



University Research Commercialisation

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Introduction

Australia produces world-leading science and research. In recent decades, we have had modest success at commercialising great Australian research into products and technologies that create new jobs, companies and industries. But we can and must commercialise our research more consistently - and on a far greater scale. Doing so will strengthen Australia's economy, build stronger sovereign capability and create many more Australian jobs.

Australia should seize the opportunity before us to 'shift the dial' powerfully on research commercialisation. To achieve stronger success at scale, two key ingredients are needed: strategic investment and specialised skills. Both are indispensable.

An initiative to drive stronger research commercialisation would pursue a seismic shift through:

- Smarter incentives to drive stronger industry engagement and investment in collaborative innovation;
- A culture shift in the research sector to turn more science into startups and pass the baton to propel more promising research into commercial partnerships; and
- Creating a new breed of lead researcher whose focus and incentives are on bench-to-boardroom science.

In this submission, Science & Technology Australia sets out a bold vision on how to achieve this urgent shift. This thinking builds on our 2021-22 [pre-Budget submission](#) proposal for a new Research Translation and Commercialisation Fund. As the peak body for the nation's science and technology sectors, representing 88,000 scientists and technologists, STA has a uniquely deep reach into the worlds of both research and industry. This positions us to play a powerful partnership role to broker expertise, deliver commercialisation skills transfer at scale, and draw on proven track records of strong commercialisation success from our own leadership, membership and networks.

This is a legacy-defining opportunity for Australia's governments, industry and research community to seize the future together. Australia's future prosperity depends on it.

Mission-driven research

Australia's science and research sector strongly supports the idea of 'mission-driven' research, national missions, or research priority areas. No country can excel at everything. Some careful specialisation in research makes sense to extend our lead in areas of existing strength, focus efforts and resources, and consolidate our lead globally in key areas of sovereign and strategic capability. It is important, however, to also leave space for serendipity.

In its 2030 report, Innovation and Science Australia made the case for Australia to set bold national missions. The benefits of this approach are not only to bring focus and resources to solve big challenges, but also in the many serendipitous products and technology created along the way. NASA is still producing commercialisable research from its space missions. Declaring a research mission is not enough to ensure success. It must also:

- Be based on a nation's research strengths;
- Have the backing of relevant industries;
- Include collaborations between industry, universities and government;
- Be flexible in its target but consistent in mechanism; and
- Have long-term support.

International success stories such as NASA or Canada's Strategic Innovation Fund (which has created 68,000 direct jobs since 2017) share these characteristics. The biggest risk to a commercialisation system is short-termism which erodes industry's trust and willingness to participate.

But for research commercialisation to be invigorated in Australia, mission-driven research cannot be the entire ballgame. In our research sector, there are ideas waiting to be translated into products. There are also challenges yet to be imagined that will need the clever application of science to solve. Any research commercialisation scheme must be flexible enough to span both opportunities. While STA agrees there is merit in setting out clear 'national missions' to focus effort and deepen our existing competitive advantages, too prescriptive an approach around missions risks commercialisation projects not being developed if they fall outside these parameters - even if they have strong prospects for commercial translation and success. We suggest national missions be used to 'guide but not dictate' areas with strong commercialisation potential.

Stage-gated scheme design

STA supports a stage-gated scheme design. Under Australia's existing policy settings, 'blue sky' research has a support mechanism, as does the final step in commercialisation. What is missing, however, is support for ideas as they reach the "valley of death". In lay terms, we describe these research translation projects as those at the "nearly there" stage of development.

STA strongly recommends the focus for further commercialisation invigoration should be on research at the Technology Readiness Level of 4 and above.

Incentives for participation

Industry incentives

Current industry incentives for research and development tend to favour in-house research - rather than research collaboration. The Research & Development Tax Incentive (R&DTI) remains Australia's biggest single spending line for research and development - and yet it has no requirement for collaboration.

Science & Technology Australia has long advocated for a research collaboration premium to be added to the Research & Development Tax Incentive. A collaboration premium is an easy policy change that would drive stronger collaboration between industry and universities. Once industry sees first-hand the benefits of such collaborations, further opportunities to commercialise university research would follow.

Science & Technology Australia also advocates for a better balance between direct and indirect incentives for business investment in research. In countries where commercialisation is a part of the research culture, highly-successful programs deliver direct investment from government to incentivise industry involvement. These include

Catapult in the UK, the Small Business Technology Transfer program in the US and the Strategic Innovation Fund in Canada. A similar approach could deepen incentives in Australia's economy - which has a high proportion of small and medium business enterprises (SMEs). A proposed [Research Translation Fund](#) would provide co-funding for projects (in this case mission-based projects) to researchers and industry in a way similar to Canada's Strategic Innovation Fund.

Researcher incentives

Despite some changes to funding mechanisms in the past, there are still too few direct incentives for researchers to commercialise their work. Going out and finding industry partners takes time and effort. It cuts into researchers' time to apply for grants. Scientists and researchers need the opportunity to spend time on commercialisation without their future traditional grant opportunities being put at risk.

The ARC Linkage Projects scheme aims to encourage research collaborations with industry. Assessment evaluates traditional research metrics such as publications rather than applicants' industry engagement and/or commercialisation experience (patents, industry projects, products enabled, etc). Any attempt to invigorate research commercialisation must come with a close look at how researchers are able to move between research and industry without penalty, and how their academic careers can continue to flourish if they dedicate a significant portion of their time to commercialisation.

Industry-university collaboration

To invigorate research commercialisation at a much greater scale will require a focus on key people in this process. This is a two-pronged strategy where:

- Projects are given the flexibility to collaborate and succeed;
- Researchers are trained in bench-to-boardroom science.

Project flexibility

Previous attempts to invigorate commercialisation have focused on encouraging collaborations with institutions. This approach has not been a strong success as research and collaboration does not typically occur because of the institutions, but rather due to the specialist expertise within them. With this in mind, the focus of this work should be on industry-researcher collaboration.

Challenge projects need a single point of entry not only for their industry partner but for other industries that may show interest further down the track. This single point of entry is the lead researcher. They are key to the commercialisation process.

Projects could be housed either on a university campus to allow for informal collaborations between projects and other experts in the institution, or in industry. But to ensure they have the flexibility needed for success, commercialisation projects should have strong autonomy. This would aim to free them from many of the more stultifying elements of university bureaucracy.

Commercialisation projects located at a university could operate with strong autonomy, and could pay to use central university resources and be able to take on students in a co-supervisory fashion as many independent medical research institutes do.

Bench-to-boardroom science

Past attempts to invigorate commercialisation have looked at industry and research as two different entities that need to be forced together. This approach has had limited success. A better approach is the concept of research 'baton passing' along the stages through to commercialisation - which Australia's Chief Scientist Dr Cathy Foley articulated in her [National Press Club address in March 2021](#).

Science & Technology Australia proposes creating battalions of bench-to-boardroom scientists as the connectors of commercialisation. Their role would be to take the research baton from university researchers and run the leg to develop it with industry.

This approach does not require every researcher to be turned into a commercialisation expert. Rather, we should focus on equipping up to 2000 leading researchers with the skills to champion the translation of technologies - a small proportion of the research workforce with the potential for vast social and economic impact.

Science & Technology Australia can play a key role in training this skilled workforce.

As the peak body for the nation's science and technology sectors, representing 88,000 scientists and technologists, we have a uniquely deep reach into the worlds of both research and industry. Our membership includes start-up incubators and scientists based in industry. This positions us to play a powerful partnership role to broker expertise, deliver commercialisation skills transfer and draw on proven track records of strong commercialisation success from our own leadership, membership and networks.

We currently deliver highly-regarded bespoke skills training to the STEM sector in specialist fields including communications, media, policy, and government engagement. This puts STA in a singularly unique position to take what our most successful commercialisation expert members know - and deploy it to create more bench-to-boardroom successes for the nation.

There might be a temptation to add further elements to PhD program design to turn more researchers into bench-to-boardroom scientists. In our view, this would be a lost opportunity and misses the immediate potential workforce of early and mid-career researchers. Identifying candidates with a strong aptitude and EQ to be these key connectors to industry and then providing specialist skills training and support will be crucial in a quest to shift the dial on research commercialisation in Australia.

Governance arrangements

One of the challenges with current funding programs is timing. While researchers are accustomed to awaiting the next grant round, industry expects greater accessibility. A rolling applications approach would be best for a research commercialisation scheme.

To increase turn-around time for decisions and limit administrative burdens, it would make sense to have a specialist selection committee for each of any defined 'national missions'. Equal representation of researchers and industry experts in each field could review applications and recommend the most promising prospects for support.

An overall Board - situated in whichever institution houses a research translation and commercialisation scheme - could make final approval decisions on support. Equal

representation from research and industry would again be a strong model. Strong conflict of interest rules and registries would be imperative.

Another challenge for the governance of this program would be the measures of success for both the missions and for initiative in general.

For the funded missions, STA champions a lithe approach. This would aim to seed promising commercialisation projects swiftly, test concepts rigorously, and either green light them to the next stage of successful development - or allow them to "fail fast", redeploying funding to other worthy projects if one can't deliver the hoped-for result. Success can be traced in:

- Income to universities from licencing research;
- Spinout revenue and jobs created by new companies;
- An efficiency measure that encourages fast failure.

Stronger invigoration of research commercialisation would generate vast economic benefits for Australia from a relatively modest public investment. If this push created even a handful of billion-dollar Australian grown and owned start-ups, this would generate significant new jobs growth and whole new industries for our economy.

We would be delighted to assist the development of this important work further. We would also be pleased for STA's submission to be made public.

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