



# Science, Technology and Education News from Australia, February 2019

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## 1. Science and Technology Developments

### **Australia designs local infrastructure for world's largest telescope**

A team of Australian engineers and scientists has designed the local infrastructure for the world's largest radio telescope – the Square Kilometer Array (SKA) – taking the billion-dollar global project one step closer to reality. The SKA will explore the Universe in unprecedented detail, doing so hundreds of times faster than any current facility. Antennas will be located in both Australia and southern Africa. The SKA Infrastructure Australia consortium, led by CSIRO – Australia's national science agency – and industry partner Aurecon Australia, has designed everything from super-computing facilities, buildings, site monitoring and roads, to the power and data fiber distribution that will be needed to host the instrument at CSIRO's Murchison Radio-astronomy Observatory in remote Western Australia. The Infrastructure Australia group, and counterparts designing SKA infrastructure in co-host country South Africa, are among 12 international engineering consortia each designing specific elements of the SKA. These consortia represent 500 engineers and scientists in 20 countries. Construction is expected to begin in 2020.

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## Constructing the world's newest nuclear medicine production facility

A key part of the Australian Nuclear Science and Technology Organisation's (ANSTO) nuclear medicine project (ANM) nears completion and will lead to the construction and pending operation of the world's newest, state-of-the-art Molybdenum-99 (Mo-99) production facility based in Sydney - SyMo. Mo-99, the most commonly used nuclear imaging agent, enables the accurate diagnosis of common diseases that affect, on average 1 in 2 Australians. It is expected to be operational at the end of March 2019. The new Mo-99 production facility has a very complex design due to the multi-component production process, radioactive environment, management of waste streams and regulatory requirements. The facility is a first of its kind in the world. ANSTO is using its existing expertise built up over 60 years and the experience gained in the Mo-99 plant to manage the SyMo project itself.

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## ANU at the forefront of ground-breaking solar research

Scientists at The Australian National University (ANU) have made a fresh series of breakthroughs that could help further revolutionize solar technology - making it more efficient, and more accessible - following major discoveries last year. The team from ANU have been concentrating on the solar cell's skin layer, which is 1,000 times thinner than a human hair, and is used to conduct electricity and protect the solar cell. Previously, much of the research in this field has focused on improving the body of the cells. The ANU researchers initially discovered the skin layer can emit light with some very distinct qualities. They quickly realized the presence of hydrogen atoms dramatically changes the characteristics of this light - information that can then be used to understand what's going on inside the skin. These discoveries will help produce more robust and more efficient silicon solar cells, and this technology is expected to replace traditional solar cell technology in the coming years.

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## 'Start-ups will scramble': Atlassian's new Sydney home a tech epicentre

New South Wales Premier Gladys Berejiklian, with Mr Farquhar co-CEO of Atlassian, announced the company, one of the world's biggest software providers, would be an anchor tenant at the Sydney Innovation and Technology Precinct in the Central-Eveleigh corridor. She said with Atlassian's decision to move its global headquarters to Central-Eveleigh, dozens of start-ups would be "scrambling" to snag an office space near them. Atlassian is worth \$30 billion. Ms Berejiklian said the Central-Eveleigh precinct would generate 25,000 jobs, helping the government reach its target of creating 250,000 jobs over the next four years. She also revealed three universities had agreed to develop the "Liverpool Health and Innovation Precinct" based around the \$740 million redeveloped Liverpool Hospital. The government will also create a "Central Coast Education and Employment Precinct" in Gosford and has committed \$12.5 million to develop a "Nuclear Medicine and Technology Hub" in Lucas Heights.

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## 2. Education and Science Policy

### National conversation of science and research priorities is important and timely

The Australian Academy of Science has welcomed the announcement by the Minister for Education, Dan Tehan, of a review of Australia's science and research priorities. Academy President Professor John Shine said that the current science and research priorities and the associated practical challenges have been useful in informing research directions. "Our existing nine priorities were developed by former Chief Scientist and Academy Fellow Professor Ian Chubb through an extensive process of consultation," said Professor Shine. The review panel announced by the Minister will be chaired by Australian Research Council Chief Executive Professor Sue Thomas and will include experienced Vice Chancellors and senior executives from Australia's research and innovation sector. Also included on the panel are Australia's Chief Scientist Dr Alan Finkel and National Health and Medical Research Council CEO Professor Anne Kelso AO, both Fellows of the Australian Academy of Science.

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## French connection for innovation and science

A delegation of senior French leaders from research organisations and universities visited Australia to further strengthen science and innovation relationship with Australia. The French Minister of Higher Education, Research and Innovation, Ms Frédérique Vidal, led a delegation of 50 French experts who formalised a total of 24 cooperative arrangements with Australian innovation and science partners. Minister for Industry, Science and Technology Karen Andrews, who met with Ms Vidal earlier this week, said international collaboration was a key mechanism to improve business and research outcomes. “France is a key science and innovation partner for Australia and is one of our most active government-to-government relationships with a European Union Member State,” Minister Andrews said. “France was Australia’s sixth highest scientific publication partner over 2012-2016 and Australia was France’s 11th highest collaborator over the same period.”

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## First Australia-France joint international research lab to be based in Adelaide

An International Research Laboratory which aims to turbocharge scientific collaboration between South Australian universities and the key French national science research organization CRNS and Naval Group, is slated to be established in Adelaide. The peak French Government scientific research organization, CNRS (National Centre For Scientific Research) and French maritime technology, shipbuilding and energy company Naval Group, have signed a Letter of Intent with Flinders University, the University of Adelaide, and the University of South Australia to develop a proposal to base what would be one of only five industry-linked CNRS international joint laboratories in the world, in Adelaide. The undertaking is one of a number of significant defence-associated education and research commitments being sealed this week in Canberra during the visit of the Minister for Higher Education, Research and Innovation Mme Frédérique Vidal.

Click [here](#) to read the article

## Scientists lay out new plan to save the Darling River

Scientists asked to investigate the fish kills in the Murray-Darling River system in New South Wales say a failure to act resolutely and quickly on the fundamental cause—insufficient flows—threatens the viability of the Darling, the fish and the communities that depend on it for their livelihoods and wellbeing. The multidisciplinary panel of experts, convened by the Australian Academy of Science, also found engagement with local residents, Indigenous and non-Indigenous, has been cursory at best, resulting in insufficient use of their knowledge about how the system is best managed. The scientists say their findings point to serious deficiencies in governance and management, which collectively have eroded the intent of the Water Act 2007 and the framework of the Murray-Darling Basin Plan (2012). The expert panel recommends that urgent steps can and should be taken within six months to improve the quality of water throughout the Darling River.

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## Space projects mark 30 years of Boeing-CSIRO partnership

Boeing and CSIRO have announced 20 new joint research projects for 2019 making this the largest research portfolio in the history of their research and development relationship. The projects form part of the current AU\$35 million five-year agreement and signal a new direction toward the joint development of space-related technologies. The new agreement includes four new joint space technology research projects: Space situational awareness for commercial and civil purposes such as monitoring space debris (1), on-board image processing and analytics for Earth observation satellites (2), lightweight, radiation shielding materials for spaceflight (3), and on-orbit manufacturing of space structures or satellite components (4). The latest projects expand the scope of joint research to five of CSIRO’s domain areas of expertise: advanced manufacturing, data analytics, energy, future insight consulting services, and space technology. The new projects were announced at the Avalon International Airshow in Victoria, where the two organizations are celebrating the 30th anniversary of their partnership.

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## Elite universities and TAFE join forces to address ‘vast chasm’ in tertiary education

Australia’s elite universities and the TAFE sector have joined forces to “draw a line in the political sand” over education policy, warning the nation’s unfair and distorted system is damaging vocational education and training. The Group of Eight and TAFE Directors Australia, the body representing public VET providers, have formed the “strange fellowship” to lobby federal and state governments to recognize the importance of their sectors in the “Melbourne Declaration”, a charter laying out the nation’s priorities in education. The two organizations have declared that their sectors are not competitors and warned that the uncapped, demand-driven system for university funding had damaged TAFE by distorting the tertiary education market. The pair warned of “inequitable funding and regulatory arrangements” in the system and “unintended consequences” of university places being uncapped between 2012 and 2017.

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