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**University Research Commercialisation – Consultation Paper**

**Submission from the Australian Council of Graduate Research [[1]](#footnote-1) (ACGR)**

The ACGR welcomes the recognition by government that ‘commercialisation’ of research is multi-faceted and involves both adoption of new research for commercial benefit to business as well as innovation through research that improves productivity. However, the background to the consultation paper is framed around the ‘barriers’ to university research commercialisation when in our view it would be more productive to assess the strengths across the R & D system and then identify structures and settings required to further develop an innovation system that would make full use of these strengths. As the peak body guiding quality and innovation in graduate research (HDR) training in Australia it is also our view that building research workforce capability should be at the heart of design elements of new initiatives in University Research Commercialisation.

**ACGR Perspective on Australia’s current performance in research commercialisation**

Universities are complex enterprises that combine learning/skill development, research/innovation and industry/international engagement. There are good reasons why much of their research is positioned in TRL 1 (Basic Research); this type of research connects knowledge generation to student learning and it enables the development of the capabilities that underpin a ‘researcher mindset’, especially in graduate researchers (HDR students). Quality research outputs have undoubtedly helped drive international fee income but it should also be recognised that industry (especially multi-nationals) also use publication quality as a proxy for excellence in research when they are looking at university partners. It would be a mistake to discount the importance of publication impact; the ERA assessment demonstrates that all Australian universities operate at or above world benchmarks in their areas of expertise and so quality research should attract investment with the right settings.

Turning to business, its low risk appetite towards R & D investment is not a new observation but ACGR is pleased to note the recognition that government rather than private sector is the most important risk taker when it comes to research commercialisation in the early stages (TRL 1-4). We also agree that the high proportion of SMEs in Australia means that a carefully thought through strategy is required to solve the challenge of the limited capacity of many SMEs to conduct ‘in house’ R & D. Finally, the barriers in relation to IP should also come as no surprise since Universities have been expected to behave as businesses themselves. If Universities were considered as key components of an ‘*Entrepreneurial State*’[[2]](#footnote-2) and funded accordingly then a more open innovation system would emerge. Although there may be a case for some adjustments to existing grant schemes *additional investment* is required. International fees income generated over the last decade, has been invested judiciously by Universities in both people (often researchers) and in infrastructure. Increased government and business spending to enhance university research commercialisation would make excellent use of these investments.

It is now five years since the ACOLA Review of Australia’s Research Training System[[3]](#footnote-3) released its report. The implementation of the review recommendations, driven by the ACGR and Universities and government, in collaboration with numerous stakeholders has transformed graduate research education in Australia. The system is now producing graduate researchers with well-developed research, transferable and professional skills, and many of these graduates aspire to work outside of academia[[4]](#footnote-4). Industry is also increasingly seeing the qualities that graduate researchers bring to a business through internship and placement schemes. The ACGR urges the government to build on this transformed Research Training system and put in place investment that will make full use of the capabilities this postdoctoral research workforce of PhD graduates.

**ACGR Response to Discussion Questions**

**1. Mission Driven Research**

The concept of Mission-based innovation is (re-) gaining acceptance around the world and ACGR agrees that an Australian initiative is required, the more so in view of post-COVID, post-globalisation economic and national security considerations. As Mazzucato describes in *Mission Economy[[5]](#footnote-5)* ‘grand challenges’ such as *Ageing Society* can be divided into many different elements that would require integration of activity that involves several government departments and across a number of business sectors. Thus, of course it makes sense to integrate smaller targeted challenges.

Questions c and d in this section need to be framed differently; although Australian researchers should actively identify demand they should also be able innovate in response to grand challenge questions and to engage with industry to co-create solutions to these challenges. This requires much greater investment in structures and processes that promote *knowledge exchange and open innovation*. This has been a core mission of research councils within UK Research & Innovation linked to agencies such as *Innovate UK[[6]](#footnote-6)* and it is a pre-requisite for the success of the types of grand challenges discussed in this paper.

**2. & 3 Stage gated schemes and Incentives for Participation**

The ACGR is pleased to note the acceptance of the critical role government rather than private sector as a high risk investor, especially in navigating the so-called ‘valley of death’ in commercialisation (associated with TRL 3-4). It follows we need to restore the idea that government is not just a ‘facilitator’ but that it can also pick winners (and we have to accept that some will fail). With respect to private sector investment an overhaul of the R & D tax credit scheme6 is long overdue. The government should use this scheme to drive investment and eliminate tax credits for expenditure where no ‘*additionality*’ is obvious.

**4. Industry-university collaboration**

It is ACGR’s view that some adjustments to government agencies are required to drive the types of Industry-University collaboration envisaged in this paper. Although the Australian Research Council has funding schemes aligned towards Industry funding (Linkage, Industrial Transformation Programs) it remains a grant awarding agency and lacks the capacity to drive industry-university knowledge exchange and collaboration as seen in U.K. R & I, for example. The potential importance of the CSIRO in the context of University Research Commercialisation should not be overlooked and it would be beneficial to consider the role that this and other Publicly Funded Research Agencies (PFRAs) would play in industry-university schemes. The UK Catapult Network is identified as a particularly successful initiative but it needs to be noted that this network is managed by the not-for-profit Innovate UK5 with strong interaction with UK R & I. Together these agencies enable Industry, PFRAs and Universities to span the TRL levels. ACGR believes that the government should be ambitious and overhaul and invest in the ARC in order to build knowledge exchange capability, and work with the DISER and other key departments to develop a new agency that can fulfil a role similar to that of Innovate UK. This would need to be configured to fit Australian conditions; a strong connection to State Governments in the development of growth centres and involvement of CSIRO and other DISER agencies.

Before answering the question of whether an Industry PhD program would help improve Industry-University collaboration it is important to consider the purpose of an Industry PhD. If the Industry PhD was aimed at increasing the number of graduate researchers focussing on Industry problems beyond applied research (TRL3 and above) then answer is that this may not be a good strategy. Working on Industry problems often involves meeting milestones on projects with attendant go-no-go, delivery of collateral benefits to businesses that ought to be performed by employees, rather than students on tax-free scholarships supporting their research training. As *developing* early career researchers it is important that PhD students continue to work on more open-ended Discovery (Basic) and Applied research (TRLs 1-2). However, exposure of these graduate researchers to later stages of technological readiness through internships/placements with businesses (such as those offered via the Australian Postgraduate Internship scheme but also in Industry-sponsored PhDs) would be excellent for the development a future workforce that could drive the sort of research commercialisation envisaged in this paper. Thus, ACGR believes that incentives to employ researchers (post-PhD) (such as a revised R & D tax credit system[[7]](#footnote-7)) and investment in a program along the lines of the Catapult Network would be transformational for Australian University-Business collaboration.

**Governance Arrangements**

We have already indicated that transformation of current agencies would be required to drive the changes envisaged by the government. This will require much greater investment from government and, as observed earlier, government can help drive private sector involvement by taking on the risk in the early stages of technological development.

The ACGR would be very pleased to engage with DESE and other stakeholders to help develop the next stages of the model for university industry research commercialisation, especially the design of an Industry PhD.

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1. ACGR Inc is the peak body for graduate research education in Australia, composed of Deans/PVCs and Directors of research training drawn from all Australian Universities <https://www.acgr.edu.au/> [↑](#footnote-ref-1)
2. Mazzucato, M. 2018 ‘The Entrepreneurial State – debunking Public vs Private Sector Myths’ Revised Edition, Penguin Books [↑](#footnote-ref-2)
3. https://acola.org/research-training-system-review-saf13/ [↑](#footnote-ref-3)
4. Advancing Australia’s Knowledge Economy – Who are the top PhD Employers? 2019 McArthy P.X. and Wienk M. AMSI & CSIRO Data61’s Ribit.net [↑](#footnote-ref-4)
5. Mazzucato, M. 2021 ‘Mission Economy’, Allen Lane [↑](#footnote-ref-5)
6. <https://www.ukri.org/councils/innovate-uk/> [↑](#footnote-ref-6)
7. <https://www.industry.gov.au/data-and-publications/2016-review-of-the-rd-tax-incentive> [↑](#footnote-ref-7)