



REVIEW OF THE NATIONAL INNOVATION SYSTEM

“PUBLIC SECTOR INNOVATIONS, COMMERCIALISATION AND KNOWLEDGE TRANSFER”

A submission by:

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Declaration of Interests:

Dr Andy Sierakowski, is the Chair of KCA, and is also the Director of the Office of Industry & Innovation at The University of Western Australia. He sits on a number of Boards of UWA start-up companies as well as on the Board of IPRIA (Intellectual Property Research Institute of Australia).

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1. INTRODUCTION

This submission is made on behalf of the members of Knowledge Commercialisation Australasia (KCA). They represent the organisational units that provide outreach services for the majority of Australia's universities and some from the public research sector and service providers.

The submission focuses upon technological innovations and the pathways to commercialisation from public sector R&D suppliers, and suggests improvements that could be made to these activities for the benefit of Australia. We have deliberately focused our recommendations on this particular element of the overall innovation system as it is where our members' activities are concentrated.

It re-emphasises the case for greater investment in the outreach activities of these organisations; such as the so-called third stream funding as introduced by the UK government after the Lambert Review¹ of the university system there.

The submission identifies several specific areas where the government could beneficially invest in order to encourage the public sector research suppliers to extend their outreach objectives in the context of regional economic and community development.

2. DEFINITION OF COMMERCIALISATION

KCA believes that the lack of clarity in the definition of "what constitutes IP commercialisation" is at the core of much confusion and often inaccurate media reports of Australia's performance in this area. We have already stated that², in recent times in Australia, there has been an over-emphasis in applying the term "commercialisation" or "research commercialisation" to include only licensing and start-up companies. This narrow definition focussing on aspects that are easy to measure represents an incomplete and therefore biased picture. In our view, a more complete definition of commercialisation must encompass the following sub-categories:

- Industry-sponsored research contracts
- External consultancies
- Joint Venture and other collaboration arrangements
- IP licensing and option agreements
- Formation of spin-out companies
- Other technology-transfer activities

There are necessarily multiple pathways and processes that universities and public research organisations (PRO's) utilize to transfer knowledge which becomes integrated into new innovations. These pathways have been articulated by Dr John Howard in his report to DEST³ in 2005.

KCA, however, is not suggesting that we should walk-away from collecting, or ignore, current IP commercialisation data. In fact, we need to keep collecting it, but by understanding some of its' limitations we can properly benchmark ourselves, both nationally and internationally. In fact, KCA has just committed to collect these data for our members for the years 2005-2007 for just these purposes. This data set represents an important asset in better understanding research commercialisation in the higher education sector, and is the only such data available. KCA wishes to share this data as a contribution to the Innovation Review. See 6 below.

3. KCA VIEWS ON IMPROVING THE INNOVATION SYSTEM

As the leading organisation in knowledge commercialisation, KCA has an advocacy position in relation to improving the environment within which its members operate.

Firstly, KCA strongly believes that the Federal Government needs to develop long-term funding strategies for supporting public-sector research to under-pin and help drive the knowledge transfer and innovation cycle. The 2007 Australian Vice Chancellor's Committee submission to the Productivity Commission recommended that the national innovation strategy include a national commitment to a target of investment in research and innovation of "2% of GDP by 2010 and 3% of GDP by 2020".

KCA also believes that we need such clear and publicly expressed targets to show Australia's innovation commitment.

Recommendation # 1: "That the Federal Government commit to higher long-term research funding and commit to specific targets as a % of GDP."

KCA supports the need for these or similar targets to be set and met to improve Australia's research funding performance as the expected outcomes will fuel technology transfer and commercialisation, and hence innovation for Australia. Firstly, there also is a need for better clarity as to "who is doing what and how" particularly between the universities and the PRO's.

Secondly, KCA advocates improved collaboration by the key players in the innovation cycle such as the universities, the public sector research organisations and industry with targeted and federally sponsored programs.

In terms of increasing collaborations between these "players", KCA recommends the following:

Recommendation # 2: "More focussed, separately funded, and targeted research areas be identified for university and CSIRO/DSTO/ANSTO collaborations with a long-term focus (10 years)."

We see this initiative as sitting outside any CRC programs currently existing but possibly fitting into some of the "Flagship Programs" in the case of CSIRO for example. With regard to ANSTO and DSTO, longer term "research programs" need to be developed with expected or projected outcomes.

Thirdly, KCA sees the need for greater collaboration through selected long-term research programs fostering closer interactions. This would include CSIRO staff seconded to universities on 50/50 arrangements and *vice-versa* for university staff. Some of these initiatives are already happening but could really be accelerated by targeted Federal funding.

Recommendation # 3: "The CSIRO-university Fellowship Program be introduced whereby significant additional stipends be provided by the government to greatly increase joint work in specifically targeted areas of determined national priority."

In addition, we see the need for much closer collaboration and interaction with the business sector, from SME's through to larger corporations with universities. We address this in section 4 below.

4. THE UNIVERSITY SECTOR

University innovation, technology transfer, and commercialisation is generally poorly supported. KCA strongly advocates that the government re-examine the Lambert Review which is a very good model to guide us in Australia. In particular, the UK HEIF (Higher Education Innovation Fund) has many attractive elements for boosting technology transfer and innovation outcomes from the tertiary education sector.

Recommendation # 4: “That the Federal Government examine the establishment of an Australian Higher Education Innovation Fund with specific elements, three of which occur as separate recommendations below.”

The size of this fund is uncertain but might be in the region of \$150 to \$200 million dollars per annum and managed through an application process by sub-set program.

Furthermore, KCA has argued previously², and points out again, that the university sector is left to its own devices to fund pre-seed proof-of-concept work. These funds (for universities that have such pre-seed schemes) come from discretionary university funds and receive no direct support from State or Federal governments. After ARC or NHMRC funded research is complete there is often “nowhere to go” for early stage commercialisation funding. This continues to be a “market-failure” situation as current Federal programs (COMET, Commercial Ready Plus etc) require company formation for access. It is often too early to embark on company formation as the desired strategy with the result that such innovation is often left languishing.

Recommendation # 5: “That the Federal Government establish the pre-seed rebate scheme whereby bona-fide pre-seed funds expended by universities are rebated dollar for dollar in the subsequent year.”

Once a university has established a qualifying pre-seed fund (with appropriate governance), this scheme would be relatively easy to administer and would provide *real* benefits to innovations which would otherwise not progress.

Additionally, more needs to be done by universities and governments to train and advise academic staff and students on IP management, commercialisation of IP, and to improve the technology transfer process from the university to the private sector. Such IP awareness training should be conducted regularly and be obligatory for all new staff and post-graduate students. (This is not meant to replace the Commercialisation Training Scheme for higher degree research students, which should be continued). Again, this IP commercialisation training has been left up to universities without supporting funding programs.

Recommendation # 6: “That the Federal Government rebate universities that conduct such training up to a fixed amount each year on provision of a report of content and costs incurred.”

Above we mentioned that KCA recognises that further support is required to encourage universities and industry to collaborate more closely. One way of facilitating this is to increase the “flow of human resources” between the two sectors. Universities can benefit from market experienced business people (potentially alumni) with well developed networking contacts across such key areas as ICT, biotechnology, and engineering to name a few. Such staff strategically placed in universities on a part-time basis will greatly assist the interactions of the two sectors.

Recommendation # 7: “That the Federal Government set up and fund the ‘Visiting Industry Professor’ Program to increase industry-university interactions and collaborations.”

5. MAJOR FEDERAL COURT OF AUSTRALIA DECISION

There has been a very recent decision in the Federal Court of Australia (FCA 498) in the case of The University of Western Australia and an ex-employee, Dr Bruce Gray, and Sirtex Limited. In that ruling, which is a lengthy and complex one, the Justice French ruled that UWA did not own the intellectual property developed by Dr Gray whilst he was employed at the University.

Although the decision was based on a complex set of facts unique to the case, the ruling if it stands will have major ramifications on commercialisation efforts by KCA members in universities, the public sector research organisations, and indeed the funding bodies, such as ARC & NHMRC, supporting them.

Moreover, this submission has been prepared based on the fundamental underlying assumption that universities and public research organisations own the IP created by their researchers which relate to the staff member's employment contract and that they can act on their staff's behalf to seek commercial exploitation of such IP. Indeed, KCA members are daily executing IP agreements on behalf of their institutions based on this premise. There will be a need for a major overhaul of the sector's fundamental agreements and policies as they relate to IP ownership rights of individual researchers and the organisations in which they are employed if this decision stands. The level of uncertainty this decision has introduced into the university sector cannot be over-emphasised.

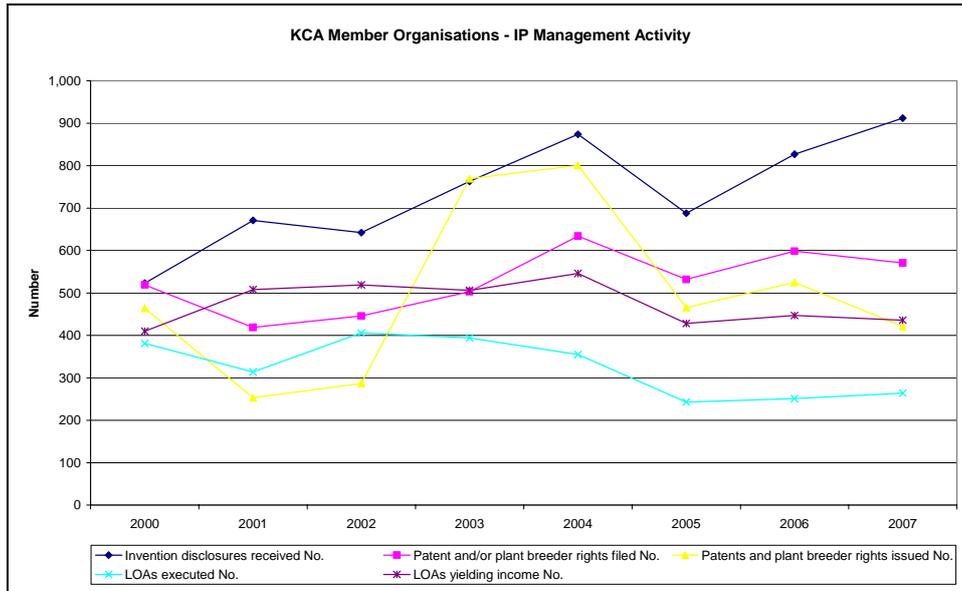
It may indeed be necessary for the Federal Government to intervene and amend the 1990 patent act so that universities are able to commercialise their researchers' IP that has been patented. This was done through legislation by the USA in the 1980 Bayh-Dole Act (*or University and Small Business Patent Procedures Act*) which gave US universities, small businesses and not-for-profits control of inventions resulting from federally funded research.

Recommendation # 8: "That the Federal Government (with advice from IP Australia) examine changes to the Patent Act so that universities have ownership of their researchers' IP in the same way as the US."

6. SUPPORTING METRICS DISCUSSION (2000-2007)

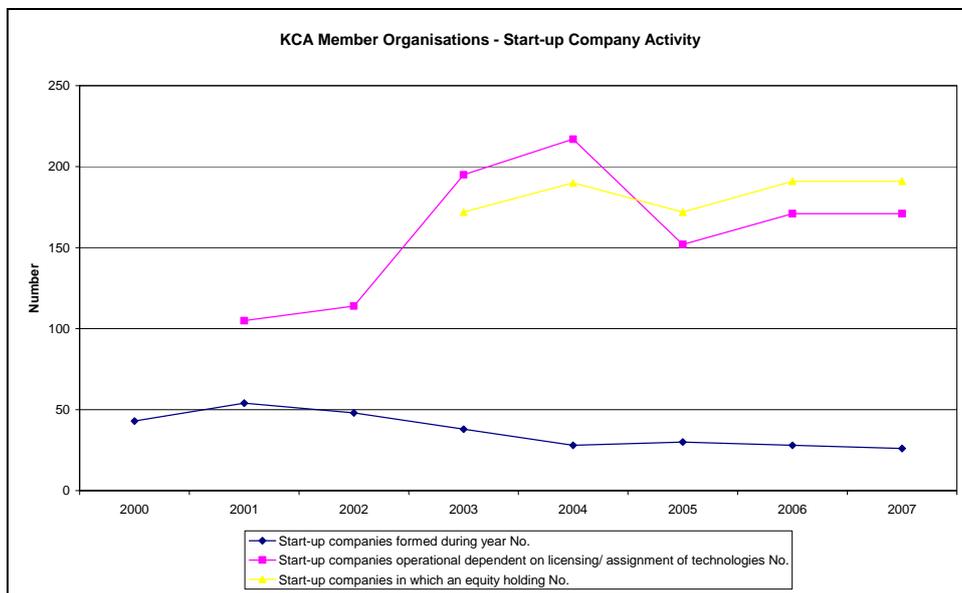
KCA has been a strong supporter for the collection of IP commercialisation data since the sector started the first survey in 2000. The latest data, which was collected and published in a report by DEST, covers the years 2003 and 2004. KCA in 2007 announced that it would undertake to collect these metrics from its members for the years 2005-2007. That process is in full swing with significant returns from most of the universities and CSIRO. We expect that a short but detailed report will be available by mid-year which will be shared with DIISR and participating members. We would also be happy to meet with members of the Innovation Review panel at that point if that were felt appropriate.

Initial trends at the aggregate level show a long term increase in Intellectual Property management activity among KCA member organisations. The increasing level of invention disclosures received, patent and plant breeder rights filed and issued over the period 2000 to 2007 indicates this.



In 2006 the value of research contracts and consultancies entered into exceeded \$900 million. In addition, universities have estimated that the value of sales resulting from technologies and innovations licensed amounted to \$8.4 billion in 2007 which is up from \$2.8 billion in 2003.

The preliminary 2000 to 2007 survey data indicates a decrease in the number of start up companies formed each year although this number has been relatively “flat” at around the mid-twenties for some years now. However, the number of start-up companies which were dependent on KCA member organisation IP increased from 105 in 2001 to 171 in 2007.



Most KCA member organisations offer training in research commercialisation. The number of participants in courses and programs has increased progressively from 2,430 in 2003 to 3,745 in 2007.

These survey data must be considered as preliminary as not all returns are in and many will require validation and follow-up.

7. SUMMARY OF KCA RECOMMENDATIONS

Recommendation # 1: *“That the Federal Government commit to higher long-term research funding and commit to specific targets as a % of GDP.”*

Recommendation # 2: *“More focussed, separately funded, and targeted research areas be identified for university and CSIRO/DSTO/ANSTO collaborations with a long-term focus (10 years).”*

Recommendation # 3: *“The CSIRO-university Fellowship Program be introduced whereby significant additional stipends be provided by the government to greatly increase joint work in specifically targeted areas of determined national priority.”*

Recommendation # 4: *“That the Federal Government examine the establishment of an Australian Higher Education Innovation Fund with specific elements, three of which occur as separate recommendations below.”*

Recommendation # 5: *“That the Federal Government establish the pre-seed rebate scheme whereby bona-fide pre-seed funds expended by universities are rebated dollar for dollar in the subsequent year.”*

Recommendation # 6: *“That the Federal Government rebate universities that conduct such training up to a fixed amount each year on provision of a report of content and costs incurred.”*

Recommendation # 7: *“That the Federal Government set up and fund the ‘Visiting Industry Professor’ Program to increase industry-university interactions and collaborations.”*

Recommendation # 8: *“That the Federal Government, (with advice from IP Australia) examine changes to the Patent Act so that universities have ownership of their researchers’ IP in the same way as the US.”*

8. REFERENCES

1. Lambert Review of Business-University Collaboration, Final Report, December 2003.
2. “Pathways to Innovation - how can we do it better?” A KCA Submission to the House of Representatives Standing Committee on Science and Innovation, April 2005. <http://www.kca.asn.au/submissions/KCAHouseofRepsSubmission.pdf>
3. “The emerging business of knowledge transfer creating value from intellectual products and services.” April 2005. Dr John Howard.