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# C4 EDGE TO DEVELOP AN AUSTRALIAN BATTLEGROUP AND BELOW BATTLEFIELD COMMAND SYSTEM DEMONSTRATOR

There are plenty of good news stories around about Australian industry, but very few with the enormous potential of the C4 EDGE consortium that has been contracted by Army to deliver a sovereign tactical command, control and communications system for battlegroup and below. Led by Canberra-based EOS Defence Systems, the company was awarded a $31.4 million dollar contract in December to have a demonstration system available by the end of 2021. This follows an earlier investment by Defence of $4.2 million in June 2020 to fund the Phase 1 mobilisation effort of the group, define the architecture and map out the required accreditation processes.

*Australian Army soldier Corporal Simon Nel at the urban operations training facility on Subject Two for Sergeant course at the School of Infantry, Singleton NSW. Credit: CoA / Julia Whitwell*

When spelt out, C4 EDGE is the Command, Control, Communications and Computing Evolutionary Digital Ground Environment, so it's not surprising that two acronyms are required to describe the capability. The December contract involves 18 wholly Australian-owned companies – and that list is set to grow as more come onboard. Every member of the team is a world class entity in its own right and many have an impressive export record. Some of the companies are specialists in defence technology; some have hybrid portfolios and yet others have been working in parallel fields.

an effort to showcase their capabilities. This means that the Australian industry financial contribution to the development is likely to be at least equal to that being made by Defence.

Mr Jones says the genesis of the activity came about as a result of an appeal by the Australian Army at the 2019 Canberra MilCiS conference for expressions of interest from companies interested in developing a sovereign C4 system. EOS DS took the lead – and had no difficulty in quickly identifying a number of potential participants. As a result, the company made an unsolicited proposal to Defence – and progress since then has been very rapid.

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The current Phase 2 activity is ambitious in scope, aiming to deliver a secure, networked, sovereign combat and situational awareness system demonstrator in about 12 months. This means that EOS DS will incorporate locally-sourced combat radios, satellite terminals, cryptography, networking middleware, command applications, user interfaces, batteries and power management into coherent mobile system solutions for the tactical land fight.

According to Matt Jones, EOS DS C4I General Manager, the program will utilise Australian design, production, workforce, intellectual property and supply chains in the development and demonstration of this capability. Most of the companies are in the Small to Medium Enterprise (SME) category. As well as receiving money from Defence, all companies are also contributing to the effort themselves as part of

There are several reasons for developing an all-Australian solution to meet Army's C4 future needs. One of the most important is cost, with overseas solutions often proving to be very expensive not only to acquire but also to keep current. For example, purchasing U.S. radios does not guarantee interoperability with U.S. forces unless equipment has been continuously updated with the latest cryptographic subsystems – and in some cases to do that has meant the need to not only install new software but to also replace the hardware. Because of ITAR requirements, often this has to be done in the U.S., which can be a major cost driver.

Because this is happening as a result of an unsolicited proposal, the Army customer is not directing the activity but is closely involved in it. According to Defence, EDGE aims to test the

*An Australian Army soldier from the 1st Battalion, The Royal Australian Regiment, provides security in a section attack at Townsville Field Training Area during Exercise Long Khanh. Credit: CoA / Daniel Strutt*

ability of Australian defence industry to design, develop and manufacture a prototype mobile tactical communications system. The prototype concept demonstrator system will potentially incorporate all elements of the tactical communications system including software, waveform, cryptography, satellite-enabled friendly-force tracking, radio and hardware manufacture.

Defence says the activity comprises four phases: Phase 1 - System Design, Phase 2 - Software Build, Phase 3 - Hardware Build and Phase 4 – System Test. Phase 1 was successfully completed in October 2020. Army entered into contract for phases 2-4 in December 2020, with each phase progressing dependent upon outcomes of the preceding phase.

Asked for an overview of the activity, a spokesperson explained:

"Army is not seeking to augment or replace existing capabilities or address any specific operational or tactical shortcomings through the EDGE program. Rather, Army is exploring the extent to which Australian defence industry (as defined by the Defence Industrial Capability Plan https://www.defence.gov.au/SPI/Industry/CapabilityPlan/Docs/DefenceIndustrialCapabilityPlan-web.pdf) can potentially contribute to future Defence C4 projects. Of specific interest is the ability of Australian defence industry to rapidly respond to emerging technologies and threats, assure supply chains and quickly increase manufacture and support scale.

"The culminating proof-of-concept demonstration will showcase different prototype technologies at different technology readiness levels. The key deliverable for Army will be an enhanced understanding of how to maximise opportunities and remove impediments for sovereign Australian defence industry to contribute to future Defence C4 projects, including the use of adopting a standards-based system design. It may also increase Defence's ability to respond to emerging threats and technologies as well as controlling its supply chains. More information on Army's support to the development of Australia's sovereign industrial capability can be found at https://www.army.gov.au/sites/default/files/2019-11/armyscontributiontodefencestrategy-screen.pdf

"The C4 EDGE program aims to develop Australia's industry capability, reduce future cost of ownership, and provide an agile and relevant capability, while being genuinely innovative."

The demonstration of the system will take place in Canberra at the end of the year and is expected to run for about a week.

The full list of companies involved is:

- EOS Defence Systems Pty Limited
- 3ME Technology Pty Ltd
- Acacia Systems Pty Limited
- Barrett Communications Pty Ltd
- CBG Systems Pty Ltd
- CIStech Solutions Pty Ltd
- Codan Limited
- EM Solutions Pty Ltd
- Etherstack Pty Ltd
- Standard Communications Pty Ltd (Trading As GME)
- Insitec MIS Systems Pty Ltd
- Kord Defence Pty Ltd
- Outlander Solutions Pty Ltd
- Penten Pty Ltd
- Skykraft Pty Ltd
- Solinnov Pty Ltd
- Tectonica Australia Pty Ltd
- Xtek Limited

**According to Defence, EDGE aims to test the ability of Australian defence industry to design, develop and manufacture a prototype mobile tactical communications system.**

Particular note should be taken of Canberra-based Penten, which will be involved in the secure communications / cryptographic part of the equation. The development of sovereign crypto that can also connect with allied systems is a vital component in a workable future solution. To be interoperable with U.S. military systems, the National Security Agency (NSA) has to certify it to Type 1 level. A Type 1 product is defined as:

"Cryptographic equipment, assembly or component classified or certified by NSA for

*Australian Army Lieutenant Sam Burston, from the 1st Battalion, Royal Australian Regiment, delivers a casualty report after a section attack at the Combat Training Centre - Jungle Training Wing during the Infantry Regimental Officers Basic Course. Credit: CoA / Brodie Cross*

encrypting and decrypting classified and sensitive national security information when appropriately keyed. Developed using established NSA business processes and containing NSA approved algorithms. Used to protect systems requiring the most stringent protection mechanisms."

This approach overwhelmingly favours U.S. suppliers. What Penten will do for the C4 EDGE crypto solution is design it for Type 1 certification without yet going through the gruelling process of gaining NSA approval. Asked for a comment, Penten CEO Matthew Wilson said:

"Penten is delighted to be part of C4 EDGE, one of the most important programs for both Australia's national security as well as its sovereign capability.

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"Our security products are the basis of what we are providing to C4 EDGE. Penten's approved technology puts us in a unique position to contribute to this program.

"Penten's new business unit; Tactical Communications Security (TCS), is already enabling a new era of secure communications across the defence and emergency services sectors.

"Cryptography is one of the more important areas for developing sovereign capability. Australia has world-class capability in high-tech sovereign technology, and this will deliver real advantage for the ADF and also create more high-value engineering jobs for Australia."

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The big question is: what happens after that? For the moment no one seems to know. Army has a Battlegroup and Below Battlefield Command System project in the form of LAND 200. The prime contractor is Israeli company Elbit via their Australian subsidiary. They have successfully delivered the first parts of the project, but Phase 3 has been put on hold until at least 2022. The reasons for this hiatus are unclear and might relate to cost and system complexity.