

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



Numerous speakers focused on preparations for a long-term human presence on the Moon and Mars.

PIXABAY

Space conference shoots for the Moon and beyond

Ewen Levick | Gold Coast

The 18th Australian Space Research Conference was held on the Gold Coast this week, the first following the [launch of the Australian Space Agency](#).

The conference showcased the cutting-edge research of scientists and the big dreams of space entrepreneurs as the sector heats up in Australia.

Proceedings were opened by Minister for Industry, Science and Technology Karen Andrews, who launched the CSIRO's [Space: A Roadmap for unlocking future growth opportunities for Australia](#) report in her opening speech.

The report outlines a growth strategy for Australia's space economy and calls for local industry to participate in international efforts towards a long-term human presence [on the Moon](#).

Minister Andrews was followed by Australian Space Agency head Dr Megan Clark.

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"We have some real opportunities, and we're not limited," Dr Clark said. "With a little bit of nurturing, with a little bit of support, we can run through the legs of giants and take those technologies further. We want Australians to see their technologies in space."

David Lingard from DST Space Science and Technology Strategy then took the stage to outline Defence's priorities for space capabilities.

"Dust is a major issue facing a human presence on the Moon, but is less an issue on Mars"

"Priority capabilities include comprehensive situational awareness, communications for a networked force, accurate knowledge of position and time for precision effects," Lingard said.

"Through the Buccaneer program, we've put a high frequency receiver into space to improve the calibration of JORN and experiment in space situational awareness alongside UNSW.

"This is about risk mitigation and testing key technologies. It's also about maturing technologies that are relevant to Defence."

Professor Russell Boyce from UNSW Canberra Space highlighted how the university is cooperating with Defence to improve the ADF's ability to respond to the increasing rate of disruption in technologies.

"Australia needs to respond quickly to the waves of disruption that keep coming. Sector after sector globally are being disrupted, and it's happening faster and faster," Professor Boyce said.

"We showed RAAF that it is possible to develop a world-class satellite system and be ready for launch in 12 months."



Minister for Industry, Science, and Technology Karen Andrews opening the conference.

EWEN LEVICK

Another central theme to the conference was the need for medical studies into human health in space as part of preparations towards manned missions to the Moon and Mars.

Dr Natalie Rens of Spaceport AI outlined how her company is creating technologies that will support the health of astronauts living and working on another planet.

"If we want to go to Mars, the communication lag is 20 to 24 minutes. That removes any possibility of mission control stepping in and taking control if things go wrong," Dr Rens said.

"We're looking at developing technology that can give a real-time sense of astronaut health and even predict health ahead of time."

There was some debate about whether the strategic focus should be on landing humans on the Moon once again, or heading straight to Mars. Proponents for another Moon landing argue that it could serve as a practice run for a Mars colony.

However, Dr Jon Clarke, President of the Mars Society Australia, argued that it is not that simple.

"I'm all for going to the Moon. It's the size of Africa, and we've only been to six places on it. But it could also be a black hole of effort. It is a different environment."

One of the major differences between the Moon and Mars is the presence of levitating dust. This is a major issue facing a human presence on the Moon, but is less an issue on Mars thanks to the planet's stronger gravity.

Professor Brian O'Brien, a WA scientist who once taught Buzz Aldrin as part of his role in the Apollo missions, expanded on the issue.

"The dust is everywhere. It is chemically unstable and reactive. It is one of the biggest medical and psychological barriers facing humans on the Moon," Prof O'Brien said.

"The Chinese rover on the Moon lasted one lunar day and hasn't moved since. Dust levitated, increased the frictional effect of everything it stuck to, and it stuck to everything."

For this reason, Dr Clarke believes both missions should happen at the same time.

"[A Moon mission] should happen in parallel to other missions, to the benefit of both. There's a lot we can learn, but there's also a lot of areas where it could be misleading."

Ultimately, all agreed that Australia has significant advantages in the sector that mean the growing domestic space economy will likely play a leading role in endeavours to come.

In fact, it already has. Professor O'Brien, who was there at the beginning, said it best.

"We're not just country bumpkins with large dishes stuck willy-nilly on this big slab of land we've got!" he exclaimed. "We've put stuff on the Moon that changed the game internationally, and we can change the game again."

"We've put stuff on the Moon that changed the game internationally, and we can change the game again"



There will be opportunities for industry in the initial construction on the expanded Shoalwater Bay training area.

DEFENCE

Laing O'Rourke wins Shoalwater Bay expansion contract

Nigel Pittaway | Melbourne

Assistant Minister for Defence Senator David Fawcett announced on September 25 that Laing O'Rourke is the successful bidder for the Shoalwater Bay Training Area (SWBTA) expansion project.

Laing O'Rourke is the managing contractor for the work, to be carried out under the Australian-Singapore Military Training Initiative (ASMTI) and will now begin engaging with local companies in the Rockhampton and Shoalwater Bay region.

“Injecting up to \$600 million into the regional economy over a five-year period, the project will deliver enhanced military training areas to the ADF”

“Injecting up to \$600 million into the regional economy over a five-year period, the project will deliver enhanced military training areas to the ADF, while fostering Australia’s close relationship with the Singapore Armed Forces (SAF),” Senator Fawcett said.

“The construction work, to commence by the end of 2019, will bring significant economic opportunities to the region, create local jobs and investment and support local industry near the SWBTA.”

Senator Fawcett added that Laing O'Rourke has developed a Local Industry Capability Plan (LCIP) to inform local businesses about the scope of work they

will have opportunities to bid for.

“Laing O'Rourke has committed to sourcing over 80 per cent of work from the Central Queensland region, ensuring local businesses can take advantages of the

PEOPLE ON THE MOVE

L3 Technologies has appointed Charles David as Senior Vice President. In this newly-created position, Mr. Davis will oversee L3's international offices and serve as Chairman of the company's International Boards in Australia, Canada and the UK, collaborating on the development and execution of L3's worldwide business development strategy, including customer outreach, sales and marketing efforts.

opportunities arising from the ASMTI," he said. "There will be opportunities for industry in the initial facilities and infrastructure construction on the expanded training area, as well as ongoing support for the ADF and SAF."

Senator Fawcett added that, over the life of the ASMTI, around \$2 billion will be injected into Queensland's regional economies. He said that an estimated \$50 million will be spent annually in these regions during the construction phase alone.

The SWBTA expansion is being undertaken under a Memorandum of Understanding (MoU) between the governments of Australia and Singapore designed to deliver enhanced training outcomes for both the ADF and SAF. The work is in addition to the SWBTA Remediation Project, which will deliver upgraded facilities and internal road networks within the existing training area between now and 2022.

The ASMTI initiative will also oversee the creation of a new training area near Townsville, in North Queensland, which is also due to begin in 2019 and run over a number of years. Defence's Estate and Infrastructure Group (E&IG) is currently negotiating with land owners in the area for the voluntary sale of land.

For a more detailed look at the work being undertaken under the ASMTI initiative, as well as the SWBTA Remediation Project, see 'Enhanced Qld ranges to support ADF and Singapore training' in the [September issue](#) of ADM.

CONTACT DETAILS

MANAGING EDITOR

Katherine Ziesing
T: 0419 014 308

katherineziesing@yaffa.com.au

ONLINE EDITOR

Ewen Levick
T: 02 9213 8249

ewenlevick@yaffa.com.au

ASSOCIATE PUBLISHER

Kylie Leonard
T: 07 3087 5101

kylieleonard@yaffa.com.au

ART DIRECTOR

Ana Heraud

SUBSCRIPTIONS

Martin Phillpott
Toll Free 1800 807 760

martinphillpott@yaffa.com.au

CONTRIBUTORS

Julian Kerr
T: 0418 635 823

jhrhkerr@bigpond.net.au

Nigel Pittaway

M: 0418596131

cnpittaway@bigpond.com

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Yaffa Media Pty Ltd
17-21 Bellevue St,
Surry Hills NSW 2010
T: 02 9281 2333

www.greatmagazines.com.au

ADM CANBERRA OFFICE

PO Box 4783, Kingston ACT 2604
T: 02 6203 9535

ADM BRISBANE OFFICE

PO Box 9165,
Wynnum Plaza Qld 4178
T: 07 3348 6966

www.australiandefence.com.au

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Understanding US influence on Defence Export Controls

Kevin Cheney | Newcastle

Australia's Defence Industry is reaping the benefits of supply chain opportunities for high tech acquisitions such as the F-35 JSF, the Future Frigates and Submarines, and vehicles under Land 400. The nature of these projects however, incurs a significant regulatory burden and oversight from the Commonwealth and international governments.

Whilst all regulations are vitally important to maintain sovereignty of ownership, one of the most important of these regulations is Export Controls. These controls are designed to protect indigenous technologies which, through their design, manufacture or application, are controlled by the respective nation's authorities.

The range of technologies being implemented in these projects has brought Australian companies under a number of foreign export control jurisdictions. The most influential of these is the US International Traffic in Arms Regulations (ITAR), and to a lesser extent, the US Export Administration Regulations (EAR).

ITAR controls military technologies and implements extra-territorial jurisdiction on these items, meaning involved Australian companies must be compliant with US regulations. Similarly, EAR controls dual-use technologies, which includes additional controls that, from the outside, might look less restrictive than ITAR. However, EAR can have more significant impacts upon Australian companies, including those working outside of the Defence arena that may not understand that they too fall within the breadth of these regulations.

An application by an Australian supply chain member for an ITAR or EAR item - either tangible or intangible - may be needed in order to fulfil a contract requirement. SMEs must be entrusted to remain compliant and fully aware of their obligations when granted this access.



The most influential foreign regulations impacting Australian companies are US ITAR and EAR.

DEFENCE

Recent events in the US and Australia have increased discussions around compliance with the regulations:

- Forward Looking Infrared (FLIR) systems was fined - under ITAR – US \$30 million (\$15 million suspended) for a number of breaches. Of those breaches, the most influential from an Australian perspective was a link provided to foreign persons who were then able to access controlled technology.
- In an EAR case, Chinese company ZTE was fined US \$1 billion with a seven-year denial order. However, this was subsequently lifted by order of President Trump regardless of the fact that ZTE was found to be supplying controlled technology to Iran and North Korea.

- In an Australian example, the recent arrest of an Iranian researcher - on ITAR charges – while he was studying at the University of Queensland illustrates the extra-territorial controls able to be exercised in Australia under these US regulations.

During the recent [Land Forces](#) event in Adelaide, ITAR was raised as a concern during industry presentations. Likewise, presentations by personnel from Defence Export Controls Office (DECO) and the Defence Export Office highlighted the importance of Defence export awareness for Australian SMEs.

Compliance breaches with Defence Export Controls can lead to both custodial and monetary penalties. However, the loss of reputation and brand damage can often be more damaging to a company through either the loss of current work, because they are no longer allowed to perform the contracted role due to their breach, or through the loss of future opportunities.

Maintaining compliance with Defence Export Control Regulations is a straightforward process provided correct procedures are established. Procedural documents that fully describe the nature of a business, nomination of a suitable person to administer this process for the company, plus an ongoing training program to ensure awareness, remain the three key factors in maintaining compliance in this area. Companies should look to embed ITAR/EAR compliance into their business processes as a matter of urgency to take advantage of the opportunities currently available in the Defence Industry sector.

Note: Kevin Chenney is a senior consultant for Goal Professional Services.

“Maintaining compliance with Defence Export Control Regulations is a straightforward process provided correct procedures are established”

MOST READ ONLINE AT WWW.AUSTRALIANDEFENCE.COM.AU



1. [Parliament releases report into Defence MPR](#)
2. [What will a military vehicle look like in five years?](#)
3. [Is the ADF ready to ask difficult questions?](#)
4. [ANAO releases scathing report into Hawkei](#)
5. [Counter UAS and EW tech in latest Hub contracts](#)



RAAF maintainers Sergeant Brooke Saunders and David Thomson work on the Australian F-35A Joint Strike Fighter flight line at Luke Air Force Base, Arizona.

DEFENCE

F-35 testing reveals potential for increased service life

The F-35 Joint Program Office and Lockheed Martin have completed F-35 static, drop test, and durability testing and early results indicate a potential for an increased service life certification for the F-35A variant.

The rigorous testing supports validation of the airframe's strength and resilience to perform in the demanding environments it will experience throughout its operational lifetime. The final results will support fleet management and maintenance forecasting for decades of operations.

“The F-35A vastly exceeded the requirement by completing three full life times of testing”

Ground testing includes a full-scale durability airframe of all three variants, which were loaded in unique test rigs and laboratories to simulate ground and flight load conditions during fleet operations. The F-35 aircraft's service lifetime is 8,000 hours, and each test airframe is required to complete two life-times of testing, or 16,000 hours.

The F-35A vastly exceeded the requirement by completing three full life times of testing, or a simulated 24,000 hours, which gives the program confidence in a potential service-life increase.

“The transformational F-35 pushes the boundaries of engineering and physics with supersonic speed, agility, high attitude and angle of attack, weapons capacity, vertical landings, carrier operations and much more,” Greg Ulmer, Lockheed Martin's vice president and general manager of the F-35 program, said.

"Durability testing gives the men and women who fly the F-35 great confidence in the aircraft's performance today and for decades to come."

"We look forward to analysing the results and bringing forward the data to potentially extend the aircraft's lifetime certification even further," Ulmer said.

"Already certified for one of the longest lifetimes of any fighter, an increase would greatly reduce future costs for all F-35 customers over several decades to come."

The F-35A airframe completed its testing at BAE Systems in Brough, England and the F-35B and C variants were tested at Lockheed Martin in Fort Worth, Texas. All variants undergo final teardown inspections at the National Institute for Aviation Research in Wichita, Kansas.

News of frame durability will come as good news following [debate](#) around pricing and availability issues in the global fleet. Australia's first two F-35s are [scheduled](#) to arrive in-country in December.

Defence upgrades Manus Island as China approaches

Australia is continuing its commitment to regional maritime security through an upgrade of wharf and shore-based infrastructure by Fletcher Morobe Constructions at PNG's Lombrum Naval Base on Manus Island.

The move comes amid fears that China is seeking to gain a regional naval base through 'debt-book' diplomacy efforts with Pacific island states.

Minister for Defence Christopher Pyne said the \$5 million contract is part of the government's Pacific Maritime Security Program.



HMAS Anzac comes alongside Port Moresby, PNG.

DEFENCE

“The Lombrum upgrades will support the safe and secure berthing of PNG’s four new Guardian-class Patrol Boats”

“The Lombrum upgrades will support the safe and secure berthing of PNG’s four new Guardian-class Patrol Boats,” Minister Pyne said.

“The infrastructure works build upon existing security cooperation between Defence and the PNG Defence Force, including the recently established \$2 million communications centre at Lombrum.”

“Australia is proud to support the PNG Defence Force in strengthening their maritime security capability, and remains committed to our longstanding partnership.”

21 Guardian-class Patrol Boats [are being gifted](#) to 12 Pacific nations and Timor-Leste from 2018-2023 under the Pacific Maritime Security Program.

“The Pacific Maritime Security Program, which is also providing a regional aerial surveillance capability, is the cornerstone of Defence’s engagement in the Pacific, and strengthens partner capacity and regional maritime security,” Minister Pyne concluded.

ASC develops new welding technique for submarines

ASC has successfully passed explosive tests for an advanced new welding technique for submarine hull steel in a development that opens the way to more efficient and reliable welds for Australian submarines.

The newly approved TIP-TIG welding method is a more consistent and improved welding process and is expected to lead to increased efficiencies for submarine sustainment while retaining a safe environment for submarine crews.

To gain Commonwealth approval, ASC-welded test specimens of the hull steel had to pass repeated explosive bulge tests at a facility in Victoria. The tests



The test specimen was repeatedly blown up until the “bulge” in the steel produced a thinning of the hull.

ASC

involved a one square metre specimen of Collins Class hull steel, made up of two sections that had been welded together.

The test specimen was repeatedly blown up until the “bulge” in the steel produced a thinning of the hull of a certain specified per cent. The tests were conducted with the specimens held at a temperature significantly below zero degrees, simulating the most demanding under-sea conditions.

Careful examination of the weld showed that cracks did not grow or break through, successfully passing the test.

ASC Chief Executive Officer Stuart Whiley said the successful explosive tests demonstrate ASC’s continued expertise in submarine hull fabrication and welding capability.

“Proving this advanced application of TIP-TIG welding for the high tensile, low carbon steel used in the Collins Class submarine pressure hulls means we will achieve even higher quality and reliability in our future work on Australia’s fleet of Collins Class submarines,” Whiley said.

“The newly approved TIP-TIG welding method is expected to lead to increased efficiencies for submarine sustainment”

“And it demonstrates our ongoing capability in ‘build like’ skills, leveraging our long history as a submarine builder, maintainer and design authority in Australia. This is a result of ASC retaining more than 40 per cent of its submarine workforce with skills and experience from the original Collins Class build in the 1990s and 2000s.”

Peter Whyte, the first welder to ever work on the Collins submarines, is proud of where the program stands today.

“As the first welder on the Collins build I’m proud of what the team at ASC achieved in the build of the fleet,” Whyte said. “It was difficult, challenging but equally rewarding to be part of something special.

“Today those same disciplines and dedication are part of the current team that works on the fleet. The next generation of welders and all trades in are very capable and committed to achieving a world class product for the RAN.”

The new technique will be introduced for the re-welding of HMAS *Waller*’s hull in its current full cycle docking in Osborne, SA.

The news follows the recent announcement that ASC is the first Australian defence company to receive the international corporate certification for excellence in procurement by the Chartered Institute of Procurement and Supply (CIPS).

“This achievement will guide our future work in procurement -- a critical role as Australia’s largest locally owned defence prime contractor, supporting the Government’s Naval Shipbuilding Plan,” Whiley said.

ASC built and maintains the Collins Class submarine fleet, employing more than 1,200 submarine personnel in SA and WA.

In recent weeks, the company has [signed on](#) with asset management experts to strengthen its life-cycle management execution of the Collins fleet under a new partnership with the Asset Management Council of Australia.

It has also signed a renewed [strategic cooperation agreement](#) with Defence Science and Technology Group for Collins.



BrightFox analyses how individual commanders solve tactical problems on the battlefield.

DEFENCE

DST partners with Rheinmetall on simulated tactical training

Defence Science and Technology (DST) Group and Rheinmetall have agreed to jointly develop a computer-based program that will assist Army commanders to outclass their adversaries with superior decision-making.

The BrightFox technology analyses how individual commanders solve tactical problems on the battlefield.

“BrightFox seeks to enhance current training and education methods”

“BrightFox seeks to enhance current training and education methods using new and innovative technologies that focus on enhancing individual decision-making by teaching officers ‘how’ to think, not ‘what’ to think,” Minister for Defence Christopher Pyne said.

“Enhanced decision-making will give the Australian Army a tactical advantage on the battlefield.

“Collaboration in new and innovative research and development between Defence and industry, such as Rheinmetall, is essential for building and maintaining Defence capability,” Minister Pyne said.

“It also helps to build a vibrant and responsive Australian defence industry that can deliver on the ADF’s unique capability requirements.”

Forthcoming Events

ADM EVENTS

More detail on **ADM** Events can be found on our dedicated website: admevents.com.au

- [ADM Defence in Northern Australia Summit](#) – 10-11 October 2018
- [ADM Congress 2019](#) – 13 February 2019

Systems Modelling Conference 2018

Date 04 October 2018

Location Adams Auditorium, UNSW Canberra

Website <https://www.unsw.adfa.edu.au/conferences/systems-modelling-conference-2018/home>

Systems thinking and modelling is the science of integration, where every system is conceptualised as a set of inter-related components. Systems thinking and systems modelling provides a problem solving approach that helps us develop the capacity to understand and manage complexity in a systemic way and how to deal with it in multi-stakeholder situations. The Capability Systems Centre in partnership with IEEE runs a one day conference on the use of whole-systems approach to design and manage complex problem in socio-technical and socio-ecological systems. The daylong conference on October 4th will feature showcases on the use of systems thinking and systems modelling in a wide range of areas.

BMT's Whole Life Warship Capability Management course

Date: 22-26 October 2018

Location: Adelaide

Website: <http://www.bmtdesigntechnology.com.au/training-courses/whole-life-warship-capability-management/>

BMT's Whole Life Warship Capability Management course is run over five days and is accredited by the Royal Institution of Naval Architects. The course covers: warship concept development and design management; regulation, seaworthiness and safety systems; platform systems and fundamentals of naval architecture; above and below water battlespace systems; production, sustainment and cost engineering.

WA Indo-Pacific Defence Conference 2018

Date 30 October 2018

Location Crown Towers – Perth, WA

Website <http://perthusasia.edu.au/defence-forum-2018>

The 2018 Western Australian Indo-Pacific Defence Conference will convene strategic thinkers from the military, industry, academic and government in Perth Australia, home to Australia's largest naval base, a growing defence industry, and a vibrant civic and academic community. This conference will promote the State's defence capability to national and international defence stakeholders. The aim is to provide new and relevant information from high-level speakers to educate and inspire our local industry, and to assist them in becoming world class and globally competitive (export ready).

NZDIA 2018 Forum

Date 30 October – 1 November 2018

Location Central Energy Trust Arena, Palmerston North (NZ)

Website <http://www.nzdiaforum.co.nz/page/528148>

The 2018 NZDIA Forum is our 21st forum. We aim to bring together industry (local, regional and international) and a wider range of government interests than has been achieved previously. The NZDIA forum has, for 20 years, been the most important event on NZ soil for defence and industry to come together. This year we are creating the opportunity and space for a wider cross section of industry: local, Australasian and global with a broader interest in national security encompassing defence, to come together. The speaking and workshop program is coming together as we identify how best to deliver excellent value to our traditional constituency and new attendees.

Veterans Film Festival

Date 1 November – 3 November

Location Palace Electric Theatre, ADFA, Canberra

Website www.veteransfilmfestival.com

The RSL National Veterans Film Festival (VFF) is an annual event, putting the spotlight on stories about veterans, first responders, their families and the influence of warfare on our society. The festival presents a curated program of carefully selected feature films, short films and media art from Australia and around the globe. Our focus is on recent work by talented indie filmmakers. However, within our program we also present mainstream films, retrospectives and provide opportunities to meet with filmmakers and content creators via Q&A's, panels, etc. All films submitted to the official competition will be eligible to compete for the coveted Red Poppy Awards.

SIA Biennial Conference

Date 7-8 November 2018

Location Rex Hotel, Canberra

Website www.submarineinstitute.com/sia-conferences

Join submarine professionals and key decision makers as the ninth in the biennial series of conferences run by the Submarine Institute of Australia returns to Canberra to explore the issues and opportunities emerging from the decision to extend the lives of the Collins class submarines.

ACA Corrosion & Prevention 2018

Date 11-14 November 2018

Location Adelaide Convention Centre

Website <http://www.corrosion.com.au>

As always, the focus of the ACA's annual conference and trade exhibition will be the safe and effective management of the continuing challenge posed by corrosion. More than 400 delegates are expected to attend the conference and extensive exhibition supported of key industry suppliers. Industry experts will deliver five plenary presentations—including the F P Thompson Lecture, which will be delivered by Professor Brian Kinsella, Curtin University, Australia.

MilCIS 2018

Date 13-15 November 2018

Location National Conference Centre, Canberra

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.

Australian Warrior Expo

Date: 15-17 November 2018

Location: Brisbane Showgrounds, Exhibition Building

Website: www.australianwarriorexpo.com.au

The Australian Warrior Expo (AWE) is Australia's premier Law Enforcement, Military, Emergency Services and Security Expo and is the only event of its type in Australia. AWE is dedicated to showcasing the latest products, technology, equipment and services to this niche market. AWE will bring both professionals and agencies together including Government Procurement Managers, Decision Makers and Operators.

Avalon Airshow 2019

Date: 26 February - 3 March 2019

Location: Avalon Airport

Website: <https://www.airshow.com.au/airshow2019/index.asp>

The Australian International Airshow and Aerospace & Defence Exposition is one of Asia-Pacific's most prestigious aviation and aerospace events and the most comprehensive aviation, aerospace and defence exposition in the southern hemisphere. Avalon hosts multiple concurrent conferences and expo streams, across the spectrum of Defence, Airlines, Business and General Aviation, Sport and Recreational Aviation, Airports, MRO, Space, Unmanned Systems, Air Safety and Ground Equipment.

TEAM DEFENCE AUSTRALIA EVENTS

- **AUSA 2018** – 8-10 October 2018, Washington DC, US
- **Euronaval 2018** – 23-26 October 2018, Paris, France
- **Indo Defence 2018** – 7-10 November 2018, Jakarta, Indonesia

For more information go to the business.gov.au TDA webpage [here](#). TDA EOIs will open a few months prior to the event – to keep up to date [register](#) for the CDIC newsletter.