

Translation of Research for Economic and Social Benefit

Measures that facilitate transfer of knowledge from publicly funded research organisations to industry

John H Howard. 10 November 2015

ABSTRACT

This study describes a range of measures that contribute to the translation of public sector research in Australia. This covers measures to increase engagement between public sector researchers and other sectors, intellectual property databases, measure taken by State and Territory governments, university initiated measures to increase research student interaction with potential users of university research. Summary information is provided in relation to the rationale for the measure, the outcome(s), operational information, administrative responsibility and cost, and indicators, measures of success and/or evaluations where available.

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Introduction

The Project Brief

In June 2012 the Australian Government announced *Securing Australia's Future* (SAF), a programme to undertake a series of strategic research projects for the Australian Chief Scientist and the Commonwealth Science Council.

Australia's four Learned Academies¹, through the Australian Council of Learned Academies (ACOLA), are working together to deliver research-based evidence to support policy development in areas of importance to Australia's future.

This Paper reports on specific policy, programme, and institutional measures that influence translation of research for economic and social benefit in Australia. It classifies measures under the following categories:

- Measures to increase engagement between researchers in publicly funded research organisations and industry
- Measures to increase engagement between researchers in universities and industry. Measures cover both staff and student engagement
- Measures initiated and funded by governments (Commonwealth, State and Territory) to promote engagement between industry and researchers in publicly funded research organisations and universities
- Measures initiated and funded by industry to promote engagement with researchers
- Measures initiated at the regional level to build engagement between research organisations, industry and State/Territory government
- The availability of database profiles that provide information on Intellectual property and research capability.

The classification does not include mission oriented research and innovation funding programmes, research organisation engagement objectives, and general capability profiles.

The measures are presented in terms of:

- The rationale for the measure
- The outcome(s) of the measure
- Operational information
- Administrative responsibility and cost (where available)
- Any indicators, measures of success and/or evaluations (if available)
- Website.

The approach to the project required:

- Identification of measures in budget documents, websites, and other published material
- Review to ascertain the extent to which a measure met the criteria for inclusion in the report
- Classification and document of material according to the categories identified above
- Request for follow-up from programme sponsors.

Approach to the Project

The project was undertaken through extensive Internet based searches for information about measures and programmes. There may be gaps and omissions, and in some categories measures are included for indicative purposes due to time constraints on more extended search.

¹ Australian Academy of Science, Academy of Technological Sciences and Engineering, Australian Academy of the Social Sciences, Australian Academy of Humanities.

About the Author

Dr John H Howard is a highly experienced public policy analyst, economist, and management consultant with a track record of achievement in the areas university-business-government relations, science, technology, and innovation policy, and evaluation of innovation programmes.

He has worked in government as a policy adviser, in business, as a partner in two global professional services firms, served on Boards of business and industry associations, and has undertaken research in universities and research organisations. He has worked at the interface of business, government, and universities as Pro-Vice Chancellor (Innovation and Engagement) at the University of Canberra.

John's professional knowledge, skills and experience provides a unique combination of capability that has been applied in an extensive portfolio of successful commissions and assignments for government, business, universities and the non-government (NGO) sector over a 25 year period. Clients have included the Commonwealth, NSW, Victorian, Queensland, and ACT Governments, private sector organisations, and industry associations.

John has provided advice to Ministers, Ministerial staff, CEOs and senior management teams on policy, strategy, organisation structure, programme performance improvement, communication, and innovation. Advice is built around detailed situation analysis, stakeholder consultation, literature review, case profiles, and evidence based material on contemporary management practice. Advice is provided in a context of practicality, feasibility, and cost of implementation.

John holds a PhD from the Australian Centre for Innovation at The University of Sydney, a Master of Arts from the University of Canberra (Public Policy), and a degree in Economics (Honours) from the University of Tasmania. He is currently an Adjunct Professor in the School of Business, University of Technology Sydney, and at the Institute for Governance and Policy Analysis (IGPA) at the University of Canberra.

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Acknowledgements

Responses to requests for information and clarification from programme sponsors are greatly appreciated.

Executive Summary

The information presented in this report identifies a very large number of institutional measures and programmes that operate in the government, research organisation, and industry domains. The information points to:

- A number of targeted Federal Government programmes centred on the recently established Entrepreneurs Programme, the Industry Growth Centres Initiative, and the Cooperative Research Centres Programme.
- Significant funding support from the Australian Research Council through the Industry Transformation Scheme and the Linkage Grants Programme.
- A large number of specific State/Territory Government initiatives, including Innovation Voucher Schemes and targeted developments in enabling technologies. Initiatives vary across jurisdictions: some measures are incorporated in large science and innovation funding programmes; whilst others, for smaller amounts, are distributed across several departments and agencies.
- A growing number of initiatives initiated by universities aimed at supporting early stage business development through seed funds, proof of concept funds, incubators, innovation contests, and technology/innovation precinct initiatives. There is a strong trend towards supporting student led innovation, entrepreneurship, and engagement with industry.
- The availability of several intellectual property and Grants search databases.

In 2015-16 the Federal Government will provide \$9.7 billion to support science, research and innovation. The greater part of this funding is allocated to public research and business R&D, through though tax incentives. The information in this report indicates that Federal funding for translation of research from public research organisations to industry is very small in comparison. Several State/Territory Governments are making important contributions, although the amounts involved are quite small.

The largest commitment to research translation is provided by the Australian Research Council through the Linkage Programme. Funding in 2014-15 amounted to \$327m, allocated between seven schemes, including the Industrial Transformation Research Programme, Linkage Projects, Linkage Infrastructure, Equipment and Facilities, ARC Centres of Excellence, Co-funded Centres, and Special Research Initiatives. These programmes tend to be researcher/investigator initiated. Industry Transformation Scheme and Research Linkages projects require industry partner contributions, although industry partners are generally involved in the other schemes.

There are very few industry initiated programmes. The Rural Research & Development Corporations (RDC) programme Rural RDC programme, funded by compulsory and voluntary industry levies, is essentially an industry led programme that has made a major contribution to building Australia's agricultural productivity and international competitiveness in areas such as wine, grains, wool, and meat and livestock². However, the new Federal Entrepreneurs Programme, the Growth Centres Programme, and State/Territory Innovation Voucher programmes are designed to have a strong industry leadership focus.

The commitment of universities to building collaborations through professionally organised and managed Technology Transfer Offices (TTOs) and the creation of senior executive roles with an industry engagement focus has strengthened over the last several years. Moreover, most TTOs have moved beyond a narrow focus on IP licensing to broader industry engagement functions. In 2013 universities reported that there were 490 staff working in technology transfer, covering IP management, industry engagement, marketing and sales legal professionals, and support staff³, with a total salaries cost of \$62.2m.

Universities have also implemented initiatives in relation to seed funds and proof of concept funds, support for incubators and accelerators, and innovation contests. This helps fill a gap created by the absence of a specific government programme of "third stream" funding. There is also strong support for student entrepreneurship and students working with businesses through Work Integrated

² <http://www.ruralrdc.com.au/Page/Home.aspx>

³ Included are 147 staff employed at the University of Queensland.

Learning (WIL) curricula, including internships, practicums, and industry placements, and Capstone initiatives. These measures also work towards giving universities a strong regional engagement focus.

Regional organisations, including several of the 55 Regional Development Australia Committees, are making a major commitment to innovation.

The measures identified in this report point to an evolution of the Australian Innovation System into a *distributed* structure where the national Government takes responsibility for nationwide issues and the States/Territories, regions, *and* universities take a role in the development of innovation strategies within their jurisdictions and operating environments. That is:

- The Federal Government appears to be concentrating its efforts in the areas of national competitive grants funding, taxation incentives, nationally oriented industrial research (through the publicly funded research agencies), national research priorities, developing and implementing national industry growth centre priorities, intellectual property management and best practice guides, data collection and dissemination, and innovation research – including the emerging role of the Office of the Chief Economist in the Department of Industry and Science in this area.
- State/Territory Governments are developing science and innovation incentive and support programmes for businesses to increase their interaction and relationships with universities and research organisations. Several are supporting innovation hubs and cluster initiatives. Most States have appointed Chief Scientists who have a role to build relationships with the research community. State/Territory Governments are looking to research organisations to support initiatives in their own regionally based priority areas. These can differ significantly across jurisdictions.
- Universities are becoming more engaged with their regions and emerging as key players in support of the development of regional and local innovation ecosystems in the cities and regions where they are located. This is an important element in strategies to recruit, educate, and train ‘work ready’ graduates, encourage student entrepreneurship, and develop sustainable research partnerships with business. By their very nature, these initiatives have a strong regional and local orientation. Universities have also become significant urban developers and renewal agents through investment in buildings, facilities, and services related to research, learning, and student amenity.

These emerging roles, supported by the measures outlined in the report indicate a trend towards supporting the growth and development of *regional* innovation systems or *ecosystems* in metropolitan areas and regions. Many of these systems are also developing around key enabling technologies (KETs), such as biotechnology, advanced manufacturing, and advanced materials, but there are opportunities to do more in the area of nanotechnology, nano and microelectronics, photonics, and design. All KETs are ICT intensive.

KETs have important characteristics that are relevant to further regional ecosystem development and growth⁴:

- They are knowledge and capital intensive
- Have high research and development (R&D) intensity
- Exhibit rapid and integrated innovation cycles
- Require highly skilled employment.

These enabling technologies have a pervasive impact by underpinning process, product, and service innovation. They have strong systemic relevance and are multidisciplinary and trans-sectorial, cutting across many technology areas. Adoption and implementation is well suited to a regional, or local, innovation system environment.

Unfortunately, however, the measures canvassed in this report are essentially on the supply side. What is missing is a commitment by industry organisations generally, and businesses specifically, to source and ‘pull through’ innovations and collaboration opportunities. While there is a strong

⁴ See <http://www.mkpl.eu/key-enabling-technologies/>

commitment to collaboration by larger businesses with publicly funded research organisations, available statistical data indicate that there is only a limited formal commitment by smaller businesses to collaboration with universities.

The description of measures outlined in the report at the regional and 'ecosystem' level may suggest that there is more collaboration occurring than is captured in the statistics. Collaboration is developing around a range of interactions and relationships that are much more nuanced than a simple transactional perspective, such as "knowledge services merchandising," would suggest. This issue warrants further investigation in order to capture the multilayered dimensions of the Innovation System.

Time and resources did not enable the report to include detailed information about medical and biomedical research centres and institutes supported by State Governments and universities, such as the Hunter Medical Research Institute, Queensland Institute of Medical Research, the South Australian Health and Medical Research Institute, and the West Australian Health Translation Networks. These institutions perform important translational work from medical research to clinical practice that deliver substantial economic and social benefit to Australia.

1 Government Funded Measures

Federal Government

The Chief Scientist

Rationale

Australia's Chief Scientist provides high-level independent advice to the Prime Minister and other Ministers on matters relating to science, technology, and innovation. The incumbent also holds the position of Executive Officer of the Commonwealth Science Council to identify challenges and opportunities for Australia that can be addressed, in part, through science.

The position is an advocate for Australian science internationally and focuses national thinking on science across the states and territories through the Forum of Australian Chief Scientists and champion of science, research and the role of evidence in the community and in government.

The Chief Scientist is a communicator of science to the general public, with the aim to promote understanding of, contribution to, and enjoyment of science and evidence-based thinking.

Website

<http://www.chiefscientist.gov.au/about/>

Entrepreneurs' Programme

In the 2014-15 Budget the Federal Government announced that it would provide \$484.2m over the next five years to fund a new Entrepreneurs' Programme.

The Programme has a focus on supporting the commercialisation of good ideas, job creation and lifting the capability of small business, the provision of market and industry information, and the facilitation of access to business management advice and skills from experienced private sector providers and researchers.

Two elements of the Entrepreneurs' Programme (Research Connections and Accelerating Commercialisation) have relevance for the translation of research for economic and social benefit.

A. Research Connections

Rationale

Research Connections Facilitators assist businesses identify critical and strategic research needs and opportunities, help find expertise, technology, and advice, and find ways to work with the research sector.

Businesses may be eligible to apply for a matched funding grant that provides direct access to research capability through *Research Connections Facilitation* and, potentially, a *Research Connections Grant*.

The outcome(s) of the measure

The Programme aims to drive business growth and competitiveness by supporting business improvement and research connections in Federal Government targeted growth sectors, and the commercialisation of novel products, processes and services.

Operational information

Research Connections Facilitation applicants must meet the following criteria:

- Be a business incorporated in Australia, be non tax exempt, registered for GST, and with trading activities that form a significant proportion of its overall activities.
- Be characterised as:

- Operating in one or more of the identified Industry Growth Sectors (Advanced manufacturing; Food and agribusiness; Medical technologies and pharmaceuticals; Mining equipment, technology and services; or, Oil, gas and energy resources), or providing enabling technologies and services to one or more of the growth sectors, or being committed to, and have the skills, capability, intellectual property or expertise to operate in, one or more of the Growth Sectors in the future.
- Having an annual turnover or operating expenditure between \$1.5m and \$100m (or between \$750,000 and \$100m for applicants from Remote Australia or Northern Australia).

Research Connection Grants provide payments of up to \$50,000 to support funding of a Research Connections Project that incorporates recommendations from a Research Facilitation Report. Grants are available for:

- Engagement of a Publicly Funded Research Organisation to undertake research activities on the business's behalf
- Placement of a Researcher in the business in order to develop and implement a new idea with commercial potential
- Accessing research infrastructure
- Accessing other forms of research capability.

Publicly Funded Research Organisations include all higher education providers and Federal, State and Territory Government departments or agencies that undertake publicly funded research. This includes, but is not limited to, CSIRO, Defence Science and Technology Organisation, Australian Institute of Marine Science, and the Australian Nuclear Science and Technology Organisation.

Administrative responsibility and cost

Department of Industry and Science

Budget 2015-16: \$2.75m.

Indicators, measures of success and/or evaluations

Between April and July 2015, 35 project grants had been made under the Programme totalling \$1.43m, with a total project value of \$3.77m.

Participating research organisations were CSIRO (18), Monash University (4), Deakin University (2), University of NSW (3), QUT (2), RMIT (2), La Trobe University (1), University of Adelaide (1), University of Melbourne (1), and Central Queensland University (1).

Advanced Manufacturing accounted for nine projects, Enabling technologies (2), Food and agribusiness (5), Medical technologies and pharmaceuticals (9), Mining equipment, technology and services (7), and Oil, gas and energy (4).

Website

<http://www.business.gov.au/advice-and-support/EIP/Research-Connections/Pages/default.aspx>

B. Accelerating Commercialisation

Rationale

Accelerating Commercialisation encourages and assists small and medium-sized businesses, entrepreneurs, and researchers to commercialise novel products, processes, and services. The programme works by providing expert guidance and connections through *Commercialisation Advisers* to help find the right commercialisation solutions for novel products, processes, or services. This may include matched funding to support commercialisation activities.

The Programme also offers grants for *Commercialisation Projects*. Funding is available for up to 50 per cent of eligible project expenditure to assist in the commercialisation for a maximum project

period of two years. The maximum grant is \$250,000 for Commercialisation Offices⁵ and Eligible Partner Entities, and \$1m for all other applicants. They are expected to:

- Target and/or participate in the Industry Growth Sectors.
- Deliver significant spill over benefits to Australia through diffusion of knowledge and skills, diffusion of novel products, processes or services and/or increased collaboration between businesses and/or businesses and research institutions.

The outcome of the measure

Accelerated Commercialisation is intended to improve Australia's participation and competitiveness in the global economy.

Operational information

Commercialisation Advisers are independent, professional advisers who provide guidance along the pathway to commercialising of intellectual property (IP) in the form of a novel product, process, or service. They assist by:

- Providing guidance with respect to Accelerating Commercialisation
- Assessing needs and helping access expertise and specialist advice
- Guiding and assisting through the commercialisation process
- Exploring alternative means of financing the project
- Guiding and assisting in operational matters
- Monitoring progress
- Developing professional networks, including by creating links to members of the Expert Network.

Commercialisation Advisers have experience in commercialisation either having taken their own products, processes or services to market, or having held senior (C Level) roles in companies commercialising novel products, processes or services.

Start-up companies are eligible for assistance, provided they are set up with the purpose or intention to trade and to return a profit to shareholders.

The Programme does not fund research and development (R&D) projects. A project is considered an R&D project if its focus is on basic research or technical experiments. However, a project may include R&D activities and still be eligible if R&D activities are essential to achieve a commercial transaction after the successful completion of the project. The likelihood of a commercial transaction must be high and will be assessed through the merit criteria.

Administrative responsibility and cost

Department of Industry and Science

Budget 2015-16: \$35.60m

Indicators, measures of success and/or evaluations

Between April and July 2015, 30 projects had been approved under the Programme, with a funding commitment of \$15.73m.

Several projects involved commercialisation of university research, and many companies had board and senior staff members with connections to universities and research organisations.

Website

<http://www.business.gov.au/advice-and-support/EIP/Accelerating-Commercialisation/Pages/default.aspx>

⁵ A Commercialisation Office is an entity of a publicly funded research organisation, or an eligible corporation controlled by one or more publicly funded research organisation, that assists researchers in commercialising their intellectual property.

Industry Growth Centres Initiative

The \$225m Industry Growth Centres Initiative is the centrepiece of the Federal Government's new industry policy direction. Announced as part of the *Industry Innovation and Competitiveness Agenda* the Initiative is a sector-based approach, which aims to drive growth, productivity, and competitiveness by concentrating investment on key growth sectors.

Rationale

Industry Growth Centres have been established in five industry sectors in areas of competitive advantage for Australia. Growth Centres will set the strategic vision for their sector by developing a ten year Sector Competitiveness Plan. They will focus on addressing key barriers to growth including:

- Collaboration and commercialisation
- Management and workforce skills
- Access to global supply chains
- The regulatory burden.

Industry Growth Centres are intended to help align other programmes and policies in the Industry and Science portfolio, including CSIRO and CRCs, to contribute to improving the productivity and competitiveness of their sectors.

The outcome(s) of the measure

Improved productivity and competitiveness in the target sectors

Operational information

Each of the five Centres will receive operational funding of up to \$3.5m per year, as well as access to additional funding streams to conduct their activities, including those outlined above. The Centres will be required to establish a plan to become self-sustaining after four years and the Government will look to establish further Centres if the Initiative is successful.

Centres will have access to the Growth Centres Project Fund, which provides up to \$78m over four years to fund projects that contribute to the outcomes of the Growth Centres and the Initiative as a whole. Specifically, the Growth Centres Project Fund will support targeted collaborative projects that build capability and address barriers impeding the competitiveness of key growth sectors on a scale that will deliver tangible results ensuring impact.

Projects funded by the Project Fund will be informed by the strategic direction set for the sectors in the Growth Centres' Sector Competitiveness Plans. For example, projects could focus on conducting research into Asian consumer preferences or improving supply chain integration between a major company and its suppliers.

Projects require a minimum matched contribution from industry participants and should demonstrate significant sector-wide impact.

The Initiative will also provide an additional \$74m over four years to co-fund commercialisation opportunities in high growth sectors on a competitive basis. The Government's investment will be no more than 50 per cent and up to \$1m in project funding. This component of the Initiative will be delivered through the Entrepreneurs' Programme.

Administrative responsibility and cost

Department of Industry and Science

Budget: \$225m over four years from 2015-16

Indicators, measures of success and/or evaluations

The Initiative will be evaluated as appropriate during its operation.

Website

<http://www.business.gov.au/advice-and-support/IndustryGrowthCentres/Pages/default.aspx>

Innovation Investment Fund including Innovation Investment Follow-on Fund

Rationale

The Innovation Investment Follow-on Fund (IIFF) is a temporary, targeted venture capital fund aimed to address the lack of capital available to the most promising innovative companies. Some of these companies might be start-up companies established to commercialise public sector research.

The outcome(s) of the measure

Through the IIFF fund managers are able to provide follow-on investments to early stage companies that have already received investment capital under these programmes.

Operational information

The Government announced in August 2009 that it would invest \$64m through 11 fund managers from the Innovation Investment Fund, the Pre-Seed Fund, and the ICT Incubators programme.

The IIFF is closed to new applicants.

Administrative responsibility and cost

Department of Industry and Science

Budget 2015-16: \$34.705m

Indicators, measures of success and/or evaluations

See: Cumming D and Johan S (2012) *Venture's Economic Impact in Australia*, December 2012; Department of Industry, Innovation, Science, Research and Tertiary Education (DIISRTE) progress report⁶. The study concluded:

Overall, the data highlight a central role for VC and IIF investment in facilitating R&D, innovation, and economic growth, and for PE investments facilitating jobs. The data indicate an expansion of VC and IIF investments would facilitate more innovation and economic growth in Australia relative to the expansion of other sources of capital, particularly in view of the comparative dearth of VC investments in Australia relative to other countries.

Website

<http://www.business.gov.au/grants-and-assistance/closed-programs/iiff/Pages/default.aspx>

Cooperative Research Centres Programme

Rationale

The CRC Programme supports industry-led collaborations between researchers, industry, and the community.

The Programme was established in 1990 and since then CRCs have developed important new technologies, products, and services that help solve major economic, environmental, and social challenges facing Australia.

The outcome(s) of the measure

Outcomes cover the commercialisation of leading-edge research taking place in universities and research institutions. CRCs are producing graduates with hands-on industry experience, which is helping to create a highly skilled workforce for the nation.

Operational information

In 2015-16 the department is supporting 34 CRCs in areas as diverse as hearing, healthcare, pest management, bushfire and natural hazards management, financial markets security and the auto and aerospace industries.

⁶ <https://www.avcal.com.au/documents/item/619>

Administrative responsibility and cost

Department of Industry and Science

Budget 2015-16: \$146.748m.

Indicators, measures of success and/or evaluations

The Programme was evaluated in 2015. The evaluation found that the programme was valuable and effective, but had scope for improvement. The Federal Government has accepted the recommendations from the CRC Review. The principal recommendations were:

- A simplified selection and review process be established, including a new, smaller, more industry-focused advisory group
- New arrangements should prioritise timely and cost effective research commercialisation and application of research outcomes for industry, while recognising the importance of research outputs to knowledge transfer
- As far as possible the new process should make use of best practice frameworks, including for intellectual property
- The advisory group should identify which existing CRCs could potentially link to the Government's Industry Growth Centres
- Consideration should be given to rolling the model out across government to support the policy objectives of different portfolios.

Websites

<http://www.business.gov.au/grants-and-assistance/Collaboration/CRC/Pages/default.aspx>

<http://www.business.gov.au/grants-and-assistance/Collaboration/CRC/about-the-program/Pages/program-evaluation-and-reviews.aspx>

Education Investment Fund (EIF)**Rationale**

The EIF was established by the *Nation-building Funds Act 2008*. It replaced the Higher Education Endowment Fund (HEEF), which was established in 2007. The EIF was initially credited with \$6.48 billion from the assets of the HEEF.

The outcome(s) of the measure

The EIF aimed to build a modern, productive, internationally competitive Australian economy by supporting world-leading, strategically-focused infrastructure investments that will transform Australian tertiary education and research.

Operational information

The EIF has provided funding for projects that create or develop significant infrastructure in higher education, research and vocational education and training institutions. Many projects had a major element involving translation of research for economic and social benefit through the development of buildings that would facilitate partnerships and collaboration. EIF funding for research projects has totalled \$746.1m.

EIF Funding for Research Projects

Project		\$m
AuScope Australian Geophysical Observing System'	AuScope Limited	23.0
Australian Future Fibres Research and Innovation Centre' (AFFRIC)	Deakin University	37.0
Building the Sydney Institute of Marine Science into a World Class Marine Research Facility'	Sydney Institute of Marine Science	19.5
Centre of Climate Change and Energy Research'	University of Western Sydney	40.0
Green Chemical Futures (GCF)	Monash University	29.1
Indian Ocean Marine Research Centre	The University of Western Australia	34.0
Institute for Marine and Antarctic Studies	University of Tasmania	45.0
National Centre for Synchrotron Science: Outreach and Research Support Facilities	Australian Synchrotron	36.8
National Imaging Facility	The University of Queensland	40.2

New Horizons Centre	Monash University	89.9
Newcastle Institute for Energy and Resources	The University of Newcastle	30.0
Processing and Devices	Australian Institute for Innovative Materials (AIIM)	43.8
QIMR Expansion	Queensland Institute of Medical Research	55.0
Retrofitting for Resilient and Sustainable Buildings ("RRSB")	University of Wollongong	25.1
Sustainable Energy for SKA	CSIRO	47.3
The Australian Institute for Nanoscience	The University of Sydney	40.0
The Centre for Neural Engineering	The University of Melbourne	17.5
The Institute for Photonics and Advanced Sensing	The University of Adelaide	28.8
The La Trobe Institute for Molecular Sciences	La Trobe University	64.1
		746.1

A further \$1,396m has been provided for higher education projects. Many of these have an important industry collaboration component. Where relevant, these projects are included in the report in Section 6 under 'Technology Hubs and Precincts'.

Administrative responsibility and cost

Department of Education and Training and EIF Advisory Board

In response to a recommendation of the Commission of the Government announced in the 2014-15 Budget that the EIF will be terminated from 1 January 2015 and that no further funding rounds will be held. Existing projects will continue to be funded.

Indicators, measures of success and/or evaluations

Not available

Website

<https://education.gov.au/education-investment-fund>

Joint Research Engagement Scheme (JRE)

Rationale

The Joint Research Engagement (JRE) scheme gives emphasis to end-user research by encouraging and supporting collaborative research activities between universities, industry and end-users, beyond those specifically supported by competitive grants.

The outcome(s) of the measure

Specifically, the objectives of the JRE scheme are to:

- Continue to support soft infrastructure;
- Continue to support the maintenance of capital items (not capital purchases); and
- Change the way that the level of funding for each university is calculated.

Operational information

The JRE provides block grants, on a calendar year basis, to eligible Australian higher education providers (HEP) to support research and research training activities. HEPs have discretion in the way they spend their JRE grant. The JRE may be used to fund any activity related to research.

Australian government funding is provided through annual block grants to eligible Australian HEPs in accordance with the Higher Education Support Act 2003 (item 7 of the table in section 41-10).

Administrative responsibility and cost

Department of Education and Training. An amount of \$352.8m has been provided for 2015 and an additional \$4.4m for Engineering Cadetships.

An evaluation of the Scheme was launched in 2011. A report has not been published⁷.

⁷ See discussion paper at: http://docs.education.gov.au/system/files/doc/other/review_of_industry_and_other_income_2011.pdf

Indicators, measures of success and/or evaluations

Not available

Website

<https://education.gov.au/joint-research-engagement>

Commercialisation Training Scheme

Rationale

The Commercialisation Training Scheme (CTS) was established to provide 250 higher degree by research (HDR) students each year with the skills necessary to bring research-based ideas to market. The CTS was announced as part of *Backing Australia's Ability – Building Our Future through Science and Innovation*, in response to an apparent lack of researchers able to enter or liaise with the commercial world.

Operational information

Funding was provided for three years with the first round of funding delivered to eligible higher education providers (HEPs) in January 2007. The Research Block Grants (RBG) funding mechanism was adopted as the funding mechanism for CTS so as to avoid developing new processes to administer the CTS. In 2007, as part of the machinery of

The CTS was a terminating program and funding ceased in December 2011.

Evaluation

The CTS was evaluated in 2011⁸. It was found that:

- Nearly all universities consulted believed HDR students received insufficient training in the skills targeted by the CTS.
- The student survey indicated that 98 per cent of students were satisfied or very satisfied with the training they had received and 92 per cent would recommend the CTS to their colleagues.
- A majority of respondents had already utilised the training or expected to do so in future employment and believed that future employers would value their CTS qualification.
- Some concerns included a lack of exposure to practical skills; difficulties balancing CTS training in conjunction with their research studies; and that some courses were not targeted to the needs of research students.
- As the CTS was a small program in the RBG, the RTS allocation formula did not allow for funding to be diverted to HEPs with the highest demand for commercialisation training.
- The RTS funding formula may therefore not have been the most effective predictor of HEP demand for, or ability to supply commercialisation training. In addition, influences such as capacity, interest, marketing expertise and resources meant that some universities were not able to develop courses that generated enough student interest to fully expend their allocated CTS funding.

Indicators, measures of success and/or evaluations

<http://docs.education.gov.au/node/34555> Austrade Services – Assisting Australian business in international markets

Rural R&D for Profit Programme

Rationale

The Rural R&D for Profit programme aims to realise productivity and profitability improvements for primary producers. It implements a government election commitment to boost funding to the rural

⁸ http://docs.education.gov.au/system/files/doc/other/cts_evaluation_report_summary.pdf

research and development corporations (RDCs) and fund nationally coordinated, strategic research that delivers real outcomes for Australian producers.

The outcome(s) of the measure

Outcomes cover:

- Generating knowledge, technologies, products or processes that benefit primary producers
- Strengthening pathways to extend the results of rural R&D, including understanding the barriers to adoption
- Establishing and fostering industry and research collaborations that form the basis for ongoing innovation and growth of Australian agriculture.

Operational information

Funds from the Rural R&D for Profit initiative are disbursed to RDCs which partner with researchers, producers, and other funding sources.

To be eligible for grant funding, RDCs must partner with one or more researchers, research agencies, RDCs, funding bodies, businesses, producer groups or not-for-profit organisations, and the partnership must provide funding (cash or cash plus an in-kind contribution) at least equal to the requested Australian Government grant funding.

Administrative responsibility and cost

Federal Department of Agriculture

Budget 2015-16: \$29.239m

In May 2015 the Minister for Agriculture announced grants totalling \$26.7m

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.agriculture.gov.au/ag-farm-food/innovation/rural-research-development-for-profit>

Defence Industry Innovation Centre

Rationale

The Defence Industry Innovation Centre (DIIC) provides targeted advisory services designed to link small and medium defence businesses to new ideas, technologies, and markets.

The outcome(s) of the measure

The Centre provides a range of services designed to link defence small and medium-sized enterprises (SMEs) to new ideas, technologies, and markets.

Operational information

Firms are offered a range of services including:

- Business Evaluations
- Continuous Improvement Programme (CIP)
- Tailored Advisory Service (TAS)
- Supplier Continuous Improvement Programme (SCIP).

In addition DIIC provides an additional range of specific services only for defence firms:

- Defence Industry Change Plan (DICP) – provides defence specific advice, guidance and implementation support to businesses. The plan provides recommendations, the setting of achievable goals, facilitation of closer connections to market players and providing access to new ideas and technologies

- Defence Advisory Service (DAS) – provides matched funding of up to \$20,000 (excluding GST) to implement changes identified through a DICP.

In addition to the defence specific services above, a range of other activities may be available to defence firms in response to identified needs from defence SMEs through consultation with the DMO. These activities may include:

- Coordination of skilling events and initiatives
- Collaboration with DMO Global Supply Chain programme
- Assistance to SMEs for International Traffic in Arms Regulations (ITAR).

Administrative responsibility and cost

The Department of Defence funds the Centre for the benefit of the defence industry.

Budget 2015-16: \$3.064m

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.business.gov.au/grants-and-assistance/DefenceIndustry/Pages/default.aspx>

National Drug Law Enforcement Research Fund (NDELRF)

Rationale

The National Drug Law Enforcement Research Fund promotes quality evidence-based practice in drug law enforcement to prevent and reduce the harmful effects of licit and illicit drug use in Australian society.

The outcome(s) of the measure

A key aim of NDLERF is to promote collaboration between the Law Enforcement Sector and Researchers.

Operational information

The National Drug Law Enforcement Research Fund was established by the Ministerial Council on Drug Strategy (MCDS) on 10 June 1999 and commenced operations in August 1999. This Fund incorporates both the National Drug Crime Prevention Fund (NDCPF) and the National Community Based Approach to Drug Law Enforcement (NCBADLE).

The Fund functions within the broader context provided by the National Drug Strategic Framework.

Administrative responsibility and cost

The Australian Government Department of Health funds the NDLERF as part of its commitment to the National Drug Strategy.

The Fund is administered by the NDLERF Board of Management, comprised of representatives from each State and Territory law enforcement agency, the Australian Federal Police, the Australian Customs Service, the Australian Government Attorney-General's Department, and a health agency from one of the States or Territories.

The NDLERF programme did not undertake a grant funding round in 2014-15. This decision was made by the Board due to the limited funding currently available.

Indicators, measures of success and/or evaluations

The Department of Health has advised the NDLERF Board of its decision to discontinue funding of NDLERF beyond 2014-15. This decision does not affect the funding of any projects currently funded.

Website

<http://www.ndlerf.gov.au/>

New South Wales

NSW Chief Scientist and Engineer

Rationale

The NSW Chief Scientist and Engineer, Professor Mary O'Kane, consults widely with academia, industry and government to ensure scientific knowledge and research can be adapted and used to benefit NSW.

The Chief Scientist is responsible for:

- Providing the NSW Government with the best quality advice on policy decisions requiring science and engineering input
- Seeing that the State's research system operates to maximise its productivity, economic value and social responsibilities
- Brokering partnerships and strengthening connections within and between the public and private sectors to expand the State's research capabilities and networks
- Promoting and encouraging high levels of research and development in NSW with global impact – including supporting the growth of vibrant and high impact research institutions and technology companies
- Encouraging research excellence, concentration and skills development in areas facing significant challenges including engineering, energy, environment, health
- Backing investment in knowledge creation and research in alignment with the needs of the State's future industries.

Website

<http://www.chiefscientist.nsw.gov.au/about>

Jobs for NSW Initiative

Rationale

The *Jobs for NSW* initiative will help meet the NSW Government's target of 150,000 jobs in four years.

The Initiative includes the creation of the Jobs for NSW board including senior Australian business leaders to drive job creation in NSW. This board will be chaired by former Telstra CEO and incoming CSIRO chair David Thodey.

The board will oversee the Jobs for NSW fund, which is being created, to help meet the NSW Government's commitment to provide a \$190m, four-year war chest to grow jobs. Thirty per cent of the Fund will be earmarked for regional NSW.

Outcome(s) of the measure

Jobs for NSW will recommend robust criteria to ensure that funds are directed to areas to achieve the greatest economic impact.

Operational information

The Jobs for NSW fund will replace the existing State Investment Attraction Scheme (SIAS) and Regional Industries Investment Fund (RIIF). Current funding agreements under SIAS and RIIF will continue under the terms of those agreements.

The Jobs for NSW fund will complement and support the following funding initiatives that are part of a broader \$678m, four-year investment by the government in jobs growth:

- Jobs Action Plan: provides NSW businesses with a \$5,000 payroll tax rebate when they employ new workers in new eligible employment. This scheme has just been extended until 30 June 2019.

- \$2,000 Small Business Employment incentive: provides a grant of up to \$2,000 for non-payroll tax paying small businesses when they hire new employees from 1 July 2015.
- \$25m Jobs of Tomorrow Scholarship Fund: provides 25,000 scholarships for students undertaking qualifications for technology and growth jobs.

Administrative responsibility and cost

NSW Department of Industry

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.industry.nsw.gov.au/invest-in-nsw/why-sydney-and-nsw/jobs-for-nsw>

Premier's Prizes for Science and Engineering

Rationale

The NSW Premier's Prizes for Science & Engineering seek to recognise excellence in science and engineering, and reward leading researchers for cutting-edge work that has generated economic, environmental, health, social or technological benefits for New South Wales.

The Prizes replace the NSW Science & Engineering Awards, held annually since 2008, and reflect the State Government's strong commitment to the local research and development community.

Outcomes(s) of the measure

The Prizes also aims to raise community awareness and appreciation of the important contribution scientists and engineers make to our daily lives, and encourage careers in both fields.

Operational information

The 2015 Scientist of the Year will receive a trophy and \$55,000 in prize money. A trophy and \$5,000 in prize money will be awarded to individual winners in the following nine categories:

- Excellence in Mathematics, Earth Sciences, Chemistry and Physics
- Excellence in Biological Sciences (Ecology, environmental, agricultural and organismal)
- Excellence in Medical Biological Sciences (Cell and molecular, medical, veterinary and genetics)
- Excellence in Engineering and Information and Communications Technology
- Energy Innovation in NSW
- NSW Early Career Researcher of the Year
- Leadership in Innovation in NSW
- Innovation in NSW Public Sector Science and Engineering
- Innovation in Science and Mathematics Education in NSW

Administrative responsibility and cost

NSW Chief Scientist and Engineer

Indicators, measures of success and/or evaluations

Not available

Website

www.chiefscientist.nsw.gov.au/premiersprizes

Knowledge Hubs

Rationale

Knowledge Hubs are industry led collaborative partnerships centred on NSW industry sectors. They bring together businesses, research organisations, and industry associations. Their purpose is to share information, direct research and collaborate through shared projects to drive innovation and create shared value.

The outcome(s) of the measure

Knowledge Hubs provides a road map for driving growth in key industries in the NSW economy. While different Knowledge Hubs may vary in their specific activities they have common goals including:

- Developing an industry vision and strategy
- Improving industry productivity and competitiveness
- Championing projects and research with broad industry benefits
- Promoting sector wide market opportunities
- Facilitating collaboration and knowledge sharing

The benefits are identified as:

- Creation of a united industry voice
- Share world leading knowledge
- Opportunity to influence public research
- Provides a conduit to Government
- Potential to enhance productivity through collaboration

Operational information

Knowledge Hubs currently exist in the following five key sectors:

- Digital Creative Knowledge
- Energy Innovation Knowledge
- Financial Services Knowledge
- MedTech Knowledge
- Transport & Logistics Knowledge

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.industry.nsw.gov.au/business-and-industry-in-nsw/innovation-and-research/knowledge-hubs>

TechVouchers Programme

Rationale

The programme provides grants to small or medium-sized enterprises to access technical research infrastructure and expertise such as testing, validation, and feasibility studies in NSW public sector research organisations (PSROs) such as universities.

TechVouchers priority will be given to:

- Companies which have not engaged with universities and public sector research organisations in the past
- Companies which have not engaged with research organisations for more than two years
- Companies with existing relationships with a research organisation that and can demonstrate that the allocation of a TechVoucher will drive transformative improvement in the existing collaboration.

The outcome(s) of the measure

TechVouchers has been established to drive opportunities for research collaboration between NSW SMEs and public sector research organisations. The programme seeks to promote the mutual benefits available in collaborating with PSROs.

TechVouchers benefits both industry and the public research sector by assisting SMEs with funding to help engage with PSROs.

Operational information

A TechVoucher will be awarded on a competitive basis to eligible NSW companies for amounts up to \$15,000:

- The TechVoucher value is to be matched by the applicant with a 50 per cent cash contribution. In-kind contributions can also be accepted
- If a TechVoucher application is successful, the voucher value will be paid to the research organisation at the end of the project. No money is paid to an SME
- The voucher will be valid for use at any NSW-based public research organisation. This includes federal organisations such as the CSIRO with facilities and expertise based and used in NSW
- The TechVoucher value is only valid for research and development costs. Other expenses, such as marketing or other business costs are not eligible

Administrative responsibility and cost

NSW Department of Industry

Indicators, measures of success and/or evaluations

Not available

Website

<http://ww3.business.nsw.gov.au/TechVouchers/home.aspx>

Innovate NSW

Rationale

Innovate NSW connects technology SMEs and businesses in key sectors of the NSW economy to develop globally competitive business-to-business (B2B) solutions that address compelling needs. The programme focuses on rapid development of business driven solutions that use 'enabling technologies'.

Enabling technologies are defined as new technologies or new uses for existing technologies that enable new products, services, or more efficient processes. This includes mobile, cloud, analytics, sensors, advanced materials, and biosciences.

The outcome(s) of the measure

Globally competitive businesses

Operational information

The Innovate NSW programme provides assistance to technology development SMEs creating business solutions for the following key sectors:

- E-health
- Advanced manufacturing
- Energy technologies and services
- Online and interactive education
- Transport, logistics and infrastructure

Administrative responsibility and cost

NSW Department of Industry

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.industry.nsw.gov.au/business-and-industry-in-nsw/innovation-and-research/innovate-nsw>

Medical Devices Fund

Rationale

The Medical Devices Fund (MDF) aims to encourage and support investment in the development and commercialisation of medical devices and related technologies in NSW. The key objective of the MDF is to promote new and innovative medical devices and technologies within NSW that may have a global benefit.

The outcome(s) of the measure

The MDF aims to:

- Support individuals, companies, public and private hospitals, medical research institutes, universities, other public sector research organisations, and the medical devices industry, to take local innovation to market
- Increase the uptake of NSW medical devices by the health system where they are cost effective and contribute to improved patient outcomes.

Operational information

The MDF has funding of \$5m per annum, for competitive technology development and commercialisation projects.

In the first two funding rounds, \$16.4m has been committed to nine technologies. Round three will have up to \$6.7m available.

Administrative responsibility and cost

NSW Health

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.health.nsw.gov.au/ohmr/mdf/pages/default.aspx>

Australian Technology Park (ATP)

Rationale

The Australian Technology Park is on the site of the NSW Government Eveleigh Railway Workshops. The Park was created in 1991 through the initiative of Universities of Sydney, NSW, UTS, and the ANU to regenerate and re-use the largely vacant site as a technology and innovation hub.

The Park's location provides direct access to city trains and is just a few minutes drive to the airport, while shops, restaurants and essential services are all located within short walking distance.

The Park's owner, UrbanGrowth NSW Development Corporation (UGDC) has actively encouraged new development and employment opportunities at the Park.

Outcome(s) of the measure

The vision for the Park is to sustain a thriving, technology-focused, growth-oriented business park producing leading products and services.

The heritage railway workshops have been sensitively converted into offices and conference facilities. New buildings have been constructed, including Sydney's Ambulance Centre, the NSW Transport Management Centre (1997), the Biomedical Building (2000), the National ICT Australia (NICTA) Building (2008) and Media City (2010).

The site has 100 resident firms providing local jobs, support for community programs and high-quality campus services.

Operational information

The ATP is a versatile business precinct where resident companies are encouraged to network and collaborate. Resident companies also have access to world-class conferencing facilities, including meeting and boardrooms, plus extensive on-site parking and 24-hour security services.

The Park is also setting a benchmark for development in an area undergoing extensive revitalisation and economic growth. There is provision for significant expansion within the Park, including specialist precincts incorporating cooperative research centres, bio-medical research, a venture capital enterprise plus a major media and television production facility and magazine publishing group. ATP Innovations assists start-up businesses commercialise their research and development.

In mid 2015, UrbanGrowth NSW decided to offer ATP for sale by select tender. Selling the Park as a whole is designed to give any future owners or developers the flexibility to manage the Park and its attributes on a whole-of-site basis, consistent with the *State Environmental Planning Policy (Major Development) 2005* and ensuring a vested interest in the success of the Park, including its heritage, community engagement and sustainability programs.

The sale of the Park to a prospective developer or business will be determined by their potential to make the Park a viable place for business, now and into the future, and will not strictly focus on whether they are technology and research focused.

Through the ROI process, interest was shown in the Park from proponents considering technology uses, commercial uses as well as hotels, gymnasiums, and other retail offers. The zoning of ATP prohibits residential development.

Administrative responsibility and cost

An independent Board manages the Park.

Indicators, measures of success and/or evaluations

Major tenants located at ATP promote its identity as a technology and research hub. These include 2014 Business Incubator of the Year ATP Innovations, as well as University of Sydney, University of NSW, Defence Science and Technology Organisation, NICTA and Media City businesses.

Website

<http://www.atp.com.au/Home>

Victoria

The Office of the Lead Scientist (OLS)

Rationale

The OLS was established in July 2013, to support activities that increase community awareness and engagement in science. Professor Leonie Walsh is the current Lead Scientist.

The outcome(s) of the measure

The OLS' broad range of activities include building multi-disciplinary links across different science and non-science based sectors, improving knowledge around collaboration and commercialisation models for science delivery, and sharing information on science achievements across industries, sectors and geographies.

Operational information

The priorities of the OLS are to:

- Provide high level strategic advice to assist in science and innovation policy development
- Foster links across the innovation value chain
- Identify opportunities to streamline support for the commercialisation of Victorian research
- Advocate the importance of science, technology, and innovation to building the skills for Victoria's future industries.

Administrative responsibility and cost

The Department of Economic Development, Jobs, Transport and Resources

Indicators, measure of success and/or evaluations

Not available

Website

<http://dsdbi.vic.gov.au/our-department/organisational-structure/lead-scientist>

Back to Work Plan

The Victorian Government has introduced a \$1 billion *Back to Work Plan* to create 100,000 new jobs in Victoria. Several elements of the Plan are relevant to translation of research for economic and social benefit.

Premier's Jobs and Investment Panel & Fund

The Premier's Jobs and Investment Panel will provide strategic advice to the Premier on driving economic growth and creating high-skill, high-wage jobs in Victoria. The Panel will provide direct advice to the Premier on strategic investments, worth \$500m over four years.

Start-up initiative

The \$60m Startup initiative will support entrepreneurs to develop high growth innovative businesses by providing support and assistance to:

- Foster the creation of startup enterprises
 - Enhance Victoria's entrepreneurial ecosystem
- Support the scale up of high potential businesses.

In parallel with this initiative, it is intended a number of programmes will be developed that support Victorian SMEs and startups to undertake innovative product, process and service development projects.

Future Industries Fund

The \$200m Future Industries Fund will support six sectors of the Victorian economy:

- Medical technologies and pharmaceuticals
- New energy technologies
- Food and fibre
- Transport, defence and construction technologies
- International education
- Professional services.

These sectors have been identified by the Government as having the potential to grow significantly, create jobs and attract investment. Sector strategies will be released towards the end of 2015.

Website

<http://www.business.vic.gov.au/support-for-your-business/future-industries>

Innovation and Technology Vouchers Programme

Rationale

The Innovation and Technology Voucher Programmes (IVP and TVP) aim to assist companies to undertake R&D, design research, learn innovation-relevant skills, and adopt and develop specific new technologies by providing a voucher that can be exchanged for access to facilities, goods, services, advice or expertise provided by other companies or publicly funded research organisations.

The outcome(s) of the measure

Vouchers fund suppliers to undertake work/activities for voucher holders (successful applicant companies).

Operational information

All Vouchers are open to all Victorian SMEs with less than 200 employees, at various stages of their life cycle.

Vouchers are also open to large businesses with more than 200 employees. In exceptional cases, and subject to the specific voucher category, non-Victorian businesses may also be eligible to apply.

There are several Voucher categories:

- Technology Student Accelerator Voucher (TVP) - Up to \$10,000
- Innovation Skills Voucher (IVP) - Up to \$10,000
- Smart Design Voucher (IVP) - Up to \$25,000
- Business R&D Voucher (IVP) - Up to \$25,000
- Technology Development Voucher (TVP) Up to \$50,000
- Technology Implementation Voucher (TVP) up to \$250,000

Voucher funds are paid direct to suppliers on project completion.

Administrative responsibility and cost

The Department of Economic Development, Jobs, Transport, and Resources.

Indicators, measures of success and/or evaluations

The Innovation Vouchers Programme is currently suspended and not receiving applications. There are some projects that were awarded vouchers prior to the programme being suspended and are still under development and yet to be formally completed.

Website

<http://www.business.vic.gov.au/support-for-your-business/grants-and-assistance/innovation-technology-vouchers>

Monash Technology Precinct

Rationale

The Monash Technology Precinct is a world-class precinct which hosts a wide range of institutional activities, collaborating to provide leadership in education, health, research and innovation in an attractive urban environment, which encourages creativity and values cultural diversity.

Melbourne 2030 has identified land within the Monash Technology Precinct as a Specialised Activity Centre (SAC) in Metropolitan Melbourne that performs a specialised function outside of retaining, commercial, and residential uses. It is one of the areas designated as a Technology Precinct in metropolitan Melbourne.

Outcome(s) of the measure

The specific Monash University objectives include:

- To build the profile of the Monash Technology Precinct as a key strategic location for high technology, research and development industries, through acknowledgement of the potential synergies between the university, medical centre, synchrotron and technology industries
- To encourage leading businesses in their fields to locate within the Precinct, especially those which provide commercial, research, medical and educational synergies
- To attract and retain existing small and medium-sized business, especially those with a primary focus on research and technology
- To encourage further clustering of businesses within the Precinct.

Operational information

The Precinct is home to many of Australia's major scientific research centres and companies, including: the Australian Stem Cell Centre (Australia's National Biotechnology Centre of Excellence), Stem Cell Sciences Pty Ltd, Nanovic (Nanotechnology Victoria), the Victorian Institute of Chemical Sciences, the National Printing Laboratory, the Australian Regenerative Medicine Institute and the Monash Immunology and Stem Cell Laboratories.

Administrative responsibility and cost

Department of Planning, Monash University, City of Monash

Indicators, measures of success and/or evaluations

The Precinct contains some of the nation's most prestigious research organisations and high technology industries including Monash University, Monash Medical Centre and Australia's only Synchrotron facility.

Website

http://planningschemes.dpcd.vic.gov.au/schemes/monash/ordinance/22_lpp02_mona.pdf

Queensland

Queensland Chief Scientist

Rationale

The Queensland Chief Scientist (Dr Geoff Garrett) provides leadership in science policy development and implementation and provides high level, strategic advice to the Queensland Government on the role of science, research and innovation in meeting Queensland's economic challenges.

The Chief Scientist also provides advice on maximising opportunities from the Government's investment in research and development.

The outcome(s) of the measure

The Queensland Chief Scientist acts as an ambassador for Queensland science, fostering cooperation and collaboration amongst the government, research, industry and community sectors; raising Queensland's profile as a smart region characterised by world class research and investment opportunities; and engaging the community in better understanding the importance of science, research and innovation in the State's future economic, social and environmental wellbeing.

Operational information

The Chief Scientist is a whole-of-government position that sits within the Department of Science, Information Technology, and Innovation.

Dr Garrett has also been involved with or led a number of reviews and inquiries, covering topics including the science of floods, uranium mining, Hendra virus, underground coal gasification, health and biomedical research and, currently, water quality improvement in the Great Barrier Reef.

Indicators, measure of success and/or evaluations

Not available

Website

<http://www.chiefscientist.qld.gov.au/>

The Advance Queensland Strategy

Rationale

In July 2015 the Queensland Premier launched an \$180m Advance *Queensland* strategy. The \$180m initiative is about bridging the gap between great ideas and the jobs they can lead to and empowering our best entrepreneurs, innovators and thinkers, and translating their work into commercial successes.

It has four main elements:

- A \$50m Advance Queensland Best and Brightest Fund, which will develop, attract and retain world-class talent both scientific and entrepreneurial.
- A \$46m Advance Queensland Future Jobs Strategy that will open the door to new industry/research collaborations, tackle the big innovation challenges, focus on translation, and deliver 10 year roadmaps for industries with global growth potential.
- A \$76m Business Investment Attraction package, which will encourage a new wave of Queensland start-ups, support proof-of-concept projects and attract co-investment through the Business Development Fund.
- \$8m is set aside to provide flexibility to respond as new opportunities arise, especially roadmaps with industry partners are developed.

Outcomes of the measure

The *Best and Brightest Fund* will develop, attract, and retain world-class scientific and entrepreneurial talent. The Fund has several elements.

- Fellowships and Scholarships at research institutions.
- Global Partnership Awards to promote the exchange of knowledge and create accelerated learning opportunities with international institutions, major companies, or innovation organisations.
- Knowledge Transfer Partnerships to enable SME's to have postgraduate students work in their company on projects that will help develop their products or services.
- A review of STEM (science, technology, engineering and maths) teaching in Queensland schools.

The *Future Jobs Strategy* will open the door to new industry/research collaborations, tackle the big innovation challenges, focus on translation, and deliver 10 year roadmaps for industries with global growth potential. Three flagship partnerships have been already commenced under a partnership approach. Broader Innovation Partnership funding will be available on a competitive basis. The ultimate goal is turning ideas into commercial realities and jobs.

- *Medical research - Drug Discovery Initiative* - a collaboration between UQ and Emory University in Atlanta on new Drug Discovery. The Government will provide initial seed funding for the project which will use the proven Emory model to build the capacity and capability to progress compounds from conception through proof of concept studies to a stage where they may be of interest to pharmaceutical companies or investment companies to fund.
- *Siemens Innovation and Translation Centre* – a new partnership between the Translational Research Institute and global technology giant Siemens, called the Siemens Innovation and Translation Centre, which will ensure Queensland has access to state of the art MRI scanning technology and highly skilled technicians to operate and program these tools.
- *Johnson & Johnson partnering office* – a collaboration between QUT and the Queensland Government to establish a Johnson & Johnson Innovation Partnering office at QUT. This has commenced with an Innovation Quick Fire Challenge to award prizes of up to \$100 000 for three

winners to undertake research and development in Queensland on a pharmaceutical, medical device, or consumer healthcare innovation.

Other initiatives include:

- A \$20m for Innovation Challenges to identify Queensland big challenges and call for collaborative bids from researchers and industry to work with government to provide the answers.
- Funding for ten-year road maps for emerging industries, developed by government and industry and academic partners, to help identify the policies, regulations, removal of unnecessary red tape, and the settings that can best provide the certainty to help people invest and new industries emerge. The first roadmap has been issued for consultation with a focus on Biofutures.

The *Business Investment Attraction* package will encourage a new wave of Queensland start-ups, support proof-of-concept projects, and attract co-investment through the Business Development Fund. It will cover:

- A \$24m Start-up Queensland program, to increase start-up formation and attraction in Queensland. This will include:
 - a pilot Queensland Small Business Research Initiative based on the highly successful models in the US and UK
 - finance and management support for start-ups and SMEs
- A \$12m Queensland Commercialisation Programme will support proof of concept projects, designed to lead to new products and services
- A \$40m Business Development Fund that will provide seed co-investment to match and encourage greater angel and venture capital investment in Queensland businesses.

Individual programme elements are being progressively rolled out. Available details of announced programmes are provided below.

Website

<http://advanceqld.initiatives.qld.gov.au/>

Research Fellowships and Scholarships

Rationale

This programme supports innovative, practical and applied research that will have positive impact on Queensland and address the State's Science and Research Priorities. It will support emerging research leaders to establish research reputations by leading and managing research projects, ensure female researchers and regionally-based researchers are awarded fellowships to establish or continue their research careers, and foster increased linkage and closer collaboration with industry and end user organisations.

Outcomes of the measure

The programme encourages a pipeline of research talent and capability and the continuation of high level research across Queensland, while incentivising collaboration and linkages to draw ideas through to commercial outcomes.

Operational information

For Research Fellowships two level grants are available: early-career fellowships - \$180,000 over three years (excluding GST) and mid-career fellowships - \$300,000 over three years (excluding GST). For PhD scholarships, the program provides top-up funding of up to \$45,000 over three years (GST exempt) for Scholars to undertake an applied PhD research project. Applications will be assessed quarterly, and can be lodged at any time.

There is a specific program directed at Aboriginal and Torres Strait Islander Research Fellowships and PhD Scholarships.

Eligibility requires the applicant:

- Be an Australian citizen, or secure Australian residency for the duration of the research
- Have a research proposal that addresses one of the [Queensland Science and Research Priorities](#)
- Have a Queensland-based research sponsor organisation
- Have one or more industry or end user partner organisations that will progress the translation and practical application of the research
- Spend at least 50 per cent of research time located with an industry/end-user partner
- For fellowships, have combined cash funding that equals or exceeds the Queensland Government funding

Applications will be assessed on:

- Well planned and novel research project
- Quality of the proposed collaboration
- Clear outcomes and relevance for Queensland
- Track record

Administrative responsibility and cost

Department of Science, Information Technology, and Innovation, Queensland

Indicators, measures of success and evaluations

Not available

Website

<http://advanceqld.initiatives.qld.gov.au/funding>

Knowledge Transfer Partnerships Programme

Rationale

This programme supports collaboration and knowledge transfer by enabling small and medium size businesses to partner with universities to select graduates for specific projects in the businesses. Grants of up to \$50,000 (excluding GST) per project are available for businesses to employ the graduates.

Outcomes of the measure

The KTP programme enables businesses to form partnerships with universities and apply for grant funding to employ a graduate to assist with an innovative project.

Operational information

Funding of up to \$50,000 per project is available to help businesses with the cost of hiring a graduate to work on an innovative project. The funding subsidises two-thirds of the eligible project costs with the business contributing one-third. Applications will be assessed quarterly, and can be lodged at any time.

Eligibility requires that a business must:

- Employ less than 200 full-time equivalent employees (FTEs)
- Have been operating for more than two years
- Have an Australian Business Number (ABN)
- Have a strategic innovation project requiring collaboration with a university that you are prepared to manage
- Be registered for Goods and Services Tax (GST) before the project commences
- Be able to contribute one-third of the eligible project costs.

Applications will be assessed on:

- The strategic nature and level of innovation of the project

- Project feasibility, budget and timeframes
- Potential benefits to the business of employing a graduate
- Anticipated outcomes to Queensland, including alignment with government priorities.

Administrative responsibility and cost

Department of Science, Information Technology, and Innovation, Queensland

Participating universities are Queensland University of Technology, Griffith University, Central Queensland University, University of Queensland, University of Southern Queensland, James Cook University, and University of the Sunshine Coast

Indicators, measures of success and evaluations

Not available

Website

<http://advanceqld.initiatives.qld.gov.au/funding/best-brightest-fund/knowledge-transfer-partnerships.aspx>

Business Development Fund

Rationale

This programme will provide Queensland businesses access to \$40 million investment through seed co-investment ranging from \$125 000 to \$2.5 million funding to assist turning ideas and innovations into commercial outcomes.

Outcomes of the measure

The BDF is designed to invest in cutting edge research, or innovative ideas, products or services which have a realistic prospect of becoming commercially successful. The end game is to increase opportunities for new, high value and skilled employment.

Operational information

Investment of \$125 000 to \$2.5 million is available match monies committed from private sector co-investors. The co-investor, who will need to have undertaken due diligence and feasibility assessments prior to submission, submits applications. An independent panel of successful entrepreneurs will assess the investment applications, using both the Fund's criteria and their expert commercial judgement. Funding of up to \$50,000 per project is available to help businesses with the cost of hiring a graduate to work on an innovative project.

There are eligibility criteria for the overall business, the co-investor, and the sought investment. Some of the key eligibility requirements are:

- The business must have the majority of its assets and employees in Queensland
- The co-investor's investment must at least match the investment sought from the Fund
- It must be commercialising research, an innovative idea or an innovative product of service
- Have a realistic opportunity of becoming commercially successful
- Create opportunities for new, high-value and skilled employment

Administrative responsibility and cost

Queensland Treasury

Indicators, measures of success and evaluations

Not available

Website

<http://advanceqld.initiatives.qld.gov.au/funding/business-investment-attraction/business-development-fund.aspx>

Brisbane Technology Park

Rationale

Brisbane Technology Park was originally a Queensland Government initiative set up to connect technology and research-focused national and multi-national companies at the one convenient location.

Operational information

Spread over 33 hectares and located only 12 minutes drive from Brisbane CBD, Brisbane Technology Park continues to expand with \$300 million in new facilities planned to come online over the next five years

The Park is now home to more than 150 companies and the outcome is a thriving hub that has evolved into Queensland's premier business park. Companies include biotech, health and medical, mining, communications, electronics, and software development.

Construction of a new Innovation Centre is already underway, with the project set to deliver up to an extra 25,000 square metres of commercial and office space.

Administrative responsibility and cost

In 2001, the Queensland Government appointed Graystone, Development Manager of Brisbane Technology Park. Graystone has been intimately involved in the planning of the park and delivery of most of the buildings. The developer has now acquired the remaining land on-site from the State Government and is planning 19 buildings in various configurations.

Indicators, measures of success and evaluations

Significant medical and scientific breakthroughs had emerged from the businesses that have established their operations at the Park. This includes the endovascular stent graft technology developed by Cook Medical to treat aortic aneurysm disease, and the advancements in food safety technology developed by Symbio Alliance.

Website

<http://www.brisbanetechnologypark.com.au/>

South Australia

Chief Scientist

Rationale

South Australia's Chief Scientist, Dr Leanna Read, works with South Australian bodies involved in science and research, technology, innovation and economic development.

Outcomes of the measure

The Chief Scientist's primary role is to:

- Provide independent advice to the Premier, the Minister and Cabinet on matters of science and research, technology and innovation
- Lead the South Australian Science Council as chair.

Operational Information

The Chief Scientist provides leadership in developing strategies to enhance the contribution of science, technology, research, and innovation to the State's development by:

- Representing the South Australian Government on matters related to science, technology, research and innovation

- Raising the research and innovation profile of South Australia, including community awareness of capabilities, and the important contribution science and research, technology and innovation make to the State's development.

Administrative responsibility and cost

Department of State Development

Indicators, measures of success and evaluations

Not available

Website

<http://www.statedevelopment.sa.gov.au/science/chief-scientist>

Innovation Voucher Programme

Rationale

The Innovation Voucher Programme (IVP) aims to encourage collaboration between small to medium enterprises (SMEs) and research and development organisations. The programme is an element of [Manufacturing Works](#), South Australia's manufacturing strategy.

The outcome(s) of the measure

Building closer links between small to medium-sized enterprises and research providers.

Operational information

Vouchers between \$10,000 and \$50,000 are awarded on a competitive basis to researchers and developers to help SMEs, without the necessary resources, to solve technical problems and to encourage greater innovation within the manufacturing sector.

Partner SMEs must have an annual turnover of less than \$200m. A funding contribution is required from the SME and the amount depends on annual turnover.

Eligible research and development businesses include public research organisations and companies that provide services for research, development, and design. Research and development services for projects include, but are not limited to:

- Technical research
- Design development
- Design validation
- Prototype testing
- The development of innovative production processes.

Administrative responsibility and cost

A joint initiative of the Department for Manufacturing, Innovation, Trade, Resources and Energy and the Department of Further Education, Employment, Science and Technology.

Cost: \$1m

Indicators, measures of success and/or evaluations

Not available

Website

http://www.dmitre.sa.gov.au/manufacturing_works/programs_and_initiatives/innovation_voucher_program

Premier's Research and Industry Fund

Rationale

The Premier's Research and Industry Fund (PRIF), aims to support South Australia's research community to compete successfully on a national and global scale.

The outcome(s) of the measure

The fund encourages investment in key science and research areas that have the potential to generate significant economic, social, and/or environmental benefits for the State.

Operational information

The elements of the PRIF include:

- *Catalyst Research Grants* - funding to support South Australian scientific and technological research projects performed by an Early Career Researcher in collaboration with an industry partner or end user group
- *South Australian Research Fellowships* – funding to expand the State's research talent to support world-class research leadership that will have a direct strategic benefit to South Australian industry and the State's economy.
- *Collaboration Pathways Programme* - to facilitate connections between the public and private sectors
- *International Research Grant* - to support South Australian scientific and technological research being conducted with an international partner

Administrative responsibility and cost

Department of State Development

Indicators, measures of success and/or evaluations

The Department of State Development together with the Chief Scientist of South Australia is currently undertaking a review of programmes under the PRIF. Whilst the review is underway, the Department of State Development will not be calling for applications for the 2015-16 PRIF funding round.

The Innovation Voucher Programme will not be impacted by the review process and will remain open.

Website

<http://www.statedevelopment.sa.gov.au/science/premiers-research-and-industry-fund>

Medical Technologies Programme

Rational for the measure

The Medical Technologies programme supports the early stage development of new commercially viable medical and assistive devices through collaboration between industry, researchers, end-users and government. The MTP is delivered as part of the well-established Medical Device Partnering programme (MDPP) based at the Flinders University. Participants in the MTP will receive up to 250 hours of research to assist with any stage of the research and development process.

The Outcomes of the measure

The programme facilitates the development of medical devices and assistive devices by coordinating the efforts of key stakeholders. It provides a mechanism for the development of prototypes, proof of concept and/or commercialisation planning for potential products. The programme has a particular focus on finding solutions for clinicians, the ageing and the disabled.

Operational information

Formally announced in August 2013, the Medical Technologies programme is funded until June 2017.

Under the Medical Technologies Programme, companies, commercial enterprises or an individual who agrees to form such an entity, with a current or proposed connection to South Australia, can benefit from R&D assistance through the MDPP.

Administrative responsibility and cost

Flinders University of South Australia

Indicators, measures of success and/or evaluations

Thirty preliminary commercial assessments were conducted, and twelve companies have had projects funded over the past two years. Of these five are seeking further commercial investment for clinical trials.

Website

<http://www.statedevelopment.sa.gov.au/industry/manufacturing/manufacturing-programs-and-initiatives/medical-technologies-program>

Nanoconnect

The rationale for the measure

The NanoConnect programme supports opportunities for South Australian manufacturers to experiment with advanced nanotechnologies and facilitate engagement with key South Australian technology researchers.

The outcome(s) of the measure

Since November 2013, 18 local and national companies have been supported to access advanced nanotechnologies (through the Flinders University Centre for Nanoscale Science and Technology) for application in their business.

Operational information

Stage 1 Scoping Project is free of charge. Stage 2 projects require a contribution of \$5,000 cash and \$10,000 of in-kind project support to ensure the relevance and commercial value of the project.

Administrative responsibility and cost

The programme is managed by Flinders University with support from the Department of State Development.

Indicators, measures of success and/or evaluations

KPIs for the project are:

- Organise a tour of FCNST for at least 15 South Australian industry stakeholders during the funding period
- Organise at least 5 awareness sessions per year
- Carry out at least 12 personalised opportunity assessments per calendar year
- Carry out at least 12 tailored technology scoping reviews per calendar year
- Carry out at least 4 proof of concept feasibility study projects per calendar year

Success will be measured on performance against these KPIS.

Website

http://www.flinders.edu.au/science_engineering/research/nanoscale/nanoconnect/

Photonics Catalyst Programme

The rationale for the measure

The Photonics Catalyst Programme (PCP) supports the development of innovative photonic products such as sensors, lasers and optical fibres through unique project based collaborations between South Australian manufacturers, researchers, end-users and government.

The outcome(s) of the measure

Since November 2013, 11 local and national companies have been involved in projects that take advantage of leading edge laser and sensing technologies in research collaborations with the Institute of Photonics and Advanced Sensing.

Operational information

Participants in the PCP will receive a commercial and technical feasibility assessment of their project and up to \$45,000 worth of research and development services to assist with the development of their new photonics product or prototype.

Administrative responsibility and cost

The University of Adelaide in partnership with the Department of State Development manages the programme

Indicators, measures of success and/or evaluations

KPIs for the project are:

- Organise 3 photonics workshops during the funding period
- Up to 40 opportunities assessed for technical and commercial feasibility
- Twenty projects funded during the funding period

Success will be measured on performance against these KPIs.

Website

<http://www.adelaide.edu.au/ipas/pcp/>

BioSA

Rationale

South Australia has a wealth of bioscience investment opportunities available and BioSA is positioned to facilitate connections between industry and investors. It is fast-tracking the high-tech industry with a focus on bringing innovative South Australian products and technologies to global markets.

Outcome(s) of the measure

Leveraging Adelaide's world-class facilities in research and commercialisation, and building a network of high growth, emerging technology companies.

Operational information

Bio SA provides:

- Access to funding including grants, venture capital and other finance
- Connection to technology investment opportunities in South Australia
- Infrastructure support through two business incubators and land for new technology facilities
- Co-location with a cluster of 60+ high-tech companies.
- Business assistance catalysing companies towards technology commercialisation
- Access to international networks

Administrative responsibility and cost

An initiative of the South Australian government,

Indicators, measures of success and/or evaluations

Over the past 14 years BioSA has facilitated significant company and job growth, increased exports and attracted investment capital to South Australia. Success stories include:

- Reproductive Health Sciences (RHS)
- Ziltek
- TGR BioSciences Pty Ltd (TGR)
- CPR Pharma Pty Ltd
- Muradel Pty Ltd

Website

<http://bioinnovationsa.com.au/>

BioSA Industry Development Grant

Rationale

BioSA established the BioSA Industry Development (“BID”) programme to assist South Australian technology organisations to develop their business. Repayable grants from \$50,000 up to \$250,000 can be used for a range of activities as described in the BID Guidelines.

Outcome(s) of the Measure

This Program aims to increase the success of commercialisation undertaken by bioscience companies, institutes and other bodies in South Australia.

The BID program is primarily positioned to assist organisations with commercialising their research and to provide early stage companies with funds to achieve key milestones to help develop their businesses and to raise equity finance.

Operational information

The BID program is open to South Australian bioscience organisations. Funding must be for activities that will exploit an advantage that the applicant has (or will have) in order to achieve important commercial outcomes for the organisation. Applications can be submitted year-round and are reviewed internally by BioSA.

Eligible activities include:

- Incorporation and start-up costs for a new company
- Crucial “proof of commercial concept” experiments
- The generation of supporting data to strengthen patent applications
- Specific professional advice (legal, patent, market, financial, accounting) for an identified project
- Training or travel of key individual(s)
- Projects that will achieve key milestones within a short timeframe (usually within 1 year).

It is anticipated that organisations awarded BID repayable grants will receive ongoing advice and in-kind support from BioSA, in addition to any grant funds.

Applications are assessed according to Merit Criteria that include the feasibility and commercial viability of the activities and the commercial expertise and skill of the management team. The BID process analyses key elements of business planning through the summarisation of the intellectual property position, market potential, and commercial outcomes.

Administrative responsibility and cost

BioSA

Indicators, measures of success and/or evaluations

Not available

Website

<http://bioinnovationsa.com.au/programs-funding/biosa-grants/>
http://bioinnovationsa.com.au/wp-content/uploads/2015/01/BID-Guidelines_20130213.pdf

Small Business Innovation Research Pilot Programme

The rationale for the measure

The design and approach for the Small Business Innovation Research (SBIR) Pilot programme is to encourage SA SME's to engage in research and development that has the potential for commercialisation, through the development of solutions to problems faced by Government Agencies.

The programme is open to and encourages collaboration between small to medium enterprises and research providers to develop these solutions.

The outcome(s) of the measure

As a pilot programme it will undergo a desktop review after three to five years. The review will consider the overall outcomes, its successes and challenges, the outcomes delivered and any early indications of SME behavioural change and collaborations arising from the program. To date two challenges have been completed. Early indications suggest that the programme has initiated collaboration not between SME's and researchers but also between SME's.

Operational information

- Phase 1 is a feasibility stage and allows for development and proof of concept activity. Up to 5 companies can be contracted as part of Phase 1, for up to 6 months at \$100,000 each.
- Phase 2 is a development phase that will cover more intensive R&D and detailed product development if funding is available.

Administrative responsibility and cost

The programme is funded by the Department of State Development but administered through the partner agency through a Memorandum of Administrative Arrangement.

The MoAA formalises the Departments relationship with the partner agency for the duration of the project. It outlines the roles and responsibilities of both Department and the partner agency under the programme and facilitates the transfer of monies necessary for its implementation.

Indicators, measures of success and/or evaluations

The evaluation of the pilot SBIR programme will require a focus on clear outcomes, if the effectiveness of the programme is to be properly assessed. With the programme objectives including a focus on the commercialisation of new technologies and the growth in SME's, the following metrics have been identified as potential measures of success:

- Commercialisation activities/planning
- Company turnover
- Number of employees
- Number of patents, copyrights, trademarks etc. as a result of a project
- Additional external funding sources VC or other
- Collaborations research/business to business
- Has the programme met the expectations of the Partner Agency

Website

<http://www.statedevelopment.sa.gov.au/industry/manufacturing/manufacturing-programs-and-initiatives/small-business-innovation-research-pilot-program?q=small%20business%20innovation%20research>

Western Australia

Chief Scientist

Rationale

The Chief Scientist of Western Australia (Professor Peter Klinken) provides advice on topics that are important to the future of science in Western Australia.

The outcome(s) of the measure

The Chief Scientist reports directly to the Minister for Science and provides independent, external advice to the State Government on Science and innovation in Western Australia with a view to:

- Broadening the economy through science
- Developing science industries in the State
- Promoting Western Australia as a science leader in the Asia-Pacific region.

Operational information

The Chief Scientist works closely with the Office of Science and plays a key role in:

- Enhancing collaboration locally, nationally and internationally
- Attracting Commonwealth and industry investment into Western Australian science
- Building leading-edge scientific capacity in the State
- Promoting science policies and initiatives at meetings across academia, industry, Government and the community
- Acting as an ambassador for science, helping the State Government raise public awareness of the importance of science.

Administrative responsibility and cost

WA Office of Science

Indicators, measures of success and/or evaluations

Professor Klinken began his tenure on 10 June 2014 and is Western Australia's third Chief Scientist since the role was established in 2003.

Website

<https://www.dpc.wa.gov.au/science/LeadershipAndAdvice/Pages/ChiefScientistofWA.aspx>

Applied Research Programme

Rationale

The aim of the Applied Research programme is to address Western Australian challenges and opportunities of immediate concern to the community.

Operational information

There are active programs in the Applied Research programme – Shark Hazard Mitigation that supported applied research projects that sought to reduce the risk of shark attacks.

Funding was available for research and development, product development, technology transfer and intellectual property (IP).

Administrative responsibility and cost

WA Office of Science

Indicators, measures of success and/or evaluations

Not available

Website

<https://www.dpc.wa.gov.au/science/BuildingCapacity/Pages/SharkHazardMitigation.aspx>

Western Australia Fellowships Programme

Rationale

This science funding programme attracts internationally prominent researchers from interstate or overseas to Western Australia to build and lead world-class research teams in the State and contribute to the development of the State's science capability and capacity.

Operational information

The programme focuses on research that is of major importance and of significant benefit to the State and supports university-industry-government research collaborations. There are three current Fellows.

There are currently three Fellows undertaking Western Australian Fellowships:

- Professor Mark Jessell, a structural geophysicist, commenced his Fellowship in October 2013. He is advancing 3D modelling of Western Australia's geology, enabling more efficient mineral exploration. Professor Jessell relocated from France to take up a position at The University of Western Australia's Centre for Exploration Targeting.
- Professor Carole Jackson, an astronomer, commenced her Fellowship in August 2013. She is leading a team generating research output from the Murchison Widefield Array, a Square Kilometre Array precursor project. Professor Jackson relocated from New South Wales to take up a position in the Curtin Institute of Radio Astronomy.
- Professor Andrew Whiteley, a microbial ecologist and soil scientist, commenced his Fellowship in November 2012. He is investigating new approaches for environmental rehabilitation, particularly for mine sites. Professor Whiteley relocated from the United Kingdom to take up a position at The University of Western Australia's School of Earth and Environment.

Administrative responsibility and cost

WA Office of Science

Indicators, measures of success and/or evaluations

Not available

Website

<https://www.dpc.wa.gov.au/science/BuildingCapacity/Pages/WAFellowshipsProgram.aspx>

Advancing Western Australian Research Education (AWARE)

Rationale

AWARE is a collaboration between the five Western Australian universities and supported by the State Government. It provides training, professional development and industry experience for PhD students and postgraduate researchers.

Operational information

iPREP, one of AWARE's programs, promotes industrial-academic research collaboration through interdisciplinary teams of PhD students completing a short-term project with an industry partner.

Administrative responsibility and cost

WA Office of Science

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.waresearch.com/>

Western Australian Regional Research Initiative (Minerals)

Rationale

This initiative is aimed at the rapid transfer of new geoscience concepts, skills and technologies into the Western Australian minerals exploration industry. It involves the placement of three embedded researchers into company exploration teams within greenfield areas, helping to promote the flow of information between research teams and industry sponsors, and creating a two-way training process for industry professionals and researchers.

Operational information

Researchers are employed by the CSIRO. Funding to support employees is split evenly between the EIS and the participating exploration company sponsors.

Administrative responsibility and cost

The initiative forms part of the Western Australian Government's Exploration Incentive Scheme, managed by the Department of Mines and Petroleum

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.dmp.wa.gov.au/7754.aspx>

Agriculture Sciences Research and Development Fund

Rationale

The Agricultural Sciences Research and Development Fund is a four year \$22.1m project funded by the Western Australian Government's Royalties for Regions program.

The aim is to generate long-term improvement in productivity in agriculture across the State through targeted research grants to grower groups along the whole supply chain.

Operational information

These aims will be achieved through a combination of market, product, industry and investment focused research that will be used to inform the delivery of grants programs to industry consortia, grower groups, supply chain participants and research providers. The four key components of the project are:

- Grower Group Research and Development Grants (\$17.4m)
- Pathways to Improved Competitiveness (\$1.9m)
- Grower Group Alliance (GGA) Transformation (\$1.2m)
- Project Management, Governance, Communication and Promotion (\$1.6m)

Administrative responsibility and cost

Department of Agriculture and Food.

The Office of Science (OSS) is responsible for the Science and Agribusiness Connect programme (\$3.41m) which will be managed separately via an MOU between OSS and the Department of Regional Development.

Indicators, measures of success and/or evaluations

Not available

Website

<https://www.agric.wa.gov.au/agriculture-sciences-research-and-development-fund>

Boosting Biosecurity Defences

The \$20m Biosecurity Research and Development Fund provides funding for innovative solutions to better manage significant pests and diseases that impact on the State's agriculture and agrifood industries.

Operational information

Boosting Biosecurity Defences project is supported by the Western Australian Government's Royalties for Regions program

Administrative responsibility and cost

Department of Agriculture and Food

Indicators, measures of success and/or evaluations

Not available

Website

<https://www.agric.wa.gov.au/biosecurity/biosecurity-research-and-development-fund>

Sheep Industry Business Innovation – Sheep Business Centre

The Sheep Business Centre, part of the \$10m Sheep Industry Business Innovation Project funded by the Western Australian Government's Royalties for Regions program, will provide a hub for information, research, training and innovation in sheep meat and will link with other providers throughout the State.

Operational information

Not available

Administrative responsibility and cost

Department of Agriculture and Food

Indicators, measures of success and/or evaluations

Not available

Website

<https://www.agric.wa.gov.au/r4r/sheep-industry-business-innovation-project>

Innovation Vouchers Programme

Rationale

The Department of Commerce developed the Innovation Vouchers Programme (IVP) to assist SMEs to overcome some of the barriers that exist on the path to commercialisation.

The State Government recognises that SMEs have great ideas, but sometimes taking these ideas and turning them into new and sustainable business opportunities with real commercial outcomes can be difficult.

The outcome(s) of the measure

IVP supports activities that have strategic merit consistent with current State Government priorities, policies, programmes, and other industry and technology initiatives.

Operational information

IVP can provide financial assistance to eligible SMEs to access professional skills, services, or knowledge to enable them to advance their innovation or commercialisation activity in Western Australia.

IVP eligible expenditure includes:

- Research and development (e.g. technical development, compliance testing, proof of concept, product testing, validation, laboratory verification and certification)
- Product development (e.g. engineering design work, prototyping, innovation design)
- Technology transfer and intellectual property (e.g. protection of intellectual property, legal advice and licensing)
- Commercialisation support services (e.g. innovation management and consulting, commercialisation strategies and commercialisation feasibility studies).

The programme allows for up to \$20,000 per voucher to be awarded. Recipients need to provide a net cash co-investment of matched funds at a rate no less than 20:80 of applicant to State Government funding.

Administrative responsibility and cost

WA Department of Commerce

Indicators, measures of success and/or evaluations

This is a new programme

Website

<http://www.commerce.wa.gov.au/industry-and-innovation/about-program-0>

The Innovation Centre of WA

Rationale

The Innovation Centre of WA is a Western Australian government supported facility, which aims to

- Enable innovators to take their ideas from concept to a viable business through education, expert advice and provision of networking opportunities
- Create a robust and sustainable innovation and commercialisation infrastructure in WA through the Centre and its Business Incubator and an accompanying regional programme
- Provide leadership and a focal point for innovation and commercialisation by providing a physical, easily accessible location and open location for innovation in WA
- The creation of collaborative relationships across the innovation eco-system, including tertiary institutions, industry, investors, government, and professional service provider.

The Centre is located in the Technology Park Bentley.

Operational information

The Innovation Centre of WA offers the following services:

- Commercialisation advice and mentoring
- Education programme for entrepreneurial innovators
- Knowledge Library and Resources
- Business Incubator
- Events
- Innovation news

- Hotdesking spaces.

The Innovation Centre currently works with 12 private companies in the Business Incubator ranging from clean tech and ICT to mining solutions and offers world-class support for innovators and growing local ventures.

Indicators, measures of success and/or evaluations

To date, as a result of the services provided to innovators by the Innovation Centre of WA, the State is directly assisting with the generation of approximately \$4.2M of new revenue and \$2.1M of new investment each year.

Website

<http://innovation.wa.gov.au/about-us/the-innovation-centre-of-wa/>

Tasmania

No information available

Australian Capital Territory

CBR Innovation Development Fund

Rationale

The key policy direction of the Canberra-based Fund is to foster an integrated innovation ecosystem that supports the various stages of entrepreneurship and innovation and builds capacity and capability in the knowledge economy. The aim is to create greater synergy within the programme-funding environment and establish a system where programmes can transition and adapt and also address new priorities and opportunities in a more agile way as they arise.

The outcome(s) of the measure

The Fund has been designed to support a range of initiatives aimed at developing capability and investment in the ACT's innovation ecosystem, including providing base funding for major commitments such as the CBR Innovation Network, NICTA, and the Innovation Connect programme.

Operational information

In 2015-16, the Fund will continue to support the committed initiatives set out in *Confident & Business Ready: Building on Our Strengths*⁹.

Administrative responsibility and cost

Innovation Trade and Investment, Chief Minister, Treasury and Economic Development Directorate. In addition in 2015-16 uncommitted funding of \$700,000 is available for allocation on a competitive basis to proposals that meet the Fund's objectives. In 2016-17, this amount will rise to \$1.45m.

Website

<http://www.business.act.gov.au/grants-and-assistance/cbr-innovation-development-fund>

Innovation Connect

Rationale

The ACT Government's Innovation Connect grant programme is designed to help Canberra-based businesses develop innovative products and services.

⁹ http://www.business.act.gov.au/resources_and_networks/business_development_strategy/confident-and-business-ready

The outcome(s) of the measure

Support for businesses in the early stages of preparing an innovative product or service for investment or commercialisation.

Operational information

The programme has two categories:

- Proof of Technology: \$5,000 to \$50,000 of matching funding for proving a concept (e.g. developing a prototype). Funding rounds are held around two or three times a year.
- Accelerating innovation: \$5,000 to \$10,000 of matching funding to further accelerate the commercialisation of an innovation. Applications can be assessed at any time.

Administrative responsibility and cost

Innovation Trade and Investment, Chief Minister, Treasury and Economic Development Directorate

Funding: \$650,000 per annum.

Indicators, measures of success and/or evaluations

Leveraged funds, employment, export sales

Website

<http://www.business.act.gov.au/grants-and-assistance/grants/innovation-connect>

Epicorp

Rationale

Epicorp was established in 2001 as a centre of commercialisation excellence. It was supported by a \$4.57m ITC incubator programme (ICTIP) grant from the Federal Government Department of Communications, Information Technology, and The Arts (DCITA), a supporting grant from the ACT Government, and the provision of buildings by CSIRO.

Epicorp has focussed on the early-stage commercialisation of research from the country's pre-eminent centres of innovation by working closely with Australian's major research institutions

Outcome of the measure

Epicorp's objectives are to:

- Create a strong high technology commercialisation system for the Australian Capital Region, under common ownership and management, involving the Region's research institutions and supported by Government and the private sector
- Draw together the relevant resources and players in the Region
- Foster and support the commercialisation of technology and knowledge from CSIRO, University of Canberra, NICTA, and industry within the broader Australian Capital Region community
- Complement other commercialisation initiatives.

Operational information

Epicorp delivers assistance to new-start and spin-off ventures in two ways:

- Through the implementation of a tailored Incubator Programme designed to assist businesses to commercialise IP; and
- Through the provision of seed funding to suitable Epicorp incubator businesses.

In 2008 the ICT Incubator programme ended. The investment portfolio is being managed by Origin Ventures, a Canberra-based venture capital and corporate advisory firm.

The incubation and business development work continues through Lighthouse Business Innovation Centre, a joint venture with the ACT Government (see below).

Administrative responsibility and cost

The Board of Epicorp administers the company.

Indicators, measures of success and/or evaluations

Epicorp's portfolio includes a number of investments spun out from quality Australian centres of research. The portfolio encompasses areas within ICT as diverse as media editing and wind resource assessment to broadband telecommunication and highly precise global positioning.

Portfolio companies include: GPSports Systems, Epitactix, Amethon Solutions, Locata Corporation, Simmersion Holdings, Cohda Wireless, Windlab Systems, Mediaware International, Hatrix, Edentiti, Newton.

Website

<http://www.epicorp.com.au/index/home.html>

Lighthouse Business Innovation Centre

Rationale

Lighthouse Business Innovation Centre is a joint venture between the ACT Government and Epicorp Limited. The role of Lighthouse is to assist companies across all industry sectors with commercialisation and business expansion.

Outcome of the measure

Lighthouse provides business advice, education and training, mentorship and networking opportunities to help new and existing start-ups, early stage and high growth businesses commercialise their ideas and grow their companies. Lighthouse will tailor an approach to meet specific needs at the current stage of business development.

Operational information

Lighthouse provides practical advice, free and fee-for-service mentoring programmes, seminars, workshops, 'hands-on' support, and the all-important referrals and networking opportunities. Lighthouse has developed strong relationships with Canberra's universities.

Administrative responsibility and cost

Epicorp administers Lighthouse.

Indicators, measures of success and/or evaluations

Not available

Website

<http://lighthouseinnovation.com.au/>

STEM 4 Business Internship Programme

Rationale

The STEM 4 Business Internship Programme is an ACT Government Science, Technology, Engineering, and Mathematics (STEM) student internship programme aimed to accelerate Canberra's digital economy. To accelerate the digital economy and stimulate business innovation in the ACT there is a need to attract and develop a workforce with stronger STEM skills and knowledge.

The outcome(s) of the measure

The STEM 4 Business Internship Programme will help to build job-ready skill capability in ACT undergraduate/CIT STEM students whilst contributing to ACT businesses longer term STEM skill requirements, enabling them to take full advantage of the digital economy.

Operational information

The ACT Government will provide a funding grant of up to \$7,500 to businesses to reimburse 75 per cent of the eligible wages and related expenses associated with offering a paid internship.

Administrative responsibility and cost

ACT Government, \$225,000 in 2015-16

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.business.act.gov.au/grants-and-assistance/grants/stem-4-digital-business-internship-program>

Northern Territory

Innovation Voucher Scheme

Rationale

The BISI Voucher Scheme offers co-funding to NT-based pre-start-ups, start-ups, sole traders, micro businesses and SMEs, to carry out science, engineering, technology and design R&D projects which could lead to successful new products, processes and services. BISI helps NT-based companies prove concepts and develop prototypes.

The outcome(s) of the measure

By reducing financial risk, it aims to encourage investment, increase innovation capability, accelerate the commercialisation of new products and services, and contribute to economic growth.

Applicants who successfully acquit a supported project can apply for additional vouchers to further develop the idea. Multiple applicants seeking the same solution can combine up to four vouchers to support a contract with a single research service provider.

Operational information

This programme is open all year round, and provides up to 60 per cent support for eligible projects, with each voucher worth up to \$25 000 (exclusive of GST).

Administrative responsibility and cost

Department of Business

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.dob.nt.gov.au/industry-development/research-innovation/grants/Documents/bisi-program-voucher-guidelines.pdf>

2 Public Research Agency Measures

Included in this Section are measures that are funded from the two main public research granting agencies (Australian Research Council and National Health and Medical Research Council) and measures funded from programmes and budgets of Publicly Funded Research Agencies (PFRAs) and Medical Research Institutes (MRIs).

Australian Research Council Linkage Programme

The Australian Research Council (ARC) Linkage Programme is one of three ARC Programmes (the others being Discovery and ERA). Linkage funding schemes aim to encourage and extend cooperative approaches to research and improve the use of research outcomes by strengthening links within Australia's innovation system and with innovation systems internationally.

Linkage promotes national and international research partnerships between researchers and business, industry, community organisations and other publicly funded research agencies. By supporting the development of partnerships, the ARC encourages the transfer of skills, knowledge and ideas as a basis for securing commercial and other benefits of research.

The Linkage schemes are:

- Industrial Transformation Research Programme
- Linkage Projects
- ARC Centres of Excellence
- Linkage Infrastructure, Equipment and Facilities
- Co-funded Centres
- Special Research Initiatives
- Linkage Learned Academies Special Projects.

In 2014-15 the ARC allocated \$326.83m to these schemes. The ARC does not publish forward estimates of the funding allocation between schemes.

The Industry Transformation Research Programme (ITRP) and Linkage Projects scheme require financial and/or in-kind contributions from Partner Organisations and are of specific relevance to the issue of translation of research for economic and social benefit. Other schemes may also involve Partner Organisations. Arrangements vary between universities.

Industrial Transformation Research Programme

Rationale

The ITRP offers a pair of funding schemes designed to be attractive to both university-based researchers and industries. The Programme will fund Industrial Transformation Research Hubs and Industrial Transformation Training Centres.

Intended outcomes

The Programme is designed to:

- Fund research hubs and research training centres
- Support Higher Degree by Research students and postdoctoral researchers in gaining real-world practical skills and experience through placement in industry.

Operational information

In 2013-14 the ARC funded 10 Transformation Research Hubs with a total funding of \$34.6m, representing a success rate of 47.6 percent. Seven awards were made for Transformation Training Centres, with a total value of \$15.7m (success rate 54.0 per cent).

The Round 3 priorities for funding Industrial Transformation Research Hubs commencing in 2014 and Industrial Transformation Training Centres for funding commencing in 2015 were:

- Manufacturing

- Food and agriculture
- Oil and gas, including petroleum
- Mining and mining services
- Medical devices and biotechnology.

These priorities align with the Government's Industry Growth Centres Initiative.

The *Industrial Transformation Research Hubs* scheme will support collaborative research activity between the Australian higher education sector and industry designed to focus on strategic outcomes not independently realisable.

The scheme is intended to engage Australia's best researchers in issues facing the new industrial economies and training the future workforce. It is designed to focus on strategic outcomes not independently realisable.

Funds are provided to engage in cutting edge research on new technologies and economic and social transformation and support the development of research in the Industrial Transformation Priorities. The ARC will provide up to \$1m per annum funding for each Research Hub for a maximum of five consecutive years.

ARC Industrial Research Hubs funded in 2012 and 2014

- Offshore Floating Facilities
- Legumes for Sustainable Agriculture
- World-class Future Fibre Industry
- Computational Particle Technology
- Transforming the mining value chain
- Basin GEodyNamics and Evolution of Sedimentary Systems (GENESIS)
- Advanced breeding to transform prawn aquaculture
- Transforming waste directly in cost-effective green manufacturing
- Genetic diversity and molecular breeding for wheat in a hot and dry climate
- Advanced Technologies for Australian Iron Ore
- Australian Copper-Uranium
- Transforming Australia's Manufacturing Industry through High Value Additive Manufacturing
- BioProcessing Advanced Manufacturing
- Australian Steel Manufacturing
- Transformational research to underpin the future of the Australian dairy manufacturing industry
- Pathways to market: transforming food industry futures through improved sensing, provenance and choice
- Commercial development of rock lobster culture systems: the cutting edge of aquaculture
- Unlocking the food value chain: Australian food industry transformation for the Association of Southeast Asian Nations (ASEAN) markets

The *Industrial Transformation Training Centres* scheme fosters close partnerships between university-based researchers and other research end-users to provide innovative Higher Degree by Research (HDR) and postdoctoral training.

Over a five-year period the ARC will award funding for up to 50 Training Centres with recommended funding for at least ten Higher Degree by Research candidates and three postdoctoral fellows in each Training Centre.

Indicators, measures of success and/or evaluations

See information provided at end of this section on ARC schemes.

Websites

<http://www.arc.gov.au/industrial-transformation-research-programme>

ARC Linkage Projects

Rationale

The *Linkage Projects (LP)* scheme provides funding to eligible organisations to support research and development (R&D) projects that:

- Are collaborative between higher education researchers and other parts of the national innovation system
- Are undertaken to acquire new knowledge
- Involve risk or innovation.
- Encourage growth of a national pool of world-class researchers to meet the needs of the broader Australian innovation system.

The outcome(s) of the measure

Linkage Projects are intended to:

- Support the initiation and/or development of long-term strategic research alliances between higher education organisations and other organisations, including industry and end-users, in order to apply advanced knowledge to problems and/or to provide opportunities to obtain national economic, social or cultural benefits
- Build the scale and focus of research in research priority areas
- Provide opportunities for researchers to pursue internationally competitive research in collaboration with organisations outside the higher education sector, targeting those who have demonstrated a clear commitment to high-quality research.

Operational information

Proposals for funding under the *Linkage Projects* scheme must include at least one industry Partner Organisation that must make a contribution in cash and/or in kind to the project.

The combined Partner Organisation contributions must at least match the total funding requested from the ARC.

In 2013 the ARC funded 306 projects to the value of \$101.8m. This represented a success rate of 39 per cent. Over the 2011-2012 period 555 projects were funded, to a value of \$168.6m.

Indicators, measures of success and/or evaluations

See information provided at end of this entry.

Website

<http://www.arc.gov.au/linkage-projects>

ARC Centres of Excellence

Rationale

ARC Centres of Excellence involve significant collaboration that allows the complementary research resources of universities, publicly funded research organisations, other research bodies, governments and businesses to be concentrated to support outstanding research.

The outcome(s) of the measure

ARC Centres of Excellence are funded to:

- Undertake highly innovative and potentially transformational research that aims to achieve international standing in the fields of research envisaged and leads to a significant advancement of capabilities and knowledge
- Link existing Australian research strengths and build critical mass with new capacity for interdisciplinary, collaborative approaches to address the most challenging and significant research problems
- Develop relationships and build new networks with major national and international centres and research programmes to help strengthen research, achieve global competitiveness and gain recognition for Australian research
- Build Australia's human capacity in a range of research areas by attracting and retaining, from within Australia and abroad, researchers of high international standing as well as the most promising research students

- Provide high-quality postgraduate and postdoctoral training environments for the next generation of researchers
- Offer Australian researchers opportunities to work on large-scale problems over long periods of time
- Establish Centres that have an impact on the wider community through interaction with higher education institutes, governments, industry, and the private and non-profit sector.

Operational information

Funding of between \$1m and \$4m per annum for up to seven years may be awarded for each ARC Centre of Excellence.

In May 2013 the Minister approved funding for 12 Centres to the value of \$285m over the life of these Centres. The success rate for applications was 11.7 per cent.

ARC Centres of Excellence Title	Administering Organisation	Approved funds over project life
Advanced Molecular Imaging	Monash University	\$27,999,996
Children and Families over the Life Course	The University of Queensland	\$20,000,000
Convergent Bio-Nano Science and Technology	Monash University	\$26,000,000
Dynamics of Language	The Australian National University	\$28,000,000
Electromaterials Science	University of Wollongong	\$25,000,000
Integrated Coral Reef Studies	James Cook University	\$28,000,000
Integrative Brain Function	Monash University	\$20,000,000
Mathematical and Statistical Frontiers of Big Data, Big Models, New Insights	The University of Melbourne	\$20,000,000
Nanoscale BioPhotonics	The University of Adelaide	\$23,000,000
Plant Energy Biology	The University of Western Australia	\$26,000,000
Robotic Vision	Queensland University of Technology	\$19,000,000
Translational Photosynthesis	The Australian National University	\$22,000,000
		\$284,999,996.00

The approved proposals involve nine administering organisations, 22 collaborating organisations and 106 partner organisations. Four projects were approved in the biological sciences and biotechnology, three in engineering, mathematics and informatics, three in physics, chemistry and earth sciences, and one in each of the humanities and creative arts, and the social, behavioural and economics sciences.

A further round of funding is currently underway for centres to commence in 2017.

Indicators, measures of success and/or evaluations

See information provided at end of this entry.

Website

<http://www.arc.gov.au/arc-centres-excellence>

Summary of funding for the ARC Linkage Program

In 2013-14 the ARC awarded \$546.9m in total funding for 402 new grants under the *Linkage Programme* schemes. The funding awarded comprised:

- \$101.8m over three years for the Linkage Projects scheme
- \$34.6m over five years for the Industrial Transformation Research Hubs scheme
- \$15.7m over three years for the Industrial Transformation Training Centres scheme
- \$285.0m over five years for the ARC Centres of Excellence scheme
- \$32.0m for the Linkage Infrastructure, Equipment and Facilities scheme (predominantly one year grants)
- \$0.8m for over three years for the Linkage Learned Academies Special Projects scheme
- \$77.0m over four and five years for the Special Research Initiatives scheme.

The total funding fluctuates each year depending on the selection rounds conducted.

Indicators, measures of success and/or evaluations for ARC Linkage Programme

The ARC reports on the following KPIs for the *ARC Linkage Programme*.

Building Australia's research capacity—collaboration	
• Average number of organisations involved in Linkage research projects	Centres: > 10; TRP: > 5; LIEF: > 3; LP: > 2
• Proportion of partner organisations that rate the research partnerships supported through Linkage research projects as beneficial or very beneficial	LP: > 90 per cent
• Financial commitment (cash and in-kind) of partner organisations to Linkage research projects (for every dollar contributed by the ARC)	ITRH: > \$1.50; LP: > \$1.90
• Proportion of Linkage funding allocated to research projects that involve collaboration with industry	Benchmark and establish baseline for measurement
• Proportion of Linkage research projects that involve international collaboration	Centres: 100 per cent; ITRH: > 80 per cent; ITTC: > 70 per cent; LIEF: > 40 per cent; LP: > 40 per cent
Building Australia's research capacity—research training and careers	
• Proportion of Linkage researchers who are early career researchers	> 12 per cent
• Proportion of completed Linkage research projects that report the research supported by higher degree by research students	Benchmark and establish baseline for measurement
• Support for research training in areas of strategic importance to Australian industries	ITTC: At least 10 higher degree by research and three postdoctoral positions funded per centre
Building Australia's research capacity—research in areas of priority	
• Evidence of economic, environmental, social, health and/or cultural benefits to Australia arising from Linkage research in areas of priority	Document three case studies demonstrating benefits arising from the research
• Proportion of Linkage research projects in areas of priority	> 90 per cent

Data from the ARC 2013-14 *Annual Report* are reproduced below as a summary of performance for the Linkage Projects and Linkage Centres of Excellence schemes.

Linkage Program: Linkage Projects - number of research outputs for funding commencing in 2007, 2008 and 2009

Year	2007	2008	2009
Academic outputs			
Books and book chapters	555	307	208
Journal articles	2,685	2,225	1,349
Conference publications	2,643	1,799	1,054
Other	797	1 457	188
Total	6,680	5,788	2,799
Commercialisation outputs			
Invention disclosures	20	14	8
Licences executed	8	36	1
Patents filed	36	19	19
Patents pending	9	9	7
Patents unknown	1	1	-
Plant breeder rights	-	4	1
Start-up companies	3	9	4
Total	77	92	40
Number of final reports	461	386	278

Source: ARC Annual Report 2013-14

Linkage Programme: ARC Centres of Excellence - research outputs, 2005, 2007 and 2011 funded centres - type of output

Type of Output	2005 Centres	2007 Centres	2011 Centres	Total
Research				
Books	26	12	20	58
Book chapters	103	38	110	251
Journal articles (articles in scholarly refereed journal)	1,271	101	1,537	2,909
Journal articles (other)	7	8	255	270
Unpublished reports	111	7	81	199
Major reviews	11	-	6	17
Conference publications	876	101	1,420	2,397
Audio-visual recording	1	-	67	68
Computer software	4	-	29	33
Patents filed	17	-	12	29
Patents pending	-	-	16	16
Creative works	1	-	36	37
Exhibition curatorship	-	1	4	5
Collaboration				0
Number of national collaborating institutions (average per centre)	16	13	26	55
Number of international collaborating institutions (average per centre)	66	6	52	124
Number of countries involved in collaboration (average per centre)	19	6	24	49
Number of countries from which international visitors originated (average per centre)	12	5	21	38
Number of international visitors (average per centre)	19	19	18	56
Number of overseas visits by Centre personnel (average per centre)	54	71	86	211
Training				0
Number of PhD graduated	113	4	99	216
Number of PhD students enrolled	490	63	638	1,191
Number of early career researchers (within 5 years of PhD completion)	168	15	368	551
Number of Centres	11	1	13	25

Source: ARC Annual Report 2013-14

National Health and Medical Research Council (NHMRC)**Development grants****Rationale**

The National Health and Medical Research Council (NHMRC) Development Grants scheme provides financial support to individual researchers and/or research teams to undertake health and medical research within Australia at the proof of principle or pre-seed stage that specifically drives towards a commercial outcome within a five-year timeframe.

The outcome(s) of the measure

The scheme supports the commercial development of a product, process, procedure or service that if applied, would result in improved health care, disease prevention or provide health cost savings.

Operational information

Research supported by this scheme must have experimental data that supports a demonstrated proof of principle or pre-seed concept and have a detailed feasible commercialisation strategy that takes into account the regulatory pathway, protectable IP, commercial barriers and potential routes to market.

Administrative responsibility and cost

NHMRC

Budget 2015-16: \$14.27m

Indicators, measures of success and/or evaluations

In 2012 the Australian Continuous Improvement Group reviewed the Scheme. The ACIG reviewed all completed and current Development Grants beginning funding in 2000 to 2008, sampled 40 grants for more in-depth assessment, and interviewed some stakeholders.

The Review found that of the 40 grants, 80 per cent secured a commercial partner, 55 per cent were under possible commercial development and six had a product to market or were awaiting regulatory approval¹⁰.

Website

<https://www.nhmrc.gov.au/grants-funding/apply-funding/development-grants>

NHMRC Advanced Health and Medical Research Translation Centres

Rationale

The translation of health and medical research into clinical practice, policy and health systems is a strategic priority in the NHMRC Corporate Plan 2015-16.

The NHMRC Advanced Health and Medical Research Translation Centre (AHRTC) initiative identifies and recognises the leading centres of collaboration in health and medical research, research translation, research-infused education and training, and outstanding health care.

The aim of recognising AHRTCs is to promote leadership in research and evidence-based clinical care, accelerating research findings into health care and encouraging research infused education and training, at international levels of excellence.

Outcome of the measure (s)

A strong set of Advanced Health Research and Translation Centres around Australia that has the potential to:

- Increase the cost-effectiveness of health care by identifying, testing and introducing systems of care, procedures and devices that are most effective.
- Restrain cost increases by identifying and eliminating those process, procedures and treatments that are ineffective or less cost-effective.
- Provide strong and more effective dissemination of information towards achieving improvements.
- Provide a more powerful base for clinical trials - to the benefit of patients and the clinical trials industry.
- Provide much greater efficiency in the use of resources – clinical, community, research – through rationalisation, avoiding duplication, and gaining critical mass efficiencies.

Operational information

Four centres have been recognised as NHMRC AHRTCs:

- Alfred Health and Monash Health and Partners Advanced Health Research and Translation Centre
- Melbourne Health Care Partners Advanced Health Research and Translation Centre
- South Australian Advanced Health Research and Translation Centre
- Sydney Health Partners Advanced Health Research and Translation Centre.

Administrative responsibility and cost

From the start NHMRC's concept has been one of recognition, not of funding. The aim is to signal that NHMRC values leadership and excellence in research, translation and training of health professionals in an evidence-based environment, at international levels of excellence.

¹⁰ http://www.nhmrc.gov.au/files/nhmrc/file/media/media/rel12/nhmrc_development_grants_review_april_public_121122.pdf

NHMRC is drawing on advice from a broad array of stakeholders to further develop the initiative and deliver the greatest possible contribution to improvements in healthcare.

Website

<https://www.nhmrc.gov.au/research/nhmrc-advanced-health-research-and-translation-centres>

Partnerships for Better Health

Rationale

The NHMRC Partnerships for Better Health initiative aims to improve the availability and quality of research evidence to decision makers who design policy and to inform the policy process by supporting more effective connections between the decision makers and the researchers. The initiative consists of two types of grant awards: Partnership Centres and Partnership Projects.

Outcome of the measure (s)

Partnership Centres

The broad objectives are to:

- Support the implementation of research-informed changes in health and health care systems
- Synthesise and disseminate research relevant to improving health and health care system performance;
- Undertake collaborative research, and
- Build capacity, both within the research community to undertake applied research, and within the system to use research as part of change management.

Partnership Projects

The objectives of the scheme are to:

- Meet the need for a more effective integration of research evidence into health policy and service delivery;
- Create partnerships among policy makers, managers, service providers and researchers;
- Provide support to answer often complex and difficult questions that policy makers, managers and service providers face when making decisions and implementing policies that affect Australians' health and health care; and
- Enable applicants to apply for funding at any time during the year to allow researchers and partner organisations to develop timely collaborations.

Operational information

Partnership Centres are jointly supported by NHMRC and organisations with an interest in using research to advance their mission. Within a Partnership Centre there are two levels of partnership: the funding partners; and the investigator partners.

Partnership Projects target research to support the work of healthcare policy and service delivery implementation agencies; they are not intended to support the research that is normally conducted in universities and medical research institutes, who have access for support through other NHMRC schemes.

Administrative responsibility and cost

There are two Partnership Centres:

- *Dealing with Cognitive and Related Functional Decline in Older People* - supported to the value of \$25 million over five years by NHMRC and its partners, HammondCare, Helping Hand Aged Care, Brightwater Care Group and Alzheimer's Australia; and
- *Systems Perspectives on Preventing Lifestyle Related Chronic Health Problems* – supported to the value of \$22 million over five years from NHMRC and its partners, the Australian Government Department of Health, the New South Wales Health Administration

Corporation, the Australian Capital Territory Health Directorate, the HCF Health and Medical Research Foundation, and the Hospitals Contribution Fund of Australia Ltd.

Partnership Projects

NHMRC

Budget 2015 \$25.7m

Website

<http://www.nhmrc.gov.au/grants-funding/apply-funding/partnerships-better-health>

Medical Research Commercialisation Fund

Rationale

The Medical Research Commercialisation Fund (MRCF) provides dedicated investment funding to support the commercialisation of early-stage medical research discoveries that originate from its member institutes.

Member institutes are: Alfred Health, AIBN, Baker IDI, Deakin, Burnett Institute, Centenary Institute.

The outcome(s) of the measure

The MRCF seeks to foster best practice in the commercialisation of medical innovations by providing its members with a range of benefits, including:

- An early-stage fund dedicated to supporting the development and commercialisation of early-stage medical technologies
- Access to risk-tolerant investment capital to support the development of promising technologies,
- Involvement in and exposure to the Investment Review process
- The investors gain access to promising technologies emanating from the Member Institutes.

Operational information

The MRCF's investors are AustralianSuper, Statewide Super, HESTA, HOSTPLUS and the Australian Government under the IIF programme.

The MRCF is also supported the State Governments of Victoria, New South Wales, Western Australia, Queensland and South Australia.

The Fund is managed by [Brandon Capital Partners](#), an experienced life science fund manager.

Administrative responsibility and cost

The fund has over \$50m under investment, has around 32 institutional members, and invests between \$200,000 and \$2m for each project that is accepted following a fairly rigorous approval process.

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.mrcf.com.au/>

Summary of Medical Research Commercialisation Activity

Metrics collected through the National Survey of Research Commercialisation point to very high level of research commercialisation across Australia's medical research institutes. Key summary data for 2011, 2012, and 2013 is provided below.

	2011	2012	2013
Intellectual property activity			
Invention disclosures received (No.)	257	311	261
Patent and plant breeder rights filed total (No.)	231	167	188
Patent and plant breeder rights issued total (No.)	81	92	79
Patents pending (No.)	956	682	762
Total held (No.)	1,811	1,318	1,419
Licensing activity			
Material Transfer Agreements (No.)	585	375	346
Income from MTAs (\$'000)	351	136	212
LOAs executed (No.)	69	47	38
LOAs active (No.)	325	146	157
LOAs yielding income (No.)	68	48	51
Adjusted gross LOA income (\$'000)	30,026	26,897	8,025
Start-up company activity			
Start-up companies created (No.)	1	7	2
Capital raising- total (\$'000)	25,305	21,934	0
Operational start-up companies which are dependent on licensing/assignment of technologies (No.)	14	23	23
Start-up companies in which institutions have an equity holding (No.)	13	23	23
Value of equity holdings (\$'000)	944	13,277	16,430
Research contracts and consultancy activity			
Contracts and consultancy agreements entered into (No.)	558	237	217
Total gross agreed value (\$'000)	58,104	39,522	38,671
Skills development and transfer activity			
Research postgraduates employed in start-up companies (No.)	35	16	16

Source: <http://www.industry.gov.au/innovation/reportsandstudies/Pages/Summary-of-Selected-NSRC-survey-metrics-for-2011-13-by-institution.aspx>

These metrics are a reflection of the very high levels of commitment to medical research in Australia.

DST Partnerships and Outreach Group

Rationale

DSTO Partnerships and Outreach Group coordinates and develops interactions with industry, academia, overseas agencies and other Australian government agencies. The Group also promotes defence science in the education and wider Australian communities.

The outcome(s) of the measure

The Group aims to position DST Group as a world leading science and technology organisation by leading external engagement strategies, collaborations, partnerships and reputation management both nationally and globally. .

Operational information

The Group operates in a number of areas, including:

- Partnerships and Engagement – outreach activities (including science, technology, engineering and mathematics promotion), graduate recruitment, scholarships and industry placements
- Technology Partnerships Office - Strategic Alliance Program with industry, Defence Science Partnerships with universities, development of engagement mechanisms with small to medium enterprises
- Innovation - Coordinating an innovation program for Defence, focusing on capability development and acquisition in partnership with industry, universities and other research agencies.
- Defence Innovation Realisation Fund and Capability and Technology Demonstrator Programme
- Grand Challenges - Coordination of cross-disciplinary, scientifically complex, high impact research for Defence projects of national significance.

Administrative responsibility and cost

DST corporate

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.dsto.defence.gov.au/discover-dsto/our-structure-and-groups/partnerships-and-outreach-group#sthash.AARhkZwt.dpuf>

CSIRO

Commercialisation and collaboration roles

Within CSIRO there is a network of business development officers (BDOs) who are charged with a responsibility for commercialisation and building collaborations. During 2013 there were 138 people with responsibilities in these areas.

SME Engagement Centre

Rationale

CSIRO's SME Engagement Centre connects local companies with the research sector and helps establish partnerships that will increase Australia's global competitiveness.

Supported by the Department of Industry Entrepreneurs' Programme, the Centre facilitates researcher placements to help SMEs overcome technical challenges and implement new innovative solutions.

Placements generally involve committing a researcher to work within a company for a specified period. Companies may work with a CSIRO researcher, or CSIRO may identify someone at another research organisation. This approach has facilitated more than 100 SME businesses to date.

Website

<http://www.csiro.au/en/Do-business/Solutions-for-SMEs/About-SME-Engagement>

Researcher placements in business

Rationale

CSIRO makes it easy for SMEs to access knowledge and expertise, by bringing researchers to an SME business. The Department of Industry's Research Connections programme supports the placements. The programme offers eligible Australian SMEs an opportunity to improve their competitiveness by building relationships with research organisations in Australia.

CSIRO facilitates researcher placements, which generally involves committing a researcher to work within a company for a period of time. SMEs may work with a CSIRO researcher, or CSIRO may identify someone at another research organisation.

Eligible SMEs can also qualify for a grant, making it more cost effective to undertake the research project.

Operational information

CSIRO helps connect SMEs to research through the Research Connections programme, while providing guidance on grant opportunities.

Indicators, measures of success and/or evaluations

CSIRO has taken with more than 100 SME businesses to date.

Website

<http://www.csiro.au/en/Do-business/Solutions-for-SMEs/Researcher-placements>

Summary of CSIRO Commercialisation Activity

Metrics collected through the National Survey of Research Commercialisation summarise the level of research commercialisation in CSIRO. Key data for 2011, 2012, and 2013 is provided below.

	2011	2012	2013
Intellectual property activity			
Invention disclosures received (No.)	117	77	84
Patent and plant breeder rights filed total (No.)	274	483	496
Patent and plant breeder rights issued total (No.)	228	254	259
Patents pending (No.)	1,845	1,835	1,740
Total held (No.)	3,552	3,567	3,504
Patents and plant breeder rights Culled or lapsed (No.)	264	586	717
Licensing activity			
Material Transfer Agreements (No.)	157	159	138
Income from MTAs (\$'000)	104	15	6
LOAs executed (No.)	108	100	130
LOAs active (No.)	488	491	479
LOAs yielding income (No.)	263	280	280
Adjusted gross LOA income (\$'000)	37,271	284,706	41,493
Start-up company activity			
Start-up companies created (No.)	0	0	0
Capital raising- total (\$'000)	73,984	2,964	40,373
Operational start-up companies which are dependent on licensing/assignment of technologies (No.)	7	8	1
Start-up companies in which institutions have an equity holding (No.)	5	6	1
Value of equity holdings (\$'000)	29,376	16,136	11,284
Research contracts and consultancy activity			
Contracts and consultancy agreements entered into (No.)	2,210	1,928	1,891
Total gross agreed value (\$'000)	349,284	388,734	347,900

Source: <http://www.industry.gov.au/innovation/reportsandstudies/Pages/Summary-of-Selected-NSRC-survey-metrics-for-2011-13-by-institution.aspx>

The data point to a very high level of intellectual property activity, as well as a significant income from research contracts and consultancy – which makes up about a third of CSIRO Income.

3 University Supported Measures

Included in this Section are measures that are funded from the internal resources of universities. Some measures receive support from State/Territory Governments.

Technology Transfer Offices

Rationale

Several universities have established technology transfer officers (TTOs) to facilitate the transfer of knowledge to the private sector for commercial application and broader public benefit. Their main activities relate to:

- Intellectual property Management
- Licenses and options to access and use intellectual property
- Formation of start-up companies
- Collaborative R&D
- Contract research
- Management of academic consulting services
- Facilitation of expert witness services
- Merchandising products created through research

Not all Australian universities have established TTOs. Capability tends to be concentrated in the major research universities.

The outcome(s) of the measure

Strengthened industry-university engagement and collaboration, effective global technology transfers, and access to university expertise, intellectual property, and facilities

Operational information

TTOs may be established as administrative units within a university structure, or as separate companies.

In 2013 there were 490 staff working in technology transfer, covering IP management, industry engagement, marketing, and legal professionals and support staff with a total cost of \$62.2m.

Administrative responsibility and cost

TTOs do not receive funding from Government for service delivery, capability development or administrative support.

In 2014 Knowledge Commercialisation Australasia (KCA)¹¹ was awarded a grant of \$98,000 from Professions Australia for the project *Building a skills framework for better technology transfer in the Australian context*. The project aims to provide a clear understanding of what it really takes to get new ideas generated by Australian publicly funded research organisations into society and the marketplace.

Indicators, measures of success and/or evaluations

A summary of metrics drawn from the *National Survey of Research Commercialisation* in relation to universities for the years 2011 and 2013 is provided below.

¹¹ KCA is the peak body for organisations and individuals associated with knowledge commercialisation and exchange between public sector research organisations and business and government entities.

	2011	2013
Resourcing for commercialisation		
Total FTE (No.)	448	490
Total staff costs (\$'000)	58,452	62,155
Intellectual property activity		
Invention disclosures received (No.)	1,295	1,044
Patent and plant breeder rights Filed total (No.)	1,166	1,044
Patent and plant breeder rights issued in Australia (No.)	119	110
Patent and plant breeder rights issued in the US (No.)	73	58
Patent and plant breeder rights issued Elsewhere (No.)	422	502
Patent and plant breeder rights issued Total (No.)	615	671
Patents pending (No.)	3,206	3,140
Patents issued (cumulative)	1,914	1,939
Total held (No.)	5,120	5,079
Patents and plant breeder rights Culled or lapsed (No.)	336	628
Licensing activity		
Material Transfer Agreements (No.)	280	427
Income from MTAs (\$'000)	56	2
LOAs executed (No.)	305	431
LOAs active (No.)	1,918	1,611
LOAs yielding income (No.)	447	618
Adjusted gross LOA income (\$'000)	62,371	70,690
Start-up company activity		
Start-up companies created (No.)	14	21
Capital raising- total (\$'000)	64,947	48,507
Operational start-up companies dependent on licensing/assignment of technologies (No.)	172	182
Start-up companies in which institutions have an equity holding (No.)	156	159
Value of equity holdings (\$'000)	110,259	111,006
Research contracts and consultancy activity		
Contracts and consultancy agreements entered into (No.)	11,849	10,046
Total gross agreed value (\$'000)	1,011,978	1,151,840
Skills development and transfer activity		
Research postgraduates employed in start-up companies (No.)	65	73

Source: <http://www.industry.gov.au/innovation/reportsandstudies/Pages/Summary-of-Selected-NSRC-survey-metrics-for-2011-13-by-institution.aspx>

The data point to a modest income from intellectual property licensing activity (\$70.7m in 2013) but a very strong level of activity in the value of research contracts and consultancy (\$1.2 billion in 2013).

Websites

- [ANU](#)
- [Newcastle Innovation Ltd](#)
- [UNSW Innovations](#)
- [Office of Commercial Service, Queensland University of Technology](#)
- [qutbluebox Pty Ltd, Queensland University of Technology](#)
- [Uniquet Pty Ltd, The University of Queensland](#)
- [The University of Southern Queensland](#)
- [Adelaide Research & Innovation, The University of Adelaide](#)
- [Itek Ventures Pty Ltd, The University of South Australia](#)
- [La Trobe University](#)
- [Monash University](#)
- [Swinburne Knowledge, Swinburne University](#)
- [UoM Commercial Ltd, The University of Melbourne](#)
- [Victoria University](#)
- [IP Commercialisation, Curtin University](#)
- [Murdoch University](#)
- [The Office of Industry & Innovation, The University of Western Australia](#)

Proof of Concept and Seed Funds

Proof of concept and seed funds are designed to assist researchers in taking a discovery or invention towards commercial application and adoption by industry.

In the absence of government funding to support early stage commercialisation, a number of universities have taken the initiative and established their own programmes.

Uniseed

Rationale

Uniseed was established in October 2000 as a \$20m proof of concept fund as a joint venture between the University of Melbourne (UM) and the University of Queensland (UQ).

A new \$40m venture fund was started in 2006, with the addition of the University of New South Wales, and the Westscheme superannuation fund (responsibility taken over by Australian Super in 2011-12). The founding universities also committed further funds.

The outcome(s) of the measure

Uniseed's mandate is to facilitate the commercialisation of university-generated intellectual property by targeted investment in highly promising technologies. Uniseed's investments cover a range of technology sectors.

Operational information

Uniseed is dedicated to the needs of its partner universities, and committed to servicing them consistently over the long term, irrespective of the short-term conditions in external capital markets. It works in very close partnership with the universities' commercialisation companies, UoM Commercial, UniQuest and UNSW Innovations providing a valuable adjunct to the capabilities these companies provide.

The fund is run with commercial discipline, ensuring independence and financial rigour in its investment decision-making processes.

Administrative responsibility and cost

An independent management team consisting of a CEO and three Investment Managers administers Uniseed. There are dedicated investment committees for biotechnology or other technologies. The nominal investment limit is \$2m to allow participation in follow-on funding rounds so as to preserve Uniseed's equity position

Indicators, measures of success and/or evaluations

Success is measured by a balance of:

- Return on investment (including the flow of funds for research to further the commercialisation of intellectual property generated within the Universities)
- The establishment of viable start-up companies
- The generation of research income for partner universities
- The improvement of university commercialisation processes

To date, the fund has exited four investments through trade sales:

- A neuropathic pain drug (Spinifex)
- A drug in development to treat fibrosis (Fibrotech)
- An IT security technology (Vintela)
- A semi-conductor technology (Fultec).

Its biotechnology portfolio is maturing, with Hatchtech completing a pivotal Phase 3 trial for its human head lice treatment in 2014. Other companies have products on the market (e.g. Hydrexia, Progel, BT Imaging, and Smart Sparrow) or are collaborating with leading global companies in the respective field.

Website

<http://www.uniseed.com.au/Home.html>

University of Sydney Commercial Development and Industry Partnerships Research Fund

Rationale

The Commercial Development and Industry Partnerships (CDIP) Research Fund supports the strengthening of the university's intellectual property portfolio.

The outcome(s) of the measure

The CDIP Research Fund provides critical financial support for research projects with commercial potential. These funds will be used to:

- Strengthen the patent applications filed by the university, especially by reducing inventions to practice during the 12 months period between provisional filing and PCT filing
- Strengthen the university's copyright portfolio
- Develop 'unripe' projects into licensable opportunities by reaching critical milestones and demonstrating feasibility.

Operational information

Subject to the receipt of competitive applications, funding of between \$30,000 and \$100,000 will be provided to the awardees. The preferred project duration will be up to one year. 5-10 awardees will be selected in each application round.

A return-on-investment mechanism is built into CDIP Fund agreements with the aim being to grow the Fund, making more funds available in the future. 50 per cent of the first future commercialization income will be paid to the CDIP Fund, with a cap of 200 per cent of the grant amount.

All applications must satisfy the following criteria:

- The underlying intellectual property is fully owned by the university, or if shared, the university has commercialising lead with more than 50 per cent ownership of the intellectual property. If the university has less than 50 per cent ownership, the other owner(s) will need to provide matching funding.
- The funding must be applied to one of:
 - Construction of prototypes
 - In-vivo testing for therapeutics intellectual property
 - Testing in animal models for biomedical devices intellectual property
 - Development of software and other copyright materials.
- The funding can only be used to buy materials, animals and external services, and not for buying equipment or to fund staff salaries.

Administrative responsibility and cost

The University of Sydney Commercial Development and Industry Partnerships Office

Indicators, measures of success and/or evaluations

Not available

Website

http://sydney.edu.au/cdip/staff/cdip_fund.shtml

Monash Research Impact Fund (MRIF)

Rationale

MRIF aims to fill the funding gap between the creation of a new technology and the demonstration of its worth to commercial and other external parties. Funding is available for adding value to technologies and inventions and achieving impact.

The outcome(s) of the measure

Early stage support for inventions and new concepts for which commercial potential exists, or there is potential to make significant national or international impact from a Monash innovation.

Operational information

The types of projects supported include the building of an engineering prototype, the validation of a drug target or the completion of a marketing study to demonstrate the demand for the technology or the development of a business plan. Funds can either be spent internally or externally to Monash.

Administrative responsibility and cost

Monash University

In 2012 Monash budgeted \$300,000 per annum.

Indicators, measures of success and/or evaluations

Not available

Website

<https://www.monash.edu/industry/experts/commercialisation/funding>

QUT Bluebox Proof of Concept Fund

Rationale

The Bluebox Proof of Concept (POC) Fund, a Queensland University of Technology (QUT) funding programme, helps to facilitate and accelerate the process of positioning QUT projects for commercialisation and adoption by industry and the wider community.

The POC Fund is aligned with QUT's vision to undertake high-impact research and development in selected areas, at the highest international standards, reinforcing its applied emphasis and securing significant commercial and practical outcomes.

The outcome(s) of the measure

Achieving proof of concept involves adding commercial value to a project by generating evidence that the innovation actually works and could lead to a commercially viable product, service or process.

Operational information

Proof of concept activities are aimed at progressing the project to a stage where:

- Additional external investment in the intellectual property is possible (such as obtaining commercially relevant data that will demonstrate the viability of the project to an investor or provider of further commercial funding)
- An industry partner or licensee might agree to take a licence to the discovery.

Administrative responsibility and cost

QUT

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.qutbluebox.com.au/investment>

Adelaide Research and Innovation Commercial Accelerator Scheme

Rationale

ARI's proof-of-concept funding programme (CAS) addresses the gap in funding known as the "valley of death" between traditional research funding and the market.

The outcome(s) of the measure

To provide a bridge for projects from discovery/invention to successful licence or other funding options.

Operational information

The maximum amount to be funded into any one project is \$100,000. The provision of matching funding or in-kind assistance from industry partners is regarded favourably.

The Scheme is only available to University of Adelaide staff. The next funding round will be held towards the end of 2015.

Administrative responsibility and cost

During the five years to 2015, \$2.5m has been contributed to the fund and \$2.6m has been allocated to promising early-stage technologies.

Indicators, measures of success and/or evaluations

The programme has been able to leverage significant funding from venture capital and angel investors as well as commercially focussed support programmes provided by Government. Successful projects have included:

- Developing rhythm map software to help improve the treatment of cardiac arrhythmia – led by Professor Prash Sanders and Darius Chapman
- Optimising the conditions for commercial deflasking and acclimatisation of tissue culture-derived ornamental eucalypt trees – led by Dr Kate Delaporte
- Using peroxidase enzymes to accelerate fracture repair in healthy or osteoporotic bones – led by Professor Andreas Evdokiou
- Validating algorithms that predict risk for pregnancy complications – led by Professor Claire Roberts
- Validating an ELISA diagnostic for early stage gastric cancer – led by Professor Peter Hoffmann
- Evaluating the use of Annexin A2 as a novel diagnostic marker for serous ovarian cancer – led by Dr Carmela Ricciardelli and Professor Martin Oehler

Website

<http://www.adelaideresearch.com.au/researchers/cas/>

UniSA Venture Catalyst

Rationale

UniSA Venture Catalyst is an initiative of the South Australian Government and University of South Australia encouraging student entrepreneurship and the creation of local start-ups by providing funding for early-stage ventures founded by the University of South Australia students and recent graduates. Under the partnership the State Government has committed \$150,000

The outcome(s) of the measure

The programme aims to encourage entrepreneurship by providing the seed funding and public endorsement needed to develop ideas and to increase the number of graduates motivated to start a new company as well as encouraging young entrepreneurs to remain in South Australia,

Operational information

The program will link with other UniSA industry partnerships such as the Innovation and Collaboration Centre with Hewlett Packard and the Lance Hill Design Centre with Hills Ltd

Eligibility Criteria for Seed Funding

- Project teams must include at least one current student or recent graduate (12 months from date of graduation) from University of South Australia
- Applications must be proposing the idea for a start-up, which Venture Catalyst defines as a product, service, or process that is both innovative and scalable
- The business proposed must benefit South Australia's economic development
- Applicants must own the IP or have the option to acquire it.

Administrative responsibility and cost

University of South Australia

Indicators, measures of success and/or evaluations

Not available

Website

<http://unisa.edu.au/venturecatalyst#.VclSpJOqqko>

<http://www.unisa.edu.au/media-centre/releases/new-initiative-to-support-job-generating-student-entrepreneurs-/#.VftoBCCqgko>

University of Western Australia Pathfinder Fund

Rationale

Pathfinder is a proof-of-concept fund for developing technologies created at University of Western Australia (UWA) to develop early-stage projects with clear commercial potential.

Pathfinder is not research funding, "gap funding" for research programmes, for the acquisition of major capital equipment, conference travel or IP protection.

The outcome(s) of the measure

Outcomes are identified as:

- To demonstrate proof-of-concept / utility of new innovations with a view to becoming investor ready
- To leverage other commercialisation funds, such as Accelerating Commercialisation funding.

Operational information

Pathfinder can fund up to \$100,000 per project. Eligible projects must:

- Build on some preliminary research that has established or suggested an IP position with commercial potential
- Aim to demonstrate proof-of-concept / the utility of the IP and support the commercialisation strategy
- Be outcome oriented with deliverables expected within 12 months
- Be managed by an RDI project manager, with appropriate records kept for auditing the use of funds.

Pathfinder funds are to be repaid from any future commercialisation income and the intellectual property developed must belong to UWA.

Applicants can be UWA staff, in permanent positions (or joint appointments) or on contracts that have at least 12 months remaining, or postgraduate students willing to assign their IP to UWA.

Pathfinder funds can be applied to a range of purposes including:

- Costs of performing “proof of concept” experiment(s) e.g. to demonstrate that a particular experimental outcome is repeatable or applicable to more than one use
- Independent consultants or service providers to undertake development of a brief, commercially-focussed business case or market research / market scoping
- Project-specific activities that help to build a case to show the concept will be commercially attractive
- Externally conducted trials, product testing or field trials
- PhD research students/technical officers contributing specific skills to a Pathfinder project on a short-term “casual” basis
- Component parts for the development of a prototype (for example, to build a demonstrator/prove the concept/develop a working prototype).

Funding cannot be applied to recovery of academic staff costs, Capital equipment purchases above \$5,000 per item, or travel to academic conferences, seminars and the like.

Administrative responsibility and cost

University of Western Australia, Research and Innovation Office

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.rdi.uwa.edu.au/pathfinder-fund>

Murdoch University Small Grant Scheme

Rationale

Under Murdoch University Small Grant Scheme, funding is available to facilitate and improve the translation of knowledge and technology resulting from Murdoch University’s intellectual property.

The outcome(s) of the measure

To advance inventions on the pathway towards societal benefit

Operational information

Funding will support early stage novel ideas with commercial potential or significant impact. Funding can cover costs for activities, which will prove technology and assess the commercial potential.

The maximum funding available for each award is \$15,000.

Administrative responsibility and cost

Murdoch University

Indicators, measures of success and/or evaluations

Not available

Website

http://www.murdoch.edu.au/School-of-Veterinary-and-Life-Sciences/_document/Announcements/010_2014-2015-Small-Grant-Scheme-Guidelines-and-Funding-Rules--FINAL.pdf

ANU Connect Ventures

Rationale

ANU Connect Ventures (ANUCV) manages a \$27m fund on behalf of the ANU-MTAA Super Venture Capital Partnership. The fund invests in early-stage commercial opportunities in the Canberra region.

The outcome(s) of the measure

The overall goal is to help bridge the critical funding gap between discovery research and the commercial development of new technologies or the establishment of new ventures.

ANU Connect Ventures manages two funds: the Discovery Translation Fund and the Seed Investment Fund. Both funds, established with the support of the ACT Government, invest in promising commercial opportunities arising out of the ANU research, other ACT-based research institutions and local R&D companies.

Operational information

The Discovery Translation Fund (DTF) 2.0 assists the commercialisation of new technologies and innovations from The Australian National University (ANU) and University of Canberra (UC). ANU Connect Ventures manages it on behalf of these Canberra region research and education institutions.

The goal of DTF 2.0 is to help bridge the critical funding gap between discovery research and the commercial development of new technologies or the establishment of new ventures.

Grants can be awarded up to \$50,000 per project, with funding above \$50,000 considered for projects of exceptional commercial potential. Funding above \$50,000 on any one project can only be awarded conditionally and will be accessible only on the demonstration of a significant commercial milestone.

The Seed Investment Fund invests in early-stage commercial opportunities developed out of research at the ANU, other ACT-based research institutions and local R&D companies.

Funding of up to \$500,000 per enterprise will be considered. Recipients of seed investment from ANU Connect Ventures will also be eligible for follow-on funding from an ANU/MTAA co-investment programme.

Administrative responsibility and cost

ANU Connect Ventures

Indicators, measures of success and/or evaluations

ANU Connect Ventures portfolio companies cover a wide range of sectors, from healthcare to physical sciences. Companies include: Warm Contact, Dosimetry & Imaging (D&I), StageBitz, Beta Therapeutics, InterfereX Communications, and Instrclustr

Website

<http://www.anuconnectventures.com.au/about-us/>

Trans Tasman Commercialisation Fund

Rationale

The Trans Tasman Commercialisation Fund (TTCF) is a collaboration between five universities, including Monash, and superannuation fund Westscheme.

The fund provides capital for investing in early commercial research projects and spinout companies generated by member universities across all sectors.

The outcome(s) of the measure

TTCF invests in opportunities and/or projects whose main purpose is to commercialise technology arising from a collaborating member university. The technology can be in any sector, including life sciences, information & communications technology or engineering/cleantech.

Operational information

\$30m is available for early commercial research projects and spinout companies.

Administrative responsibility and cost

Not available

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.bulletpoint.com.au/trans-tasman-commercialisation-fund/>

Entrepreneurship and Work Integrated Learning Programmes

Several universities have instituted innovation contests, entrepreneurship programs and made strong commitments to Work Integrated Learning (WIL)

InnovationACT

Rationale

InnovationACT takes participants through a journey that guides them through the process of developing and validating a clear and credible venture.

A panel of judges from the local innovation ecosystem assesses completed business models, and those deemed feasible will receive part of a \$50,000 seed pool.

The outcome(s) of the measure

The main component of the Learning Journey is a series of five hands-on Workshops. During these, participants obtain the tools required to develop a business model for their venture.

Operational information

Teams are comprised of 2 or more students, staff and graduates from the ANU, UC, UNSW Canberra, CIT, AIE, ACU, and CSU. In order to be eligible for a grant, at least 50 per cent of team members must be students.

“Student” or “graduate” means being enrolled to study/having completed at the time of team registration a qualification of a minimum of six months duration (full-time load), or part-time equivalent.

Over the course of the 10 week programme teams develop ideas, undertaking cycles of development and validation to maximise the idea’s chances of success in the real world. At the end of the programme Teams will have documented a fully developed business model and plan for the future.

InnovationACT places very little restriction on the types of ideas it supports and funds. All kinds of ideas from small businesses to social ventures to technology start-ups are encouraged to participate.

Administrative responsibility and cost

InnovationACT is a student run contest. The ANU and University of Canberra make financial contributions.

Indicators, measures of success and/or evaluations

The 2014 winners were:

- BehavioMatrix (UC) – A diagnostic aid for depression using facial recognition, based on over 15 years of university research.
- KRIGE Tech (ANU, CIT) – Home electricity monitoring and reduction technologies.
- OzGuild (ANU) – An online platform and digital scanner for cataloguing and trading Magic: The Gathering Cards.
- Siege Sloth Games (AIE) – A team from the AIE Incubator developing a “zen” creative video game.
- Vacant Space (ANU, UC) – A business model for the utilisation of vacant real estate in Canberra.

Website

<http://www.innovationact.org/>

UTS 3P Business Plan Competition

Rationale

The 3P Business Plan Competition is an annual business plan contest for UTS students. The competition gives students the chance to explore creative and innovative business ideas whilst being mentored by business professionals.

Operational information

The challenge requires students to develop a new, innovative product/idea or service associated with the 3Ps. The teams are required to develop their ideas into a viable business cases submitting a ten page business plan for judging

Students attend an initial briefing session to hear from the mentors about idea generation and how they will help you throughout the competition. Over four weekends (leaving a gap for exams and holidays) teams meet with individual mentors to discuss their ideas and develop their business plan. Business plans are submitted for judging and six finalists are chosen to present their cases to the judging panel for final assessment.

Team Prizes for the 2015 competition were:

- 1st Place \$10,000
- 2nd Place \$7,500
- 3rd Place \$5,000

UTS student start-up Construction Cloud represents Australia at University Start-up World Cup

Sydney start-up Construction Cloud has represented Australia at the University Start-up World Cup after winning the fifth annual 3P Business Plan competition at the [University of Technology Sydney](#).

The start-up, founded by engineering students Hartley Pike and Jan Schroeder, and Samuel McDonnell, an industrial design student, has created a SaaS application that looks to improve on current construction project management systems. It increases the efficiency of the processes associated with multimedia data, including photographs and video that occur during large-scale construction projects.

The idea came from Pike's experience working with engineering firms, seeing how poor communication and management of project files loses companies both time and money. Processes currently used in the construction industry see files manually transferred from a device to a project's public drive.

“Because it is so inefficient, a lot of the time it simply doesn't happen. The result is that at the end of the project, we have no access to the visual information that we need,” Pike said.

This can prove costly if there are problems with or disputes regarding a project.

Professor Zoltan Matolcsy of the UTS Business School Accounting Discipline Group, organiser of the 3P Business Plan competition, said this is the first time the competition has been won by a team consisting of students from the engineering and design faculties.

The competition asks students to come up with innovative business ideas that consider people, the planet, and profit. Previous competition winners include ‘social textbook’ start-up MindInk, and the now defunct 99 Dresses.

Second place went to a start-up called Loyalty, which has created software that enables EFTPOS terminals with a loyalty marketing system. Third place went to 4GS Sydney, creators of an app called Lifekeeper, which tracks personal expenses

through text mining and analysis.

The Construction Cloud founders travelled to Copenhagen last week for the World Cup. The event, which saw entries from over 3000 universities around the world, divided the 50 finalists into five categories: cleantech and environment, life science and medtech, mobile and web, product and technology, and social entrepreneurship.

The overall winner was VesaliusMed, a medical start-up from Stanford University in the US. The team came up with an innovation that allows doctors to detect abnormal cells in bladder patients through the testing of urine instead of blood.

Source: <http://www.startupdaily.net/2015/09/uts-student-startup-construction-cloud-represents-australia-at-university-startup-world-cup/>

Previous prize winning ideas have included an industrial lift, a digital textbook service, safer, fashionable and practical scooter attire, crowd sourced fashion website, an online art platform, thermoelectric generation devices and a home automation system.

Administrative responsibility and cost

UTS Business School with support from [IBIS World](#).

Website

<http://www.uts.edu.au/current-students/business/prizes-awards-and-competitions/3p-business-plan-competition>

RMIT Business Plan Competition

Rationale

The RMIT Business Plan Competition is claimed to be the biggest programmes of its type in Australia. It is open to vocational education, undergraduate and postgraduate students across all RMIT campuses in Melbourne, Vietnam and Singapore.

Operational information

More than 3,500 people have taken part in the Competition since 2001, with many past entrants now running successful businesses in Australia and around the world.

Total prizes to all winners in the Competition are valued at up to \$100,000.

Administrative responsibility and cost

College of Business Industry Engagement and Work Integrated Learning group

Website

<http://www.rmit.edu.au/events/all-events/special-events/2015/february/2015-business-plan-competition-launch/>

University of Adelaide: the Australian eChallenge

Rationale

The Australian eChallenge is a student entrepreneurial competition based around the development and submission of a strategic business plan for an early-stage entrepreneurial venture. Participants pitch their venture concepts to panels of potential investors <https://www.adelaide.edu.au/echallenge/sponsors/judges-mentors/> from the local business community.

Teams compete for prizes and the prestige of being nominated the most outstanding Australian eChallenge entrepreneurial venture of the year.

The outcome(s) of the measure

The Australian eChallenge has stimulated Australian entrepreneurship since 2001.

Operational information

The Australian eChallenge's proven teaching and learning environment includes:

- A series of specialised workshops conducted by experts in their fields
- The opportunity to work with dedicated business mentors
- Connection with members of the business and research community
- The opportunity to enrol in the eChallenge as a course.

Each year a team from the Australian eChallenge is selected to participate in International competitions. This includes the [Global Venture Labs Investment Competition](#) in Austin, Texas. The Australian eChallenge is an affiliated competition, which allows automatic entry directly into this global competition.

Administrative responsibility and cost

The Entrepreneurship, Commercialisation and Innovation Centre at the University of Adelaide,

Indicators, measures of success and/or evaluations

Many participants have gone on to develop successful businesses indicating that the Australian eChallenge can create genuine commercial prospects that help South Australia flourish.

Websites

<https://www.adelaide.edu.au/echallenge/information/>
<https://www.adelaide.edu.au/echallenge/success-stories/>

UTS MBAe Programme

Rationale

The UTS Business School Master of Business Administration in Entrepreneurship is a unique one year intensive MBA designed for entrepreneurs and innovators. The programme is designed to enable participants to:

- Take business ideas up to venture capital grade
- Understand what makes entrepreneurs successful
- Become immersed in an entrepreneurial environment working on live projects
- Develop, test and launch ideas, in collaboration with aspiring entrepreneurs and innovators.

The outcome(s) of the measure

The Programme is directed towards the following outcomes:

- Knowledge with impact: Research and programmes are developed with industry for industry.
- Learn from the experts: Teaching by leading academics and practitioners who cut their teeth doing exactly in industry, and who bring in a global network to our doorstep.
- Reality-based rigour: Live case studies, with real clients, provide the ultimate opportunity to apply what learning, all while being mentored by a who's who of corporate leaders

Operational information

The Programme is uniquely constructed as three short courses to enable choice between how, when and what to focus on whilst developing, with increasing confidence, your own enterprise ideas. The elements are:

- Graduate certificate in commercialisation
- Graduate certificate in entrepreneurship
- Graduate certificate in new venture funding

Website

<http://www.uts.edu.au/future-students/business/business-study-areas/mba-and-executive-mba-programs/mba-entrepreneurship>

National Strategy on Work Integrated Learning in University Education

Rationale

Work Integrated Learning (WIL) is a term for a range of approaches and strategies that integrate theory with the practice of work within a purposefully designed curriculum.¹²

Universities Australia and peak industry organisations have developed a *National Strategy on Work Integrated Learning in University Education*.

The outcome(s) of the measure

The National WIL Strategy proposes action in eight key areas:

1. Provide national leadership to expand Work Integrated Learning (WIL)
2. Clarify government policy and regulatory settings to enable and support growth in WIL
3. Build support - among students, universities, employers across all sectors and governments - to increase participation in WIL
4. Ensure the investment in WIL is well targeted and enables sustainable, high quality experiences, stakeholder participation and growth
5. Develop university resources, processes and systems to grow WIL and engage business and community partners
6. Build capacity for more employers to participate in WIL
7. Address equity and access issues to enable students to participate in WIL
8. Increase WIL opportunities for international students and for domestic students to study offshore.

Operational information

Most universities have policies for implementation and adoption of WIL programmes.

Administrative responsibility and cost

Deputy Vice-Chancellors (Academic), Academic Boards, faculties, course coordinators, and university Careers Offices

Indicators, measures of success and/or evaluations

There are many scholarly papers on the benefits of WIL¹³.

Website

<https://www.universitiesaustralia.edu.au/ArticleDocuments/212/National%20Strategy%20on%20Work%20Integrated%20Learning%20in%20University%20Education.pdf.aspx>

Capstone Projects

Rationale

Many universities have introduced "capstone" projects or courses, which have the purpose of:

- Helping students synthesise their learning across the program, demonstrate holistically their development of graduate capabilities and successfully negotiate the transition to their next career stage
- Enabling the institution to assess final graduate capabilities for a program.

Outcomes of the measures

A capstone project involves an authentic, project-based activity that closely relates to professional work in the field. In completing it, students must apply the discipline knowledge and capabilities they have learned, as well as generic skills.

¹² <http://cdn1.acen.edu.au/wp-content/uploads/2015/03/National-WIL-Strategy-in-university-education-032015.pdf>

¹³ See, for example, "Evaluation methodology for work integrated learning - placements: a discussion paper" <http://dro.deakin.edu.au/view/DU:30033657>.

Operational information

A Guide prepared for The University of Melbourne¹⁴ notes that Capstone experiences are varied. They may consist of experiences that illustrate a student's skill, development and/or experiences that broaden a student's understanding of the work environment and the communities with which they will engage and contribute to.

The Guide suggests that Capstone experiences can be designed to address:

- Connecting discipline-specific curriculum to general education objectives
- Assisting students to reflect on and demonstrate what they have learnt over the course of their degree
- Relating discipline-specific learning outcomes to the world of work
- Providing a forum for students to participate in interdisciplinary activities
- Enabling students to reflect on and imagine personal, social, emotional and practical issues of transition beyond the university into the world of work
- Providing a bridge between final year of an undergraduate degree and graduate programmes and lifelong learning
- Directly engendering the development of graduate capabilities that employers are searching for in graduates
- Linking undergraduate students to employers and employment arenas
- Connecting graduates to alumni in their chosen fields
- Linking major subject students to another discipline
- Preparing graduates to become active alumni.

For a Capstone project, the course developer often negotiates with the student to determine the form and process of the task and its assessment. Students often compile portfolios for the purposes of assessment

Swinburne University Capstone Projects

Rationale

Capstone Projects connect businesses and organisations facing a challenging problem with a group of final-year students tasked with finding innovative and creative solutions. Students are drawn from multiple disciplines including business, information and communication technologies, journalism, media and design.

Outcomes of the measure

Swinburne's Capstone Projects have been running for over 10 years. Past projects have addressed business challenges such as stagnation in revenue, retention of talent, improving productivity, developing a business plan, targeting a new market or developing a new product.

Operational information

A business problem is assessed by a team of students who will work on the project for 12 weeks while being mentored by an experienced academic. In addition, Swinburne will provide project teams with relevant industry and discipline-specific resources.

Teams are charged with generating well-informed, creative solutions. Their solutions will be delivered via a report and a concise presentation at the end of the project. The report will present recommendations and include any associated risks and implementation issues.

The formal presentation delivery is followed by a networking event hosted by Swinburne. Organisations are invited to continue discussions at this event.

There is no cost involved for a participating organisation, or expectations of future commitments. A representative of the host organisation will be the key contact with the supervising academic. Students will not approach an organisation directly unless agreed.

The representative will be expected to visit Swinburne's Hawthorn campus three times during the project:

- To brief the team on the relevant aspects of your organisation and problem
- To see the progress of the project
- For the project team to deliver the project report and presentations, where you will have a chance to discuss the tailored solutions proposed by the students

Ownership of all intellectual property created as part of the project will rest with the host organisation. The student team

¹⁴ http://www.cshe.unimelb.edu.au/resources_teach/curriculum_design/docs/Capstone_Guide_09.pdf . See also <http://businesscapstones.edu.au/wp-content/uploads/2013/01/GoodPracticeGuide.pdf>

will strictly adhere to matters relating to confidentiality.

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.swinburne.edu.au/business-partnerships/working-with-our-students/short-term-projects-capstones/>

Incubators and Accelerators

ATP Innovations

Rationale

ATP Innovations is Australia's leading technology business incubator. It is a collaboration between the Universities of Sydney, NSW, The ANU and UTS.

The ATP Innovations Accelerator HUB is home to [Startmate](#), [Ignition Labs](#) and university accelerator programmes. ATP Innovations' portfolio comprises over 65 companies from the software, hardware and life science sectors.

The outcome(s) of the measure

ATP Innovations accelerates the growth of technology companies that target global markets, by providing advice and guidance from seasoned entrepreneurs, access to investors, customers and domain specialists, and world-class infrastructure tailored to the needs of start-up companies.

Operational information

ATP Innovations works with researchers and entrepreneurs to help them raise capital, build a team, secure government grants, create new products, grow revenue and ultimately exit the business profitably.

The ATP community has access to unique serviced office space, laboratories, strategic guidance and mentoring, capital assistance and access to a professional network.

Administrative responsibility and cost

ATP Innovations

Indicators, measures of success and/or evaluations

Over 300 software, hardware, and life science start-ups have been helped by ATP Innovations since 2000. Together, they have raised over \$113m in capital since 2006.

In 2014 ATP Innovations' companies had combined revenue of over \$45m, half of which was export related. They raised \$8m in equity capital, hired 69 new employees, launched 80 products, and had seven patents granted.

Website

<http://atp-innovations.com.au/>

The Hatchery (UTS)

Rationale

The Hatchery Pre-Incubator is a new distinctive UTS enterprise designed to give students start-up skills and to educate and launch the entrepreneurs of the future.

UTS is aware that today's students and tomorrow's graduates will follow very different career paths to previous generations. Many of them will choose start-up and entrepreneurial careers over traditional jobs. Organisations are also changing, with employers increasingly valuing entrepreneurial skills.

The outcome(s) of the measure

The Hatchery pre-incubator program will prepare UTS students with the skills and expertise needed to confidently take their business ideas to the next level of development. Hatchery participants will learn the groundwork needed to pitch their own ideas to the thriving industry incubators and accelerators in our precinct such as Fishburners. These skills will also be valuable to aspiring intrapreneurs seeking to innovate within organisations.

Operational information

The Hatchery is a safe and secure environment for students to be provided with the scaffolding to support the 'hatching' of their entrepreneurial talent.

The Hatchery pre-incubator program is designed specifically to create entrepreneurs – not companies. However, graduates from the Hatchery looking for help in developing commercial opportunities will be able to access further advice from UTS experts, mentors, and precinct partners.

The Hatchery seeks students who will bring the exceptional knowledge and skills they are developing while studying at UTS, while being willing to experiment and explore new ways of responding to social and commercial challenges. Students don't need to have their own business idea, or start-up. Students at various levels of experience have participated in the program with great success.

Like the ground-breaking Bachelor of Creative Intelligence and Innovation, the program will be cross-disciplinary and draw on expertise across the university and from among Sydney's innovative ecosystem.

Administrative responsibility and cost

UTS

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.uts.edu.au/current-students/opportunities/hatchery/overview>

iAccelerate Wollongong

Rationale

iAccelerate is a University of Wollongong initiative to help build and grow start-ups. The iAccelerate programme is designed around an educational program, formalised business acceleration monitoring, and one-to-one mentoring.

Wollongong City Council and NSW Trade & Investment support iAccelerate. It has also been working closely with [Waterloo Accelerator Centre](#) to adapt their methodologies to the Illawarra.

Outcome(s) of the measure

iAccelerate is based on the lean start-up model and is designed to support entrepreneurs who use technology as an enabler for a scalable service or product that can be globalised. It consists of multi-faceted business acceleration programmes to help grow the skills of entrepreneurs, create commercially sustainable businesses within a purpose-designed space to enhance innovation in the Illawarra region.

The overall aim is to form an innovation ecosystem through collaboration between government, business, and research organisations to deliver an exponential benefit in the form of a 'virtuous circle'.

Operational information

The iAccelerate initiative consists of two main streams:

- iAccelerate Start - An ideas incubator for early stage businesses that offers a co-working space for entrepreneurs with first stage ideas to work alongside each other to grow their concepts into early stage scalable businesses. Participants in the programme are offered education, business support and mentoring. Companies participating in iAccelerate Start that receive investment by the iAccelerate Seed Fund will receive up to \$40,000 in funding for up to 10 per cent equity
- iAccelerate Advanced - A tailored business acceleration programme for more advanced companies with high growth potential. It focuses on enabling start-ups to transform and scale into sustainable and globally focussed companies. Companies that are part of iAccelerate Advanced may be selected to receive seed funding of up to \$200,000 for up to 20 per cent equity.

Other elements include:

- iAccelerate Club - Engagement with successful entrepreneurs and networking opportunities
- iAccelerate Mentor - Expert advice, knowledge sharing, support, peer-to-peer
- iAccelerate Pitch - Present to key industry experts, receive feedback, practice, polish
- iAccelerate Educate - Tailored education programme around delivering key knowledge areas
- iAccelerate Seed - An early stage venture capital fund that makes seed and follow-on investments in iAccelerate resident start-ups via an assessment programme.

Strong relationships have been developed by iAccelerate with Government, local Businesses, the local community and the innovation ecosystem both locally and internationally. This has delivered a strong foundation for to grow the Innovation Ecosystem in the Illawarra rapidly.

Administrative responsibility and cost

The University of Wollongong

The NSW Government has provided \$16.5m for the iAccelerate Centre - a three-storey, 4000 square metre building to be constructed on UOW's Innovation Campus.

The Government considers the investment to “represent the new ‘international’ face and focus for the Illawarra region.” The iAccelerate Centre is designed to provide a ‘plug and go’ expandable space for more than 280 entrepreneurs of fast growth start-up companies. iAccelerate is seen as a critical step in transforming the Illawarra’s manufacturing based economy into a high-tech industry cluster¹⁵.

Indicators, measures of success and/or evaluations

In two years of operating the iAccelerate Startpad iAccelerate has hosted 25 start-up companies representing 52 entrepreneurs and new jobs – with just 20 available spaces. The completed iAccelerate Centre will house 200 spaces for entrepreneurs.

Citi looks to the Illawarra for mobile challenge innovators

The next big innovation in global banking technology could come from Wollongong with global investment bank Citi partnering with UOW start-up hub iAccelerate.

The Citi Mobile Challenge gives local technology developers the chance to work on financial technology (Fintech) solutions for personal and business banking for Citi’s 200m customers worldwide.

Citi approached iAccelerate to partner in the Citi Mobile Challenge on the back of its leading work in the Australian start-up sector and places it alongside leading Asia-Pacific companies spanning technology, telecommunications, venture capital and education.

iAccelerate is also the only start-up hub in the Challenge that is backed by a university and has direct access to leading researchers and talented technology students and graduates.

The Citi Mobile Challenge in Asia Pacific is a next-generation accelerator that combines a virtual hackathon with a developer programme, a worldwide network of Fintech experts, and the bank’s global reach to discover and incubate solutions from across more than 100 markets.

It will enable developers to plug into Citi’s technology network, known as APIs, to enable them to create solutions that reimagine the digital economy and the way people interact with money.

¹⁵ <https://media.uow.edu.au/UOW162837>

Citi's global network gives developers an opportunity to have their ideas put in place in markets all over the world and to support their further growth.

iAccelerate CEO Dr Elizabeth Eastland said the partnership was a unique opportunity for local developers to be directly engaged with solutions that could revolutionise banking.

"It would be amazing if the next big FinTech solution, for small businesses up to multinational corporations was developed here in Wollongong. This is a rare opportunity for local start-ups to work on innovations and have direct access to Citi's global infrastructure, expertise, mentoring as well as exposure to the data and networks required to provide banking solutions worldwide."

A panel of industry experts and financial technology leaders will evaluate the solutions at each event. Finalists compete for an opportunity to take their technologies into production with Citi's support, plus a share of \$100,000 in cash awards and a suite of services from Citi Mobile Challenge sponsors, including the opportunity to participate in accelerator programmes and receive mentoring, office space and investment.

<http://www.iaccelerate.com.au/news/507-social-status-pitch-success-at-innovation-bay-2.html>

Website

<http://www.iaccelerate.com.au/>

Macquarie Technology Business Incubator (NSW)

Rationale

Macquarie Technology Business Incubator (MTBI) is located at Macquarie Park, Sydney. It is a business growth incubator focused on creating learning environments that help owners and managers to transform their companies.

It is the only incubator in the catchment area for the Northern Sydney region, which is the Macquarie Park Corridor, a 10km corridor from North Sydney to North Ryde.

The outcome(s) of the measure

The goal of the Incubator is to create a low risk, dynamic, and collaborative environment that fast track pioneering technology businesses in the Northern Suburbs of Sydney - Helping them to grow into financially successful companies in the community.

Operational information

The incubator is located adjacent to Macquarie University and managed by Access MQ, the University's commercial entity responsible for successful commercial ventures spun-off from Macquarie University.

Administrative responsibility and cost

Access MQ

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.startup-australia.org/person:macquarie-technology-business-incubator>

Slingshot (University of Newcastle)

Rationale

Slingshot runs a corporate accelerator programme that brings start-ups and corporates together to build and grow companies. Slingshot's current branded programme is with the NRMA.

The outcome(s) of the measure

Called Jumpstart, the mentor-driven programme is designed to assist entrepreneurs in the tech space who want to develop a start-up or scale-up with the assistance of an innovative partner and, most important, a big customer base.

Operational information

Jumpstart is driven by Slingshot and sponsored by NRMA, Artesian Venture Partners, the University of Newcastle, PwC and Sparke Helmore Lawyers.

The programme is comprised of two parts: the Jumpstart Accelerator programme for start-ups and the Jumpstart Bridge Programme for more mature scale-ups.

The accelerator programme offers potential to access more than 2.4 million NRMA members, \$30,000 seed funding, a structured 12-week programme, mentors, and workspace at hubs in Sydney or Newcastle.

Indicators, measures of success and/or evaluations

Not available

Administrative responsibility and cost

Investments are managed by Artesian Ventures (<http://www.artesianinvest.com/>)

Website

<http://www.slingshotters.com/>

Sydney Accelerator Network: IT

Rationale

The Sydney Accelerator Network: IT (SAN) provides a platform for students, academics, and industry practitioners to collaborate and innovate solutions to challenging problems and to pursue opportunities for creating new products and services.

By actively engaging the university community and our industry partners, SAN will initiate and advance exciting projects, with the aim of successful commercial outcomes, and utilise the expertise of participants with training and mentoring.

Equipped with state-of-the-art infrastructure, the hub will provide a conducive environment for experimenting with innovative ideas and developing and testing prototype solutions.

The outcome(s) of the measure

To foster innovative research and development in ICT and to facilitate the successful commercialisation of promising ideas by promoting an entrepreneurial culture that encourages and supports start-up business activities.

Operational Information

The hub will house up to four start-up companies at any time, and will facilitate:

- Short courses, full semester units of study, and other forms of experiential training on aspects of entrepreneurship and business development
- Opportunities to network with successful entrepreneurs, angel investors, and venture capitalists and to connect with Silicon Valley start-ups through a high profile Advisory Panel
- Guidance on optimal team formation with the right mix of technical and business development skills and background
- Access to advice and support from researchers and academics with relevant, specialised expertise
- Venture and commercialisation competitions to open to select groups
- Successful capstone project teams will be invited to join the hub
- Links and pathways to the broader innovation ecosystem in Sydney through cooperative arrangements with similar innovation centres and incubators.

Current members of SAN include:

- [Grok Learning](#) - an online interactive platform that offers coding classes in programming languages like Python and Logo.

- [Tzukuri](#) - designers of wearable technology, with the first product being the world's first handmade unloseable sunglasses. At the TECH23 2014 Awards in October Tzukuri took out three major prizes - the Noah Consulting Disruption Award, the Sirca University Medal for Student-led Tech Entrepreneurship and the People's Choice Award.
- FoodPod - connects farmers directly with families in the local community to access locally grown, sustainable and freshly "picked the day before" fruit and vegetables. FoodPod employs technology to facilitate direct efficient connections between farmers and families.
- Animatives (Pty Ltd) - provides a new way of storytelling to help people make creative animations from their smart phones.
- Docit - a platform that allows users to book their favourite services through a simple iPhone application. It provides bookings through businesses favourite marketing channels including Facebook and Instagram. Additionally, Docit provides a business management tool aimed to reduce administration and increase efficiency for professionals.
- [Atomnaut](#) – created the world's first microscope that can see every atom in 3D. A 100x resolution improvement. This data transforms materials engineering from experiment based trial & error, to cheaper and faster computer-aided decoding and design. The company provides B2B analytical services and design of patentable new materials - from stronger lighter metals to smaller faster silicon electronics.

Administrative responsibility and cost

The School of Information Technologies, The University of Sydney

Indicators, measures of success and/or evaluations

Not available

Website

<http://sydney.edu.au/engineering/it/innovation-hub/index.shtml>

Sydney University Incubate

Rationale

The Incubate programme at The University of Sydney has already provided four batches of start-ups the opportunity to grow on a university campus.

The outcome(s) of the measure

Incubate looks for start-ups to join the programme that are using technology to explore a broad range of applications.

Operational information

Start-ups that go through the Incubate programme are provided with \$5000 in seed funding, co-working space on campus, internet, printing and offices resources as well as the use of meeting rooms, advice from industry experts, and mentoring from experienced business minds and alumni.

Indicators, measures of success and/or evaluations

Forty start-ups have come through the programme since 2012 and over 70 per cent of them are still actively working on their businesses

Website

<http://incubate.org.au/>

Venture Space (University of NSW)

Rationale

The University of NSW School of Computer Science and Engineering supports the development of ideas generated in the school's research laboratories into commercially viable products, services or ventures and supports the aspiration of those individuals that wish to explore the commercial viability of ideas.

Its Venture Space is a subsidised-cost space available to approved UNSW students and alumni who wish to develop ideas into business models, products or services.

Operational Information

Venture Space tenancy conditions include:

- Applicants must be either current students or graduates from the School of Computer Science and Engineering at UNSW.
- Space in the Venture Space will be granted to successful applicants for a period of up to 12 months, with up to one six month extension available on approval.
- Tenancy of the VS will be conditional on the tenant not being engaged in significant commercial operations [turnover <\$20k per month] and not having raised material equity financing [>\$250k].
- Tenancy at all times will be at the discretion of the CSE Head of School.
- Space in the Venture Space will be available in 15 sq. m blocks. Rent will be payable according to the following schedule;

Website

<http://www.cse.unsw.edu.au/engage-with-us/graduates-alumni/venture-space/>

Melbourne Accelerator Programme (MAP)

Rationale

The MAP, a start-up accelerator, was established in June 2012, when a group of staff in the Melbourne School of Engineering, decided that those with ideas – and courageous enough to claim them – needed a home.

MAP's goal is to support entrepreneurs of all stages and accelerate the growth of world-class start-ups. Its vision is to raise the culture of entrepreneurship on campus.

The outcome(s) of the measure

Since its inception in 2012, it has evolved into a programme that hosts a range of public events, workshops and feeder programmes to help up-skill and connect entrepreneurs of all stages.

Top start-ups are awarded Entrepreneurial Fellowships and gain access to the MAP Start-up Accelerator where they receive \$20,000 funding, office space, mentoring and travel to Sydney and Silicon Valley.

MAP alumni have raised over \$10.0m in funding, generated almost 80 jobs and \$3.5m in revenue since June 2012.

Operational information

Once a year, the MAP Start-up Accelerator funds a group of start-ups (currently 8 per intake) and works intensively with them to grow their businesses. Start-ups are provided with:

- \$20,000 funding
- Office space
- Unparalleled networking opportunities
- Structured mentoring

- Stamp of approval from the University of Melbourne
- Access to MAP networks in Sydney and Silicon Valley.

Administrative responsibility and cost

The School of Engineering, The University of Melbourne, hosts MAP.

In order to be eligible for the MAP Start-up Accelerator, at least one founder needs to be a student, staff or alumni (within the last five years) from participating faculties.

Indicators, measures of success and/or evaluations

To date, MAP has supported 24 start-ups in total. Together these start-ups have raised over \$10.0m in funding and forged connections to some of the best entrepreneurial minds and talent across the globe. In 2014, MAP took to the road with their cohort, direct to Silicon Valley.

In June 2014 MAP was ranked number 13 globally from over 300 university business incubators surveyed from 67 countries by the UBI Index.

Website

<http://themap.co/>

RMIT New Enterprise Fund

Rationale

The New Enterprise Investment Fund (NEIF) and associated programme is designed to support the formation of new business ventures originating from RMIT students.

Each year over 650 fully fledged business plans are created by RMIT students through innovative programmes such as Business Skills for Creative Industries, The New Enterprise Incentive Scheme, the Business Plan Competition and a range of short courses.

But without financial and practical support, most of these budding entrepreneurs are unable to take the critical step of turning their idea into a viable business.

The outcome(s) of the measure

The programme is student focused with an emphasis on practical entrepreneurship. In setting up and running their own businesses, participants enter into a real life, real consequences learning environment supported by industry mentors.

Operational information

The NEIF programme has been established by RMIT so that students with business proposals that meet the criteria can apply for funding in the form of an interest-free loan and get their ideas off the ground. Loans are typically up to \$25,000 and for a period of one to three years.

In addition to financial support, NEIF recipients benefit from a comprehensive mentoring programme and are given access to an extensive business network, all from the supportive and resourced university environment.

Wholly owned and run by RMIT University, the fund is administered through a board comprised of leading corporate advisers, entrepreneurs, RMIT staff and alumni. It is backed by a financial endowment from RMIT, as well as philanthropic donations and support from industry.

Indicators, measures of success and/or evaluations

New Enterprise Investment Fund Portfolio 2015 includes six investments:

- Free Is Better - <http://www.freeisbetter.com.au/>
- Gigkoo - <https://www.gigkoo.com/>
- Nixi Killick - <http://www.nixikillick.com/>
- Totantzinchocolate - www.tontantzinchocolate.com
- Licghtcore Tech – <http://www.lightcoretech.com.au/>

- Manuko - www.manuko.com.au

Website

<http://www1.rmit.edu.au/students/neif>

ilab (University of Queensland)

Rationale

ilab was established by the Queensland Government in 2000 as a business incubator to support early stage, high-tech companies through the first few years of development by building their business management capabilities, fostering mentor networks for start-up founders, creating investor ready companies, and graduating companies with increased chances of success.

The outcome(s) of the measure

ilab provides a comprehensive package of assistance, coaching, mentoring and training which helps the founders of new ventures to build successful businesses and negotiate the many risks faced by start-up companies.

Operational information

The rapid growth of the Internet, mobility and cloud computing, has enabled different methods of supporting early stage companies through accelerated start-up approaches.

These are characterised by low capitalisation requirements during the initial business validation and early product build phases and support rapid growth for successful businesses model.

In support of this, ilab changed its model in 2012 to introduce a new accelerator model – Germinate.

Administrative responsibility and cost

In 2009, The University of Queensland (UQ) acquired ilab in an arrangement with the State Government. ilab continues to be financially supported by the Queensland Government.

ilab benefits significantly from its participation with UQ and UniQuest through provision of facilities and infrastructure, and access to commercialisation, legal, mentoring, networks, and back office support arrangements.

Indicators, measures of success and/or evaluations

Since opening in 2000, ilab has incubated over 140 start-up companies and helped them raise over \$80m in grants and investment to fund their growth and has generated nearly 800 technology jobs.

Companies that have benefited directly from ilab membership include ASX-listed QRxPharma, RedFlow Ltd, Charm Health and Codesion.

Website

<http://www.ilabaccelerator.com/>

QUT Creative Enterprise Australia

Rationale

Brisbane-based QUT Creative Enterprise Australia (CEA) targets creative entrepreneurs planning creative industry-based companies. It provides studio space, production facilities, fashion studio, on-site production facilities, mentoring, training amenities, special events, networks, research expertise and capital to foster the growth of the creative industries in Australia.

It is for predominantly creative industries including film, television, music, design, fashion, games, entertainment, photography, music, film and television, digital technology, games and interactive content. It is focused on emerging and start-up businesses, but also established high-growth-potential businesses.

The outcome(s) of the measure

QUT CEA is the very first - and only - business development agency actively supporting commercially-driven creative industries nation-wide. CEA helps start, grow, scale and connect creative companies.

CEA provides essential business skills and pragmatic training focused on company growth and investment and accelerates company development.

Operational information

CEA operates the Creative Industries Enterprise Centre and Creative Industries Accelerator Hub providing mentoring and facilities for creative companies to take their business to the next level. Since 2004 CEA has been the commercial arm of QUT's award winning Creative Industries Precinct.

With significant assistance from the Queensland Government, CEA has broadened its specialist support services to industry beyond the Creative Industries Precinct to operate new business support programs and facilities to boost the success of a broad range of creative enterprises in a variety of ways.

The CEA Business Hub is located at Z1 the works, a physical hub for creative entrepreneurs looking to grow their business. Currently home to over 20 creative businesses, the CEA Business Hub is co-located in the same building at QUT's award winning Creative Industries Precinct.

CEA Pitch Forum Masterclass

The world's most creative, influential and inspiring entrepreneurs will descend upon Brisbane on September 17 and 18 2015 for QUT Creative Enterprise Australia's Creative³ forum.

The only event of its kind in Australia and now in its sixth year, Creative³ is a two-day pitch, forum and masterclass encompassing a series of dynamic presentations from the world's leading creative visionaries and entrepreneurs that offer real-world insights into creativity, enterprise and investment. With a blend of interactive sessions, keynote speakers, workshops, networking events and an investor pitch event, Creative³ is designed to spark collaboration, and inspire entrepreneurs and start-ups to execute their ideas.

The Creative³ Forum brings together the brightest minds from across the globe, empowering the next wave of entrepreneurs while the Creative³ Pitch is designed to connect creative industries ventures with investors, and finally, the Creative³ Masterclass is an intimate event that provides attendees with the opportunity to learn from incredibly innovative business leaders.

The prestigious winner of the Creative³ Pitch will go on to represent Australia and compete against 63 countries at the world championships for creative entrepreneurs, the Creative Business Cup in Copenhagen, Denmark later this year.

The four finalists who will battle it out at the Creative³ Pitch include Brisbane's [Men on the Moon](#), [comiXchat](#) from the Gold Coast and [Brandspot](#) and [Bluethumb](#) from Melbourne. Men on the Moon helps bricks and mortar retailers boost sales using beacon technology; comiXchat turns conversations into comics, Brandspot groups all of a company's branding materials in one online location and Bluethumb is an online art marketplace.

The following Creative³ partners have made the event possible: Arts Queensland, Pitcher Partners, Screen Queensland, Brisbane City Council, Brisbane Marketing, McCullough Robertson and QUT Real World Futures, QUT Business School, City of Gold Coast, Sunshine Coast Council, Sunshine Coast Creative Alliance, Queensland Futures Institute, Red Chip Lawyers, QTIX, K.W. Doggett, AvantCard and Hub 4101

<http://qutcea.com/2015/08/20/the-worlds-most-creative-influential-and-inspiring-entrepreneurs-to-attend-creative%C2%B3-the-largest-conference-for-creative-entrepreneurs/>

Indicators, measures of success and/or evaluations

Since 2008, over 3,500 entrepreneurs have engaged in CEA services. It has supported over 150 companies on site, created over 25 start-ups and established Australia's first creative Start-up Fund.

Website

<http://www.creativeenterprise.com.au/>

University of Adelaide Entrepreneurship, Commercialisation and Innovation Centre (ECIC)

Rationale

The ECIC's mission is to stimulate innovation through its research, teaching, and community engagement activities including the Australian eChallenge, the ThIncLab Commercialisation Accelerator, and ThincTrain.

The outcome(s) of the measure

ThIncTrain assists University of Adelaide coursework and research students commercialise their research outcomes through providing a comprehensive and supportive research-commercialisation training and mentoring programme.

The programme equips students with the necessary entrepreneurial skills and knowledge that are pertinent for transforming their research into sustainable entrepreneurial ventures.

Operational information

Not available

Administrative responsibility and cost

Not available

Indicators, measures of success and/or evaluations

Not available

<http://ecic.adelaide.edu.au/research/thinclab/>

Flinders New Ventures Institute

Rationale

Flinders University established the New Venture Institute (NVI) in June 2013 to create connections between the university's staff, students and resources with external businesses, entrepreneurs, and innovators to create and foster an entrepreneurial community in Adelaide.

NVI is at the centre of entrepreneurship at Flinders University.

The outcome(s) of the measure

New Venture Institute Flinders inspires, educates and connects innovators and entrepreneurs, grows and supports new ventures and start-ups through a range of initiatives

Operational information

NVI connects, inspires and educates business, innovators, researchers and students. It offers several programs in business and entrepreneurship that are available to anyone interested in being part of Adelaide's growing start-up scene.

NVI facilitates and embeds entrepreneurial skills and thinking into the education framework. Experiential education through this framework provides evidence based cutting edge solutions that businesses adopt. NVI will ensure Flinders University staff are recognised as thought leaders who are externally positioned as vital contributors to address real world challenges.

NVI offers businesses easy navigation to the university's extensive resources best suited to meet consulting or commercialisation needs

Some of the programs NVI currently offers are Venture Dorm, Enterprise Workshop, Flinders Enterprise Consulting and speakers events such as Entrepreneurs in Conversation and New Venture Lab. NVI's newest venture is the eNVIision Incubator Space, a co-working space where teams of start-ups can get together to work on their businesses.

The offers a range of programs including

- Consulting – an industry program developed to integrate knowledge acquired over a range of business relevant degree programs giving students have the opportunity to apply that knowledge to engage with clients, ultimately providing evidence-supported business solutions that can be implemented by businesses.
- Virtual Boards - a pathway for start-up enterprises to gather commercially sensitive advice to advance their new venture
- Venture Dorm - provides an educational environment for people who want to learn how entrepreneurs build new ventures and then create one themselves. It involves taking or finding

an idea, finding a viable business model that is scalable and repeatable, from scratch, in less than 12 weeks.

The eNvision space connects businesses, students and the community to build relationships.

Administrative responsibility and cost

NVI is part of Flinders University, but is not solely for students and staff of the university.

Indicators, measures of success and/or evaluations

Not available

Webpage

<http://nviflinders.com.au/>

Curtin Accelerate

Rationale

Curtin Accelerate, a Curtin University programme, looks for motivated individuals and teams to kick-start or accelerate an innovative business idea. The programme works with teams to improve and grow their business ideas. The programme is open to students, staff and alumni of Curtin, with any innovative business idea.

Over the course of the period of the programme Curtin Accelerate will make connections with industry contacts, give one-to-one and group mentoring sessions, and bring ideas and businesses closer to commercialisation.

Operational information

The programme delivers:

- A \$5,000 equity-free grant
- Access to co-working space and facilities
- Access to networks including commercialisation experts, investors and potential partners
- Workshops designed to help you develop your start-up
- 10 weeks personalised mentoring.

To be eligible, one core member of the team must be a Curtin University staff member, student or graduate.

The selection criteria are novelty of the idea, commercialisation potential, and the team.

Administrative responsibility

Curtin University

Indicators, measures of success and/or evaluations

Not available

Website

<http://research.curtin.edu.au/commercialisation/curtin-accelerate/>

Science and Technology Hubs and Precincts

A number of universities have made major commitments to the development of science and technology hubs and precincts to build linkages between research, innovation, and industry adoption and application. A number of these are described below.

The coverage is by no means exhaustive, but it serves to indicate the commitment to collaborations and research translation across the sector, as well as the diversity of arrangements.

The Education Investment Fund (EIF) has been instrumental in stimulating many of these collaborations, together with the former Victorian Science and Technology (STI) Initiative and the Queensland Smart State Research Facilities Initiative.

Piivot – Sydney’s Creative Hub

Rationale

Piivot is a partnership of tech start-ups, digital, creative, cultural, corporate, government, and education organisations centred on digital creative innovation.

Warehouses, cafes, co-working spaces, streets are filled with entrepreneurs connected to the Sydney CBD and the inner city start-up and creative scene. This is the place that will put Sydney on the map as the digital creative capital of Australia.

The initiative is directed towards start-ups, entrepreneurs, partners, investors and students looking to connect, learn and work together.

Outcome(s) of the measure

Piivot is focussed on blending and collaborating with all parts of the digital creative ecosystem through support and partnership. Its home in Ultimo has just been named one of the top 15 places in the world right now. The vibrant urban culture and surroundings is ripe for digital creative start-ups, amongst world class architecture, small bars, independent galleries and most importantly, great coffee.

Operational information

Programmes and initiatives include:

- The Hatchery “pre-incubator” programme is designed to specifically create entrepreneurs not companies. The Hatchery is a safe and secure environment for students to be provided with the scaffolding to support the ‘hatching’ of their entrepreneurial talent.
- Springboard Enterprises Australia, a highly vetted expert network of innovators, investors, and influencers who are dedicated to building high-growth technology-orientated companies led by women.
- City of Sydney start-up pilot projects to support entrepreneurs in creative and technology start-ups (in development). They will focus on creative enterprises, specifically new, innovative businesses that have technology at their core and are designed for fast growth.
- Pollenizer 60 day Start-up Programme. Australia’s first start-up incubator has a 60 day start-up programme to help start-ups grow.

Administrative responsibility and cost

Piivot Sydney has been incubated at UTS, in Ultimo, “right in the heart of the digital creative ecosystem.”

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.piivot.sydney/>

Newcastle Institute for Energy and Resources (NIER)

Rationale

NNIER was established to provide a multidisciplinary model for transformational research in energy and resources. Driven by a vision of global leadership, NIER addresses challenges of the rapidly emerging issues of resource sustainability, productivity and competitiveness associated with energy and resources infrastructure.

The outcome(s) of the measure

Through the collaboration of industry and academia, NIER aims to deliver solutions that contribute to the sustainability of resources and the environment and address rapidly emerging issues including critical resource sustainability, the transformation of the energy system, and national productivity.

NEIR has a strong commitment to quality engagement with partners and developing the collective capacity to facilitate technological advancements whilst maintaining environmental and economic stability.

Operational information

Bringing together the University of Newcastle's leading researchers working in the area of energy and resources, the NIER precinct at the Callaghan campus is an integrated facility, which provides valuable opportunities to advance research through access to large-scale test bed and pilot plant operations.

NEIR's multidisciplinary research capacity positions the institute to focus holistically on efficient next generation energy and resources production and distribution solutions aligned with the energy reform agenda of government, industry and the community.

NIER has established a research partnership worth \$1m over four years with global healthcare provider Aspen Medical to launch the Centre for Resources Health and Safety. The Centre aims to address key healthcare challenges for the resources and mining industries and will harness expertise from across a range of disciplines within the University.

Research areas will include occupational health and safety, respiratory studies, psychology, psychiatry, environmental impacts and social impacts.

Administrative responsibility and cost

University of Newcastle

NIER is funded with the assistance of a \$30m Australian Government EIF grant and is supported by the NSW Government.

Indicators, measures of success and/or evaluations

A range of successful collaborations including Ampcontrol, Aspen Medical, Ausgrid, BHP Billiton, Glencoe, Sonedi, Hunter Water, Forgas and Nucoal.

Website

<https://www.newcastle.edu.au/research-and-innovation/centre/nier/about-us>

Ballarat Technology Park

Rationale

The Ballarat Technology Park (BTP) is a 29-hectare site set in a park-like environment, 7km from the regional city of Ballarat. It is easily accessible from Melbourne, Geelong and Bendigo.

Adjacent to Federation University's Mt Helen Campus, the BTP is situated to support innovative technology-based enterprises grow and prosper. Enterprises can access skilled graduates through the University, as well as take advantage of the applied, academic and research knowledge available.

The outcome(s) of the measure

BTP has been successfully supporting and fostering industry, innovation and job creation since 1995. This fast evolving precinct encourages and supports the development of emerging and existing technology-oriented enterprises.

Operational information

Currently, more than 30 enterprises are located at the Park, including IBM, State Revenue Office, Emergency Services Telecommunications Authority, Primary Health Care and others. The Park's

ideal location on the outskirts of Ballarat provides great lifestyle opportunities as well as having the convenience of being close to Melbourne, Geelong, Bendigo and Western Victoria.

The BTP has evolved and expanded steadily since its beginnings and is now embarking on a further growth strategy.

- The Greenhill Enterprise Centre (GEC) is the BTP's early-stage business incubator, hosting start-up technology focused businesses navigate their way through any challenges, better equipping them for survival.
- The Global Innovation Centre (GIC) is the next step for small-to-medium sized enterprises. It is currently the home to a range of innovative technology focused enterprises.

Administrative responsibility and cost

Not available

Indicators, measures of success and/or evaluations

Not available

Website

<http://btp.federation.edu.au/index.php>

Geelong Technology Precinct

Rationale

The Geelong Technology Precinct was established to apply advanced knowledge and advanced technology to advance Victorian Industry. The Precinct focuses on Deakin's core research capabilities in materials, biotechnology, chemistry, and environmental engineering, along with regional strengths in manufacturing and agri-processing.

The University's vision for the Precinct is to create Australia's 'Silicon Valley' by co-locating aligned technology businesses on 54ha of vacant land west of the campus.

Outcome(s) of the measure

The Precinct aims to provide the integral link between technological innovation and advanced performance outcomes. It achieves this through integrating high-level research capabilities with specialised research equipment and industrial scale infrastructure.

The Precinct offers opportunities for collaborative and contract research, provides tenancy for technology-oriented businesses, and enables 'proof of concept' and 'industrial prototyping'. It aspires to be the leading Australian regional hub for higher degree training in science and engineering.

Operational information

The Precinct is located seven kilometres from the Geelong CBD and within Deakin University's Waurin Ponds Campus. It is the base for:

- The Australian Future Fibre Research and Innovation Centre, a partnership between Deakin University, CSIRO, VCAMM and the State and Federal Government. The Centre received a \$37m Education Investment Fund grant)
- The Institute for Frontier Materials (IFM), which undertakes a unique style of research combined with industry co-operation.
- A state of the Art Electron Microscopy Suite
- The Centre for Intelligent Systems Research
- CSIRO Materials and Science Engineering
- Carbon Nexus, world's first, dedicated, pilot scale Carbon Fibre Plant
- A Proof of Concept facility comprising 2,000 m² of open floor space and 1,000 m² of laboratory space for Metal, Intelligent Systems and Corrosion laboratories

- Metabolic Research Unit, a purpose-built molecular facility that supports research focussed on the causes and characterisation of complex metabolic diseases.
- A number of industry partners including Carbon Revolution, Kemin Nutrisurance, Victorian Centre for Advanced Material Manufacturing and the International Fibre Centre.

Proof of Concept facility will enhance academic and industry partnership

11 August 2010

Deakin University's new Proof of Concept facility, opened in Geelong today by the Minister for Regional and Rural Development, Jacinta Allan, provides local industry with state-of-the-art research facilities and will foster further collaboration between the University and local industry.

Part of a \$13m expansion of the Geelong Technology Precinct and supported by an investment of \$6m under the Victorian Government's Regional Infrastructure Development Fund (RIDF), the 3500m² Proof of Concept facility represents a significant increase in research infrastructure and capability at Deakin University's Geelong Campus at Waurin Ponds.

The Proof of Concept facility provides space for pre-commercial work to occur and for local industry to collaborate with Deakin on the testing of prototypes and the rapid commercialisation of projects.

The facility provides critical infrastructure for the future stages of development of the GTP and is the platform for growth of Deakin's 'smart design', nano-manufacturing, carbon fibre, composites and high-performance light metal capabilities.

It is also the site for research activity of national importance in sectors including defence, automotive and aerospace.

Already housed within the Proof of Concept facility are a number of Deakin's industry partners, including The Victorian Centre for Advanced Materials Manufacturing, The Co-operative Research Centre for Cast Metals Manufacturing, CFusion, HARD Technologies, Quickstep and VR TEK Global.

Deakin University Vice-Chancellor, Professor Jane den Hollander said that the new facility was an example of the University's progressive approach to industry collaboration.

"Deakin is a relatively young university but this facility is testament to our commitment to excellence in research both in Victoria and throughout Australia," she said.

"There is great potential in a facility like this for Geelong to benefit from successful partnerships between Deakin and industry participants."

<http://www.deakin.edu.au/news/media-archives/2010-media-releases-archives/proof-of-concept-facility-will-enhance-academic-and-industry-partnership>

Administrative responsibility and cost

Deakin University.

Indicators, measures of success and/or evaluations

Deakin's partnership model has encouraged more than 40 industry collaborators and partners to connect with the GTP. These include Ford, General Motors, CSIRO, Barwon Health, MG Dairy, VCAMM, Chemgenex, Quickstep, FTS Technologies, Hard Technologies, VCAMM, Cordlife, and Interpath. Many of these are engaged in collaborative research with the University.

Website

<http://www.deakin.edu.au/gtp/>

<http://www.enterprisegeelong.com.au/geelong-technology-precinct-deakin-university>

La Trobe Technology Park

Rationale

La Trobe's R&D Park is the largest wholly University owned and managed network of technology parks in Australia, focused on innovation, new product development and realisation, industry collaboration, and the commercialisation of intellectual property. The University has research parks in Bundoora, Melbourne and at its Albury-Wodonga Campus.

Outcome(s) of the measure

The mission of the R&D Parks is to provide accommodation and facilities for the promotion and support of commercial science and technology research and development so as to build on the particular strengths of the University's teaching and research facilities and expertise and to provide a means of further developing those strengths in collaboration with outside researchers, teaching institutions, government agencies and private industry.

Operational information

The Technology Enterprise Centre (TEC) is the nucleus of the La Trobe University Research and Development Park. It now comprises the original Park Centre building opened in 1993 and the purpose designed building opened in 1995.

Current tenants include:

- Adalta P/L
- BSA (Business Student Association)
- Centre for Technology Infusion
- Computer Professionals Pty Ltd
- Cooperative Research Centre for Biomarker Translation Transbio Ltd (Management company)
- Cornerstone computing
- Hardware Product Realisation Centre - Auto CRC
- Insfin/Insurance Watch
- Market Pathways
- Research Centre for Computers, Communications and Social Innovation (RECCSI)

Rio Tinto, Walter Eliza Hall Institute (WEHI), and CAVAL Collaborative Solutions are also located in the Park.

Administrative responsibility and cost

La Trobe University

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.latrobe.edu.au/research/techpark>

RMIT Advanced Manufacturing Precinct

Rationale

The Advanced Manufacturing Precinct combines RMIT's expertise in technology and design innovation.

The Precinct is developing the next generation of engineers, designers and technicians, and working closely with industry both in Australia and internationally. The vision is to be the leader in the implementation of the next wave of manufacturing in Australia.

Outcome(s) of the measure

The Advanced Manufacturing Precinct brings design and engineering together, from digital design to digital manufacturing. It has a focus on 3D printing of advanced high value add products and components.

Specialised equipment and experts are available to assist companies to develop new conceptual products, perform multiple design iterations, or further develop existing products or enhance existing manufacturing processes. The Precinct offers:

- Additive and subtractive process manufacturing in a range of materials
- High-speed multi-axis machining centres
- Reverse engineering
- Highly trained technical staff.

Operational information

Research at the Advanced Manufacturing Precinct is carried out in a range of areas, including:

- Aerospace and automotive - new bio-inspired structures, topology optimisation, materials and manufacturing methods using both metal and polymer-based additive technologies.
- Bioengineering - advanced limb reconstruction, surgical guides and just-in-time implants utilising additive manufacture that enables the fabrication of new and complex organic and inorganic structures.

The Precinct offers commercial applications across a broad range of industries, including aerospace, defence, automotive, consumer, biomedical and dental, manufacturing, and textile.

Administrative responsibility and cost

RMIT University

Indicators, measures of success and/or evaluations

Not available

Website

<https://www.rmit.edu.au/about/our-locations-and-facilities/facilities/research-facilities/advanced-manufacturing-precinct/>

Swinburne Advanced Manufacturing and Design Centre (AMDC)

Rationale

AMDC is a state-of-the-art facility that gives researchers and students the opportunity to use the latest manufacturing and design techniques and technologies.

The outcome(s) of the measure

The AMDC aims to bridge the gap between imagination and reality.

The Centre's demonstrator *Factory of the Future* provides industry and organisations with unparalleled facilities and equipment with which to explore conceptual ideas for manufacturing next generation products.

Operational information

AMDC is a hub for researchers carrying out world-leading research, education and training. It forms part of a cluster of specialist facilities designed for research translation, including the Advanced Technologies Centre, the Aviation Simulation Laboratory, a Geotechnical laboratory, Hydraulics Laboratory, Micro Fabrication Facility, Nanofabrication Laboratory, Neuroimaging Facility, and Smart Structures Laboratory

Indicators, measures of success and/or evaluations

Swinburne has a reputation for excellence in applied research in partnership with industry, business, government and not-for-profit organisations.

Administrative responsibility and cost

The AMDC cost \$100 million and was built with the support of the Commonwealth Government, which provided \$40 million through the Education Investment Fund.

Website

<https://www.swinburne.edu.au/research/strengths-achievements/specialist-facilities/advanced-manufacturing-and-design-centre/>

<https://www.swinburne.edu.au/business-partnerships/research-commercialisation/case-studies/>

Australian Institute for Bioengineering and Nanotechnology

Rationale

AIBN was established with the specific aim of combining research excellence with an industry focus.

- The commercial objectives of the Institute are to:
- Produce innovations assisting in the growth of industries;
- Develop new products, processes and technologies; and
- To play a major role in developing the Australian nanotechnology and biotechnology industries, through establishing new opportunities, obtaining the support of the industry sector and interfacing with industrial collaborators.

Outcome(s) of the measure

AIBN has worked to develop and promote:

- A culture of commercialisation within the Institute;
- Strategies to support the Institute's commercialisation and industry engagement;
- The Institute's R&D capabilities and infrastructure to industry; and
- A suite of quality patent assets relevant to industry and market need.

Operational information

AIBN is home to 18 research groups working at the interface of the biological, chemical and physical science to alleviate current problems in human health and environmental issues.

Administrative responsibility and cost

AIBN is located within the University of Queensland.

Atlantic Philanthropies, the Queensland State Government and the University of Queensland provided funds for the construction of the AUD \$75 million AIBN research facility have supported the AIBN.

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.aibn.uq.edu.au/industry>

QUT Creative Industries Precinct

Rationale

The Creative Industries Precinct at [QUT's Kelvin Grove campus](#) is an incubator for the next generation of ground-breaking ideas, emerging and experimental artists and designers, and [creative enterprise](#).

The Precinct, which hosts some of Australia's most sophisticated, high-tech digital facilities, is located on the western fringe of Brisbane's Central Business District and is part of the newly established [Kelvin Grove Urban Village](#).

Operational Information

The Precinct provides a unique opportunity to easily connect and collaborate with partners from government and industry to create new work, develop new ideas and grow the creative industries sector in Queensland and Australia.

The yearly [exhibition program](#) bolsters Brisbane's contemporary art scene by showcasing the emerging field of new media and digital art, and is supported by innovative [public programs](#) and [student showcase theatre](#) productions, all taking place in our state-of-the-art facilities.

Administrative responsibility and cost

QUT. The Precinct represents a \$60m investment.

Website

<http://www.ciprecinct.qut.edu.au/about/>

Flinders at Tonsley (South Australia)

Rationale

Flinders at Tonsley is a place where students interact with business, where business interacts with researchers in areas such as engineering, medical devices and nanoscale technologies, to create the new products and processes of the 21st century.

It is also a new hub for entrepreneurs and future employers who are creating next generation start-ups through the Flinders New Venture Institute.

Outcome(s) of the measure

Flinders' ambitions for Tonsley will see a major contribution to student achievement, commercial venture success and engagement with business. In doing so, Flinders aims to redefine the traditional role of a higher education provider in a way that binds the University into the future economic and social fabric of southern Adelaide and beyond.

Operational information

Flinders at Tonsley co-locates expertise in Computer Science, Engineering and Mathematics together with the Flinders Medical Device Research Institute, Flinders Partners, and the Centre for Nanoscale Science and Technology, alongside some of Adelaide's biggest businesses and key industries.

Students at Tonsley receive 'hands-on' experiences with heavy engineering equipment located in a 2,000 square metre 'pod' situated within the broader Tonsley complex. The pod houses workshops and laboratories focusing on courses and research programs in civil, mechanical and maritime engineering.

An integral part of studying engineering at Flinders is the opportunity to experience future employer environments first hand with a 20 week 'work-integrated learning' (WIL) placement.

It is expected that the close business-industry relationships developing within Flinders at Tonsley will further expand these WIL opportunities, which play an invaluable role in preparing 'job ready' graduates

Administrative responsibility and cost

Flinders has invested \$120m in the Tonsley development.

Indicators, measures of success and/or evaluations

Iconic South Australian communications and technology company, Hills that provides trusted and innovative solutions in healthcare, security and surveillance technologies. Has moved to Tonsley represents to create as more collaborative space that will foster new ideas, job creation and further revenue.

Website

<http://flindersfuturefocus.flinders.edu.au/major-projects/tonsley/>

Future Industries Institute (South Australia)

Rationale

The Future Industries Institute (FII) was established in 2015 bringing together the research activities of the established Ian Wark Research Institute (IWRI), Mawson Institute (MI) and Centre for Environmental Risk Assessment and Remediation (CERAR).

Outcome(s) of the measure

The FII focuses on four research strands:

- Minerals and Resources Engineering
- Energy and Advanced Manufacturing
- Environmental Science and Engineering
- Bioengineering and Nanomedicine.

The research strands build from the research capabilities and reputations of the IWRI, MI and CERAR, IWRI and extends into other complementary research capabilities within the University's Division of Information Technology, Engineering and the Environment, and across the University.

Operational information

The Institute is designed to attract leading collaborators and engage new talent by including opportunities for research fellowships and higher degree research scholarships, providing a pipeline for the nurturing of talented engineers and scientists. Its internationally engaged researchers work with a core team of technical staff to bring projects to fruition.

In addition, we have a senior industry engagement manager who develops partnership opportunities with industry locally and internationally and works with ITEK, UniSA's commercialisation arm, to support the development of new products and services.

Administrative responsibility and cost

UniSA

The Education Investment Fund provided \$40m for the construction of the Materials & Mineral Sciences Building.

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.unisa.edu.au/research/mawson-institute/>

Urban Development and Renewal Projects

Universities are substantial property owners and have become increasingly significant as developers, particularly in central business districts of capital and regional cities. Developments are motivated by bringing the delivery of courses and programmes closer to where students, including business and overseas students, can find accommodation, choose to live, and have greater opportunities to find part-time work.

Being close to business partners and opportunities to strengthen industry and community engagement also motivates CBD location. Investment in new buildings can also have significant employment and income effects.

University of Newcastle NeW Space

NeW is a \$95m landmark education precinct under development by the University of Newcastle in the heart of Newcastle's CBD.

The project received state significant development (SSD) approval in February 2015 and the UON awarded the Principal Contractor contract to Hansen Yuncken in May 2015 after a lengthy and in-depth procurement process. A commencement celebration was recently held on the site, marking the official turning of the sod that signifies the commencement of construction on site.

The new precinct is a significant revitalisation project for the city of Newcastle and will host a range of University-supported activities including:

- Business and law programmes
- Digital library services and information commons
- Collaborative learning and research spaces
- Facilities for engagement with industry, business and the community
- Social learning spaces.

Although initially for the delivery of business and law programmes, NeW Space will be a resource for the entire University community across different disciplinary and knowledge fields. Developed as a technology-rich and engaging site, NeW Space will provide a unique platform for our staff to develop and test innovative ideas and to deliver a 'next generation' university experience for students.

The NeW Space concept is designed to be a place that invites the city and the community into the building, the University and onto the city campus through social spaces, connecting pathways and active student learning spaces that are right on the street front

NeW Space is supported by Australian Government funding of \$30m through the Education Investment Fund Regional Priorities Round, NSW Government funding of \$25m, and \$40m invested by the University.

<https://www.newcastle.edu.au/about-uon/our-environments/new-space>

The Innovation Investment Fund had the dual objective of building research and capability as well as generating construction employment in the post 2008 global financial crisis.

Universities have made significant investments in the CBDs of Melbourne, Sydney, Adelaide, and Canberra. These investments have had a major influence in re-vitalising CBD areas.

Other Measures

Contract Research, Consultancy, and Advisory Services

Rationale

Contract research, consultancy, and advisory services are important sources of research income for universities and facilitate the translation of research for economic and social benefit. Some universities actively promote capability to industry for expert advisory services.

The outcome(s) of the measure

Knowledge translation and enhanced industry engagement.

Operational information

Most universities have specific guidelines about contract research and consultancy. Policies vary, particularly in approaches to outside work, where a great deal of unmeasured engagement happens.

Administrative responsibility and cost

Responsibility varies among universities between a Technology Transfer Office, a Research Office, or a Faculty.

Indicators, measures of success and/or evaluations

National Survey of Research Commercialisation data indicates that in 2013 a total of 10,046 research and consultancy contracts were entered into, across the university sector, with a project value of \$1,151.8m.

Visiting, Adjunct, and Honorary Appointments

Rationale

Visiting, adjunct, and honorary academic appointments benefit a University by increasing cooperation and activities between a University and leaders in the professions, business, industry, community and the public sector in Australia and overseas.

The outcome(s) of the measure

Honorary appointments strengthen a university's teaching, research and professional activities and foster co-operative arrangements between a university and other members of national and international academic, business, professional and cultural communities.

Appointments are being made more widely across the university sector and are seen as an important vehicle for building university-business engagement.

Operational information

Universities have formalised policies and procedures relating to visiting, adjunct, and honorary appointments. The range of activities that an appointee may be involved in covers:

- Contribution to the design and review of a teaching curriculum within the Faculty
- Participation in research projects and programmes
- Peer review of publications and assessment of HDR theses
- Delivery of lectures/tutorials in content areas related to the appointee's area of professional expertise and interest
- Participation in specialty reference groups to oversight specific themes of Faculty curriculum
- Participation in professional and community service including contributions to relevant professional societies and to the community
- Participation in the interview selection process of students and staff
- Participation in promotion, marketing and recruitment activities
- Assist in the planning and provision of clinical and other intern placement opportunities for students
- Acting as a mentor to executive staff, teaching staff, and students.

Administrative responsibility and cost

University executive, faculties, schools, institutes, and centres.

Indicators, measures of success and/or evaluations

Not available

University-Industry Entry Points

Rationale

A website is the *digital front door*, or entry point, to a university. The information included on the front page provides the essential information functions and services of the university and an implied priority among them.

All university website front pages include information about teaching and research capabilities, but not all provide a link to industry or community engagement commitments and activities. Some universities provide access to industry partnerships through the research page.

Operational information

As Australia's 39 universities are autonomous public organisations it can be a challenge to find consistent and comparative information about industry engagement commitments across the sector.

Administrative responsibility and cost

Universities

Indicators, measures of success and/or evaluations

Not available.

Websites

Universities that have industry partnership pages that can be accessed from the front page of the website for industry engagement include:

NSW

- Macquarie University http://www.mq.edu.au/business_community.php
- The University of Sydney <http://sydney.edu.au/sydnovate/>
- The University of Newcastle <https://www.newcastle.edu.au/industry>
- University of Wollongong <http://www.uow.edu.au/engage/index.html>

Victoria

- Deakin University <http://www.deakin.edu.au/industry-and-community>
- Monash University <http://www.monash.edu.au/industry/>
- RMIT University <http://www.rmit.edu.au/industry>
- Swinburne University http://www.mq.edu.au/business_community.php

Queensland

- Queensland University of Technology <http://www.qut.edu.au/industry-and-partnerships>

South Australia

- University of South Australia <http://www.unisa.edu.au/Business-community/>

Western Australia

- Murdoch University <http://www.murdoch.edu.au/Business-and-Industry/>
- The University of Western Australia <http://www.uwa.edu.au/business>

Northern Territory

- Charles Darwin University <http://www.cdu.edu.au/business-government>

For other universities industry engagement pages can be located through the Research Office page, or individual Faculty pages.

Alumni Networks

In the United States and the UK universities use their Alumni networks to foster cooperation and collaboration and engagement between graduates in business and the university through events, information and briefing sessions. This is over and above a philanthropy objective.

This measure is not widespread in Australia.

Research Translation Through Staff “outside work”

Across the university sector many academics undertake ‘private consultancy’ outside their professional obligations to the university. Several universities support this, provided a staff member meets requirements under a workload agreement and risks to the university are known and covered.

There has been a tradition in universities where staff can be available one day a week (20 per cent of their time) for outside ‘engagement’ activities. But as universities are becoming more commercially oriented, and arrangements under enterprise agreements are changing, there is a view that staff should be working full time for their university in teaching and research roles and that ‘outside work’ should be managed through the University Research Office and the Contracts Office.

While there is often an expectation within industry that researchers can be approached directly to assist in research projects, the reality is that project proposals must be processed through formal channels, including assessment by university ethics committees and contribution to university overheads, which range from 20 to 30 per cent of project cost. Individual researchers are generally not entitled to receive additional payments for external work – except for minor payments for activities such as thesis assessment, op-eds, and public commentary.

In some areas university staff members may be directors of consulting companies or design businesses that receive income from commercial work. Staff are generally required to declare and receive approval for appointment as directors.

4 Industry Funded Measures and Supported Initiatives

In this Section measures predominantly supported by industry are outlined.

Business-Higher Education Round Table

Rationale

The Business/Higher Education Round Table (B/HERT) is a not-for-profit organisation that was established in 1990 to strengthen the relationship between business and higher education.

B/HERT is the only organisation with members who are leaders in higher education, business, industry bodies, and research institutions.

Outcome(s) of the measure

The mission of the Business/Higher Education Round Table is to pursue policies and collaboration initiatives that will advance the goals and improve the performance of business and tertiary education. B/HERT adds value through its unique membership, its engagement on policy issues with government and its commitment to better business/education outcomes through collaboration

Australian business and industry can reap significant benefits from better access to the skills and knowledge the nation's tertiary sector. Business leaders are well placed to promote the quality and global competitiveness of Australia's tertiary education system. As a knowledge broker, B/HERT facilitates effective working relationships.

Operational information

B/HERT has established strategic partnerships in the development of programmes that advance education, research, and innovation. Through various initiatives B/HERT is involved in:

- Promoting collaboration and knowledge exchange
- Promoting policy debate and discussion on issues including:
- Responding to members' issues
- Hosting the Annual B/HERT Awards
- Hosting Ministerial working lunches
- Producing publications
- Hosting distinguished speakers' dinners

Administrative responsibility and cost

B/HERT is a member-based organisation governed by a Board constituted by representatives from universities, and business.

Costs are met through membership, sponsorships, and events.

Website

<http://www.bhert.com/>

AMIRA International

Rationale

AMIRA International Ltd is a member-based organisation of minerals companies and suppliers that develops, brokers, and facilitates collaborative research projects.

Through this process a number of companies can jointly fund research and jointly share the benefits. This combined funding enables AMIRA to recruit leading researchers to address industry problems and opportunities and to conduct sustained research that leads to the development of a stronger industry research base.

The outcome(s) of the measure

Strength of research in the minerals sector

Operational information

While AMIRA International does not carry out research itself, it brokers collaborative projects between industry and world-leading research providers by leveraging available government and industry funds.

Administrative responsibility and cost

AMIRA

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.amira.com.au/>

Rural Research and Development Corporations

Rationale

The Rural Research and Development Corporation model of joint industry and government funding has been a vital element in the success of Australia's R&D effort for over 25 years.

The current RDC model is a mix of statutory and industry-owned companies. The industry-owned R&D companies are independent corporate entities with expertise-based boards.

They were formed in response to an industry desire to have more control over their affairs and increased flexibility, industry representation and to foster market driven R&D that will be widely adopted by industry.

The outcome(s) of the measure

A globally competitive agriculture sector

Operational information

RDCs commission agricultural R&D on a competitive basis amongst public and private providers using funds from levies on production and matching Commonwealth grants.

The model has given rural industry the vehicle to negotiate new standards for investment, focussed on triple bottom line outcomes.

RDCs can fund R&D into either production (on-farm) or processing (off-farm) issues and are expected to fund portfolios of projects that have a mix of both public good and industry good components given the taxpayer contributions.

The RDCs engage with a diversity of stakeholders in a shared vision of what the future can be, which is updated in 5 year plans and reinforced with each of the annual operating plans.

Administrative responsibility and cost

Individual RDCs individually administer the programme.

Total funding from the Federal budget in 2015-16 is \$252.28m. The allocation between major industry categories is as follows:

Programme	Budget Estimate 2015-16
Dairy Australia Limited	22.29
Fishing Industry Research	18.08
Grains	69.13
Horticulture Research	42.50
Meat Research	53.95

Other Rural Research	22.59
Rural Industries R&D Corporation	12.24
Wool Research	11.50
	252.28

Source: <http://www.industry.gov.au/innovation/reportsandstudies/Documents/2015-16ScienceResearchAndInnovationBudgetTables.xlsx>

Indicators, measures of success and/or evaluations

In 2001 the Productivity Commission released a report on its inquiry into Rural Research and Development Corporations¹⁶.

The Commission concluded that the RDC co-investment model has important strengths, including: helping to ensure that public money is not spent on research of little practical value; and facilitating greater and faster uptake of research outputs.

The Commission was of the view, however, that as currently configured, the model has some significant shortcomings and a number of suggestions were made for improvement.

RDC Council Website

<http://www.ruralrdc.com.au/Page/Home.aspx>

University-industry Collaborative Research and Teaching Centres

Industry or government might establish centres to address specific research or policy matters. Most universities have specific policies and guidelines about how they will engage with industry through research centres.

There are a number of collaborative centres funded by industry, with or without the involvement of the ARC Linkage Programme or other funding organisations. Government also funds a number of centres, particularly in the health and human services area. Funding can be provided by grant (contract) or philanthropy (gift, endowment).

A number of universities have 'named' research centres in recognition of industry contribution.

Research intensive and technology-oriented universities (UTS, RMIT, QUT, Swinburne, UniSA and Curtin) have quite a number of centres around various industry sectors.

Examples of industry supported collaborative research centres are provided below.

IBM Partnership

Rationale

The IBM Research - Australia Laboratory was established in 2010 next to The University of Melbourne main campus.

Outcome(s) of the measure

The laboratory aims to be employing 150 researchers by the end of its first five years. (As at the end of 2012, over 40 researchers were engaged). It is an outcome of the IBM-UoM Partnership Agreement.

Operational information

The Laboratory is focussing on three major research themes: life sciences and healthcare, natural resources management and disaster management. The research focus of the Partnership aligns closely with these priorities and the presence of the IBM Lab is seen to be enabling the relationship to go still deeper and broader, as the partners' researchers explore new joint research projects.

The partners have agreed that they will work together to:

- Enhance the scientific research skills and capabilities of each partner
- Strengthen the partners' joint capabilities to solve big, bold, difficult global challenges

¹⁶ <http://www.pc.gov.au/inquiries/completed/rural-research/report>

- Increase the partners' access to research funds and infrastructure
- Strengthen the partners' ability to attract and keep the best and brightest researchers
- Enable the partners to leverage one another's interdisciplinary strengths
- Expand the partners' global networks and global research opportunities
- Enhance the reputation and positioning of each partner as global research leader

Indicators, measures of success and/or evaluations

Not available

Website

<https://mro.unimelb.edu.au/content/ibm-partnership>

HP ICT Innovation Collaboration Centre

Rationale

The ICT Innovation and Collaboration Centre is a strategic venture between UniSA, HP and the South Australian Government. The Centre will provide a unique environment that connects, technology, knowledge and commercialisation expertise to South Australian business and industry.

Outcome(s) of the measure

The Centre will:

- Support and facilitate innovation, collaboration and co-creation across the South Australian ICT sector.
- Support business innovation and growth through access to UniSA business growth and HP global technology expertise.
- Provide a range of technology and/or innovation-based business support programs and workshops designed to meet the needs of small to medium sized enterprises.
- Be a pipeline for the commercialisation of new innovations.
- Provide a business and solution-orientated environment where knowledge, ideas and technology are drawn together to grow business and solve complex problems.
- Educate the ICT professionals of tomorrow.

This Centre will be designed to combine a range of expertise and products from both HP and UniSA in order to provide an integrated range of services and support for technology-based development and business growth.

Operational information

HP, as the Centre's anchor business partner, will provide stakeholders with access to its global technology knowledge, services and products.

The ICT Innovation and Collaboration Centre is one component of a broader relationship forged with HP and the State Government which also includes:

- The delivery of a four-year ICT honours program, the Bachelor of Information Technology (Honours) (Enterprise Business Solutions) including specific work placements with HP.
- A Student Entrepreneurship Initiative of \$150,000 per annum, supporting innovative students through the commercialisation of new ideas in the ICT sector, funded by the State Government.

Website

<http://www.unisa.edu.au/Campus-Facilities/Maps-Tours/Health-Innovation-Building/ICT-Innovation-and-Collaboration-Centre/>

Australasian Joint Research Centre for Building Information Modelling

Rationale

Established in March 2012, the Australasian Joint Research Centre for Building Information Modelling (BIM) is a collaboration of multidisciplinary research and industry expertise from Curtin University and Huazhong University of Science and Technology (HUST) in Wuhan, China.

The Centre focuses on developing leading research that integrates BIM with other advanced concepts and technologies to improve the performance and productivity of building projects in the energy, mineral and construction industries worldwide.

It acts as an allied international platform for creating and sharing knowledge among researchers, engineers and innovators in these industries - which aims to enhance policy development and enable key industry stakeholders to ameliorate informed decision-making throughout a project's life cycle.

Outcome(s) of the measure

The Centre's research will potentially impact the work practices of people involved in these projects worldwide. The Centre's research will also see improvements across the life cycle of smaller-scale construction projects, such as hospitals and commercial buildings.

Industries to benefit from BIM and its integrated technologies include:

- Mining: virtual construction to rehearse the planning and construction of mining infrastructure or facilities, allowing an optimised site plan to be created prior to construction
- Oil and gas: improved cost and schedule control of mega projects will result in a productivity boost and a reduction in down time and the costs associated with this.
- Construction: a reduction in the amount of rework, requests for information, scheduling and risk
- Infrastructure: safety control and quality assurance for projects such as hospitals, railways, bridges and highways.

Indicators, measures of success and/or evaluations

- More than \$7 million research funding for three years, including two ARC linkages
- More than 200 technical journal articles over the past five years
- Connections with more than 50 overseas universities
- More than 40 industry partners
- Industrial test-beds at various scales.

Website

<http://research.humanities.curtin.edu.au/centres/bim/>

Baosteel-Australia Research and Development Centre

Rationale

The Centre is a collaboration between Monash, University of Queensland (UQ), University of New South Wales, and the University of Wollongong.

The Centre seeks to create fundamental knowledge and exploitable technologies with commercial relevance to the steel industry, and focuses on metallurgy and new materials, energy utilisation, environmental sustainability and other new technologies.

Outcome(s) of the measure

The mission of the Centre is, through an enduring partnership, to engage in exploring and developing new knowledge and technologies within selected areas of particular significance for Baosteel's longer term, strategic development and business activities.

Administrative responsibility and cost

Baosteel will provide up to \$25m over five years for research and development projects at the centre.

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.bajc.org.au/>

The Cisco Internet of Everything Innovation Centre (CIIC)

Rationale

The Innovation Centre is an industry and research collaboration centre at Curtin University, established by Cisco with foundation partners Curtin University and Woodside Energy. The Centre was launched in July 2015.

The CIIC's mission, therefore, is to create a state-of-the-art connected community in Western Australia focused on leveraging cloud, analytics, cyber security and (IoE) network platforms. It will interconnect with the second node in Sydney, to enable work to be undertaken on both west and east coasts.

Outcome(s) of the measure

Cisco is committed to creating a future of growth and innovation in Australia with the establishment of its eighth global Innovation Centre with a hub at Curtin University in Bentley and another to be launched in Sydney later in 2015. Cisco's Innovation Centres across the world aim to catalyse and showcase innovation and development, bringing together customers, industry partners, start-ups, application developers, government organisations and universities.

Operational information

With over 80 researchers and links to advanced facilities and a global industry network, the Centre will bring together start-ups, industry experts, developers and researchers in an open environment to create ground-breaking and innovative solutions that foster growth, provide jobs and help build sustainable economies.

The Centre provides collaboration and co-working space, a demonstration area and experimental lab facility, and is open to students, researchers, industry operators and technology service providers. It facilitates and showcases state-of-the-art research and technology demonstration projects, and delivers targeted research solutions to industry problems.

Administrative responsibility and cost

Cisco and the foundation partners Curtin University and Woodside Energy have committed approximately \$30 million to establish and develop the Perth Centre, and help position Western Australia as a global collaborator in research and innovation.

Indicators, measures of success and/or evaluations

Not available

Website

<http://research.curtin.edu.au/about/institutes-centres/cisco-internet-of-everything-innovation-centre/>

Competitions and Contests

Industry involvement in university (and student) managed innovation contests has the potential to develop the translation between research and industry.

Telstra University Challenge

Rationale

The annual Telstra University Challenge is for students to explore innovative and commercially viable ideas to foster a Connected World. The 14-week challenge encourages teams to explore innovative and commercially viable ideas to foster a Connected World.

Operational information

Students are required to demonstrate how the latest technology can be transformed to benefit Australian consumers or businesses in the following categories:

- Wearable devices
- Smart Cities including Emergency Services
- Transport & Logistics
- Industrial (e.g. mining, agriculture)
- Retail (e.g. small business).

Finalists pitch their innovation to an expert judging panel to be in the running for:

- A substantial financial grant for their University
- A fast track to the top 50 interviews for entry to the muru-D boot camp program
- Consultancy services
- A Telstra Mobile device for each team member
- A Telstra University Challenge trophy.

This competition is open to undergraduate students across all faculties and year levels, with eligible students often considered for the Telstra Graduate Program.

Administrative responsibility and cost

Telstra

Indicators, measures of success and/or evaluations

Not available

Websites

<https://www.telstra.com.au/business-enterprise/university-challenge>

<https://entrepreneurship.asu.edu/innovation-challenge>

Australia Post Innovation Challenge

Rationale

Undergraduate and postgraduate students from marketing, architecture and design programmes have been taking part in the inaugural Australia Post Innovation Challenge, which is aimed at driving customer-led innovation. The mission for the student teams was to transform Australia Post to work differently.

Outcome (s) of the measure

To encourage employees to think in customer terms and generate 'outside-the-square' solutions that solve customers' challenges while helping the business to deliver on its strategy to adapt to a changing environment

Operational information

The competition came together very quickly and promises to be a platform for Australia Post and RMIT to do further work across any number of disciplines. At the conclusion of the Innovation Challenge the student teams came together to their share their insights and experience with RMIT staff and the team from Australia Post.

Administrative responsibility and cost

Nota available

Website

<https://www.rmit.edu.au/news/all-news/2014/december/students-drive-customer-led-innovation/>

Microsoft Imagine Cup

Rationale

Imagine Cup is a global student technology programme and competition that provides opportunities for students across all disciplines to team up and use their creativity, passion and knowledge of technology to create applications, games, and integrated solutions that can change the way we live, work and play.

Operational information

Imagine Cup provides a chance to:

- Break new ground, solve tough problems facing the world today, and maybe even turn your ideas into a business
- Get involved in the next wave of games and applications – the future is in your hands
- Learn new technological skills
- Test oneself against the brightest students around the world.

Administrative responsibility and cost

Not available

Indicators, measures of success and/or evaluations

Not available

Website

<https://www.imaginecup.com/>

5 Formalised Regional Innovation Ecosystem Measures

There are several “innovation precincts” that have been supported by industry, government, and research organisations. Precincts included in this Section have a formalised governance structure. They are supportive of the development of regional innovation ecosystems.

Many initiatives have had a very strong property development flavour. Included below are those that retain a primary focus on collaboration.

CBR Innovation Network (CBRIN)

Rationale

The CBR Innovation Network (CBRIN) is an open collaboration of innovators, dedicated to developing a thriving and diverse innovation ecosystem within the Australian Capital Territory. The ANU, University of Canberra, NICTA, CSIRO, and UNSW Canberra are foundation members.

The outcome(s) of the measure

The CBR Innovation Network links businesses and entrepreneurs to services, facilities, and stakeholders to accelerate their innovation and growth, maximising wealth creation in the ACT.

The Network takes a central role in growing the innovation ecosystem in the ACT, providing practical insights to policy development at a Territory and Federal level, and building individual and corporate capability.

Operational information

A Board that includes a ministerially appointed Director governs CBRIN. Members of the Chief Minister, Treasury and Economic Development Directorate have the right to observer status at all Board meetings

Administrative responsibility and cost

The ACT Government has played a crucial part in the establishment of the network, and continues to provide on-going base-financial and other support.

Funding: \$1.1m base funding per annum for five years

Indicators, measures of success and/or evaluations

Connected innovation ecosystem, flourishing start up environment.

Website

<http://cbrin.com.au/#weare>

Biomedical Research Victoria

Rationale

Biomedical Research Victoria (BioMedVic) is the peak body for the organisations that make up Victoria’s internationally recognised research community, providing a collective voice for advocacy and a structure for promoting collaboration and innovation.

Representing universities, teaching hospitals, medical research institutes, CSIRO and other research organisations, Biomedical Research Victoria seeks to develop shared vision, long term plans and better links between government, industry and the biomedical community.

Biomedical Research Victoria evolved from the *Bio21 Project* established in 2001 as an initiative of The University of Melbourne, Melbourne Health, and the Walter and Eliza Hall Institute of Medical Research, and the State Government of Victoria to support the development of Victoria’s fledgling biotechnology industry on the northern perimeters of Melbourne’s CBD.

Operational Information

Biomedical Research Victoria adds value to its Members and the biomedical sector by:

- Working with governments to establish priorities for investment and to inform policy development
- Advising on research strategy and securing funding opportunities
- Advancing clinical research and its translation to the benefit of patients and to improve health care services
- Inspiring biomedical career paths for students
- Driving networks for shared use of sophisticated research equipment and other infrastructure (
- Supporting commercialisation
- Creating a critical mass in Victoria that's capable of competing effectively with the emerging life sciences centres in the region.

Indicators, measures of success and/or evaluations

Not available

Website

<http://biomedvic.org.au/about-us/>

Monash Health Translation Precinct

Rationale

A partnership between Monash Health, Monash University, and Hudson Institute of Medical Research, the vision of the Monash Health Translation Precinct (MHTP) partnership is to be a world leader in translational research, generating innovative scientific discoveries and revolutionising clinical care in a dynamic and collaborative environment.

Outcome(s) of the measure

The vision of the Monash Health Translation Precinct (MHTP) partnership is to be a world leader in translational research, generating innovative scientific discoveries and revolutionising clinical care in a dynamic and collaborative environment.

Operational information

MHTP is also a critical component of Monash Partners Academic Health Science Centre. Through these partnerships, leading researchers have direct access to clinicians and patients, enabling scientific breakthroughs to reach the bedside more effectively than ever before.

To facilitate the vision of the MHTP, the partners, with the support of the Federal Government, are building an MHTP Translational Research Facility (TRF), currently under construction and due for completion in October 2015. By co-locating research institutes and clinicians, the TRF will create stronger ties between basic and clinical research teams, clinicians, and patients.

The MHTP is based in Clayton, within the South East Melbourne Innovation Precinct (SEMIP). Its location creates new opportunities for collaboration and commercialisation with some of Australia's leading research organisations and companies, including the Australian Synchrotron, the CSIRO and emerging biotechnology entities.

Administrative responsibility and cost

The MHTP Board

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.mhttp.org.au/about-mhttp>

Regional Development Australia**Rationale**

Regional Development Australia (RDA) is an Australian Government initiative that brings together all levels of government to enhance the development of Australia's regions. A national network of 55 RDA committees has been established to achieve this objective.

Operational information

RDA committees are required to:

- Consult and engage with communities
- Promote and participate in regional programmes and initiatives
- Foster economic development in the region
- Provide information and advice on their region to all levels of government, and
- Support informed regional planning.

Each RDA committee has developed a Regional Plan that outlines priorities for the region and guides them in strengthening their communities. Several RDA committees have specific programmes to build engagement between research organisations and business to further economic development objectives.

The Hunter RDA is in the process of developing a Smart Specialisation Strategy based on OECD and EU methodologies for regional development. Smart Specialisation establishes priorities for investment and research that maximise the competitive advantages of a country or region through innovation and collaboration. It seeks to build strong relationships between industry, the research sector, and government.

Smart Specialisation

The Smart specialisation' approach combines industrial, educational and innovation policies to suggest that countries or regions identify and select a limited number of priority areas for knowledge-based investments, focusing on their strengths and comparative advantages.

This entails:

- More effective spending of public resources, concentrating on certain domains of knowledge or expertise.
- The creation of synergies between public support mechanisms for R&D and innovation, industrial promotion and training institutions.
- The elimination of fragmentation and duplication of policy interventions that may result in a waste of public resources.
- The identification of the strongest or promising domains for entrepreneurship and growth through a careful analysis of the existing capabilities, assets, competences, competitive advantages in a city, region or country.
- Mechanisms to enable strategic development based on multi-faceted and multi-governance interactions.
- Mapping and benchmarking of cluster including analyses of the role and influence of key players.
- Evidence-based monitoring and evaluation systems to select the knowledge domains and innovation projects.

<http://www.oecd.org/sti/inno/smartspecialisation.htm>

Administrative responsibility and cost

Department of Infrastructure and Regional Development

Indicators, measures of success and/or evaluations

Not currently available. Review and evaluation is scheduled for late 2015.

Website

<https://rda.gov.au/>

South East Melbourne Innovation Partnership (SEMIP)

Rationale

The South East Melbourne Innovation Precinct (SEMIP) initiative is a unique partnership between the Department of State Development, Business and Innovation, CSIRO, Monash University, Australian Synchrotron, Small Technologies Cluster, Melbourne Centre for Nanofabrication and local government municipalities of Greater Dandenong, Kingston, Knox, and Monash.

Building on existing strengths and networks, the SEMIP initiative aims to improve connections between businesses and between businesses and researchers providing potential for significant long-term job creation in the South East Melbourne region.

Operational information

There is a 12 member executive team.

A SEMIP Strategic Plan provides potential for significant long term job creation for the Victorian and Australian economy:

- Australian Synchrotron - Australia's newest and brightest major national research facility
- Monash University - Australia's largest university, with over 26,000 students located in the SEMIP region
- CSIRO's largest Research and Development site - focussing on materials science, engineering, medical and health technologies
- Southern Health - head office of Victoria's largest health network
- Melbourne Centre for Nanofabrication - state of the art instrumentation for nano and micro scale fabrication
- Flagship companies include: ABB, Advanced Polymer Technology, Amcor, Aortech, Biota, BMW, Bristol-Myers Squibb, Ceramic Fuel Cells, Daimler, Davey Water Products, Dulux, EcoWise, Ego, Fontera, GBC Scientific, Glaxo Smith Kline, Hospira, IDT Pharmaceutical, Invetech, Leica, L'Oréal, Lockheed Martin, Mayne Pharma, Mazda, MiniFAB, Marand Precision Engineering, NCR, NEC, Nestlé, Nintendo, Nissan, RP Scherer, Recaldent, Robert Bosch, SGE, Shimadzu, Siemens, Sigma, Steritech, STC, Telstra, Toshiba, Toyota, Universal Biosensors, Varian, VCAMM and Viridian.

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.semip.org.au/>

6 Early Stage Venture Capital Investors

Australia's start-up ecosystem and early-stage venture capital scene has been growing in sophistication for several years. However, promising companies still regularly relocate to larger start-up communities such as Silicon Valley, New York, Tel Aviv or London to access later stage capital, characterised as cheques of \$5 million or more.

There is a small number of privately owned early stage venture capital companies emerging that have strong connections with universities and publicly funded research agencies. Several of the most active are described below.

Artesian Ventures¹⁷

Rationale

Artesian Venture Partners is a seed investor, originally spun out of ANZ Banking Groups capital markets business in 2004. The fund manages several seed funds in collaboration with Australian universities. The fund takes a long-term view with a five-year investment period and five-year wind down.

Artesian expertise is in raising capital and doing the investment management aspect of this. It saw incubators and university programmes as best placed to act as a funnel for the start-ups, to screen and mentor them.

Outcomes of the measure

Partnering with university and private sector incubators allows Artesian to scale on the analysis side of the operation – that is, the seeking out of companies and doing due diligence.

The aim is to roll out the platform and support this ecosystem in Australia. The Fund considers that in very early venture space – seed capital and angel capital – it is important to have a lot of investments. As a large number of start-ups fail, and a large percentage of returns in the early-stage venture capital come from a fairly small percentage of start-ups.

The longer-term aim is to ultimately convince larger investors it is worth investing in start-ups as part of a diversified portfolio. Currently wealthy individuals and angel investors with start-up experience dominate investment in early-stage companies. If Australian start-ups can show a better track record of success and get some headline-grabbing exits, more investors will become interested.

Artesian considers that the only way that institutional money may invest in start-ups is to prove this it is a real asset class. To do that at an institutional level small institutions need to be allowed to invest in a diversified portfolio across the start-up space. To do this they could have access to ilab in Queensland, the Slingshot accelerator in Newcastle, and other university programmes or accelerator programmes in Melbourne, Canberra, Perth or regional Australia – all in one fund.

Operational information

Partners with experience in the early stage investment field manage Artesian Ventures.

Indicators, measures of success and/or evaluations

Artesian has made around 30 direct investments in Australian start-ups since it began investing in the early-stage sector four years ago.

Website

<http://www.artesianinvest.com/>

¹⁷ Material largely sourced from
http://www.brw.com.au/p/entrepreneurs/artesian_ventures_queensland_form_dBX5TTnhYV0ty6gj4dIAUI

iAccelerate Seed Fund

Rationale

The University of Wollongong's (UOW) iAccelerate initiative has launched a \$10m seed fund targeted at Australian early and advanced start-ups to grow and thrive.

PwC who were key advisors in the structuring the fund is also involved.

The fund aims to attract investors with a passion and commitment to the start-up sector who will contribute to the \$10m seed fund pledge. In turn, the fund will provide investors with access to a unique pipeline of early stage business investment opportunities.

All companies accepted into the UOW iAccelerate incubator programme (see below) will be able to apply for seed funding from the fund. This means investor risks will be lessened due to the support and development provided to the start-ups through the iAccelerate programme and its rigorous assessment process.

ilab Accelerate Investment Fund

Artesian Ventures has also partnered with the University of Queensland's commercialisation arm UniQuest to build a \$1.5m "Accelerate Investment Fund" which will invest in graduates from UQ incubator ilab.

ilab is part of a growing ecosystem for start-ups in Queensland, including River City Labs, Brisbane City Angels and the Gold Coast angels.

Slingshot investment Fund

The \$10m Slingshot Venture Fund was formed in partnership between Artesian and Hunter Valley regional accelerator, Slingshot.

The Slingshot Venture Fund makes seed and follow-on investments in capital efficient technology focused start-ups from the Newcastle based Slingshot Accelerator program.

http://www.slideshare.net/proto1234/slingshot-venture-fund?from_action=save

Blackbird Ventures¹⁸

Rationale

Blackbird Ventures is a collection of Australia's most successful start-up founders and Silicon Valley's top investors interested in seed stage investing. It will target tech companies that would previously have headed overseas in search of bigger investments, and will exclusively back Australian companies.

It has a particular focus on consumer and social Internet, software as a service, mobile, e-commerce and software tools and services. It is attracted to businesses that are taking advantage of digital marketing and sales, where the sales cycle is short and/or revenue is recurring.

The fund is designed to boost the local ecosystem by backing companies with worldwide visions. It has a focus on companies with global growth potential, rather than companies making Australian versions of successful existing overseas models.

Operational Information

Blackbird ventures is Australia's biggest-ever technology start-up venture capital fund, with more than \$200m set aside to back growing companies. It is more than double the size of the next-largest Australian tech fund AirTree Ventures at \$60m.

¹⁸ Material sourced from http://www.brw.com.au/p/entrepreneurs/finally_super_funds_gazelles_startups_BbFEQApcTc4xENkGSmoUBP and <http://www.theaustralian.com.au/business/in-depth/blackbird-venture-capital-fund-to-support-local-tech-start-ups/story-fnw66tov-1227527693546>

Ninety-six technology entrepreneurs including [Atlassian](#) co-founder Mike Cannon-Brookes, as well as two major superannuation funds, First State Super and Hostplus Super, have backed the fund.

Indicators, measures of success and/or evaluations

The first fund has invested in 13 companies with two successful exits, and only one of its start-ups failed and shut down completely in its two years.

Blackbird's existing investments include design software Canva, cryptocurrency platform CoinJar, human resources insights software CultureAmp and education software Edrolo.

Website

<http://blackbird.vc/>

GBS Ventures

GBS Venture Partners is a life sciences venture firm founded in 1996. Investors include major Australian superannuation funds. GBS manages over \$400m across five funds.

Rationale

GBS provides funding from the early stages of company initiation and technology proof of concept through to later stage investments in companies approaching the final stages of product approval or market launch. The firm specialises in incubating ideas—working with inventors to capture ideas and transform them into viable start-up ventures.

Areas of particular interest and expertise include human healthcare, biotechnology product development and life science start-ups. Recent investments have included biological or small molecule therapeutics, medical devices and diagnostics.

Operational information

GBS seeks to lead investments in companies which have, or can develop, the following attributes:

- A significant Australian presence with assets, employees or activities in Australia
- World-leading technology with comprehensive patent protection based on excellent science and with the potential for multiple applications
- An experienced management team, or an entrepreneur who will form the nucleus of the management team
- Significant international market opportunities
- A business with a coherent commercialisation plan, rather than a stand-alone project
- Potential for a high return on investment, and an identifiable exit mechanism, such as a public flotation or trade sale

Particular areas of interest include therapeutic or device opportunities from product focused companies at or near the clinic.

Typically, GBS invests in a syndicate with other investors, with the expectation of further funding if the venture is successful.

Indicators, measures of success and/or evaluations

The GBS team has financed companies with a combined market capitalisation approaching \$2 billion.

GBS investee companies have consistently raised significant funds from international venture syndicates and NASDAQ and ASX capital markets to develop valuable biotech products. Examples include:

- Celladon: US\$200 m+ during seed, venture, NASDAQ IPO and public market rounds.
- Peplin: AU\$100 m+ during seed, venture, ASX IPO and PIPE rounds.
- Pharmaxis: AU\$200 m+ during seed, Series A, ASX and NASDAQ IPO and public market rounds.
- Spinifex: US\$8 0m+ during seed, AU Series A and B and US Series C rounds.

Website

<http://www.gbsventures.com.au/>

Right Click Capital

Rationale

Right Click Capital is an investment firm that specialises in identifying and investing in high-growth early-stage Internet-based businesses.

It backs Internet founders who are building remarkable businesses, helping them craft a bigger vision and working with them to make it a reality.

Partners have over three decades of combined experience in building and investing in Internet-based businesses. They have invested in or co-founded over twenty companies.

Operational information

The firm is based in Sydney and invests in businesses based in Asia/Pacific. It provides:

- Access to Asia-Pacific's premier Internet investment opportunities
- Access to our proprietary market analysis and research through [Internet DealBook](#)
- Access to our expert team of thought leaders in the Internet space

Website

<http://www.rightclickcapital.com/>

Starfish Ventures

Starfish was founded July 2001. It has raised three funds totalling over \$400m.

Rationale

Starfish seeks to partner with companies that address a global high-growth market opportunity and leverage novel technologies to create a new market or supply new products or services to an existing market. The investment focus encompasses information technology, life sciences and cleantech.

Starfish supports commercialisation of Australian R&D, and has undertaken 19 investments with universities and research institutes across Australia.

Operational information

Starfish Ventures partners with entrepreneurs to build successful innovative global technology companies. With expertise in venture capital investing, entrepreneurship and technology Starfish navigates the challenges of seeding, building and managing high-growth technology businesses from an Australian base

Indicators, measures of success and/or evaluations

The team has invested in over 60 companies to date with 14 trade sales and IPOs, including listings on the NASDAQ, AIM and ASX.

Website

<http://www.starfishvc.com/>

Sydney Seed Fund

Rationale

The Sydney Seed Fund is an early stage investment fund managed by [experienced entrepreneurs](#) looking to invest in Australia's most [passionate tech founders](#). Backed by a skilful investment team, international advisors and group of investors, the Fund aims to invest in 20 start-ups with approximately \$100,000 of funding per company.

Outcome(s) of the measure

The Fund's investment strategy is based on the following:

- The calibre of the founders trumps everything else in a pre-revenue business.
- Investing in start-ups that have two or three founders.
- Investing in businesses that can reach global scale.
- Investing in businesses that have greater than a \$1B global market.
- The power of the network, bringing together founders and investors in person to develop strong and deep relationships.
- Making decisions quickly.
- Momentum plays a huge role in a start-up's success.
- Leading the first round of a start-up's investment.
- Helping our founders to the best of our ability through the early days of their business.
- All investment funds should be collaborative and non-competitive.
- Doing everything we can to help grow Australia's start-up ecosystem.
- Finding **EPIC** founders – those who can **E**xecute flawlessly, those with broad **P**erspective who can see the forest from the trees, those with a sharp **I**ntellect and those who can **C**ommunicate clearly to anyone.

These attributes are reflective of the more general approach to seed financing.

Operational information

Ten Fund works through an "industry-leading ecosystem" that provides a platform to connect investors with founders on a frequent basis. It is claimed to be the most collaborative and supportive way to share skills and experience between fund investors, investment managers, investee founders and mentors, thereby accelerating the opportunities for global success.

The ecosystem offers:

- The facility to unlock the value of the Sydney Seed Fund's broader industry networks for investee companies (such as follow-on investors, team members, suppliers and potential acquirers).
- Regular Sydney Seed Fund dinners for founders and investors, where they can share experiences, provide updates, facilitate knowledge sharing and explore opportunities.
- An online/offline network, connecting local founders and investors with each other and similar regional and international networks.
- A shared resource library, including templates and commonly used tools.
- Founder peer-to-peer learning through private forums and regular informal events.
- Opportunities to join other founders and investors in attending or participating in local, regional and international demo days, industry briefings, networking events and conferences.
- Ongoing development events, featuring outside expert speakers.

Website

<http://www.sydneyseedfund.com.au/about/manifesto/>

Telstra Ventures

Telstra Ventures is a corporate venture capital group founded in 2011 as a wholly owned subsidiary of Telstra Corporation. It invests in breakthrough companies that are strategically important to Telstra.

Rationale

TV's investment strategy is focused on high growth opportunities that offer technology and solutions that leverage Telstra's assets and enable Telstra to offer new products and services to its customers.

Operational information

Areas of strategic interest include cloud, mobile, and media-related companies including video content management and monetisation for publishers, products targeted to making CIOs' operations more efficient; cloud automation, configuration, orchestration and security, and managed services and healthcare ICT (excluding biotechnology).

Telstra Ventures has partnership with NICTA and plans to work with Deakin University, the George Institute, and the University of Technology, Sydney

Indicators, measures of success and/or evaluations

Telstra Ventures recent investments include:

- Gorilla Technology Group – a leading video data and analytics company
- Elastica to improve enterprise cloud security
- Zimperium to improve mobile security
- Elemental to deliver software defined video solutions
- Bigcommerce to power SMB ecommerce
- AdNear a leading location intelligence company
- eSignature and digital transaction company, DocuSign
- Mobile Identity Service company Telesign
- MATRIX, enabling Telcos to become digital service providers
- Nexmo, a leading API provider to the OTT market
- Box's secure file sharing cloud solution
- Ooyala to accelerate adoption of market leading video analytics
- Pharmacy health software company, FRED IT Group
- Electronic health record specialists IP Health
- Leading mobile apps provider Kony.

Website

<https://www.telstra.com.au/ventures>

7 Toolkits, Intellectual Property Databases, and Guides

A selection of toolkits, databases and guides to assist in the translation of research is provided in this Section.

Australian IP Toolkit

Rationale

The Australian IP Toolkit for Collaboration has been prepared by the Department of Industry and Science to help drive greater collaboration between researchers and business which is critical to Australia's future growth and competitiveness.

Development of the IP Toolkit involved extensive consultation with stakeholders to ensure that it meets the needs of Australian businesses and researcher.

Outcome(s) of the measure

The toolkit aims to link research with industry to allow for better translation of ideas into tangible goods and services, technologies and life improvements.

The Government expects that by providing guidance on how to develop partnerships and manage intellectual property researchers and businesses will be equipped with the practical tools that they need to collaborate. The Toolkit is expected to be particularly useful for small to medium enterprises and researchers, and save them time and money and increase the effectiveness of collaboration.

Operational information

The Australian IP Toolkit has tools for use in collaboration and has model contracts that can be used as a neutral starting point for research collaboration. It provides key information, such as tips and case studies, in a user-friendly format.

The Department of Industry and Science and IP Australia have jointly developed the Toolkit.

Administrative responsibility and cost

Department of Industry and Science and IP Australia

Indicators, measures of success and/or evaluations

The IP Toolkit will be continually evaluated and updated in line with user feedback, to ensure it remains current.

Websites

<http://www.business.gov.au/IPToolkit>

<http://www.business.gov.au/business-topics/business-planning/intellectual-property/ip-toolkit/Pages/default.aspx>

IP Australia Data Base: AusPat

Rationale

AusPat is IP Australia's search database that allows inventors, industry and researchers to access patent applications lodged and granted in Australia.

An eDossier system allows users to view documents that are Open for Public Inspection (OPI) within AusPat. It includes documents for applications that are from the year 2006 onward, i.e. prefixed by 2006 or greater.

Administrative responsibility and cost

IP Australia

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.ipaustralia.gov.au/auspat/about.html>

ARC Grants Search

Rationale

The ARC Grants Search is a web-based search tool that allows stakeholders to search for information on ARC-funded research projects.

Administrative responsibility

Australian Research Council

Indicators, measures of success and/or evaluations

ARC Grants Search is a recently established initiative that can be expected to help inform strategic decision-making by universities and other research performing agencies, individual researchers and research teams, and industry end-users of research, both within Australia and overseas.

Grants Search can support, for example, identification of opportunities for collaborative research, as well as research priority- and direction-setting activities within collaborative partnerships. It can also be expected to be useful as a source of information to underpin research policy within government and elsewhere.

Website

<https://rms.arc.gov.au/RMS/Report/Download/Report/d6b15b2b-3a50-4021-8e6f-6c7ef1cba553/0>

NHMRC Research Funding Data - 2000 to 2014

Rationale

The All Grants – 2000 to 2014 dataset contains details of all research grants during the period from 2000 to 2014. The dataset contains all publicly available details including research achievements and expected future outcomes from Final Reports when available.

The Summary Tables 2000 – 2014 dataset contains tables that summarise the data from the All Grants – 2000 to 2014 dataset. These summaries include funding by the main funding groups, grant types and sub types, States and Territories, research sectors, broad research areas and administering institutions.

Administrative responsibility and cost

NH&MRC

Indicators, measures of success and/or evaluations

Not available

Website

<https://www.nhmrc.gov.au/grants-funding/research-funding-statistics-and-data>

Australian Technology Showcase

Rationale

The Programme, supported by the NSW Government, identifies innovative, market ready Australian technologies with global market potential, and provides support through seminars, networking and

showcasing to local and international markets. Participating companies are able to gain additional assistance tailored to local market needs from respective State government programmes.

Businesses nominating a technology for membership must have an innovative, Australian-developed technology with global market potential, supported by intellectual property. The company must be a small to medium sized business with annual turnover of less than \$10m, have controlling ownership resident in Australia, and own the intellectual property in their technology.

Administrative responsibility and cost

NSW Department of Industry

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.ats.business.gov.au/about-ats>

Find an Expert Guides

Rationale

Many universities have established websites that profile their staff expertise. Sites can be targeted either at industry collaborators, or for journalists for media commentary.

Operational information

Development and maintenance of sites are generally the responsibility of universities. Sites are managed either by a Technology Transfer Office, a Research Office, or a Media Office. Some universities have faculty specific sites.

University staff supply information through templates. The level of editing varies among universities.

Websites

General:

- Find an expert - <http://www.expertguide.com.au/default.aspx>
- Food Innovation - <https://www.enterpriseaccess.com/>

New South Wales

- Macquarie University - <http://mq.edu.au/newsroom/find-an-expert/>
- Southern Cross University - http://scu.edu.au/scunews/experts/index.php?action=search_by_tab&criteria=112
- University of Newcastle - <https://www.newcastle.edu.au/contact/media-centre>
- UNSW (Unisearch Expert Opinion Services) - <https://www.unisearch.com.au/forms/briefing-form>
- UNSW - Built Environment - <https://www.be.unsw.edu.au/staff1/find-an-expert>
- UTS - <http://www.uts.edu.au/research-and-teaching/industry-partnerships/ways-engage/find-expert>
- The University of Sydney - <http://www.flinders.edu.au/medicine/sites/health-care-management/research/hcm/expert.cfm>
- University of Wollongong - <http://www.skills.itc.com.au/>

Victoria

- Deakin - <http://www.deakin.edu.au/marketing/media/>
- La Trobe - <http://www.latrobe.edu.au/news/find-an-expert3/index.php?keyword=all&page=24>
- Monash University - <http://www.monash.edu/people>
- The University of Melbourne - <http://findanexpert.unimelb.edu.au/>

Queensland

- CQU - <https://www.cqu.edu.au/research/current-research/find-an-expert>
- Griffith University - <http://research-hub.griffith.edu.au/>
- James Cook University - <http://www-public.jcu.edu.au/news/findexpert/>
- QUT - <https://www.qut.edu.au/news/expert-guid>
- The University of Queensland (Uniquet) - <http://uniquet.com.au/find-expert>

South Australia

- The University of Adelaide - <http://www.adelaide.edu.au/research/researchers/expert/>
- University of South Australia - <http://w3.unisa.edu.au/cmkm/media/expert.asp>
- Flinders University - <http://www.flinders.edu.au/medicine/sites/health-care-management/research/hcm/expert.cfm>

Western Australia

- Curtin University - <https://experts.curtin.edu.au/>
- Murdoch University - <http://www.murdoch.edu.au/News/Find-an-expert/>
- University of WAS - <https://www.socrates.uwa.edu.au/Staff/ProfileList.aspx?Cmd=Search>

Tasmania

- University of Tasmania - https://rmdb.research.utas.edu.au/public/rmdb/q/indiv_detail_warp_ko

ACT

- ANU - <http://www.anu.edu.au/news/for-journalists>
- University of Canberra - <http://www.canberra.edu.au/expert/index.cfm>
- <https://www.anzsog.edu.au/about-us/media-centre-home>

With this scope of website material available, finding an expert across the university sector can be a challenge. There are opportunities to aggregate this information into an information system that is readily accessible and useful for industry and business.

Australia Council - Synapse programme

Rationale

The Australian Network for Art and Technology (ANAT) provides opportunities for artists and scientists to work together. The most recent projects, delivered under the Synapse brand in partnership with the Australia Council for the Arts, include residencies, the Synapse database and a moderated e-list.

Operational information

The Synapse database contains comprehensive information on collaborative projects between artists and scientists. Such projects include the research, development and production of work through residency programmes and other means, as well as exhibitions and publications concerned with this interdisciplinary practice.

Administrative responsibility and cost

Australia Council

Budget 2015-16: \$0.065m

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.synapse.net.au/>

Queensland Inventor Service

Rationale

Queensland Inventor Service is a free web-based self-help system with resources that can be used by businesses to assess ideas and prepare for market entry.

Administrative responsibility and cost

Queensland Government

Indicators, measures of success and/or evaluations

Not available

Website

<http://www.qldinventorservice.com.au/>

8 Independent Innovation Intermediaries

Innovation intermediaries are independent third parties that play an integral part in developing collaborative activities supporting any aspect of the innovation process. They can play a key role in the transfer and translation of knowledge and technologies from creators to users in a business (commercial) context.

Intermediary roles supported by government and publicly funded research organisations are discussed in earlier parts of this Report. There is, in addition, a range of independent intermediaries that work on a brokerage, agency or consultancy model.¹⁹ There is also a range of specialist IP Lawyers, Patent Attorneys, and Taxation Advisers that specialise in this field.

A sample of organisations active in this area is provided below.

Biolink

Rationale

Bio-Link aims to assist clients to source funding to support commercialisation activities, and to support commercially focused research and development of client technologies and programmes.

Operational information

Eligible clients and projects are able to apply for Skills and Knowledge Grants from the Federal Government Entrepreneurs Programme to support their engagement of Bio-Link. Bio-Link has a strong record of assisting clients to apply for and receive these grants.

Indicators, measures of success and/or evaluations

Bio-Link has assisted clients with applications to the Australian National Health and Medical Research Council (NHMRC) Development Grant scheme, Commercialisation Australia Proof of Concept Grant scheme, NSW Medical Devices Fund, US SIBR, US National Institute of Health U01 and US Therapeutics for Rare and Neglected Diseases (TRND) grants, and philanthropies such as the Epilepsy Therapy Project (USA), Michael J Fox Foundation (USA) and Thrasher Foundation (USA).

Website

<http://bio-link.com/>

Intellectual Property Research Institute of Australia

Rationale

The Intellectual Property Research Institute of Australia (IPRIA) was established in March 2002 as an initiative of IP Australia to increase the understanding, creation, use and exploitation of intellectual property by Australian organisations and individuals.

The focus is to move understanding and engagement with intellectual property from a technical to a strategic consideration. Intellectual property in this context is broader than formal intellectual property rights and includes the management of knowledge, personnel and intangible assets.

The Institute is a collaborative research centre located at the University of Melbourne with significant funding from [IP Australia](#). The core faculties are the [Faculty of Business and Economics](#), the [Melbourne Law School](#) and the [Melbourne Business School](#).

Outcomes

IPRIA's objectives are to:

- Support and generate development of high-level public policy in relation to intellectual property issues

¹⁹ For a more detailed discussion see *Study of the Role of Intermediaries in Support of Innovation* at <http://www.industry.gov.au/innovation/reportsandstudies/Documents/InnovationIntermediariesReport.pdf>

- Optimise the protection, management and exploitation of intellectual property by all Australian stakeholders, including research institutions, public and private sector interests
- Help create an informed environment for, and contribute to, on-going public debate in Australia about intellectual property issues and related matters, including innovation policy and economic growth.

Operational information

The Institute publishes

- Australian Patent Applications Scoreboard

A comprehensive collection of data about the number of patent applications made in Australia each year. It is a useful reference across a number of disciplines and industries.

As it contains a large amount of information about patent applications in an easily accessible form, the Scoreboard is a useful tool for enterprises that facilitate the commercialisation of research projects.

- The Australian Trade Mark Applications Scoreboard

This publication provides an informative analysis of the trademarks landscape in Australia. It provides an overview of the number of trademark applications in Australia (and whether these applications originate in Australia or overseas); trademark applications by class; and trademark applications filed by attorney firms.

- R & D Intellectual Property Scoreboard: Benchmarking Innovation in Australian Enterprises

Full data file costs \$A150, including GST.

The institute also publishes books and research papers relating to the Australian IP system, and organises events seminars, conferences, workshops and delivers education and training.

Website

<http://ipria.org/home>

QMI Solutions

Rationale

QMI Solutions works with entrepreneurs, industry, research organisations and governments, bringing together a wealth of knowledge to help businesses improve and grow.

Operational information

QMI Solutions is positioned as an integrated centre of excellence for business, manufacturing and industry. It is a specialist consulting team dedicated to helping Australian industry improve by introducing new ideas and business tools that help solve their challenges.

The Australian Institute for Commercialisation (AIC) is a division of QMI solution and provides a range of innovation and collaboration services. The Institute works nationally with entrepreneurs, businesses, research organisations and governments to convert ideas or intellectual property into successful business outcomes.

Websites

<http://www.qmisolutions.com.au/qmi-solutions-about-us/>

<http://www.ausicom.com/>

Gemaker

Rationale

Gemaker is a team of consultants that provides market research, marketing and sales advice to publicly funded research organisations, and Technology Transfer Offices.

Website

<http://www.gemaker.com.au/>

IP Pragmatics

Rationale

IP Pragmatics assists clients identify, manage and create value from a broad range of intellectual property assets through a combination of value creation and cost management services.

Operational information

The company is headquartered in London, UK with strategic partners in Japan and North America. In 2010 an office in Sydney, Australia was opened.

It seeks to create value through licensing, spin-out company creation and enhancing commercial service offerings for clients in the UK and overseas

Website

<http://www.ip-pragmatics.com/home-intellectual-property-services/>

Grant Writing Consultants

There is a large number of consulting firms that specialise in preparing grant applications for universities, research organisations and institutes for government funding programmes. Many specialise in assisting firms access the R&D Tax Incentives Scheme.

A partially complete listing of grants writers is at

<http://business.grantguru.com.au/MyGrantSpace/?section=FindGrantwriter>

9 Conclusion

The material presented in this report about the programmes and initiatives to facilitate the translation of research for economic and social benefit point to a very wide range of measures that have been adopted and applied by the Federal Government, State/Territory Governments, regional organisations and universities.

The range of schemes also points to wide diversity, but suggests the emergence of a ‘distributed’ structure with the Federal Government taking on nation-wide roles and the States/Territories and universities developing measures that are directed towards their own jurisdictions and innovation ecosystems.

While there are a large number of measures, only a few have been reviewed and evaluated. It is difficult, therefore, to discern whether measures have achieved their objectives. Evaluation would also assist in determining whether programmes have been developed on the basis of a sound ‘theory’ or whether they have been a response to a symptom of a problem rather than an underlying cause.

Some programmes, such as the Innovation Investment Fund (IIF), which had a strong element of university-business collaboration, have been suspended. Nonetheless, a publicly available evaluation of this and similar initiatives would assist in designing future initiatives.

In the design and development of further measures it is important to ensure that they address the unique institutional setting of a modern university and research organisation. Universities can no longer be regarded as a simple ‘community of scholars’, a knowledge ‘repository’, or even a knowledge ‘factory’ engaged in the production and distribution of knowledge.

Organisationally, universities in Australia are very similar in their foundation statutes. But with growing pressure to secure funding from non-government sources, including fee paying students and leveraging their substantial asset bases into income streams, they have evolved into highly complex and diverse business enterprises. They remain as public organisations, but they manage very large budgets with increasing amounts of discretion.

Universities are businesses that constitute a higher education industry that is global in nature. In 2012 total revenues of Australia’s 39 public universities amounted to \$25.2 billion. The largest university, in terms of revenues, was The University of Melbourne, with an income of \$1.81 billion, followed by The University of Sydney, with revenues of \$1.74 billion. Three other universities had revenues of around \$1.5 billion. These universities are also among some of the largest business organisations in the country. The export of higher education services is also the nation’s third largest export earner.

In some cities and regions a university is the largest business, in terms of revenue and employment, and has a substantial economic impact²⁰. By international standards, most Australian universities are relatively small – but they compete nationally and globally – for students and research funds. At a regional level, where there is only one university, success in this competitive environment can be important for regional development as universities develop strongly targeted research capabilities (for example, medical and energy research in the Hunter) and recruit large numbers of international students.

University autonomy means that they all have different policies, procedures, and communication channels. This affects the development and maintenance of consistent procedures and protocols for industry engagement – like the multiple ‘find an expert’ websites mentioned in this report. Unlike the US, Australia does not have State based university systems.

A modern university can be far more complex than most industrial corporations, undertaking many activities - some for profit, some publicly regulated, and some operating in highly contested markets. However, their activities centre on the core missions of teaching and research – but with a framework of plans, budgets, and accountability. Like industrial corporations, universities are

²⁰ The combined total economic contribution of the University-related sector to the Australian Capital Territory (ACT) exceeded \$1.7 billion in 2012 and about 11,500 full time equivalent employees. http://www.canberra.edu.au/blogs/vc/files/2014/12/UC_ACT-Universities-Economic-Contribution-Final.pdf

required to report annually in relation to income, expenditure, and bottom line performance. In addition to academic objectives, most universities now have financial performance objectives.

In keeping with English traditions the Chief Executive Officer (CEO) role in Australian universities has traditionally been referred to as Vice-Chancellor. More recently, Vice-Chancellors have also taken the title of President, in an American tradition, to reflect the greater business orientation of the university. Traditional academic titles such as Registrar and Bursar have been replaced with more corporate senior executive roles defined as Chief Operating Officer, Chief Finance Officer, Director Human Resources, Director Marketing, and Director Information Technology.

Vice-Chancellors now spend a great deal of time engaging with stakeholders, including government policy and funding agencies, business, and others about the overall development and progress of the university. Their key role is to position their university academically and strategically – nationally and globally. Their remuneration levels reflect this changed Chief Executive Officer role. Increasingly decisions are made on a business basis, *including* decisions to undertake research for industry.

As the business orientation of a modern university emerges they are becoming more active players in regional innovation systems and ecosystems. Vice-Chancellors are being invited to join, and lead, local business groups and forums. At a system wide level, the Australian Vice-Chancellors Committee has transformed into Universities Australia which functions as an industry lobby organisation in the same way as many other peak industry bodies.

State governments are keen to ensure that their nominees to university councils or senates have business experience. Several universities have appointed prominent business people to the role of Chancellor to build business connections.

The emergence of the corporate university has implications for the way that businesses and industry interact with the academic community. Universities have a *commercial* as well as an academic interest in the development of strategic partnerships with industry on a ‘business to business’ basis. These arrangements can be multi-faceted, longer term, and purposefully driven. They involve the input of university executives (from the ‘Chancellery’, or corporate HQ) in negotiations with CEOs and senior executives in business. Many of these deals have a multi-million dollar value.

Interactions and relationships are best built around alliances, partnerships and joint ventures – where there is a common and shared interest for all parties, but at the same time acknowledging and respecting the fundamentally different core institutional missions. They are inevitably built on high levels of trust between parties, which can take many years to develop. The drivers in these relationships are often similar to business-to-business (B2B) strategic alliances.

There are some very large deals being negotiated, principally with international businesses. The pattern of relationships and interactions has moved well beyond a transactional approach of ‘buying and selling’ knowledge products based on intellectual property rights. Strong intellectual property will, however, be important for a ‘seat at the table’ in negotiations. Apart from the CRC model, there are few examples of best practice in university-business collaboration governance.

The more successful universities and business are in building collaborations, partnerships, and alliances, particularly at the regional innovation ecosystem level, the greater will be the benefit to both sectors and the contribution to the national economy in terms of economic growth, exports, employment, and productivity performance. Universities are playing their part by active investment and involvement, and engagement in regional innovation systems.

The measures identified in this report point to achievements that are being made in developing regional innovation ecosystems, with little direct involvement of the Federal Government. However, the Federal Government has a key role in providing critical infrastructure in terms of funding national facilities, competitive research, intellectual property protection, information, and innovation systems research. The Education Investment Fund (EIF) supported a number of projects that had a strong translation element through support for science and innovation precincts and hubs.

State Governments have also emerged as key players in facilitating relationships between universities and the business community in addressing state/territory development and growth priorities. The commitment and range of support varies considerably, reflecting the diversity of policies and priorities to support science and innovation and its role in creating jobs.

The States, together with the Commonwealth, have made a major commitment, over many years, to building research capability and research translation in the health area. There has also been a strong tradition in supporting agriculture and mining research. The emphasis is tending to shift towards advanced digital and key enabling technologies – which also have application in these traditional domains.

Collaboration in Australia is limited by the very high level of foreign ownership in large corporations operating in Australia. These corporations undertake R&D on a global basis and select countries to undertake research on the basis of local capability, including availability of research expertise and relationships with universities and research organisations. Boeing and Kimberley Clark, for example, have long-standing relationships with CSIRO, and Ford Motor Company has continued its research in Melbourne with collaborations with Melbourne, Deakin, RMIT universities and the ANU.

Global steel giant Boasteel has a collaboration with four universities and global pharmaceutical companies also have important collaborations in drug discovery, clinical trials, and commercialisation. Collaborations are also emerging in the ICT area with new centres being supported by IBM, HP and Cisco. Large mining companies support research through AMIRA, which in turn contracts with universities and large agricultural companies support research through the RDC levy system. Much of this research is undertaken in CSIRO and universities with strong veterinary and agricultural science capabilities.

But the problem is largely with SMEs. Small to medium size businesses do not, by their nature, commit heavily to research and development, and what they do tends to be at the applied end of the spectrum. The sort of research being undertaken in universities and research organisations has limited application in SMEs concerned with short-term issues – such as staying in business, generating the next order, and meeting the next payroll.

This situation suggests a number of solutions, or pathways, including:

- Support for start-ups, where the venture backed start-up model is relevant and appropriate, such as in the development of businesses around key enabling technologies and technology applications. This support comes through locally and regionally based incubators and accelerators, and locally based early stage technology investors.
- Education and training of engineers, mathematicians, statisticians and designers who can take a place in technology and design firms that are looking to expand, transform, and diversify to enter new markets and global value chains.
- Acknowledging and supporting the important initiatives that universities are taking, particularly through their engineering, ICT, design and business schools, in preparing students for careers in business – either as employees or founders of their own businesses. They are providing support for innovation contests, start-up programs (including incubators and accelerators), internships and placements, capstone projects, and innovative workspaces.
- Universities taking an active role in the development of networks, in collaboration with business and government, to cultivate an engagement framework with SMEs. This can lead to collaborative projects with PhD students as well as senior undergraduate students. It can also lead to the development of be-spoke teaching programmes.

Much could be learned from the initiatives that have been implemented for translation of economic benefit in the medical research area for potential application in other industries.