

ADM

AUSTRALIAN DEFENCE MAGAZINE

SERVING THE BUSINESS OF DEFENCE

DEFENCE WEEK PREMIUM EDITION



Two neuromorphic cameras developed in Australia will be attached to the International Space Station.

NASA

WSU AND RAAF TECH TO DEPLOY ON INTERNATIONAL SPACE STATION

Last August I wrote a piece for *ADM* about Western Sydney University (WSU) and RAAF's Plan Jericho developing *Astrosite*, a world-first mobile space situational awareness module. The article mentioned it may be possible to deploy the system in space itself.

LINCOLN PARKER | SYDNEY

WSU announced on Wednesday that it is collaborating in a project with the US Air Force Academy (USAFA) to operate two neuromorphic cameras and build a payload that will be attached to the side of the International Space Station; one camera looking down at Earth and one looking at the horizon.

The Americans are calling the system Falcon Neuro.

I sat down with the man behind this incredible development, Associate Professor *Greg Cohen* at WSU. Almost more incredible than the capability of his work is

IN THIS ISSUE

WSU and RAAF tech to deploy on International Space Station	1
Marine rotation to Darwin cancelled	3
Kongsberg chooses Milspec for NASAMS mechanical fixtures	4
Defence extends Serco medical and dental logistics contract	6
More Silvershields head to Afghanistan	7
NUSHIP Sydney pulls into Fleet Base East	8
Forthcoming Events	10

how fast he took an idea, literally sketched on his boarding pass, to a functioning system.

In a chance encounter, in September 2018 A/Prof Cohen met with the USAFA and was asked to explain his research in neuromorphic technology and what it could do. They asked him to impress them. He literally sketched a design on his boarding pass and was asked "can you have it ready in February?"

"We took it from a sketch on my boarding pass in September to an actual physical container with a telescope with an operational device in February that year and then it was deployed to Woomera for testing in March," A/Prof Cohen explains. "It was an enormous amount of work but we literally went from a sketch to a capability in a matter of months."

The initial goal of the project is to look for a class of high altitude phenomena or Transient Luminous Events, also known as upside-down lightening, or Sprites. This is lightening that instead of firing down to the ground, travels upwards to the upper atmosphere.

Sprites are almost impossible to detect and could be very damaging to satellites, missiles, aircraft, communications or anything traveling via the upper atmosphere including SpaceX or other spacecraft.

Conventional camera technology was not designed to capture very bright, rare and fast moving events. But WSU's neuromorphic cameras operate more like a photoreceptor in the eye than a conventional camera. All the pixels in these cameras work like single individual cameras that don't interact or depend on one another.

To put it simply, they're all looking for changes around whatever set point they see, and as a result there are no frames like a normal camera and you don't have to worry about exposure times because the pixels just send you the changes when they are detected.

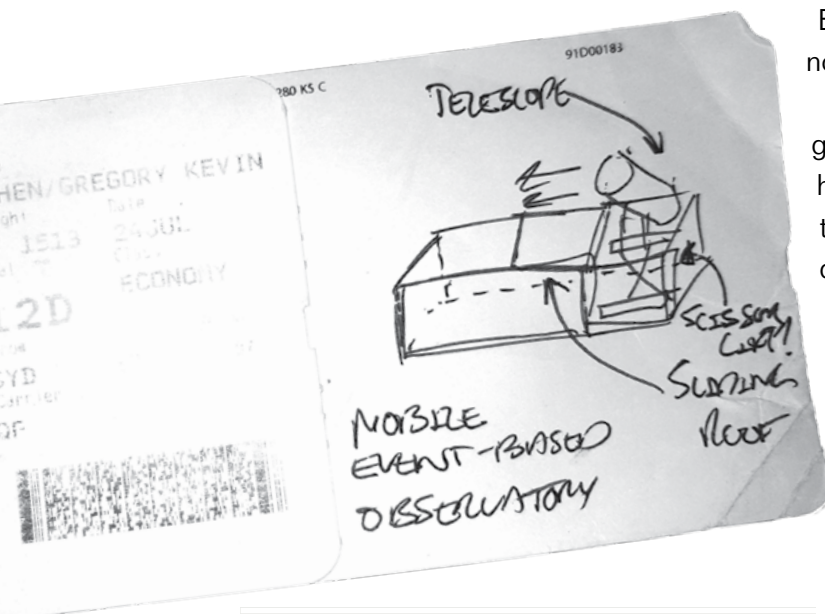
To capture an event that is moving incredibly fast (for example a Sprite or hypersonic missile) a conventional camera would need to capture many large pictures extremely regularly resulting in terabytes of data that then need analysing. A process that is both slow and power hungry.

But with Falcon Neuro, Sprites have nowhere to hide.

"With these cameras we'll be able to get more insight into when they happen, how often they happen, where around the globe they happen and then if we do catch them, we should also be able to see how they form and what they're actually doing," A/Prof Cohen said.

In a crucial development for detecting hypersonic missiles, A/Prof Cohen was adamant.

"I think neuromorphic sensors for hypersonics are the perfect sensor," he said. "So whether they're on the ground looking up or somewhere in



The sketch A/Prof Cohen made on his boarding pass. LINCOLN PARKER

orbit looking down, it's absolutely designed for it, and that's even before you start going into the infrared spectrum."

In discussing WSU's evolution from research to the Astrosite program and now to the International Space Station, Professor Hugh Durrant-Whyte, NSW Chief Scientist and Engineer had high praise.

"WE TOOK IT FROM A SKETCH ON MY BOARDING PASS IN SEPTEMBER TO AN ACTUAL PHYSICAL CONTAINER WITH A TELESCOPE WITH AN OPERATIONAL DEVICE IN FEBRUARY"

"Developing, deploying and operating world-first sensors on the International Space Station in a collaborative project with the US Air Force Academy is an outstanding accomplishment," Prof Durrant-Whyte said. "This is another example of innovative technology being supported and developed in NSW and rapidly deployed on the world stage."

In the future A/Prof Cohen sees no technical reason why Falcon Neuro 2.0 cannot also observe the Earth, through clouds to track ships, aircraft, missile launches and explosions, and possibly submarines.

"We can already see through bushes," A/Prof Cohen said. "The moving surface of the sea, for example, is yet another surface that we may be able to use these algorithms to see through."

Current resolution will not allow these capabilities, but given the amount of time it took Prof Cohen to field Falcon Neuro 1.0, he may achieve the above game-changing capabilities sooner than we think.

Note: Lincoln Parker works for the NSW Defence Innovation Network (an initiative of the NSW Government, Defence Science & Technology Group and seven NSW universities). The author's views are his own.

MARINE ROTATION TO DARWIN CANCELLED

The government has decided not to proceed with the 2020 Marine Rotational Force – Darwin (MRF-D) deployment given ongoing restrictions associated with COVID-19.

In a statement, Minister for Defence Linda Reynolds said she would consider options for a delayed deployment if possible.

"Australia will work with the US to devise options for a possible later deployment, subject to conditions improving and the viability of such a deployment proceeding," Minister Reynolds said. "Any decision in relation to the 2020 MRF-D in no way affects Australia's commitment to host next year's, or subsequent, MRF-D rotations.

"I remain fully engaged with NT Chief Minister Michael Gunner on this matter."



The planned 2020 Marine rotation to the NT will not proceed as planned.

DEFENCE

Minister Reynolds also affirmed the government's commitment to the deployment, which has steadily grown in size in recent years.

"Australia and the US remain firmly committed to the benefits to regional security that the MRF-D brings," Minister Reynolds said. "Our ability to host such deployments, alongside the unmatched degree of interoperability we enjoy, is clear testimony to the enduring strength and sense of purpose of the Australia-US Alliance."

ADM understands that RAAF combat squadrons are planning to deploy to the NT in July for Exercise Pitch Black 2020, despite the current COVID-19 restrictions placed on travel, which is set to run from July 24 to August 14.

However, the event is currently 'under consideration' in line with advice from the Chief Medical Officer.

KONGSBERG CHOOSES MILSPEC FOR NASAMS MECHANICAL FIXTURES

Kongsberg Defence Australia has chosen Albury-based MILSPEC Manufacturing to supply mechanical fixtures for components for sub-systems within the Australian National Advanced Surface to Air Missile System (NASAMS) program being delivered under Project Land 19 Phase 7B.

Kongsberg, in partnership with Raytheon Australia, will deliver a NASAMS capability for the Australian Army, providing a beyond-visual-range Ground Based Air Defence capability to defeat aircraft, unmanned aerial vehicles, and cruise missile threats.

MILSPEC will supply mechanical fixtures for the Fire Distribution Centres and NASAMS Classroom Trainers.



David Cooper, Colin Christensen, Matthew Gay, Brad Hewitt, Noel Gordon, Nathan Lane, Neil Morrison, and Russell Sharp. SUPPLIED

**“MILSPEC IS A TERRIFIC
EXAMPLE OF A SUCCESSFUL
AUSTRALIAN BUSINESS”**

MILSPEC joins other Australian suppliers including Daronmont Technologies, Eylex and REDARC on the program.

“MILSPEC is a terrific example of a successful Australian business that Kongsberg is proud to partner with to deliver some key components for NASAMS sub systems,” Kongsberg Defence Australia General Manager John Fry said.

Kongsberg Defence Australia Supply Chain Manager, Sally Dunbar, said MILSPEC has proven themselves as leaders in the industry.

“Since MILSPEC commenced operations in 2002, they have proven themselves as a world-class provider of CNC machining, CNC sheet metal fabrication and welding, integration, assembly and testing of military products,” Dunbar said.

MILSPEC are now part of Kongsberg’s global supply chain, which is set to provide opportunities both in Australia and internationally.

Kongsberg Defence Australia will assemble and conduct sub-system level integration of the Fire Distribution Centre and NASAMS Classroom Trainers in Adelaide. The company will also conduct final assembly of the canister launchers and support integration activities.

MOST READ ONLINE AT WWW.AUSTRALIANDEFENCE.COM.AU



1. [NZDF and ADF: Different responses to COVID-19](#)
2. [Air Affairs provides jet for HMAS Arunta to shoot down](#)
3. [Pitch Black set to continue – for now](#)
4. [Ministers outline economic support for defence industry](#)
5. [Leidos calls for industry responses to Land 129 Phase 3](#)

DEFENCE EXTENDS SERCO MEDICAL AND DENTAL LOGISTICS CONTRACT

Defence has exercised a two-year extension of the Medical & Dental Logistics Support Service Contract with Serco.

Serco Australia has provided dedicated medical and dental logistics support, with specialist medical kitting and management of maintenance services to Defence, as their primary partner for this key capability, for 20 years.

Currently operating alongside the ADF at Joint Logistics Unit (East) Moorebank, NSW, Serco supports all ADF joint operations, peace-keeping missions, humanitarian and disaster relief operations, as well as peace-time training exercises and activities.

Serco Defence Managing Director, Clint Thomas, said this extension further strengthens Serco's partnership with the ADF.

"SERCO SUPPORTS ALL ADF JOINT OPERATIONS"

"We are extremely proud of our strong, long-standing partnership with the ADF, which leverages a range of capabilities, including maritime operations, engineering and logistics support, asset management, facilities management, medical and dental logistics, equipment and weapons maintenance and repair, specialist training and technical services," Thomas said.

"This extension allows Serco to continue supporting the ADF medical and dental capability to deliver consistently high quality service, innovation and efficiencies."

The contract is valued at \$12 million for the two years.



Air Commodore Angie Castner, Director General Supply Chain, Joint Logistics Command signing the contract extension at Victoria Barracks in Melbourne. SUPPLIED

MORE SILVERSHIELDS HEAD TO AFGHANISTAN

Defence and Australian industry will manufacture and deliver more than 15,000 Silvershield units to the Afghanistan National Defense and Security Forces this year.

Silvershield is a vehicle-mounted system being developed under the REDWING program, which provides protection against radio-controlled improvised explosive devices.

Minister for Defence Linda Reynolds said this capability would empower the Afghan National Defence and Security Forces to operate confidently in a high-threat environment.

"The REDWING program is one of Australia's largest contributions to the Afghan security forces through the Afghan National Army Trust Fund," Minister Reynolds said.

"We are extremely proud to produce life-saving force protection systems for our Afghan partners to help address the evolving threat of improvised explosive devices in Afghanistan."

Since 2015, Australian industry, in collaboration with Defence, has produced and exported more than 224,000 individual and vehicle-mounted REDWING systems to the Afghan National Defence and Security Forces.

L3 Micreo produced and delivered around 16,000 units in 2018 and 14,000 in 2019.

The final assembly of the Silvershield units will take place in Brisbane at the L3Harris Micreo facility. The units are comprised of component parts sourced from companies



Major Geoffrey Small installs a silver shield electronic countermeasure device on a vehicle in Kabul, Afghanistan.

DEFENCE

across Australia, including Axiom Precision Manufacturing (based in Adelaide), SRX Global (Australia) (based in Melbourne), ZCG Scalar (based in Lindenow, Victoria), and LINTEK (based in Queanbeyan).

"SINCE 2018, WE'VE PRODUCED OVER 30,000 SILVERSHIELD UNITS THAT HAVE BEEN SUCCESSFULLY DEPLOYED ON LIGHT VEHICLES IN AFGHANISTAN"

"We're extremely proud to be managing the production of these lifesaving Silvershield systems under the REDWING program this year," Sarah Earey, Managing Director, Micreo, L3Harris, said to ADM. "As the industry partner collaborating on the system design with DST Group, we've worked hard to support the development of Silvershield, ensuring it's an effective system, suitable for high-volume manufacturing."

"Since 2018, we've produced over 30,000 Silvershield units that have been successfully deployed on light vehicles in Afghanistan to protect against the persistent threat of RCIEDs, and we're committed to using a predominantly Australian-based supply chain to continue the time critical manufacturing required to deliver these systems where they are needed most to continue saving lives."

Minister for Defence Industry Melissa Price said the REDWING program highlights the best of Australian industry.

"The success of the REDWING program is a result of the remarkable diversity of Australia's defence industry nationwide," Minister Price said. "The program continues to be recognised as a leading example of innovation and industry working together, most recently at the 2018 ADM Essington Lewis Awards, which recognise excellence in Australia's defence industry."

PEOPLE ON THE MOVE

NEPEAN Engineering & Innovation has recruited a New General Manager – Peter Buckley. Initially commencing his employment as an apprentice Fitter/Machinist in 1998, Buckley's focus for his new role is on identifying key differentiators, innovation and leveraging appropriate strategic opportunities.

NUSHIP SYDNEY PULLS INTO FLEET BASE EAST

Sydney residents recently had their first glimpse of their city's namesake ship with the arrival of NUSHIP Sydney at Garden Island.

The third and last Hobart Class Destroyer to join the Navy's fleet entered Sydney Heads and made her way through the harbour, with contractors and ship's company embarked.

Minister for Defence Linda Reynolds said the arrival of Sydney is a proud day for Defence and the people of Sydney.



NUSHIP Sydney arrives at her homeport of Fleet Base East for the first time.

DEFENCE

“Today marks another milestone in Defence capability, with Sydney being the most potent and capable warship Australia has ever built,” Minister Reynolds said. “The Hobart Class Destroyers are the first Australian warships equipped with the US Aegis combat management system, and will allow us to work closer with our allies than ever before.”

The 147-metre warship sailed from Osborne, SA, where she was built by the Air Warfare Destroyer Alliance.

During the transit at Garden Island, Sydney will conduct a number of acceptance trials coordinated by Air Warfare Destroyer Alliance personnel.

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

DESIGNER

Lauren Esdaile

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

Copyright © 2020



PUBLISHED BY

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

SUBSCRIPTIONS GREATMAGAZINES.COM.AU CALL 1800 807 760 EMAIL SUBSCRIPTIONS@YAFFA.COM.AU

All material appearing in ADM is copyright. Reproduction in whole or in part is not permitted without permission in writing from the publisher. The publishers accept sole responsibility for the contents of this publication, which may in no way be taken to represent the views of the Department of Defence, the Australian Defence Force or any other agency of the Commonwealth of Australia.

FORTHCOMING EVENTS

ADM EVENTS

More detail on ADM Events can be found on our [dedicated website](#).

- [ADM STEM and Defence Summit](#) – 19 August 2020, Novotel | Brisbane
- [ADM Defence Estate and Base Services Summit](#) – 15 September 2020 | Canberra
- [ADM Women in Defence Awards](#) – 23 October 2020
- [Defence in the North](#) – 28 October 2020 | Darwin Convention Centre
- [ADM Space Summit](#) – 3 December 2020, Hyatt Hotel | Canberra

AIRBUS DEFENCE AND SPACE INDUSTRY ENGAGEMENT ROADSHOW

DATE postponed until further notice

LOCATION Various

WEBSITE www.airbus.com/space.html

The purpose of the briefings is to engage Australian industry and identify potential roles in the pursuit, delivery and support of projects of interest to Airbus Defence and Space such as but not limited to satellite and terrestrial communication networks, processing of imagery and data and surveillance sensors. Airbus are particularly interested in companies with the following capabilities, but not exclusive to: Advanced manufacturing; Electronics/Electrical engineering; Antenna design and manufacturing; Mobile Terminals; Electrical harness; Software development; Payload development; Infrastructure.

CYBER DEFENCE NEXT GENERATION TECHNOLOGY & SCIENCE CONFERENCE

DATE: postponed until further notice

LOCATION: Brisbane

WEBSITE: wp.csiro.au/cdng

The Cyber Defence Next Generation Technology and Science Conference, is a first of its kind scientific and technology focused Cyber Defence Conference. The aim is to have the community of cyber-security under the “Next Generation Defence Technologies | Cyber Research” program in collaboration with DST-Data61 and partner universities meet together, expose relevant research activities and discuss future collaborations.

CERTIFICATE IV IN RESPONDING TO ORGANISATIONAL COMPLEXITY | CANBERRA

DATE postponed until further notice
LOCATION to be confirmed
WEBSITE iccpm.com/events/certificate-iv-canberra-2020

Developed and offered exclusively by ICCPM (RTO number 41394), the Certificate IV in Responding to Organisational Complexity helps project leaders develop the skills and attributes they need to respond to complexity, as defined in the Complex Project Manager Competency Standards. This is a highly interactive course which introduces project leaders to useful tools and methodologies with a strong focus on the practical application of concepts to real-world situations.

WILLIAMS FOUNDATION SEMINAR: NEXT-GEN AUTONOMOUS SYSTEMS

DATE postponed until further notice
LOCATION: National Gallery of Australia
WEBSITE www.williamsfoundation.org.au

Building upon the existing foundations of ADF capability, the aim of the March seminar is to explore the force multiplying capability and increasingly complex requirements associated with unmanned systems. From its origins at the platform level, the opportunities and potential of increased autonomy across the enterprise are now expected to fundamentally transform Joint and Coalition operations.

ASIA-PACIFIC SECURITY INNOVATION SUMMIT

DATE postponed until next year
LOCATION Queenstown, NZ
WEBSITE www.apsisummit.com/page/apsi-summit-2020

The theme of this year's APSI summit, to be held in Queenstown on the South Island, is Strengthening Security Resiliency Through Partnerships and Alliances.

AUSCERT 2020

DATE: 02-05 June 2020
LOCATION: The Star, Gold Coast
WEBSITE: www.auscert.org.au/giveaway

The AusCERT Conference is the oldest information security conference in Australia. Each year, we attract in the vicinity of 800 participants and approximately 50 sponsors. AusCERT is hosting more than 50 speakers at AusCERT2020, as well as an array of tutorials, workshops, networking events & much more.

QUANTUM TECHX

DATE 08 June, 2020
LOCATION TBC
WEBSITE www.quantumtx.com.au/qtx-program

TechX is powered by leading innovation providers, Atomic Sky, and its team of experienced business scale-up facilitators. It's supported by a range of financiers, corporate and government partners who provide access to sites, specialist sector expertise, technical mentors and networks. Through the program each company will be provided condensed capability building, tailored site visits and direct mentoring to build capability, capital and connections.

2020 VERNON PARKER ORATION AND DINNER

DATE 17 June 2020
LOCATION Hotel Realm, Canberra
WEBSITE navalinstitute.com.au/2020-vernon-parker-oration-and-dinner

Sir Peter Cosgrove has kindly agreed to deliver the 2020 Vernon Parker Oration on 17 June. Sir Peter was Governor-General from 2014-2019 and former Chief of the Defence Force. In January 2020 Sir Peter accepted the voluntary role as chairman of the Business Council of Australia's Community Rebuilding Initiative in response to the 2019/20 bushfires.

43RD COSPAR SCIENTIFIC ASSEMBLY

DATE 15 – 22 August 2020
LOCATION International Convention Centre Sydney
WEBSITE www.cospar2020.org

The Australian space research community enthusiastically extends the invitation to you, to meet with us for COSPAR 2020, and in so doing to forge the friendships and opportunities that will connect space research for global impact. The 2020 Assembly will combine the latest in space research findings with activities designed to enrich the global space research community – including helping equip our future leaders, and workshopping with space industry – and inspire the next generation of scientists and engineers.

PROJECT AND PROGRAM MANAGEMENT SYMPOSIUM 2020

DATE 25-26 August 2020
LOCATION Canberra Rex Hotel
WEBSITE www.pgcsymposium.org.au

PGCS 2020 is designed to help project and program managers, and their sponsors and senior managers, develop the skills and understanding needed to deliver projects success in the next decade. Now in its 8th year, PGCS 2020 will focus on ways to build the foundations needed to create project and program success.

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

ROTORTECH 2020

DATE 14-16 October, 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.

2021

AVALON 2021**DATE** 23 – 28 February 2021**LOCATION** Avalon Airport

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.

VARIOUS DATES**NSW DEFENCE INNOVATION NETWORK'S REGIONAL ROAD SHOW****DATE:** Various**LOCATION:** Various**WEBSITE:** defenceinnovationnetwork.com/din-regional-road-show-2019-20

NSW Defence Innovation Network and AIDN will be undertaking a series of small business focused regional forums across NSW. Register to attend and hear about the programs, grants, opportunities and services the NSW Defence Innovation Network (DIN) provides to the small business community across NSW. We encourage small businesses to engage with us and participate in opportunities across our networks, including DIN's seven partner universities, as well as with other state and federal agencies.

DEFENCE READINESS SEMINAR SERIES**DATE** postponed until further notice**LOCATION** Various**WEBSITE** bit.ly/37fipjH

The Defence Readiness Seminar Series kicked off in November last year. If you are considering entering the Defence market, or have staff you consider require orientation to the Defence market, you are strongly encouraged to consider this invaluable series, shaped and developed by people in the Hunter that have worked closely in the Defence Industry over many years. Please see the website for more information on how to get involved.

2020 ICCPM INTERNATIONAL ROUNDTABLE SERIES

DATE Various (April, August)
LOCATION Various
WEBSITE iccpm.com/2020-rs

One of the characteristics of complex projects is that they emerge over time. This creates uncertainty for project leaders. To support project success, project leaders need to understand how to manage risk in uncertainty and identify new opportunities. The International Roundtable Series is a Thought Leadership initiative that brings together senior project leaders and leading academics from different industries to share their experience and international perspectives. The outcomes report will share these insights to improve project success.