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**Breakfast address**

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***Research excellence and commercialisation:***

***How can Australia do both?***

*[Check against delivery]*

**Acknowledgements:**

*Professor Linda Kristjanson, Vice-Chancellor, Swinburne University of Technology (Chair),*

*Vice Chancellors, senior academics and policy makers*

Thank you for inviting me to speak at today's conference, the annual signature event for the higher education sector.

And I appreciate this opportunity to discuss today's topic and question: "Can we be excellent in research and commercialisation?" Other countries are so why not us too? And so that we are talking about the same thing this morning, when I speak of innovation I am not just talking of new knowledge, or inventiveness, I am talking about the translation and commercialisation of that newness into world markets.

Innovation is of great interest to me because in my view it goes to the very heart of Australia's future economic development and prosperity. Research translation makes our lives better, the environment better and our children's future better. The Prime Minister's announcement in December 2015 of a National Innovation & Science Agenda ("the NISA") is a potential 'game changer' for the trajectory of a future Australian economy and society. It provides a comprehensive blueprint that includes a number of significant measures which address some key barriers to innovation in Australia.

Innovation and Science Australia is a re-invigorated independent statutory board charged inter alia, with providing strategic whole-of-government advice to the government on all science, research and innovation matters. It reports through Minister Pyne (Industry,

Innovation and Science) to the Innovation and Science Sub-Committee of Cabinet, chaired by the Prime Minister.

A core responsibility for this Board, the Deputy Chair of which is newly appointed Chief Scientist Dr Alan Finkel, is the development of a 15 year strategic plan for National innovation and science. We will need your advice and we will seek your help in this ongoing endeavour.

In my view there are six key ways to accelerate innovation in Australia:

1. Improving active collaboration for commercial outcomes - among universities, research institutes, business entities, government and venture capitalists
2. Improving access to risk capital funding
3. Improving access to business and entrepreneurship skills
4. Improving access to international markets
5. Increasing investment and interest in STEM curricula in our schools, vet colleges and universities.
6. Encouraging a culture where the excitement of gain trumps the fear of failure.

It is the first of these points - active collaboration for commercial outcomes - that I want to focus on today.

### Collaboration

High quality research is an important driver of innovation and as you know Australia performs strongly on international measures of research excellence. A recent *Scientific American* article ranked Australia 12th out of the world's best 40 countries for science. Even better, the World Economic Forum ranked Australia 1st on its list of the world's most creative countries in 2015!

Quality research helps develop the pool of knowledge in ALL disciplines. We need that pool of knowledge to draw on – whether it is to develop a new technology to cure a dreadful disease; find a new type of wheat seed that can help feed the world or address important social issues like drug abuse.

But where are we in terms of translating our new knowledge and ideas into actual outcomes? How good is our collaboration between academia and business? The latest OECD table puts Australia last out of 26 OECD countries that report on collaboration between businesses and public research institutions on innovation. How can that be? One explanation is that our small but open economy has sensibly made us better importers and adopters of other people's technology. There may be some historical truth in this, but in today's internet and digitally enabled economies the tyranny of distance is more of an

excuse than an acceptable explanation. There is no doubt that our alarming collaboration ranking is a direct contributor to our poor performance at commercialising our discoveries. The good news is that we can - and will - dramatically improve on this performance.

There are of course some wonderful examples of successful Australian research and business collaborations. The nucleus heart pacemaker, Professor Colin O'Sullivan and the Resmed sleep apnoea product, Professor Graeme Clark and Cochlear's bionic ear, CSIRO and Radiata's Wi-fi, to name just a few.

And more recently, some Australian universities can claim a number of successful venture spin-offs, especially in the biomedical sector. But it seems we can count them on one hand so to speak, not in their hundreds each year...which other countries with high collaboration rates between research and business can, like Israel, USA, Germany and the UK. Innovation has flourished in locations where researchers and industry have co-located, for example, in Silicon Valley and in Boston, the UK's Cambridge Science Park, and in Germany's Fraunhofer Institutes.

What works in these countries won't necessarily work in Australia but I believe the bio21 precinct in Melbourne, with university, Medical Research Institute, CSL and biotech co-location will prove to be another shining example.

So what are some of things we can do to accelerate collaboration to achieve both research excellence AND commercialisation excellence?

The NISA has some initiatives that work towards this objective, and I have some of my own ideas that I will risk bouncing off you.

**First, nothing much will change until we recalibrate the way research funding is allocated to our universities.** One NISA measure focuses on adjusting the ways we reward university research performance. Dr Ian Watt's review has recommended a move from 6 to 2 research block research grants with a reweighting for industry engagement in both the Research Support and Research Training programmes. Encouragingly, this has already been picked up in the NISA initiative on sharpening incentives for engagement.

Dr Watt's design for a Research Support Programme (RSP) embraces better balancing by equally weighting two funding drivers – competitive grants income, and businesses and other user income. The Research Training programme (RTP) removes publications as a funding driver and gives equal weight to student completions, and research income (again 50/50 weightings). This is bold and innovative and is already sending powerful signals.

These new arrangements seek to incentivise universities to achieve greater industry and other end-user engagement, in addition to the traditional tests of research. I understand that unless we continue this excellence in our fundamental research, our ambitions for

significant collaborative outcomes will be thwarted. But I don't accept that research excellence and clever commercialisation are mutually exclusive.

The ARC is now leading the work to ensure we can understand and measure the economic, social and other benefits flowing from universities' research as well as their engagement with industry and other end users. Whatever metrics and indicators of collaboration we finish up with, my plea is to keep it as simple as possible, please. This will make it easier for everyone to understand the drivers especially those of us outside the campuses – entrepreneurs, businesses and tax payers.

I welcome these improvements to the research funding mix. But collaboration is a two way street. Not only do we need researchers reaching **OUT** to businesses but we need more businesses and entrepreneurs reaching **IN** to our universities and Publicly Funded Research Organisations (PFRO)s.

**A second way to enhance collaboration may be via changes to the incentives for private Research & Development, namely via the Research & Development Tax Incentive (RDTI).**

As I'm sure you are all aware, the Australian Government spends about \$3 billion a year on these incentives for R&D expenditure by businesses.

The Government tasked me as Chair of Innovation and Science Australia, Chief Scientist Alan Finkel and Treasury Head John Fraser – the “3F's” – with reviewing the R&D Tax Incentive programme – to report in the first half of this year.

Our task is to advise government on how it might improve the programme's effectiveness and integrity, and to sharpen the focus on additional R&D activity, that is, on R&D that would not otherwise happen anyway.

As part of the Review, we are looking at the degree to which additional R&D is encouraged; and the difference between the effect the incentive has on small businesses and its effect on big businesses. Where is the best additionality, and where are the best positive spill over effects?

The Review will also consider the scope for the R&D Tax Incentive to play a role in fostering collaboration. Ideally I would like to see if the programme could be recalibrated to include a greater emphasis on rewarding collaboration; to incentivise/motivate business to seek solutions with and from PFRO researchers. It is interesting to note what the French emphasise in their R&D tax incentives. There they offer a significant premium tax credit for business R&D spent with PFROs and for recruitment of young PhDs into business. Over a five year period, these premium incentives appear to have increased collaboration three fold, and also increased recruitment of PhDs three fold.

**A third way of facilitating collaboration among researchers and entrepreneurs is contained in the NISA measure which incentivises risk taking by “angel investors”.** This is a

generous combination of a 20% tax offset against an individual investor's tax bill (of up to \$200,000 offset in any one year) and a CGT exemption if sold after 3 years. Now you might not think it's obviously relevant to translation of research in universities, but the simple truth is that translation needs risk capital investment, and lots of it.

Let me give you an example to illustrate:

I am sure everyone in this room was excited by the announcement last month that scientists have detected gravitational waves, first predicted by Albert Einstein a hundred years ago. My colleague Alan Finkel has said it is the most significant discovery in cosmology in his lifetime; he was jumping out of his skin when trying to explain LIGO to me! You may have been involved in some of the key work done here in Australia to support this discovery, or you might know people who have - universities across Australia played a role in a fantastic effort.

Already, this research is being translated – spinoffs from the technology are being used and developed for commercial applications, such as the search for oil and gas and to measure groundwater from space. And I understand venture capital funding has been used to assist in translating this research.

And this is where we come back to the Angel Investors scheme as part of the NISA. It is a measure which will propel investment in translating good ideas and excellent research. Einstein would be excited by the excellent research across Australia which helped detect and measure the ripples in space and time he first hypothesised a century ago. I too am excited at the prospect of seeing more investment in translating such fantastic discoveries for social and economic benefit.

**Now let me turn to the Fourth matter to help collaboration, IP management and access to IP.**

I'm sure there are many stories in this room about negotiations focussed on the development, ownership, protection and management of intellectual property that in themselves have frustrated and hindered the development of robust collaboration agreements with businesses.

We have plenty of great examples of getting great commercial outcomes and leveraging our IP – but there are plenty of war stories. For example, the Gardasil patent dispute with the US shows us what can happen from sharing early research findings – and this is not something we want the system to discourage inadvertently.

Dr Watt explored many of these issues in his review of research policy and funding. And he debunked some myths too – particularly in relation to a one size fits all “use it or lose it” proposal.

He also identified initiatives such as the Easy Access IP network, made up of 27 universities and research institutes internationally, which aims to facilitate collaboration and deliver impact from research outcomes. The initiative is providing a mechanism which allows businesses free access to technologies at an early stage of development and which require significant investment and development effort. Dr Watt's review concluded that the Easy Access IP model is useful in supporting universities to release IP to businesses who want to commercialise it with reduced risk. The review proposes that government, publicly funded research organisations, and universities should continue to explore the broader application of Easy Access IP or similar arrangements across the publicly funded research sector.

I know there are universities in this room who are involved and have views on the success of this model.

The Productivity Commission is conducting an Inquiry on IP and that report will be submitted in the coming months. ISA will be working closely with IP Australia on the results of this inquiry.

**A fifth way we can turbo charge collaboration is via Government lead co-investment programmes. A very important example of this in the NISA is the creation of the Biomedical Translational Fund (BTF).**

Already there is a very active collaboration among researchers, entrepreneurs and venture capitalists in early stage development of novel drugs and medical devices ... but there has been a scarcity of Venture Capital (VC) to drive much of this work through later stage trials and tests.

This Biomedical Translation Fund (BTF) will provide support to the health and medical research sector by providing capital for commercialising medical research discoveries. The Government is providing \$250 million in capital for the BTF to be matched dollar for dollar by the private sector. This will represent a significant \$500 million boost in the translation of our world class medical research into real world commercial outcomes. This means growth in high value jobs, exports, profits and better health outcomes. It means expansion of our outstanding clinical trials capability and a deepening of the eco systems of biopharmaceuticals, medical devices, processes, technologies and procedures; and services, including digital health. Separately, a \$200 million CSIRO Innovation Fund will be formed to co-invest in new spinoff companies and existing start-ups, from the CSIRO itself and from other research organisations. This is a key early stage funding initiative in the entrepreneurship and investment pipeline for IT, advanced manufacturing, new materials and much more.

Both of these co-investment programs will facilitate significant incremental collaboration for commercialisation.

**Finally and briefly let me touch on other existing enablers of collaboration.**

There are other important and direct collaboration grants available. What used to be called Research Connections, an element of the Commonwealth Government's Entrepreneurs' Programme which placed researchers from publically funded research organisations into companies has been re-branded as Innovation Connections in the NISA ... and modified to also fund placement of company researchers into publicly funded research organisations.

Decision making will be fast tracked in the ARC's Linkage Projects Scheme, moving from an annual process to continuous application. I would like to think that with an increased industry engagement quotient in this programme, we might expect more market place successes like the UNSW and Onesteel polymer injection technology.

And the tried and tested Cooperative Research Centres (CRC) program is alive and well with 33 current CRCs commercialising leading-edge research taking place in our universities and research institutions. A just completed review of this program has reinforced a need for greater emphasis on shorter term industry driven projects. These will be described as CRC-Ps and will be expected to involve more SMEs and an increased share of CRC resources.

**Concluding remarks**

I have discussed six areas where changes should help solve what seems to be our riddle of low-collaboration:

- Introduction of industry engagement metrics into the research block grant funding arrangements for universities
- Possible inclusion of incentives in the R&D Tax Incentive for greater business reach-out to publicly funded researchers
- New incentives for Angel Investors to fund start ups
- Easy Access IP model
- Co-investment programs
- Improvements in other existing enablers

It's clear to me that universities understand what it takes to be globally competitive. You have fought for and won access to overseas markets that some Australian businesses could only dream of. And you are achieving this despite strong global competition and a fluctuating dollar.

Back in the early 1980s I was involved in a start-up called Austrade; educating students from overseas was basically illegal at that time (save for the Colombo Plan and some other scholarships). As a founding board member, and the then chairman of Austrade, I remember being ridiculed for forecasting that education could become a \$1 billion dollar export industry.

Thanks to our universities, Australian international education exports are valued at over \$18 billion; ranking third after iron ore and coal.

This business acumen among our universities explains why I am very confident we can achieve excellence in commercialisation as well as in research ... they are not mutually exclusive endeavours. Having said that, we need to move faster.

There is no doubt we will need to develop a culture that celebrates success, tolerates failure, and encourages those who “give it a go”. This requires top down and bottom up buy-in, from business, academia, researchers, entrepreneurs and the broader community if we are to truly unlock our potential.

We certainly won't get there without universities and researchers being prime movers for this cultural change. I know you want what is best for Australia as much as I do, and I look forward to working with you to achieve that.

Thank you.