



Australian Government



Australian
Space Agency

Joint Statement of Strategic Intent and Cooperation

between

Australian Space Agency

and

The Boeing Company



**THE BOEING COMPANY
STATEMENT OF STRATEGIC INTENT AND COOPERATION WITH
THE AUSTRALIAN SPACE AGENCY**

The Australian Space Agency, an Australian government agency part of the Department of Industry, Innovation and Science, hereinafter referred to as "the Agency", and represented by Dr Megan Clark AC, Head, Australian Space Agency,

and

The Boeing Company, hereinafter referred to as "Boeing" and represented by Maureen Dougherty, President Boeing Australia, New Zealand and South Pacific.

Recalling that the Agency's purpose is to transform and grow a globally respected Australian space industry that lifts the broader economy, inspires and improves the lives of Australians – underpinned by strong international and national engagement;

Recalling that Boeing is the largest aerospace company both globally and in Australia, sustaining 90 years of Australian operations. This significant presence of approximately 3800 Australian employees, Boeing's largest footprint outside the United States includes investment of \$400AU million in its Australian supply chain and \$47AU million in research and development in partnership with 10 local universities.

Recalling that Boeing Australia's highly-skilled aerospace workforce is capable of developing and supporting complex systems for both aeronautics and space applications.

Recalling that the global space industry is very diverse, and Boeing has broad and deep capability and business interest in almost every aspect of the global space economy.

Recalling that the Agency's areas of strategic priority include communications, technologies and services; space situational awareness; research and development; earth observation; remote asset management and; positioning, navigation and timing in space and on earth;

Recalling that the Agency's responsibilities include: whole-of-government coordination of Australia's civil space sector matters, providing primary civil space policy and strategic advice to the Australian Government, supporting the growth of our national space industry and the use of space across the broader economy, leading international civil space engagement, administering space activities legislation and completing our international obligations, and inspiring both the Australian community and the next generation of space entrepreneurs;

Recalling that throughout the last 50 years, Boeing and its heritage companies have been integral in every major western endeavour to escape Earth's gravity - from the first Mercury capsule, to the current International Space Station and Starliner transportation system, and beyond to the Space Launch System which will take humans and technology back to the moon and on to Mars. Boeing is also the second largest contractor to NASA after JPL/Caltech, with \$2.1US billion revenue in 2017, and is the leading commercial/government satellite producer supported by the largest satellite factory in the world.

Recalling that Boeing-produced communication satellites are being used by Australian Defence (WGS, Intelsat 22) and have been used by Australian commercial satellite operator Optus.

Recalling that Boeing Defence Australia (BDA) is the prime contractor for the Australian Defence Force's Project LAND 2072 Phase 2B Currawong Battlespace Communications System, which includes bespoke Australian-developed satellite communications terminals for accessing the WGS satellite network.

Recalling that Boeing is currently pursuing, through its relationships with various academic and R&D institutions across Australia, indigenously developed R&D projects to demonstrate Australian space technology. These projects support the health & safety of humans and spacecraft in earth-orbit and deep space through the application of biotech, material science, and autonomous systems. Boeing Australia works closely with Boeing's US space team who is NASA's prime contractor for the management and operation of the International Space Station (ISS) and is a contractor for Lunar Orbital Platform-Gateway.

Recalling that Boeing has a 30 year research & development (R&D) partnership with Australia's Commonwealth Science and Industrial Research Organisation (CSIRO), and that Boeing has invested over \$170AU million in CSIRO R&D projects.

Recalling that the CSIRO is Australia's leading institution for space R&D, has been a key NASA/JPL partner for over 50 years in spacecraft tracking and communication, and is a world leader in radio astronomy and earth observation satellite image processing and analysis.

Acknowledging that the Agency and Boeing share the common objective of enhancing the capability and competitiveness of Australian industry, and promoting investments in space capabilities and capacities that will support smart growth and highly qualified jobs as well as improving the day-to-day lives of all Australians through innovative products and services.

Recognising that Boeing's internal organisation - the Office of Australian Industrial Capability (OAIC), was the first prime contractor to sign on to Australia's Global Supply Chain (GSC) program in 2007. The OAIC's primary goal is to increase the participation of Australian aerospace SMEs in Boeing's global supply chain, as well as providing training and mentoring opportunities and technology assessments and collaborations. Boeing plays a large role in facilitating the entry of SMEs into its global supply chain - with the OAIC identifying many commercial and defence opportunities for Australian-based SMEs to partner with Boeing and is increasingly looking to engage Australia's space SMEs and start-ups. As the local space industry grows, Boeing will monitor and explore opportunities to bring more Australian space SMEs into its global supply chain.

Recognising Boeing's efforts and investments in promoting STEM education in Australia - especially in space-related fields. This includes support of Space Squad and the Australian Youth Aerospace Association, introducing Australian students to STEM career options in the local space industry and providing opportunities to learn about design engineering, robots, drone-piloting and geo-mapping. Boeing is an industry partner and supporter of the Australian Space Design Competition, providing expert industry mentors and education for students entering the international competition with exchange opportunities to NASA. Boeing is also a sponsor of FIRST (For Inspiration & Recognition of Science and Technology), including their 2018/19 robotics program - 'Mission Moon'.

Recognising that Boeing has strong partnerships with Australian universities, and has deepened these relationships through its competitive internship program. As the Australian aerospace industry becomes increasingly complex, Boeing is committed to developing a skilled and diverse workforce with the knowledge and experience to position Australia at the leading edge of aerospace. Boeing Australia's internship program is a key part of this - providing both undergraduate and graduate students with hands-on experience in industry before and after they graduate. Boeing has internships with Boeing Research and Technology Australia as well as its largest Australia subsidiaries, Boeing Aerostructures Australia (BAA) and Boeing Defence

Australia (BDA). Boeing Australia currently supports two space interns, and intends to increase that number as our Australian space industry grows.

Boeing's goal is to be a space industry leader in Australia just as it is globally. To do this, Boeing plans to make strategic R&D investments with its long-time technology partner CSIRO in the key focus areas for the agency and in space technologies where CSIRO has world-class capabilities.

Through this Statement, Boeing acknowledges the following current projects, areas of strategic interest and growth, potential new areas of collaboration and support for education and training which are of mutual interest:

- **Space Situational Awareness (SSA)**

A jointly funded cooperative R&D project with CSIRO is being launched to determine whether, and how, CSIRO's world class radio astronomy capability may be used for civil SSA.

- **Space Manufacturing & Materials**

Advanced aerospace manufacturing and materials have long been a focus area for Boeing-sponsored R&D with CSIRO. A new joint Boeing-CSIRO R&D project has begun to study manufacturing and spacecraft fuel production in space, either in orbit around the earth or moon or on the lunar surface. The project includes development and evaluation of specialised materials for space, including materials that shield humans and electronics from space radiation.

- **On-Orbit Image Processing & Analytics**

A new joint R&D project has begun to leverage CSIRO's world-class capabilities in image processing and analytics, particularly in applications of critical importance to the Australian economy (mining, agriculture, and environmental monitoring). This project will develop solutions for turning raw data into knowledge on-board satellites rather than in post-processing on the ground.

In addition to our joint R&D space projects with CSIRO, Boeing Research & Technology Australia (BR&T-A) has other on-going space projects:

- **Space VR/AR Training & Simulation**

Boeing Research & Technology Australia (BR&T-A) is developing virtual and augmented reality space simulators which are being used for a variety of purposes including astronaut training. A simulator has been developed and delivered for the Boeing CST-100 Starliner that includes a full rendering of the International Space Station (ISS) exterior, while new simulations are being developed for Lunar Orbital Platform-Gateway, all in support of Boeing's work with NASA on human space exploration programs.

- **Remote Spacecraft Operation**

BR&T-A has developed and deployed a capability to remotely monitor, test and check-out satellites systems prior to launch. This is a core capability that may be extended to other space systems, either on earth or in space.

- **Antimicrobial Surfaces for Space Systems & Habitations**

BR&T-A and the University of Queensland (UQ) are developing a next generation "smart" anti-viral/bacterial/fungal surface technology to reduce disease and degradation of liquid and polymer systems in space habitats such as the ISS. The technology is also aimed at reducing the risk for interplanetary contamination.

- **Space Launch & Hypersonics**

Boeing will continue to monitor and study opportunities to develop hypersonics and space launch capabilities in Australia to build upon Boeing's partnership with UQ, DST Group and AFRL on the successful Hypersonic International Flight Research Experimentation (HIFiRE) program (2012-2017).

In addition, BDA will continue to ambitiously pursue space opportunities with Australian industry alliances, the Australian Government and Defence Force. Boeing will also leverage the capabilities of its other Australian subsidiaries, such as Boeing Training & Professional Services, to develop astronaut training and simulation systems. Boeing Australia also intends to leverage its relationship with Boeing US to develop and propose new Australian experiments and demonstrations for ISS and Gateway.

Boeing's R&D focus is likely to change with time, just as the Agency's strategic priorities may change. This statement does not create any legal relations or obligations between the parties, and neither party makes any representation or promise, nor gives any information, that may be relied upon by the other party. This statement reflects the intention of both to continue a deep level of collaboration and engagement, without becoming obligated to enter into any agreement, as Boeing and the Agency focus their efforts in furthering Australia's space industry capabilities.

This Statement is signed in two (2) copies both at the offices of Boeing Australia, Sydney, and the Australian Space Agency, Adelaide on 26 March 2019.

**On behalf of
The Australian Space Agency**



**Dr Megan Clark AC
Head of the Australian Space Agency**

**On behalf of
The Boeing Company**



**Ms Maureen Dougherty
President Boeing Australia, New Zealand
& South Pacific**