

A SUBMISSION TO THE FEDERAL GOVERNMENT’S PAPER: “Boosting the Commercial Returns from Research”.

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Introduction

The University of Tasmania welcomes the opportunity to provide a submission in response to the Federal government’s paper, *“Boosting the Commercial Returns from Research”*.

The University of Tasmania has ambitions to undertake commercially relevant research and we encourage any avenue of government support and policy to support partner organisations and businesses to engage in joint research projects. We can provide evidence to show that our researchers have engaged with their respective industry partners and delivered research outcomes that underpin billions of dollars in value for Australia. Importantly, these are not projects that provide an immediate return on investment to the University but should none-the-less be configured as a rich research resource for the country.

The University of Tasmania has chosen to provide feedback on the following seven key questions:

1. How should research funding be adjusted to provide greater incentives for collaboration between research and industry?
2. What changes to intellectual property arrangements would facilitate collaboration and commercialisation of ideas?

3. What mechanisms would increase the level of collaboration between University researchers and industry?
4. How can we increase the level of entrepreneurship in our Universities and support the creation and growth of new business?
5. What changes to research training programs would incentivise and facilitate closer collaborations between researchers and industry?
6. How should Australia address research infrastructure to attract the world's best researchers and facilitate collaboration with industry?

Executive Summary

The University of Tasmania summarises its responses to the questions as follows;

Response 1: The current definitions for research income categories could be revisited to minimise overlaps and increase category specificity. The government could consider the introduction of another category(s) that more directly measures engagement with industry. Further, it might introduce (*incrementally*) new weightings to properly incentivise engagement, but only at a pace which allows universities to redirect future resources without compromising core educational missions.

Response 2: New practices to partially offset the publicly funded research organisations' (PFRO's) qualifying intellectual property (IP) protection costs, and the development of IP frameworks to accelerate university-industry negotiations, will reduce currently high barriers to collaboration.

Response 3: Without access to financial incentives / mechanisms universities will remain largely unable to redeploy existing, or secure new researchers committed to mid- to longer-term collaborations and consultancy with industry.

Response 4: There would be a marked increase in the number of universities with entrepreneurial programs if the government provided access to resources to meet the costs to access cohorts of business mentors and/or offered very-early stage investors financial incentives to invest in university-based incubator or accelerator opportunities.

Response 5: Without regulatory and taxation reform to permit part-time higher degree research (HDR) students to receive income tax-free scholarships from industry and clearer conditions for tax-free scholarships for HDR students, there will be little change in the number of HDR-industry engagements.

Response 6: The amount of funding for infrastructure assets appears too low to offer the nation sustainable global competitiveness. An increase in overall commitment to infrastructure and an equitable rationalisation that takes into account end user contributions, may offer a practical solution.

Response 1: Research Funding Allocations

*The current definitions for categories of research income could be revisited to minimise overlaps and increase category specificity. The government could consider the introduction of another category(s) that more directly measures engagement with industry. Further, it might introduce **(incrementally)** new weightings to incentivise industry engagement, but only at a pace which allows universities to redirect future resources without compromising core educational missions.*

Synopsis:

With respect to changing the approach to the allocation of research funding the University of Tasmania makes the following comments:

- (i) The current **definitions** for research income category could be **revisited** to minimize overlaps and increase category specificity.
- (ii) The Government could consider **introducing incrementally a new category(s)** to more directly measure university-industry collaboration.
- (iii) Any changes to the allocation process for RBG must **provide incentives for University to invest in their future collaborative performance**, otherwise the changes may inequitably reward past performance and/or create perverse incentives. If adopted the government should call for input on appropriate metrics for effective university-industry engagement.
- (iv) There remains considerable opportunity to place increased emphasis on university-industry collaboration through **other mechanisms** beyond the **RBG allocation**.
- (v) Any revision to the RBG scheme should where possible, **leverage metrics already being recorded** in the HERDC system.
- (vi) Where possible the revision should **limit the introduction of new metrics** to those that are essential to drive meaningful outcomes.
- (vii) There are critical educational outputs of Universities which are not traditionally taken up by industry (e.g. **Humanities and Social Sciences**) and any revised allocation process should **continue to allow** those disciplines to **compete** for funding **using existing metrics**.

Response 2: Changes to IP Arrangements

New practices to partially offset the PFRO's qualifying IP protection costs, and the development of improved IP transfer frameworks will accelerate University-industry negotiations and reduce barriers to commercialisation.

Synopsis:

- (i) The University of Tasmania seeks new policies to support innovators and publicly funded research organisations (PFRO), so that this important IP-related investment barrier can be removed. The government might provide funding to **partially offset the PFRO's qualifying IP protection costs**. For example a reimbursement scheme that meets (say 50%) of the patenting costs *that an industry partner agrees to meet* under the terms of a *commercial license* with the patent owner (i.e. the PFRO), is worthy of consideration. This scheme might be funded by **restructuring the current R&D tax arrangements** to include a specific rebate.
- (ii) The government might consider **staged grants** where in the initial phase, the minimum financial support (to complete the target research outcomes) is provided, but where the grants contain additional contractual undertakings to **provide follow-on financial benefits for participants that achieve pre-agreed impact/commercial/collaboration targets**.

Response 2- Discussion

The University of Tasmania has provided commentary on this issue in its submission¹ to the 18 March, 2014, Senate Economics References Committees call for responses to its paper, "*The Challenges to Australian industries and jobs posed by increasing global competition in innovation, science, engineering, research and education*". In the present submission it also draws to the government's attention the discussion paper² by the World Intellectual Property Organisation (**WIPO**), that considers IP issues with respect to university-industry technology transfer.

Our earlier submission noted that for university-created inventions and innovations for which there is a commercial opportunity, PFROs are often required (by their potential commercial / industry partners) to secure intellectual property (IP) protection in order to offer some form of commercial advantage.

For many types of IP, patenting is the mechanism commonly used to secure the limited commercial monopolies that industrial partners typically require. However, while patent protection often needs to be in place soon after the innovation has been created (or be un-protectable), it may be **many years before the technology has matured** sufficiently that there is commercial uptake.

In the event a commercial partner licences that IP, it **may be several years again before the PFRO receives any royalty** to offset its IP costs, costs that typically continue throughout the course of the licence. As a result of the substantial financial impost associated with filing and maintaining patents, most **universities are only able to protect a small proportion of the publicly funded intellectual property**.

Importantly, those long-term IP investments drive commercial behaviour that means at best, the **negotiations are long** or at worst inconclusive and **innovation is not taken up by business**, or the commercial returns **reduce incentives to reinvest** those returns into future patenting strategies.

¹ http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Economics/Innovation_System/Submissions

² <http://www.uschamberfoundation.org/sites/default/files/article/foundation/IndustryAcademia.pdf>

Without change to the innovation system, Australian research organisations and particularly PFROs will be unable to afford to protect otherwise valuable IP and therefore be without the fundamental assets that commercial partners seek. While unaddressed this issue will **perpetuate a barrier to collaboration**.

The University of Tasmania sees merit in the government introducing new policies to support innovators (and in particular PFROs) so that this important IP-related investment barrier can be removed. For example, the government might consider providing funding (which could take a variety of forms) to **partially offset the PFRO's qualifying IP protection costs**. For example a reimbursement scheme that meets (say 50%) of the patenting costs *that an industry partner agrees to meet* under the terms of a *commercial* license with the patent owner (i.e. the PFRO), is worthy of consideration. This scheme might be funded by **restructuring the current R&D tax arrangements** to include a specific rebate to the commercial partner.

The Government's paper also raised the possibility of introducing measures to strengthen IP guidelines where grants are conditional on the appropriate management and dissemination of IP.

In relation to implementing grants that contain conditions which require certain IP management and exploitation metrics, the University of Tasmania is broadly supportive of the *concept* but would anticipate that defining those metrics would be complex and difficult.

Instead, the government might consider **staged grants** where in the initial phase, the minimum financial support (to complete the target research outcomes) is provided, but where the grants contain additional contractual undertakings to **provide follow-on financial benefits** (e.g. additional development funding, reimbursement for certain commercialisation costs, preferential taxation arrangements etc.) for **participants that achieve pre-agreed impact/commercial/collaboration targets**.

Such an approach does not rely on defining in advance what the IP management and IP exploitation terms should be and instead incentivises the participants to **dynamically manage and exploit the IP** in a way which targets the agreed outputs.

The Government's paper sought feedback on the use of an IP toolkit to overcome obstacles and accelerate negotiations. A separate list of common legal obstacles when negotiating with industry is provided in Appendix 1.

Embedded within the Government's question concerning IP arrangements that facilitate collaboration and commercialisation of ideas, the paper explores the implications of benefit-sharing for university-based researchers.

We are currently considering a review of its benefit-sharing policies, (i.e. our IP Ordinance). While its deliberations are ongoing the University would make the following comments;

- i. Benefit sharing schemes should be flexible enough to accommodate the **wide array of technology transfer mechanisms**.

- ii. The terms of benefit sharing schemes should **encourage innovation** and commercialisation and take into account the **risk-reward balance**.

Benefit-sharing programs (in whatever form they take) are by their nature designed to provide medium to long-term incentive to researchers to commercialise their research. However, it is equally important to provide mechanisms which **incentivise researchers to disclose pre-commercial inventions** in the first place. To that end universities need adequate resourcing and the government might consider providing a modest pool of funding (either embedded in the RBG process or separately) to be administered by universities as rewards for encouraging and assessing invention disclosures.

Response 3: Facilitating University-Industry Collaboration

Without access to financial incentives / mechanisms Universities will remain largely unable to redeploy existing, or secure new researchers to participate effectively in mid- to long-term collaborations and consultancies with industry.

Synopsis:

The University of Tasmania would encourage the government to consider mechanisms which:

- i. Provide industry with a **platform** (and incentives) **to identify R&D challenges** and the ability **match** those with **University capabilities**³.
- ii. Universities are financially supported to **offset the normally substantial costs associated with redirecting traditional academic efforts** towards these industrial projects.

Discussion

Currently Australian universities (by and large) do not have the staff to resource mid- to long-term industry collaboration. Financial arrangements that incentivise universities to either hire industry dedicated academics (or to backfill academic positions) to **avoid compromising the University's obligations to teaching and research is critical**. This flexibility is common-place in many American universities, which use this as a mechanism to *build a pipeline of industry related collaborations*.

The government might consider programs such as the US National Science Foundation's, *Grant Opportunities for Academic Liaison with Industry* (GOALI) program⁴. The GOALI program supports faculty, postdoctoral fellows, and students to conduct research and gain experience in an industrial setting and conversely industrial scientists and engineers to bring industry's perspective and integrative skills to academe.

³ The federally funded *Manufacturing Excellence Taskforce Australia* (META), is pursuing an initiative addressing this issue in the manufacturing space.

⁴ <http://www.nsf.gov/pubs/2012/nsf12513/nsf12513.htm> GOALI targets high-risk/high-gain research with a focus on fundamental research, new approaches to solving generic problems, development of innovative collaborative industry-university educational programs, and direct transfer of new knowledge between academe and industry.

Response 4: Facilitating Entrepreneurial Programs

There would be a marked increase in the number of Universities willing to administer entrepreneurial programs if the government provided access to resources to either; (i) establish new, or augment existing entrepreneurial programs, (ii) fund access to a cohort of business mentors for the programs and offered very-early stage investors financial incentives to invest in incubator or accelerator opportunities.

Discussion:

There is substantial evidence to indicate that a vibrant entrepreneurial culture is essential to ecosystems of innovative⁵ and competitive economies. Likewise, there is now a range of credible models for Australian university-based entrepreneurship including; ATP Innovation⁶, Griffin Accelerator⁷, Melbourne Accelerator Program⁸ (MAP).

While the scope of the University's direct involvement in these schemes ranges (from minimal to significant), in each case there is a need for **resources and capital to jump-start entrepreneurial ideas**. For many universities finding the capital (which typically ranges between \$10K-\$50K per opportunity) to support the very earliest stages of commercialisation, is prohibitive, particularly when compounded with the resources needed to provide the working spaces, offset mentoring costs and meet other administrative overheads.

The University of Tasmania would support initiatives which provide one-off allocation of money to establish a new, (or augment an existing) University based entrepreneurial program, on the basis that this one-off investment would provide (in the case of new entrepreneurial programs) the start-up funding required.

To encourage sustainability, this type of funding might be subject to the University providing a business case that demonstrates at least nominal commitments by state or local government, program mentors and potential follow-on investors to participate. These accelerator / incubator business cases could be assessed by a panel of independent experts with a strong track-record in the space.

If the Government were unable to commit dedicated funding to directly support University accelerators / incubators it might as an alternative consider;

- i. funding a program that would support a cohort of business advisors / mentors to make themselves available to accelerator and incubator programs, as there is evidence that the quality of, and access to advisors is a key factor in the success rate of these programs and

⁵ http://www.rhgraham.org/RHG/Recent_publications_files/MIT%3ASKoltech%20entrepreneurial%20ecosystems%20report%202014%20_1.pdf

⁶ <http://atp-innovations.com.au/>

⁷ <http://www.griffinaccelerator.com.au/>

⁸ <http://map.eng.unimelb.edu.au/>

- ii. Offering **special tax treatment** or other benefits **to investors in University accelerator programs** or,
- iii. Offering matching investment funding (with a cap) for private investments made into accelerator / incubator start-ups.

Response 5: Research Training Programs

Without regulatory and taxation reform to; (i) permit part-time higher degree research (HDR) students to receive income tax-free scholarships from industry and, (ii) the ability for higher degree research students to receive tax-free scholarships on the condition that they undertake a fixed-term placement in industry, there will be little change in the extent of meaningful HDR-industry engagements.

Discussion:

University of Tasmania strongly endorses the continuation and extension of funded research programmes that drive collaboration between industry and researchers. In particular, the Australian Research Council (ARC) **Industrial Transformation Training Centres (ITTC)** appears to be a program creating enduring relationships between universities and industry partners.

In the University of Tasmania's experience, these programs has been able to support high quality research that has the potential to address industry goals on terms which allow Universities to maintain strong research integrity and meet their obligations to offer students a high quality educational experience, while at the same time creating commercial value and enduring relationships with industry.

The University of Tasmania's joint venture with the Tasmanian Government – the Tasmanian Institute of Agriculture (TIA), is another example of an effective model to facilitate long term collaboration. This partnership has brought together the resources of the State Government with the scientific research and teaching capacity of the University to create a centre of excellence in agricultural research, development, extension, education and training. TIA's activities are funded by the State Government, the University of Tasmania, agricultural research, development and extension organisations, resource management organisations, other granting bodies and industry.

However, there is scope to remove barriers which currently limit the opportunities to place postgraduate students in industry settings as part of their study programs. Currently, barriers exist in the areas of; (a) taxation in relation to industry sponsored postgraduate research (including scholarships) and (b) the ineligibility of part-time students to receive scholarships and financial industry support on a tax-free basis.

Others have already reported^{9,10} that, students graduating from research programs involving industry partnerships and placements develop a broad suite of skills and are typically highly

⁹ "The Changing PhD"- The Group of Eight , March 2013:

successful in securing industry employment. For this reason the University of Tasmania would welcome the extension of the programs and/or others like it as a vehicle to create highly competitive graduates.

We submit that a review of mechanisms to increase industry relevant research training should take into account the fact that not all industry experience is gained while persons are *exclusively* in the employ of industry, and in particular should consider industry's ability to offer tax-free scholarships.

Specifically we recommend a review of the following areas;

Part-Time Scholarships: Students who are both **part-time employees and part-time students are ineligible to receive income tax-free scholarships** (whether or not from their employer) based on s51-10 of the *Income Tax Assessment Act 1997*. **Scholarships** paid by industry to their employees undertaking research training that is *related to their employment* are also likely to be **taxable**. In our experience, this is **typically a strong disincentive** for those persons already employed in industry pursuing research training.

- a) Scholarships Paid on the Condition of Completing an Industry Placement: Even where a student is full-time, or not employed by industry, there are other legal impediments to the payment of scholarships to support students undertaking placements with industry where they are also undertaking higher degrees by research (such as a PhD or Masters by Research):
 - i. Universities approached with 'scholarship' opportunities must assess in each case whether any required placements are still 'vocational placements'. Placements supported by scholarships may not be a 'vocational placement' under the *Fair Work Act 2009* in circumstances where either the student is entitled to be paid; or the student makes an active contribution to the business; or where the placement is not a course requirement (and in particular a placement is not generally a course requirement for PhD students). In some circumstances, this means such **students undertaking 'placements' must be engaged as employees and receive a wage and other employment conditions/ benefits**. In our view greater clarity should be provided regarding what fair-work protections and entitlements apply to HDR students (enrolled in research-based courses) undertaking placements as a condition of a scholarship.
 - ii. To be treated as exempt from income tax, the 'scholarship' paid for the placement must not be primarily for the student's labour and must be principally for educational purposes based on s51-10 and s51-35 of the *Income Tax Assessment Act 1997*. Various Australian Taxation Office rulings have cast doubt on whether scholarships paid on the condition that a placement is undertaken can legitimately

¹⁰ "Research Skills for an Innovative Future- A research workforce strategy to cover the decade to 2020 and beyond"- ISBN 978 0 642 72563 9

be treated as income tax-free¹¹. As the purpose of the ‘scholarship’ is essentially assessed from the point of view of the industry placement provider¹², scholarship agreements which require the student to undertake a placement and give industry an active role in guiding student research, require the student to **provide reports** (other than updated on the progress of their course) or **assign intellectual property** in the student’s research results to the industry placement provider can cause those ‘scholarship’ funds to be **characterised as ordinary income** that is subject to income tax (and no longer a scholarship). This is a **substantial impediment to incentivising students to complete scholarships that involve industry participation** and should be remedied.

- iii. The government might also consider providing Australian based industries with financial incentives, through taxation mechanisms or otherwise, to take on more post-graduate students through industry sponsored support programs / scholarships / internships.

Response 6: Research Infrastructure

The amount of funding for infrastructure assets continues to appear too low to offer the nation sustainable global competitiveness. Subject to an increase in overall commitment to infrastructure, rationalisation across the sector in an equitable fashion (while taking into account contributions made by end users) may offer the sector a solution.

Discussion:

There is a looming crisis in terms of ageing research structure and we strongly encourage government investment and support schemes to enable our research to remain world class. In the University of Tasmania case we hold around \$80 million of infrastructure for research purposes at the University’s Australian Maritime College (AMC). AMC is the national institute for maritime and maritime-related education, training and research and is one of the seven founding members of the International Association of Maritime Universities (IAMU), which represents five continents.

AMC is globally recognised as being a centre for excellence. Our multi-million dollar suite of specialist teaching, learning and research facilities are internationally acclaimed and are utilised by government bodies and maritime-related businesses world-wide. Despite this **world-leading capability** there is **no suitable infrastructure budget for its updating or renewal**.

¹¹ See for example ATO private ruling 1012609421129, which raises the question of whether the student is a ‘full-time student or a student at a school, college or university’ while located off-site for the purpose of exemption under s51-10 of the ITAA 1997.

¹² See *Federal Commissioner of Taxation v. Hall*. 75 ATC 4156 at 4164

The University of Tasmania would make the following general comments in respect of **optimising the research infrastructure capacity in the sector**.

- i. World class infrastructure is a key platform for growing global competitiveness. Currently the investment in our infrastructure appears too low.
- ii. Building on the Linkage Infrastructure, Equipment and Facilities (**LIEF**) scheme the government might consider continuing a **rationalised but augmented investment** in infrastructure
- iii. Distributed infrastructure would require a process whereby **access was equitable**, while taking into account the relative contributions that research institutions make towards infrastructure clusters.
- iv. Federal infrastructure investments should support areas where Australia has other **sustainable advantages** (e.g. existing technology, existing commercial investment or other natural advantages).
- v. The infrastructure spend should be guided in part by a **dialogue** with industry, PFRO, Universities that would galvanise a financial contribution by all parties to ensure alignment;
- vi. With the exception of some specific sectors (e.g. astronomy) infrastructure **spend is too low** to secure an internationally competitive position.

Appendix 1

In the University's experience, common legal obstacles that exist when negotiating with industry include:

Lack of Common Understanding regarding University Functions and Requirements

For example industry often seeks terms that:

- Would restrict the PFRO's publication or examination, or impose unacceptable timeframes on the review of a student thesis which describes the results of a research project.
- Allow industry to amend proposed publications regarding a research project which might affect the academic integrity of the proposed publication or otherwise restrict the release of information that might be unfavorable to it.
- Restrict the further conduct of research which relies on the outcome of collaborative research.
- Require the University to make unreasonable warranties or provide indemnities about either: the outcomes of its research (including the purposes to which it might be put); or the extent of its due diligence in relation to whether research outputs will infringe third party IP.
- Require the University to seek the consent of authors of copyright works for industry to infringe moral rights.

Industry (particularly SMEs) lack Access to Legal, Tax and Intellectual Property Advice

In our experience, negotiations take longer when the other Party does not have access to legal or IP advice and as a consequence struggles to form or negotiate a clear position on IP matters that are addressed in a collaborative research agreement.

Third Party Funding Restrictions

Where the other party is one of several parties involved in the same project, Universities need to ensure their agreements with each other are consistent. Negotiations can be particularly difficult where one provider of funding insists on ownership or an exclusive license or option of IP arising out of the project.

As sections A-C demonstrate, such terms are usually project-specific, less straightforward and less likely to be able to be addressed through the use of 'template' terms.

It is in this context that that the University of Tasmania makes the following recommendation:

- i. A more straightforward approach (than an IP toolkit) might be to provide model IP clauses for certain situations, and information about when PFROs and industry might seek to use those model clauses. A decision guide or tool, similar to that available on the UK Intellectual

Property Office Lambert Tool Kit¹³ might assist in the selection of a suitable IP clause, encompassing publication restrictions, use and disclosure of confidential information, intellectual property ownership and licensing and commercialisation. We note however that the Lambert toolkit would need to be further developed in order to accommodate the common situation where there is a hierarchy of agreements.

We do not support the use of template term sheets addressing only IP matters, as in our experience these rarely provide sufficient instructions for lawyers to draft a collaboration or other agreement based only on those terms. Instead we suggest that the inclusion of specific questions within the term sheet, (rather than check boxes), as this will allow instructors to provide more information about agreed terms. The model CRC term sheet¹⁴ takes a question-based approach and may represent a model upon which to build such a framework.

¹³ <http://www.ipo.gov.uk/whyuse/research/lambert/lambert-mrc/lambert-decguide.htm>

¹⁴ <http://www.crc.gov.au/Selection-Rounds/Documents/Term%20Sheet%20Template.doc>