

**National Committee for Space and Radio Science supplementary submission to
the Parliamentary Inquiry into Developing Australia's Space Industry**

Australia's next decadal plan for space science is currently in publication stage following extensive consultation across the space sector. The plan aligns with the Academy of Science's positionⁱ which "supports a vigorous and well-supported space industry, sustained by a strong space research sector".

The most critical requirement for sustainable development of Australia's space sector is a mechanism to focus its many diverse elements (civil, defence, industry, academia) to identify key goals and actions including an overarching strategic plan which supports long-term decision making by stakeholders, translation of basic research to commercial or practical outcomes, development of sustained sovereign capability, and career pathways in the space and innovation sector.

A national research priority in space science is therefore central to aligning with and complementing civil and defence sovereign capability requirements, to driving innovation and collaboration and building capacity for national benefit and international impact. Such a focus should foster a consortium or network including Australia's leading research institutions and key civil, government and commercial stakeholders, with jointly articulated priorities. Notably, space science is not currently recognised in the National Science and Research Priorities or in the National Collaborative Research Infrastructure Strategy.

Our rationale is outlined below.

1. Australia has critical dependencies on space-derived capability and services, mostly delivered via global supply chains and strategic alliances. These enable economic, environmental, societal and national security priorities. Building significant sovereign capability in something so central to our way of life is essential.
2. To develop sovereign capability and grow the innovation sector the Federal Government and the Australian Space Agency have implemented initiatives to stimulate the Australian space industry. These include the Moon to Mars initiative, the Modern Manufacturing Initiative, Defence's Industry Capability Priorities, and support for the SmartSat CRC. However, a workforce skills gap threatens growth of the space industryⁱⁱ and Defence sectorsⁱⁱⁱ.
3. Space science R&D generates new knowledge, products and processes, and its reach extends beyond space-related outcomes, providing benefits to the broader community^{iv}. For example, basic space science research is essential to understand and mitigate risks to critical infrastructure^v, and to develop breakthrough communications technologies. The economic multiplier effects of space science and innovation are well documented from the space programs of other countries^{vi}.
4. Australia's space research activities are world standard^{vii}, engaging with international partnerships, leading innovative technical developments, and providing high level skills training. However, our space science expertise and capabilities have developed largely through activities that are subject to institutional priorities and time-limited funding, mostly from highly competitive Australian Research Council (ARC) grants.
5. A sustainable space industry sector requires a foundation of excellence in space science and technology, and that requires focus.
6. Space research would benefit from an environment that encourages focus: to encourage coordination and collaboration across the diverse elements of the space ecosystem. Such a

focus would enable long-term planning and investment in R&D by industry, and facilitate enduring relationships between government, industry and research providers^{viii,ix}.

7. The Australian Defence Force's space capability priorities are critical^x. Measures to improve Defence's innovation capabilities, including strengthening links with academia and industry, are subject of a review recently initiated by the Minister for Defence Industry (now also the Minister for Science)^{xi}.
8. It has also been suggested that Australia implement a DARPA scheme which mimics and maps into the US program, to provide a source of funding for Australian universities enabling research to support Defence and industry needs^{xii}. DARPA has been successful in the United States and a similar scheme is well worthy of consideration in Australia.

Australia in space: A decadal plan for Australian space science will be published in late 2021 by the Australian Academy of Science. The Academy would be pleased to arrange a briefing on the plan and its recommendations with the Standing Committee on Industry, Innovation, Science and Resources, or relevant Members of Parliament, at its convenience.

Please contact the Academy directly via the Manager National Committees for Science, Meaghan Dzundza (meaghan.dzaundza@science.org.au), or the Chair of the National Committee for Space and Radio Science, Professor Fred Menk (fred.menk@newcastle.edu.au), to arrange a briefing or with any further questions.

ⁱ *Position statement- Australian space industry*, Australian Academy of Science, October 2018

<https://www.science.org.au/supporting-science/science-policy/position-statements/statement-space-industry>

ⁱⁱ *Space Industry skills gap analysis*, Technical report no. 5, SmartSat CRC, March 2021

ⁱⁱⁱ *Moving towards a high-tech future for Defence*, Australian Government, 2019

^{iv} *New Zealand space sector: its value, scope and structure*, Deloitte Access Economics, 2019

^v *Security Legislation Amendment (Critical infrastructure) Bill 2020*, Parliament of Australia, December 2020

^{vi} *Space exploration and innovation*, UN Office for Outer Space Affairs

^{vii} Australian space and planetary science is ranked 8th globally. Source: *Measuring the economic impact of the space sector*, OECD, October 2020

^{viii} *Position statement – Australian space industry*, Australian Academy of Science, October 2018

^{ix} *Investment in the Australian space sector*, KPMG, January 2020

^x Defence strategic update 2020

^{xi} <https://news.defence.gov.au/files/090921termsofreference-defenceinnovationreviewdocx>

^{xii} *An Australian DARPA to turbocharge universities' national security research*, R Clark AO and P Jennings, ASPI Special Report, July 2021