

AUSTRALIAN SPACE SCIENCE AND INDUSTRY POLICY

Australian Space Science and Industry Agency & Space Industry Program

A Shorten Labor Government will establish an *Australian Space Science and Industry Agency* with a mandate to double the size of the Australian space industry. The agency will aim to grow the industry by ten thousand new jobs in areas such as research, earth observation, space technologies and advanced manufacturing.

The *Australian Space Science & Industry Agency* will improve intra and inter-governmental co-ordination of Australian assets in space, create opportunities for Australian space industry companies and enhance Australia's space science capabilities.

In addition a Shorten Labor Government will invest in developing the Australian space industry through establishing with industry and universities, four research hubs and two training centres

A Shorten Labor Government will also establish a *Space Innovation Council* and a *Space Industry Supplier Advocate*.

This reflects Labor's commitment to harnessing the power of innovation, science and research to create Australian jobs. Bill Shorten has made science, research and innovation a priority for Labor. That is why Labor has set an aspiration for Australia to devote 3 per cent of GDP to research and development by 2030. Achieving this will require governments, universities, research organisations and industry to work together.

Why are we doing this?

There is a new space race and Australia is lagging at the back of the field.

Countries and companies are competing for a share of the rapidly growing space economy.

In Australia we have companies – big and small – ready to make their mark, and we have the people and the science ready to move the nation forward.

Globally, commercial space activities are growing by almost 10 per cent annually and now represent 76 per cent of the \$420 billion global space economy. Australia's share of it is only 0.8 per cent.

Our space sector is small, but the opportunities are limitless. At the moment the sector earns revenues of \$3-4 billion per year and employs between 9,500 and 11,500 people¹.

According to the Space Industry Association of Australia,

¹ Asia Pacific Aerospace Consultants, *A Selective Review of Australian Space Capabilities*, <https://industry.gov.au/industry/IndustrySectors/space/SpaceIndustryDevelopment/Pages/SelectiveReviewAustralianSpaceCapabilities.aspx>, 2016, p. 11

“...there is an opportunity to double this within five years -- if the Australian Government is prepared to commit to the establishment of an Australian Space Agency to lead a cohesive national space strategy”.²

The cost of doing nothing

Australia is one of the most space dependent nations on earth. Without access to satellites and other space-based applications much of our economy and critical national infrastructure could grind to a halt.

We have a high degree of dependence on space-based applications in our everyday lives, for things like:

- Supermarkets provide fresh fruit and vegetables by using satellite navigation in their delivery fleet to optimise just-in-time deliveries.
- ATMs and other credit card applications authorisation process rely on very accurate timing synchronisation to prevent fraud. This depends on satellite time transfer.
- Food prices depend on crop yields, which rely on satellite-optimised flood irrigation. Satellite levelling is progressively allowing higher crop yields and lower food prices.
- Cell phones use dedicated radio frequency links to send digital data packets of conversation around the world, but re-building these data packets into conversations requires synchronisation, which comes from satellite time transfer.
- Responses to civil emergencies rely on specialised satellite imagery and communications because electrical power, cell phone towers and cables can all be damaged by natural disasters like bushfires, floods etc.
- Adaption to climate change relies on space data. Australia has excellent space infrastructure monitoring, for example, the first signs of sea level change.
- Transport is being revolutionised today by artificial intelligence and autonomous and driverless vehicles relying on satellite navigation enhancements, which now provide real-time navigation that is accurate to within 25cm of the destination.

Australia has the science, technology, infrastructure and skills to punch significantly above its weight in the global space industry. Australia has highly regarded capabilities in astronomy – both optical and radio – yet no equivalent is to be found in other space technologies.

Space is of great importance to modern life and the costs of accessing space are falling rapidly. Advances in technology have enabled the development of very small satellites and lower-cost launches with the ability to carry multiple satellites into space. As a result, we are seeing a significant increase in the number of commercial satellites being launched and a continued reduction in the average satellite mass. A key driver of this is the growing popularity of nano/microsatellites (satellites less than 50kg) for civil and commercial use.

² Space Industry Association Australia, *White Paper: Advancing Australia in Space*, <http://www.spaceindustry.com.au/Documents/SIAA%20White%20Paper%20-%20Advancing%20Australia%20in%20Space.pdf>, March 2017, p. 2

It has become clear that we have to rapidly build our capabilities in space to capitalise on the emerging economic opportunities, advance our interests, and manage international relationships and obligations.

The Australian Academy of Science has called for policies that will, “*support fundamental sciences and related fields... [and] grow the supply of highly trained workers, allowing the expansion of innovation industries.*”³

State governments are unilaterally seizing opportunities and developing their own capabilities. They are looking to the Commonwealth to provide national leadership and coordination.

Case Study: Space and Industry 4.0

Industry 4.0 is the shorthand term for the fourth industrial revolution, where the digitalisation and transformation of society and economy is enabling radical changes in industrial processes and business models worldwide. The key enabling technology of this new industrial revolution derives from space-based systems and the increased data they provide.

Space-based systems are essential for Industry 4.0 capabilities like the internet of things, big data, cloud computing and the cyber-physical systems enabling smart factories and AI.

Industry 4.0 is being accompanied by the fourth phase in human exploration of space – Space 4.0 – where access to space is being transformed from the preserve of a few big countries to a domain where commercial uses will dominate.

Industry 4.0 & Space 4.0 present both challenges and opportunities for Australia, if we are prepared to seize them.

What will Labor do?

A Shorten Labor Government will establish the *Australia Space Science & Industry Agency* from 2020, within the Department of Industry, Innovation and Science. The Agency will be responsible for the \$173.9 million contribution to landmark international space initiatives like the Square Kilometre Array (SKA).

The agency will have a mandate over civil space activities to develop a strategic plan and help facilitate the growth of the Australian space sector and Australian space capabilities. The key tasks of the agency will be to provide leadership and co-ordination for the Australian space sector, to drive economic growth and to build Australian capabilities in space science.

In addition to the agency, a Shorten Labor Government will establish an *Australian Space Industry Program* to encourage the development of the Australian space industry. This program will run on a co-investment basis and the Australian Research Council will invest up

³ Australian Academy of Science, *A vision for Space Science and Technology in Australia*, <https://www.science.org.au/files/userfiles/support/documents/vision-space-science-technology-2017.pdf>, 2017, p.7

to \$18.5 million, with additional funding from industry and university consortiums. The Program will consist of:

- Four Industrial Transformation Research Hubs, to advance research capabilities in emerging areas of industry focused space research and technology
- Two Industrial Training Centres offering 25 PhDs awarded on the basis of competitive bids from universities working in collaboration with industrial partners to establish industrial PhDs.

Labor will prioritise applications from consortiums in the areas of:

- Space Systems (designing, building, manufacturing, operating components and systems that are based in space)
- Launch activities and support services (designing, building, manufacturing, operating equipment and services related to the launch of satellites into space)
- Ground systems (designing, building, manufacturing, and operating ground systems)
- Space enabled services and applications (designing, building, manufacturing, operating equipment and services related applications that require the data or services from space based systems or components)

A Shorten Labor Government will also appoint a Space Industry Innovation Council to serve as an advisory board for the agency, develop an industry wide agenda, and build international confidence. A Space Industry Supplier Advocate will be appointed, to open up opportunities for space industry companies and attract investment and jobs.

Case Study: A £40 billion a year space economy – the United Kingdom Space Agency

The UK only established a national space agency in 2010, with the mission of being “*responsible for all strategic decisions on the UK civil space programme and provide a clear, single voice for UK space ambitions* “. Since then the agency has become the catalyst for the UK to become a significant player in the global space economy, attracting start-ups and investment alike with a mission to develop the UK into a £40 billion a year space economy by 2030.

Britain has improved its competitiveness with reforms to regulation, insurance tax and licensing. It now has a Smart Government Program (SSPG) – with the objective to improve public services and increase their productivity – and a National Space Security Policy (NSSP) – to ensure continued access to space-based service.

The UK’s rising space sector has been recognised globally, evidence of which is attracting investments. It is well positioned for future success: the goals that have been set are ambitious but realistic. *The Case for Space 2015* is shows that the UK is on track to increase its share of the global space economy from 6per cent to 10 per cent by 2030, with an estimated value of £400 billion.

Labor’s record

Australia has a long history in space. In 1967 a rocket launch at Woomera saw Australia become the seventh nation to launch an object into space. We have strong capabilities in

astronomy, in space based instrumentation and have capabilities within our universities to design and manufacture miniature satellites.

Labor has long assumed leadership in space research and industry policy. The Hawke Government instituted a national space program and established an Australian Space Office.

The Rudd Government initiated a Space Super Science Initiative, established a space policy unit, and delivered a Satellite Utilisation Policy.

The 2013 Australian Satellite Utilisation Policy, established by Labor, focuses on the development of capabilities to ensure access to critical space-enabled services. It gives priority to domestic capabilities that can make valuable contributions to international satellite projects. Labor also established:

- National Earth Observations from Space Infrastructure Plan (NEOSIP)
- National Positioning Infrastructure Plan (NPIP)
- Digital Earth Australia (a project for satellite imagery to be used to drive growth in agriculture and support evidence-based decisions on the environment)

Labor also established the Australian Space Research Program (ASRP), which supported a number of projects that have had lasting benefits for the Australian space sector.

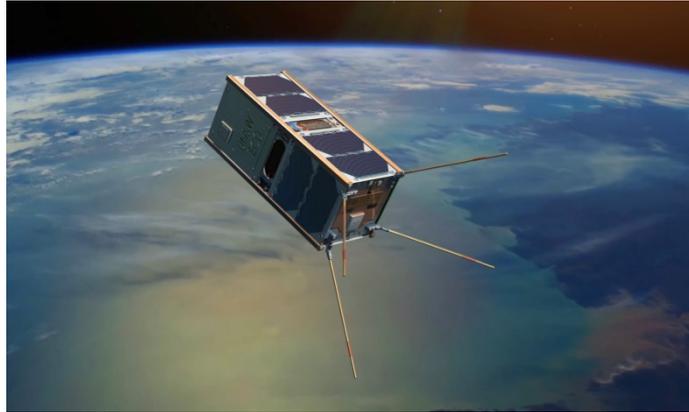
Case Study: Miniaturisation and CubeSats

Only on three occasions in the past fifty years have Australian-built satellites been launched into space. The first was in 1967 from Woomera, the second in 2002 and the third just this year.

A new generation of nano-satellites – known as CubeSats – were launched into orbit by NASA. Three of the satellites were built at UNSW’s Australian Centre for Space Engineering Research (ACSER). These satellites are part of an international mission that involves universities from 22 countries – the QB50 project.

CubeSats are the manifestation of a number of trends making their impact on space and the economy. These include the revolution in manufacturing miniaturisation, the exploration of low-earth orbit and the explosion in the data requirements of modern advanced economies.

Thanks to Australia’s investments in space science under former Labor governments, Australian universities and start-ups have acquired the capabilities to given Australia a chance to participate in these and other initiatives.



The University of Sydney will partner with UNSW, Saber Astronautics Australia Pty Ltd, the Defence Science and Technology Organisation and others to set up an *ARC Training Centre for CubeSats, Unmanned Aerial Vehicles (UAVs)* and their applications. \$4.6 million in funding from the Australian Research Council (ARC) will go towards further developing a world-class Australian industry in CubeSats, UAVs and related products, developing new instruments and technology and training the next generation of workers.

The Liberals' alternative

The Liberals have downgraded space policy and failed to renew the Australian Space Research Program.

The Space Policy Unit has been become a mere section of the Industry and Science Department, and cross-government co-ordination has been relegated to a junior interdepartmental committee able to do little but receive and table reports.

A promised review of the Space Activities Act has so far taken two years to be completed, with legislation looking unlikely until 2018 at the earliest.

And now the Liberals have been dragged into reluctantly agreeing to establish an Australian Space Agency, though its budget, scope, mission and resourcing are as yet unknown, five months after the announcement.

Under the Liberals Australia is missing opportunities in the global space economy.

Financial Implications (\$m)

2018-19	2019-20	2020-21	2021-22	Total ⁴
	-5.8	-7.2	-3.5	-16.5

Labor is able to make this investment as a result of policy announcements that make our tax system fairer and improve the budget position.

This includes reforms to negative gearing and capital gains tax concessions, closing loopholes for multinationals, and limiting tax minimisation through incoming splitting from discretionary trusts. Labor will announce further budget improvements prior to the election.

Funding for the *Australian Space Industry Program* in this policy come from setting priorities within an existing program of the Australian Research Council, the Industrial Transformation Research Program.

⁴ Totals may not sum due to rounding