

# Boosting the Commercial Returns from Research

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## *ANU Submission*

The Government's *Industry Innovation and Competitiveness Agenda* recognises the importance of research as a foundation of what drives innovation, grows business, and boosts productivity<sup>1</sup>. The Competitiveness Agenda highlights Australia's strong performance in research excellence, and the nation's challenges with translating this research into commercial outcomes.

The Australian National University (ANU) thanks the Government for the invitation to respond to its plan to meet this challenge. In doing so, ANU fully endorses the Group of Eight response to the *Boosting the Commercial Returns from Research* discussion paper, and welcomes the opportunity to further highlight critical elements required to effectively support research translation for national and societal benefit.

## **Background Principles**

The Australian National University, as a research-led education institution, plays a crucial role in developing and supporting the Australian innovation system. Successfully translating publicly funded fundamental research into direct economic and social impact is key to building our international standing and attracting the best staff and students. Providing educated graduates to meet commercial, social and environmental needs of the nation; and directly engaging with business, industry and government to address problems that restrict productivity and growth are areas that demonstrate relevance for the University. From this context we note:

- *National Priorities for Research* should cover a range of social, cultural and environmental priorities beyond lifting productivity and economic growth. Mechanisms to stimulate collaboration between the research community and industry must recognise that economic benefit can be derived through routes other than commercialisation, and that social impact and translation also has a key role in driving innovation and productivity.
- We fully support the government's initiatives to explore new ways for research institutions to collaborate and engage with the business, industry and community sectors for better commercial outcomes, noting that consolidation of *research-industry collaborative programs* to create scale must be effected within an understanding that industry comprises established multi-national companies; growing small to medium enterprises; and emerging start-ups, each with differing levels of readiness or capacity to absorb research innovation. Absorptive capacity must be addressed to ensure collaborations result in outcomes beyond the act of collaboration itself.
- We support the Government strengthening the existing focus of the NCRIS scheme. A long term *research infrastructure* investment plan is unarguably essential to supporting research excellence. A reassessment of existing research infrastructure must recognise however that the use of infrastructure in fundamental, blue-sky research drives innovation as much as more industry focussed application.
- Intellectual Property management is not a critical blockage for *research access*, and most experienced research organisations have well developed IP principles and commercialisation support for collaborative projects. The development of IP Toolkits, while

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<sup>1</sup>Australian Government (2014) *Industry Innovation Competitiveness Agenda: An Action Plan for a Stronger Australia* pp 74-75

useful, should retain an awareness of the broad range of application which IP may be used for beyond generating revenues and profits.

- The key to successful translation of research to innovative business or social outcomes are people who intersect domain expertise with an understanding of research and business culture. Australia has an undeniable skills gap in this area. Universities should provide flexible *research training* which supports better commercial and industry focussed interaction, however this should not compromise the goal of achieving research excellence.
- Research organisations should be accountable for the public funds they receive to undertake research and *measuring outcomes* is an important part of this process. Commercial and industry income is one small part of how research organisations can demonstrate impact on the economy, and the ANU welcomes Government working with the research sector and industry to define methods to capture the nation's multi-factor productivity.

## Funding Research Translation

The opportunities and challenges for the nation's economy cannot be uncoupled from its location at the centre of the fastest growing region in the world; Australia must focus on translating its novel intellectual property within the global supply chain of innovation this creates.

To drive the uptake of Australian research requires a Government commitment to leverage specific research translation funding, and venture funding to complement fundamental and industry collaborative research funding to best support competitiveness in this global environment.

The path from research through commercial development to market adoption is not linear, but it does progress through a series of stages, and to be effective a developed country needs to be active across the spectrum. Australia is active at both ends of the spectrum but its commitment to translation, and publicly funded schemes which encourage industry investment in research and development, is comparatively poor. Direct action is required through co-investment schemes between the public and private sector. Open university-industry schemes with regular cycles allow both the public and private sector to commit to building partnerships.

The ARC Linkage Project scheme is important in promoting collaboration, building relationships between research and end-users and developing initial collaborative partnerships. Programs such as the new Entrepreneurs' Infrastructure Programme focus on business and industry and not necessarily assisting in taking ideas along the early, high risk stages of innovation.

To take research outcomes further down the innovation pipeline to a point of acceptable commercial risk requires larger scale projects often with multiple partners on a pre-competitive basis. There is need for a responsive Research Translation Program. To translate publicly funded research into application requires investment; for industry to be interested it also requires considerable public sector investment to de-risk new technology and strategic research to the point of acceptable applied risk<sup>2</sup>.

- There is a case for the establishment of Research Translation Centres similar in nature to the UK Catapult Centres. These centres have *long term funding* allowing new technologies, methods and processes to be developed. They are based within institutions that have existing expertise and are focused on areas of potential growth for collaborating companies. Co-locating collaborative centres with universities allows integration of administrative functions of the host institution, thus benefitting from economies of scale, but with the direction of programs and projects determined by business and industry.

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<sup>2</sup> Mazzucato Mariana (2011), [The Entrepreneurial State](#) London: Demos

## Developing Absorptive Capacity

In order to progressively de-risk opportunities from research to business successfully along the innovation pipeline, will require not only responsive collaboration between research institutions, business, industry and governments, but access to skilled people that can traverse across sectors of the innovation spectrum and funds targeted at the risk levels along the spectrum.

There is and always will be a cultural difference between university research and business/industry priorities, but the key is harnessing this tension to promote creativity. Research organisations need skills to understand the drivers and priorities of business and such individuals provide the absorptive capacity required for successful adoption of research outcomes.

There is a need for translation and commercialisation training programs for undergraduate and post graduate students and early career researchers that equips them to work in both environments and in particular increase the capacity to absorb innovation in SMEs. Filling the gap between university research and industry requires a generation that understands both cultures, which may take 10 years to foster. A long term training program is required to create innovation capacity and capability in Australia.

- A model for skills development is the UK's Knowledge Transfer Partnership program. It pairs a business with a research partner, joined by a publicly funded Knowledge Transfer Associate whose role it is to transfer the knowledge the business is seeking via a strategic project. This simple methodology focusses on developing and then sustainably transferring skills to effect innovative change in business, recognising that knowledge created in an academic environment may need extensive adaptation to meet business requirements.

## Growing Beyond the Local

Early stage equity funds are needed to expand growth of our country's emerging start-up companies. Raising a new early stage fund within Australia is difficult however. In addition, successful innovative SMEs also suffer from a lack of available growth capital that is needed for them to take the next step to global markets. There is a need to support early stage funding mechanisms that open up capital markets to early and growth stage companies that complements the existing Entrepreneurs' Infrastructure Programme schemes.

Whilst there is a significant pool of capital within the \$1.8Tr in Australian Superannuation Funds, little of this is finding its way into translating the significant national investment in research to commercial outcomes for the nation. There are many reasons for this, such as the deal flow within in Australia being too low for the traditional venture model. New models of early stage funding that suit the Australian economy are needed. Other financial mechanisms that assist in mitigating risk for fund managers need to be explored to bridge this funding gap.

- Novel bond structures such as innovation bonds may assist in this along with schemes such as the Enterprise Investment Scheme (EIS) in the UK. Cambridge University have successfully used this scheme to raise the Cambridge Enterprise Fund targeted at alumni and other investors. This fund invests in start-ups originating from University research.

## Increasing Responsiveness

It is worth emphasising that Innovation support programs must be responsive to industry priorities. Programs should be set up to receive applications at any time, with funding distributed at regular intervals during the year. Programs that accept applications through a two stage process, with an expression of interest as stage one which may or may not progress to full application stage, are the most effective in terms of time and resources. The use of project managers, similar to that used in the Entrepreneurs' Infrastructure Programme, would maximise success, so that even those projects which do not receive funding have still benefitted from contact with an experienced project

manager. This will allow better facilitation of building a relationship between the research and end user organisations.

## Case Study: Supporting Early Adoption at ANU

The ANU is a significant component of the ACT ecosystem, which creates a supportive environment that allows ideas to successfully transition from the University. Such an environment has been characterised by availability of investment funds, incubator space and business and entrepreneurship advice. Key and direct components of the local ecosystem have been driven and supported by the ANU, leveraging funding and in-kind support from the ACT Government, and utilising Commonwealth programs, including:

- Establishing *InnovationACT* business planning competition and skills development program
- Providing facilities at peppercorn rate for the *Entry29* co-working space
- Launching the *Canberra Innovation Network*, a collaboration with University of Canberra, University of New South Wales Canberra, CSIRO, NICTA and the ACT Government to provide a connected local environment between research institutions and start-ups
- Through *ANU Connect Ventures*: establishing the Proof of Concept grant scheme *Discovery Translation Fund*; managing the \$27M ANU-MTAA Super Venture Capital Partnership Equity Seed Fund; and establishing the *GRIFFIN Accelerator* Program.

It has been shown that early stage start-up businesses nurtured in an environment where they have access to mentoring and strategic support from both experienced advisers and each other, have a survival rate of 87% after five years, while businesses that go it alone survive at a rate of 44%<sup>3</sup>. These figures make a strong case for promoting incubation facilities within the Australian innovation system. The Canberra Innovation Ecosystem has accordingly shown incredible effectiveness in facilitating growth in viable start-ups linking inexperienced entrepreneurs to experienced mentors, each with entrepreneurial success, skills and experience in the government sector, or a significant technology industry network.

## Discovery Translation Fund and ANU Connect Ventures

The Discovery Translation Fund is an ACT region proof of concept grant scheme funded from the ACT Government's contribution to the ANU-MTAA Super Venture Capital Partnership. The scheme has provided early stage start-up companies and university technology transfer with funding to de-risk concepts and directly demonstrate key features and innovations in response to market feedback. By helping entrepreneurs and university researchers establish a commercial discipline to their projects, and requiring them to demonstrate achievements of interest to the market, the DTF has been a key stepping stone to applying the results of exploration based investigations.

### SNAPSHOT OF DISCOVERY TRANSLATION FUND SINCE ITS INCEPTION IN 2011

\$3.1M awarded in 39 projects; Fifteen new companies formed around DTF funding; \$1.5M spent directly on employment; Over \$10M leveraged in investment and follow-on funding

The ANU is fortunate at this time to have an associated early stage fund, ANU Connect Ventures. This has enabled the ANU to commercialise highly innovative technologies that would have remained in the laboratory otherwise. Of note is the success of the spin-out company Lithicon. ANU Connect Ventures is not a standard venture fund. It is integrated in with the University and local innovation eco-system and run with an aim to make a return for its limited partners and also to promote the translation of novel research to commercial reality.

Government funding has been critical to sustaining these activities and ensuring research and education is connected to and integrated with the economic and social region surrounding campus. ANU has contributed considerable leadership with intellectual, financial and in-kind support to the local community, but impact has been substantially widened through government mechanisms.

<sup>3</sup> Ned Smith *Business News Daily* (October 2010) "[Incubator Heats Up Chances of Small Business Survival](#)"

This has been strong evidence from the ACT experience of the benefits of government supporting regional innovation networks. It is critical that this public translation support be sustained and accelerated to drive benefits nationally and globally for all Australians.