessed within minutes of the vehicle's recovery. The two-man portable UUV weighs 70kg and can be deployed and recovered from piers, a rigid-hulled inflatable boat (RHIB) or other vessels of opportunity.

The Bluefin-9 delivers mission endurance of up to eight hours at three knots and dives to 200 metres.

The Bluefin-12 weighs 213kg and can carry multiple payloads simultaneously for mine countermeasures and unexploded ordnance detection at depths of up to 200 metres.

The vehicle design includes swappable payload sections and battery modules for in-field mission reconfiguration. Endurance is around 26 hours at three knots.

Rapid Environmental Assessment under Project Sea 1770 Phase 1 will also be enhanced with the delivery in December of two REMUS 100S UUVs optimised for hydrographic survey and seabed search in shallow waters to a depth of 100 metres.

Defence anticipates operational capability will be achieved in June 2020 within an undisclosed suite of systems. The capability will provide the ability to remotely conduct hydrographic surveys in addition to recording oceanographic information such as salinity and current for prediction models to support military operations and exercises.

The REMUS 100S (Survey) weighs 37kg, has an endurance of 12 hours at depths of up to 100 metres, and is in widespread military and civilian use.

TOP COMMENTS

China documented using Cold War tactics in Australia

I am not advocating anti-China sentiment or policy here but we must stand firm for our national sovereignty and freedom. The Chinese regime will respect us more, not less, when we show them that we are willing and able to stand up for our rights. – **Michael Ling**

There is a bit of strategic balancing going on here, so concern is one thing but over the top scare mongering is another. And China has as much 'right' as anybody to do strategic deals to protect its trade routes, or to avoid being 'contained'. The concern is of a neo-cold-war rivalry rather than an accommodation of mutual interests. – **Patrick**

WA prepares for Indo-Pacific challenges

Ewen Levick | Sydney

A range of speakers convened in Perth at the WA Indo-Pacific Defence conference this week to cover the role the state has to play in meeting Australia's future strategic challenges and industry needs.

ADM spoke to two of those speakers, Dr Lynn Kuok of Cambridge University and Rear Admiral Lee Goddard, head of Maritime Border Command, about the

broader geopolitical challenges facing the region and how they will impact ADF assets in the west.

According to RADM Goddard, one of the major regional challenges is depleting fish stocks, which could lead to increased piracy and criminal activities in the seas east of India.

"There's challenges in the Bay of Bengal and Andaman Sea – depleted fish stocks, for example, which potentially can lead to other types of criminal activities. People involved in illegal fishing can gradually become bolder and progress to more risky criminal acts such as piracy or the smuggling of narcotics," RADM Goddard, said to *ADM*.

"They can move into Australia's immediate area of operational interest. So we are watching that very carefully."

"The same international order China is attempting to undermine in the Indo-Pacific is actually in its own interests"

Of course, one of the largest challenges comes from China's actions in the region. According to Dr Kuok, China remains principally responsible for undermining a rules-based international order, not least by its actions in the South China Sea, but the Trump administration must also take some share of the responsibility as its trade war hurts the rules-based trading system and isolates its allies and partners.

"The trade war is deeply undermining the US' reputation in the region and giving pause to countries who might otherwise be more willing to support the US," Dr Kuok said.

Dr Kuok also argues that the future of the Indo-Pacific order is not just a matter of which side is able to wield the biggest stick; it is a question of how great powers compete with each other.

"My concern is whether the US-China strategic relationship takes place within the broad framework of international law or whether it's a no-holds-barred contest," Dr Kuok said. "The world would look very different if the latter is the case—we are already seeing signs of how that can really hurt interests on all fronts."



HMAS *Stuart* sails into Cockburn Sound, WA.

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Interestingly, Dr Kuok notes that the same international order China is attempting to undermine in the Indo-Pacific is actually in its own interests, and holds hope that the country's leadership will come to reach this "enlightened position".

"The maritime rights and freedoms Beijing is pushing back against are actually in its favour; they will help it protect its overseas economic and military assets," Dr Kuok said.

Dr Kuok references the example of the Soviet Union, which came to support maritime rights and freedoms as its navy transitioned from a coastal force to a blue-water fleet.

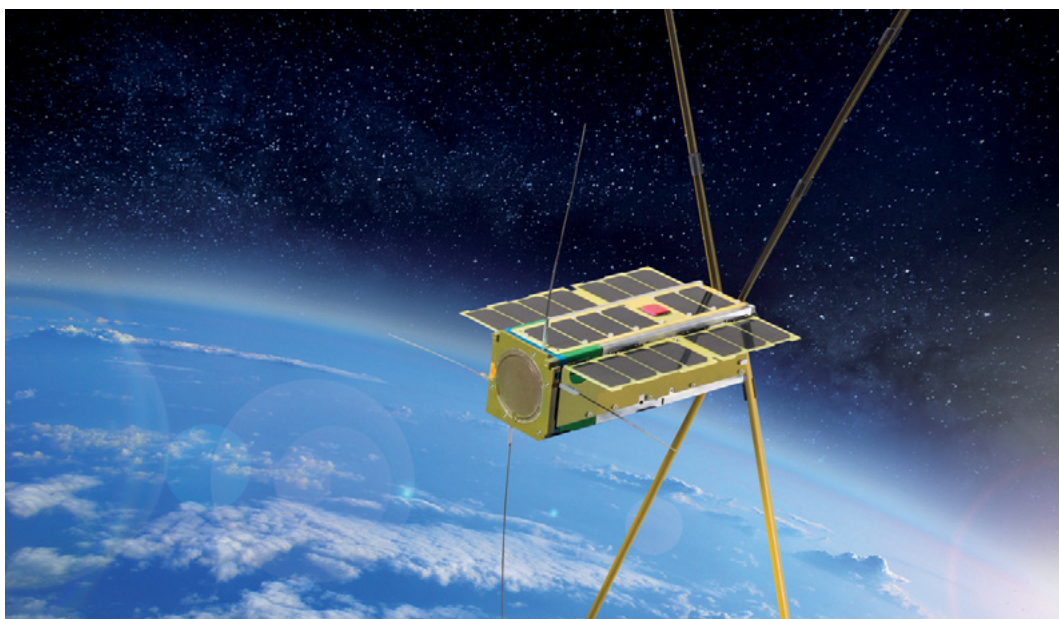
"When the Soviet Union had a small, reactive coastal navy, it was very much against maritime rights and freedoms. As its navy grew and became a more proactive, outward reaching blue-water navy, it actually aligned itself with the US to press for maritime rights and freedoms to be enshrined in the United Nations Convention of the Law of the Sea," Dr Kuok said. "If China were to adopt a more enlightened view, it would similarly move in that direction as well."

Dr Kuok believes that Australia can do more to convince China that a rules-based international order is in its own interests.

"Through UN conventions we have very clear regulations about how a nation flag state should behave at sea and I think our continual engagement and to remind each of that is very, very important."

UNSW showcases defence skills to industry

UNSW will showcase its defence research capabilities to Australian and international force planners and defence companies at its latest defence research showcase in October at its Kensington campus. The event follows the Pacific 2019 International Maritime Exposition at the ICC.



One of UNSW's defence skills is designing small cubesats.

DEFENCE

"UNSW delivers real research impact across the emerging technology areas of direct interest to defence," Professor Brian Boyle, UNSW Deputy Vice-Chancellor, Enterprise, said. "We bring together industry and university research teams from around the world with defence subject matter experts to tackle wicked problems and create globally disruptive, new Australian industry capabilities."

The 'Defence R&D – An Instrument of National Power' showcase event will be held in UNSW's Leighton Hall on the morning of Friday 11 October. It will exhibit research by some 40 teams from across [UNSW](#).

After a keynote by Professor Brian Boyle, senior defence industry and technology leaders – including Brad Yelland, Chief Technology Officer of BAE Systems Australia Limited; Kerry Lunney, Chief Engineer of Thales Australia; and [Vice Admiral Paul Maddison](#) (Ret'd), Director of UNSW's Defence Research Institute – will share their insights on defence R&D and emerging technology in a short panel discussion. Attendees are encouraged to engage with UNSW research teams and technology specialists afterwards.

Designed to partner researchers with industry, it is for companies of all sizes. UNSW has experience in preparing applications for research grants and other funding to help smart but cash-poor SMEs undertake and then commercialise R&D. There is \$1.3 billion available through the Defence Innovation Hub and Next Generation Technologies Fund (NGTF) alone for this purpose. Plus, there are other grants available through AusIndustry's Accelerating Commercialisation and Innovation Connection programs.

"We can help form links with high technology companies and researchers overseas – we've been doing this successfully for years," Professor Ian Gibson, Associate Dean, Industry and Innovation of UNSW Engineering, said.

UNSW has partnered with DST to design and launch the [Buccaneer 1 'cube-sat'](#). It has also worked with the RAAF, the US Air Force and DST on Space Situational Awareness (SSA); the US and Australian Armies on trusted autonomous systems; companies including Lockheed Martin and GE Aerospace on advanced composites, Naval Group on acoustic material, Thales Australia on optical sonar technologies, and Leidos and 3M on bio-threat response; the US Navy's Office of Naval Research on ferroelectric materials for sonar; and with non-defence partners on technologies as varied as hypersonics, artificial intelligence

"Designed to partner researchers with industry, it is for companies of all sizes"

PEOPLE ON THE MOVE

Naval Group Australia has appointed the former Chief of the Australian Army, Lieutenant General Ken Gillespie, as Independent Board Director. The Independent Director is charged with the effective oversight of Naval Group Australia and its strategy. The role will also have a significant influence on the overview of the Future Submarine Program.

Aurecon has announced a new Defence and National Security market to service the \$100 million business it has rapidly grown over the past five years in Australia, NZ and South Africa. David Barnes has been appointed Managing Director – Defence and National Security and will further drive the portfolio's diversification and expansion.

(AI), photovoltaics, and microwave and millimetre wave devices for mobile and satellite communications.

“Defence industry policy is designed to hone the ADF’s operational edge while strengthening its essential high-technology industry base,” VADM (Ret’d) Maddison said.

“That edge is the product of targeted R&D and then commercialisation by teams from industry, academia and defence. We understand that R&D is expensive, especially for SMEs, but UNSW can help with access to funding, and by making every research dollar count. We can do R&D efficiently, and target it on the needs of both ADF end-users and industry partners to create new products and capabilities.”

New equipment funding boost for Special Forces

Prime Minister Scott Morrison has approved the first stage of Project Greyfin ([Land 1508](#)), which will provide the first \$500 million of a \$3 billion planned investment over 20 years in equipment for the Special Forces.

Project Greyfin will see investments in body armour, weapons, diving and parachuting kit, roping and climbing systems, medical search and rescue, communications, and human performance training and support.

“This funding will ensure our Special Forces have cutting edge capabilities”



Soldiers from 2nd Commando Regiment drive their all-terrain vehicle near Townsville during Exercise Talisman Sabre. DEFENCE

"Australian Special Forces undertake complex, highly demanding operations in high threat environments," PM Morrison said.

"Global threats will continue to evolve in ways which threaten Australia's interests. This funding will ensure our Special Forces have cutting edge capabilities to stay ahead of those who might threaten Australia's interests."

"Our Special Forces, now more than ever, need to be ready and able to deploy on operations anywhere in the world, at short notice, and in very uncertain conditions," Minister for Defence Linda Reynolds said.

"This first stage of funding enables our Special Forces to engage with intelligence, science and technology, and innovation organisations to ensure future threats and opportunities are assessed, to make sure we are delivering them the capability they need in the future."

Defence releases latest Reconciliation Action Plan

Minister for Veterans and Defence Personnel Darren Chester has launched the fourth Defence Reconciliation Action Plan at the Australian War Memorial.

The Defence Reconciliation Action Plan (D-RAP) 2019-2022 outlines Defence's commitment to reconciliation and aligns with the whole-of-government 'Closing the Gap' strategy.

"Defence is already a leader in Indigenous employment and procurement, and the D-RAP 2019-2022 presents an opportunity to continue our contribution towards reconciliation," Minister Chester said.

The focus for the D-RAP 2019-2022 is to enhance Defence's cultural awareness and improve the retention and career development opportunities for Defence Aboriginal and Torres Strait Islander personnel.

"Having reached our previous targets, Defence has now committed to an



Australian warrior culture dates back thousands of years.

DEFENCE

“Defence has now committed to an Indigenous representation target of three per cent”

Indigenous representation target of three per cent by 2022 for the Australian Public Service workforce, and five per cent by 2025 for the ADF in the D-RAP 2019-2022,” Minister Chester said.

Defence launched its first D-RAP in 2007, which focused on cultural awareness, recruitment and retention, and land and environmental management. Since then there have been two further editions, each with unique strategic goals.

The D-RAP 2019-2022 is available [here](#).



Able Seaman Boatswains Mate Jamian Canendo during a Bungaree dance performance.

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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

PGCS 2019

Date 20 – 22 August 2019

Location The Canberra Rex Hotel, Canberra

Website www.pgcsymposium.org.au

Now in its 7th year, PGCS 2019 will focus on ways to build the foundations needed to create project and program success. Creating the organisational capability needed to underpin the consistent delivery of successful projects in the 2020's starts at the top. Leadership and a sustained focus are required to build a culture of excellence that can balance innovation with surveillance and accountability, encourage learning, and manage knowledge effectively.

Lessons in Leadership

Date 21 August

Location RUSI Hall, Victoria Barracks, Brisbane

Website <http://www.rusi.org.au/event-3317743>

In his presentation to RUSIQ members Dr Brendan Nelson will reflect on his own upbringing and the lessons he has learned through school, university, work as a physician, his political career and now as Director of the Australian WAR Memorial. Dr Nelson will impart key lessons that have stayed with him, and are important to all leaders, such as the importance of service to the community rather than self.

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.

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.