"Can Australia Become a Top Tier Innovation Nation?"
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American Chamber of Commerce, Sydney
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The Importance of innovation excellence

I think we are just 2 weeks away from Australia eclipsing the unbroken 25 year economic growth record held by Holland. Australians have some of the highest living standards in the world. We have high life expectancy, access to high-quality education and health services, and some of the most liveable cities in the world.

We also know that the Australian economy and our way of life are likely to be challenged by accelerating forces of change reshaping the world.

The major trends impacting the Australian economy are technology, globalisation, and demographics. These aren't new, but they are evolving rapidly. Each will profoundly affect how the world's economies and societies develop over the near and long term. In my view, for Australia to manage and benefit from these changing circumstances it needs to join the ranks of the world's top performing innovation nations…… and as soon as possible.

So, is this goal achievable; **can Australia become a leading innovation nation?**

Innovation and Science Australia, ISA, is an independent statutory board tasked by the Federal Government to provide advice as to how Australia can improve its innovation performance. In late 2015 I was invited to chair this board, now comprised primarily of private sector practitioners in innovation, including Chief Scientist Alan Finkel, VC investors Daniel Petre and Paul Bassat (seek.com Founder), former CEO of Cochlear Chris Roberts, Maile Carnegie now at ANZ, Scott Farquhar co-founder of Atlassian, Michele Allan from Charles Sturt Uni and CSIRO, and Beth Comstock, Vice Chair of GE in New York. The full list of our talented and passionate board members is on our website www.industry.gov.au/ISA.

Last month, ISA released its *Performance Review of the Innovation, Science and Research System.*

The Review developed a novel performance framework for assessing the innovation system and generated a unique scorecard by which we can assess Australia's performance relative to its peer competitor nations now and into the future. (See scorecard in hand-outs at your table). By competitor nations we mean the OECD plus Singapore, Taiwan and China – tracking our performance in a series of 20 key metrics relating to the three key innovation activities of knowledge creation, transfer and application (= commercialisation).

Our strength is clearly in knowledge creation; in both our number of researchers per capita and the proportion of highly-cited publications produced, we sit in the top ten internationally. Regarding knowledge transfer we perform much more poorly. Collaboration is essential for the exchange of ideas, sparking creative insight and driving innovation activity; yet we have low rates of collaboration and mobility among research institutions and businesses.

- In the proportion of researchers employed by businesses we come in at 28th out of 36 comparable countries.
- Perhaps of most concern is that out of 26 OECD countries we came in last for collaboration between business and research institutions.

The picture is similarly disappointing for our levels of knowledge application ….. think commercialisation. We found that the vast majority of Australian business innovation is achieving incremental improvements rather than new-to-world breakthroughs. This helps explain why in terms of our proportion of high-growth enterprises we rank 27th out of 27.

So how can we hope to become a top tier innovation nation? On this I'm a glass half full. Australia has an excellent history of invention and innovation, examples include penicillin, spectrophotometry, the black box flight recorder, Wi-Fi, the cochlear bionic ear, cure for stomach ulcers, cornea replacements and contact lenses, various
minerals extraction and mineral processing technologies, the photo-voltaic cell, micro-surgery, polymer bank notes, and I will then throw in the world's first full-length feature film (notoriously enough) "The Story of the Kelly Gang".

Our inventive legacy and population diversity undoubtedly provide a wonderful foundation for building Australia into a top-tier innovation nation by 2030. Increasing the collaboration between our researchers, businesses and entrepreneurs will be crucial in driving this outcome.

Getting Australia into the top tier: ISA's 2030 Strategic Plan

The Performance Review is the starting point for the development by ISA of a 2030 Strategic Plan for the Australian innovation, science and research system …….. a plan that we will deliver to government before the end of this year. Inter alia, it will make a series of recommendations to better target the Federal Government's current $11b annual investment in the system; it will also suggest where improvements must and can be made system-wide by business, academia, and the broader community.

So what is the vision we've set for Australia in 2030? What sort of Australia do we want ……. in two sentences:

"We want an Australia counted within the top tier of innovation nations, known and respected for its excellence in science, research and commercialisation.
Innovation, which can underpin a diversity of internationally competitive industries, will enable todays and future generations to have meaningful work, and a great quality of life, in a fair and inclusive society."

Achieving this vision requires a focus beyond any three year election cycle. Accordingly, our Strategic Plan will make recommendations across three time horizons:

- improving the current system in the short term; (3 to 5 years);
- adding new capability in the medium term; (5 to 8 years); and
- realising transformative options in the longer term out to 2030.

Based on our findings in the Performance Review we have identified 6 key challenges as work-streams core to the development of our Strategic Plan out to 2030.

The six key challenges

1. **Moving more firms, in more sectors, closer to the innovation frontier**

Australia already has some firms and sectors that are world-class, and others that have the potential to become so. We will need to continue to support our innovation leaders, while encouraging the emergence of the next generation of breakout firms.
A large number of Australian businesses are not exposed to international competition or have chosen not to engage with export markets. Yet it is our export competitive companies which demonstrate highest growth rates and job creation.

Overwhelmingly, new jobs are created by new firms. Between 2004-05 and 2010-11, the 820,000 net increase in new jobs in the Australian economy balanced 1.2m jobs created by start-ups (firms less than 3 years in age) and 360,000 shed by older firms. We should continue to develop an innovation ecosystem where more start-ups flourish and scale-ups successfully mature. In doing so, we will need to embrace a more sophisticated national mindset on risk-taking, one that has greater appetite to take smart chances in search of high growth and wealth creation.

Some of the key questions to address in this work-stream are:

- How best to strike balance between supporting existing innovative leaders and encouraging the emergence of the next generation?
- What role could "clusters" of innovative activity play in fostering high-growth firms?
- What regulatory reform, in what sectors, is required to help firms move closer to the innovation frontier and enable greater risk-taking and adaptability?

2. Moving and keeping Government closer to the innovation frontier

Governments operate significant public enterprises and are Australia's largest employers. We need governments to lead by example and set new global benchmarks for innovation best practice.

Government procurement of approx. $60b pa represents a significant opportunity for competitive and innovative Australian suppliers. Reducing the cost of doing business with government (for example simplifying procurement and compliance obligations), and maximising the resultant innovation outcomes for the nation has big potential upside. Defence is one such stand-out opportunity. Government must of course be a demanding customer to ensure that taxpayers get the greatest value out of government expenditure.

Some of the key questions include**:**

- How can we make it easier for business to partner with Government?
- How could government seek to leverage greater social and commercial benefit and public value from its major procurement and delivery programs?

3. Delivering high-quality and relevant education and skills development for Australians throughout their working lives

Australia's demographic profile will continue to change as we move to 2030, and the demands of our economy will also change. Our workforce will require the skills to generate, transfer and implement knowledge and ideas. We need an integrated education and skills system that enables and supports a workforce capable of reacting and adapting to change.

We must do more to cultivate innovation and entrepreneurial skills from an early age. We want our children to have highly developed skills in the areas of logic, creativity, and social interaction. The acceptance of and learning from failure as well as an attitude that it's okay to start again must become the rule not the exception.

The best education system will see experienced and well-qualified teachers combine emerging adaptive learning tools with well-established techniques to deliver the best possible outcomes for their students. Significant improvement in maths skills is one immediate priority.

Some relevant questions:

- How to create a cohesive education and training system that is integrated into the innovation and research system?

- Which international examples, if any, should we seek to emulate?
- How best to create and support a culture of continuous learning and retraining?

4. Maximising the engagement of our world class research system with industry and end users

The Australian research community exhibits high levels of international collaboration and is well represented in international scientific efforts. However, as described earlier, collaboration between the research and business community is weak, and mobility of people between academic and business careers is low. We need to ensure that the research training system produces a quality and quantity of graduates, in a diverse range of sectors that adequately serves the needs of a knowledge-intensive future economy and society.

Key questions include:
- How to create a comprehensive research training system that is connected to the needs of end users?
- How can we increase exchanges of people and ideas between industry and academia?
- What other incentives do we need to encourage a significant increase in research translation?

5. Maximising advantage from international knowledge, talent and capital

Evidence indicates that higher levels of global engagement correlate with higher levels of innovation. Ongoing community support for greater global engagement will, in part, depend on leaders communicating the benefits that international knowledge, talent and capital flows bring to our community. Building a stronger evidence base for the value Australia derives from international talent and capital will be critical to this support. In the current international climate, signalling we are open to diversity, to free trade, and to new ideas could have profound benefits for Australia in the near term.

Creating and taking more opportunities for Australian researchers to collaborate internationally, including through taking advantage of our links in Asian growth markets, will stimulate the flow of ideas, people, and innovation.

Key questions include**:**
- How can we maximise the advantages from international knowledge exchange?
- How do we increase our participation in global supply chains of component parts, not just the traditional focus on exports of finished goods and services?

6. High Impact initiatives ("Moonshots")

Finally, in developing the Plan we are considering the value of recommending major initiatives with scale that can deliver significant direct and spill-over benefits to the innovation system and broader economy. Today's headlines re the possible new role for The Snowy Hydro Scheme as part of a solution to our energy crunch is a reminder of just how impactful "moonshots" can be! With remarkable spill-over benefits if you will pardon the pun!

Australia is already engaged in ambitious initiatives, including in advancing quantum computing and the bionic eye, and as a lead participant in the large global initiative of a next-generation Square Kilometre Array radio telescope.

In making any such recommendations it is essential that we exercise the utmost rigour in selecting potential projects that ensure maximum direct return on investment, as well as spill-over benefits. One such opportunity may be in digital health, encompassing medical health records and the big data involvement with genomics based precision medicine. And maybe there are some moonshot ideas in this room today?

In Conclusion,

I do believe Australia can become a top tier innovation nation:

Everyone in this room is qualified, and I'd hope interested, in contributing to the formulation of our responses to the not inconsiderable challenges I've just outlined. We recognise the importance of capturing insights from the breadth of the business, research and public policy sectors. To this end we are seeking input from across the innovation system and indeed across the nation to guide our thinking.

Imagine how tough this challenge would be were we a nation that was unable to generate new ideas, new knowledge. We actually excel in this; we need to match this excellence in knowledge creation with similar excellence in commercialistation.

I am confident we can deliver an actionable 2030 Strategic Plan, which if followed will enable Australia to be a leading innovation nation by 2030. I urge you all to help us get there.