



University Research Commercialisation Consultation Paper

Department of Education, Skills and Employment

April 2021

Overview

The University of Melbourne welcomes the opportunity to respond to the DESE's *University Research Commercialisation* Consultation paper and recognises the potential to enhance the economic and social benefits of greater university and industry research translation, including commercialisation.

Research translation to impact takes many pathways and is not limited simply to commercialisation and economic benefit but includes translation to deliver net public benefits. It relies on basic research as the engine room of discovery. There should be a commitment to preserving this and the infrastructure that supports it. That said, we recognise the importance of research commercialisation to drive economic recovery and growth. The current consultation builds on numerous others over the last decades. There is much in these previous reviews that could be useful in the current deliberations. Success will require a refresh of policy settings relevant to both universities and industry.

Building the soft and hard research infrastructure for discovery and translation are key elements of the translation and commercialisation ecosystem. Innovation precincts have shown themselves to be enablers of research translation, impact and commercialisation. At the University of Melbourne, for example, the medical [Melbourne Biomedical Precinct](#), the IT and digital [Melbourne Connect](#), the [Southbank Arts Precinct](#), the bioengineering [ACMD](#) precinct and the emerging engineering [Fishermans Bend](#) precinct are sustaining crucial links between research and industry, thereby driving commercialisation outcomes. Precincts bring diverse skills together and allow for the agglomeration of expensive and specialised infrastructure and equipment.

Improving Australia's innovation and research commercialisation performance will require a sophisticated gap analysis of the skills, capabilities and infrastructure required to deliver on that aspiration. Often, these professional skills typically lie outside the academy and are in short supply in Australia. Building this specialised skills capacity in Australia will be part of the solution to improving commercialisation outcomes. Further, finetuning and better promoting existing programs, such as PhD industry intern programs, will help to build stronger connections between industry and universities, facilitating greater knowledge transfer.

Improving the efficacy of funding and policy settings for commercialisation must also take into account the nature of the Australian economy, including our competitive advantages but also the challenges that come with the large share of the economy made up of SMEs. These are distinctive features that any funding scheme will need to design for. The design of the scheme will also need to consider the entire research and innovation system and the place of any new scheme relative to ARC Linkage, CRCs, NHMRC Development Grants, MRFF and related research translation funds, and the CSIRO programs and funds.

In the following sections we provide additional comments in response to some of the specific questions raised in the Consultation paper. We look forward to engaging further with the Expert Panel as it prepares advice to Government on reforms in this area.

For further information, or to discuss the submission, Professor Mark Hargreaves, Acting Deputy Vice-Chancellor (Research) can be contacted at dvc-research@unimelb.edu.au.

Mission-driven research

The University of Melbourne supports the use of missions as one priority-setting mechanism for an additional source of national interest research funding. However, it needs to be emphasised that mission-advancing research will only be one way that university research promotes the national interest. The sector will continue to benefit the economy and society through the generation of new knowledge produced by basic research. Nonetheless, missions can increase the potential for impact by influencing organisational strategy and encouraging earlier involvement of end-users and downstream partners in the design phase of research. Missions may also allow for a clearer assessment of the range of alternate pathways by which the broader objective could be achieved. Industry Growth Centres could provide a framework for identifying missions.

In broad terms, the selections of missions should be informed by the following criteria:

National need	The mission should address an important problem or market opportunity for Australia.
Scale of benefit	The mission should help to achieve a meaningful competitive position on a global scale.
Competitive advantage	The mission should leverage Australia's comparative advantages, including its research strengths.
Long-term challenge	The mission should capture a set of long-term objectives i.e. covering a 10-15-year period.

While the University also supports the use of “smaller, targeted Challenges” to accompany a given mission, we suggest that available funding should not be exhausted by these challenges. This can be achieved by leaving a proportion of funding allocated to a given mission (e.g. 25%) not tied to one of the articulated challenges. This would allow for “out of the box” ideas to be assessed on their merits and enable the funder to integrate additional targeted challenges into future funding rounds.

Mission-prioritised funding should potentially support both basic and applied research. While the University of Melbourne supports the use of Technology Readiness Levels (TRLs) in designing a ‘stage-gated’ funding program (see below), TRLs should not be used to determine whether a proposed research project is responsive to a given mission. This would exclude research at earlier stages (e.g. TRL 1 or 2) that may help advance the mission’s objectives. Similarly, mission funding should be discipline neutral and support projects that respond to relevant challenges irrespective of the field of research.

Recommendations

The University of Melbourne recommends that the Australian Government:

- *commit to a mission-based fund, with missions identified based on national need, scale of benefit and Australia's competitive advantage.*
- *include smaller, targeted challenges to accompany a given mission, while leaving a proportion of mission funding untied to any particular challenge.*
- *use mission funding to support basic and applied research from a range of disciplines.*

Stage-gated funding

The University of Melbourne strongly supports the use of a stage-gated approach to Government-backed support for research commercialisation. Early-stage research in many cases has a risk profile that makes it unattractive for business to invest in. A stage-gated investment program would help to de-risk promising projects that would otherwise fail to secure the capital they need to progress. In addition, a mix of ‘proof of concept’, pre-seed and seed funding would provide flexibility to support projects at various stages of maturity. Funding should support technical staff, professional commercialisation capability, and provide incentives to industry to commit to projects.

The University of Melbourne supports the use of TRLs to frame a stage-gated funding program; however, we are concerned that the program may be too narrow if support is limited to projects at TRL 4-7. This will result in lost opportunities, as promising ideas at earlier stages fail to progress. A wider scope, commencing at TRL 2, is preferable:

Stage	Technology Readiness Level	Purpose
Stage 1	TRL 2 – 3	<ul style="list-style-type: none">• Funding in support of ‘proof of concept’, prior to the entity being incorporated.• Funding devolved to universities.
Stage 2	TRL 4 – 6	<ul style="list-style-type: none">• Seed funding to support the setting up of the company.
Stage 3	TRL 7	<ul style="list-style-type: none">• For projects close to commercialisation.

We also encourage complementing the use of TRLs with Investment Readiness Levels (IRL). IRLs are conceptually similar to TRLs, but have a focus on the business model of the relevant project, product or service, and provide a framework for assessing the merits of investment.

Investments made through the scheme should be ‘non-dilutive’: these should not be contingent upon the funding body taking an equity share of the business. The funding scheme should be designed to position Australia to retain the talent and ideas that we are currently losing to countries where capital and commercialisation expertise is more readily available. The economic benefits delivered by the scheme justify the investment made through grants.

The funding scheme should be partially devolved to universities. This approach has proven successful elsewhere. The UK’s [Biomedical Catalyst](#) program aims to accelerate the progress of new products to market. Most of the ‘proof of concept’ components of the program have now been devolved to leading universities. This builds greater efficiency into the program, as early closure of failing projects is incentivised by the University being able to recycle monies. It also helps to attract local entrepreneurs and industry experts into the University commercialisation ecosystem.

Recommendations

The University of Melbourne recommends that the Australian Government:

- *establish a stage-gated program invest in research at TRL 2-7.*
- *commit to non-dilutive funding.*
- *partially devolve funding to universities.*

Incentives

Given the dominance of SMEs in Australia's economy, incentives for them to engage with research providers should be considered. As one example, the Innovation Transfer Program at Melbourne provides opportunities for SME staff to engage with graduate students on an "innovation challenge" that provides valuable professional development experiences to both the students and SME staff. Government policy in relation to RSP calculation has been used to alter perceptions in relation to Category 2-4 research income and incentives could be provided to business, of all sizes, to engage with universities. SMEs could be provided with vouchers to engage with research providers, in a program potentially similar to the [Small Business Innovation Research and Small Business Technology Transfer](#) programs run by the US National Science Foundation.

Industry-university collaboration

The barriers to wider collaboration between research and industry have been well commented upon and extend beyond financial incentives to invest in individual projects. The structural and cultural gaps between university researchers and industry often impedes the exchange of ideas and knowledge. The number of business executives and managers with significant research experience is much lower in Australia than in the US or Europe. Consideration should be given to a "researcher in residence" for Australian businesses to parallel the "enterprise professor" or "entrepreneur in residence" in universities. There are also skills deficits that constrain Australia's capacity for research translation. While no single intervention will overcome these barriers, there are areas where Australia's existing strengths could be better leveraged to facilitate higher levels of research collaboration. There is an opportunity to draw from successful policy and funding interventions in other parts of the world, but also to look to local programs. The Victorian Higher Education State Investment Fund and the new Breakthrough Victoria Fund are underpinned by a principle of co-design, and are playing a positive role in bringing industry and research together.

The potential contribution of Australia's research trained workforce to commercialisation outcomes remains largely untapped. There were more than 11,000 research higher degree completions at Australian universities in 2019; most of these graduates will not proceed to a career in academia. The [ACOLA Review of Australia's Research Training System](#) contains a number of recommendations for a broader training experience that are still being implemented across the sector. Measures to better utilise the skills of graduate researchers could include:

- entrepreneurial and commercialisation experiences for graduate researchers;
- expansion of support for industry-embedded PhD programs, notwithstanding differences in disciplinary practices and norms;
- building greater awareness in industry of existing PhD internship programs;
- establishing a program for translational or industry-based post-doctoral fellowships, with a focus on research commercialisation.

Notwithstanding the need to continue to build researcher capability and understanding around commercialisation, there is a need for a broader skills eco-system that facilitates the exchange of knowledge between universities and industry and that advances commercialisation outcomes. 'Knowledge-brokering' is supported by a range of professional roles, including business development managers, partnerships officers, market analysts and impact planners. These are skills that are not typically the domain of researchers. Investment is needed to build core commercialisation

capabilities in Australia that will become a driving force to enhance commercialisation and translation. These skills will need to be developed and reside both within and outside the university sector.

The sector's potential contribution to commercialisation outcomes through its teaching (as well as research) activity should not be overlooked. Government support for new curricula aimed at supporting those interested in setting up a company or other entrepreneurial activity would deliver considerable gains. This may involve support for co-designed programs, where teaching delivery and placements are shared between the relevant university and the partner organisation.

Research precincts are already the site of successful collaborative relationships between research and industry in Australia. The Melbourne Biomedical Precinct, for example, is home to the largest concentration of publicly funded biomedical research in Australia, and includes universities, hospitals, medical research institutes and industry. CSL has been a long-term partner in our Bio21 Institute and its decision to base its global R&D leadership there catalysed an expansion of laboratory capacity. CSL's corporate headquarters will also soon move to the heart of the Melbourne Biomedical Precinct. Recently, we signed a partnership with the global genomics company Illumina to establish a genomics innovation hub in the precinct to leverage emerging trends in cancer and pathogen genomics to grow new companies and jobs in this expanding area. Melbourne Connect has recently opened and uses the co-location of academics, students, corporates, SMEs, NGOs and venture firms, brought to stimulate innovation. There is an opportunity to leverage the advantages enjoyed by research precincts through a series of targeted investments.

The R&D Tax Incentive remains the single biggest source of Australian Government support for research and development, and the primary mechanism through which the Government aims to drive private sector support for R&D. The [Review of the R&D Tax Incentive Final Report](#) recommended introducing a collaboration premium of up to 20 per cent to address the modest levels of industry-research collaboration, noting that this would help address the cultural barriers and lack of familiarity that limit interaction between universities and business. There is now an opportunity to implement this recommendation as part of a broader suite of reforms to boost commercialisation outcomes. Expanding eligible activities under the scheme would also drive more value, such as the cost of embedding a PhD in the business to drive R&D.

Recommendations

The University of Melbourne recommends that the Australian Government:

- *maximise the contribution of Australia's research training system.*
- *support Australia's commercialisation skills eco-system to facilitate knowledge-brokering between research and industry.*
- *better leverage the benefits of Australia's research precincts.*
- *reform the R&D Tax Incentive to include a premium rate of up to 20 per cent for spending on collaborative research.*