Australian Government

Department of Industry and Science

Innovation Policy Report

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Strategic policy initiatives

Australia

New Chief Executive of CSIRO

Dr Larry Marshall is the new Chief Executive of CSIRO. Dr Larry R Marshall has previously been the Managing Director of Southern Cross Ventures, a venture capital firm based in Silicon Valley, Shanghai and Sydney, specialising in growing Australian technology companies in Asia and US.

He has a longstanding partnership with SoftBank China, China's most successful VC firm, and co-managed the Renewable Energy Fund, founded in 2012, with them.

Dr Marshall began his career as an engineer with a PhD in Physics and over 100 publications and presentations.

He became an inventor, with 20 patents protecting numerous commercial products generating over A$200 million in revenue; then became an entrepreneur, raising over A$100 million in funding and creating companies with over A$1 billion in market cap, and now an investor with A$400 million under management. He has served on 20 boards of high tech companies operating in US, Australia and China.

Benchmarking Australian Science & Technology report released

On 1 December 2014, the report *Benchmarking Australian Science, Technology, Engineering and Mathematics* was released. This follows the tabling of the report at the inaugural meeting of the Commonwealth Science Council.

In his foreword to the report, Australia's Chief Scientist Professor Ian Chubb says: "In view of the central importance of STEM, we need to know how we perform. We need to get 'a fix' on our performance—not an easy one, against 'the world', but a more challenging one, against nations that, like us, are essentially free-market economies with serious science engagement.

"…This report provides insights into where we are and will help us decide what we should do. As an analysis mostly at a high level—signposts in kilometres not metres, let alone centimetres—it is intended to highlight performance and trends that might warrant further investigation, prompt questions for government and contribute to discussion on the future shape and scale of Australian STEM."

The report is available for reading online, and for printing.

Review of the National Survey of Research Commercialisation

The National Survey of Research Commercialisation (NSRC) is being reviewed to help strengthen and streamline the data collection regarding commercialisation of publicly funded research in Australia, and to ensure alignment with current and emerging policy objectives for research commercialisation here and abroad.

The review is also addressing administrative matters to make certain future collections and data management processes are accessible and efficient for survey respondents, administrators and data users. An underlying focus is how data might be better organised and presented to maximise relevance and usage and maintain alignment with data collection abroad.

The Department of Industry and Science has released a discussion paper as part of the consultation process for the review and is inviting comment on that paper. The discussion paper is available at: www.industry.gov.au/NSRCReview. Input can be provided in the first instance via direct submission to https://consult.industry.gov.au or by emailing documents to NSRCreview@industry.gov.au. Submissions will be accepted until close of business on Friday 27 February 2015.

National Agricultural and Environmental Sciences Precinct

CSIRO is working with the Australian National University (ANU) to build a global research precinct based in Canberra. The *National Agricultural and Environmental Sciences Precinct* will become a focus for integrated plant breeding and natural resource management, which will also create opportunities for new biologically-based industries and contribute to the sustainable development of Australia's future prosperity.

At its launch on 5 December, Minister Ian Macfarlane announced that $18 million will be provided from the Science and Industry Endowment Fund's Research Infrastructure Program for the new Precinct. The funding will be used to help upgrade facilities at CSIRO's Black Mountain site, adjacent to the ANU, and enable access to supercomputing systems at the National Computational Infrastructure facility.

Entrepreneurs' Infrastructure Programme – Request for Tender

On 3 December 2014, the former Department of Industry issued a Request for Tender seeking Industry Partners to deliver business advisory and facilitation services for the Entrepreneurs' Infrastructure Programme from 1 July 2015. The tender closed on 16 December 2014.

Soil and Landscape Grid of Australia

Researchers from across Australia - including CSIRO, the University of Sydney, several federal, state and territory government agencies and the Terrestrial Ecosystem Research Network - have joined together to develop detailed digital maps of the country's soil and landscape attributes.

The Soil and Landscape Grid of Australia provides relevant, consistent, comprehensive, nation-wide data in an easily-accessible format, including a range of soil and landscape attribute products. The datasets are a first approximation of national scale maps and are designed to be updated and improved over time as resources, new data and improved methods and technologies become available.

Improving the productivity and incomes of smallholder farmers across Sub-Saharan Africa

CSIRO has received a $14.5 million grant from the Bill and Melinda Gates Foundation to improve the productivity and incomes of smallholder farmers across Sub-Saharan Africa.

The five-year humanitarian project aims to develop higher-yielding self-reproducing hybrid cowpea and sorghum crops to help millions of farmers become more self sufficient.

The team will use the grant to partner with other world-leading research teams from Switzerland, the Unites States, Germany and Mexico.

Further information is available at:

http://www.csiro.au/Organisation-Structure/Flagships/Agriculture-Flagship/CapturingHeterosis.aspx

Australia to host global space research group to keep satellites safely in orbit

On 2 December 2014, Minister Ian Macfarlane opened the Space Environment Management Cooperative Research Centre at a ceremony at Parliament House. This international collaboration, based at Mt Stromlo, will tackle the complex and commercially important issues of managing space debris and preserving the space environment to protect the 3,000 operational satellites in orbit.

Minister Macfarlane said $19.8 million from the Government would enable the CRC to bring together experts from around the world to look at ways to protect around 3,000 operational satellites.

“This new CRC is an international collaboration and will harness the combined knowledge from a range of prominent science and research organisations and businesses,” Minister Macfarlane said.

“This includes the NASA Ames Research Centre and Lockheed Martin from the US, the National Institute of Information and Communications Technology from Japan and our very own Optus and EOS Space Systems.”

NICTA announces new data analytics lab in Victoria in collaboration with RMIT University

New lab to focus on the application of data, user and text analytics in industries including health, logistics, smart cities, environment and security.

On 20 November 2014, NICTA, together with RMIT University, announced the opening of joint data analytics lab in Victoria, based at RMIT University's School of Computer Science & Information Technology (CSIT). NICTA and RMIT value the collaboration at over $1M, with further projects in the pipeline worth up to another half a million dollars.

The team combines the expertise of NICTA's Machine Learning Research Group – independently rated amongst the top five groups of its kind in the world – with RMIT University's School of CSIT, which is widely recognised as a leader in data and information management. The team, jointly led by Professors Timos Sellis and Mark Sanderson, is based in the lab's new premises includes 18 PhD students and four postdoctoral members. Its key focus areas include data, user and text analytics, which have application in industries such as health, logistics, urban development, transport, environment and security.

The Australian Innovation & Manufacturing Incentive discussion paper launched

On 27 November 2014 AusBiotech, Cook Medical, the Export Council of Australia and the Medical Technology Association of Australia released 'Australian Innovation & Manufacturing Incentive', a paper outlining what may be required to introduce a patent box system to Australia to help grow the number of ideas in Australia reaching commercialisation.

NSW: International postdoctoral scholarships – for innovative minds

An exercise physiologist and an engineer from the University of Wollongong will travel to San Francisco this year as recipients of the NSW-QB3 Rosenman Scholar Program. The Rosenman Institute's program of biotech garages - or start-up incubators - allows start-ups access to rental laboratory spaces close to the University of California in which they can lay the foundations for their innovative ideas and devices to move towards commercialisation. This year's participants will work with clinicians and mentors recognised for their expertise in medical device innovation and translation. The NSW Minister for Health and Minister for Medical Research Jillian Skinner, announced the scholarships in December 2014, during the NSW Medical Device Commercialisation Training Program graduation at the National Innovation Centre, Sydney. The scholarships are valued at $448,000 in total over two years.

More Information: http://www.health.nsw.gov.au/ohmr/Pages/nsw-medical-device-tp.aspx

NSW: University of NSW to launch the Michael Crouch Innovation Centre in 2015

The Michael Crouch Innovation Centre (MCIC) will be a student innovation hub which fosters learning, teaching and collaboration that is cross-faculty, cross-disciplinary and industry-informed. The MCIC will operate in the new Materials Science and Engineering building at the epicentre of the UNSW campus' science, technology, law and business precinct. It will house collaborative innovation spaces with state-of-the-art facilities and infrastructure for students to innovate and create and operate based

on three central premises: ‘Everyone is an innovator’; ‘Everyone is welcome’; ‘There is always a better way’.

The MCIC will be a hub for both internal stakeholders (UNSW students, faculty, staff and alumni) and external stakeholders (business, government and industry). It will engage with industry, business and other partners and sponsors to provide training, services and solutions (e.g. business planning, venture catalyst, lean start-up, advisory board, intellectual property, legal, and software and tools).

The hub will mentor and support students to generate creative ideas, build prototypes, minimum viable products or offers, test hypotheses with end users, draft and iterate business models and otherwise take ideas and projects to the next level.

The MCIC seeks to forge strong two-way relationships with industry and businesses. Anyone with a desire to sponsor or engage with the Michael Crouch Innovation Centre at UNSW, Australia, is invited to contact the university to explore opportunities.

The MCIC was made possible through a donation by Michael Crouch AO, an alumnus of UNSW and founder of Zip Industries.

Tasmania: A New Innovation Collaboration for Tasmania launched

On 11 December 2014, the Tasmanian Government announced a renewed partnership with the University of Tasmania to promote innovation in Tasmania.

In 2010, the first Collaboration Agreement was established between the Government and the university's Australian Innovation Research Centre, based in the Tasmanian School of Business and Economics. It has provided a platform for policy makers and researchers to collaborate, along with specific initiatives such as the Tasmanian Innovation Census.

Both parties have agreed to extend the agreement for a further three years, with a number of new focus areas added to the agreement, including:

- Industry-research linkages;
- Innovation in existing/priority industries;
- Innovation in emerging industries, such as creative industries, digital economy, advanced manufacturing, nanotechnology/micro-sensing and science and research; and
- Public sector innovation.

Further information is available on the Tasmanian Government website: http://www.premier.tas.gov.au/releases/a_new_innovation_collaboration_for_tasmania

International

UK-US: A new STEM initiative to understand and improve informal science learning

The US National Science Foundation (NSF) has partnered with Wellcome Trust, a global charitable foundation based in the U.K., and the U.K.'s Economic and Social Research Council (ESRC) to advance the field of informal science education through "Science Learning+." The initiative, which was launched on 2 December 2014, has as its long-term goals broadening of participation in STEM and better understanding, strengthening and coordinating of STEM engagement and lifelong learning. Three U.S.-based foundations--the Noyce Foundation, the Gordon and Betty Moore Foundation, and the MacArthur Foundation--are participating in supporting this effort. While there's general agreement that STEM experiences outside of school can be exciting and engaging for young people, not much is known about its impact on short-term and long-term learning.

The grants awarded to fund the initiative represent the first phase of a two-phase initiative where one-year planning grants of up to $115,000 will enable groups and organisations in the U.K. and/or U.S. to form or enhance partnerships designed to build knowledge about informal science.

In the second phase, NSF and Wellcome Trust intend to fund several significant, longer-term research projects of approximately $2.4 million each for up to five years (possibly more for long-term longitudinal studies). If these two phases are successful, the expectation is to build on this effort and seek additional participation by other collaborators--both governmental agencies and private foundations.

US: National Institute of Standards and Technology awards $2.5 million to Manufacturing Extension Partnership centres for pilot network projects

On 2 December 2014, the U.S. Commerce Department's National Institute of Standards and Technology (NIST) awarded $2.5 million in grants to 10 Hollings Manufacturing Extension Partnership (MEP) centres to pilot online regional business-to-business network projects. The networks will help match buyers and sellers of technologies or products and services in support of small and midsize manufacturers.

"The Manufacturing Extension Partnership grants … are an example of our efforts to invest in cutting-edge technologies through public-private collaboration", said US Secretary of Commerce Penny Pritzker.

Each awardee will receive a total of $250,000 for a two-year project. The pilots are designed to be scalable and interoperable to help determine if they might be expanded into a national network or a series of regional ones. The networks are expected to include technologies available at federal laboratories and universities and, therefore, enhance the framework for collaboration between the private and public sectors through the nationwide network of MEP centres.

US Department of Homeland Security Science and Technology Directorate announces $2.8 million in Scientific leadership Awards

On 4 December 2014, the US Department of Homeland Security's (DHS) Science and Technology Directorate (S&T) announced the award of six new Scientific Leadership Awards (SLAs) to the following institutions: Alabama Agricultural and Mechanical University, Jackson State University, Tennessee State University, Texas Southern University, the University of the District of Columbia, and the University of Texas at San Antonio. These institutions will partner with S&T Centres of Excellence to develop course content and engage students and faculty in research relevant to the nation's complex homeland security challenges.

"Our universities are incubators for innovation and creative problem solving," said S&T Under Secretary Dr Reginald Brothers. "We look forward to working with these institutes of higher learning to help foster a homeland security culture within the academic community through research and educational programs."

SLA grants are competitively awarded to accredited Minority Serving Institutions (MSIs) to develop educational programs in homeland security science and engineering; establish related curricula and courses of study; support the development of early career faculty; and recruit and mentor students.

This year's award represents the first of a two-year funding effort where each university would ultimately receive up to $1 million. These grants are one of the numerous ways that S&T is helping to build a diverse, highly capable, technical workforce for the homeland security mission.

Assessment of Innovation Performance

CSIRO researchers receive Thomson Reuters Citation Award

The prestigious *Thomson Reuters Citation Award* (http://sciencewatch.com/nobel/2014-predictions/chemistry-laureates) has been given to three CSIRO researchers for their groundbreaking work with polymers.

Each year Thomson Reuters announces Laureates in the fields of physiology or medicine, physics, chemistry, and economics, just three in each category, with the award recognising the significance of the awardees research in the eyes of the scientific community, based upon the number of times fellow researchers have cited their published papers.

More than just a number of citations though, the committee also selects the Laureates where they feel the citation data reflected discoveries or themes that might be considered worthy of special recognition by the Nobel Committee.

In 2011, all nine winners of the Nobel Prize in Physiology or Medicine, Physics, Chemistry, and Economics had been previously named by Thomson Reuters as Citation Laureates.

Events and Conferences

Innovation Challenge awards

On 26 November 2014, Minister Ian Macfarlane congratulated Australia's best innovators who have been recognised at the fourth annual *The Australian* Innovation Challenge.

Minister Macfarlane said the overall winner – The Australian Square Kilometre Array Pathfinder (ASKAP), led by CSIRO researcher Antony Schinckel – illustrated the characteristic Australian ingenuity that has led to our greatest scientific ideas and breakthroughs.

Switzerland : *Global Forum 2014*: *Opportunities & Disruptions in a Time of Transformation*

The 23rd Global Forum, an annual policy and strategy conference for technology leaders, was held on 17-18 November 2014 in Geneva.

The Global Forum/Shaping the Future is an internationally recognized think-tank for exchange and networking among governments at national, regional & local levels, private & public organizations, research & development experts. The Global Forum is an independent, high profile, international, non-for-profit event dedicated to business and policy issues affecting the successful evolution of the Digital Society.

The theme of the 23rd Global Forum was "opportunities and disruptions in a time of transition" and presenters repeatedly stressed that what's occurring in the world today is a mixed bag of unprecedented technical advance amid serious social disruption.

Delegates came by invitation-only from 35 countries and multiple international organisations, with representatives also from vendors, service providers, academia and government agencies.

Australian International Airshow and Aerospace & Defence Exposition

NSW Trade & Investment will host a stand at the Australian International Airshow and Aerospace & Defence Exposition, Avalon Airport, Geelong, Victoria, from 24 February to 1 March 2015.This major event within the Asia Pacific region attracts key industry, defence and government decision-makers and provides a valuable opportunity for NSW companies to showcase their capabilities to thousands of visitors.

CeBIT Australia

CeBIT 2015, the largest business technology event in Australia will be held at Sydney Olympic Park from 5-7 May 2015. It will feature CeBIT StartUp, a dedicated exhibition and conference for the start-up sector and investment community in

Australia. Startup offers commercial innovators and tech entrepreneurs an opportunity to connect with business, investors and government.

NSW Trade & Investment, Destination NSW and Business Events Sydney are joint sponsors of CeBIT 2015 and are hosting a stand. NSW Government departments represented on the stand include: Service NSW, Office of Finance and Services and NSW Trade & Investment. CeBIT attracts over 20,000 people each year and presents an opportunity to connect with over 450 exhibitors, from start-ups to global companies, from Australia and around the world.

For more information visit www.cebit.com.au and www.cebit.com.au/cebit-startup or visit mycebit.com.au/visitor/tickets for registration.

Publications

2014 Australian Innovation System Report

This 2014 report is the fifth in the Australian Innovation System Report series. The series monitors the performance of our innovation system over time, allowing emerging issues to be identified. Each report builds on data and insights from previous reports, employing both quantitative and qualitative approaches to measuring innovation.

The 2014 report examines various aspects of innovation as a driver of competitiveness. Business innovation is about implementing change in a market and staying competitive. The proportion of employing businesses that were innovative was 42 per cent in 2012-13. In that same year these innovative businesses accounted for a 70 per cent share of the economy's employment, capital expenditure and business income.

Australia's small and medium sized businesses appear innovative by OECD standards (ranking fifth). This is a positive for our domestic competitiveness. Australia's large businesses, which do almost all our exporting, are not innovation leaders by OECD standards (ranking 21st). New to market innovation is very important for international competitiveness. However Australian businesses of all sizes perform poorly on new to market innovation compared to other countries and this situation is getting worse.

Australia has several, mostly resource, industries that are internationally competitive. High innovation capability, including high R&D intensity, is found in these sectors. However, the number of these internationally competitive industries is low compared to other comparator countries and our export sector is now less diverse than it was fifteen years ago.

Australian industry needs to invest in innovation across all domestic and exporting sectors as one of several key strategies to lift long term total factor productivity in order to maintain our high standard of living. The scale and impact of innovation appears to be hampered by a poor management culture of innovation and collaboration, and shortages in a range of skills.

To download or order a hard copy of the report go to:
www.industry.gov.au/innovationreport

Transforming human services for the digital era

For the past five years CSIRO has been working with the Department of Human Services – under the Human Services Delivery Research Alliance – to develop a number of tools that are helping to transform service delivery for the digital era.

CSIRO has released a report that profiles some of the outcomes of the alliance. These include:

- LATTE, a software tool that quantifies how people interact with websites, to measure the effectiveness and convenience of digital service delivery.
- Vizie, a social media monitoring tool that is transforming the way government agencies listen to, understand and respond to customer feedback from social media, to support digital service delivery;
- Emergency Response Intelligence Capability (ERIC), software that provides map-based automated situation reporting to support departmental responses to large-scale emergency events;
- A series of trials that show strong evidence that the use of behavioural insights encourages take-up of online services among Australians.

With research showing that an online transaction costs a mere 1/100th of a transaction conducted face-to-face, there's clear savings to be made by agencies improving their online experience for customers.

Australia's Biosecurity Future: preparing for future biological challenges

CSIRO, along with its partners, launched a new report on Australia's Biosecurity Future in November. The report outlines a systematic examination and assessment of where Australia is heading and what we need to do as a nation to protect our environment, industries and people over the next 20 to 30 years.

According to the report – *Australia's Biosecurity Future: preparing for future biological challenges* – three events alone could devastate Australia's agricultural industries, economy and environment, and could severely alter our way of life. These threats were a human disease pandemic, European honey bee colonies wiped out, and an invasion of a devastating wheat disease.

As an island nation, Australia has largely been able to maintain an enviable biosecurity status. However, experts warn that the 12 biosecurity megashocks identified in the new report could turn into reality if we become complacent with our nation's biosecurity measures.

Draft IP Toolkit

A draft IP Toolkit has been released for public comment at industry.gov.au/IPToolkit. It provides information and resources to help establish the terms for managing and using intellectual property in collaborations between researchers and industry.

The Australian Public Service Commision releases State of the Service Report 2013-14

The State of the Service Report 2013-14 was launched by the Public Service Commissioner on Monday 1 December 2014. The report, which is based on the survey conducted in May this year which most of you responded to, identifies trends in workforce participation and capability across the APS. This year the report has been organised around three key agency capability themes: efficiency, effectiveness and evaluations.

Australian Business Deans Council releases Future of Management Education report

The Australian Business Deans Council (ABDC) released Future of Management Education report on 27 July 2014. The Future of Management Education (FoME) initiative was devised by the ABDC in collaboration with the Department of Industry because of the growing consensus that management education needed to recalibrate in line with a changing and challenging business environment.

The initative has produced a scoping paper, held consultative forums with business and community, and run three Innovative Practice Trials at business schools around Australia.

NICTA: Government can do business through digital brokers

Government can do business differently, according to a new Report released by NICTA on 26 November 2014. *New models for Digital Government: the role of Service Brokers in driving innovation* says there is an increasing role for 'digital service brokers'i to deliver traditional government services to customers.

The Report was launched at the FutureGov Summit in Canberra, in a keynote presented by the Hon. Paul Fletcher MP, Parliamentary Secretary to the Minister for Communications.

Mr Fletcher said the Abbott Government had made a clear commitment to improve the delivery of government services online, with its 'Convenient Services Anytime Anywhere' policy released at the last election.

"NICTA's paper has some fascinating ideas about the way that service brokers can help in driving the delivery of government services. In particular, the paper points out that independent or non-government service brokers can take 'wholesale' government data and make it available in a user-friendly, 'retail' form - such as a website which citizens can access, designed by the broker rather than by a government department."

Measuring and Enhancing Impact from University Research

The University of NSW held a workshop in August 2014, to facilitate discussion on measuring and enhancing the impact of research. Participants included Universitas 21 (U21) research leaders and Australian Government representatives.

The context of the workshop and resulting paper was that 'Many governments and research sponsors have expectations that the research they fund will deliver economic, social and/or cultural impacts. In the past, these expectations have been more implicit than explicit. But universities in many countries have staked their claims for increased funding on their pivotal role in delivering economic growth through research and its impact on innovation, and funders are now expecting the sector to deliver.'

Discussion focused on research impact assessment and the current and potential metrics and mechanisms to drive behaviour change.

The workshop concluded that:

- Research impact results from the performance of a number of stakeholders within an Innovation Ecosystem. These include University leadership, University researchers, Industry and Government;
- There are three key elements to the role of universities in any innovation ecosystem: driving research outputs; engagement; and impact. An effective, overall, research impact measurement system needs to take into account all three elements;
- It is the research users who primarily create the impact not the universities. Universities do, however, contribute to impact through the quality of the engagement they have with the research end users. Assessment, understanding and management of engagement is a vital precursor to impact measurement and must form part of any complete research impact assessment system. Maximising engagement increases the probability of effective research impact.

Further information on Engagement Metrics methodology is available at: http://www.innovations.unsw.edu.au/sites/all/files/uploads/Engagement%20Metrics%20Report%20October%202013%20-%20UNSW.pdf

Measuring Innovation in Canada: The Tale Told by Patent Applications report launched

On 28 November 2014, a new report from the C.D. Howe Institute "*Measuring Innovation in Canada: The Tale Told by Patent Applications*" was released. The authors of the report – Robbie Brydon, Nicholas Chesterley, Benjamin Dachis, and Aaron Jacobs – show for the first time which provinces and which sectors are leading or lagging in Canadian-led innovation for the Canadian market.

According to the report, Alberta and Ontario are leading the pack in innovation as measured by patents filed per capita.

US Congressional Budget Office releases a report on US federal policies and innovation

The US Congressional Budget Office (CBO) has released a report *Federal Policies and Innovation*. The report "examines the effects on innovation of existing policies and systems and the possible effects of a variety of proposals for changing those policies and systems."

Vietnam: The OECD-World Bank Review of Science, Technology and Innovation in Vietnam

On 24 November 2014, the World Bank and Organization of Economic Co-operation and Development (OECD) released "The Review of Science, Technology and Innovation in Vietnam". The study looks at the key elements, relationships and dynamics that drive the Vietnamese innovation system and opportunities to enhance it through government policy.

Despite its historical record of scientific research, Vietnam's innovation system in the modern sense is only emerging. Current science, technology and innovation capabilities are weak and the national innovation system is in a nascent and fragmented state. Research and development both in the public and private sectors still have a lot of room for improvement, according to the report.

The World Bank-OECD joint review provides several recommendations for policy makers to foster science, technology and innovation in Vietnam:

- Improving framework conditions for innovation;
- Improving public governance of the innovation system;
- Strengthening the human resource base for innovation;
- Fostering innovation in the business sector;
- Increasing the contribution of public research; and
- Fostering innovation linkages.

The Full Report and its Executive Summary are available from:

http://www.worldbank.org/en/news/feature/2014/11/24/infographic-science-technology-and-innovation-in-vietnam.