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Boosting the Commercial Returns from Research

KCA[1] welcomes the Government's focus on better translation of research into commercial outcomes, as this aspiration is also central to our association and our members

One of the comments in the discussion paper is that Australia performs poorly by international standards in translating publicly funded research into commercial outcomes. This is true in relation to some metrics – for instance new startup creation.[2] However on other benchmarks the sector performs credibly – for example in relation to licensing returns.[3] Much more significant again in terms of volume and value of interaction and engagement though are the metrics around R&D contracts.[4] These represent significant value creation and productivity improvement that flows to the economy and community from a very broad range of activities undertaken by PFRAs and Universities. The collective value of this contract and licensing engagement has grown steadily.

Naturally, measuring the value of this engagement solely by its value in terms of a revenue source to the research sector is only an indirect proxy for the full value of this interaction. For example, the development of a new crop variety that might raise millions on a per annum basis in end point royalties to those responsible for its breeding and development pales in comparison to the value of the grain traded – which may be over a billion dollars in the broader economy. The value of innovations such as Wifi and Gardasil also has a much broader productivity benefit – and impact on human lives – than that measured by the financial returns to the research sector. In many other ways contract research arrangements, whether in relation to the development of novel or improved products and services, or more efficient and production allocation of resource, deliver multiples of value well beyond their contract value.

However, regardless of current performance the focus needs to remain on how to further improve and better connect research to commercial outcomes and other forms of productivity benefit.

As a sector we also recognise that we need to do more to promote examples of successful

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1 Knowledge Commercialisation Australasia Inc is the peak sector body for those involved in commercial engagement within PFRAs and Universities in Australia and New Zealand. See www.kca.asn.au

2 National Survey of Research Commercialisation 2010 and 2011, Figure 21

3 Australian Innovation System Report – 2012 – Chart F5.1, National Survey of Research Commercialisation 2010 and 2011, Figure 20

4 Australian Innovation System Report – 2012 – Chart F5.2

translation of research to impact, to increase awareness of the potential benefits to be derived and the paths to engagement. This is necessary whether or not such impact stories become a feature of formal evaluation of performance, and in parallel to any other quantitative metrics.

Research Excellence and its connection to industry engagement

We welcome the acknowledgement of the importance of research excellence and in particular the acknowledgement that Industry engagement can also be a driver of research excellence (p.5) – this latter element is often under-appreciated, but is well recognised by those researchers who are most active in applied engagement with industry.[5]

Targeted research effort

In relation to targeting of research effort in a more concerted way in connection with specified national priorities, we are sure the government and other stakeholders will be conscious of the increasing importance and interdependence of many diverse disciplines and research efforts required to progress in areas of identified priority.[6]

Cooperation between researchers and industry

Support for translational resource*:* We recognise the various models deployed internationally to improve research business linkages. UK programs are mentioned, and we note that the UK government also directly funds translational support in part through the funding of commercial liaison and commercialisation functions inside universities. Through programs like the Higher Education Innovation Funding (HEIF) initiative the UK government directly supports and develops research translation capacity including a broad range of knowledge-based interactions between universities and colleges and the wider world, with a goal of deriving economic and social benefit to the UK.[7] There is no equivalent source of funding in Australia – institutions are required to resource their own functions, and do so in a wide variety of ways and to varying extents based on their individual priorities.

Simplify and consolidate support for research-industry engagement within and across different levels of government*:* We also believe that there is opportunity for Australia to better align the various programs that exist to support such connections – at the Federal level, but also at the point of interface between the State and Federal systems. This opportunity was identified in the Cutler review[8] but has not been embraced in a systematic way. There is still a proliferation of small, sub scale programs that are well intentioned but not sustainable, with each having varying eligibility rules and application processes. Business-research engagement would benefit much more from consolidated, simplified and aligned government support programs that are supported on a

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5 Indeed research conducted in 2009 by one of our members (Adelaide Research & innovation Pty Ltd), indicates that this is the second most significant motivating factor for researchers involved in such work, second only to their desire to see their research have some impact in the economy or community.

6 the complexities of this are noted at p10 in respect of medical research but also apply elsewhere

7 http://www.hefce.ac.uk/whatwedo/kes/heif/

8 http://www.industry.gov.au/science/policy/Pages/Library%20Card/NISReport.aspx

bi-partisan basis for a sustained period of time, and are readily accessible by business within well known and established frameworks.[9]

Connecting people around need: We believe that there is opportunity to bring the business sector and research sector together in a more concerted way around areas of national priority and strength. In conjunction with the Department of Industry, we have been exploring how we might come together to co-ordinate challenge based workshops and to provide successful examples of collaboration. As a result of these discussions, we will be launching an "Accessing Innovation" series at the upcoming biannual Austmine conference being held in May 2015. We plan to run a series of such events next year, chosen to match areas of strategic interest to the Australian Federal Government. The first session in this series will be an ancillary stream to foster research-business interaction, in line with the overall theme of next year's conference (Transforming Mining - Technology and Innovation). It is this needs focussed orientation and increased opportunities for interaction between the people engaged in our research and industry sectors that is important to spark new engagement and value add.

Changing and improving practices around contracting and IP: There is also some comment in the paper in relation to delays and difficulties experienced in negotiating IP contracts that may deter businesses trying to collaborate with Australian research organisations. There are no doubt examples of this, however in the experience of our members it is not correct to say that IP contracts typically take 10 months to negotiate. Most contracts are resolved in much shorter time frames, especially for standard research contract engagements, and most institutions now take a flexible approach towards IP ownership (and will often assign it to industry partners who engage the University under fully funded contract research arrangements, or alternative mechanisms). Nonetheless, KCA is keen to spread a better understanding of these practices and approaches in business and to help ensure its members are focussed on doing reasonable and prompt deals. We think there is an opportunity for joint discussion and training programs with industry to help facilitate this, and we have also proposed a research project on Building a skills framework for better technology transfer in the Australian context recently submitted to the submitted to the Professional Standards Council to underpin this effort with sound research on the current skillsets and gaps across the research – industry sectors as the issues and lack of skills surrounding the transfer of IP do not lie entirely with the research side.

Entrepreneurship

We agree that this is another area for focus. We look forward to the Government realising policy changes in this field around areas such as the treatment of employee incentive plans, other taxation measures, examining the potential of crowdfunding and other interventions

Proof of concept funding*:* The paper correctly observes (p16) that early stage financing to get past the '*valley of death'* funding gap (proof of concept and prototyping stages) —is crucial to success. Many of our members run internal proof of concept funding schemes[10] to help bridge this gap, investing increasingly scarce results to help transfer promising opportunities to a point where they are market ready. We think there are opportunities to better profile these schemes and their outputs and connect them more

[9] Eg the US SBIR program

[10] sometimes matching up against other sources of funding such as the Accelerating Commercialisation component of EIP

systematically into other public and private programs and funds. We note initiatives in other countries that directly support proof of concept funding within the research sector.[11]

Emerging entrepreneurial programs*:* The paper comments that most PhD programmes place limited focus on the skills and training—such as IP awareness, business management and entrepreneurship. We agree that there is room to do more in this respect, especially in a more systematic fashion. However we also note the increasing emphasis on these activities within many of our members, encompassing a broad range of interventions extending from basic skills training to entrepreneurial challenge activities, hackathons, alumni events and classes to targeted accelerator and incubator programs.[12] These programs often extend beyond simply a PhD focus group. There is also an evolving network of private and state government initiatives that are directed at supporting emerging entrepreneurs. Still there many other international models that are worthy of consideration and have extensive private and public support – Australia has some way to go to catch up to these other examples.[13] Some of our members in New Zealand have had good success with entrepreneurial programs driving new business creation and supporting growth of existing SMEs – notably perhaps IceHouse (University of Auckland).[14]

Opportunities to reshape research grant incentives

We note the proposal that block grants for Australian universities should retain a focus on quality and excellence and should be adjusted to place added emphasis on research-industry collaboration, and that other changes could be made to grant programs to recognise industry experience as a complement to research excellence. Certainly in some other jurisdictions (eg Germany) a higher weighting is placed on industry linked funding. Of course, there will be issues to be managed to avoid disproportionately focussing on work that provides an income flow to Universities from industry, to the potential disadvantage of equally impactful work that enhances productivity and efficiency but is not a rich income stream for the research sector itself (including research on evidence based policy interventions around efficient allocation of resource – in the health sector and elsewhere).

Measurement of outcomes

KCA also welcomes the Government's parallel focus on reform of the National Survey of Research Commercialisation. KCA has been proactively engaged with the Department of Industry for the last year in the lead up to the review now underway[15], and KCA members have embraced the opportunity to have further dialogue with both the Department of

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[11] Eg New Zealand's Pre-Seed Accelerator Fund (PSAF) - http://www.msi.govt.nz/get-funded/research-organisations/types-of-funding/pre-seed-accelerator-fund/ - administered through Kiwinet and University of Auckland

[12] There are a great number of these in most institutions. An indicative but incomplete list includes: the Incubate program (University of Sydney Student Union, supported by Google), Monash Entrepreneurs Club (Monash University), Thinclab and echallenge (Adelaide), New Venture Institute (Flinders), Venture Catalyst (UniSA, SA Government), Hills Innovation Centres (Hills Industries, DSTO, SA Government, UniSA, Flinders and Adelaide University), iAccelerate, iIncubate (University of Wollongong), Young Entrepreneurs and Student Entrepreneur Development (UNSW); ilab (Uniquest, UQ).

[13] For example, incubator and accelerator and entrepreneurial programs at MIT, the National University of Singapore, Waterloo and others

[14] http://www.theicehouse.co.nz/

[15] http://www.industry.gov.au/innovation/reportsandstudies/NSRCReview/Pages/default.aspx

Industry and the Department of Education. We see this as a good opportunity to cut red tape and provide more concise metrics around industry and applied research engagement.

Opportunity to encourage entrepreneurial culture – IP ownership and revenue sharing

The paper comments at page 20:

> *"There are also concerns about the disincentives created by the amount of bureaucracy at the university level associated with 'going commercial' in Australia. For example, it has been standard practice for many Australian universities to assert university ownership of IP created by staff members within the course of their duties, although revenue sharing arrangements in some universities (e.g., Monash University and University of Queensland) provide better financial incentives for researchers."*

We wish to highlight a few facts in response to this:

Institutional ownership of IP – the International benchmark: Firstly, in relation to the issue of institutional ownership of IP. This is a standard practice not only in Australia but also internationally, with very few exceptions. Germany and Japan moved away from a position of individual academic ownership of IP a decade ago, leaving only a very few examples of jurisdictions that do not follow this practice. Sweden is one example of academic ownership – interestingly a report commissioned by Vinnova found very mixed opinions in relation to the functionality of this stance, noting considerable difficulty created by it in relation to contracting between Universities and industry (as Universities were then unable to readily provide clear title to related IP).[16] Canada is another example, where there are mixed practices around ownership – some institutions following a corporate model, some an individual model and some a blend of the two (we would not recommend a blend). Most notably, the US is often held up as a leading example of engagement between Universities and business. And the US has had a clear and legislated entrenchment of institutional ownership of IP (in the context of federally funded grant activity), for many decades: under the Bayh Dole legislation from 1980.[17]

Assignment of opportunities to individuals: Institutional ownership does not prevent later assignment, and most of our members have practices to facilitate IP

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[16] Vinnova (Swedish Governmental Agency for Innovation Systems) report V R 2008 : 17 Christina Johannesson "UNIVERSITY STRATEGIES FOR KNOWLEDGE TRANSFER AND COMMERCIALISATION - An overview based on peer reviews at 24 Swedish universities 2006" at http://www.vinnova.se/upload/EPiStorePDF/vr-08-17.pdf This reported inter alia: lack of a strategic approach, information or tracking about commercialisation matters, as a result of them being treated as individual rather than institutional opportunities, internal differences in cultures within institutions; lack of new business, entrepreneurial licensing and spinout activity flowing from University work; 50/50 split of opinion about whether the professor's privilege is appropriate.

17 http://www.autm.net/Bayh_Dole_Act/3143.htm

commercialisation by the originators personally in circumstances where we are unable to drive that activity, whether by assignment or licence.[18]

Revenue sharing with originators – a standard approach: Finally, the comment tends to suggest that revenue sharing arrangements are unusual (only present in "some" Universities, such as Monash and Queensland). In fact they are standard and uniform features of all University policies – we are not aware of any significant examples where there is no revenue sharing. And the policy settings in other institutions are at least as generous to individuals as those for the nominated examples – in some cases more so, with one third or more of net returns being a common proportion. We note that academic analysis[19] suggests that the level of the revenue sharing is not a key driver of researcher commercialisation activity, but we believe it is an appropriate and important component to ensure alignment of incentives.

Beyond these observations, many of our members have protocols for the release of IP to academics in situations where we are unable to support its commercialisation (whether by direct assignment, licence, Easy Access measures or otherwise).

Opportunity to reform IP arrangements to assist collaboration

We note the suggestions and current actions to assist collaboration through a focus on IP issues, and KCA members have contributed to consultations on the IP Toolkit. However we suggest more direct interventions to foster collaboration – through networking and needs focussed discussions between industry and research partners in priority areas, combined with skills development to ensure that there is an adequate focus on identifying and defining the opportunity and ensuring a clear meeting of minds around the substance of the collaboration. IP should not be characterised as the up front issue, the end game or a barrier to be overcome. Rather it is a business tool to be used flexibly to meet the needs of the collaborators, once those needs and the opportunity has been clearly articulated. It is the substance of the collaboration and the matching of capacity to need that is critical.

It is important to promote stories of successful collaborations to improve awareness in peers in industry and the research sector of both the potential and the pathways to engagement . We are aware that this will be a component of the IP toolkit approach, but we believe it is worth sustained focus.

Improving commercial outcomes from research - Conclusion

We welcome the Government's desire to work with the research sector and industry to drive better outcomes and impact, and we mirror it. We are keen to be involved not only in further discussions with government but roundtable discussions and active work with industry to facilitate better collaboration. In conclusion:

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18 Including but not limited to Easy Access approaches
19 Monotti, A.L., Ricketson, S., 2003, Universities and Intellectual Property: Ownership and Exploitation, Oxford University Press, New York USA.

- National survey data shows steadily growing research-industry engagement in Australia, but we can improve our collaborative efforts (through skills development, cross sector networking and through some of the other measures advocated) to translate more research to impact and support productivity growth

- As resources permit over time, consideration should be given to direct support for commercial and translational resource and proof of concept funding within the research sector

- Federal and state research-industry support schemes could be better consolidated and aligned

- We need long term consistent policy (ideally with bi-partisan support), including a measure of support (programs and projects) from government in order to get the long term consistent support from industry, PFRAs and Universities. Constant change in these policy settings won't result in the sustainable and systemic changes that we need. Global evidence (UK and US) is clear that a long term and co-ordinated approach both at the policy and organisation levels in order to make a real difference.

- In seeking to foster enhanced collaboration we should adopt a needs focussed approach around priority sectors with active support for research-industry networking

- Reduction of red tape and improved metrics and alignment of incentives are all useful elements to improve outcomes

We look forward to playing our part in growing productive collaboration.

Yours Sincerely

Robert Chalmers
Chair, on behalf of the Executive Committee
Knowledge Commercialisation Australasia Inc