



THE UNIVERSITY OF
SYDNEY

Duncan Ivison
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Mr Jeff Connolly
Chairman and CEO of Siemens Australia and New Zealand
Chair, University Research Translation Expert Panel
C/- Department Education, Skills and Employment

By email: urcs@dese.gov.au

Dear Mr Connolly,

Thank you for the opportunity to provide feedback on the [University Research Commercialisation Consultation Paper](#) released by the Hon. Alan Tudge, Minister for Education, on 26 February 2021.

In preparing our submission we consulted our researchers who lead successful collaborations with industry partners, or who have translated research into commercial and other benefits for the community. Through them, we engaged with some of our established industry partners GE, Qantas and Thales, and with spin-offs from University of Sydney research such as Elastagen, DetectED-X, Gelion Technologies, Licella Holdings and Q-CTRL. We also consulted staff responsible for our entrepreneur education and training programs, for managing our [incubator](#) and [knowledge hub](#) co-working spaces, and for growing [our partnerships](#) with industry, government and community not-for-profit organisations.

Their feedback informs our answer to the Consultation Paper's questions below. We also include as an attachment statements from some of our researchers and their industry partners about the factors they believe hold the key to successful industry/university partnerships and the commercialisation of university research.

Eight key themes or policy design principles emerged from our expert staff and partners in response to issues and questions raised in the Consultation Paper:

- There is an important place for mission-driven research and greater commercialisation efforts as part of an enhanced and diverse mix of funding sources for R&D in Australia.
- People are key to successful research commercialisation. Policy and financial incentives for individuals and universities need to support entrepreneurial researchers to put time into commercial efforts.
- Universities are creating, promoting and releasing IP as simply and quickly as possible to its creators, spin-offs and other companies committed to commercialising research and this should continue to be encouraged.
- Incentives are needed for industry as well as universities to enhance levels of collaboration, develop and champion entrepreneurs and drive cultural change. The most successful university/industry partnerships are built over many years and are multidisciplinary in approach.



- A new Australian government scheme to help bridge the ‘valley of death’ that confronts university research with commercial potential would be welcome but should not come at the expense of existing funding for university R&D or require university co-contributions. It needs to be simple, transparent, quick and flexible.
- The Government must continue to invest in a strong and growing capacity for basic research, high quality education, research training and infrastructure. These are the building blocks for a dynamic and competitive Australian innovation and translation ecosystem.¹
- The lengthy and often non-linear nature of the innovation process requires a long-term and holistic perspective to policy development and investment.
- The Government plays a vital role in stimulating innovation and industry/research collaboration across the economy by setting clear policy targets, providing regulatory certainty and appropriate funding incentives, and then leaving it to individuals, firms and market forces to deliver the desired outcomes.

Responses to the Consultation Paper’s proposals and questions

Mission-driven research

Missions are appropriate as part of a diverse mix of funding sources supporting R&D. Australian Governments have prioritised investment in R&D (including research infrastructure) in line with nine *Science and Research Priorities*² for many years, with these under review.³ The Medical Research Future Fund includes *Research Missions* while the Modern Manufacturing Strategy and the Low Emissions Technology Statement are other examples of current missions with a commercial emphasis.

Missions to focus university research commercialisation efforts should be aligned with an updated and broader set of national research priorities that draw on our universities’ strengths across all disciplines and have the potential to develop economically and socially impactful and employment generating Australian industries. They should be agreed in consultation with industry, state and territory governments, universities, researchers and their representative academies. To ensure that the missions endure beyond the political cycle, they should have horizons of at least 5-10 years with progress measured and reviewed every three years.

Stage-gated scheme design and Incentives for participation in such scheme

We agree that a key barrier to the successful commercialisation of more Australian university research remains the availability of funding to progress innovative ideas and new technology to the proof-of-concept point needed before industry or venture capital is willing to invest.

Feedback from our researchers with first-hand experience commercialising their technology was mixed on the desirability of a stage-gated scheme. Some were strongly supportive, noting that Australia lacks national programs at scale like the United States’ long-standing Small Business Innovation Research (SBIR) and the Small Business Technology Transfer (STTR). They said that any such scheme needs to be targeted to support university research, which has different needs to non-university start-up enterprises. Others argued that any new scheme to foster university

¹ Here we note Industry, Innovation and Science Australia’s recent findings about the shift from basic to applied research that has occurred in Australia’s universities and the economic and other reasons why strong public funding for basic research is important: [Driving Effective Government Investment in Innovation, Science and Research](#), 2021, p.35.

² <https://www.arc.gov.au/grants/grant-application/science-and-research-priorities>

³ <https://www.arc.gov.au/about-arc/consultations/national-science-and-research-priorities-review>

research commercialisation needs to be simpler and nimbler than traditional stage-gated schemes. Some also advised that stage-gated schemes reflect an outdated linear and supply-driven understanding of the innovation process, pointing to models of open, soft and networked innovation that recognise the process is often much more organic and complex than A leads to B leads to C.

Our researchers told us that their most valuable resource is time. ‘Commercialisation fellowships’ that allow researchers to step away from day-to-day responsibilities and focus on commercialisation would be welcome and impactful. Support for more commercialisation and entrepreneurship training would contribute to lasting culture change, especially as PhD students and early career researchers conduct much of the hands-on research. Although there is more to do, at the University of Sydney, we now recognise and support the pursuit of industry engagement and commercialisation as part of our academics’ career paths. Further support to enable even greater porosity between industry and universities should be a priority.

We note that the Consultation Paper does not mention the Australian Government’s establishment in 2016 of the \$500 million [Biomedical Translation Fund](#) (BTF). Anecdotally, the BTF still tends to only fund research at the clinical stage, overlooking the critical pre-clinical phase where proof-of-concept funding is desperately need. We recommend an evaluation of the BTF and strongly support the establishment of a new national scheme, which targets grant support to university researchers to undertake proof-of-concept work in all fields other than medical research. The scheme will have the greatest impact if it has the flexibility to support motivated individual university researchers and research teams directly, in the form of PhD scholarships, commercialisation fellowships, as well as providing funding for spin-offs and SMEs seeking to take discrete projects and IP through to proof-of-concept.

Industry-university collaboration

Multiple incentive structures already exist to reward universities and individual researchers who receive funding from and otherwise collaborate with industry. The key opportunities to link supply with demand lie in finding ways to increase the market pull for university expertise and technologies, including removing barriers to research commercialisation and the development of productive industry/university partnerships.

Researchers with strong industry links and experience are adept at identifying demand for their research. For researchers who have not been exposed to industry, or who are new to the challenge of commercialising research, access to expert advice and mentoring can ease the transition of an idea to a commercial reality. University commercialisation and industry partnership offices play important advisory roles and assist researchers to identify and meet demand for their ideas and technology, including through close working relationships with our venture capital partners such as [Uniseed](#) and [IP Group](#).

We need to find more incentives and support for early engagement between researchers and industry and the expansion of industry-linked PhD programs would deliver significant improvements. We strongly support the Review of the R&D Tax Incentive’s recommended introduction of a 20 per cent collaboration premium for the non-fundable tax offset. If adopted, the premium would also apply to the cost of employing new PhD or equivalent graduates for their first three years. We recommend, however, that the Government does not restrict the employee cost component of the proposal to graduates with PhDs in the STEM disciplines. Graduates from disciplines beyond STEM have much to offer industry and should not be excluded from this proposed policy reform. So long as the graduates are employed by business in genuine research or research management roles, equivalent graduates from all disciplines should attract the premium.



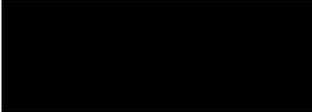
Governance arrangements

We endorse the Go8's key enabling recommendations as follows:

1. That the Government commit to a **principle of ongoing co-design** involving industry, universities and government of any material initiative to uplift Australia's research commercialisation record.
2. That the Government establish **an ongoing advisory committee**, building on the existing advisory panel, comprising university, industry, SME and government representatives, to advise it on specific research commercialisation opportunities and gaps in Australia, and to champion key initiatives.

I trust this feedback is helpful and commend the attached supporting statements provided by some of our researchers and their industry partners.

Yours sincerely,



Professor Duncan Ivison
Deputy Vice-Chancellor, Research

Attachment Statements from some of the University of Sydney researchers and their industry partners about the factors they believe hold the key to successful industry/university partnerships and the commercialisation of university research

The keys to successful industry/university collaboration and research commercialisation

Perspectives from some of our industry partners and researchers engaged in successful partnerships with industry and the commercialisation of their research

“It’s absolutely clear to me that the key to successful business/university collaborations is the creation and maintenance of long-term partnerships, based on mutual respect and trust between business and academia. The most successful partnerships are patient, with at least a 5-10 year horizons. They are directed towards solving industry problems but are open minded about the path that the collaboration might take. They also acknowledge and support the importance of pushing the boundaries of knowledge and understanding through discovery research and international collaboration to develop human capital and ensure Australian companies have access to a broader range of world leading R&D and innovation.”

Belinda Hutchinson AC / Chancellor, The University of Sydney / Chairman, Thales Australia Limited / Non-Executive Director, Qantas

Improving the customer experience - Qantas Dreamliner health & wellbeing partnership - [qantas.com](https://www.qantas.com)

“By taking a holistic view of our customers, our partnership examines everything from reducing the impact of jetlag to health, nutrition, sleep and state of mind through the entire journey experience ... We didn’t have this brief with a beginning and an end, we have an ongoing relationship It’s been one of the most enjoyable partnerships I’ve had in my 25 years at Qantas.”

Philip Capps / Head of Product Strategy & Development, Qantas Airways

“At the Charles Perkins Centre we were able to convene an impressive, multidisciplinary team to work in true partnership with Qantas. It has been exhilarating to conduct research that is both fundamentally interesting to our researchers and is translated directly with clear and measurable benefits for passengers, flights crew, and the airline’s bottom line.”

Professor Stephen Simpson / Academic Director, Charles Perkins Centre

Realising the potential of quantum technology - [q-ctrl.com](https://www.q-ctrl.com)

“The only reason Q-CTRL is in such a strong position is that our core IP was unencumbered and the University of Sydney rapidly determined that it was acceptable for me to pursue a commercial spinoff without a conflict.”

Professor Michael Biercuk / CEO & Founder, Q-CTRL / Director, Quantum Control Laboratory

Improving patient outcomes with synthetic skin replacement technology - [Elastagen](https://www.elastagen.com)

“I am pleased that the company I founded, Elastagen, has been so successful and brought a large financial return to Australia. I am the inventor on a substantial collection of strategic patents here and overseas. Much of my success is due to a smart networked community and a lot of self-motivated drive. I relied on the foundation provided by a robust university research environment, which gave me the freedom to pursue my translational vision.”

Professor Tony Weiss / Professor of Biochemistry and Molecular Biotechnology / Founder Elastagen Pty Ltd

Pioneering technology for a lower carbon future - [licella.com.au](https://www.licella.com.au) & [gelion.com](https://www.gelion.com)

“Research translation as such is not an end in itself, it is a means to address pressing problems in a manner that generates profit for the people doing it. Directing this market interplay by setting targets, de-risking investment and creating legislative market certainty (at least for a while) is one of the critical roles of government. What is needed is a clear policy framework with evidence-based targets and a selection of de-risking instruments for the introduction of new technologies that can address the targets, the market will respond (...) and government needs to harness the market’s power by directing its attention. The rest happens on its own.”

Professor Thomas Maschmeyer / Executive Chairman, Gelion Technologies Pty Ltd / Co-Founder & Principal Technology Consultant, Licella Holdings / Director, Laboratory of Advanced Catalysis for Sustainability

Eliminating diagnostic error in imaging worldwide - detectedx.com

Partnering with world-class academics with a world-class product such as DetectED-X, is enabling us to educate and therefore sell to our global markets much quicker than we originally expected, and that in turn is letting us achieve our mission of saving families from cancer. We look forward to continuing to tap into the innovation that the University connection brings"

Ralph Highnam, PhD, Chief Executive Officer, Volpara Health

Connecting industry and researchers through co-location and support - [Sydney Knowledge Hub](#)

"The Knowledge Hub has assisted in introducing us to partners from across multiple disciplines. A connection to Westmead Breast Cancer Institute opened the door to meeting clinicians (who worked) with us... to start a local sample collection to validate the BCAL test. Introductions lead to academics at the University, which allowed discussions for ARC funding applications. We also connected with fellow Knowledge Hub start-up, DetectED-X, a breast cancer imaging start-up, about potential collaborations. These are just a few examples of the versatile connections established thanks to Sydney Knowledge Hub."

Dr Amani Batarseh Chief Scientist, [BCAL](#) (Sydney Knowledge Hub member)

Accelerating student startups and training future entrepreneurs - [INCUBATE](#)

"Coming from Silicon Valley, INCUBATE is an extremely well thought-out program. You can't put a price on the benefits of going through it."

Austin Nichols, Director, CISCO MERAKI

"INCUBATE is an amazing startup program for students serious about entrepreneurship who are open to learning by doing."

Petra Andren, CEO, CICADA Innovations

Driving Australian manufacturing with [General Electric](#)

"Additive manufacturing is an enormous scientific and technological disruption and the opportunities for Australia are immense. GE knew we needed a partner that had outstanding capability in the key fundamental disciplines, particularly materials science, and the will and ability to work with us on a translational research agenda. Our strategic relationship with Sydney is a critical element in Australia's progress to develop a reimagined 21st century manufacturing sector."

Sam Maresh / Country Manager, General Electric

Transforming aerospace, defence, security and transport capabilities with [Thales Australia](#)

"Thales has always believed in the power of innovation ecosystems to solve the most difficult challenges. By linking Thales and our specialist local suppliers with the research power of academia, an effective innovation ecosystem brings the right people and incentives together in a collaborative partnership. We have found that patient investment builds long term relationships and trust between the company and a university. The broadening of our research relationships with Sydney University over the years is evidence of how an effective innovation ecosystem develops over time.

For Australia's national security in an uncertain world, where emerging technologies are posing new and powerful risks, this has never been more important. Defence, defence industry, research agencies and universities will need to build on these long-term research relationships and find new ways of working together. It may mean for example a greater willingness on the part of universities to fund researchers within companies like Thales where there has been a long and trusted relationship, in order to accelerate the commercialisation of joint research and ensure the benefits are realised in the national interest."

Gary Dawson, Vice-President Strategy, Thales Australia