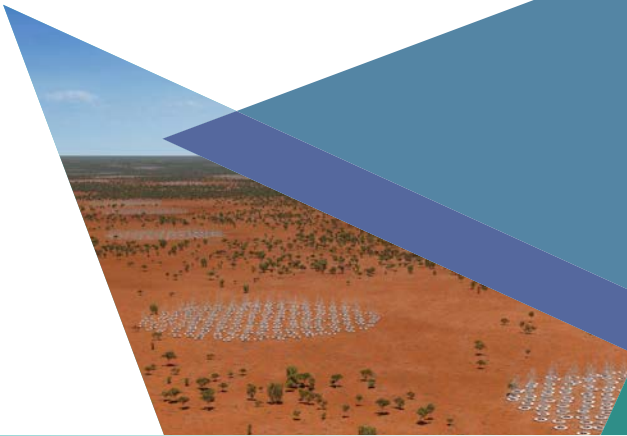




Australian Government



Innovation and
Science Australia



ANNUAL REPORT 2018–19



Online version

The online version of this report can be accessed:

www.industry.gov.au/ISA

Contact

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Letter of Transmittal



Innovation and
Science Australia

Chair

The Hon Karen Andrews MP
Minister for Industry, Science and Technology
Parliament House
CANBERRA ACT 2600

Dear Minister

I am pleased to present the Innovation and Science Australia Annual Report on its activities for the financial year ended 30 June 2019, prepared in accordance with section 46 of the *Industry Research and Development Act 1986*.

Innovation and Science Australia was established on 20 October 2016, prior to then it was known as Innovation Australia.

Sincerely,

A handwritten signature in blue ink, appearing to be "AS", with a horizontal line underneath.

Andrew Stevens
14 November 2019

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Innovation and Science Australia's strategic objectives

Objective 1: Inform Australian Government policy on Australian innovation, science and research.

Objective 2: Oversee innovation programs to ensure effectiveness and efficiency of delivery.

Objective 3: Advocate and champion for Australia's innovation, science and research system.

Welcome from the Chair



I am pleased to present the *2018–2019 Innovation and Science Australia (ISA) Annual Report* for the first time in my capacity as Chair of the ISA Board. It has been an exciting and interesting start to my tenure, taking over from the inaugural Chair Bill Ferris AC, leading the Board through a Commonwealth election period, engaging with departmental and ministerial stakeholders, and confirming the direction for ISA's future areas of focus.

Departing members and new appointments bring an interesting and diverse mix to ISA's Board. My background puts me in good stead to drive important conversations with ISA colleagues on how, and more importantly why, Australia needs to transition to an innovation-driven economy based on delivering unique value propositions in a globally competitive economy. I appreciate the opportunity to take on this new role and work with a talented group of individuals passionate and curious to drive change and innovation.

ISA continues to pursue its mandate to provide strategic whole of government advice on all science, research and innovation matters. The Board, CEO and the Office of Innovation and Science Australia (OISA) are committed to providing quality leadership and advice to help ensure Australia realises its full innovation potential. Effective stewardship of a contemporary innovation system involves both ongoing monitoring of incoming performance data and broader developments in the ecosystem, as well as in-depth analysis of ongoing weaknesses that hold the system back.

Consistent with our previous work, ISA continues to believe that a key to ensuring Australia has a strong, resilient economy is creating an environment where Australian businesses (private and public sector) are internationally competitive through their ability to innovate. In the 2018–19 year we therefore sharpened our focus on understanding the underlying issues which contribute to Australia's measured decline in business expenditure on research and development, as well as updating our understanding of the key drivers and challenges impacting business investment in innovation more generally. We are undertaking this work against the backdrop of a rapidly evolving innovation landscape internationally, with a growing recognition of the role played by intangible assets, continued debate around the appropriate role for government, and ongoing challenges in securing timely and reliable metrics of innovation. As part of our program of strategic advice, we plan to provide a detailed report to Government on business investment in research, development and innovation during the 2019–20 year.

ISA is also building on its 2016 Performance Scorecard to look at the Government's annual investment in science, research and innovation, as well as the performance of the system as a whole. ISA will provide a high-level view on the mix of innovation, science and research investments to determine whether there are any overlaps, duplications or gaps, and to ensure that this investment is effective and fit-for-purpose. This investigation will include a system-level assessment of the degree of overall alignment of the investment mix. We plan to provide a detailed report on these topics during the second half of the 2019-20 year.

I would like to thank all members of the Board for their contributions during the past year. In particular I would like to thank the former (and inaugural) ISA Chair, Mr Bill Ferris AC, for his leadership and tireless dedication to pursuing the ISA agenda.

I would also like to thank Board members who departed during the year: Mr Daniel Petre AO, Mr Scott Farquhar, Mr Saul Singer and Dr Michele Allan, for their time, insights and contributions to ISA's efforts. I am also pleased to welcome our new Board members Professor Elanor Huntington and Professor Raoul Mortley.

ISA's subcommittees also play a vital role in the governance of key government programs supporting the innovation system, and I would like to thank the Chairs and Committee Members for their ongoing contributions. As you will see from the program sections later in this report the committees have been kept very busy, but have continued to provide the benefit of their hard-won experience to program operations with a strong sense of commitment.

I would also like to thank CEO, Dr Charles Day for his dedication and leadership and the support of the Office of Innovation and Science Australia for their continued hard work on the broad range of issues that have come to the Board over the year. In this report you will find more details of the advice the Board has provided to Government through a range of mechanisms on topics ranging from visa and trade policy through to innovation in the agriculture sector. We have included two case studies in this report which highlight some of the less-visible ways in which ISA Board members, the CEO and Office staff have worked across Government and with industry, science and research stakeholders in delivering on our vision for the future of Australia's innovation system.

At its core, being innovative is simply being able and willing to adapt to change and apply fresh thinking to create value. Adopting an innovative mind-set and discipline in business and government will enable these changes to begin. ISA is committed to ensuring Australia's innovation system reaches its full potential and thus contributes to the wellbeing and prosperity of all Australians into the future.

Mr Andrew Stevens

Chair

Welcome from the Office of Innovation and Science Australia



2018–19 was a year of several transitions for Innovation and Science Australia.

The latter half of 2018 saw a leadership transition as our inaugural Chair Bill Ferris stepped down after a very successful three year term steering the establishment of ISA to become a key part of the Government's innovation policy architecture. We thank Bill for his commitment and his vision, and have continued to maintain our momentum under the leadership of new Chair Andrew Stevens. Andrew brings a wealth of experience to his position from a diverse range of corporate roles, as well as strong experience in working with Government in both making and implementing policy.

The latter half of 2018 also saw a transition in our Portfolio minister, with The Hon Karen Andrews MP stepping into the role and subsequently issuing a new Statement of Expectations to guide ISA's work. With Minister Andrews retaining the portfolio following the return of the Morrison Government in the 2019 election, ISA has been able to make excellent progress on the program of work outlined in the Statement of Expectations.

The third transition for the year reflected this new program of work, and saw ISA and my Office that supports it, balancing its ongoing

monitoring of the innovation system with some longer-term analytical projects which take a fresh look at some of the well-established challenges in the system. To assist us with this we were delighted to welcome Dr Kate Cameron to the newly-created position of Chief Operating Officer in OISA. Kate has already had a significant impact on the team and our engagement with stakeholders, and brings a wealth of experience in innovation systems both here and overseas.

Speaking of the innovation system, 2018–19 saw a continuation of the mixture of encouraging signs and challenges that have marked the last few years.

On the positive side, we continued to see strong growth in investment activity in the Venture Capital and start-up sector, with landmarks including Square Peg Capital's announcement of a new \$340m venture fund in June, and Airwallex's confirmation of 'unicorn' status (as a private company valued at over \$1b) following a capital raising in May. We also saw strong performance amongst some of our leading established firms such as CSL, Cochlear and Atlassian, with the latter passing a valuation of \$50b for the first time just after the end of the financial year.

Our universities and publicly funded research agencies continued to provide a strong foundation of new knowledge to nourish our innovation system. In March 2019 we saw the release by the Australian Research Council (ARC) of the latest data from the Excellence in Research Australia (ERA) exercise, as well as the first-ever report of the Engagement and Impact assessment. The ERA confirmed that Australia's universities continue to perform at very high levels by international standards, whilst the engagement & impact assessment provided a valuable baseline against which future progress will be able to be monitored.

The data landscape is increasingly important for any national innovation system, and so it was encouraging to see several developments on this front. August 2018 saw the appointment of the interim National Data Commissioner, which is a key plank in strengthening the responsible use of public sector data across the economy. We also saw considerable work on the implementation of the Consumer Data Right in Banking, with legislation passed shortly after the end of the financial year. In the Health sector 2018-19 saw the roll-out of the MyHealthRecord system to around 90 percent of the population, which will be a vital data platform but which also prompted a vigorous national debate about data use and data privacy. These conversations will continue to be important as we learn to navigate an increasingly data-enabled future, and as the year drew to a close the Government was actively consulting with the community to develop an AI Ethics framework, which is another example of a vital national conversation.

On the more challenging side of the ledger, productivity growth across the economy continued its subdued trend. Indicators of business investment in R&D continued to show disappointing trends, and on some indicators of digital uptake such as high speed broadband subscriptions, Australia continues to lag well behind its advanced-economy peers. Government investment in innovation, science and research has not kept pace with the growth of the economy in recent years, even though important

new funding streams such as the Medical Research Future Fund have started to make their presence felt. So there remains much to be done.

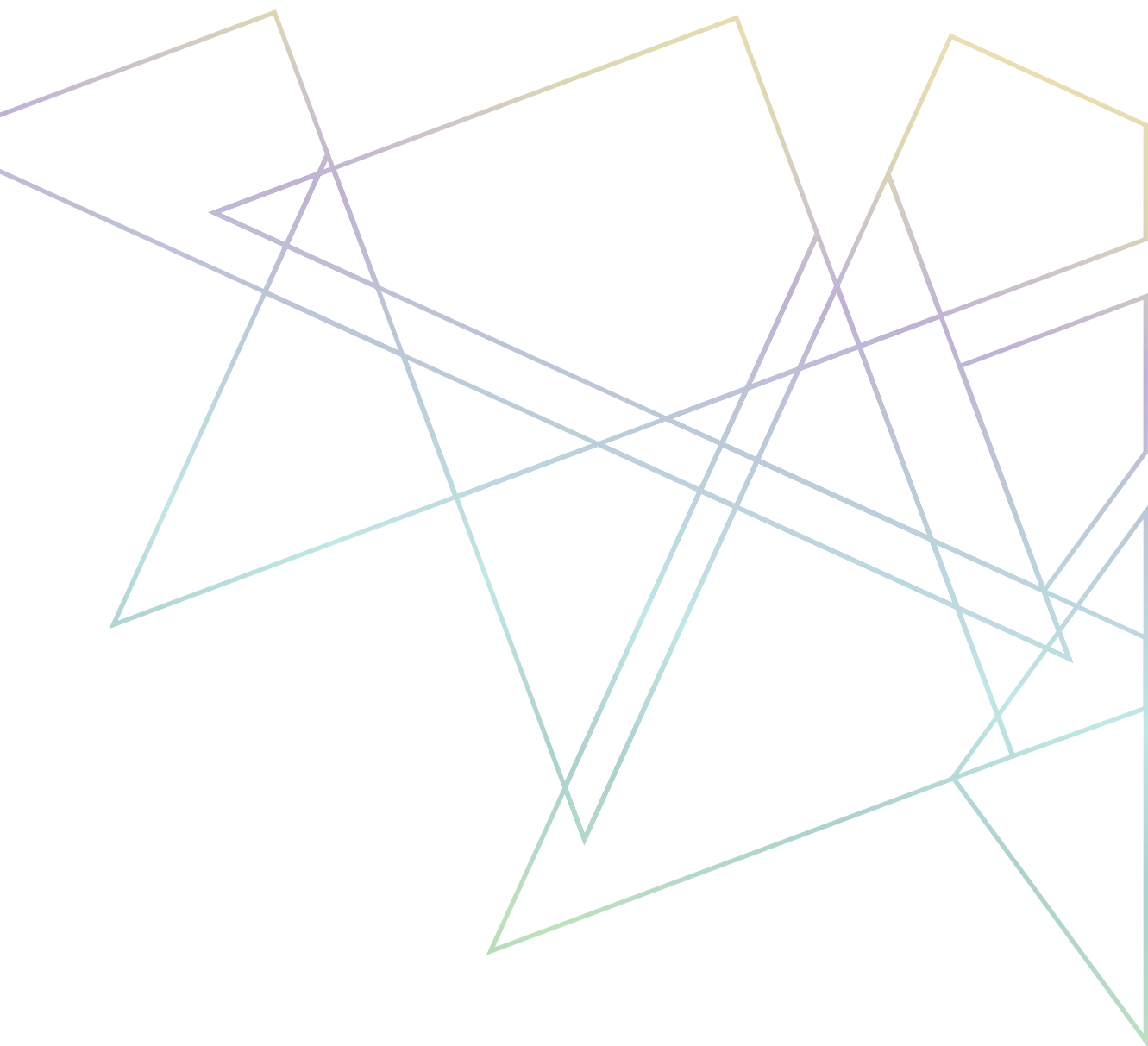
On talent, notwithstanding the roll-out of the Global Talent Scheme pilot, we continued to hear from businesses and universities that the availability of specialised talent was a constraint on growth of the innovation system, and in the context of a global competition for talent it will be important we remain focused on this. Encouragingly, the OECD in May 2019 ranked Australia as the most attractive destination for highly skilled migrants.

We'd like to thank the Chair and all the ISA Board Members for their support and their guidance over the past year. We'd particularly like to thank the team in OISA who have done a great job maintaining momentum as we have moved through this year of transitions. As you'll see elsewhere in this report, it has been a busy year for us as we engaged across several parts of the Commonwealth in support of the science and innovation system.

In closing, the preparation of the Annual Report is always a great pleasure as it provides an opportunity to reflect on the many remarkable people and projects we have the privilege to engage with over the course of the year. At the risk of singling one out, we thought we would share one of the most memorable of this year, which came in May when our CEO attended a showcase of Australian technologies and companies organised by Austrade's landing pad in Shanghai. Listening to Aussie start-up Baraja present its breakthrough LiDAR imaging technology to an attentive audience of Chinese investors and industrialists, it was impossible not to wish that more Australians could see the technology, the talent, and the international connections that give us such a strong opportunity for continued prosperity. We need to back ourselves to ensure we make these kinds of stories far more common.

Dr Charles Day, CEO

Dr Kate Cameron, Chief Operating Officer



Section One

REVIEW OF 2018-19

Overview of Innovation and Science Australia

Strategic advice

Advocacy

Program oversight



Overview of Innovation and Science Australia

Innovation and Science Australia (ISA) is an independent Board that provides strategic whole-of-government advice to Government on all innovation, science and research matters. It also monitors and oversees a number of innovation programs through several sub-committees.

ISA was originally announced as part of the Australian Government's National Innovation and Science Agenda (NISA) in December 2015, and formally established on 20 October 2016 through amendments to the *Industry Research and Development Act 1986* (IR&D Act). Upon its establishment, ISA was tasked with two key roles: to undertake a performance review of the Australian innovation, science and research system, and from these findings to produce a strategic plan for Australia's innovation system out to 2030. The *Performance Review of the Australian Innovation, Science and Research System* was delivered to Government in November 2016, and Australia 2030: Prosperity through Innovation (the 2030 Plan) was delivered to Government in November 2017.

On its formation, the Board inherited the roles of the body formerly known as Innovation Australia which had been established under the IR&D Act to assist with the administration and oversight of the Government's industry, innovation and venture capital programs.

ISA's role and responsibilities are defined by the IR&D Act, the Government's Statement of Expectations and any directions issued by our portfolio Minister. The Government's current Statement of Expectations SOE, and ISA's Statement of Intent (SOI) in response are published on <https://www.industry.gov.au/strategies-for-the-future/innovation-and-science-australia>.

Strategic Advice

Core projects

ISA's advisory work during the year focused on two key programs of work:

- The first program of work has used both quantitative and qualitative analysis to assess the drivers and barriers for increasing business investment in innovation. This work will be completed in the first half of 2019–20. Through this work we have directly engaged with over 180 firms to understand the needs and opportunities of businesses in existing and emerging areas of the economy. We used quantitative data to highlight the implications of Australia's industry mix in the economy, the importance of macroeconomic conditions, and their impacts on the trends in innovation investment in Australia.
- The second program of work consists of a system-level assessment of the mix of innovation, science and research investment made by the Australian Government. This will determine whether there are any overlaps, duplications or gaps in the system and ensure that the Government's investment is effective and fit-for-purpose. This work will be complete in the second half of 2019–20. This work will be supported by the inclusion of a scorecard of the performance of Australia's innovation, science and research system – based on the recommendations of the Innovation Metrics Review.

Both of these programmes of work support ISA's unique mandate to take a strategic, whole of innovation system view that is supported by the diverse, experienced and influential group of Board Members. We look forward to building upon this research and analysis as we continue to engage with a broad range of stakeholders across the innovation, science and research system in the year to come.



Photo credit: Manop Phimsit/EyeEm <https://www.gettyimages.com.au/>

Broader engagement

ISA is committed to engaging across the whole of the Australian Government, as well as the broader innovation ecosystem.

ISA provided advice on various topics for a number of matters that the Government publicly consulted on during 2018–19 including: Innovation Metrics Review, Early Stage Investment Market Dynamics, Artificial Intelligence/ Machine Learning, Women in STEM, Trade/Export and the Global Talent Scheme.

ISA is also uniquely positioned to act as an integrator and connector in the Australian innovation ecosystem. The diverse, experienced and highly influential Board approach innovation in Australia through a strategic, whole-of-system lens. This has facilitated meaningful engagement with a broad stakeholder group outside of government on a number of cross-cutting areas and initiatives. Some notable examples include:

- **ANZLF Trans-Tasman Innovation and Growth Awards:** *ISA is a supporting sponsor for the inaugural awards, alongside government and private sector partners. The awards focus on successful innovation and growth stories, shining a spotlight on businesses across Australia and New Zealand that have succeeded in converting innovation inputs to outputs.*

- **Australian Institute of Company Directors (AICD) innovation survey:** *ISA continues to work with the AICD on a survey of directors about the role innovation plays on the Boards they are involved with. The Chair, CEO and a Board member are members of the AICD's Technology Governance and Innovation Panel.*

- **Women in STEM Decadal Plan and Strategy:** *The ISA 2030 Plan encouraged the Australian Government to maintain its long-term policy commitment to greater gender diversity in the STEM workforce, including by raising awareness of gender diversity in government programs.*

ISA was pleased to lend its expertise, experience and advice to the development of both the Women in STEM Decadal Plan¹ led by the Australian Academy of Science and the Australian Academy of Technology and Engineering, and the Australian Government's Women in STEM Strategy.²

A number of ISA Board members contributed relevant experience in academic and industry contexts. Notably, Professor Marlene Kanga AM was a member of the Advisory Committee to the UNESCO STEM and Gender Advancement project³, whilst ISA's Chair, Mr Andrew Stevens, is a participant in the Male Champions of Change for STEM initiative.

1 Australian Academy of Science and Australian Academy of Technology and Engineering 2019, Women in STEM Decadal Plan, <https://www.science.org.au/support/analysis/decadal-plans-science/women-in-stem-decadal-plan>

2 Department of Industry, Innovation and Science 2019, Advancing Women in STEM Australian Government, Australian Government, Canberra, <https://www.industry.gov.au/data-and-publications/advancing-women-in-stem>

3 United Nations Educational, Scientific and Cultural Organization (UNESCO) 2019, STEM and Gender Advancement (SAGA) project, <https://en.unesco.org/saga>

Case Study

Board Member involvement in Australian Public Service Review



*Ms Maile Carnegie, Group Executive,
Digital Banking, ANZ Bank*

ISA welcomed the announcement of the Australian Public Service (APS) review in May 2018, as recommended in ISA's *Australia 2030: Prosperity through Innovation*. Board member Maile Carnegie actively supported the review process, joining experts in public policy and management on a panel chaired by David Thodey AO.

The review examined leading domestic and international public and private sector practices and provided an opportunity to examine the critical role the public service plays in driving the national innovation ecosystem. The last holistic review of the APS was the Coombs Royal Commission in the mid-1970s.

ISA's investigation of the Australian innovation system highlighted the strength of the APS and its international standing. However, it also recognised the importance of fostering greater innovation and productivity within the APS in the face of technological disruption and social change. ISA reinforced these views in a submission to the APS Review consultation.

Ms Carnegie's expertise in digital transformation and customer-focused design informed the panel as it explored the capabilities and collaborative approaches that will characterise a future ready APS. Ms Carnegie drew on extensive Banking and Tech sector experience, where companies are asking similar questions about how to serve their customers in a digitally-driven economy.

Ms Carnegie's experience also provided insight and strategic direction for the review which identified priority areas such as collaboration with community and business, improving citizens experience with government, the changing nature of leadership and developing innovative approaches to policy, corporate and regulatory functions.

Ms Carnegie observes that there are many similarities between the private and public sectors which provides a good basis for sharing lessons, including on how to tackle large capability gaps and technology deficits in a fast-changing environment. "Both are large, complex organisations where the majority of people are trying to do the right thing, including becoming more customer or citizen centric."⁴

According to Ms Carnegie; "The APS plays a critical role in the lives of every Australian so it is important that the APS has the culture and capabilities required to effectively deliver for the nation. Just like all organisations facing into our volatile, uncertain, complex and ambiguous future, the APS needs a unified purpose and contemporary innovation tools."

4 APS Review, Australian Government, <https://www.apsreview.gov.au>

Advocacy

ISA third strategic objective is to 'advocate and champion for Australia's innovation, science and research system'. This objective encompasses a range of activities for ISA, from speeches and presentations by the Chair, Board members and CEO at conferences and public events, to participation in roundtable forums and meetings with stakeholder groups from industry and government.

ISA's broad engagement strategy ensures that ISA can proactively target messages to the innovation, science and research communities and the wider Australian public, as well as work directly with stakeholder groups to address issues that impact Australia becoming a leading innovation nation, and leading a national dialogue on the future of the Australian innovation, science and research system.

ISA continued to provide advocacy through its social media channels in 2018-19. Social media channels were used to engage with all sectors of the innovation system as well as the general public by sharing the latest news from the system, promoting ISA spokespeople at events and in the media and highlighting innovation success stories. Some of ISA's public engagement activities over the past twelve months include an interview with Radio National Breakfast, multiple interviews with The Australian, and engagement with world experts on international best practice for innovation. In addition, ISA provided a number of submissions to key enquiries and reviews, for example, the Joint Standing Committee on Foreign Affairs, Defence and Trade on access to free trade agreements by Small to Medium Enterprise (SMEs). ISA's contributions to this review were included in the final recommendations.

During the reporting period, the ISA Chair and Board members presented at over 18 events, and the CEO of OISA presented and/or participated at over 49 events.



Mr Andrew Stevens speaks to Elysse Morgan (ABC The Business) about his new role as Chair of Innovation and Science Australia, his goal for Australian businesses and how all Australian's can feel part of the innovation and science agenda.



Mr Bill Ferris AC talks at the AFR Innovation Summit about ISA's 2030 plan, the 30 recommendations and the Government's response to the report.



Dr Charlie Day speaking on a panel at the 2018 AFR Innovation Summit. Charlie was part of the closing leaders debate panel discussing immigration and diversity, R&D tax incentives, competition, the future of work, nuclear science and technology and the VET system.



Bronwyn Harch speaking about ISA's 2030 innovation goals, the role of initiatives like Industry Mentoring Network in STEM (IMNIS) and officially launching IMNIS nationally.

Program oversight

ISA's strategic Objective 2 is to 'oversee innovation programs to ensure effectiveness and efficiency of delivery'. As at 30 June 2019, the programs and initiatives that the Board supported the administration of and provided oversight for included⁵:

R&D Tax Incentive program

Cooperative Research Centres Program

- Cooperative Research Centres (CRCs)
- Cooperative Research Centres Projects (CRC-Ps)

Venture Capital programs

- Early Stage Venture Capital Limited Partnerships (ESVCLPs)
- Venture Capital Limited Partnerships (VCLPs)

Biomedical Translation Fund (BTF)

Entrepreneurs' Programme (EP)⁶

- Accelerating Commercialisation (AC)
- Incubator Support (IS)

Business Research Innovation Initiative (BRII)⁷

A committee structure assisted the Board to oversee these programs. The programs were delivered by AusIndustry, within the Department of Industry, Innovation and Science (DIIS). The Australian Taxation Office (ATO) assists DIIS with the administration of the R&D Tax Incentive and both the Venture Capital programs.

⁵ Legacy programs which are no longer open to new applicants and of which Innovation and Science Australia maintains oversight are listed at page 54.

⁶ Note that there are two other components of the Entrepreneurs' Programme, the Business Management component and the Innovation Connections component, which are not included here because ISA does not have a formal role in overseeing them.

⁷ Note that the Business Research Innovation Initiative does not have its own committee, but instead is overseen by the Entrepreneurs' Programme Committee.

Program Overview

R&D Incentives Committee



Opportunities for the Program

"The Committee was pleased to see new technology sectors emerging and benefitting from support from the R&D Tax Incentive program. The purpose of the Incentive is to support Australian companies in developing technologies, to provide the jobs of the future and ensure Australia's competitiveness in an increasingly technology-driven world."

Challenge

"Providing clear guidance about the eligibility requirements for the R&D Tax Incentive is an ongoing effort. It is important to ensure that support for R&D is provided in accordance with the legislation."

DR MARLENE KANGA AM
CHAIR, R&D TAX INCENTIVE COMMITTEE.

R&D Tax Incentive Program

The R&D Tax Incentive program is the Australian Government's principal measure to encourage industry investment in R&D. It is a broad-based, market-driven program that is accessible to all industry sectors. The program provides benefits in the form of tax offsets to eligible entities undertaking eligible R&D activities. To access the incentive, companies are required to self-assess the eligibility of their R&D activities, register them with DIIS, and then claim a tax offset in their company tax return with the ATO.

The broad objective of the incentive is to encourage industry to conduct R&D activities that might otherwise not be conducted. The incentive addresses a market failure whereby businesses under-invest in R&D due to uncertain outcomes and the inability to capture all the benefits of their R&D.

During 2018–19, DIIS continued to promote the R&D Tax Incentive and inform stakeholders through:

- Clearer guidance for software companies: the development and release of clearer software guidance makes it easier for businesses to understand eligible research activities in software development.
- Enhanced stakeholder consultations: the establishment of a new, national stakeholder engagement forum – the R&D Tax Incentive Roundtable helps improve communication between the department and its stakeholders. The roundtable is chaired by the co-administrators of the incentive, and includes tax agents, consultants, business and key industry representatives.
- Better informed claiming behaviour: program stakeholders and businesses can participate in a wide range of engagement events and information sessions as well as receiving email bulletins.

These activities help customers to self-assess their R&D activities correctly, and provide strong stakeholder engagement, bringing together a broader range of viewpoints from industry and users of the program.

Key outcomes⁸ in relation to the R&D Tax Incentive for the 2017-18 income year, at the end of June 2019, include:

- \$11.92 billion in registered R&D expenditure.
- 12,393 registrations (representing 14,109 R&D performing entities).
- 10,817 registrations for small-to-medium companies (87 percent of program participation).
- 2,511 companies registered that were new to the program (18 percent of program participation).

As part of the Federal Budget 2018-19, the Treasurer announced reforms of the incentive program. These reforms include measures to support improved program outcomes, including additional funding for the department and the ATO.

DIIS and the ATO continue to work together on a number of administrative and compliance enhancements, including better application forms and information management systems, clearer guidance products for companies and regular stakeholder engagement.

The reform measures will help maximise the returns from the investment of public money to the Australian economy.

Further information and details on the performance of the R&D Tax Incentive program are available on DIIS' website www.industry.gov.au.

Find out if you are eligible for the R&D Tax Incentive and apply at www.business.gov.au.

⁸ All data as at 30 June 2019.

Please note that income year 2017-18 is still incomplete. Companies with a substituted accounting period (SAP), ending after 30 June 2018 (but before 31 December 2018) may continue to register for the R&D Tax Incentive until 30 September 2019. There are around 200 of these R&D-performing entities, which are often referred to as 'late balancers'.

Case Study

RayGen Resources Pty Ltd

RayGen Resources Pty Ltd is developing more efficient solar power technologies using satellite grade solar cells that can be manufactured more cheaply and that can produce heat and power at a large scale.



RayGen Receiver generating power

RayGen saw the need and identified a way to create a solar energy solution that is more efficient and commercially viable. The company has developed new grid scale solar power technology that has a clear path to lower capital cost and is two times more efficient than typical solar panels. It has been operated at appropriate performance levels with pilot scale field trials under way for reliability and performance.

RayGen is also developing the manufacturing systems for this technology to enable the key core (small and high value) components of the system (30 percent of the product) to be economically produced in Australia. This facilitates low cost deployment and export with the balance of system able to be sourced appropriately.

For an international project, it will also source and assemble the larger balance of system components 'in-country'. This has made the technology more attractive due to the lower level of import required and ease to transport the smaller core components, especially in countries that have stricter rules about the level of imports.

Once fully operational, RayGen will train supply chain partners to produce the larger (low tech) balance of system components in the respective countries. As the intellectual property is held by RayGen, it enables the company to manage and contract out portions of the system to partners.

The key customers for this technology are power companies or industries which require industrial or grid scale power. RayGen also have a way to capture and utilise the heat by-product, enabling organisations to save on their electricity and gas bills.

RayGen have used several Australian suppliers to make key components, for example Ceramet, a metal pressing and precision parts manufacturer in Ballarat and Harrop Engineering which traditionally have been involved in car manufacturing. Now that RayGen has worked with these businesses they can use their manufacturing skills to produce new components and new products when car manufacturing shuts down. Other local suppliers have 'skilled up' so they can produce components for RayGen, include Furphy in Shepparton, and Able industries in Melbourne.



PV Ultra pilot system in operation

The RDTI program has helped fund RayGen's research into finding efficient ways to produce reliable and cost effective solar technologies, achieve more and become more attractive to investors.

The RDTI has also enabled RayGen to develop relationships with international players to augment the technologies for international use and discuss export opportunities.

In regards to machinery for manufacturing, the RDTI has assisted RayGen in purchasing machinery for the manufacturing process and to modify the machines to be able to produce the novel technology in a high quality and efficient fashion.

The program has also facilitated the expansion of the RayGen team from three to 25 employees.

"The RDTI allows us to include more people, to go faster, it allows us to go further than we otherwise would have. It's very valuable, it is a great scheme and it has worked well for us."

DR JOHN LASICH, RAYGEN RESOURCES PTY LTD

Case Study

Micro-X Limited

Micro-X Limited saw the opportunity to use carbon nano-tube technology in mobile X-ray carts to improve the portability and use of these carts in the medical, security and defence markets.



Mixro-X DRX Revolution NANO Mobile X-ray system

Micro-X is in the research and development stage moving toward manufacturing stage for their first product, which is a novel medical mobile X-Ray cart. Their aim is to use carbon nano-tube technology and apply it to make X-ray carts more mobile and light weight, reducing the weight of the cart from the current 400–600 kg to 100 kg.

From a medical point of view, this product will significantly increase workflow, which means that people in hospitals and in aged care who need X-rays will have shorter waiting times and, when required, the X-ray cart can be brought to the hospital room instead of moving patients to the X-ray room.

In addition to its healthcare applications Micro-X is testing the effectiveness of this technology for defence and security fields, around explosives detection. One of the key aims of this technology is creating the ability to detect explosives so personnel do not need to be sent out, which will save lives. Per Micro-X's CFO Georgina Carpendale from a defence perspective, "this could save lives by reducing risk when trying to find out what is in a package."

Initially the business outsourced the engineering expertise, though recently the team has expanded to 23 from a team of two in September 2015. Due to this expansion, Micro-X are developing their engineering capabilities internally and managing the different engineering disciplines required themselves.

Micro-X outsource part of their engineering expertise to the Australian based company Hydrix. They also outsource other elements as well including sourcing of materials, regulatory expertise, and expertise to create this novel product.

Micro-X have an Original Equipment Manufacturer (OEM) agreement with United States Company Carestream Medical, which gives them global distribution and naming rights to the mobile X-ray cart. Micro-X worked closely with the company to develop a product that is appropriate for the market and is consistent with what radiographers are looking for in the product from ergonomics to workflow. The cart will also use Carestream Medical software which most hospitals are currently using. Through this partnership Micro-X is able to penetrate the market despite being a small player in an industry with a high barrier to entry.

Since the inception of the company in 2012, Micro-X has been researching uses of the technology in different ways.

The RDTI has enabled Micro-X to develop relationships with Hydrix, and with other organisations within the supply chain which previously had not been in this space before, getting them to produce items that had not existed previously. Around 90 percent of Micro-X suppliers are local or interstate.

Micro-X have also developed relationships with post-graduate researchers at Flinders University in South Australia, with Micro-X employees sharing knowledge through lectures at the university, and the organisations working together to develop knowledge through research in the area.

"Especially for the Australian economy there are companies here that have ground-breaking technology and without the R&D Tax Incentive it would have been very, very difficult to bring it to market and [the question of] whether we would even be able to do it in Australia or not."

GEORGINA CARPENDALE, CFO, MICRO-X LTD

Program Overview

Cooperative Research Centres (CRC)



"The CRC Advisory Committee has been extremely pleased with the continuing strong interest in the Program this year, across both CRC and CRC-P streams. As I highlighted at the CRC Association conference in May, there are always more good applications than funding available, so applicants need to work hard to develop stand out applications for either stream. Applicants need to own their industry problem and tell us their story: there is no single formula for a great application".

"CRCs continue to impress, with four successful round 19 CRCs commencing activities. Round 20 was highly competitive, and resulted in a further four successful CRCs which will commence operation in 2019-20. This year sees a transition period, with the end of eleven CRCs' funding terms, and a variety of transition arrangements in place. The committee acknowledges the significant contributions of each of the completing CRCs and recognises the legacies they each leave in their areas of research".

"CRC-Ps continue to receive overwhelming interest with the number of quality applications now the highest since the program began in 2016. Notably the Government also chose to use the CRC P stream to encourage collaborative research in areas of competitive strength or strategic priority demonstrating the stream's adaptability. This year \$25 million was committed to artificial intelligence CRC-Ps and up to \$20 million was made available for critical minerals projects. CRC-Ps are now starting to produce some real economic benefits for participating partners in terms of job creation, SME growth, and the development of technology which contributes to meeting the CRC Program's aims of increased competitiveness, productivity and sustainability of Australian industries. As the first of the CRC-Ps come to an end, the committee hopes to see participants move on to new industry-academia collaborations, including potentially full CRC participation".

MS KYLIE SPROSTON
CHAIR, CRC ADVISORY COMMITTEE.

Cooperative Research Centres Program

The Cooperative Research Centres Program is a competitive, merit-based grants program supporting industry-driven multi-year research collaborations. The program has supported the development of important new technologies, products and services to solve industry problems and improve the competitiveness, productivity and sustainability of Australian industries.

The CRC Program has two streams:

1. CRCS undertake medium to long term industry-led high quality collaborative research for up to ten years, with no set limit on funding.
2. CRC Projects (CRC-P) undertake short term, industry-led collaborative research for up to three years, with a maximum limit of \$3 million.

Since the program's inception in 1990, the Government has committed over \$4.8 billion to support the establishment of 225 CRCS and 95 CRC-Ps. Partners have committed over \$14.8 billion in cash and in-kind contributions.

Major highlights

During the 2018-19 reporting period:

- CRCS and CRC-Ps operated across a variety of sectors, including manufacturing, mining, healthcare, agriculture, and the environment.
- The total Government commitment for new CRCS (4) and CRC-Ps (32) was \$255 million which leveraged over \$838 million in partner cash and in-kind contributions.
- Of the 11 CRCS completing their funding terms in 2018-19, eight spin-off companies have been established by six CRCS as legacy vehicles.

Current CRCS and CRC-Ps

STATE	NUMBER OF CRC-PS	TOTAL CRC-P (MILLION)	NUMBER OF CRCS	TOTAL CRC GRANT FUNDING (GST EXCL) (MILLION)
ACT	2	\$4.81	1	\$19.84
NSW	27	\$64.64	9	\$293.18
NT	3	\$4.02	0	0
QLD	15	\$29.83	3	\$140.45
SA	5	\$10.54	4	\$94.87
TAS	3	\$6.02	1	\$25.00
VIC	25	\$50.29	9	\$304.49
WA	9	\$20.81	3	\$107.00
Grand Total	89	\$190.96	30	\$984.83

Other highlights include:

- During 2018-19 Round 5 & 6 CRC-P funding outcomes were announced.
 - Round 5 had 13 successful applicants who were offered grant funding of \$29.3 million.
 - Round 6 had 19 successful applicants who were offered grant funding of \$40.4 million. Thirteen of these projects were supported by an additional \$25 million allocated to the CRC-P Program in the 2018-19 Budget for projects with a specific focus on artificial intelligence.
- In March and April 2019, CRC Round 20 outcomes were announced, with four successful applicants offered grant funding of \$185 million to tackle a range of industry problems including the development of an offshore seafood and sustainable marine industry; the growing Australia's future battery industries value chain; harnessing and advancing space technologies; and developing future food systems for emerging markets.

Looking ahead it is expected the CRC Program will continue to develop important real world commercial solutions to improve the competitiveness, productivity and sustainability of Australian industries, strengthen the economy and create jobs.

Ongoing continuous program improvements such as engagement with SMEs, strengthened compliance and review processes and improving gender diversity on boards contribute to a more efficient and effective CRC program as well as helping to reduce administrative time and cost burden on applicants and grantees.

The Program has continued to evaluate its performance through an assurance review focussed on the application assessment process. An Impact Evaluation is also planned for the 2019-20 year.

Case Study – CRC Projects

Portable brain scanner for rapid, point of care, stroke diagnosis and monitoring

EMvision Medical Devices and some of Australia's finest researchers from GE Healthcare, Metro South Hospital and Health Services and the University of Queensland are collaborating through a CRC-P to deliver a portable, non-invasive and non-ionising device to support early on-site diagnosis and ongoing monitoring for stroke and brain injury patients.

Supported with \$2.6 million in CRC Program funding and over \$8 million in partner contributions, EMvision's brain scanner device works by creating rapid 3D images of the brain using the same type of electromagnetic waves mobile phones use to transmit voice and data, but for medical imaging.

One of the features of EMvision's portable head imaging system is its non-ionising radiation, which means it can be used more frequently on patients for post-stroke monitoring. It operates at a safe signal level, one-tenth the power of a mobile phone, and contains innovative algorithms for rapid scanning, processing and image reconstruction.

The portable brain scanning device is the product of over a decade of research and development at The University of Queensland and is now moving towards its pilot clinical trial, to collect imaging data from ischemic and haemorrhagic stroke patients, at the Princess Alexandra Hospital, Brisbane.



Portable brain scanner for rapid, point of care, stroke diagnosis and monitoring

"The difference between permanent disability or death and a positive recovery is timely diagnosis and treatment."

EMVISION CEO JOHN KEEP.

Case Study – CRC Grants

Australia's low carbon future at our fingertips



White Gum Valley precinct, Fremantle WA

White Gum Valley (WGV) is a 'living laboratory' to trial and assess what works for low carbon or carbon neutral housing and community living.

WGV is a 2.2 ha medium density, 100 dwelling residential infill development located in Fremantle, Western Australia partially funded and supported by the CRC for Low Carbon Living as a living laboratory site to provide data for its research.

The CRC for Low Carbon Living was awarded a total of \$28 million in CRC Program funding from 2012 to 2019, and leveraged approximately \$73 million in partner contributions.

Led by the WA State Government's land development agency LandCorp, WGV demonstrates design excellence on many levels by incorporating diverse housing types, climate sensitive considerations, solar energy generation and storage, innovative water management and creative urban greening strategies. The project has received international certification as a 'One Planet Living' community. As of late 2018, WGV was approximately 60 percent complete and occupied.

WGV is demonstrating that low carbon residential developments are technically feasible and commercially viable in today's market. Modelling and early data collection has indicated WGV will meet its design goal of being a Net Zero Energy precinct. What's more, the collaboration between industry and researchers, which has been enabled by the CRC for Low Carbon Living, has led to a ground-breaking trial for shared solar power and battery storage technology on strata-titled developments.

"The living laboratory concept is a 'learn-by-doing' approach to research where innovations are tested in real-life settings with the aim of informing policy and industry outcomes."

"WGV is a living laboratory which will answer some very important questions around carbon reductions. It will unlock barriers to cost-effective carbon reduction opportunities, empower communities and facilitate the widespread adoption of renewable energy."

MR SANDY HOLLWAY AO,
DEPUTY CHAIR, CRC FOR LOW CARBON LIVING.

For more information on the **CRC Program**, visit business.gov.au or call 13 28 46.

Program Overview

Venture Capital programs



"This year, the Committee registered a record number of Early Stage Venture Capital Limited Partnerships (ESVCLPs), bringing the total number of registered ESVCLPs to just under 100, and driving economic growth by delivering better scientific and economic outcomes for Australia. The Venture Capital Limited Partnerships (VCLPs) program increased foreign investment in Australian businesses by just over half a billion dollars in 2018-19".

"The Committee has also had the opportunity to hear from industry about their experiences as ESVCLPs and VCLPs and to consider industry's views on the venture capital market and its current state of play. This has provided the Committee with a range of considerations to improve the customer experience of venture capital tax concession programs".

MR MARTY GAUVIN
CHAIR, INNOVATION INVESTMENT COMMITTEE

The Australian Government has a suite of programs designed to cultivate innovation and encourage venture capital investment in entrepreneurial start-up and early stage companies.

Tax concession programs: Venture Capital Limited Partnerships and Early Stage Venture Capital Limited Partnerships

The VCLP and ESVCLP programs are designed to stimulate the Australian venture capital sector by attracting both domestic and foreign capital into Australian venture capital markets. Since inception, the programs have enabled \$15.6 billion in venture capital commitments and \$8.0 billion in investments into over 1300 Australian businesses. Venture capital funds (structured as limited partnerships) that access either program are registered under the *Venture Capital Act 2002* (VC Act). VCLPs and ESVCLPs are required to operate in accordance with the VC Act and the relevant Income Tax Assessment legislation.

VCLPs

The VCLP program aims to stimulate Australia's venture capital sector by attracting foreign investors. A VCLP is entitled to flowthrough tax treatment and its eligible foreign investors do not pay capital gains tax on their share of returns the VCLP makes from eligible venture capital investments. The program is also open to domestic investors. VCLPs benefit Australian businesses as they increase the level of foreign investment in the Australian venture capital sector.

Since inception in 2002, \$7.1 billion has been invested by VCLPs in Australian businesses with high growth potential, helping to drive Australia's economic growth. There has been an increase of \$0.8 billion since 2017-18, at which time VCLPs had invested \$6.3 billion, demonstrating the continued positive impact of the VCLP program.

- As at 30 June 2019 there were 86 registered VCLPs, with 25 VCLPs registered in 2018-19.
- As of 30 June 2019, committed capital for VCLPs, which is the amount investors have agreed to contribute to a partnership, increased by \$0.8 billion to \$11.7 billion in 2018-19. This is the highest level of committed capital in VCLPs ever achieved.

ESVCLPs

The ESVCLP program aims to stimulate the Australian early stage venture capital sector by increasing investment into start-ups and early stage businesses. The program assists fund managers to attract pooled capital as ESVCLPs benefit from flow-through tax treatment and investors are exempt from tax on their share of returns. In addition, investors in ESVCLPs receive a 10 percent investor tax offset on capital invested during the year. ESVCLPs encourage investment in start-up enterprises with a view to commercialisation of activity and business growth.

- Since inception, \$959 million has been invested by ESVCLPs in Australian businesses. This is an increase of \$294 million since 2017-18, when ESVCLPs had invested a total of \$665 million. Boosting investment in Australian businesses is critical for commercialising new ideas and encouraging new start-ups.
- As at 30 June 2019 there were 90 registered ESVCLPs. The registration rate had a 6 percent increase in 2018-19 with 36 ESVCLPs being registered compared to 34 registrations in 2017-18.

- The amount of committed capital in current ESVCLPs increased from \$1.62 billion in 2017-18 to \$2.1 billion in 2018-19. Australia is the dominant source of committed capital in the ESVCLP program, with superannuation funds providing an increasing percentage of committed capital. This indicates fund managers are able to demonstrate solid returns to investors and the growing maturity of the venture capital market in Australia.

Other Types of Registration under the *Venture Capital Act 2002*

The *VC Act* also provides for two other types of registration:

Australian Venture Capital Fund of Funds

(AFOF): AFOFs are available to Australian resident general partners to pool capital from limited partners for investment into VCLPs and ESVCLPs. An AFOF may also invest directly into eligible venture capital investments the VCLP or ESVCLP (in which the AFOF is a partner) also holds. AFOFs are limited partnerships registered under the *VC Act*. As at 30 June 2019, there are 10 AFOFs with a total of \$287 million in capital. At 30 June 2019, the registered AFOFs reported investing \$127.3 million.

Eligible Venture Capital Investor (EVCI): For tax-exempt foreign residents, registration is available as an EVCI under the *VC Act*. Under the incentive, EVCI disregard their capital gains or capital losses from eligible investments they have held for at least 12 months. EVCI are also exempt from income tax on profits and denied deductions for losses arising from the disposal or realisation of such investments. To date, one EVCI has been registered.

Disclaimer:

- Figures may vary from previously published data, for the same time period, due to additional data being supplied by customers.

Case Study

ANU Connect Ventures

The ANU MTAA Super Venture Capital Partnership was established in 2005 to invest in early-stage commercial opportunities and innovative ideas that arose from research undertaken at the Australian National University and other ACT based research institutions and Canberra region businesses.



Photo credit: Witthaya Prasongsin <https://www.gettyimages.com.au/>

The fund has invested \$20 million into 15 Australian companies since 2006 – including Instaclustr, Beta Therapeutics, Liquid Instruments and EpiAxis Therapeutics, helping to grow Australian industry, resulting in jobs and growth.

Instaclustr enables clients to focus in-house development and operational resources on building applications. Instaclustr operate an automated environment, providing databases, analytics and search messaging services. ANU MTAA Super Venture Capital Partnership's investment has enabled Instaclustr to roll out its product to clients.



Photo credit: PeopleImages <https://www.gettyimages.com.au/>

Beta Therapeutics is developing first-in-class treatments for diseases driven by inflammation in retinopathy, diabetes, tumour growth and metastasis. Beta Therapeutics' treatment has successfully treated age-related macular degeneration and type 1 diabetes in mice, and the company is collaborating with international pharmaceutical partners to develop the therapies.

EpiAxis Therapeutics is focused on the prevention of metastatic breast cancer, with other diseases such as ovarian, pancreatic, colon, melanoma, lung and liver cancers to be pursued later. EpiAxis Therapeutics is progressing well with its novel proof of concept Phase 1b clinical trial in breast cancer. Its aim is to offer best-in-class LSD1 inhibitors to prolong remission in difficult to treat cancers.

For more information on:

ANU Connect Ventures visit anuconnectventures.com.au.

Venture Capital Limited Partnerships visit business.gov.au or call 13 28 46.

Case Study

Blackbird Ventures

Blackbird Ventures was founded in 2012, sparked by the surge in start-up activity in Australia, and the lack of venture capital available at that time. Blackbird Ventures has grown from a team of three people in 2012 to twelve today.

The company now manages three ESVCLPs with combined capital of \$194 million, as well as a number of other funds. It provides equity capital for all stages of start-up companies including seed—ideas stage and series A—early growth stage.

Blackbird Ventures currently has 110 investors involved in their partnerships. These are split between individuals, most of whom are tech-founders, and institutions such as Cisco, Hostplus, First State and the Future Fund.

Blackbird Ventures has invested funds in over 100 companies. These companies are typically high-tech start-ups, focusing on software and frontier technologies such as autonomous vehicles, robotics and the commercial space industry.

One investee company is Canva, a software business based in Sydney. Canva offers a graphic design website/app, providing an intuitive drag-and-drop type user experience that has changed graphic design globally. The platform offers millions of photos, graphics and fonts, attracting both professional designers and amateurs alike. Blackbird Ventures first invested in Canva in 2013 at their seed stage, providing capital to get them off the ground. Blackbird Ventures initially invested \$250,000 in Canva, a figure that has since grown to more than \$100 million.

This investment has allowed Canva to grow. Since its founding in 2012, Canva has been able to expand its team to over 600 people. Canva's platform is now used by tens of millions of people monthly. In 2018, Canva became Australia's tech unicorn as it reached over one billion dollars in market value. This success has allowed Canva to attract further capital from global investors.

Investing in Canva saw significant return for Blackbird Ventures, helping it to raise more capital for another fund. Blackbird Ventures continues to share in Canva's' success, and the Canva founders are highly active in the start-up community, helping the next generation of founders.

How the Government has helped

The ESVCLP program has helped Blackbird Ventures attract investors due to the tax concessions the program provides. The ESVCLP program provides great benefits for start-up companies, most significantly the capital necessary to get their business off the ground. The start-up companies also benefit from the networks the partnership brings, with access to other similar minded companies as well as the experience investors bring.

Blackbird Ventures believes the ESVCLP program ultimately attracts investment to Australia, creating a local community of tech founders. The companies that operate within this community are recognised and respected on the global stage.



The Blackbird Ventures team. Photo credit: BlackBird Ventures <https://blackbird.vc/>

For more information on:

Blackbird Ventures visit <https://blackbird.vc>.

Early Stage Venture Capital Limited Partnerships

visit business.gov.au or call 13 28 46

Program Overview

Biomedical Translation Fund (BTF)



"The BTF has had a very successful 2018-19 with investments made in a range of ventures bringing the number of investee companies to 14. Investments range from a project which is developing a new therapy to treat cystic fibrosis through to a device which will significantly improve health outcomes for post-menopausal women and breast cancer survivors".

"Two companies that have benefited from funding from the BTF have both recently completed their clinical trials. The funding from the BTF to take research from the lab to the marketplace will assist in ensuring long term health benefits and national economic outcomes for all Australians".

MR PETER WILLIS AC
CHAIR, BTF COMMITTEE

The BTF program was announced in December 2015 as a key initiative under the National Innovation and Science Agenda. It is an equity co-investment venture capital program that:

- supports commercialisation of biomedical discoveries in Australia; and
- assists translation of biomedical discoveries into high growth potential companies to deliver long term health benefits and national economic outcomes.

The BTF focusses on supporting early stage companies that are, or will be, developing and commercialising biomedical discoveries for the long term health and economic wellbeing of Australians.

Biomedical discoveries include: therapeutic, medical or pharmaceutical products, processes, services (including digital health services), technologies or procedures that represent the application and commercialisation of the outcomes of research that serve to improve health and wellbeing. It does not include alternative or complementary medicine, or traditional medicine.

The Department of Health has policy responsibility for the BTF. The Department of Industry, Innovation and Science administers the BTF.

Australian Government funding (\$250 million) has been slightly more than matched by private sector capital commitments (\$251.25 million) to provide a total funding commitment of \$501.25 million to the BTF.

Following a competitive, merit-based selection process, three private sector BTF fund managers were licensed in December 2016. This process was conducted by the BTF Committee under the auspices of the Innovation and Science Australia Board. The licensed BTF managers are: Brandon Capital Partners, OneVentures Management and BioScience Managers.

Licensed BTF fund managers invest in promising biomedical discoveries and assist in their commercialisation. These fund managers also encourage the development of companies which are commercialising biomedical discoveries, by addressing capital and management constraints.

All BTF investment decisions are made by the selected fund managers. The Government has no role in selecting investments, technologies or markets, but ensures all investments are consistent with the requirements of the program guidelines. This approach has been taken to ensure the venture capital expertise required to invest in commercialisation opportunities is provided by those most qualified.

As at 30 June 2018, the licensed fund managers have made ten investments totalling \$68.6 million into a range of biomedical companies. This includes the second largest commitment of \$20 million to Respirion Pharmaceuticals Pty Ltd (Respirion). Respirion is developing a drug and device to improve the quality and duration of life for individuals with the life-threatening disease of Cystic Fibrosis. Respirion is an example of how venture capital is helping Australian innovation, as this biotechnology was incubated at the Telethon Kids Institute in Perth and tested in Western Australia.

Case Study

Brandon Capital Partners

Brandon Capital Partners manages seed and venture capital investment to support the development and international growth of Australian and New Zealand life science companies.



Wrist-worn device for Parkinson's disease

Photo credit: Global Kinetics Corporation <https://www.globalkineticscorporation.com/>

Brandon Capital Partners currently manages five funds totaling over \$740 million in medical research support, including the Medical Research Commercialisation Fund (MRCF)-BTF.

Brandon Capital Partners is backing Global Kinetics Corporation's innovative Personal KinetiGraph (PKG®) - a Parkinson's disease symptom monitoring and reporting wristwatchstyle medical device to capture and assess the symptoms of Parkinson's disease. The device has now been used to complete over 40,000 tests for Parkinson's patients across 16 countries. The device is being manufactured in Australia and will be shipped to an expanding global footprint.

The technology has already been used with over 45,000 Parkinson's patients, providing precise quantification and reporting of specific disease-related movement signatures associated with the disease. The watch captures continuous movement information which is then used to create a detailed report the company delivers to the patients' doctor, enabling personalised treatment and management decisions which contribute to the highest possible quality of life for patients.

The PKG® system provides continuous, objective, ambulatory assessment of movement disorder symptoms, such as tremor, dyskinesia and bradykinesia during activities of daily living and in the patient's home environment.

Consisting of an interactive watch that collects movement data and medication reminders, proprietary algorithms and a detailed diagnostic report, the system also correlates the frequency and severity of symptoms with respect to consumption of prescribed medication.

The company was established to commercialise technology co-developed by Professor Malcolm Horne, from the Australian medical research institute Florey Institute of Neuroscience and Mental Health, and Dr Rob Griffiths.

Using unique patented algorithms, the PKG® records and scores the movement of a person with Parkinson's. A report is produced and provided to the treating clinician. The system also records and reports when a person with Parkinson's takes their medication, which boosts dopamine levels to treat the slowness or paucity of movement caused by Parkinson's.

The resulting data set is proving to be a valuable and affordable tool for neurologists and, increasingly, national health care systems.

The information provided by the PKG® system is providing clinicians with access to key information, which enables improved treatment decisions. "The benefit of the PKG® has been quite profound and, in many cases, it is enabling Parkinson's patients to stay in their jobs and enjoy an improved quality of life", said John Schellhorn, CEO of Global Kinetics Corporation. "In addition to the improvement for patients, it can also lower the cost to the healthcare system, by ensuring that Parkinson's patients are getting access to optimum treatment", said Mr Schellhorn.

How the government has helped:

Brandon Capital Partners committed over \$11 million to Global Kinetics through its \$230 million Medical Research Commercialisation Fund, which is backed, under licence, by the Australian Government's BTF.

Global Kinetics Corporation managing director and CEO John Schellhorn said "BTF funds, together with other Australian Government assistance, have enabled the company to commercialise the PKG® system".

"The accompanying expert advice and assistance - about how best to launch our products into the global market, has been a tremendous value-add. In a start-up, you need to have access to both money and expertise to be able to move quickly to commercialise."

For more information on:

Brandon Capital Partners visit <http://www.brandoncapital.com.au/>

Global Kinetics visit <https://www.globalkineticscorporation.com/>

Biomedical Translation Fund (BTF) visit business.gov.au or call 13 28 46

Case Study

OneVentures

OneVentures is one of Australia's leading venture capital firms, with almost \$400 million in funds under management. This includes a \$170 million healthcare fund (OneVentures Healthcare Fund III), which was formed after OneVentures was granted an \$85 million licence through the Australian Government's BTF, supported by matching capital from OneVentures' private investor network.

OneVentures' Healthcare Fund III invests in therapeutics, devices and diagnostics, at or near clinical development, with a clear commercial, regulatory and reimbursement pathway.

The Fund invests \$10–20 million per company helping drive opportunities through the clinical, regulatory and reimbursement processes to achieve prominence in global markets.

The OneVentures Healthcare Fund III investment team is playing an active role in supporting BiVACOR to develop a rotary Total Artificial Heart device that could provide a life-saving solution for individuals requiring a new heart. The device has the potential to replace current heart transplantation procedures and gives hope to the 20 million individuals worldwide affected by heart failure by providing an alternative to organ transplantation. Only 4,200 heart transplants take place globally each year due to a shortage of donors.

Heart transplantations often fail within 7–10 years because of rejection of the donor heart and recipients also risk severe side effects from the rejection medication. The Total Artificial Heart offers the prospect of a permanent alternative to transplant without the risk of rejection or associated side effects from medication. This small compact device uses proven rotary blood-pump technology to provide the patient's required cardiac output. Once clinically tested and approved, the device is expected to last the life of the patient without needing replacement.

For more information on:

OneVentures visit one-ventures.com.au

BiVACOR visit bivacor.com

Biomedical Translation Fund (BTF) visit business.gov.au or call 13 28 46



OneVentures has invested \$6.8 million in BiVACOR, a company that is developing a rotary Total Artificial Heart.

Program Overview

Entrepreneurs' Programme



"Commercialisation is a challenging process because good ideas are not enough in an intensely and increasingly disrupted competitive world. Entrepreneurship is essential to both transform and develop the Australian economy. Invention, research, innovation and technical development need to be matched with both adaptive and new business models, insightful and mature management and a bold determination by those pursuing these ventures to succeed".

"Through its Accelerating Commercialisation (AC) element, the Entrepreneurs' Programme (EP) delivers tangible and timely services to many early-stage businesses through extensive diligence, selection and a hands-on approach to mentoring and management assistance. This is delivered to all applicants and participants in the program and in particular, through experienced commercialisation advisers across Australia. The companies supported are commercialising some of the best emerging technologies in Australia and are working in close alignment with the Growth Centres".

"The direct impact of AC is evidenced by the success of many new businesses in terms of new employment, additional exports and ongoing matching investment by private sector investors driving additional rounds of growth that are helping to add depth to the Australian entrepreneurial and commercialisation ecosystem. Over this last year, we have seen further evidence that innovation and entrepreneurship demonstrated by participants and applicants to the AC element of EP continues to improve. Recently updated metrics of the success and performance of EP confirms the reach and effectiveness of the program. There has been both a tangible and meaningful improvement in the quality of applications and a sharper focus on the performance metrics of the programmes, which translate into measurable outcomes".

"We are delighted to report that this year the EP Committee has been returned to full strength with the addition of new members (Bessi Graham and Rachel Neumann) and the return of an experienced past member (Jan Bingley). This enlarged team adds more depth and diversity to the Committee, which has already been demonstrated in our recent meetings".

"We have also seen significant participation by a number of Commonwealth Agencies participating in the next round of the Business Research and Innovation Initiative (BRII). This initiative simultaneously creates new commercial opportunities for small entities and adds skills development and knowledge transfer between small business and government, while providing an opportunity to improve cost-effective productivity for these Agencies solving problems and addressing functional challenges that align with their own priorities".

"The integration of government strategy and policy, departmental staff and the EP Committee have driven material improvement in the processes of the Accelerating Commercialisation and Incubator Support elements of EP, and BRII".

MR ANTHONY SURTEES
CHAIR, ENTREPRENEURS' PROGRAMME COMMITTEE.

The Entrepreneurs' Programme (EP) Committee provides merit assessments and merit ranking recommendations on applications under the Accelerating Commercialisation and Incubator Support elements of EP. The Committee also provides merit assessments for the Business Research and Innovation Initiative, which supports Australian businesses to develop innovative solutions that address government challenges.

Entrepreneurs' Programme

The Entrepreneurs' Programme (EP) delivers advice, networking and grants to help businesses grow, innovate and commercialise nationally and globally. This helps to drive economic growth and jobs, improving broader community outcomes. EP delivers this support through Accelerating Commercialisation, Business Management, Innovation Connections and Incubator Support.

Business Management helps businesses to grow by improving management capabilities, extending supply networks and taking advantage of growth opportunities.

Innovation Connections helps businesses innovate by collaborating with the research sector to develop new ideas with commercial potential.

Accelerating Commercialisation helps businesses, entrepreneurs and researchers to commercialise novel products, processes and services. Businesses may also apply for a competitive matched grant of up to \$1 million for commercialisation.

Incubator Support helps innovative startups develop business capabilities to achieve commercial success in international markets, through the provision of incubator services. Funding is provided to new and existing incubators to support their development, boost their effectiveness, expand services and increase their capabilities by providing access to seconded Experts in Residence

In 2018-19, approximately 3,200 firms accessed advice through EP. The program delivered 8,238 services over the year, exceeding its Portfolio Budget Statement Key Performance Indicator target of 6,932 for 2018-20.

In 2018–19, a total of 1,951 matched grants were approved across all elements, worth a total of \$83,509,135:

- Business Management: 1,456 grants worth a total of \$21,710,470
- Innovation Connections: 342 grants worth a total of \$14,441,328
- Accelerating Commercialisation: 83 grants worth a total of \$35,960,528
- Incubator Support: 70 grants worth a total of \$11,396,809.

Based on a sample of businesses that have completed a service and or grant to date, EP has helped:

- Create 10,100 jobs
- Increase business turnover by \$3.1 billion
- Increase business export revenue by \$235 million
- Increase new capital raised by \$66.5 million.

This analysis is based on self-reported performance data from a sample of 2,244 businesses across Business Management (2095), Accelerating Commercialisation (107) and Innovation Connections (42). Equivalent data is not yet available for Incubator Support.

Incubators funded through Incubator Support are delivering services to over 1,000 startups participating in supported projects, and have provided access to expert advice through the secondment of over 130 seconded experts.

Through 2018–19, the Department of Industry, Innovation and Science used its customer relationships and its user-design expertise to develop opportunities to improve how EP helps businesses to grow, innovate and commercialise. The department is now working to implement learnings that will improve access to expert advice for businesses as well as networking and grants through the program.

During the 2019 Election campaign, the Australian Government also announced that it would invest \$5 million in funding to support first generation migrant and refugee entrepreneurs, through the Incubator Support element of EP. Program funding has been committed over four years, commencing in 2019–20.

For more information on the services, advice and support available through the Entrepreneurs' Programme go to business.gov.au or call 13 28 46.

140
National Network
**ADVISORS/
FACILITATORS**

**\$66.5
MILLION**



in additional capital raised,
based on a sample
of supported grantees

14,000
BUSINESSES



accessed **advice** to date

41 INCUBATORS
FUNDED TO DATE

WHICH WILL
SUPPORT OVER



AUSTRALIAN START-UPS

10,000



**JOBS
CREATED
TO DATE**

**\$3.1
BILLION**

increase in
business turnover to date



**134
Experts**

in Residence seconded
to build capabilities of
Australian Start-ups

Case Study

AgriDigital

Helping local Australian farmers to connect to global supply chains.

With help from the Entrepreneurs' Programme, Emma Weston, CEO and Co-Founder of AgriDigital, has built her company from 22 to 47 staff after receiving a \$1 million Accelerating Commercialisation Grant awarded in July 2017.

AgriDigital's ambition is to make global agricultural supply chains simple, easy and to ensure the integrity of the trading, tracing and finance by connecting all parties in the supply chains.

AgriDigital launched their platform in September 2017 after spending two years developing a state-of-the-art solution to solve challenges faced by multiple participants in the agrifood supply chain.

Real time transactions, and the ability to perform these using block chain technology gives AgriDigital users live information about the location and status of their asset at any given time as it moves through the supply chain.

The platform provides AgriDigital users with full scale trade flow management, access to finance and traceability of the origins of the item. It makes workflows standard and dramatically reduces the opportunity for fraud.

AgriDigital now has 37 customers and more than 3000 active users, operates in 30 different countries, with 5.2 million tonnes of grains and cotton, worth \$1 billion transacted through the platform.

AgriDigital is now entrenched in its initial target market of Australian grain, and growing within the cotton industry. In 2019, the company is working on capturing customers in North America and Canada.

To support this strategy, Emma undertook a three month residency at the Austrade's Landing Pad in San Francisco. Emma arrived at the Landing Pad with a clear goal: to validate her market strategy for North America. She used her time in San Francisco to create brand awareness in the market, build relationships with potential customers, the regulatory community and other stakeholders, and connect with potential investors.

Following this residency, Agridigital is now setting up a Chicago office to establish an in market presence, and growing its team and brand in North America.



Emma Weston with her AgriDigital Co-Founders,, Bob McKay and Ben Reid

Quote: "EP provided an important injection of non-dilutive capital [and enabled us] to begin a long-lasting relationship with our Commercialisation Adviser Topaz Conway which provided us an alternative development and growth lens."

EMMA WESTON, CEO AND CO-FOUNDER, AGRIDIGITAL

Case Study

Sentek Technologies

Revolutionising soil management for a global market.



The research team working on Sentek Technologies' sensor.

With help from the Entrepreneurs' Programme (EP), Sentek Technologies is producing a new, innovative and patented sensor product to release on the global market, and has recruited four new staff with expertise in material science.

From its base in Adelaide, Sentek sells sensors and solutions for precision management of water, salt and fertiliser levels in soil. Sentek's products are sold around the world through a network of distributors, who are experts in irrigated agriculture, mining and environmental management. Sentek supports more than 70 distributors, with hundreds of sales locations around the world.

Sentek was developing a new sensor that could selectively detect nitrate in soils, but had problems with premature ageing and cracking. To solve this, Sentek accessed networking assistance through the Innovation Connections element of EP to link up with experts in material science at the University of South Australia (UniSA).

EP helps businesses to collaborate with the research sector to develop new ideas with commercial potential and to address any knowledge gaps that are preventing business growth.

Sentek worked with UniSA to develop the sensor and test its commercial viability. Building on this collaboration, a researcher from UniSA is now working with Sentek to develop a commercial prototype.

EP is also providing Sentek with business advice and mentoring to help them increase revenue and further expand in overseas markets. This has included identifying focus areas for Sentek to prioritise and an action plan with strategies to support its targeted business improvement outcomes.

As a result of this advice, Sentek are now delivering tailored solutions for growers in Australia, the United States, Africa and Europe.

Case Study

Catten Industries

Diversifying markets for growth.



Catten Industries has been providing full service sheet metal fabrication from concept to completion since 1994.

Catten Industries is a precision sheet metal manufacturer based in Melbourne. Since 1994, Catten Industries has been providing full-service sheet metal fabrication from concept to completion.

In recent times, Catten faced various challenges, including an ageing workforce and equipment, dated and inefficient work practices; difficulties competing against cheaper imports; and a need to identify new target markets. With the closure of major automotive manufacturing plants in Australia, Catten lost a key customer segment, leading to declining revenue growth and a pressing need to refocus their activities.

To help address these challenges, Catten sought advice from the Entrepreneurs' Programme and support in reviewing its business strategy and direction to achieve further growth.

Based on advice from EP, Catten invested in new operational processes, including adopting an efficient, integrated paperless system. Catten has also started reviewing their marketing processes to make more effective use of their website to generate sales.

EP has also supported Catten to focus on exports and increase its revenue. This has included working with a major buyer to understand their requirements and collaborate with their customers. Catten are also exploring opportunities to expand their range of products.

As a result of this support, Catten has diversified its income streams through exports, grown its employees from 27 to 31, and increased its turnover by 10 percent.



Catten provides in-house services from design to delivery, allowing Catten to have complete control over the manufacturing process. This allows for flexibility in meeting complex customer requirements using the latest CNC sheet metal manufacturing technology and machinery.

Program Overview

Business Research Innovation Initiative (BRII)

The Business Research and Innovation Initiative (BRII) is a pilot program that was announced in December 2015 as part of the 'Government as an exemplar' pillar of the National Innovation and Science Agenda.

The BRII is a competitive grant program that aims to drive innovation within small to medium enterprises (SMEs) and Government. It offers competitive grants to encourage SMEs to develop solutions to public policy and service delivery challenges nominated by Australian Government agencies. It seeks to:

- stimulate the innovative capacity of SMEs and Australian Government agencies;
- improve business capability to access national and international markets;
- develop SMEs confidence and awareness when working with government as a possible customer and
- encourage Australian Government agencies to source innovative solutions.

Each round provides up to \$2 million for feasibility studies and up to \$10 million for proofs of concept across five challenges. The SMEs with the best proposals for each challenge receive grants of up to \$100,000 to test the feasibility of their ideas over three months, and they may then apply for up to \$1 million to develop a prototype or proof of concept over a period of up to 18 months.

At the conclusion of the proof of concept, Australian Government agencies can consider purchasing the solutions developed through the program, but are under no obligation to do so.

The SMEs retain full rights to their solution and any intellectual property, and are then able to pursue further commercialisation opportunities domestically and worldwide.

The BRII is administered by the Department of Industry, Innovation and Science (DIIS) and is delivered by AusIndustry. The BRII is delivered in three stages:

1. Challenge Selection
2. Feasibility Study
3. Proof of Concept.

CHALLENGE SELECTION

1. Australian Government Agencies submit challenges
2. Innovation and Science Australia shortlist challenges through assessment process
3. Minister approves shortlisted challenges
4. Challenges are announced by the Minister

FEASIBILITY STUDY

1. SMEs apply to respond to a challenge
2. Innovation and Science Australia assess applications
3. Minister approves recommended applications for funding
4. Successful SMEs conduct feasibility studies

PROOF OF CONCEPT

1. Successful SMEs apply for proof of concept grant
2. Innovation and Science Australia assess applications
3. Minister approves recommended applications for funding
4. Successful SMEs conduct proof of concepts

Round one has been completed with positive outcomes being shown. Out of the five challenges, one agency has provided funding to continue development of the solution; another has subscribed to the premium model developed; and a third agency is conducting a selection process between the two solutions developed which is to be completed in 2019-20.

The BRII Round 2 pilot officially launched with five new challenges from Australian Government agencies:

- Fast and secure digital identity verification for people experiencing family and domestic violence – **Department of Human Services**
- Intelligent data to transform tourism service delivery – **Australian Trade and Investment Commission (Austrade)**
- Uplifting government capability to help deliver world-leading digital services – **Digital Transformation Agency**
- Managing the biosecurity of hitchhiking pests and contaminants on shipping containers – Department of Agriculture and Water Resources
- Automating complex determinations for Australian Government information – **National Archives of Australia**

Out of 150 applications received, 15 SMEs were selected and will share in up to \$1.5 million in initial funding to complete feasibility studies on their innovative ideas or solution to solve these public sector challenges. SMEs with the most promising ideas and products arising from these 15 initial grants may be competing for a further grant of up to \$1 million each.

For more information about the initiative please visit the BRII [webpage](https://www.business.gov.au/assistance/business-research-and-innovation-initiative)

<https://www.business.gov.au/assistance/business-research-and-innovation-initiative>

Some examples from previous grant recipients that have participated in the program are outlined in the following pages.

Case Study

Atamo Pty Ltd

Atamo was established in 2003 and specialises in developing professional electronic engineering solutions.



Atamo's Pyrethroid Surface Sampler (PSS) developed under the proof of concept grant for the Business Research and Innovation Initiative'

The company was funded under the first round of the Australian Government's Business Research and Innovation Initiative (BRII) in partnership with the Department of Agriculture to make a portable device that measures the amount of insecticide residues sprayed inside aircraft to combat mosquito-borne diseases. Atamo's innovative solution has caught the attention of new markets.

Over the course of the feasibility and proof of concept stages Atamo collaborated with several individuals and companies to develop the solution, including researchers who helped to test and refine technical elements of the initial design, and several businesses that helped to produce the prototype.

As a result of BRII, Atamo has been able to expand its innovative capacity and access new commercial opportunities. The proof of concept funding has enabled Atamo to continue its R&D at a scale they would not have been able to achieve without the grant, and has provided the company the certainty needed to employ three graduates. Atamo has identified several applications of their solution beyond the scope of the BRII challenge, for which it has already started to pursue commercialisation pathways.

Atamo is sharing information about the technology developed under BRII with the Innovative Vector Control Consortium (IVCC). IVCC is a 'Product Development Partnership', a special class of not for profit organisation funded by the major international philanthropic charities and United Kingdom, United States, Swiss and Australian Governments. The Atamo technology is relevant to IVCCs Next Generation Indoor Residual Spraying program to develop new insecticides to control Malaria.

The company is also collaborating with the Malaria Consortium, Chemsearch Consulting Pty Ltd and the University of Western Australia. Atamo has had discussions with the New Zealand Ministry of Primary Industries, which is interested in what the company has developed through their proof of concept for possible field trials with Air New Zealand and the New Zealand Defence Force.

Atamo has also negotiated a Memorandum of Understanding (MoU) with Callington Haven who are a specialty chemical manufacturer for global aviation. The MoU establishes a basis to collaborate in commercialising the product. Atamo has registered one international patent and expects to develop an additional two patents. Atamo has engaged an intellectual property law firm to provide advice regarding the intellectual property strategy and implementation.

Having completed the proof of concept stage, the next milestone for the company is to begin commercialising their device nationally and internationally.

Following the successful testing of the prototype, the Department of Agriculture has approved a budget under its Biosecurity Innovation Program for a Validation Project and will soon enter into contract negotiations with Atamo to implement the project.

The Business Research and Innovation Initiative provided funding of \$1.1 million to Atamo to solve government challenges in public policy and service delivery.

"BRII has provided the opportunity to identify and address a market opportunity we would not otherwise have identified".

"The evaluation process to be awarded the funding for the Feasibility Study and the Proof of Concept has added credibility in our dealings with potential commercial partners, allowing us to progress commercial arrangements more rapidly than would otherwise be possible".

"Ongoing communications facilitated by the BRII team with DAWR has helped us ensure we are developing the technology in a way that will be readily adopted by DAWR and meet their requirements for a solution. BRII has initiated planning for procurement processes post the proof of concept phase enabling us to plan the business case for commercialisation with more certainty than would otherwise have been possible."

STEWART SNELL,
CHIEF EXECUTIVE OFFICE - ATAMO PTY LTD

Case Study

Likely Theory Pty Ltd

Likely Theory, established in 2015, is an experienced team of entrepreneurs, engineers, psychologists and policy officers that focus on tackling complex organisational decision making and policy analysis issues in both the public and private sectors.

Likely Theory's innovative product, Converlens, enables governments to collect, analyse and report data while they are undertaking consultations. The product enables better engagement and consultation with communities and within departments. Converlens utilises cutting edge artificial intelligence technology that processes complex qualitative data, providing rapid analysis and deep insights from a range of sources, including written and verbal submissions, and social media.

Converlens is an innovative web-based consultation platform that combines leading engagement research with cutting edge statistical and artificial intelligence and machine learning technologies, while also providing data visualisation, informatics and analysis capabilities. By using modern information collection and engagement techniques, Converlens enables communities and stakeholders to collaborate on policy and program design, and continue to participate in a productive and efficient way.

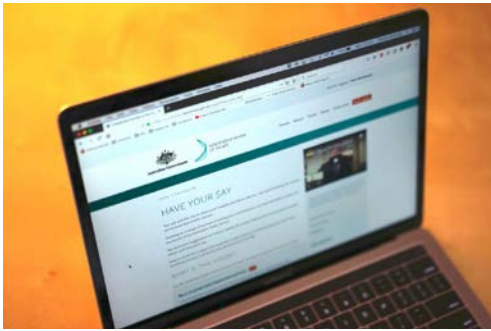
Converlens enables organisations to expand the consultation they undertake. It is able to analyse input to draw out themes and sentiments across a broad range of channels. The benefit for users is an easy-to-use platform

that enables citizens to participate, contribute and collaborate on a much broader scale than ever before. Converlens can also be utilised for internal consultation, offering rapid formation of project spaces where people can ideate, create, share and edit content, as well as capture comments and feedback. In addition to this, understanding internal engagement, pulse checks on employee sentiment and deep dives on organisation culture can all be facilitated and analysed on Converlens, providing an easy to use, end-to-end solution for internal consultation.

The Converlens platform is being used by the Department of Prime Minister and Cabinet (PM&C) to support the APS Review designed to position the APS in the years and decades ahead to be equipped to continue to professionally serve the government and the nation. The platform has enabled PM&C to capture input and insights from the public, allowing opinions of Australians to be heard, and encouraging them to get involved in the outcome of the APS Review.

Likely Theory received grant funding from the BRII to develop a solution to the BRII's digitally enabled community engagement in policy and program design challenge.

Participating in the BRll enabled Likely Theory to undertake a feasibility study of their solution, Converlens, and then complete a proof of concept demonstration to the sponsoring Australian Government agencies. This funding allowed them to grow and build competitive advantage by developing artificial intelligence based software that otherwise wouldn't have been possible. They are now pursuing several leads for future work with the City of Greater Geelong Council, the Productivity Commission, the Department of Industry, Innovation and Science, Department of Premier and Cabinet Victoria and Elton Consulting.



"BRll has enabled us to significantly investigate, model and analyse approaches to digitally enabled community policy engagement, specifically within the context of public service requirements".

"The BRll provided an exciting platform for us to engage in dialogue with the agencies, with direct access to staff which provided critical and invaluable guidance during our research into a wide variety of techniques and methodologies related to the challenge".

"The high level of stakeholder access and support offered throughout BRll has helped inform our product development and ultimately led to our commercial success. We have found the program highly valuable and engaging and would encourage any business considering participation in future rounds of BRll to apply".

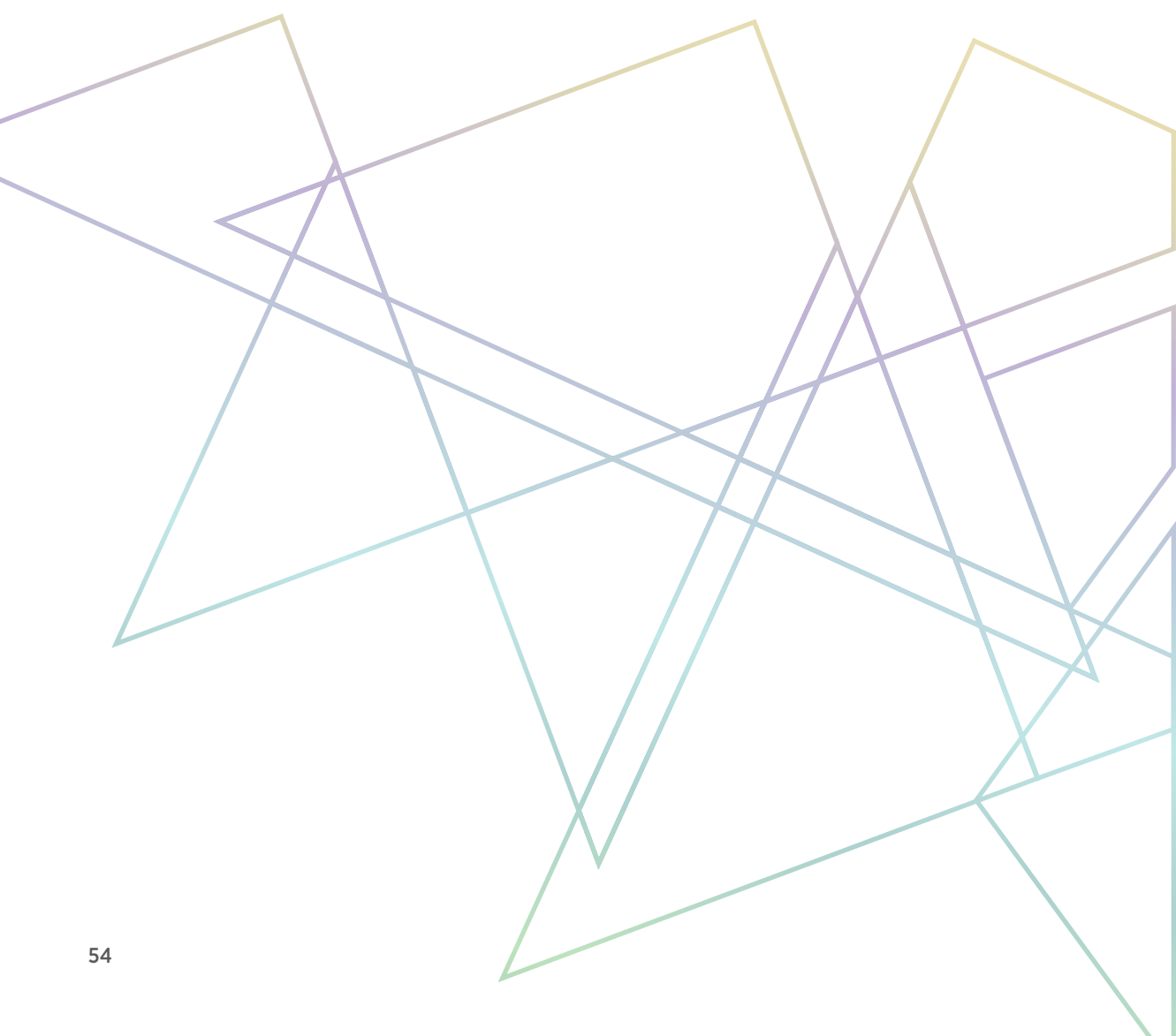
TOM WORKMAN, LIKELY THEORY PTY LTD

Legacy programs

As at 30 June 2019, ISA continues to monitor the following programs which are closed to applications:

- Innovation Investment Follow-on Fund
- Innovation Investment Fund
- Pooled Development Funds
- Pre-Seed Fund

AusIndustry (a division of DIIS) will continue to work with legacy program customers.



Section Two

GOVERNANCE

Innovation and Science Australia

Legislation

Organisation and management

Board and committee membership in 2018-19

Meetings of Innovation and Science Australia in 2018-19

Structure of Innovation and Science Australia

Legal matters/Litigation



Innovation and Science Australia

ISA seeks to encourage a more entrepreneurial Australian innovation, science and research system through its partnership and administration of the Government's industry research and development, innovation and venture capital programs.

By collaborating and engaging with stakeholders throughout 2018–19 ISA contributed to an increased level of investment and commercial success in Australian industry.

In 2018–19, ISA reported to the Minister for Industry, Science and Technology, The Hon Karen Andrews MP.

Legislation

The Industry Research & Development Act 1986

ISA operates under the authority of the *Industry Research and Development Act 1986* (IR&D Act). The aim of the *IR&D Act* is to facilitate provision of independent strategic advice about industry, innovation, science and research, and to promote development, and improve the efficiency and international competitiveness of Australian industry by encouraging research and development, innovation and venture capital activities.

Functions and powers of ISA

ISA's functions are set out in the *IR&D Act* and associated Ministerial Directions. The Board's responsibilities include:

- provision of independent strategic whole-of-government advice to government in relation to industry, innovation, science and research matters;
- promote investment in industry and Australia's innovation, science and research system;

- co- administration, monitoring and operation of the R&D Tax Incentive;
- registering, monitoring and revoking the registrations of Venture Capital Limited Partnerships and Early Stage Venture Capital Partnerships;
- co-administration and oversight of the Cooperative Research Centres Program;
- strategic oversight of the Entrepreneurs' Programme, which includes administration and monitoring of Accelerating Commercialisation and Incubator Support Initiative;
- monitoring ongoing projects under programs which are now closed to applications (see list of legacy programs on page 54;
- advising the Minister about the operation of the *IR & D Act*, the *Pooled Development Funds Act 1992* and the *Venture Capital Act 2002*, and the Commonwealth's income tax laws as they operate in relation to those Acts; and
- Ministerial Directions issued to the former Innovation Australia Board and the ISA Board also provided additional functions for ISA, which were undertaken in the 2018–19 reporting period.

In February 2019, the Government provided ISA with a Statement of Expectations (SOE) outlining ISA's core objectives and activities that would support the Government to transform Australia into a leading innovation nation that is capable of continued economic prosperity and creation of new job opportunities. ISA is on track to deliver two priority tasks set out in the SOE: a report on opportunities for increased business investment in innovation and a report on effectiveness of government investment and system performance. A statement of intent is expected to be delivered to the Minister in August 2019.

Financial responsibilities of ISA under the IR&D Act

ISA has no financial responsibility for program-related grants, loan or licence agreements entered into after 10 September 2004. This follows amendments to the *IR&D Act* which came into effect on 11 September 2004, and removed powers of the former Innovation Australia to commit, approve or recommend expenditure of government funds and further safeguard members from any personal liability stemming from board membership.

Organisation and management

ISA uses a committee structure to support the administration and provide expert advice on innovation and venture capital programs. As at 30 June 2019, five committees report to ISA; each committee has the following specific functions:

- **R&D Incentives Committee** - responsible for advising the Board about the operations of the R&D Tax Concession program for income years commencing before 1 July 2011 and the R&D Tax Incentive program for income years commencing on or after 1 July 2011. The Committee advises on operational policy as well as providing certificates to the Commissioner for Taxation about the eligibility of activities registered for the concession and the incentive. The R&D Incentives Committee met eight times in 2018-19.
- **Cooperative Research Centres Advisory Committee** - ongoing role is to provide advice and recommendations on applications for funding, the progress and performance of individual CRC's, and the operation of the CRC program. The CRC Advisory Committee met four times in 2018-19.
- **Innovation Investment Committee** - responsible for administering the venture capital programs and providing guidance to the Department throughout the programs' lifecycles, including decisions on registration and decisions relating to compliance and interpretation of provisions in the relevant Acts. The Innovation Investment Committee met 10 times in 2018-19.
- **Biomedical Translation Fund Committee** - administers the Biomedical Translation Fund (BTF) program and guides the Department of Industry, Innovation and Science throughout the lifecycle of the program. The BTF Committee met twice in 2018-19.
- **Entrepreneurs' Programme Committee** - responsible for providing merit assessments and merit ranking recommendations on applications under the *Accelerating Commercialisation* and the *Incubator Support Initiative*. The Committee also provides merit assessments for the *Business Research Innovation Initiative* which supports Australian businesses to develop innovative solutions that address persistent government challenges. The Entrepreneurs' Programme Committee met eight times in 2018-19.

Board and committee membership in 2018–19

Members of ISA are appointed by the portfolio Minister in writing. The *IR&D Act* provides for a maximum of 15 members, including the Chair, Deputy Chair and an ex-officio member. Four members of ISA constitute a quorum.

ISA committee members are appointed by the portfolio Minister and operate under delegation from ISA. Committees comprise a chair and up to six members, with three committee members constituting a quorum.

ISA (Board and committee) members are individuals with an appropriate mix of professional and technical expertise across a broad section of industries, technologies and capital markets, as well as experience in commercialisation of industry innovation, corporate governance and business finance.

ISA and its committee members, other than the ex-officio members, are remunerated in accordance with determinations set by the Remuneration Tribunal.

Conduct of Board

ISA has two primary policies setting out requirements for Board and Committee members conduct and the disclosure and management of member's pecuniary and non-pecuniary interests. As statutory office holders, Board and Committee members are also bound by the Australian Public Service Code of Conduct as per sections 13 and 14 of the *Public Service Act 1999*.

More details on the Disclosure of Interest Framework and Code of Conduct are published on the www.industry.gov.au website.

Office of Innovation and Science Australia

While ISA is independent of government by virtue of its founding statute, ISA is supported by OISA, which is located within, and supported by, DIIS. As part of the development of its advice to Government, ISA (through OISA), undertakes consultation with relevant government portfolios, industry, the innovation community, and the research and science communities.

OISA is headed by Dr Charles Day, Chief Executive Officer who is appointed by the Portfolio Minister and engaged through DIIS. OISA also has a dedicated Board Manager. Resources in the OISA as at 30 June 2019 were: the CEO, the COO, nine full time staff and one graduate.

Partners in delivery

AusIndustry is the program delivery division of DIIS. AusIndustry staff in the national, state, territory and regional offices provide project reporting services, technical assessment and promotional services for the programs that ISA oversees. AusIndustry officers also advise customers about the range of government industry support programs.

AusIndustry (on behalf of ISA) and the ATO jointly administer the R&D Tax Incentive, the R&D Tax Concession, the venture capital tax programs and Pooled Development Fund. AusIndustry manages the registration of research and development activities and conducts compliance reviews related to the eligibility of these activities. The ATO determines if the expenditure that is claimed in a tax return for research and development activities is eligible.

The Department of Health has policy responsibility for the Biomedical Translation Fund (BTF). The Department of Industry, Innovation and Science (AusIndustry) administers the Fund.

Board members as at 30 June 2019

Chair



Mr Andrew Stevens
20 December 2018 to
19 December 2021

Innovation and Science Australia Membership



Dr Bronte Adams AM
Managing Director,
Dandolo Partners
International
24 October 2016 to
16 August 2019



Mr Paul Bassat
Co-Founder
Square Peg Capital
24 January 2019 to
23 January 2020
10 March 2016 to
27 October 2018



Ms Maile Carnegie
Group Executive,
Digital Banking ANZ Bank
25 January 2019 to
24 January 2020
10 March 2016 to
24 January 2019



Professor Bronwyn Harch
Executive Director,
Institute for Future
Environments, QUT
24 October 2016 to
16 August 2019

Deputy Chair



Dr Alan Finkel AO
Australia's Chief Scientist
25 January 2019 to
31 December 2021
10 March 2016 to
24 January 2019



Dr Christopher Roberts AO
Chair, OncoSil Medical
Limited
13 March 2019 to
12 March 2021
10 March 2016 to
9 March 2019



Professor Elanor Huntington
Dean of Engineering and
Computer Science at the
Australian National
University
20 December 2018 to
19 December 2021



Professor Raoul Mortley
Principal, Raoul Mortley
Consulting Chairman
Spee3D
20 December 2018 to
19 December 2021



Special Advisor to the Board

Dr Marlene Kanga AM
Director,
iOmniscient Pty Ltd
15 September 2017 to
12 September 2019
(past Board member 3
August 2013 to 4 August
2016*; 15 September 2016
to 14 September 2017)

Members who retired from the Board in 2018-19



Mr Bill Ferris AC, Chair
Co-Founder and Co-Chair
CHAMP Private Equity
12 November 2015 to
11 November 2018



Dr Michele Allan
Chancellor, Charles Sturt
University
10 March 2016 to
27 October 2018



Mr Scott Farquhar
Co-Founder and Co-CEO
Atlassian
10 March 2016 to
1 August 2018



Mr Daniel Petre AO
Partner Air Tree Ventures
10 March 2016 to
27 October 2018



Mr Saul Singer
(International Member)
Editorial Board Member
Times of Israel; Author
5 May 2016 to
January 24 2019

*inc. Acting Chair of Innovation Australia from 19 September 2014 to 18 September 2015

Committee members as at 30 June 2019

R&D Incentives Committee

R&D INCENTIVES COMMITTEE MEMBERS TERM OF APPOINTMENT

Dr Marlene Kanga AM CHAIR	President, World Federation of Engineering Organisations	16 August 2016 to 15 August 2019 05 August 2013 to 04 August 2016
Mr Lachlan James	Executive Director of Frontier Fund Management & ITP Renewables and CEO of Haystack HQ	04 April 2019 to 03 April 2022
Ms Julia Sloman	Company Secretary, Big 4 Transactions and listed company CEO	01 March 2019 to 28 February 2022
Ms Julie Phillips	CEO, BioDiem Ltd	01 November 2018 to 31 October 2021 14 September 2015 to 13 September 2018
Ms Joanne Mulder EX-OFFICIO	Department of Industry, Innovation and Science	N/A

Cooperative Research Centres (CRC) Advisory Committee

CRC ADVISORY COMMITTEE MEMBERS TERM OF APPOINTMENT

Ms Kylie Sproston Chair	CEO, Bellberry Ltd	18 June 2018 to 17 June 2021 (Chair) 20 October 2016 to 19 October 2019 (member)
Dr Damian Barrett	Research Director, Onshore Gas Program	09 April 2019 to 08 April 2022
Professor Ian Chubb AC	Former Australian Chief Scientist	18 June 2018 to 17 June 2021 18 June 2015 to 17 June 2018
Ms Denise Goldsworthy	Independent Director, Western Power	18 June 2018 to 17 June 2021
Professor Christobel Saunders AO	Professor of Surgical Oncology, School of Surgery, The University of Western Australia	20 October 2016 to 19 October 2019
Mr Douglas Stuart	Chief Marketing Officer, Instacluster	20 June 2017 to 19 June 2020
Mary Ann O'Loughlin EX-OFFICIO	Department of Industry, Innovation and Science	N/A

Innovation Investment Committee

INNOVATION INVESTMENT COMMITTEE MEMBERS TERM OF APPOINTMENT

Mr Marty Gauvin CHAIR	President and CEO, Virtual Ark Pty Ltd	20 April 2019 to 19 April 2022 20 April 2016 to 19 April 2019
Professor Stephen Barkoczy	Professor, Faculty of Law, Monash University	20 April 2019 to 19 April 2022 20 April 2016 to 19 April 2019
Ms Amanda Heyworth	Non-executive Director	12 March 2019 to 11 March 2022 20 April 2016 to 19 November 2018
Leonie Horrocks EX-OFFICIO	Department of Industry, Innovation and Science	N/A

Biomedical Translation Fund Committee

BIOMEDICAL TRANSLATION FUND COMMITTEE MEMBERS TERM OF APPOINTMENT

Mr Peter Wills AC CHAIR	Deputy Chair, Research Australia	2 May 2019 to 1 May 2022 2 May 2016 to 1 May 2019
Professor Melissa Little	Professor, NHMRC Senior Principal Research Fellow Murdoch Children's Research Institute	2 May 2016 to 1 May 2019
Ms Elizabeth McCall	Investment Director, Yuuwa Capital LP	4 April 2019 to 3 April 2022
Ms Fiona Pak-Poy	Non-executive Director, Securities Industry Research Centre of Asia	2 May 2019 to 1 May 2022 2 May 2016 to 1 May 2019
Dr Deborah Rathjen	Chief Executive Officer & Managing Director, Bionomics Ltd	2 May 2019 to 28 February 2021 2 May 2016 to 1 May 2019
Dr Leanna Read	Chief Scientist for South Australia	04 April 2019 to 3 April 2022 2 May 2016 to 24 January 2019
Mr Jeremy Samuel	Founder & Managing Director, Anacacia Capital	4 April 2019 to 3 April 2022 2 May 2016 to 24 January 2019

Entrepreneurs' Programme Committee

ENTREPRENEURS' PROGRAMME COMMITTEE MEMBERS TERM OF APPOINTMENT

Mr Anthony Surtees CHAIR	Co-founder - Marketing and Strategy, Zeetings Pty Ltd	1 November 2018 to 31 October 2021 (Chair) 1 July 2017 to 30 June -2020 1 July 2015 to 30 June 2017
Ms Jan Bingley	Founder & Principal, UCX Consulting Pty Ltd	28 November 2018 to 27 November 2021
Ms Bessi Graham	Co-Founder, Benefit Capital	29 January 2019 to 28 January 2022
Dr Carrie Hillyard	Co-Founder CM Capital Investments Pty Ltd	1 July 2018 to 30 June 2021 1 July 2015 to 30 June 2018
Ms Rachael Neumann	Netherless Tech Pty Ltd	28 November 2018 to 27 November 2021
Dr James Williams	Investment Director Yuuwa Capital	19 July 2017 to 18 July 2020
Mr Steve Telburn	Managing Director, Secret Sauce IP Ventures	1 July 2018 to 30 June 2021 1 July 2015 to 30 June 2018

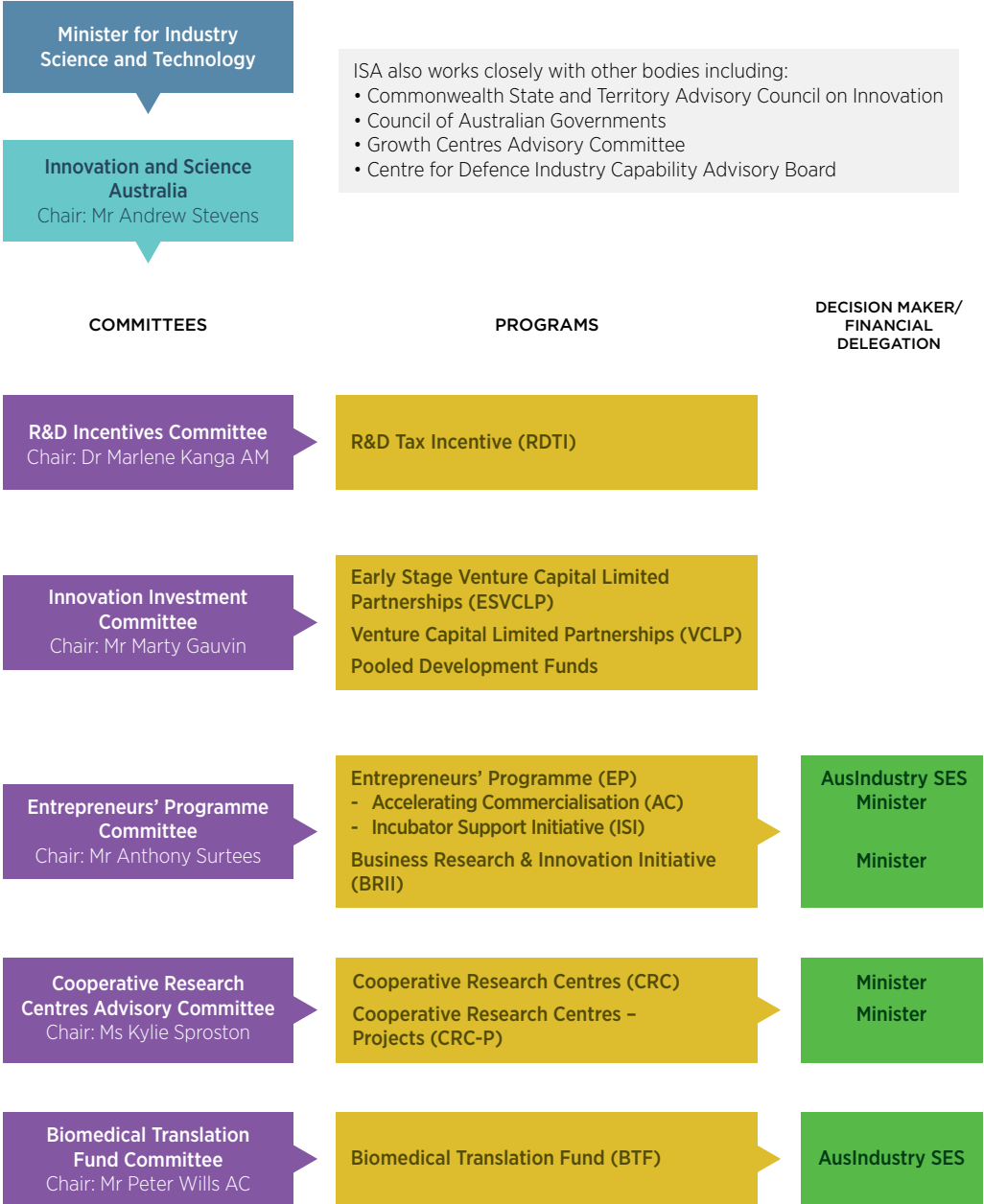
Meetings of Innovation and Science Australia in 2018-19

ISA held five meetings during 2018-19:

2 August 2018	Brisbane
4 October 2018	Melbourne
6 December 2018	Sydney
12 March 2019	Canberra
16 May 2019	Adelaide

ISA also considered a number of matters via teleconference and out of session.

Structure of Innovation and Science Australia as at 30 June 2019



Legal matters/litigation

In 2018-19, ISA was involved in one (1) matter before the Full Court of the Federal Court of Australia. That matter involved an appeal of a decision of the Administrative Appeals Tribunal (AAT) relating to the R&D Tax Incentive.

At the AAT, ISA was involved in 57 matters. Of these, 22 were matters which were initiated in prior years. The remaining 35 matters involved applications received in 2018-19. Two of the applications were related to other applications already before the AAT.

Sixteen matters were resolved in 2018-19. The AAT handed down decisions on two (2) applications. In each proceeding, it affirmed ISA's decision. Eight (8) matters were discontinued or withdrawn by applicants. Five (5) matters were resolved through consent orders. In one proceeding, the application was dismissed due to the applicant's non-compliance.

At 30 June 2019, there were 41 active applications before the AAT involving ISA. However, as some applications are being dealt with together (e.g. same applicants), there are only 35 separate proceedings. Two matters were active but in abeyance.

CURRENT MATTERS AS AT 30 JUNE 2019	FEDERAL COURT	ADMINISTRATIVE APPEALS TRIBUNAL
Board as respondent	1	41

RESOLUTION OF MATTERS 2018-19	FEDERAL COURT	ADMINISTRATIVE APPEALS TRIBUNAL
Decision	0	2
Withdrawal	0	8
Agreement (consent Orders)	0	5
Other finalisation	0	1

ACRONYM LIST

INDEX



Acronym list

A

AAT	Administrative Appeals Tribunal
AC	Accelerating Commercialisation
AFOF	Australian Venture Capital Fund of Funds
AFR	Australian Financial Review
AI	Artificial Intelligence
AICD	Australian Institute of Company Directors
ANZLF	Australian/New Zealand Leadership Forum
APS	Australian Public Service
ARC	Australian Research Council
ATO	Australian Taxation Office

B

BRII	Business Research Innovation Initiative
BTF	Biomedical Translation Fund

C

CRC	Cooperative Research Centres
CRC-P	Cooperative Research Centres-Projects

D

DAWR	Department of Agriculture and Water Resources
DIIS	Department of Industry, Innovation and Science

E

EP	Entrepreneurs' Programme
ERA	Excellence in Research
ESVCLP	Early Stage Venture Capital Limited Partnerships
EVCI	Eligible Venture Capital Investor

I

IR&D	Industry Research and Development
IR&D Act	Industry Research and Development Act 1986
ISA	Innovation and Science Australia
IS	Incubator Support
ISI	Incubator Support Initiative
IVCC	Innovative Vector Control Consortium

M

MoU Memorandum of Understanding

N

NISA National Innovation and Science Agenda

O

OECD Organisation for Economic Co-operation and Development

OEM Original Equipment Manufacturer

OISA Office of Innovation and Science Australia

P

PKG@ Personal KinetiGraph

PM&C Department of Prime Minister and Cabinet

Q

QUT Queensland University of Technology

R

R&D Research and Development

RDTI Research and Development Tax Incentive

S

SME Small to Medium Enterprise

SOE Statement of Expectations

SOI Statement of Intent

STEM Science, Technology, Engineering and Mathematics

T

The Board Innovation and Science Australia

The 2030 Plan Australia 2030: Prosperity through Innovation

U

UNESCO United Nations Educational, Scientific and Cultural Organization

UniSA University of South Australia

V

VC Act Venture Capital Act 2002

VCLP Venture Capital Limited Partnerships

W

WGV White Gum Valley

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