GROUP
OF EIGHT
AUSTRALIA

Go8 Defence Collaboration and Commercialisation Summit – summation

Adelaide: 9 April 2019

The Go8 Defence Collaboration and Commercialisation Summit brought together senior participants from Defence, Defence Industry including SMEs, defence advocates, Government, and Go8 universities to discuss how all parties could better collaborate to deliver ever stronger Defence workforce and innovation.

The deliberately targeted Summit, which was closed to media, and with 123 invited guests, addressed three key issues - workforce, policy and the value of research.

A driving element was recognition of Defence's aspirations to deliver leading defence capability for Australia, that is underpinned by innovation, as set out in the Defence White Paper 2016.

The Summit was addressed by the Minister for Defence Industry, Senator the Hon Linda Reynolds CSC; by Professor Stephen Smith a former Federal Defence Minister and former Minister of Foreign Affairs who is now at the University of Western Australia; by leading industry representatives including Thales, Lockheed Martin, Boeing, Naval and Siemens, and from those across the Defence portfolio and Go8 universities.

Importantly the Summit allowed for panel discussions, a number of open question and answer sessions, and small group discussions.

Clear and common themes emerged from the day - a strong desire to commit to innovation as a means of advancing Australia's defence capability; the need for trusted partnerships; and the value of lifelong learning. These themes will now underpin proposed actions.

Executive Summary

1. A **strong desire to commit to innovation and collaboration-driven defence capability** – and how do we make this happen
   a. Defence, Defence Industry and universities each recognise and have a strong interest in pursuing further collaboration and innovation
   b. Mobility between these sectors is one key way to advance this and should be fostered
   c. Funding, venture capital and resourcing is essential
   d. Regardless of how fundamental or experimental, research is necessary to defence innovation
   e. How to celebrate innovation and combat disinterest in, or fear of, innovation and its impacts
   f. What Go8 incentives and career options including the 'entrepreneurial career' path, are needed and can be provided
   g. A need for third-party endorsement – defending and championing the value of research and R&D conducted in and with universities

2. A **trusted partnership model** and how to build this
   a. A long-term view is needed re the provision of incentives to invest and investing

    b. Common ways of working must be found, tested and employed – such as co-location, adoption of known models such as Lincoln labs – in building effective clusters

    c. Recognition of, and openness about, respective sector strengths, constraints and limitations

    d. An environment is needed where key policy and IP issues are more readily resolvable

3. **Lifelong learning** (the 60-year curriculum) – from primary school to beyond retirement – and how this can be used to the advantage of Defence and universities

    a. The role of micro-credentialing from universities

    b. Sharply improving Australia's record on workforce mobility – by enabling industry employees to work in universities, and vice versa

    c. A robust purpose statement by Defence on its ambitions: one that would inspire a career choice in Defence

Summit outcomes

- A considerable number of options were canvassed to improve how advanced defence capability is built and implemented; especially by breaking down barriers and silos within and between sectors
- Collective effort from the Go8 to achieve continuous improvement for Defence, including workforce building, policy and research collaboration
- Plus, the Summit itself was a vital step in delivering answers to key questions of current and future national demand and capability that can be acted upon

Next steps

The Go8 will ascertain agreement on what it can collectively action including, as a minimum:

- Engaging directly and as a priority with the Department of Defence and Government on the policy and regulatory issues affecting Go8 Defence-relevant research and partnerships

- Active Go8 participation in consultation on the implementation of the Government's response to the Review of the Defence Trade Controls

- More streamlined mechanisms to expedite collaboration in Defence projects including potential sharing of protected Defence focussed networks within Go8 universities, and a science and technology committee to assist in identifying areas of sensitive or controlled research

- Solutions to increase the pool of skilled employees in 'high-demand' areas including increased micro-credentialing, and further work with Industry on workforce mobility solutions

Key Issues

Workforce - lifelong learning

Strategic workforce planning has been identified across all sectors in Australia as a critical issue facing Australia's economic future. The right skills, available to be delivered in quality and quantum at the right time, are an essential. This was front of mind, and concern, for Defence and the Go8 (and its graduates).

Skills, namely lack of or imprecise fit; the low attractiveness or even visibility of a Defence career; structural barriers such as lead times for security clearances; and cultural differences between existing and future workforce cohorts, and between university researchers and Defence, were all discussed.

The core issues discussed were not having enough qualified staff in certain spheres – while all industries are seen as short of engineers, other well-known or emerging examples of gaps include artificial intelligence, machine-learning, health using real time data, electronics, radiofrequency engineers, cybersecurity and generally across the technical range.

Defence had an added issue of being seen as 'not sexy' as a career or, counter to the aspirations of today's young people.

There was strong recognition of the need to share resources; to intersect higher education with vocational learning; to diversify the skills and employment pipeline; to manage the entire continuum of a person's career rather than specific points; to attract and then re-attract during mid and late career; and to train and retrain. The clear tension between gaining a PhD and the lure of a high-paying position was also understood.

It was suggested that the Go8 refine curricula and/or structure Bachelor degrees more flexibly; that the Go8 initiate more micro-credentialing for those 'in-career' who have limited time and resources to commit to a full degree. It was however well-emphasised that 'off the shelf' has its limits beyond gaining the skills for specific solutions, therefore graduates still must be grounded in 'first principles' thinking to, for example, problem solve outside the norm.

Quotable Quotes:

"Defence has a 'male and pale' image"

"Fewer issues recruiting graduates, while finding mid-career talent is challenging"

"Must think about things differently re career management; try to bring people back when we might not normally attract them back to do a PhD"

"Target particular cohorts of age and life stage and rethink approaches to attract potential students at different stages"

Ensuring a trusted partnership model

The Summit placed emphasis on trusted relationships and partnerships and the need to facilitate the Department of Defence engaging collaboratively and continuously with Go8 universities and, with 'as little bureaucracy as possible'.

The Department proposed a meeting not limited to Defence Trade Controls. Nevertheless, Defence Trade Controls and the associated United States ITAR were key discussions.

The complexity of implementation was stated, as was the potential financial implications for universities, and the risk of researchers abandoning research if they perceived controls were too detrimental to their work and careers.

A different partnership perspective came from Industry which voiced a preference for confidentiality to maintain 'competitive advantage' compared to researchers' interest in publishing and having 'open' research.

Industry also noted:

- It often imposes self-regulation to be 'safe'
- It works by developing a 'generic' proposal, or by ensuring no one person has the full picture.
- Companies with wide enough networks can partition work to those with security clearance
- Regulation does not so much limit the market as require Industry to work through how to manage it

The United States annual defence Broad Agency Announcements for the 'best in the world' to work on a particular issue (https://www.acq.osd.mil/osbp/sbir/sb/schedule.shtml), was referenced positively. Could Australia also adopt such a process?

With trusted relationships also dependent on having the systems in place to ensure secure communications, it was noted that university practices and infrastructure varies from standalone dedicated and isolated terminals to a completely segregated network.

Quotable Quotes:

"Defence wants to break down barriers and have strong collaborative links going forward – with as little bureaucracy as possible"

 "If technology is sensitive, this is the key question – nationality is secondary"

"Hypersonics advances in Australia did not come from directed research – from the 1960s it was funded by ARC on the basis of being a good idea; not on the basis of being a strategic imperative"

"Great research emerges from researchers' academic freedom"

"By definition universities are not secure, nor should they be"

Building/renewing a culture of innovation, creativity and collaboration

This session focussed on shifting attitudes, relationship-building, consolidating or streamlining collaboration, and also the absence of a standard pathway for careers and success in innovation.

'Systems' or 'streamlined' engagement was valued. Universities needed to embrace collaboration not only as individual universities but also using cohort approaches such as those of the Go8.

Defence was urged to be less 'shy'; to be bolder in outlining its purpose statement (this was a recommendation that also occurred in relation to workforce).

There was no one size fits all when it came to innovation – it was necessary to negotiate the tension of tech push and market pull while focussing on the end user. A bottom-up approach as well as a capability approach was advocated.

Where research was 'mission-directed', it was important to drill down to various parties' expectations rather than assume the outcome. There were advantages to being able to quickly convene 'dynamic contracting teams' that supported both large and small entities, as well as pooling and sharing resources such as world class facilities.

The Trusted Autonomous Systems Defence CRC was noted as taking a non-linear, agile, high impact, disruptive approach – which could be taken to characterise many pathways to innovation.

Industry took various approaches to relationship building. Lockheed Martin 'starting young' by developing early relationships with younger people in partnership with Questacon in maths and science. Boeing relies on university research for Technology Readiness Levels (TRLs) 1 to 3 especially, and collaboration with it on TRLs 4 to 6. Industry's co-located collaboration with specific universities including in Maker Spaces was also noted.

Collaboration was recognised as no longer an "option" for large organisations such as CSIRO and universities but essential to success in driving innovative solutions such as plastic banknotes and extended wear contact lenses.

Specific overarching considerations included Australia's business sector being dominated by SMEs with Australian industry not as resourced as in other nations to invest in research.

Having an entrepreneurial academic is another model with emerging researchers increasingly asked to consider starting a company rather than seeing their work as simply a pathway to an academic career.

Quotable Quotes:

"I don't want to talk about the technology anymore I just want the tech"

"We need to be attractive to the next generation, be less conservative, be more reflective of society; we need to live and breathe innovation"

"Industry needs to do more heavy lifting – to create the glue"

"Forming and disbanding a team at speed can be useful"

"Agility comes with pain"

"By virtue of being classified the research/work has impact"

For future reference

Please note that the Go8 Directorate intends to keep everyone who donated their valuable time to attend the Summit - and by being there, ensure it was such a success – apprised of future plans to best utilise the material from the Summit's invaluable discussions and debates. It is important that we communicate to you that for the Go8, the Summit was most definitely the start of a process of positive engagement with you.