

New business opportunities from research collaboration

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Businesses must take the lead in enhancing research translation and collaboration to achieve Australia's transition into an expanded knowledge base economy.

The industry challenge: greater collaboration

Australia needs a stronger growth outlook which will depend largely on our ability to lift productivity. There is increased pressure on Australian businesses to produce higher value products and services in order to drive economic growth. Meeting these challenges requires business innovation. To drive this, Australia needs a policy framework that supports basic research, as well as applied research and development, and fosters the transmission of frontier knowledge to businesses and research end-users. A higher level of investment in business R&D and enhanced engagement between businesses and research providers will contribute significantly to businesses recognising and reaching their innovation potential.

Collaboration with research organisations is an important source of knowledge and provides businesses with access to an extensive range of world-leading research infrastructure, capacity and human talent. A 2014 report published by the NSW Business Chamber showed that Australian businesses that collaborate with research organisations are 240 per cent more likely to report increases in productivity and 70 per cent more likely to develop new products compared with non-collaborating businesses. Business-research collaboration resolves the limitations of businesses being risk-averse and time-poor for conducting basic research. It also overcomes the issue of research organisations lacking the business acumen needed for product development.

Australia is infamously ranked last in collaboration by the OECD, and it would be foolish to believe that the nation can indefinitely ride on the productivity coat-tails of the substantial growth in our service economy. There is still relatively low business investment in research collaboration compared with other developed nations. Only 13 per cent of Australian businesses regard Australia as 'highly innovative' but more than 25 per cent identify themselves as 'highly innovative' – an apparent serious mismatch between perception and reality. Australia's approach to promoting collaboration is fragmented, short-term, diffuse and below adequate scale¹.

The time is right for industry and research organisation executives to make research collaboration and engagement a priority, for the benefit of the Australian economy².

The vision

Effective research collaboration and engagement within industry and research organisations will boost Australia's productivity and potentially create new industry sectors and markets. Businesses will seek out and identify priority areas to focus co-invested research collaboration, which will result in a shift in the perception of research collaboration within businesses and a boom in highly competitive innovative businesses. At the same time, research providers will become more approachable and strive to better understand and meet industry needs. As demand for highly skilled workers rises, businesses will help develop the talent pipeline by identifying opportunities to attract the best researchers within Australia and overseas. Effective collaboration will ultimately lead to the highest impact outcomes, through sustained long-term jobs growth, the creation of jobs of the future and a sustainable and prosperous economy.

The challenges

A large emphasis has been placed on what actions government or research organisations should take to improve collaboration. However, the opportunities for collaboration must come from all participants, particularly businesses. With notable exceptions, business has largely been 'missing in action' when it comes to collaboration. The long-held separation between businesses and research organisations in Australia has evolved through disincentives, such as the continual focus of publications, which inadvertently discourage collaboration, as well as structural and cultural barriers:

- > Businesses often do not know how to approach research organisations, are risk averse, lack personnel who are sufficiently familiar with the techniques being used by researchers, and have minimal capital to invest in research. They perceive research organisations as unworldly, preoccupied with publications, out of touch with business reality, unwilling to understand commercial pressures, too slow and bureaucratic in executing commercial contracts, and expecting too great a return from their specialist knowledge. Often the technology transfer offices in the public sector are not operating at world's best practice and hinder rather than encourage such collaborations; and

¹ BELL, J., FRATER, B., BUTTERFIELD, L., CUNNINGHAM, S., DODGSON, M., FOX, K., SPURLING, T. & WEBSTER, E.

2014. The role of science, research and technology in lifting Australia's productivity. Melbourne, VIC: Australian Council of Learned Academies.

² ATSE recognises that improved collaboration between researchers and businesses will require changes from both groups. In this Statement, ATSE focusses on the changes that can be made primarily by industry – the changes required by universities and researchers have been covered extensively elsewhere, including by ATSE. The actions recommended here have been developed from a series of workshops convened by ATSE to examine best practice case studies, seeking to move beyond simply listing the problems in collaboration to identifying positive examples and successful approaches.

> Researchers perceive businesses as excessively focused on the short-term, unwilling to shift their focus from current problems to future opportunities, limited in their understanding of technical language and difficult to negotiate with for a fair price.

Despite this, some businesses have recognised the profitability potential from R&D – major companies that invest seriously in innovation and research, SMEs that are driven by exploiting technology-based opportunities, newer industry sectors that rely on close interaction with research (e.g. medical devices), and researchers who are closely connected with companies. What is missing is not good practice, but scale.

The challenge is to transform the exceptions to the norm and create a cultural shift. For sustainable collaboration, businesses and research organisations must make engagement with each other part of the job description of employees at all levels.

Many businesses, especially small SMEs, are unaware of the over 220 state and federal programs that support innovation, they lack the time and resources to apply for such programs, or the return on investment from the effort to apply for these programs is not high enough. As SMEs are the major contributors to jobs growth in Australia, the nation needs strong government support to encourage these businesses to collaborate with research organisations. At the same time, larger local companies and local subsidiaries of major multinationals have the capacity to shepherd or sponsor local SMEs with niche skills and IP into their own supply chains.

The Australian Government is moving in the right direction to maximise Australia’s innovation potential and address some key research collaboration barriers. For example, the National Innovation and Science Agenda (NISA) includes programs that aim to make industry-focused research project funding available more quickly, allocate more university funding to research that is done in partnership with industry, invest in more long-term world-leading research infrastructure and encourage investment of early stage investors. Complementing NISA, a number of government programs are being rolled out to drive innovation, such as the Defence Innovation Hub and the Medical Research Future Fund. Together, these measures have the potential to significantly improve research collaboration in Australia, which will ultimately boost our economy.

However, one strong message from experience with policies to promote innovation over many years is that it is their implementation, rather than their design, which is the most common cause of failure. As former Chief Scientist Ian Chubb has stated, Australian attempts at innovation policy have been marked by limited commitment, lack of scale and loss of learning – characteristics which are unlikely to generate the level of structural change required for a strong economy. It is however not solely up to the Government to change a strongly entrenched culture of poor research collaboration. All parties, especially large and small businesses, must come on board.

The way forward

ATSE calls for the following priority set of actions from governments, businesses and research organisations:

1. Governments to drive industry collaboration through stable, long-term and well-funded measures:

- > Stronger and more immediate incentives for businesses to engage with research organisations and drive future business opportunities, such as through the R&D Tax Incentive and more direct ‘procurement’ measures like the Business Research Innovation Initiative (BRII), modelled on the US Small Business Innovation Research program.
- > Support programs for research intermediaries (organisations that help link businesses and researchers, including Industry Growth Centres), which reward performance, would make a significant contribution to fostering greater inter-sectoral collaboration and encourage larger profitable businesses to engage with technology-based SMEs, with potential to improve the performance of their supply chains and lead to their development into internationally competitive businesses.

2. Businesses to develop business practices and models that recognise the competitive advantage possible from innovative technology:

- > Coherent business models to build capacity within businesses for innovation and collaboration with research organisations leading to growth opportunities.
- > Identify willing customers and focus on customer demand rather than supply to ensure profitability and growth.

3. Businesses and research organisations to measure and publish the level of research collaboration and government to make collaboration performance a factor in R&D funding:

- > Make businesses and research organisations accountable in actively seeking out and identifying opportunities for engagement and collaboration across a range of levels to further lift productivity growth and competitiveness.
- > Reform the structure and performance of peak bodies and associations to ensure they are focusing on identifying collaboration opportunities within the sector they represent.

4. Governments, businesses and research organisations need to work together (e.g. through joint meetings and intermediaries) to develop a common understanding of global value chains:

- > Look at the entire production chain as well as product lifecycles to understand how to best interact with end users, strengthen collaboration and improve efficiency³.

³ PRICEWATERHOUSECOOPERS 2014. Industry Research Collaboration Discussion Paper. Sydney Business Chamber, NSW Business Chamber