

Industry Driven Research

Promoting Industry Driven Research

Research provides significant benefits for Australians, as individuals, businesses, and communities.

A research system, characterised by innovation, excellence and impact, needs sustainable support from government to ensure universities respond to research end-users, delivering the benefits of research to individuals, communities and industry.

The Government has made clear its determination to expand the extent of industry driven research that achieves commercial returns as a critical part of its Industry Innovation and Competitiveness Agenda. IRU members are committed to improving industry driven research outcomes, building off their strong research output and capability.

The IRU has identified four crucial issues for the Australian research system each of which address the Government's aims to improve the commercial outcomes from research. They are:

 Promoting industry driven research to complement Australia's extensive university led research outputs

- 2. Emphasising translational research. Translational research tests the findings of basic research in practical, real world contexts to put the research to work improving products and processes, feeding back the outcomes into the next stages of the underlying research;
- Encouraging regional and outer urban research ecosystems that see research conducted throughout Australia with benefits delivered to communities and industries; and
- 4. Strengthening Australian interaction with the expanding economies of **Asia** through linked research systems and support for industry in those countries.

The following Statement will explore the way ahead to promote industry driven research from the perspective of industry, universities and individual researchers.

Promoting Industry Driven Research

The Problem

The problem is clear. Australia produces a high level of research. It has a low level of industry take up of the research produced and low levels of industry initiated research.

In response, we need a fundamental change in approach that engenders a significant increase in industry driven research while ensuring the existing academic research capability continues to develop.

The prime focus is to alter the incentives for industry and business to seek out research that can improve their operations and commercial outcomes. The secondary set of issues is to ensure that university researchers are encouraged to pursue opportunities for industry driven research through internal and external incentives that balance the incentives for investigator driven research.

A differentiated suite of schemes within a clear framework will ensure that the diversity of Australian industry is accommodated, with businesses of various sizes and sectors able to access programmes suited to their needs. The approach would have a fiscal impact through funding more businesses which invest in research of relevance to their success. The outcome should be a significant return on the investment through the results from/of the industry driven research – the overall aim.

Once in place, it is important to have continuity of schemes. Frequent and significant changes to programmes, which has been common in Australia, decrease industry knowledge and takeup of assistance available.

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IRU Recommendations

1	Create of an industry research incentive progra Development tax incentive to give businesses to
	 the tax incentive to offset the cost of inter company; and
	 a Government incentives programme to in of Australian universities and other researcher
2	With the third ERA to be completed in 2015, the to assessing the extent of industry driven resea assessment.
3	Government should continue to support indust Research Centres, to target important industry
4	Government should target research support to profit organisations with a commitment to expanding time in line with demand.
5	IRU members will examine their internal arrang for researchers who work with and in industry. Commercial Application of Science.
6	A proof-of-concept programme that supports re early stages of development into commercially
7	Government investigate international models o experience during their research programme.

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gements to ensure that there is sufficient support The IRU welcomes the new annual prize for the

esearch organisations to translate innovations at viable products attractive to industry investors.

of incentives for giving research students industry

Encouraging enterprises to use research

The objective is to stimulate industry driven research, creating a major step change in the level of demand from Australian enterprises and also from enterprises internationally. The focus should be to stimulate additional, improved, activity through incentive programs that highlight the value from the use of research as a competitive spur to invest in research, expanding current activity.

Through the Entrepreneurs' Infrastructure Programme (EIP), the Australian government has consolidated support for industry costs of research and development. The guidelines for the EIP place too much emphasis on applicants demonstrating that the product or service development could not occur without programme funding.¹ This focuses the programme at marginal activity in the hope that it proves more successful than initially expected.

At a smaller scale are State programs such as the Victorian Innovation voucher programmes which are wholly business-led to support research defined by an individual business' need.

Creating incentive based programs

A better approach involves real incentives leading to a greater level of industry demand for research.

The current Research and Development Tax Incentive is a demand responsive Government program for the use of research to stimulate innovation. It supports investment in research whether in-house or through external parties.

A parallel incentive scheme would reward industry investment in university research through a payment based on the amount invested.

There are potential mechanisms to ensure the scheme ultimately stimulates a major shift in business demand for research while avoiding exploitation of the scheme:

- it would be for investment in research in universities and other research agencies which the research body determines meets the standard definition of research. Universities would claim the industry funds as research income, which is subject to Government audit;
- if funding initially matches a portion of the investment, it could over time be limited to a total pool, from which each business would receive funds in proportion to its contribution to the total of industry research. Government would control the size of the pool to ensure a balance between a viable incentive and total expenditure;
- the funding should be paid to the business after it invests in external research. It would not be a direct payment to the research body; and
- the research activity could be constrained to focus on the key outcome of research with the potential to create a new product or service that has a substantial market opportunity. It could target the countries of Asia by giving a higher incentive for development of services and products that have an Asian market just as the Government now offers more support for students taking time to study in Asia than in other parts of the world.

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Addressing industry wide issues

The IRU supports retention of support for industry research Centres that bring together a significant set of industry research users and researchers, including research students, to pursue issues and opportunities of importance to that industry.

The value of Centres is that they focus on a suite of related industry issues to advantage all with a stake in the area. The approach contrasts with much industry driven research whose emphasis is the need of the particular company involved.

The Government's planned Industry Growth Centres provide one basis for activity, albeit highly targeted to a select set of industries. The Industry Growth Centres are explicitly to improve cooperation across enterprises operating in the



¹See the IRU comments at http://www.iru.edu.au/policy.aspx

same broad arena. To be effective they should lead to a better understanding of the research needs of the industry and demand for those needs to be met. It is not clear yet how the Industry Growth Centres will engage with universities to drive the required research support.

The Co-operative Research Centres (CRC), with a change in approach to selection, may provide one basis for responding to industry wide needs. The CRC selection process is designed to push away all but the best and toughest. It does not encourage demand from industry but stifles it. Rather than an excessive focus on identifying the 'best dressed' applicants to win the prize the program should be refocussed to identify the 'well dressed' through an open, criterion-based assessment that endorses all applications meeting suitable benchmarks.

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Incentives for universities

Given Australia's success in terms of producing high quality fundamental research well ahead of international benchmarks, the IRU does not support changes to the major schemes that support this activity, including the ARC Discovery programme, the Research Infrastructure Block Grant and the Sustainable Research Excellence block grant. Changes to funding instruments targeting research students could be considered to give greater emphasis to industry linked research training for some but not all research students.

Programs supporting industry driven research

The focus should be the programmes already intended to stimulate the supply of industry driven research.

The Joint Research Engagement (JRE) programme and the Australian Research Council (ARC)'s Linkage programme have struggled to generate greater levels of industry research funding, which is why the IRU emphasises improving industry incentives first before the university programs.

A major problem is that the JRE funds are fixed, so that growth in industry driven research income does not improve the return to universities.

Should industry incentive schemes be successful, it will put pressure on the JRE and the Linkage programme. They need to grow in lockstep with the growth in industry relevant research.

An issue with both programmes is that they target all non-competitive research grant activity, conflating support for research relevant to Government and non-profit agencies with research supporting commercial outcomes. Both are important but there are different drivers for non-industry research user organisations.

Through differentiation the Government would be better placed to target an increase in industry driven research outcomes, supporting its focus on improving commercial outcomes from research.

Access to Research: intellectual property arrangements

The arrangements to access intellectual property which university researchers create, vary from university to university but they are linked by a common desire to see research outcomes used. The challenge for most universities is that there is too little interest in discoveries rather than a desire to withhold them from interested parties.

Use of schemes like Easy Access IP² is one option explored by IRU members. Others have similar options for use of research outcomes. There may be legitimate concerns that the legal agreements to implement access to IP may be cumbersome and risk averse dissuading potential business partners. This is an issue which universities need to address. Government could encourage access by focussing on the take up of research outputs by business, and the related commercial outcome, not on the commercial returns generated by universities.

Linking access to research funding to commitments to disseminate intellectual property may help highlight the need to make access easy.

The real challenge is support for translating new ideas into commercially viable ventures through proof-of-concept development, making opportunities which are ready for more risk-averse businesses to invest in. This is a funding gap in Australia, which risks leaving research either undeveloped or subject to high equity demands from potential venture capitalist investors.

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Proof of concept funding for high potential research could address this issue. Internationally, the Scottish Enterprise High Growth Spin-Out Programme offers funding to research organisations whose idea could lead to a Scottish enterprise achieving a £5 million turnover or a commercial investment of £10 million within five years, with projected continued growth. The European Research Council (ERC) offers Proof of Concept grants to researchers who already have an ERC grant. Funding of up to €150 000 is available to help "ERC grant-holders bridge the gap between their research and the earliest stage of a marketable innovation."³

Incentives for researchers

The incentives for individual researchers are critical to stimulating a change in the balance of researcher focus.

The emphasis on publication output and impact (as measured by citations) used in the Excellence in Research for Australia (ERA) initiative and various international ranking systems has reinforced the importance of those measures amongst both institutions and individual academics. This has been the case even though ERA results drive about 4% of the total research block grant pool.

ERA's reinforcement of traditional assessments of standing has been major. Industry driven research clearly has less standing in university culture than research that achieves great recognition amongst other researchers. Altering those priorities, without diminishing the importance of investigator led research, will not be easy.

A parallel exercise to ERA focussed on a considered assessment of the real impact of a university's research may similarly be able to influence the importance given by universities to collaboration with industry. Such an exercise must retain a qualitative element, and, similarly to ERA, be benchmarked against an objective standard rather than being rankings-based. Hence, the approach developed by the Australian Academy of Technological Sciences and Engineering does not provide the needed qualitative assessment to balance ERA.

With the third ERA to be completed in 2015, the Government should direct resources for ERA to assessing the extent of industry driven research, deferring the next ERA until after the impact assessment.

It is important for universities to enable researchers to work with industry and for individuals to forge careers that move between academic and industry roles. There continues to be significant impediments for academics to transition to industry including the risks to defined benefit superannuation entitlements and long-service leave accrual. An effective means to maintain employment benefits across different employment bases is needed.

IRU considered the value from creating an additional stream of academic employment for those who move between academic appointments and industry roles. On balance, university employment arrangements would not be advantaged by a further specialisation but it is important to ensure that academic roles are in reality open to researchers who have taken positions in industry. IRU members will examine their appointment arrangements to ensure that there is sufficient support for people making such moves.

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To provide greater emphasis on industry driven research, IRU members will also consider the value of some specific leading positions tied to industry driven research and the potential for internal award programs to recognise those most active. Such awards could then lead onto eligibility for national awards in the way there are national teaching and learning awards. For example the Malaysian government has a National Academic Award in the category of commercialisation and product development. The IRU welcomes the recent announcement of an Australian award precisely for this purpose.

Stimulating industry supported research training

The CRC's support for research students is one of the few mechanisms to address Australia's low proportion of researchers working in industry when compared to other developed nations.

It will be worthwhile to consider schemes employed internationally. The Canadian Industrial R&D Internship Program (IRDI) matches "graduate students and post-doctoral fellows with private sector host organizations for private sector research internships. The interns will work on research projects jointly developed by the private sector host organization and their academic supervisor."

The European Research Council, under the Marie Skłodowska-Curie Actions, offers:

- European Industrial Doctorates, where a research student spends at least 50% of the research programme in the private sector; and
- Innovative Doctoral programmes, where the research institution offers innovative research training with international, public-private sector or interdisciplinary dimensions in partnership with other organisations.

Such schemes may not in and of themselves lead to an increase in the number of researchers based in Australian industry. They would however be significantly more capable of working with and for industry during over their careers, be they based in industry or a public sector research organisation. The goal for the Government is not necessarily greater industry employment of researchers, but better industry use of and engagement with research.



The IRU Research System Series

Industry Driven Research, the first statement in the series addresses the long standing challenge to improve universities' involvement in industry driven research. Such research strengthens innovation creating new services and products to replace those in fading industries or segments of industries.

Incentives for enterprises, universities and researchers are explored in the context of current funding dynamics with recommendations for structural changes that would incentivise greater industry use and initiation of research, clear return for universities and enable better movement for researchers between industry and academia.

The IRU is a network of six comprehensive researching universities comprising Charles Darwin University, Flinders University, Griffith University, James Cook University, La Trobe University and Murdoch University. Through research relevant to the region, and the creation of graduates, IRU universities strengthen the social and economic prosperity of both their own areas and the nation.