INDUSTRY RESEARCH COLLABORATION

Stakeholder insights

Thinking business

Contents

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Foreword

Australia spends around $30 billion each year on research and development across all sectors, yet we are not necessarily seeing the commercial success that such an investment should generate.

Australia, and in particular NSW, has a competitive advantage in delivering outstanding research. Australia currently ranks 11th for innovation input in the 2013 Global Innovation Index, but frustratingly, when it comes to turning these ideas into wealth creating goods and services, we drop to 32nd.

Industry policy in Australia should squarely focus on building Australia's competitive advantages and successes, including harnessing the country's considerable research talent to create wealth through new products and services, and secure jobs for the next generation of Australians. As part of our Thinking Business program, the NSW and Sydney Business Chambers have established the Industry-Research Collaboration project.

The project aims to identify opportunities and provide practical and implementable actions to better leverage Australia's unique research capabilities to solve industry problems. This Stakeholder Insights Paper has been formulated through feedback from over sixty stakeholders from industry, the research sector and government agencies, and identifies key recommendations to improve the interaction and interface between these groups.

While this project will have application for businesses and research bodies across Australia, Western Sydney has been specifically identified by the Chambers as a region that can clearly benefit from a closer relationship between industry and the research sector. With advanced manufacturing developing rapidly across the greater Western Sydney region, linking these businesses with the considerable knowledge and expertise that our universities provide will be a boon for knowledge jobs within the region.

The Chambers wish to thank the **NSW Department of Trade and Investment** for their support in undertaking this Project.

Stephen Cartwright
Chief Executive Officer
NSW Business Chamber

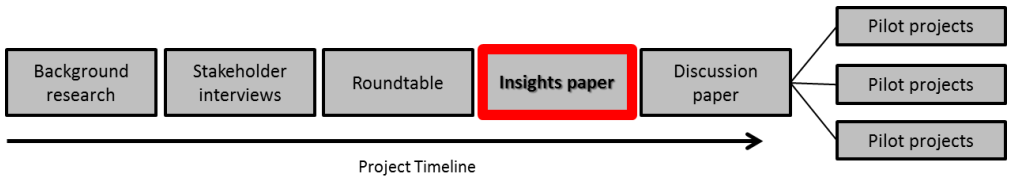
David Borger
Western Sydney Director
Sydney Business Chamber

Introduction

On 5 February 2014, the NSW and Sydney Business Chambers (the 'Chambers'), with the support of NSW Trade & Investment (DTI), hosted the Industry-Research Collaboration Roundtable in Parramatta. The Roundtable was attended by over 60 leaders from industry, academia and government *(see **Appendix I** for list of attendees*). The Roundtable sought feedback from stakeholders on ways to improve the effectiveness of industry-research collaborations. This insights paper provides an overview of some of the recommendations and actions provided by Roundtable participants.

There are a myriad of important activities and actions that can improve outcomes of R&D and innovation. The Chambers have focused their attention on improving the effectiveness of industry-led research collaboration for the purpose of solving industry identified issues. This focus has been determined by feedback from industry and research sector stakeholders.

The purpose of this insights paper is to highlight recommendations provided by Roundtable participants and other stakeholders who were interviewed as a part of this Project. The final report for this Project will provide a more detailed assessment of potential actions and recommendations, costs and benefits, key stakeholders, and implementation challenges. This analysis will be finalised in mid-2014 and provide the basis for the development of pilot initiatives.



Overview of industry-research collaboration in Australia

Research and Development (R&D) is vitally important to the productivity and performance of the Australian economy. Australia spends approximately $30 billion on R&D across all sectors[i]. Despite this significant spend and the potential to harness R&D more effectively, R&D as economic policy issue has largely been neglected.

In spite of this neglect, Australia's research capabilities are ranked highly by global standards. The *Global Innovation Index 2013*[ii] ranks Australia 11th for innovation inputs. However, our track record of commercialisation of research is substandard. While Australia ranks highly for innovation inputs, it ranks 32nd in terms of innovation output.

The challenge

Australian industry and research organisations undertake less collaborative research when compared to other jurisdictions in North America, Europe and Asia[iii]. According to the *Australian Innovation System Report 2013*[iv], there has been a decline in collaborative research activities between industry and the research sector over the past five years[v].

This is a significant missed opportunity. Globally, industry-research collaboration has led to significant wealth creation, with such collaborations being responsible for the establishment of Silicon Valley and the creation of global companies such as Google and Apple. While it is not suggested that we could or should even attempt to recreate the Silicon Valley experience in Australia, Australia's economic prosperity could certainly be improved through more effective industry-research collaboration.

From discussion with stakeholders, the difficulty in engaging in collaborative research, and the mixed commercial outcomes of such collaborations have been consistently identified as providing a major barrier to effective and ongoing collaborative research relationships. Specific barriers/challenges identified by stakeholder have been highlighted in the following diagram *(see **Appendix II** for detailed description of the barriers and challenges):*

'Match making' challenge	Governance & Interaction challenge	Motivation & incentives challenge
• Compatibility of potential partners • Difficulty in identifying suitably qualified & motivated researcher, research organisation, and industry partner • Finding the right research • Lack of understanding of the organisational culture of the collaborating partner • High cost associated with undertaking searches for research partners	• Overly bureaucratic governance structures that impede innovation and R&D of commercial value • The complexity of performance and reporting requirements attached to government funded research • Effectiveness of vehicles for collaborations (Cooperative Research Centres (CRCs), Industry Innovation Precincts and physical collaborative R&D precincts)	Lack of incentives/motivation to collaborate on research: • Industry: Collaborative research not financially viable or outcomes driven, benefits of local collaboration not recognised in govt. procurement processes • Individual researcher: Successful collaboration does not impact on their career trajectory, not part of their performance objectives etc. • Research organisations, particularly universities, are not assessed on commercialisation success.

Recommendations

Roundtable participants were asked to consider current challenges and barriers to effective commercially focused industry-research collaboration. Given the fiscal constraints across state and federal government budgets, participants were also asked to focus on solutions with minimal budgetary impacts. Recommendations identified by stakeholders included:

1. the creation of a 'marketplace' for research expertise;
2. getting researchers business ready;
3. the creation of a simplified standard approach to IP transfer between the research sector and industry;
4. the establishment of regular 'good practice' forums for universities on corporate engagement and commercialisation;
5. a whole-of-government audit on programs that facilitate and promote industry-research collaboration; and
6. other actions dealing with Australia's R&D system as a whole.

1. The creation of a 'marketplace' for research expertise:

Australia has approximately 92,000 researchers[vi], and a reputation for providing world class research. Despite the availability of this deep pool of expertise, Australian businesses have not been able to effectively utilise this competitive advantage, with only 9.2% of R&D active firms actively collaborating with the research sector[vii]. Industry stakeholders suggested that the difficulty and cost involved in identifying the right researcher was a key barrier to greater commercial collaboration.

Industry stakeholders, particularly from the corporate sector, suggested that this challenge is a particular concern for smaller projects (less than $200k), where it is not viable to invest significant internal resources in finding the appropriate research expertise. Smaller businesses had a further challenge, in that they were generally not aware of the expertise and services the research sector could provide.

Recommendation:

Establish a marketplace for industry to tap into research expertise by:

- providing relationship brokering services to match the right businesses with the right researchers
- translating research expertise into a language that can be applied to business; and
- developing an Australia research map and providing easy access for business to this information.

Stakeholders suggested that a 'one-stop-shop' approach to such services would be beneficial in terms of industry engaging and using such services. The one-stop-shop

could take the form of an online platform, an intermediary service, or a combination of the two options.

2. Getting researchers 'business ready'

Researchers' lack of business exposure or appreciation of commercial imperatives was identified by a number of industry stakeholders as holding them back from undertaking more significant collaboration with research bodies. A number of strategies were put forward to attempt to address these concerns and while they may not achieve a perfect alignment in terms of underlying industry and research motivations, they will help foster understanding and build the opportunity for more collaborative work.

Recommendation:

Stakeholders identified several actions in getting researchers, and the research sector more generally, engaged with the business community:

- engaging with by industry early to help develop university course curriculums to ensure students and future researchers have greater exposure to industry, industry cultures and real life industry problems;
- Providing career incentives for researchers where they demonstrate effective engagement with industry (and adding corporate engagement within researchers performance objectives);
- Establishing regular industry-research sector trade shows to increase the understanding of the skills, expertise and needs of business and research sector organisations; and
- industry collaboration with universities on work integrated learning (WIL), such as internship program and graduate employment opportunities..

First steps could include the establishment of a university-industry good practice forum to develop frameworks for early engagement of industry on matters such a course development, industry placements and greater industry focus in university curriculums.

As a founding member of the Australian Chamber of Commerce and Industry (ACCI), the NSW Business Chamber has actively supported WIL initiatives across Australia. To this end, on 26 February 2014[viii], ACCI, in conjunction with Universities Australia and other peak organisations, announced an agreement to increase WIL and graduate employment opportunities across Australia' universities.

3. Establish simplified, standard, Intellectual Property (IP) agreement

The cost associated with IP, particularly the costs associated with negotiating on IP, was identified as a significant barrier for businesses in collaborating with the research sector. Similarly, the requirement for businesses to pay for IP upfront prior to the realisation of any commercial benefits, dissuades many businesses from engaging with the research sector.

Recommendation:

Investigate and expand existing IP initiatives that attempt to deal with IP in an efficient manner (such as Open-IP and Easy Access IP programs).

4. Establish 'good practice' forums for universities on corporate engagement and commercialisation

Universities engaged as part of this Project, demonstrated shared challenges in improving their engagement with industry, and in maximising the commercial opportunities of collaborative research. Universities also demonstrated novel ways to overcome these challenges. The establishment of regular good practice forums would allow the sharing of this expertise across all universities to improve the engagement and commercialisation process across the sector.

Recommendation:

Stakeholders recommended the establishment of regular university corporate engagement good practice forums to improve effective engagement across the entire sector.

Stakeholders suggested focus areas for these forums should include a simplified standard approach to research IP, and frameworks for early engagement of industry in tertiary education curriculums.

5. A whole-of-government audit on programs that facilitate and promote industry-research collaboration

Government stakeholders present at the Roundtable sighted many examples of projects and programs that facilitate industry-research sector collaboration. However, industry and research sector stakeholders had varying levels of knowledge as to the existence of these programs, and also had varying experiences in terms of the effectiveness of the programs. In some instances programs offered overlapped and duplicated services provided by other agencies.

Recommendation:

Stakeholders suggested that work to identify and assess programs currently offered by state and federal governments that facilitate and promote industry-research collaboration should be undertaken. Programs identified by stakeholders included Australian Research Council linkage grants, Cooperative Research Centres, Enterprise Connect's Researchers in Business service, and DTI's S11 industry engagement network.

Once programs were identified, Stakeholders suggested an assessment of individual programs in terms of:

- success in facilitating commercial outcomes;
- potential or capacity to be scaled-up (if found to be successful);
- the need for resources to increase program awareness in the market (if found to be successful);
- revise or redirect resources to failing programs; and
- combine programs where duplicative services have been provided.

6. Other recommendations

Encouraging collaborative R&D through Government procurement: Stakeholders, particularly in the med-tech and pharmaceutical sectors, suggested that a greater focus on rewarding local collaborative R&D in government procurement services would encourage more industry-research collaboration in Australia.

Review of regulatory approval times*:* Stakeholders suggested that R&D is being offshored to other jurisdiction due to the longer regulatory approval times in Australia when compared to other jurisdictions. As an example, stakeholders suggested that it took several years longer to test and certify medical technologies in Australia when compared to the US and Europe.

Encouraging the development of centres of excellence: Stakeholders suggested that governments should promote centres of excellence by channelling funding to the areas of research strength within individual institutions. This will create critical mass and lead to better research outcomes (including commercial outcomes).

Review of guidelines, frameworks and processes for government funded research: Stakeholders suggested that the criteria and reporting requirements for government funded collaborative research added undue bureaucracy, and diverted research resources away from outcomes and towards maintaining governance issues. It is recommended that the Federal Government explore ways to streamline reporting and governance requirements, to free up these research resources.

Appendix I: List of Roundtable attendees

Mr	Glen	Cross	Chief Operating Officer	AusBiotech
Mr	Aapo	Skorulis		AusIndustry
Mr	Dom	English	Head of Research & Strategy Group	Australian Department of Education
Mr	John	Vassallo	CEO	EJC Corporate Services
Ms	Kerry	Chikarovski	Director	Chikarovski & Associates
Ms	Libby	Day	Director, Market Access	Baxter Healthcare
Mr	Phil	Mealey	Director, Quality Assurance	Baxter Healthcare
Mr	Kevin	Cullen	Managing Director	Breseight Australia
Mr	Andrew	King	Associate	Capstone Partners Australia
Professor	Ian	Chubb AC	Australia's Chief Scientist	Australia's Chief Scientist
Mr	Dig	Howitt	Senior Vice President, Manufacturing & Logistics	Cochlear
Ms	Rita	Khodeir	IP Associate	Coleman Greig Lawyers
Mr	Roan	Fryer	Tax Partner	Deloitte Touche Tohmatsu
Dr	Phil	Hamdorf	Senior Regional Coordinator	Department of Premier & Cabinet
Mr	Wayne	Green	Assistant Regional Coordinator	Department of Premier & Cabinet
Ms	MaryAnn	Quagliata	General Manager,	Department of Industry (Cth)
Dr	Rob	Porteous	Head of Science, Research and Innovation	Department of Industry (Cth)
Mr	Sam	Moreton	Western Sydney Coordinator	Enterprise Connect
Mr	Bill	Kerr	Research-Business Facilitator	Enterprise Connect
Professor	Bruce	Muirhead	CEO	Eidos Institute
Mr	Tony	Enright	Product Specialist	GE Healthcare
Mr	Will	Jacka	Marketing Manager	Global Orthopaedic Technology
Mr	Mike	Ribot	Director	Global Orthopaedic Technology
Professor	Greg	Kaplan	CEO	Ingham Institute of Applied Medical Research
Professor	David	Wilkinson	Deputy Vice-Chancellor (Corporate Engagement & Advancement)	Macquarie University
Ms	Margaret	Hudson	Director Corporate Engagement	Macquarie University
Ms	Roslyn	Mitchelson	Policy Adviser	Medical Technology Association of Australia
Dr	Alan	Broadfoot	Director	Newcastle Institute for Energy and Resources (NIER)
Dr	Kevin	Cullen	Chief Executive Officer	New South Innovations
Mr	Steven	Brodie	Open Innovation Manager	New South Innovations
Ms	Cheryl	Smythe	Senior Director	Northrop Grumman Australia
Mr	Ian	Irving	Chief Executive	Northrop Grumman Australia
Mr	Roger	Norton	Facilitator	Norton Crumlin
Mr	Paul	Orton	Director Policy & Advocacy	NSW Business Chamber
Mr	Ash	Salardini	Policy Advisor	NSW Business Chamber
Mr	Tony	Dormer	Deputy President	NSW Business Chamber
Mr	Luke	Aitken	Senior Manager, Policy	NSW Business Chamber
Ms	Jo	Spencer	National Corporate Engagement	NSW Business Chamber

Mr	Paul	Hogan	Director Investment & Export Services	NSW Department of Trade & Investment
Mr	Graham	Bulles	Director	NSW Department of Trade & Investment
Mr	Richard	Cislowski	Business Advisory & Development	NSW Department of Trade & Investment
Mr	Jason	Scattolin	A/Director Innovation & Industry Policy	NSW Department of Trade & Investment
Mr	David	Willison	Manager Industry Policy	NSW Department of Trade & Investment
Dr	Mal	Eutick	Owner & CEO	Phebra Pharmaceuticals
Mr	Anthony	Claridge	Senior Vice President Global Supply Operations	ResMed Ltd
Mr	Paul	Fish	Head of Marketing & Clinical Research	Simavita
The Hon.	Patricia	Forsythe	Executive Director	Sydney Business Chamber
Mr	David	Borger	Director Western Sydney	Sydney Business Chamber
Mr	Brad	Braithwaite	Research Manager	Sydney Business School
Mr	Michael	Clark	Director Research & Technology	Thales
Mr	James	Bell	Program Manager	University of New England Future Campus
Ms	Xanthe	Mallet	Academic in Residence	University of New England Future Campus
Professor	William	Purcell	Deputy Vice-Chancellor (International & External Engagement)	University of Technology Sydney
Professor	Barney	Glover	Vice Chancellor	University of Western Sydney
Professor	Tony	Cunningham AO	Executive Director	Westmead Millennium Institute
Professor	Hugh	Durrant-Whyte	Chairman and CEO	NSW Innovation & Productivity Council
Mr	Tony	Penna	Director	NSW Office of Health & Medical Research

Appendix II: Details of identified challenges to effective research collaboration

The 'match making' challenge

An identified barrier to industry-research collaboration is the lack of knowledge of the process to link with relevant collaborators. The inability to identify the appropriate collaboration partners and/or the high search costs involved with the search for partners acts as a disincentive to collaboration, particularly for smaller projects.

Industry participants often do not know how to approach research organisations, are unaware of the expertise available, and are uncertain as to the outcomes of such collaborations. Research organisations, particularly universities, have become more proactive in engaging with industry, yet still face challenges in identifying and engaging with suitable industry partners.

The search costs associated with finding appropriate collaborators was an issue for both industry and research institutes. Search costs refer to both financial resources and non-financial resources (time, human resources, opportunity costs associated with delaying research to conduct searches etc.) associated with finding research partners. Industry feedback suggests that search costs are a critical barrier for smaller projects (>200k & >6 months).

Search activities for an industry organisation could involve searches through several research organisations and faculties for an expertise that may or may not exist within the institution, chasing up subsequent referrals and interviewing research candidates to assess suitability. Research organisations face similar search costs.

Governance and interaction challenges

Government funding of R&D accounts for nearly 30% of Australia's total R&D spend. In 2013-14, the Australian Government has a budget of $8.6 billion for R&D related activities. Nearly $3 billion has been allocated towards higher education sector research and approximately $1 billion dedicated to medical research.[ix]

The performance objectives and measures tied to this research funding and the way in which this funding is delivered (performance based funding, block grants, ARC grants, funding through CRCs) shape the outcomes of the research. Some stakeholders have sought a stronger emphasis on commercial objectives for government funded research.

Feedback has highlighted that the reporting and governance requirements placed on some government co-funded collaborations acts as a barrier to collaboration, particularly for

smaller scale projects. Stakeholders have reported that a 'tick the box' approach to this reporting can occur, which puts into question the utility of such requirements.

Industry stakeholders have also reported mixed commercial results from government funded/facilitated research collaborations such as the CRC, where the capabilities of the universities and researchers have been the key determinant of success or failure. A recent Grattan Institute Report (2013)[x] highlighted the lack of any formal appraisal of government funded/facilitated collaborations.

Challenges with aligning stakeholders' motivation and incentives

A critical challenge to effective industry-research collaboration is the differing (and sometimes misaligned) motivations, expectations and cultures driving industry, research organisations, individual staff, and individual researchers.

Feedback from stakeholders has shown a strong commitment to collaboration. However, there may be a misalignment between the expectations on outcomes between industry and research organisations on matters including the substantive research issues, value of IP created, and timing.

Similarly individual researchers and industry employees may not share the same commitment to collaboration as the parent organisation. Individual researchers may be reluctant to spend time on industry research as it might not be viewed as having sufficient research value and not be relevant to their pursuit of obtaining publications and citations (a key performance criterion for researchers). Industry employees may find the administration of research organisation collaboration as time-consuming and unfamiliar, and may value internally produced research more highly.

[i] Department of Industry (2013), *Australian Innovation System Report 2013,* at URL: http://www.innovation.gov.au/science/policy/AustralianInnovationSystemReport/AISR2013/wp-content/uploads/2013/11/AIS-Innovation-Systems-Report-2013-v3.pdf
[ii] See URL: http://www.globalinnovationindex.org/content.aspx?page=GII-Home
[iii] University of Lieden, *CWTS Leiden Ranking 2013,* at URL: http://www.leidenranking.com/
[iv] See URL: http://www.globalinnovationindex.org/content.aspx?page=GII-Home
[v] Department of Industry (2013)
[vi] Department of Industry (2013)
[vii] Department of Industry (2013)
[viii] See URL: https://www.universitiesaustralia.edu.au/news/media-releases/-business-partnership-to-boost-graduate-employment
[ix] Australian Bureau of Statistics (2012), *Research & Experimental Development, Government and Non-Profit Organisations,* ABS 2012
[x] Andrew Norton (2013), *Mapping Australian higher education,* the Grattan Institute