



**2015 B/HERT Awards Dinner – 17 November
Melbourne Crown Towers – Palladium C
8 Whiteman St, Southbank, Vic**

**Keynote Speaker, Transcript of the Minister for Education and
Training, Senator the Hon. Simon Birmingham's Address**

SIMON BIRMINGHAM: It is a pleasure to be with you tonight.

I particularly wish to acknowledge Ken Boal, Business / Higher Education Round Table President and Vice President Cisco Systems and the recipients of tonight's awards.

I regret that I will not be able to stay on for the awards presentations but I trust that you will have a great night.

As the only national organisation of its kind, the Business / Higher Education Round Table is well placed to drive stronger partnership and collaboration between business and the higher education sector.

The best way to do that is to understand each other better so that the challenges and obstacles to collaboration can be overcome.

The appointment of Dr Russell Howard, researcher and entrepreneur, to promote the work you do, will help to build that understanding.

Much has been said about business-to-university links and how we get better bang for the taxpayer dollar and commercialise our world-class research in Australia. I do not see this as a one-sided affair. The only way to make collaboration work is if both industry and higher education institutions are committed to it. That means higher education institutions being responsive to, and understanding the needs, of industry. It also means businesses engaging with universities and research institutions to explain the problems they are wanting researchers to address. Partnership is a two-way street – as those of you in this room well understand.

We have a good higher education system in Australia but we need to continue to adapt and innovate to stay ahead of the game.

We are in demand now around the world due to our reputation – last financial year saw our fifth successive year of growth in student visa applications.

And we are continuing to open opportunities to more students – more than a third of 25 to 34 years olds now have a bachelor degree, compared to only 12 per cent a quarter of a century ago.

We are world class in research excellence – in 2013 we ranked 9th in the OECD for total percentage of research output, and between 2005 and 2013 we increased our share of highly cited publications by 75 per cent.

This system is an important driver of growth:

- Advanced skills and capabilities improve workplace productivity, as well as assisting the rate of innovation and the adoption of technology.
- Expenditure on research and development in research agencies and higher education institutions also drives productivity growth – for example, analysis shows that for every one per cent increase in investment between 1993 and 2012, Australia's multifactor productivity for the whole economy increased by nearly half a per cent.

We are facing challenges though and we will be left behind if we do not respond effectively to these challenges. The all-pervasive technological disruption that will see 90 per cent of jobs requiring digital literacy in five years is having a profound impact.

The way in which people live, work and learn is changing. Some universities are thinking about how they design new learning spaces that are fit for purpose in this technologically mobile age. How many students will be sitting in lecture theatres in 10 years' time? How many are not sitting in them today?

Technological advancements have changed how we learn and interact.

The challenge for our institutions is that increasingly global brands are offering their wares to Australians – and to mobile, tech savvy students around the world. More courses – from quality global institutions – are being offered online.

Shorter courses focusing on employment outcomes are being demanded.

Just as Uber sent shockwaves through the taxi industry, so do the changes in education offerings present a challenge and an opportunity for Australian higher education institutions.

As Prime Minister Malcolm Turnbull said in his address to the

Prime Minister's Prize for Science dinner last month: 'If we want to remain – and we do – a high-wage, generous social welfare net, first world economy in a rapidly expanding global economy that has vastly more opportunities than we could have ever imagined only a decade or a generation ago, and is more competitive than ever... then we have to be ...more productive, more innovative, more technologically sophisticated, more imaginative.'

The Chief Scientist's report, Boosting High-Impact Entrepreneurship in Australia, released last month, reinforces the vital role of our higher education institutions in

contributing to our innovation system by fostering entrepreneurship skills and commercialising research results.

New-to-world innovators rely heavily on research skills – in Australia, these skills are concentrated in universities and other publicly-funded research organisations.

In 2015–16, the Australian Government’s support for science and innovation across all portfolios will exceed \$9.7 billion.

Total expenditure on research and development in Australia has more than doubled over the past decade, rising from just over \$13 billion in 2002–03 to just over \$30 billion in 2012–13. Australia makes a large investment in research.

Since the late 1990s, business research and development has also become a much more significant part of the picture. Business investment has more than quadrupled to nearly \$19 billion in 2013–14, supported in part by the research and development tax incentive and the continued public investment in research.

But it is clear that investment in public and private sector research and development could be better integrated.

Although ABS statistics show that collaboration on innovation significantly increases the likelihood of new-to-market and new-to-world innovation, arguably giving a better return on this investment, everyone in this room would recognise that we could do better in regards to research collaboration.

Despite talking about this problem for several years, Australia now ranks last in the OECD on the proportion of businesses which collaborate with research institutions on innovation, and second last of 17 OECD countries on new-to-the-world innovation.

Many people – including in particular many here tonight – have done some excellent work to help bridge the divide.

Yet, business can still too often be risk averse, and higher education institutions are not always responsive to business in timeframes that are attractive.

For business, collaboration with universities provides opportunities to move beyond incremental and process-focused innovation to achieve breakthrough impact.

For universities, the opportunity to work closely with business provides greater insight into practical problems of national and international significance, delivering new opportunities for collaboration and commercialisation which business may not be equipped to recognise.

International experience tells us that there are no quick fixes: policy interventions can take years to have effect and building and sustaining capacity over the long term – in business, universities and research institutes and among researchers – is critical.

The United Kingdom’s Dowling Review of Business-University Research Collaborations, released earlier this year, points to the important role of co-location in

fostering knowledge creation and technology transfer, calling collaboration a 'contact sport'.

The Cambridge Science Park, which is a concentration of science and technology related industry with strong links to the university, forms Europe's largest technology cluster with over 54,000 people employed by more than 1500 technology-based firms in the area, generating a combined annual revenue of over £12 billion.

Within the United States, the state of California has been an epicentre of university-industry collaboration. In a survey conducted by

Price-Waterhouse Coopers, 20 per cent of biomedical companies in the state of California credit a California research institute for helping create or grow the company.

These successes have become such a feature of the global innovation story that it would be easy to forget the significance of the changes that were required to develop these hubs. For example, it was just a generation ago, in 1980, that innovation in the US stopped being stymied by an intellectual property system which guaranteed ownership of IP arising from federally funded research to the Federal Government.

Although Australia has been slower to act, the Australian Government supports collaborative projects involving a wide range of higher education researchers and other parts of the innovation system through a range of programmes – both industry and university led.

These include for example, the Cooperative Research Centres, and the Australian Research Council's Linkages programme and Industrial Transformation Research Programme.

We do have some standout examples of the shared value of businesses forging partnerships with researchers and educators.

Yesterday I opened Deakin University's Centre for Advanced Design in Engineering Training (CADET) at its Waurin Ponds campus with Sarah Henderson and Jane den Hollander. This state-of-the art facility is at the forefront of digital manufacturing and innovative design, opening its doors to industry, researchers, VET and students from local secondary schools, particularly girls. This is the kind of learning environment that is dynamic and can inspire young people to pursue a career in a STEM discipline.

I also visited RMIT's Advanced Manufacturing Precinct with Vice-Chancellor Martin Bean and saw the potential application of 3D printing and design to the defence industry, patient care (where bone repairs for cancer patients can be manufactured during operations) and Formula 1.

As is the key in the skills of the future, it is not the tools themselves that drive innovation but the ingenuity of the researchers and designers who can foresee new and exciting applications for that technology. I heard yesterday that RMIT's Advanced Manufacturing Precinct has germinated some 200 small businesses and as a dual sector provider has sought to strengthen its links with business and ensure employment outcomes for its graduates.

When we think of Australian ingenuity we often think of penicillin, refrigeration, the black box flight recorder and the bionic ear. Today we are developing more lightweight defence equipment, more efficient electricity grids, replacement body parts and more effective environmental applications in the resources sector. These innovations have social, environmental and economic benefits. That is ultimately the great value of scientific and technological advancement – how we improve peoples' lives here and around the world.

The 20 year relationship between BlueScope (and its predecessors) and the University of Wollongong (UOW) in the Illawarra region of NSW is a key feature of that area's ongoing industrial transformation. The University of Wollongong – Australian Research Council Research Hub for Australian Steel Manufacturing, now brings together six industrial partners and six universities to enable the Australian steel industry to improve its global competitiveness as a world class steel manufacturer.

The Australian Research Council Centre of Excellence in Plant Energy Biology, based at The University of Adelaide, partnering with La Trobe University, Australian National University, and The University of Western Australia, is making important contributions to future food security through better understanding the way plants respond to environmental change. Working with the Institute of Crop Sciences in the Chinese Academy of Agricultural Sciences in Beijing, they announced earlier this year they had discovered how to breed a soybean to better tolerate soil salinity.

Our regional universities are often smaller and less research-intensive than those based in metropolitan areas, but make significant contributions to their local communities, both socially and economically. Newcastle University is working with community partners to improve health outcomes and Southern Cross University has collaborated with over 50 organisations including local community groups to make a positive difference in the lives of children and young people.

Research infrastructure is important in industry-research engagement – co-investment, required to make such projects viable, also plays an important role in bringing together different parts of the innovation system.

The National Collaborative Research Infrastructure Strategy provides openly accessible merit-based research infrastructure to over 35,000 Australian and international researchers each year, delivered through 27 projects that involve 222 organisations employing more than 1700 highly skilled technical and research specialists.

This represents a \$2.8 billion, 10 year investment, and more than \$1 billion co-investment from state and territory governments, universities, research facilities and industry.

Industry engagement plans provided by existing projects for 2015 show significant existing industry-research engagement.

For example, Bioplatforms Australia (or BPA) reported 700 commercial collaborators across many sectors, including food and agriculture, environment, pharmaceuticals, pathology, genetic testing, and other biotech services, from start-ups, through small

and medium-sized enterprises, to global companies. These commercial collaborators make up 15 per cent of BPA's total custom for the period.

I am strongly committed to a research system that sees more of this kind of work.

Our research strengths frequently align with industry priorities. But it is self-evident that Australia needs more – and more robust – collaboration to better support innovation, and drive new commercial opportunities.

We can build on what we do well to make better use of this investment by increasing focus on engagement and collaboration with end-users and industry, to better leverage our research excellence to contribute to economic growth.

It is telling that the winners of this year's Prime Minister's Prizes for Science were not only innovators, but had seen their research applied in a wide range of areas, including Australia's mineral, energy, and agricultural industries and across health and environment sectors.

The ability to support this kind of high impact research as Minister for Education and Training is a great privilege. Government support helps address barriers to collaboration such as differences in culture, difficulties in identifying appropriate partners, managing collaborations and encouraging effort in targeted fields of research or industry sectors.

There have also been an increasing number of wins in this space without government involvement.

Work by the University of New South Wales in partnership with 3M, is just one example of a growing number of initiatives providing research students with industry experience and transferable skills, which have the potential to contribute to addressing the low level of staff movement between universities and industry.

Many Australian universities, including those in this room, have established their own programmes to actively seek philanthropic donations. For example, the University of Melbourne has set up

The Campaign for the University of Melbourne, the University of Sydney has the Inspired programme, and the Australian National University has established ANU Giving. Reports in the weekend press indicated the University of Sydney had exceeded its target two years early. I congratulate them on that effort.

The Origin Foundation, the philanthropic arm of Origin, won the award for Outstanding Philanthropic Support for Higher Education at last year's Business Higher Education Round Table awards for their work with the Queensland University of Technology (QUT), bringing high-quality teachers into the schools that need them the most.

There have also been some significant endowments made to institutions in recent years.

There is certainly room to build further on this across the sector.

Of course, funding isn't the whole story. What we measure matters.

On 6 November, the release of the UK Government's Higher Education Green Paper signalled its commitment to the Research Excellence Framework (REF). Unlike our Excellence in Research for Australia (ERA), the UK approach includes evidence of the impact of UK research, through its case study methodology. While there has been some criticism from the UK higher education sector of the administrative burden of the number of case studies that have been required, it should be possible to measure impact without making it overly burdensome. There is always a reason not to do something. Sometimes we need to learn from the experience of others and adapt.

Innovation and impact in rankings have the potential to tell a compelling story about our ability to transfer knowledge created in our universities to industry – about the economic and social impacts of the kind of research I've spoken about tonight.

I was at the Times Higher Education World Academic Summit here in Melbourne last month – their work on 'Innovation Indicators' is promising, and is part of an important conversation about the interplay between traditional measures of research excellence and research impact.

Some universities are out in front on this – there is definitely a shift underway both here and internationally, driven, I think, by two things:

- a realisation that where industry relevant research is undertaken in the absence of linkages with business, it may not have significant impact and
- a recognition that research excellence is not antithetical to impact.

I acknowledge the important work undertaken in 2012 by the Australian Technology Network (ATN) and the Group of Eight (Go8). Their Excellence in Innovation for Australia (EIA) Trial demonstrated considerable impact across a wide range of university research disciplines, using case studies.

More recently, the Australian Academy of Technological Sciences and Engineering's Research Engagement for Australia based measurements of research impact on the amount of research income each university receives from industry and other end-users. Again, this work is promising.

Key challenges will be how well any new measures engage with the diversity of research being undertaken, and how they relate to other indicators of university performance, such as those in teaching and research excellence and international engagement.

This is not to discount the important impact of graduates – as tonight's awards demonstrate, collaboration in teaching and learning is also vital to ensure we equip students with the skills they need to contribute to the economic and social fabric of our society.

The Government invests in work-integrated learning projects in universities to build industry linkages and develop rich learning experiences for students in areas such as health, veterinary science, finance, international placements, and ICT.

Initiatives such as this make a vital contribution to preparing students to meet the needs of the future labour force. They will be employed in jobs that will arise as a result of substantial changes in the global economy.

Recent work by the Chief Scientist shows that some of our universities are starting to move into the top 50 worldwide on the measure of whose graduates form startups – the University of New South Wales is top of the list at number 34.

Under the New Colombo Plan, a signature initiative of the Australian Government, almost 10,000 Australian undergraduates will study and undertake work-based learning in the Indo-Pacific region by the end of 2016, building all-important regional relationships, fostering an increased ability to identify and enter new markets, better manage culturally diverse teams and achieve outcomes in foreign business environments.

Since the inception of the Plan, B/HERT has provided invaluable support. Former President of B/HERT, Bill Scales, was an active participant in the New Colombo Plan's Reference Group. I thank him for his role in helping to shape the blueprint of the New Colombo Plan's roll-out and its successful implementation.

Dr Sharon Winocur, Executive Director B/HERT, has generously provided her time and expertise to the New Colombo Plan Secretariat and has joined interview panels to select our 2015 and 2016 Scholarship recipients. I thank Dr Winocur for her role in selecting the best and brightest we can offer to the region.

The New Colombo Plan will continue to benefit from collaboration with B/HERT as the program scales up, as internships and mentorships grow and as new linkages are created between industry and universities through the New Colombo Plan's Mobility Partners Program.

Prime Minister Turnbull has set a strong Innovation and Science Agenda for the Government.

We are currently looking at all the complex, interacting features of our innovation system, to improve business and research sector collaboration, support economic growth and ensure Australia's competitiveness into the future.

Catherine Livingstone AO made the point well earlier this month at the Business Council of Australia Annual Dinner, when she said:

'We must move on from a fundamental misconception in Australia that 'innovation policy' is a somewhat standalone activity, or a government program, when the real task is to unlock the innovation capability of the whole economy.'

The Government's Agenda targets:

- commercialising ideas
- capital raising for innovation
- retaining and attracting talent and
- improving digital and STEM skills

It builds on ongoing work such as:

- The Boosting the Commercial Returns from Research strategy, which aims to improve Australia's economic performance through better translation of research into commercial outcomes.
- Consultations on a national approach to science, technology, engineering and mathematics, led by the Chief Scientist, to ensure science is woven not only into our classrooms, but also into our boardrooms, and our living rooms.
- The Research Infrastructure Review, which will provide a solid base for the Government to plan for national scale research infrastructure to support priority research of national significance.

The reviews of the research training system, and of research policy and funding arrangements, are also underway. These should help us to identify ways in which we can increase the impact of our research effort, while protecting its quality and scale.

Thank you to many people in this room for their thoughtful input into these processes.

I look forward to continuing discussion with industry and researchers to improve collaboration and cross-fertilisation of ideas and opportunities that will eventually lead to a wealthier, more successful nation.

Business and universities each have fundamental and complementary roles in the innovation system.

The Government is working to facilitate robust engagement that is responsive to the needs of students and communities and drives productivity.

One of the great things we can do as a country is ensure we invest in the people and ideas that will serve us well now and in the future.

Thank you for all the work you do, and congratulations to tonight's award recipients.

ENDS.