



Go8 Space Collaboration and Commercialisation Summit

– outcomes and summation

Canberra: Tuesday 13 August 2019

Introduction

The Go8 Space Collaboration and Commercialisation Summit was an invite only day which brought together 96 senior participants from the space industry, Government including the Australian Space Agency, Go8 universities, and investors to discuss how best the Go8 could continue to work collaboratively to help achieve an enhanced Australian space capability.

The Summit addressed three key topics: Regulatory, Legislative and Ethical; Research and Workforce and Go8 collaboration with Industry.

Driving the Summit was the recognition of the increased space focus, spearheaded by the Australian Government's establishment of the Australian Space Agency in 2018.

The Summit heard from Senator Zed Seselja, Assistant Minister for Finance; Professor Brian Schmidt AC, Vice Chancellor of the Australian National University; Mr Anthony Murfett, Deputy Head of the Australian Space Agency; Mr Peter Jennings PSM, Executive Director, Australian Strategic Policy Institute; leading industry representatives including Saab Australia, and Gilmour Space Technologies, and from Go8 universities.

There were common themes: especially the need for a coherent approach and framework to support the sector's growth; pinpointing the precise role for Australia amidst many competing jurisdictions; understanding, promoting and capitalising on Australia's 'capability' strengths; and the opportunity to advance existing space SME/industry and academic engagement. These themes underpin proposed actions for further consideration.

Executive Summary

The Summit found that maintaining Australian space endeavour¹ momentum relied on several conditions and the Go8 with its multi-disciplinary strengths could assist optimally achieving these:

1. Coherence – as the Australian Space Agency is starting to provide – is needed to mitigate a highly fragmented system. It must be supported by a long-term competitive vision that is not risk averse.
 - a highly coordinated strategy is required

¹ Australia generates around 0.8 per cent of the global space economy (Mr Anthony Murfett, Deputy Head, the Australian Space Agency)

- currently the Go8 and other capabilities are under-utilised because of no coherency
 - a major joint challenge or a unifying project could create an impetus
2. Australia's strengths both internationally and domestically
 - demonstrate our national capability and attractiveness as collaborators
 - apply that capability across the full spectrum of industries
 - ensure Go8 strengths are obvious to industry and assist it access Go8 universities
 - articulate clearly why space participation and developments are so important
 3. Pinpoint Australia's role and vision in competition with numerous other jurisdictions with space budgets
 - focus on Australia's world class capability, then apply this to space
 - drive multidisciplinary approaches and mindsets taking advantage of Go8 diversity
 - focus on problems where resolution both grows our talented workforce and assists industry
 4. Tap into the interests of future participants in the space economy, from school students to PhD researchers to capture and build skills
 - communicate effectively in a global competition for talent
 - convince a potential workforce that space can provide an excellent career pathway in Australia
 5. Build the right blend of industry-university interaction to achieve Australia's space ambitions
 - What specifically does industry need in terms of technology, expertise and aptitudes from both collaborators and a future workforce?

Summit Outcomes

There was excellent identification of the legislative, geopolitical, regulatory, ethical and workforce issues facing Australia's space sector.

Practical options were discussed to advance how Australia can accomplish optimal space participation with two proposals – leverage the Go8's multi-disciplinary capabilities and further build space capability through a unifying project.

The Summit itself provided a forum to connect prominent and new space entities and groups, while answering key questions of how best to position Australia for a global role in a responsible, resourced and targeted way.

Next steps

The Go8 will consider key outcomes and proposed suggestions that Go8 universities can collectively act upon, including:

- discuss future strategic collaborations with the Australian Space Agency
- convene a smaller forum to further connect specific industry/SME needs with Go8 expertise
- assist explore a potential joint challenge or 'moonshot' to kickstart a major collaboration

Key Theme based discussion

Regulatory, legislative and ethical issues (Australia as a responsible space actor)

The Summit discussed many of the complexities. This included lessons from past space eras as well as the challenges of technological expansion and new political positionings. The Australian Space Agency noted the importance of building and setting rules for the environment we want space to be, entailing not only regulations and frameworks but culture and risks – and stressed a desire for continued peaceful space use.

Key tensions were explored such as the potential militarisation of space, space tourism, sustainability, environmental management including of space debris, the speed and unexpectedness of activity (including by the private sector) and how Australia can influence a responsible space era.

The importance of calibrating language was stressed in terms of how space participation is referred to, with terms such as wild west, conquest, colonisation and capture imparting certain unfortunate meanings or intent.

It was noted that Australia must be competitive, smart, imaginative and unafraid of risks in leveraging Australia's, and the Go8's, array of capabilities in a fast-moving race.

Participants were urged to take advantage of the current investment and interest in space, while carefully navigating the global race.

The military influence on space activity and space technology - due to the dependence of security and defence on access to space systems - was highlighted in the context of there being four identifiable space 'races'; for terrestrial military advantage; for space military advantage, for commercial advantage; and for nationalist, ideological and political advantage – as suggested by keynote speaker Peter Jennings.

Commercial interests may outpace regulation². Doubt was expressed that a commercial space race would be free of government interest and direction. But it was also noted that private space operations would occur before the regulatory environment is settled, and that private enterprise needs drive technology.

Learning from how Australia has managed other extra-jurisdictional issues (such as in the open seas) would be an advantage in understanding what was needed.

Options discussed included Australia being a leader by developing rules that enable the use of satellite data, a broker, a provider of data and services, or a proponent of multi-state agreements.

A significant role the Go8 could play, would be to integrate its expertise in a multi-disciplinary way to inform Australia's participation.

² It was noted that 1998 was the first year when commercial spend in space exceeded the state spend.

Quotable quotes

‘A false move by one nation could ruin it for everyone’ Anthony Murfett, Deputy Head, Australian Space Agency

‘One of the advantages that Australia has in coming in now, is that we can learn from what already exists’ Professor Erika Techera, Professor of Law, UWA Law School and UWA Oceans Institute, University of Western Australia (formerly Interim Pro Vice Chancellor International, University of Western Australia)

‘We’ve been a b-minus – need to raise the game’ Professor Melissa de Zwart, Dean of Law, University of Adelaide

‘We are now in a different type of cold war’ Professor Steven Freeland, Professor of International Law, Western Sydney University; Member Australian Space Agency Advisory Group

‘Is there enough space in space?’ His Excellency Dr Michael Pulch, Ambassador of the European Union to Australia

‘There would have been no space race in the 1960s absent the Cold War, it’s not coincidental that a new space race is emerging at the same time as a new Cold War is snapping at our heels’ Peter Jennings PSM, Executive Director, Australian Strategic Policy Institute

Research and Workforce – Building Capacity

There was a focus on the importance of better communication to potential and diverse workforce participants of the vast possible options – and the real existing and future pathways – of a space career.

Inspiring that next generation was a key theme. Better Australian understanding of what space engagement can mean was critical. It needed to be bolstered by an extended vision³ that helped inspire that next generation. A national approach targeting early schooling to PhDs incorporating both theoretical and practical training was also needed, and quickly. Tapping into students’ interests, be they for example, medical, agricultural, or environmental could assist interest them in space as a career.

It was essential that industry communicated to Go8 universities precisely what skills were needed and that it fostered university contribution - such as by employing PhDs. Industry also had a role in forecasting new skillsets and alerting others to the potential services that Australia could offer, such as added value services or digital/data services, in addition to the more established ones such as manufacturing.

Space’s multi-disciplinary nature did offer key opportunities - a wide field in which students can be developed to have deep thinking and deep leadership skills, and strong communication skills along with technical and STEM skills. The value of humanitarian engineering – including a commitment to ‘purpose’ and the human element – was recognised.

Go8 workforce strategies could focus on experiential training opportunities. The Go8 could also help capitalise on its diverse student base to help convince students that space can be a serious career - opportunities for students to ‘get their hands dirty’, to assist them understand how they might use that capability including by working in a startup⁴.

A specific national collaborative space mission, in addition to inspiring a future generation, could also provide a focus for industry-Go8 workforce and skill building.

³ The United Arab Emirates’ 100 year vision was referred to, as well as its intent to take a satellite to Mars in 2021 on the occasion of UAE’s 50th anniversary.

⁴ Reference was made to the usefulness of the experience for PhD students involved in an Amaero Engineering/Monash Engineering project to build an aerospike rocket engine, which also included collaboration with Woodside.

Quotable Quotes

‘we have taken the view that space is the figure head for STEM but is that the case?’ Professor Caroline McMillen, Chief Scientist for South Australia

‘It’s not about rockets and yet all about rockets’ Anthony Murfett, Deputy Head, Australian Space Agency

‘A smaller fraction of our STEM workforce goes on to do a postgraduate course in Australia than in Europe’
Dr Daniel Edgington Mitchell, Senior Lecturer, Department of Mechanical and Aerospace Engineering, Monash University

‘the highest and most difficult courses in Israel to get into are in computing science, which is linked to the entrepreneurial culture – people want to take up computer science so they can form their own company’ Dr Sarah Pearce, Deputy Director, CSIRO Astronomy and Space

‘Space is an enabler, not a narrow field – if kids are challenged by these deep problems, and examine space from that perspective, they are conducting deep learning’ Professor Russell Boyce, Chair for Intelligent Space Systems, and Director, UNSW Canberra Space

Go8 Collaboration with the Australian and international space industry

Industry expectations of Go8s were well articulated. It incorporated the perspectives of Go8 universities on their approach to entrepreneurship, commercialisation and the establishment of companies.

While views varied on the ease of mixing universities and industry together and the mechanisms for achieving success, there was general acceptance that more progress was needed. However, successful models of this did not necessarily mean they would duplicate well to others.

Agreed messages were that close collaboration between academia and industry was desirable, that industry wanted unrestricted access to intellectual property (IP), that successful spinouts from universities relied on the existence of specific IP (being a product, service or business) and often a competent dedicated CEO, and that industry strongly relies on knowing what is available in the universities in order to form connections.

Participants also noted that a significant amount of time was needed before the return on relationships and investment might be seen – this needed to be built in; while similarly Government and other funding cycles could not be ad hoc. Emphasis was again placed on using PhDs as a conduit to building and maintaining the relationship, and it was reinforced that industry had as much a role to play in building the talent pipeline.

Industry specifically cited that it wanted university expertise to quickly develop space technology in a rapidly moving environment, and to circumvent the expense and restrictions (e.g. trade controls) of acquiring it from overseas. ‘Tinkerers’ and students or graduates who can build, and could communicate well, were especially valued.

Industry also advised strong interest in continued access to Go8 information such as the Space capability statement and leveraging Go8 international connections to aid industry. Discussion also noted the possible role for the Go8 as a trusted advisor in influencing policy changes, and a role for Go8 business schools in building the case for investment or providing business advice.

Some practical ways forward proposed included: a smaller brainstorming meeting with 15 or so companies and the Go8 to explore further the specific needs of industry; Go8s embracing and inviting external entrepreneurs to farm what they can get from the universities; and a combined project for the Go8 that drew various Go8 capabilities together

Quotable Quotes

‘The Go8 Capability Statement is a fantastic help – would like this to go further. The next stage might be a list of available products to shop to industry. Add to the book top three connections overseas’ Adam Gilmour, Chief Executive Officer, Gilmour Space

‘Well-constructed spinouts are being built and facilitated – but not run – by universities’ Doron Ben-Meir, previously Vice-President Enterprise, University of Melbourne



'In CUAVA, PhD students need to spend one year of the three years in a company' Professor Iver Cairns, Professor of Space Physics, University of Sydney, and Director, ARC Training Centre for Cubesats, UAVs and their applications

'R&D is 1% of total cost of taking it to market. Realism is important' Mr Doron Ben-Meir, previously Vice-President Enterprise, University of Melbourne