

SPACESCAPE 2025

Snapshot of the Australian Space Industry

Katherine Grace Stewardson

November 2025



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Spacescape 2025 - Snapshot of the Australian Space Industry

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Foreword

The Space Industry Association of Australia is committed to ensuring the Australian public is informed about our nation's space activities and the benefits they deliver. Spacescape 2025 highlights Australia's role in the global space sector and demonstrates how space technologies underpin everyday life. Through interviews with an astronaut, engineers and technicians, this publication brings real industry stories to students and the wider community. We are proud to support an initiative that inspires curiosity, strengthens understanding and showcases Australia's growing space capability.



Sharlet Merin Sunny
Project Coordinator
Space Industry Association of Australia

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We acknowledge the Traditional Custodians of Country throughout Australia and their continuing connection to land, waters and community. We pay our respects to the people, the cultures and the Elders past and present, and extend that respect to all Aboriginal and Torres Strait Islander peoples.

Introduction

Spacescape 2025 provides a snapshot of the Australian space industry, including economic and societal contributions, and career opportunities. It also outlines Australia's historical role in space, lists infrastructure, highlights current events like the 76th International Astronautical Congress, and touches on law and policy.

This short, accessible e-book caters for the general public and students to showcase the Australian space industry; help people to understand the benefits of government investment in space research and startups; and spark curiosity in STEM education to shape a skilled future workforce.

Funds invested in space technology have significant terrestrial spillover effects, addressing complex problems such as food security; climate change; monitoring natural disasters; and improving medical services to remote communities. Have you ever considered that many everyday items like memory foam mattresses, water purifiers, and smartphones, which significantly improve our lives, are enabled by space technology?

Government spending on space research and startups is a direct reflection of public priorities. Therefore, it is important that the general public understand the everyday benefits of the space industry. Australians generally support space and recognise its economic importance. However, many lack awareness of the nation's specific space activities and the daily impact of space-based technologies (Moss et al., 2023; Robinson et al 2025). Spacescape 2025 aims to address this awareness gap. Furthermore, given the industry's focus on inspiring young people and developing a future STEM workforce, Spacescape 2025 is an accessible and engaging way for students to learn about career paths and the exciting developments in the sector.

CHAPTER ONE: What is the Australian space industry?

Definition of the space industry

The Australian space sector is defined as:



“A set of space-related activities along the space value chain and is part of the broader space economy.”

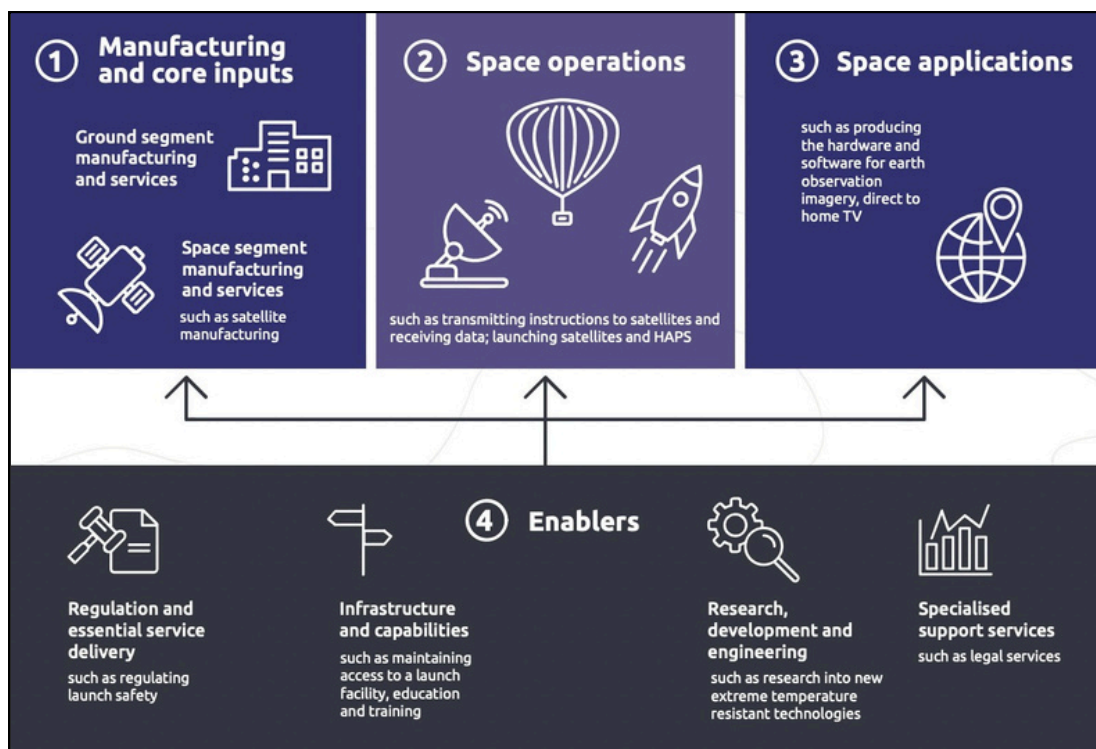
“All actors (private, public and academic) participating in production, operation, supply and enablement activities that form the space value chain are part of the space sector.”

(Australian Space Agency, 2020)

Space value chain segments broadly include:

1. Manufacturing and core inputs (ground and space segment manufacturing and services)
2. Space operations
3. Space applications
4. Enablers (such as regulation and essential service delivery, infrastructure and capabilities, research, development and engineering, and specialised support services).

(Australian Space Agency, 2020)



Source: © Northern Territory Government (2020). Territory Space Industry 2020.

Definition of the space economy



“The space economy is the full range of activities and the use of resources that create and provide value and benefits to human beings in the course of exploring, understanding, managing and utilising space.”
(Australian Space Agency, 2020)

Products and services provided by the space industry

The products and services provided by the space industry can be categorised as follows:

1. Upstream (provision of technology):

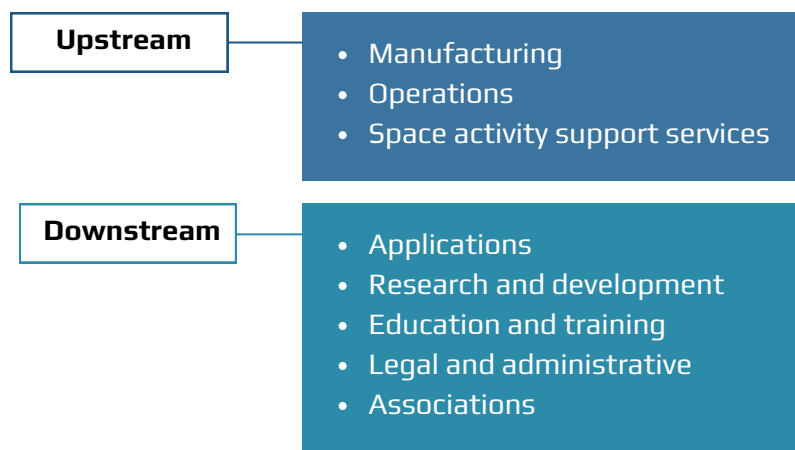
- Space systems (designing, building, manufacturing, operating components and systems that are based in space)
- Launch activities and support services (designing, building, manufacturing, operating equipment and services related to the launch of satellites into space)
- Ground systems (designing, building, manufacturing, operating ground systems)
- Space activity support services (provision of professional services to support space-based activities)

2. Downstream (the exploitation of technology):

- 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)
- Space-related research and development
- Space education and training (education aimed at furthering knowledge about space science, or developing skills to undertake a career in space-related activities)
- Space-related associations, media and public information activities (disseminating information, providing networking opportunities, and promoting space-related endeavours)

(ACIL Allen, pers com)

The two categorisations are related as follows:



Source: ACIL Allen.

This approach adopts a definition of the space industry that is based on the Organisation for Economic Co-operation and Development (OECD) definition of the space economy, and is refined by a definition of the space industry, developed in a series of reports prepared by ACIL Allen for the UK Space Agency (ACIL Allen, pers com).

Snapshot of the current space industry

As Australia's space industry continues to expand, it will drive innovation and technological advancement that will shape a "Future Made in Australia" (Australian Space Agency, 2025):

Global space sector

Current Value: The global space sector is valued at **US\$596 billion**.¹

Projected Growth: It is projected to grow to **US\$944 billion by 2033**.

Total Space Economy: The total space economy, including applications, is forecast to reach **US\$1.8 trillion by 2035**.²

Australian space sector

Annual Turnover: The Australian space sector has an annual turnover of **\$4.6 billion**.

Employment: It employs approximately **17,000 full-time equivalent (FTE)** individuals.

Organisations: There are around **620 organisations** within the sector.³

Australian specialised space businesses (SSB)⁴

Turnover (2022): Small-to-medium enterprises (SSBs) had a turnover of **\$1.1 billion**.

GDP Contribution (2022): They contributed **\$330 million to GDP**.

Employment (2022): SSBs employed **3,600 people**.

Average Wage (2022): The average wage in this sub-sector was **\$107,000**.

Growth Since 2018:

- Value-add to GDP: Increased by **91%** by 2022.
- Employment: Grew by **61%** by 2022.

Total Sales: Rose by **62%** by 2022.

R&D Investment: Quadrupled to **\$112 million** by 2022.

Private Equity Investment: Grew from **\$34 million to \$289 million** by 2024.

Economic benefits of space services in Australia⁵

Agriculture: Provides annual benefits of **\$1.5 billion**.

Mining: Contributes annual benefits of **\$115 million**.

Source: Infographic designed by Katherine Grace Stewardson with information from the Australian Space Agency (2025).



CHAPTER TWO: Australia's attitude towards space

General public

Based on the Australasian Centre for Space Governance's (ACSG) 2025 report, Australia's space industry needs to address a significant public knowledge gap. Although Australians generally support space and recognise its economic importance, many lack awareness of the nation's specific space activities and the daily impact of space-based technologies (Moss et al., 2023; Robinson et al 2025).



“Public understanding of the importance and value of space-based technologies and capabilities is still low. This appears especially true regarding Australia’s reliance on satellites and the importance space plays for other industries.”

“The report highlights the need to develop messages that speak to a range of different Australian audiences about the important role of space and our reliance on space-based technologies.”

(Robinson et al 2025)



© Australian Space Agency 2025. The Australian Space Agency Discovery Centre in Adelaide.

To build stronger public and governmental support, space industry stakeholders are collaboratively developing targeted communication strategies to:

- Enhance public engagement
- Communicate strategic direction
- Improve career pathways
- Showcase national capabilities
- Promote innovation

This e-book, *Spacescape 2025*, aims to contribute to this communication effort.

Examples of current educational outreach

- The Australian Space Agency's **Australian Space Discovery Centre** (South Australia) was officially opened in Adelaide in 2021. The centre has hosted over 150,000 visitors; and since November 2024 has delivered 'Online Schools in Space program' to over 1,500 students from 104 schools (Australian Space Agency 2025a).
- More than 19,500 space enthusiasts of all ages attended the free Space Day as part of the **International Astronautical Congress** in Sydney in October 2025 (Australian Space Agency, 2025b). This clearly demonstrates a public eager to be more informed and involved in the future of the space industry and space exploration.

Valuable perspectives

Australia's space priorities from government, science and industry

Engaging broad stakeholders, including government, science, and industry, in discussions regarding Australia's space priorities yields a wealth of perspectives, despite not always achieving a unified consensus due to conflicting priorities. The resulting strategies, plans and roadmaps offer invaluable insights to guide the growth of the Australian space industry.

Examples include:

Government

The Australian Civil Space Strategy 2019–2028 was developed through a phased, extensive consultation process conducted before and after the Australian Space Agency's (ASA) formation in July 2018. This process was informed by two key 2018 reviews: a review of Australia's space industry capability from an Expert Reference Group, which included consultation with companies, research groups, government agencies, and more than 200 submissions; and a parallel parliamentary inquiry. After its establishment, the ASA continued stakeholder engagement through targeted forums. The final strategy, which integrated findings from this comprehensive consultation, was formally published by the ASA in April 2019 to guide the sector's growth (Australian Space Agency, 2019).

Science

In 'Australia in Space: a decadal plan for Australian space science 2021–2030', the Australian Academy of Science documented a consensus of science perspectives. This plan provided a strategic 10-year roadmap of Australian space science which intended to inform and guide government policy and investment in the Australian space industry (Australian Academy of Science, 2022).

Industry

In its '2025–26 Pre-Budget submission to the Australian Federal Government', the Space Industry Association of Australia (SIAA), the national peak body for the space industry, documented a consensus of industry perspectives. This submission consolidated the input of domestic and international member organisations, including launch providers, advanced manufacturers, data and AI providers, and specialised law firms. It presented eleven recommendations on key focus areas intended to deliver significant economic, social, and geopolitical advantages for Australia (Space Industry Association Australia, 2025).



CHAPTER THREE: How does space contribute to our everyday lives?

The universe has long captured our collective imagination, inspiring humanity's unquenchable thirst for discovery. This quest to understand the cosmos is not merely for wonder and inspiration, but a powerful driver of innovation that provides tangible benefits for life on Earth. It is through our reach for the stars that we find new resources, technologies, and perspectives to improve our lives right here at home.

Despite the harsh realities of space - hostile and isolated environments, space radiation, microgravity, vast distances, and the necessity of reliable equipment and spacecraft - space scientists and engineers have achieved remarkable advancements. We have pushed the limits of technology and innovation through the development of equipment and spacecraft.



A key objective of the United Nations 'Space 2030' agenda is to "harness the potential of space to solve everyday challenges and leverage space-related innovation to improve the quality of life."
(United Nations, 2024)

Many innovations originally developed for space based capabilities have been transferred and/or adapted for everyday use on Earth, leading to significant societal, economic and environmental benefits:



Source: Infographic designed by Katherine Grace Stewardson.



ECONOMIC AND SOCIETAL DEVELOPMENT

Economic growth

- The global space economy will grow to \$1.8 trillion by 2035, according to a World Economic Forum report by creating high-tech jobs, stimulating innovation, technology transfer and new commercial ventures.
- National technical competence, capacity and productivity will be improved/enhanced.

Food security

- Satellites enable real-time data on weather patterns, crop health and yields, and soil health that can be used to increase food production efficiency and reduce waste.
- Satellites can be used to identify the threat of pests earlier, allowing management strategies to be put in place; reduces the need for inputs, such as fertiliser; and boost overall crop yield.

International partnerships and collaboration

- Partnerships and capabilities developed through space exploration can foster trust, sharing of resources and knowledge, reduce costs, generate high-tech jobs, and create new opportunities for addressing global challenges.

Inspiration for STEM

- Space exploration is a powerful catalyst for engaging young people in science, technology, engineering, and mathematics which in turn helps drive future innovation and a skilled workforce.

(Charlton, 2024; Greenblatt et al., 2019; Khlystov et al., 2023; NASA, 2013; NASA, 2023; NASA, 2025b; NASA, 2025f)



COMMUNICATION AND NAVIGATION

Mobile phone and broadband services

Communication satellites

- Connects rural and isolated communities with high speed internet connections where terrestrial infrastructure is either impractical or too expensive. This technology is also vital for connecting maritime and aviation travel, ensuring communication at sea and in the air.
- Enables long-distance communication.
- Facilitates global voice calls and data transfer, e.g., direct to home television, satellite phones and high-speed internet.
- Enables online banking and e-commerce.

Satellite broadcasting - TV and radio

Communication satellites

- Enables people around the world to stay informed, entertained, and connected, especially during disasters where reliable information is essential.
- Enables the delivery of live high-definition broadcasting of the news, television shows/movies, sporting events, music and radio. This service is delivered to viewers' homes through a satellite dish on their property.

Global Navigation Satellite System (GNSS)

[GPS is the American equivalent of GNSS. Galileo is the European equivalent. Other countries have various versions of GNSS]

GPS relies entirely on signals from navigational satellites to calculate a location. GPS:

- Is a core component of emergency systems for locating individuals and their vehicles.
- Enables key functions such as route optimisation, real-time tracking, and time synchronisation for transport systems and digital mapping.
- Enables accurate time synchronisation for telecommunications, synchronising cell phone towers, time-stamping of financial transactions.

While satellite technology has had a profound impact on Earth, the extent to which people fully understand how satellites enable their daily digital interactions is often overlooked. Satellites enable online shopping and banking; weather forecasting; navigation using GPS; and high-speed internet access **where traditional wired services** (e.g., like fibre or cable) **are unavailable** such as on ships at sea, in aeroplanes, in isolated communities or during environmental disasters.

(Greenblatt et al., 2019; NASA, 2024; NASA, 2025b; NASA, 2025e)



HEALTH AND MEDICINE

Many technologies initially designed for space missions have been adapted and/or improved for everyday use on Earth, including healthcare.

Medical equipment

- Improved imagery and resolution of MRI and CT scans, improved prosthetic limbs, improved laser eye surgery, and infrared ear thermometers have been developed.
- Programmable devices - technology has led to pacemakers and insulin pumps, as well as cochlear implants.
- Robotic surgery - a robotic arm, originally designed for space, is now used for delicate procedures.

Treatments and therapies

- Targeted drug delivery - methods for delivering drugs directly to tumours have been created.
- Side effect management - light technology helps reduce pain for cancer patients.

Patient monitoring and remote care

- Telemedicine - satellite technology allows remote communities to access medical specialists.
- Remote monitoring - smartwatches and portable ultrasound equipment enable doctors to monitor patients from a distance.

Research and physiological understanding

- Microgravity studies - research on astronauts in space has improved understanding of human health, providing valuable insights into bone density, muscle loss, and cardiovascular health.
- Rehabilitation - anti-gravity treadmills designed for astronauts are now used in physical therapy.

(Adepoju, 2022; Asrar et al., 2021; Comendador, 2023; dataentry, 2023; Greenblatt et al., 2019; NASA, 2013; NASA, 2022; NASA, 2025c)



ENVIRONMENTAL MONITORING AND SUSTAINABILITY

Weather satellite forecasting

Real-time meteorological data

- Earth observation satellites provide critical real-time meteorological data on temperature, precipitation, humidity, wind speed and cloud movement enabling more accurate weather forecasts and severe weather warnings.

Enabling mitigating measures

- Accurate forecasts and warnings of events like storms, floods, and heatwaves enable people to take protective measures or evacuate, thereby reducing casualties and property damage.

Supporting industries

- Reliable long-range forecasting mitigate risks and optimise operations for many industries notably agriculture, energy, aviation and shipping.

Planning and preparation

- Reliable long-range forecasting is a valuable tool to allow people to plan for all conditions, e.g., extreme weather events, fine weather for construction etc.

Emergency communication

- Satellite communication is vital during disasters when ground-based infrastructure fails.
- Satellites provide a reliable backup, enabling first responders to coordinate efforts, and allowing affected communities to stay connected and informed.

Climate change/climate monitoring

Climate monitoring and data collection

- Many of the essential climate variables are derived from satellites.
- Earth observation satellites provide essential, high-resolution data to monitor climate change indicators such as sea levels, greenhouse gas emissions, global temperatures, and changes in glaciers and forests.

Climate change mitigation and adaptation

- Satellite data and technologies support global efforts to develop and implement strategies for both reducing the causes of climate change and adapting to its effects.

Disaster management

Tracking and responding to natural disasters

- Earth observation satellites provide imagery and data to track and predict natural disasters such as storms, floods, bushfires, and droughts allowing emergency services to plan responses and issue early warnings.

Monitoring of air pollution

- Satellites are used to monitor air quality globally by detecting and tracking pollutants. This allows officials to issue public health warnings, and assess the effectiveness of emission reduction strategies.

(Greenblatt et al., 2019; NASA, 2025a)



CONSUMER PRODUCTS AND EVERYDAY CONVENIENCES

Many technologies initially designed for space missions have been adapted and/or improved for everyday use on Earth, including consumer products and everyday conveniences

Personal comfort and safety

- Firefighter suits with enhanced heat resistance and cooling.
- A special foam for comfortable footwear.
- Memory foam to provide pressure relief in mattresses and pillows.
- Impact-resistant sport helmets for enhanced protection.
- Eyeglass lenses with scratch-resistant coating for increased durability.
- Glass to filter ultraviolet light.
- Smoke detectors with adjustable sensitivity for reliability.

Environmental and energy solutions

- Solar cells/panels with improved efficiency and affordability.
- Purification systems to remove contaminants from air and water.
- Emulsified zero-valent iron to treat contaminated groundwater.
- Slow-release fertilisation (Zeoponic products) to increase biomass production.
- Electrostatic spraying to provide complete coverage for sanitisation and agriculture.
- Shower recycling to reduce water consumption.

Electronics and communication

- CMOS and CCD sensors - enabled high-resolution imaging in digital and smartphone cameras.
- Enhanced quartz clocks by improving their accuracy.
- Enhanced the technology of charge-coupled devices.

Engineering and materials science

- NASA's anti-corrosion coating technology - used on boats, bridges, oil rigs, and other infrastructure.
- Long-life tires - enhanced durability for a longer product lifespan.
- Home insulation - improved thermal efficiency.
- Freeze-dried food
- Foil blankets
- Jaws of life
- Light-weight materials, e.g., aerogels and composites

(Greenblatt et al., 2019; Jet Propulsion Laboratory, 2016; NASA, 2013)



MILITARY AND DEFENCE APPLICATIONS

National security

Satellite communications

- Enables secure, long-range command, control, and coordination for forces operating across vast distances.

Intelligence, surveillance and reconnaissance

- Uses satellites to gather high-resolution imagery and data for monitoring adversaries, targeting threats (including potential asteroid strikes), and providing early warning of missile launches.

Positioning, navigation and timing

- Provides precise location and timing data, essential for enabling reconnaissance, rapid deployment, and the use of precision-guided munitions.

Global Situational Awareness

Provision of consistent stream of imagery and data over a regular period enables both non-government humanitarian agencies and military to perform a longitudinal watch and analysis of combat zones in areas of interest across the globe. This can be used to detect population displacement, rapid changes in military or government land use, detection of infrastructure damage or build up of armed forces. Humanitarian aid agencies can position themselves for faster response.

(Keogh, 2025)



CHAPTER FOUR: Is a career in space for you? Let's find out!

Technology-related jobs underpin almost all aspects of Australian industry and society, including research, advanced manufacturing, transportation, clean energy, healthcare, defence and national security. Australia's technology and digital capability are central to our national interest and have the potential to help solve national challenges, deliver well-paid jobs and strengthen international partnerships. The Australian Government has a goal to grow the number of technology-related jobs to 1.2 million by 2030.

Key jobs in the space industry include astronauts; aerospace medicine specialists and medical scientists; scientists and researchers; engineers; technicians and manufacturers; information technology and data specialists; space business development professionals; and media and communications.

Australian universities and TAFEs offer a wide range of space industry study opportunities.

Examples of Australian universities offering space specific courses include:

- University New South Wales - Bachelor of Engineering (Honours) in Aerospace Engineering including a Space Systems Engineering stream
- University New South Wales Canberra - Graduate Certificate in Space
- International Space University in partnership with the Adelaide University - Southern Hemisphere Space Studies Program
- RMIT University - Master of Engineering (Aerospace) and PhD (Aerospace Engineering and Aviation)
- Curtin University - Graduate Certificate in Space Environment
- The University of Sydney - Bachelor of Engineering Honours with Space
- The Australasian College of Aerospace Medicine

Furthermore, a number of universities provide relevant courses in fields such as science, mathematics, engineering, data analytics, computer science, business administration, project management, space law and governance, media and public relations.

Space industry courses in Australian universities are primarily accessed through each university's official study portals and application systems, rather than a single, centralised national portal. However, the following sites may be useful: [Best Global Universities](#), [Studyportals](#), [Hotcourses Abroad](#), [edX](#) and [Open Universities Australia](#).

TAFEs offer foundational certificates/diplomas providing pathways into the space industry through related fields such as aeroskills; engineering technical/drafting; welding and fabrication; and digital technologies. Navigate to your state's official TAFE website (e.g., TAFE NSW) and utilise the built-in course search function. Employ the terms aerospace, aviation, aeroskills, engineering and robotics to filter available programs.

There are also excellent opportunities for employment in the space industry through Australian apprenticeships and traineeships.

Astronauts

Astronauts travel beyond the Earth's atmosphere to conduct scientific experiments, operate and maintain spacecraft and space stations. They perform extravehicular activities and spacewalks to work outside their vessel.

Aerospace medicine specialists and medical scientists

Aerospace physicians and scientists focus on the health, safety, and mental and physical wellbeing of space personnel. They address general health and health hazards posed by weightlessness, radiation, speed, isolation and confinement.

The healthcare and wellbeing for the flight crew is managed by a team of ground-based professionals, including specialised physicians (flight surgeons) and space nurses assigned to the flight crew before, during, and after a space mission. Social and psychological scientists and other specialists are also engaged in the care of flight crew with a focus on continually improving the quality of life for future flight crews, e.g., develop better medical protocols; introduce more effective countermeasures for space hazards; improve living and working spaces; and enhanced psychological support. This research not only benefits the flight crew, but also has potential to benefit the broader community.

Examples of aerospace medicine specialists and medical researchers/scientists

- **Clinical and operational health**
 - Flight surgeons
 - Nurses
 - Aviation medical examiners
 - Occupational therapists
 - Psychologists
 - Physiotherapists/exercise physiologists
 - Dietitians/nutritionists
- **Research and technology development**
 - Space medicine researchers
 - Biomedical engineers
 - Biotechnology specialists
 - Industrial hygienists
 - Microbiologists
 - Radiological health officers
- **Ethical and psychological oversight**
 - Bioethicists
 - Behavioural health scientists - neuroscientists, sociologists, psychologists

Scientists and researchers

Space scientists and researchers are essential to space programs as they provide the critical scientific knowledge needed to explore the cosmos, develop cutting-edge technologies, and tackle pressing Earth-based issues. Their work enables us to better understand the universe through data collection; discover new medical and biological insights from space; and develop technological advancements that improve life on Earth.

Scientists and researchers are often supported by technicians with relevant areas of expertise.

Examples of scientists and researchers

- **Planetary science and Earth observation**
 - Astrophysicists and astronomers
 - Planetary geologist
 - Geophysicists
 - Chemists and materials scientists
 - Atmospheric scientists and meteorologists
- **Life scientists**
 - Astrobiologists and astrobotanists
 - Zoologist and ecologist
 - Medical and health professionals (see relevant section above)
- **Data and analysis**
 - Mathematicians
 - Computer and data scientists/analysts

Engineers

Engineers apply their knowledge of science, mathematics and technology to design, build, test, and maintain systems, products, and structures to solve problems and improve everyday life.

Examples of engineers

- **Core engineering disciplines**
 - Aerospace/mechanical
 - Electrical, electronics and avionics
 - Computer (software/hardware)
 - Quality
- **Specialised space systems**
 - Space systems
 - Robotics
 - Propulsion
- **Supporting disciplines**
 - Material
 - Chemical
 - Civil, biomedical, environmental, and industrial

Technicians and manufacturing trades

Technicians assemble, install and maintain critical systems like navigation and electronics. They also test equipment; conduct experiments; collect data, manage and maintain equipment, troubleshoot problems, and ensure that projects are completed according to specifications.

Manufacturers perform the hands-on construction and repair of spacecraft and related systems/structures.

Computer-aided drafters and designers use specialised software to create detailed 2D and 3D digital models and technical drawings for spacecraft, components, and systems, translating concepts into manufacturable designs that meet extremely strict criteria.

Examples of technicians and manufacturing trades

- **Assembly technicians**
 - Mechanical assembly technicians
 - Avionics assembly technicians
 - Electrical assembly technicians
 - Aircraft maintenance technicians (mechanical, avionics, and structures)
- **Quality control/assurance**
 - Quality control technicians
 - Quality assurance specialists
- **Automation and robotics**
 - Robotics technicians
 - Automation technicians
- **Computer-aided drafters and designers**
- **Manufacturing trades**
 - Machinists
 - Fabricators
 - Welders
 - Sheet metal workers
 - Aircraft spray painter

Information technology and data specialists

Information technology and data analytics experts use their skills to process and analyse the huge amounts of data generated by space missions, which is vital for a wide range of activities, including designing spacecraft, planning missions, and navigating autonomously. This analysis is also crucial for tracking space debris, discovering new celestial bodies, monitoring Earth from space, and monitoring human health in space, to ensure the success of space missions and providing benefits for life on Earth.

Examples of information technology and data specialists

- Software developers
- Computer programmers
- Network and systems administrators
- Cybersecurity analysts/specialists
- Intelligent game developers
- AI and machine learning specialists

Space business development

Space business development professionals are essential for coordinating complex projects, managing resources, and securing funding to transform scientific research into practical programs and economic growth. They provide the framework for the operations, strategy, and support functions of the space industry, ensuring everything from project management to human resources and financial stability can be executed effectively. They create the systems for managing risk, coordinating projects, and handling the day-to-day logistics, allowing the industry's technical and scientific achievements to be translated into successful, long-term endeavours.

Examples of space business development professionals

- **Legal and policy**
 - Space lawyers
 - Policy officers
- **Project and mission management**
 - Space business development program managers, project managers, and mission managers
- **Finance and business strategy**
 - Business intelligence analysts
 - Financial/accounts managers
- **Marketing and communications**
 - Marketing/advertising managers
- **Workplace health and safety**
 - Work health and safety officers

Media and communication experts

Media and communications experts are crucial for space programs because they ignite public interest and help secure investment through engaging storytelling, captivating the public's imagination, and attracting new talent to the field. They are essential in bridging the gap between scientific advancements and the broader audience, effectively communicating complex concepts and research to decision-makers and the broader community.

Examples of media and communications experts

- **Content creation and public information**
 - Journalists and copywriters
 - Photographers and videographers
 - Graphic designers and illustrators
 - Website designers and content managers
- **Public relations and engagement**
 - Space communicators and public relations specialists
 - Event coordinators
 - Educational outreach officers
 - Social media coordinators

Useful online career booklet

Australian Space Agency - Careers in Space 2024

<https://www.space.gov.au/sites/default/files/2025-02/booklet-careers-in-space-2024.pdf>

Interviews with experts in the space industry

Would you like to know more?

Click on the boxes to watch live interviews with experts sharing their experiences within the Australian space industry:



**Astronaut &
Space Policy**



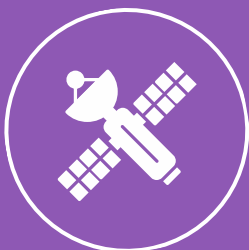
**Astrophysicist/
Cosmologist**



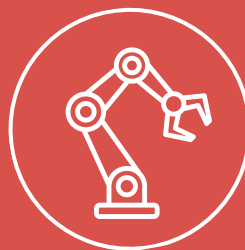
**Antenna
Mechanical
Systems**



**Resident
Astronomer**



**Integration
Engineer
(Satellites)**



**Manufacturing
Engineer**



Space Medicine

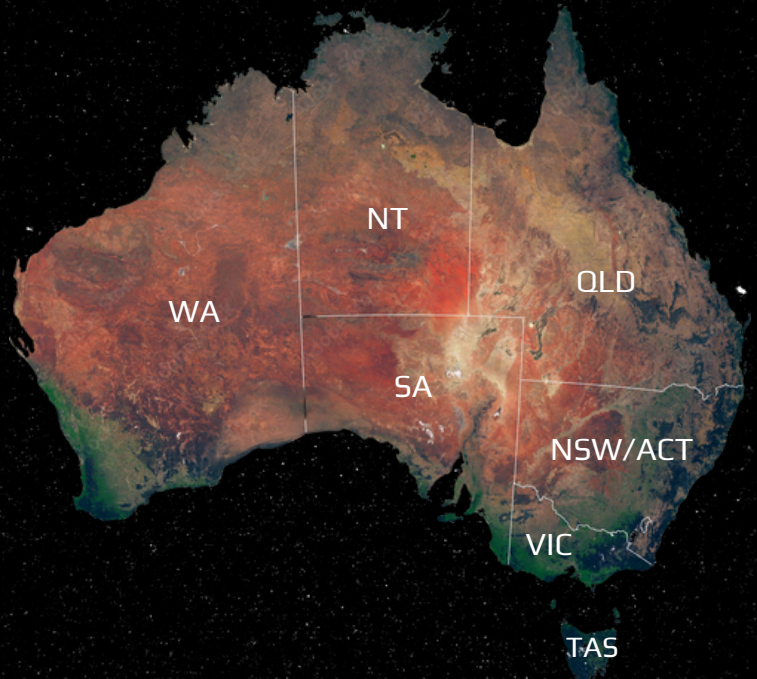
Source: Infographic designed by Katherine Grace Stewardson.



CHAPTER FIVE: A shared orbit: Connecting you with local clubs and societies

Connect with others who share similar interests, develop new skills and learn more about space.

Examples of state and territory astronomy clubs and astronomical societies:



Victoria (VIC)

[Astronomical Society of Albury/Wodonga](#)

Albury/Wodonga (Facebook)

[Astronomical Society of Victoria](#)

Melbourne, Heathcote, Shepparton, Geelong, Bendigo

[Astronomy Benalla](#)

Benalla

[Ballarat Observatory & Society](#)

Ballarat

[Latrobe Valley Astronomical Society](#)

Latrobe Valley, Tyers East
Gippsland

[Mornington Peninsula Astronomical Society](#)

Frankston

[Mount Burnett Observatory](#)

Dandenong Ranges east of
Melbourne

[Oasis Stargazers Club Mildura Inc](#)

Mildura (Facebook)

[Snake Valley Astronomical Association](#)

Pryenees/west of Ballarat

[Tallangatta and District Astronomy Club Inc](#)

East of Wodonga

Queensland (QLD)

<u>Astronomical Association of Queensland</u>	Brisbane
<u>Brisbane Astronomical Society</u>	Brisbane
<u>Bundaberg Astronomical Society</u>	Bundaberg
<u>Night Sky Secrets</u> (tours/education/shop)	Cairns (operate in northern QLD and NT)
<u>Coffs Harbour Astronomical Society</u>	Coffs Harbour
<u>Redlands Astronomical Society</u>	Brisbane
<u>South East Queensland Astronomical Society</u>	Brisbane/Bracken Ridge
<u>Southern Astronomical Society</u>	South Brisbane/Upper Coomera
<u>Townsville Astronomy Group</u>	Townsville (Facebook)

Western Australia (WA)

<u>Astronomical Group of WA</u>	Perth
<u>Stargazers Club WA</u>	Perth
<u>Astronomical Society of the South West</u>	Bunbury
<u>Astronomical Society of Western Australia</u>	Perth

Northern Territory (NT)

<u>Astronomical Society of Alice Springs</u>	Alice Springs (Connected with Earth Sanctuary)
<u>Night Sky Secrets</u> (tours/education/shop)	Cairns (operate in northern QLD and NT)

South Australia (SA)

<u>Astronomical Society of South Australia</u>	Adelaide
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New South Wales (NSW)/Australia Capital Territory (ACT)

<u>Astronomical Society of Coonabarabran</u>	Coonabarabran (Facebook)
<u>Astronomical Society of New South Wales</u>	Sydney
<u>Canberra Astronomical Society</u>	Canberra
<u>Central West Astronomical Society</u>	Parkes
<u>Coffs Harbour Astronomical Society</u>	Coffs Harbour
<u>Illawarra Astronomical Society</u>	Wollongong
<u>Macarthur Astronomical Society</u>	South Western Sydney- Campbelltown, Camden, Wollondilly, Liverpool
<u>Macquarie University Society</u> (Association for Astronomy)	Sydney
<u>Newcastle Astronomical Society</u>	Newcastle (Facebook)
<u>Northern Sydney Astronomical Society</u>	Sydney
<u>Port Macquarie Astronomical Association</u>	Port Macquarie
<u>Shoalhaven Astronomers</u>	Nowra
<u>Sutherland Astronomical Society</u>	Sydney, Oyster Bay
<u>Sydney City Skywatchers</u>	Sydney
<u>Sydney Northwest Astronomy Group</u>	Sydney
<u>Tamworth Regional Astronomy Club Inc</u>	North West Slopes
<u>University of New England and Northern Tablelands Astronomical Society</u>	Armidale
<u>Western Sydney Amateur Astronomy Group</u>	Western Sydney

Tasmania (TAS)

<u>Astronomical Society of Tasmania</u>	Hobart / Launceston
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The following may also help you connect with the broader space community:

- American Institute of Aeronautics and Astronautics - Australian sections
- Astronomical Society of Australia
- Australian Space Network
- Australian Space Research Institute
- Australian Youth Aerospace Association
- Australian Youth Space Society
- Mars Society Australia
- National Space Society of Australia
- OrbitOz
- Royal Aeronautical Society - Australian division
- Space Association of Australia
- Engineers Australia
- Space Industry Association of Australia
- Various university affiliated groups



CHAPTER SIX: A snapshot in time: Australia's rich space history

Australia has a long and distinguished history as a spacefaring nation.

Knowing Australia's rich history in space exploration is crucial for understanding our current position in the field, and for guiding our future ambitions. Our past contributions have not only established a strong foundation for advanced technologies today, but also serve as an inspiration to continue our pursuit of space exploration.

Australia's significant space history is captured in the following timeline. This chronology of events is not intended to be a complete list of events; and does not capture the cause and effect relationships or historical causations.

Indigenous people of Australia - world's first astronomers

65,000 YEARS AGO

Integral to their survival and culture, Indigenous Australians have used space for position, navigation and timing. This knowledge is passed down in stories, song, dance and art.

[30,25]

An expedition to observe the transit of Venus also enabled the discovery of the eastern portion of the Australian continent (New South Wales) by Captain James Cook

1768–1771

In 1769, Lieutenant James Cook, captain of HMB Endeavour, and astronomer Charles Green, sailed to Tahiti to observe the rare transit of Venus crossing in front of the sun in order to contribute to the first accurate method to measure the distance to the Sun, the astronomical unit, for the Royal Society of London. Although their resultant data was unusable, the voyage paved the way for major discoveries in science and exploration including discovering the eastern portion of the Australian continent (New South Wales) for the British Crown in 1770.

[40]

1947: Woomera Rocket Range was established in South Australia, marking the beginning of Australia's spacefaring journey

1946-1947

Woomera - The British government approached Australia to establish a long-range weapons testing facility

Following the advances in military technology of World War II, Australia and the United Kingdom formed the Anglo-Australia Joint Project in 1946. Woomera (South Australia) was selected as a suitable site to test long-range weapons. The area was declared a Prohibited Area in 1947 and the first military trial took place in December 1947.

[22,42]

1955: Pivotal year in space development

1955

The 'Space Race' began

The United States announced its intent to launch an artificial satellite for the International Geophysical Year. The Soviet Union responded, declaring that they would also launch a satellite in the near future.

[The United States and the Soviet Union were the most powerful countries after World War II. Competition between them, to achieve superior rocketry and spaceflight capability, had begun. This was a key driver for significant progress in science, space exploration and technology].

[23]

1957-1958

The 'International Geophysical Year' (IGY) was a catalyst for space-related activities and international cooperation

Australia participated in the International Geophysical Year - a global scientific research program focused on understanding the Earth's relationship to its surrounding space environment. Australia hosted two space tracking stations at Woomera to support the US satellite program, and launched sounding rockets from Woomera to study the upper atmosphere. This marked the beginning of space tracking in Australia, our longest continuous space activity.

[The IGY was a key driver for advancements in oceanography, meteorology, seismology, and the establishment of the first Earth satellites; and demonstrated the ability of people from all nations to work together harmoniously for the common good, even during a time of heightened political tension].

[46,58]

1957

The 'Space Age' began

The launch of Soviet Union 'Sputnik' (1957), and United States 'Explorer 1' (1958), marked the beginning of the Space Age which led to new scientific discoveries.

[Sputnik 1 became the first human-made object to orbit the Earth. Sputnik 2 carried the dog Laika, the first living animal to travel into space. Explorer 1 was the first US artificial Earth satellite].

[8,58]

1957: Woomera became a focal point for IGY activity

Woomera marked the beginning of Australia's involvement in space tracking and sounding rocket programs

[15,22,24,25,26,35]

Tracking station	Location	Period of operation	Description
Minitrack	Woomera, South Australia	1957-1966	Radio interferometry tracking and data reception system
Baker-Nunn	Woomera, South Australia	1957-1973	Telescope tracking camera observatory

1957-1979

Woomera - Britain's Skylark Sounding Rocket program

This was the longest-operating space project at Woomera, launching British, Australian, European and American scientific instruments.

Australian and British researchers made substantial contributions to x-ray, infra-red and ultra-violet astronomy.

[46]

1958

Woomera - defence-related space research commenced

The Black Knight and Jabiru programs commenced, focusing on missile technology, materials, and re-entry phenomena.

[45]

1958

NASA was founded

NASA formed a long-standing relationship with Australia.

[15,35,45]

1958-1975

Woomera - The Australian sounding rocket program

The Weapons Research Establishment in conjunction with the University of Adelaide carried out upper atmosphere research at Woomera (South Australia) that made important contributions to understanding the factors governing Australia's meteorology. [46]

1959: Australia becomes a founding member of international space organisations

Australia was a founding member of the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS). Australia continuously chaired the Scientific and Technical Subcommittee (subsidiary body of COPUOS) for over 30 years (to present), significantly influencing UN space treaties. Furthermore, Australia became a signatory to the five United Nations space treaties between the 1960s and 1980s. Australia was also a founding member of the Committee on Space Research (COSPAR).

[46]

From the 1960s onwards: Australia hosted several NASA tracking stations

From the 1960s, Australia hosted several NASA tracking stations. By 1969 it was home to the largest number of NASA tracking stations outside the United States. The first cooperative space agreement was signed in 1960 between the United States and Australia. NASA stations were staffed and operated by local personnel. This remained a requirement for NASA facilities in Australia. At this time, Australia was considered one of the leading space-active nations.

[26,59,60,61,62]

Tracking Station	Location	Period of operation	Description
Muchea	Perth, Western Australia	1960-1963	
Red Lake	Woomera, South Australia	1960-1966	
Island Lagoon	Woomera, South Australia	1960-1972	
Carnarvon	Carnarvon, Western Australia	1964-1974	This station was established for NASA's Gemini program. This was the second step for NASA's plan to put a human on the Moon (and subsequently supported the Apollo and Skylab space programs).
Tidbinbilla	Tidbinbilla, Australian Capital Territory	1965 - present	Now known as the Canberra Deep Space Communication Complex, Tidbinbilla was established for robotic lunar and planetary exploration and is now used for tracking and communicating for interplanetary missions with NASA and other agencies. It is the only NASA tracking station in Australia still in operation and is managed by the CSIRO.
Orroral Valley	Orroral Valley, Australian Capital Territory	1966-1985	This station was established for tracking and communicating Earth orbiting scientific satellites. Received data from instrument packages from Apollo missions. From 1982-1985 was used to communicate with the space shuttle.
Cooby Creek	Toowoomba, Queensland	1966-1970	This station was established to support NASA's Application Technology Satellite program and was a part of the Spacecraft Tracking and Data Acquisition Network.
Honeysuckle Creek	Honeysuckle Creek, Australian Capital Territory	1967-1981	This station was established to support the Apollo Lunar program as part of NASA's Manned Space Flight Network. The Honeysuckle Creek Tracking Station dish was transferred to the Tidbinbilla after 1981.

1961

Opening of Parkes radio telescope

Shortly after its opening, in 1962, the telescope tracked NASA's Mariner 2 spacecraft as it flew by the planet Venus, marking the start of Australia's longstanding relationship with NASA as a supporting facility.

[21]

1962

Australia became a member of the European Launcher Development Organisation (ELDO)

This organisation was created to develop an independent launch capability for Europe and used Australia's Woomera site for rocket launches.

As part of ELDO program, in June 1964, the first test flight of the 'Blue Streak' first stage of the Europa rocket took place at Woomera.

[46]

1964

Australia became a founding member of INTELSAT, the first global satellite communications network

In 1965, Early Bird (Intelsat I) was launched into geosynchronous orbit. This was the world's first commercial communications satellite and the term "live via satellite" was born.

[46]

1966

The first Overseas Telecommunications Commission (OTC) Satellite Earth Station opened

Located at Carnarvon Western Australia, this station provided the first direct satellite broadcast out of Australia which was with the UK.

[46]

1967

Australian-born Dr Philip K Chapman was selected as an Apollo scientist-astronaut

Dr Chapman left the program in the 1970s before making a space flight.

[46]

1967: Australia was a signatory to The Outer Space Treaty

[42]

1967: Australia launched its first satellite

The Weapon Research Establishment Satellite (WRESAT-1), Australia's first satellite, was launched from Woomera, South Australia, making Australia one of the earliest countries to launch its own satellite. The project extended our knowledge of the upper atmosphere and proved Australia was capable of making a satellite.

[34,35,42]

1969: Apollo 11 Moon landing

Honeysuckle Creek station initially transmitted Neil Armstrong's first steps. Parkes Radio Telescope also played a crucial role in providing higher-quality signal for the rest of the televised moonwalk. Together, the stations brought the landmark event to 600 million viewers and also assisted during the Apollo 13 crisis. [15,34,35,46]

1970

World first Australian amateur radio satellite launched

Australis-OSCAR 5 (AO 5) was one of the first amateur radio satellites in the world. AO 5 was launched in the US with a NASA weather satellite. [35]

1970

"Houston, we've had a problem"

An Australian team communicated with Apollo astronauts and tracked their path, helping to avert a tragedy. The Parkes radio telescope and Honeysuckle Creek station in the ACT played a vital role in the rescue of Apollo 13. [34]

1970

Joint US Australian Defence Satellite facilities

Pine Gap near Alice Springs, providing signals intelligence; and Nurrungar near Island Lagoon, managing the early warning satellites. [46]

1970s: Australia's space activities slowed down

Across the 1970s Australia's space prominence had dwindled, with the country lacking both a national space agency and a coherent national space policy. [42,25]

1970

ELDO withdrew from Australia

[46]

1971

The last British Black Arrow rocket launched the Prospero satellite from Woomera

[46]

1972

Australia became one of the earliest users of the Landsat program

The Landsat remote sensing program was a joint project with NASA and the US Geological Survey to study the Earth's surface from space. [46]

1979

The Skylark sounding rocket program at Woomera transferred to Europe

[46]

1979

Australia's Landsat station opened

Australia became one of the first countries outside the US to have a Landsat receiving facility. Australia also received its own LandSat data archive.

[46]

1979

Skylab crashed in Esperance (Western Australia)

Skylab, NASA's first space station, crashed in Esperance and over the Indian Ocean.

[34]

1979

Australia became a member of the International Maritime Satellite Organisation (INMARSAT)

Provided the first global maritime communications network.

[46]

1980s: Australia's space capabilities reenergised

1980-1981

The Starlab project commenced and Aussat was established as Australia's domestic satellite communications system

[46]

1980

First Australian Space Industry Symposium was held

[46]

MID 1980s

OTC and CSIRO become involved in satellite ground station development

1984

CSIRO's Office of Space Science and Applications

COSSA was established to carry out research in remote sensing and the development of instrumentation for remote sensing satellites.

[15]

1984

First Australian-born person to make a spaceflight

Oceanographer Dr Paul Scully-Power became the first Australian-born person to make a spaceflight on Space Shuttle mission STS 41G. He made visual oceanographic observations of three-quarters of the world's oceans; and observed ocean current features.

1985

The Australian-developed Aggregation of Red Cells (ARC) experiment made first flight on space shuttle mission STS 51C

[46]

1985

Release of the “Madigan Report”

Also known as “A Space Policy for Australia” report, this report included the first proposal for a coherent Australian space policy and the recommendation to establish a national space agency.

[46]

1985

Aussat 1 and Aussat 2 were launched from NASA space shuttles

[46]

1986

The Australian Space Board and the first National Space Program were established

They were established to support the development of an Australian space industry.

[46]

1987

Aussat 3 was launched by the European Space Agency

[46]

1987-1996

The Australian Space Office (ASO)

This office was established to manage Australia's National Space Program, to serve as the secretariat and operational arm for the Australian Space Board, focusing on promoting the growth of a local space industry.

[15]

1988

The first Ausroc 1 student rocket was launched by the Australian Space Research Institute

[46]

1989

Australia joined the COSPAS-SARSAT network—a satellite-aided search and rescue initiative

[46]

1990s: Privatisation and commercialisation in the Australian space sector grew

The shift in perspective, which saw space as a domain for commercial rather than solely governmental activities, created new opportunities. The increasing demand for an Australian space industry ultimately necessitated legislation to regulate space activities conducted on Australian soil.

[42]

1991

Australian components launched on the European remote sensing satellite ERS-1

The Along Track Scanning Radiometer (ATSR) included components from Australia. The ATSR was designed to observe global sea surface temperature from space to very high levels of accuracy.

[35]

1992

Australia designed and built Endeavour space telescope which flew on the STS 42 mission

It was the successor to the Starlab project to demonstrate and space qualify the UV detector.

[46]

1992

Aussat satellite system was privatised to become the Optus. The Australian Telecommunications Commission (Telecom) and OTC merged to become Telstra

1992

The Australian Space Industry Chamber of Commerce was established

It is now known as The Space Industry Association of Australia (SIAA).

[46]

1993

First successful scramjet engine test by University of Queensland

[46]

1995

The Space Shuttle Endeavour launched on its second flight (STS-67); and the ERS-2 satellite was launched with ATSR-2

[46]

1996

First Australian-born NASA Mission Specialist

Dr Andrew ('Andy') Thomas was the first Australian-born NASA Mission Specialist. His first flight was STS 77 aboard the Space Shuttle Endeavour. Between 1996 and 2005, Andy flew four missions. He performed a 6.5-hour spacewalk in 2001 on his third mission (STS-102), making him the first Australian-born person to do so.

[15,34]

1998: The Space Activities Act

This act was introduced in response to a number of proposals through the 1990s for commercial space ports in Australia. The act was designed to 'reflect in Australian law, Australia's obligations as a signatory to the key United Nations space treaties and to provide a legally certain and predictable environment for the development and operation of Australia's space launch facilities'.

[42]

1998

The International Astronautical Congress was held in Australia for the 1st time

The world's premier global space event was held in Melbourne (Victoria).

1998

The Australian Space Act and the Space Licensing and Safety Office (SLASO)

The Space Activities Act 1998 reflected obligations set out under the Outer Space Treaty, the Rescue Agreement, the Liability Convention, the Registration Convention and the Moon Agreement. It was replaced by the Space (Launches and Returns) Act 2018. [53]

Early 2000s: Australia reevaluates its space priorities

2001

The Australian Centre for Astrobiology

Now based at the University of New South Wales, this centre fostered interdisciplinary research into the origin, evolution, and distribution of life across the Universe. [46,57]

2002

Australian designed Federation Satellite (FedSAT)

FedSAT was Australia's second science satellite, a technology demonstrator, launched in 2002 to celebrate the Centenary of Federation. It was designed and built by the CSIRO's Cooperative Research Centre for Satellite Systems (CRCSS) and various Australian universities and companies. It was the world's first microsatellite to operate in the Ka-band for communications and featured a unique "cultural time capsule" on a CD with songs and recorded statements from Australian school children about their visions for Australia's future. The launch was provided by Japan as a federation centenary gift. [27,46]

2002

Woomera - successful supersonic combustion flight

The launch of HyShot II in 2002 was the first successful flight test of a scramjet engine. One of the engines was designed by the University of Queensland. [46,56]

2002

Envisat launched with Australian instrument

This satellite was carrying a new Australian sensor, Advanced Along-Track Scanning Radiometer (AATSR), for measuring sea surface temperatures (integral to climate modelling and forecasting) launched by the European Space Agency. [46,57]

2006

"Space, a Priority for Australia" report

This report was released by the Australian Institute for Policy and Science. It called for a national space policy to foster Australia's space industry. [9,46]

2007

Australia joined the International Space Exploration Coordination Group (ISECG)

ISECG was established in response to “The Global Exploration Strategy: The Framework for Coordination,” developed by 14 space agencies (including Australia). The strategy articulated a shared vision of coordinated human and robotic space exploration focused on destinations where humans may one day live and work. Today it includes 27 international space agencies. Australia is also a member of the international Mars Architecture for the Return of Samples (iMARS) Working Group.

[44,32,33,55]

2006

The Advanced Instrumentation Technology Centre (AITC)

AITC, part of the Australian National University, opened at Mt. Stromlo (Canberra, ACT) to support the development of the next generation of instruments for astronomy and space science.

[7,46]

2008

The Australian Senate Standing Committee on Economics released a report called Lost in Space

The report set a new direction for Australia’s space science and industry sector, calling for the establishment of a space agency.

[17]

2009

First Hypersonic International Flight Research Experimentation (HIFiRE) flight

A collaboration on hypersonic flight research between the Australian Department of Defence and the US Air Force. This flight was at speeds above Mach 5 (five times the speed of sound).

[39,46]

2009-2013

The Australian Space Research Program (ASRP)

In response to the Lost in Space report, ASRP was a government grant program, funding space education and industry development projects (AU\$40 million).

[46]

2010s: The development of the nano-satellite enabled research groups, students and small organisations to build their own satellites and have them launched into space

[35]

2012

Landing the Curiosity rover on Mars

The Canberra Deep Space Communication Complex (NASA and CSIRO) had primary responsibility for landing Curiosity on Mars. Radio dishes across Australia listened in for the rover and relayed the message that it had landed and was operating successfully.

[34,43]

2010

Japan’s Hayabusa asteroid sample return capsule landed at Woomera

The spacecraft travelled for 6 years to the 4.6 billion year old asteroid Ryugu and then back to Earth.

[13,46]

2013

Australia's Satellite Utilisation Policy released

The policy focused on securing cost-effective access to satellite capabilities for Earth observation, satellite communications, and positioning and navigation services. It was Australia's first formal space policy.

[18,46]

2017-2018: Australia reengages with space activity

2017

SIAA Space White Paper released

The Space Industry Association of Australia (SIAA) released its white paper, 'Advancing Australia in Space'.

[46,49]

2017

International Astronautical Congress is held in Australia for the 2nd time

The world's premier global space event was held in Adelaide (South Australia) hosted by the Space Industry Association of Australia. Australia announced its intention to form the Australian Space Agency at this Congress.

[2]

2017

The first Australian Cubesats were launched

There were three satellites built by Australian universities as part of the QB50 international research program. They were built by the universities of Sydney, New South Wales and South Australia and Adelaide and deployed from the International Space Station to make research observations of the thermosphere and ionosphere.

Defence also launched their first satellite, the Buccaneer Risk Mitigation Mission.

[6,46]

2018

The "Review of Australia's Space Industry Capability"

The report from the Expert Reference Group, chaired by Dr Megan Clark AC, was released in March 2018. This review provided the rationale for the establishment of the Australian Space Agency.

[11,46]

2018

M1 mission was launched

This satellite was testing technologies for maritime surveillance and space situational awareness. M2 was the successor of M1 which launched two linked CubeSats to test formation flying in 2020.

2018

“Space: A Roadmap for unlocking future growth opportunities for Australia”

This CSIRO report highlighted Australia’s strengths and geographic advantages to increase Australia’s share of the international space sector. One of the three key recommended areas for development was “using Australia’s southern hemisphere location for space object tracking and deep space communication”.

[20]

2018: Establishment of the Australian Space Agency

The Australian Space Agency was officially announced during the 68th International Astronautical Congress (IAC) hosted in Adelaide in 2017.

The Australian Space Agency commenced operations on 1 July 2018. This agency was established within the Australian Department of Industry, Science and Resources to promote growth and innovation in the Australian space sector.

Specifically to: (i) provide national policy and strategic advice on the civil space sector; (ii) coordinate Australia’s domestic civil space sector activities; (iii) support the growth of Australia’s space industry and the use of space across the broader economy; (iv) lead international civil space engagement; (v) administer space activities legislation and deliver on our international obligations; and (vi) inspire the Australian community and the next generation of Australia’s space workforce.

[3,10,15,42]

2019

Australian Civil Space Strategy 2019–2028

A 10-year plan to guide the growth and development of Australia’s domestic space industry.

[12]

2019

The Space (Launches and Returns) Act 2018 (Cth) (the Launches and Returns Act) commenced on 31 August 2019

Following consultation with government, non-government and international stakeholders, the 1998 space Act was revised. The revised Act marked the commencement of Australia’s new space legislative framework, facilitating the growth of a more commercial and forward-looking approach.

[42,52]

2019

Australia joins the US moon to Mars mission

The Australian government allocated \$150 million for the Moon to Mars initiative. This was to support Australian businesses and researchers to participate in NASA's plan to return to the Moon and on to Mars. [4,15]

2020

"Purra"

A toy kangaroo named "Purra" was sent to the International Space Station as part of the NASA-SpaceX Crew-1 mission, drawing significant media attention to Australia's role in international spaceflight.

2020

Australia became a founding signatory of the Artemis Accords

Australia became one of the seven founding signatories of the Artemis Accords, playing a key role in achieving a sustainable and robust presence on the Moon and preparing to conduct a historic human mission to Mars. [15]

2020

Headquarters of the Australian Space Agency opened in Adelaide

2021: Australian Space Discovery Centre opened in Adelaide.

2021: Responsive Space Operations Centre (RSOC) was established. [14]

2020

Japan's Hayabusa II asteroid sample return capsule landed at Woomera

Despite lockdown restrictions as a result of the COVID-19 pandemic, Australia managed a successful recovery program with the Japanese Space Agency.

2021

"Roo-ver" - Australia commenced project to develop a lunar rover

Under the Moon to Mars mission, the Australian Space Agency was collaborating with NASA to send an Australian-designed, built and operated semi-autonomous rover to the lunar surface to develop key capabilities that lead to a sustainable human presence on the lunar surface. [5]

2022

Defence Space Command was established

Marked a critical milestone in Australia's commitment to prepare space power for national interests.

2022

Australia's first commercial space launch

Three suborbital sounding rocket launches took place on behalf of NASA at the Arnhem Space Centre (Nhulunbuy, Northern Territory), operated by Equatorial Launch Australia. [15]

2023

First Australian satellite carried a foreign space agency's scientific instrument

The Space Industry Responsive Intelligent Thermal (SpIRIT) satellite launched on a SpaceX mission carried the HERMES X-ray detector from the Italian Space Agency. After the establishment of the Australian Space Agency Australian universities began launching their own satellites. [15,47]

2024

Buccaneer mission

The Buccaneer Main Mission was a nanosatellite designed to collect data on radio-frequency propagation to inform future space capabilities for Australia.

2024

Waratah Seed-1 launched

Australia's first industry ride-share satellite was launched to give New South Wales-based startups, and industry-led teams, low-cost access to space.

2024

First female Australian astronaut

The Australian Space Agency's Katherine Bennell-Pegg graduated from the European Space Agency's Astronaut Basic Training and became the first Australian woman to qualify as a professional astronaut. Katherine represents a new era of Australian space exploration. In the same selection round, dual citizen Meghan Christen was selected as reserve astronaut representing the United Kingdom. [15,41]

2024

First state funded Australian satellite (Kanyini) was launched by South Australia

2024

Australia formally joined US-led Landsat Next satellite program

As a core partner, Australia contributes to map the Earth's surface and support mining exploration, environmental monitoring, agriculture and disaster management. [37]

2025

First test flight of the Gilmour Space Technologies orbital rocket - Eris Test Flight 1

Gilmour Space Technologies attempted the first launch of an Australian made rocket into orbit from Australian soil. The Eris Test Flight 1 took place at Gilmour's Bowen Orbital Spaceport at Abbot Point (North Queensland). [29,16]

2025

First Australian spaceflight participants to orbit Earth over its poles

Australian, Eric Philips, was on the Fram2 mission crew.

2025

Varda Space Industries' Winnebago-2 (W-2) capsule returned to Earth and landed in Australia

This United States capsule was launched from California and returned to Earth at the Koonibba Test Range (South Australia) marking the first commercial re-entry and landing at a commercial spaceport anywhere in the world. Southern Launch and Varda Space Industries signed a contract for a further 20 spacecraft [48,51] returns to the Koonibba Test Range.

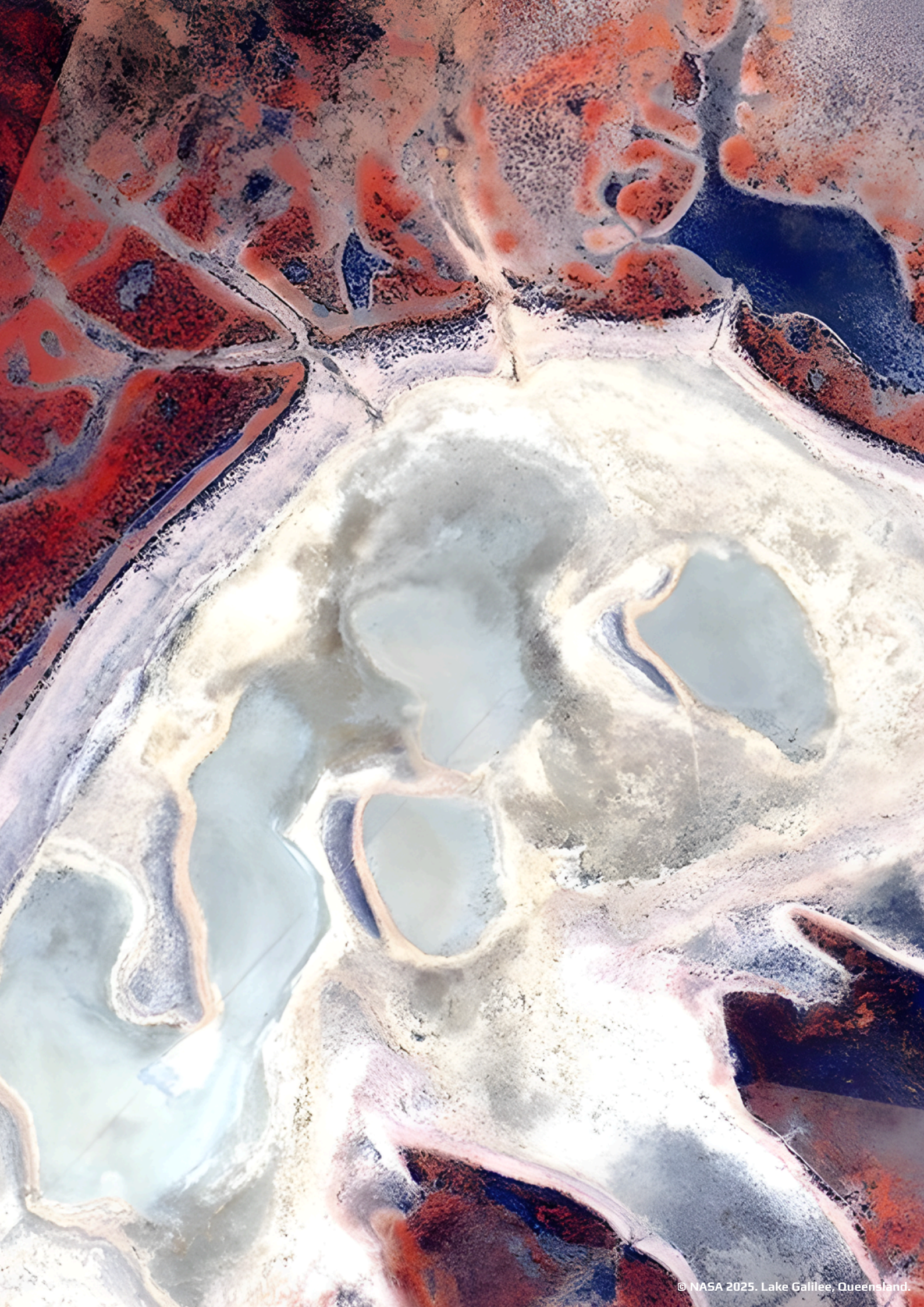
2025

International Astronautical Congress - held in Australia for the 3rd time

The world's premier global space event was held in Sydney (New South Wales).

[31]

References: Numbers represent individual references, and are located in the bottom corner of each entry. Refer to reference list for full citations.



CHAPTER SEVEN: 76th International Astronautical Congress 2025:

The world's premier global space event

The 76th International Astronautical Congress 2025 was a resounding success, uniting 99 nations on Australian shores to champion the collaborative, sustainable, peaceful and innovative future of the global space industry.



© Australian Space Agency 2025. (left to right) The Australian Space Agency Dr Katherine Bennell-Pegg [Australian Astronaut]; The Governor-General of Australia [Her Excellency the Hon Sam Mostyn AC]; Head of the Australian Space Agency [Mr Enrico Palermo]; and The Honourable Anoulack Chanthivong MP [Minister for Industry and Trade].

Three case studies highlighting the success of this world premier event include:

1. Waratah Seed: Australia's First Industry Ride-Share Satellite
2. Expansion of International Space Partnerships
3. The Aussie Lunar "Roo-ver"

76th International Astronautical Congress 2025

Date

- 29 September to 3 October 2025

Location

- **Sydney**, Australia (76th IAC 2025)
- Note: This is the third time that Australia has been honoured to host the prestigious IAC. The IAC has been hosted in Adelaide (68th IAC 2017) and Melbourne (49th IAC 1998).

Host

- Space Industry Association of Australia (SIAA)

Co-host

- Australian Space Agency and NSW Government

Attendees

- **7,500 delegates** from **99 countries** including space agencies, industry leaders, researchers and academics.

Theme

- **“Sustainable Space: Resilient Earth”**:
 - Space-based application for Earth
 - Sustainable space activities
 - Sustaining life off Earth

Aim

- To advance space in the Indo-Pacific by showcasing the entire region and its wide variety of space-based opportunities.
- To share knowledge, foster partnerships, showcase cutting-edge innovation and educate the broader community about ‘why space matters’.

One of the many highlights of the program was a presentation exploring ‘how Indigenous perspectives can inform sustainable space practices and foster co-discovery between Indigenous knowledge systems and Western science’.



© International Astronautical Federation. IAC 2025.

CASE STUDY ONE

Waratah Seed: Australia's first industry ride-share satellite

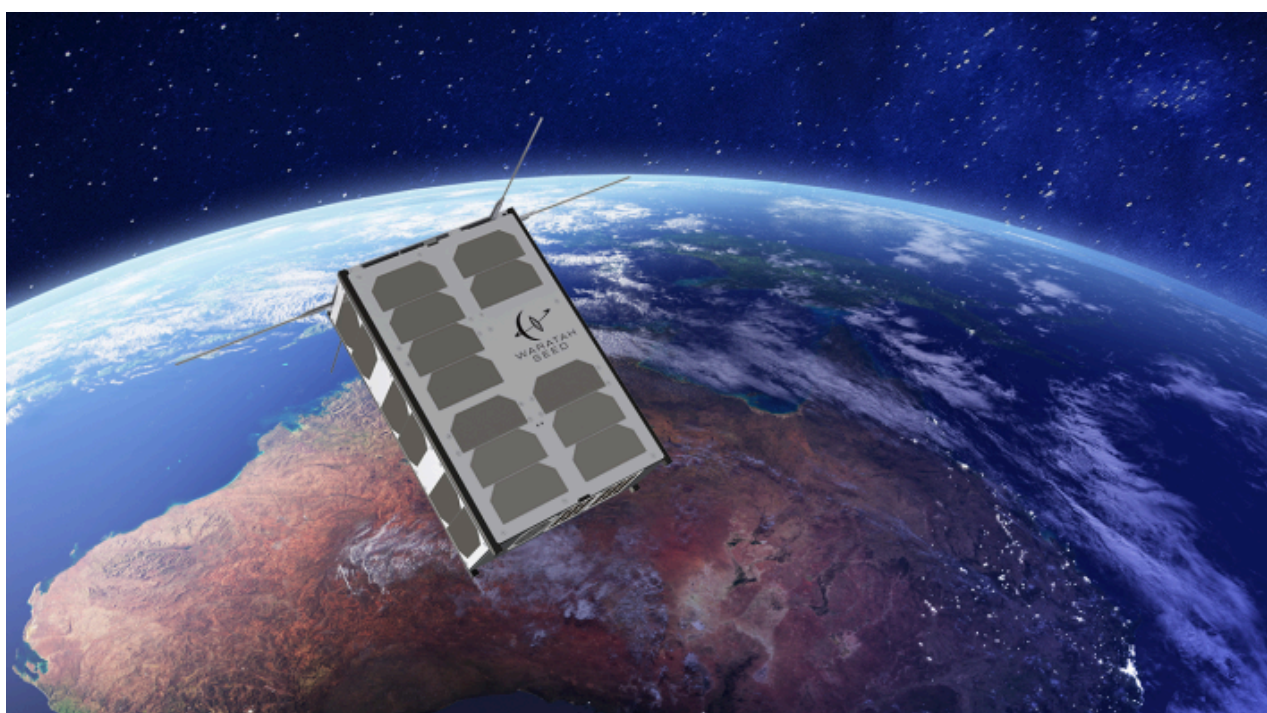
Plenary program, highlight lecture by Professor Iver Cains
(Space physics, Sydney University)

Waratah Seed-1, Australia's first industry ride-share satellite, was launched on August 16, 2024, to give New South Wales-based startups, and industry-led teams, low-cost access to space.

The 6-unit cube satellite provides opportunities to test and qualify new technologies in Low Earth Orbit, approximately 500 kilometres above Earth.

Waratah Seed-1 has been operating in space for over 12 months, with eight of its nine technology payloads on board operational, generating data and sending files back to Earth for analysis:

1. Matilda, a novel thermal management system to regulate temperature.
2. Harry3, a GPS reflectometry payload to monitor ocean conditions.
3. PORT-2, a test for high-efficiency, perovskite solar cells to improve the cost and efficiency of solar cells for spacecraft.
4. SE-2, a space edge computing system for near real-time data delivery.
5. Bio-materials experiment for a heat-resistant alternative material to carbon fiber.
6. SPaDeS, the Submillimeter Particle Detection System to detect particle impacts and measure waves in the Earth's ionospheric plasma.
7. Radiation counter to measure the radiation environment.
8. Electropermanent magnetorquer for attitude control and stabilisation of the spacecraft.



© University of Sydney 2025. Waratah Seed-1.

The New South Wales Government has declared “**Mission Success**”.

In August 2025, this amazing mission won the prestigious American Institute of Aeronautics and Astronautics SmallSat Mission of the Year award, a highly significant milestone for the Australian space industry.

The project was funded by the New South Wales Government, SmartSat CRC, space companies, and universities led by the University of Sydney. Professor Iver Cairns, Director of the CUAVA space training centre at the University of Sydney, leads the Waratah Seed consortium.

(Australian Space Agency, 2025; IAC, 2025, Waratah Seed, 2025)

CASE STUDY TWO

Expansion of international space partnerships

The IAC 2025 served as a platform for the Australian Government to announce important developments in the Australian space sector, including global agreements, notably (i) AU-US Space Framework Agreement; (ii) AU-EU Cooperative Agreement; and (iii) AU-UK Space Bridge renewal.

These agreements not only strengthen collaboration in aeronautics and space exploration between the respective nations, but also amplifies Australia's world-class capability, and our commitment to peaceful, collaborative space exploration.



© Australian Space Agency 2025. Acting NASA Administrator Mr Sean Duffy (left) and Australian Space Agency Head Mr Enrico Palermo (right) signed an agreement 30 September 2025 in Sydney.

(i) AU-US Space Framework Agreement

The Australian Government announced that Australia and the United States had signed the Framework Agreement on Cooperation in Aeronautics and the Exploration and Use of Airspace and Outer Space for Peaceful Purposes (Space Framework Agreement).

This agreement establishes a formal partnership to increase cooperation in key areas, including space exploration, Earth and space sciences, space medicine, and life sciences.

(ii) AU-EU Cooperative Agreement

The Australian Government announced a mandate for the Australian Space Agency (ASA) to begin negotiations on a Cooperative Agreement with the European Space Agency.

This agreement, the first official step in the treaty-making process, will provide new opportunities for industrial growth, high-tech job creation, and enhanced participation in the global space economy.

(iii) UK-Australia Space Bridge Arrangement

The UK-Australia Space Bridge Arrangement was formally renewed at IAC 2025.

The renewed agreement focuses on boosting collaboration through knowledge sharing, joint R&D, innovation initiatives, and government-to-industry projects.

Source: Infographic designed by Katherine Grace Stewardson.

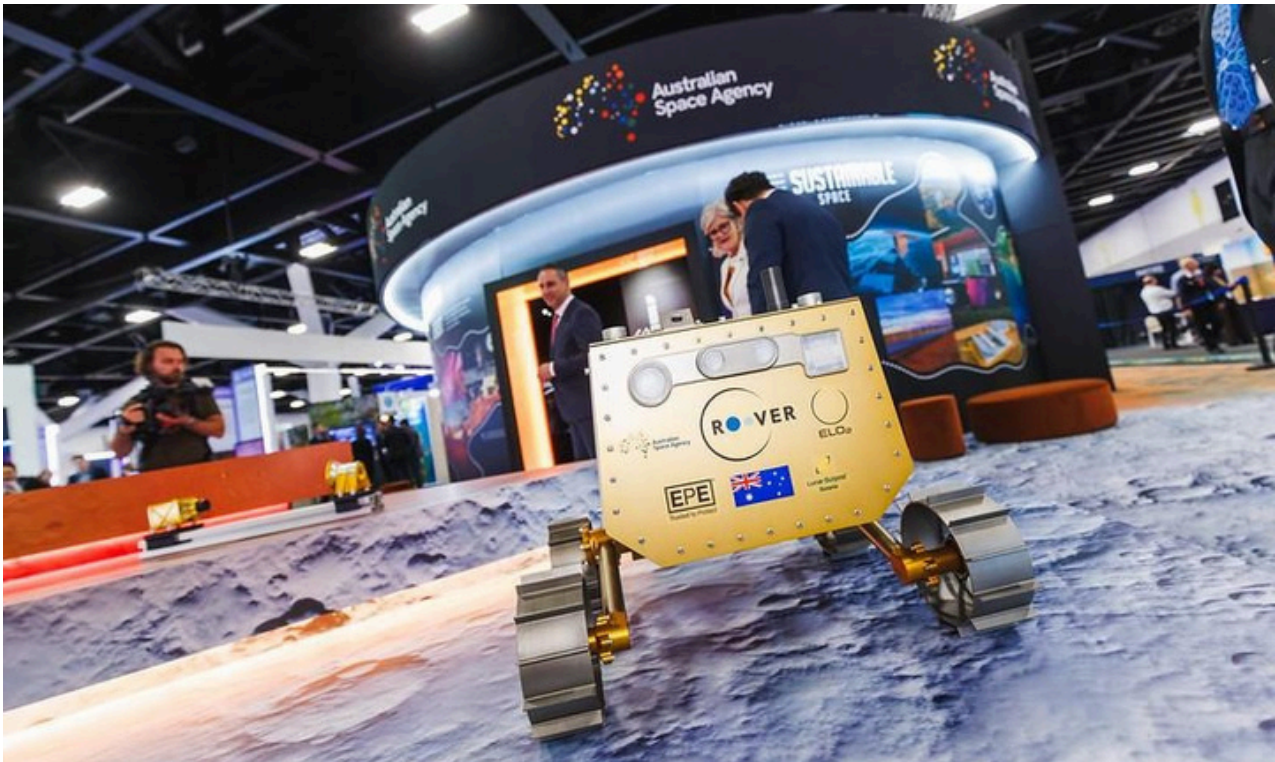
(Ayres, 2025; Gilbert and Tobin, 2025; NASA, 2025)

CASE STUDY THREE

The Aussie lunar “Roo-ver”

Australia is heading to the Moon with NASA’s Artemis program, marking a new era of space exploration.

An Australian-built semi-autonomous rover, affectionately nicknamed “Roo-ver,” will perform critical lunar soil analysis for oxygen extraction. This groundbreaking mission, officially confirmed by the Australian Space Agency on 29 August 2025, represents a pivotal step toward achieving the Artemis program’s long-term goal of establishing a permanent human presence on the Moon and paving the way for future human missions to Mars. The collaboration highlights Australia’s growing role in global space innovation and exploration.



© Australian Space Agency 2025. The latest prototype of "Roo-ver".

The mission's progress featured strongly at the IAC 2025:

- The latest physical prototype was unveiled and displayed at the Australian Space Agency's exhibit.
- A technical paper - The road to the Moon: Roo-ver, Australia's first lunar rover - was presented by Ben Sorensen at the IAF Space Exploration Symposium, a key component of the IAC 2025.
- The Roo-ver was a centerpiece of the public-focused Space Day event, allowing space enthusiasts to learn more about the mission.

The ELO₂ industry consortium is responsible for the design and development of "Roo-ver", which is expected to take place over the next two years, and will demonstrate Australia's growing capabilities in robotics and automation.

(Australian Space Agency, 2025a; Australian Space Agency, 2025b; Australian Space Agency, 2025c)



CHAPTER EIGHT: Australia's space infrastructure

Australia has significant space industry capabilities, including extensive ground station networks, advanced deep space communication, and expertise that spans most of the supply chain. The nation is particularly recognised for its proficiency integrating space-sourced data, Earth observation, and satellite-based navigation services. Our sovereign capabilities in space flight and satellite manufacturing are developing.

The Australian Space Agency coordinates this national effort by leading policy and civil space activities, working with states and territories to develop a unified approach to the space sector. National reviews of Australia's space capacity, including infrastructure, were published in [2017](#) and in [2018](#).

Dedicated government webpages for each state and territory provide informative overviews of their respective space capability. These can be viewed in the interactive map below.

Click on the state and territory icons to explore their space page:



Source: Infographic designed by Katherine Grace Stewardson.

The Australian Space Agency (ASA)

[Australia's space infrastructure](#)

[Growing Australia's national space capabilities](#)

[Australian space innovations making an impact](#)

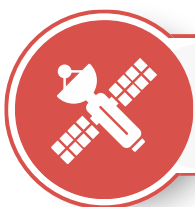
Space Industry Association of Australia (SIAA)

[Australian Space Industry Capability Database](#)

A snapshot of Australia’s current space infrastructure is presented below. To ensure consistency with the Australian Space Agency’s definition of the space industry (see [Chapter 1](#)), examples provided in this snapshot align with the following four key categories (i) Manufacturing and core inputs; (ii) Space operations; (iii) Space applications; and (iv) Enablers.

Examples	Manufacturing	Space operations	Space applications	Enablers
Launch infrastructure				
Spacecraft and satellite manufacturing				
Mission control and operation centres				
Ground station networks				
Data analysis facilities				
Earth observation data platforms				
Global Navigation Satellite Systems				
Research and testing infrastructure				
Robotics and automation complexes				
Cybersecurity infrastructure				
Astronomical facilities				
Astronomy				
Specialised support services				
Regulation and legal*				

*See [Chapter 9](#): Australia's place in space: law and policy



LAUNCH INFRASTRUCTURE

Physical launchpads and complexes for rockets (established, proposed or developing sites).

Name	Location	Operational date
Operational launch sites		
Woomera Instrumented Range	Woomera approximately 450 km north-west of Adelaide (South Australia)	1950s–present
<ul style="list-style-type: none"> • It is owned by the South Australian Government and operated by the Royal Australian Air Force. • This Australian government research facility is currently used for various defence and aerospace testing activities. • It has a long history of rocket testing. From 1957 to 2007 over 518 launches were known to have been made from Woomera. • It is the largest land-based test range in the world covering approximately 122,000 square kilometres. • For more information see: Woomera Range Complex and Woomera 		
Bowens Orbital Spaceport	Abbot Point, Bowen (North Queensland)	2013–present
<ul style="list-style-type: none"> • Owned and operated by Gilmore Space Technologies • Provides commercial launch services for satellites and other payloads into low-to-mid-inclination orbits. • In July 2025, Eris became the first Australian made orbital launch vehicle to lift off from Australian soil at Bowens Orbital Spaceport. • For missions see: https://www.gspace.com/missions https://www.gspace.com/launch 		
Koonibba Test Range	Tip of the Eyre Peninsula (South Australia)	2019–present
<ul style="list-style-type: none"> • Southern Launch operates two complementary facilities on the Eyre Peninsula; (i) Koonibba Test Range; and (ii) Whalers Way Orbital Launch Complex. • Koonibba Test Range is the largest commercial rocket testing facility in the Southern Hemisphere, specialising in suborbital launches and rocket recovery for testing and validation. 		

Name	Location	Operational date
<ul style="list-style-type: none"> For a list of completed missions see: https://www.southernlaunch.space/completed-missions https://www.southernlaunch.space/koonibba-community 		
Planned launch sites		
Atakani Space Centre	40 km east of Weipa, Cape York Peninsula (Queensland)	2025-present
<ul style="list-style-type: none"> Equatorial Launch Australia (ELA) operates the Australian Space Centre™ (ASC) Cape York. The centre was founded in 2019. This centre aims to provide Australia with its first fully integrated, sovereign launch capability and serve commercial, defence, and scientific missions. The Atakani Space Centre land lease was secured in August 2025 and a development timeline aiming for initial operations in 2029 and full commercial operations in the 2030s. The project aims to become Australia's primary vertical launch facility, providing Spaceport infrastructure and launch service for small and medium rockets. 		

Australia has expertise in both launch capabilities and returns.



SPACECRAFT AND SATELLITE MANUFACTURING

“The building and integration of items to go into space, including spacecraft, satellites, payloads and products to be used in space. For example, manufacturing a satellite that will perform Earth observation” (Australian Space Agency 2020).

Examples of ground segment manufacturing and services

- The [Australian Space Industry Capability Database](#), developed by the Space Industry Association of Australia, provides an overview of the size and capability of the Australian space sector listing manufacturing businesses.
- [Lusha](#) also provides a database of Australian businesses ranging from defence to space manufacturing.
- The [National Space Qualification Network](#) (NSQN) is an Australian network of testing facilities that allows domestic companies and researchers to qualify spacecraft, payloads, and components for space missions.



MISSION CONTROL AND OPERATIONS CENTRES

Mission control and operations centres are ground based facilities that track and manage a spaceflight from launch to end. These operations involve monitoring spacecrafts and satellites using telemetry, send commands, and oversee the subsystems like power, propulsion and altitude control through specialised personnel.

Examples of operation centres

- [Saber Astronautics' Responsive Space Operations Centre](#) (RSOC) has been established in Adelaide to support space operations and provide integrated space traffic management services.
- [Air and Space Operations Centre](#) (ASOC) is part of the Australian Defence Force.



GROUND STATION NETWORKS

A network of antennas and facilities across Australia that receive satellite data for Earth observation, communications, and positioning (government networks and commercial operations).

Satellite receiving ground stations

- These stations receive signals from satellites, allowing for data downlink, communication, and command execution.

Deep space communication centres

- These specialised stations are designed for communicating with spacecraft far from Earth and are often used for interplanetary missions.

Telemetry, tracking, and command stations

- These stations monitor and control satellites in near Earth orbit, providing tracking data, sending commands, and receiving telemetry information.

Examples:

Station	Complex (overseas government partnerships)	Location
Australian Capital Territory		
Canberra Deep Space Communication Complex	Canberra Deep Space Communication Complex (Aus and US)	Tidbinbilla
Mount Stromlo Observatory	Mount Stromlo Observatory (Australia and France)	Mount Stromlo
HMAS Harman	Defence Communications Station (DEFCOMMSTA) Canberra (Royal Australian Navy)	Harman
Optus	(Optus)	Hume
Western Australia		
OTC Satellite Earth Station Carnarvon	Carnarvon Earth Stations (Aus and Europe)	Carnarvon
Yatharagga	Yatharagga West Australian Space Centre (Aus, US and France)	Yarragadee

New Norcia Station	New Norcia Station (Aus and Europe)	Norcia
Australian Defence Satellite Communications Station	Australian Defence Satellite Communications Station (Aus and US)	Yarragadee
Australian Defence Satellite Communications Station	Australian Defence Satellite Communications Station (Aus and US)	Kojarena
Perth Station	Perth International Telecommunications Centre (Aus and Europe)	Gnangara
Lockridge Optus Earth Station	Lockridge Optus Earth Station (Optus - SingTel)	Lockridge
Bassendean NewSat Earth Station	Bassendean NewSat Earth Station (NewSat)	Bassendean
Perth WASTAC Earth Station	Perth WASTAC Earth Station (WASTAC)	Murdoch
Gnangara Telstra Earth Station (Perth Earth Station)	Perth Telstra International Telecommunication Centre (Telstra International - Telstra)	Landsdale
Northern Territory		
Pine Gap	Pine Gap (Aus and US)	Alice Springs
The Centre for Appropriate Technology Satellite Enterprises Pty Ltd	The Centre for Appropriate Technology Satellite Enterprises Pty Ltd (CfAT Satellite Enterprises)	Alice Springs
Shoal Bay Receiving Station	Shoal Bay Receiving Station (ASD)	Shoal Bay
Darwin Weather Data Earth Station	Shoal Bay Receiving Station (BoM)	Shoal Bay
New South Wales		
Parkes CSIRO Earth Station	Parkes CSIRO Earth Station (CSIRO)	Parkes
Belrose Optus Earth Station	Belrose Optus Earth Station (Optus - SingTel)	Belrose
Oxford Falls Optus Earth Station	Oxford Falls Optus Earth Station (Optus - SingTel, Intelsat)	Oxford Falls
Sydney BoM Earth Station	Sydney BoM Earth Station (BoM)	Sydney

Uralla Lockheed Martin Earth Station	Uralla Lockheed Martin Earth Station (Lockheed Martin)	Uralla
BLUESat UNSW/ACSER Groundstation, UNSW, Kensington	University of New South Wales (BLUESat UNSW)	Kensington
Oxford Falls Telstra Earth Station (Sydney Earth Station)	Oxford Falls Telstra International Telecommunication Centre (Telstra International - Telstra)	Oxford Falls
Victoria		
Crib Point Satellite Earth Station at HMAS Cerberus Naval Base	Crib Point Satellite Earth Station at HMAS Cerberus Naval Base (Aus and Japan)	Crib Point
Melbourne BoM Earth Station	Melbourne BoM Earth Station (BoM)	Melbourne
Telstra - Bendigo	Telstra	Bendigo
Telstra - Hawthorn	Telstra	Hawthorn
Tasmania		
Tasmanian Earth Resources Satellite Station	Tasmanian Earth Resources Satellite Station	Hobart
South Australia		
Regency Park Optus Earth Station	Regency Park Optus Earth Station (Optus - SingTel, Intelsat)	Regency Park
Mawson Lakes NewSat Earth Station	Mawson Lakes NewSat Earth Station (NewSat)	Mawson Lakes
Other		
Casey Station and Davis Station	Casey Station, Davis Station (BoM, AAD)	Australian Antarctic Division
Mawson Station and Macquarie Island Station	Mawson Station, Macquarie Island Station (AAD)	Australian Antarctic Division

AAD Australian Antarctic Division; BoM The Bureau of Meteorology; ASD Australian Signals Directorate

(Wikipedia Contributors, 2023)



DATA ANALYSIS FACILITIES

Computational infrastructure and supercomputing centres used to process, store, and analyse the large amounts of data received from satellites/spacecraft.

Examples

- [Canberra Deep Space Communication Complex](#) (CDSCC) in Tidbinbilla
- [Australian Space Data Analysis Facility](#) (ASDAF) is fully operated by the [Curtin Institute for Data Science](#)
- [Pawsey Supercomputing Research Centre](#) (Perth, Western Australia)
- [Western Australia Data Science Innovation Hub](#)
- [SmartSat Cooperative Research Centre](#)
- [National Computational Infrastructure](#) (Australian National University)
- [Ngarrgu Tindebeek](#) (Swinburne University of Technology)
- Australis II (supercomputer used by [Australian Bureau of Meteorology](#))
- [Earth Observation Australia Inc.](#)

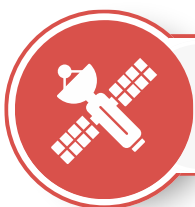


EARTH OBSERVATION DATA PLATFORMS

An Earth observation platform is the system (often in space) used to gather data about the planet itself that translates raw satellite imagery into useful information for various sectors.

Examples

- [EO Data Products and Portals](#): CSIRO
- [Earth Analytics and Science Innovation \(EASI\) Hub](#): CSIRO
- [Digital Earth Australia](#) (DEA): Geoscience Australia
- [Copernicus Regional Data Hub](#): Geoscience Australia also supports the European Union's Copernicus Programme by providing the Sentinel Australasia Regional Access (SARA) data hub



GLOBAL NAVIGATION SATELLITE SYSTEMS

Australians most commonly access Positioning, Navigation and Timing (PNT) services via space-based GNSS constellations owned by other countries, e.g., US, Russia, Europe and China. Australia's PNT infrastructure is being developed to improve the accuracy and resilience of the raw GNSS signals.

Examples

- [National Positioning Infrastructure](#) with GNSS receivers across Australia
- [Southern Positioning Augmentation Network](#) (SouthPAN)



RESEARCH AND TESTING INFRASTRUCTURE

Education and training, including facilities for advanced research and development.

Examples of universities with space research programs

- Australian National University
- Swinburne University of Technology
- University of Western Australia
- Monash University Research
- University of Melbourne
- University of Sydney
- University of New South Wales
- Curtin University
- University of Queensland
- University of Adelaide
- Macquarie University Research
- University of Tasmania
- RMIT University
- University of Newcastle
- Western Sydney University

Examples of key government departments

- Department of Industry Science and Resources (The [Australian Space Agency](#) is a division of this department)
- Department of Defence (The [Defence Science and Technology Group](#) and [Defence Space Command](#) are divisions of this department)
- The [Commonwealth Scientific and Industrial Research Organisation](#) (CSIRO)
- [The Bureau of Meteorology](#)
- [Geoscience Australia](#)
- [Australian Trade and Investment Commission](#)

Examples of testing infrastructure

- The [National Space Qualification Network](#) (NSQN) is an Australian network of testing facilities that allows domestic companies and researchers to qualify spacecraft, payloads, and components for space missions.

This section also includes: (i) education, student bodies, professional organisations; (ii) current Cooperative Research Centres (CRCs) including SmartSat CRC, National Collaborative Research Infrastructure Strategy (NCRIS) facilities, Australian Research Council funded centres, Training Hubs with industry relating to space; and (iii) research groups, joint ventures, consortia relating to space (Report from the Expert Reference Group, 2018).



ROBOTICS AND AUTOMATION COMPLEXES

Infrastructure for testing and controlling autonomous systems for remote asset management in both space and on Earth.

Examples

- [Australian Automation and Robotics Precinct](#)
- [Fugro Space Automation, AI and Robotics Control Complex Centre](#)
- [CSIRO Robotics Innovation Centre](#)
- [Australian Institute for Machine Learning](#)
- [Swinburne University of Technology](#)
- [The Queensland University of Technology Centre for Robotics](#)



CYBERSECURITY INFRASTRUCTURE

Critical frameworks and infrastructure to ensure the security of space-based and ground-based assets.

Examples

- [Australian Space Cyber Framework](#) (SCF) was developed by the private company CyberOps with support from the Department of Defence.



ASTRONOMICAL FACILITIES

Astronomical facilities for space operations, e.g., gamma-ray, optical and radio bands of the electromagnetic spectrum.

Examples

- Australian Astronomy provide a list of [Astronomical facilities](#)



ASTRONOMY

Observatories and planetariums are both important parts of the infrastructure for astronomy. Observatories are facilities for scientific research and data collection, while planetariums are primarily for public education and outreach. All observatories and planetariums are astronomical facilities.

Examples:

Queensland

- [Mount Kent Observatory](#).
- [Sir Thomas Brisbane Planetarium](#)
- Reedy Creek Observatory (no dedicated website)

Western Australia

- [Perth Observatory](#).
- [Inyarrimanha Ilgari Bundara observatory including the SKA-low telescope](#)
- [Square Kilometre Array](#)
- [Murchison Radio-astronomy Observatory](#)

Victoria

- [Bendigo Planetarium](#)
- [Giardini Planetarium](#)
- [Melbourne Planetarium](#)
- [Hutton-Westfold Observatory](#)
- [Melbourne Observatory](#)
- [Mount Burnett Observatory](#)

Tasmania

- [Bisdee Tier Optical Astronomy Observatory](#)
- [Launceston Planetarium](#)
- [Bruny Island Radio Spectrometer](#)
- [Greenhill Observatory](#)

South Australia

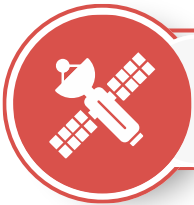
- [The Heights Observatory](#)

Australian Capital Territory

- [Mount Stromlo Observatory](#)

New South Wales

- [MAAS Planetarium](#)
- [New Powerhouse Museum](#) (planetarium)
- [Science Space](#) (planetarium)
- [Parkes Observatory](#)
- [Grove Creek Observatory](#)
- [Siding Spring Observatory](#)
- [Green Point Observatory](#)
- [Crago Observatory](#)
- [HAT-South](#) (observatory)
- [iTelescope.Net](#) (observatory)
- [Anglo-Australian Telescope](#) (observatory)
- [KMTNet-SSO](#) (observatory)
- [Mopra Telescope](#) (observatory)
- [Narrabri Stellar Intensity Interferometer](#) (observatory)
- [Potts Hill Observatory](#)
- [SkyMapper Telescope](#) (observatory)
- [Solaris-3](#) (observatory)
- [Sydney Observatory](#)
- [ANU 2.3m Telescope](#) (observatory)
- [UNC PROMPT](#) (observatory)
- [United Kingdom Schmidt Telescope](#) (observatory)
- [Australia Telescope Compact Array](#) (observatory)
- [Australia Telescope National Facility](#) (observatory)
- [Australian Astronomical Observatory](#)
- [Bagnall Beach Observatory](#)
- [Campbelltown Rotary Observatory](#)
- [Murchison Widefield Array](#) (observatory)
- [Paul Wild Observatory](#)



SPECIALISED SUPPORT SERVICES

“The range of professional support services which directly contribute to, and enable, the activities that comprise the space sector” (Australian Space Agency, 2020).

Examples

- Insurance services
- Financial and legal services
- Software development and IT services
- Market research and consultancy
- Business incubation and development
- Specialised communication, media, and outreach
- Health services



CHAPTER NINE: Australia's place in space: Law and policy

[Considering the nature of this section, the wording remains largely unchanged from the authoritative source].

Australia's space industry is governed by a combination of national policy, legislation, and international treaties. These frameworks regulate civil, defence, and commercial space activities to ensure they are safe, sustainable, and consistent with Australia's interests and international obligations. Australia has some of the most business-friendly space laws in the world and a robust policy framework (Australian Space Agency, 2025a).

The Australian Space Agency, formally established on 1 July 2018 under the Department of Industry, Science and Resources, is responsible for the regulation of civil space activities in Australia under the 'Space (Launches and Returns) Act 2018' (Australian Space Agency, 2025a).

Defence Aviation Safety Authority (DASA) regulates military space safety. DASA has established a Directorate of Space and a Defence Space Safety Program (DSSP) to regulate safety for space activities like launches, returns, and the operation of space objects. The DSSP is designed to align with the safety obligations of the civil Australian Space Agency, while also meeting Defence's specific security requirements (Department of Defence, 2025).

Australia is a signatory to the five United Nations space treaties. The Australian Space Agency has formal bilateral agreements with 15 nations. Other agencies work closely with international partners to secure access to space data and capabilities critical to Australia (Australian Space Agency, 2025a).

International policy and obligations

1967: The Outer Space Treaty (OST)

Australia's domestic law is designed to meet its international obligations under treaties such as the 'Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies' (1967). This treaty, commonly referred to as OST, governs the exploration and use of outer space and requires states to authorise and supervise their space activities. For example, weapons of mass destruction in space are prohibited; outer space be freely explored for the benefit of all countries; national sovereignty claims over outer space or celestial bodies is prohibited; and nations are liable for damage caused by their space objects (UN, 2025).

1968: The Rescue Agreement

This agreement expands upon Articles 5 and 8 of the Outer Space Treaty, and mandates that countries take all possible measures to rescue and assist astronauts in distress and return them to their launching country. It also stipulates that countries, upon request, should assist in recovering and returning space objects that land outside the launching country's territory (UN, 2025).

1972: The Liability Convention

This Convention expands upon Article 7 of the Outer Space Treaty, establishing absolute liability for launching states for damages caused by their space objects on Earth's surface or to aircraft (UN, 2025).

1976: The Registration Convention

Countries are required to register their orbiting space objects with the United Nations. The United Nations Secretary-General maintains this registry ensuring access to the information provided by countries and international intergovernmental organisations (UN, 2025).

1984: The Moon Agreement

The Moon and other celestial bodies must be used exclusively for peaceful purposes, prohibiting environmental disruption. It requires countries to inform the United Nations about the location and purpose of any stations established on these bodies and declares the Moon and its natural resources the common heritage of all humankind (UN, 2025).



© Australian Space Agency 2025. Australia supports the peaceful use and exploration of outer space by adhering to international law and establishing a domestic regulatory framework that governs civil space activities and balances innovation with safety and liability.

International space legal principles and declarations

There are also a number of legal principles and declarations to support these treaties which were negotiated from 1982 to 1996 addressing a range of technical issues (UN, 2025).

1964: The Declaration of Legal Principles

Established foundational principles for space exploration and use, paving the way for the later Outer Space Treaty. Key principles include the freedom of exploration for all countries, international responsibility for space activities, and the importance of international cooperation (UN, 2025).

1982: The Broadcast Principles

Provide guidelines for countries using satellites for direct international broadcasting, addressing potential political, economic, and cultural implications (UN, 2025).

1986: The Remote Sensing

Provide guidance on remote sensing of Earth from space for improved natural resource management, land use, and environmental protection (UN, 2025).

1992: The Nuclear Power Sources Principles

Outline guidelines to ensure the safe use of nuclear power sources in outer space (UN, 2025).

1996: The Benefits Declaration

Provide guiding principles for exploring and using outer space in a way that will benefit all countries, regardless of their degree of economic, social or scientific development (UN, 2025).

2007: The Space Debris Mitigation Guidelines

Set international standards for minimising space debris by regulating spacecraft design, operation and disposal (UN, 2025).

2009: The Safety Framework for Nuclear Power Source Applications

Provide international best practices for the safe use of nuclear power in space missions, covering all mission phases from launch to disposal (UN, 2025).

These treaties, legal principles, and declarations, which apply to countries, also extend to the private sector, requiring adherence to national legal standards and international law (UN, 2025).

Artemis Accords

The [Artemis Accords](#) aims to establish a framework for cooperative space exploration by outlining principles, guidelines and best practices to ensure safe, transparent, and sustainable civil space exploration. Intended to advance NASA's Artemis Program, the Accords are a political commitment to reinforce obligations under the Outer Space Treaty and promote cooperation on missions to the Moon, Mars and other celestial bodies. Signatories, including Australia, agree to implement these principles through mission planning and other appropriate measures.

The "Space2030" Agenda

Australia supports the "[Space2030](#)" Agenda, developed by the United Nations Committee on the Peaceful Uses of Outer Space. Its overarching goal is to strengthen and ensure the long-term contribution of space activities to achieving the Sustainable Development Goals (SDGs), emphasising that space science and technology are drivers of sustainable development for all of humanity.

National (Australian) policy and legislation



"The regulatory and policy settings are in place to support the growth of Australia's space sector."
(Law Business Research Ltd, 2019)

- [Space \(Launches and Returns\) Act 2018](#) and associated rules (taking into account amendments up to Act No. 74, 2023);
- [Space \(Launches and Returns\) \(General\) Rules 2019](#);
- [Space \(Launches and Returns\) \(Insurance\) Rules 2019](#);
- [Space \(Launches and Returns\) \(High Power Rocket\) Rules 2019](#);
- [Flight Safety Code \(August 2019\)](#);
- [Maximum Probable Loss Methodology \(August 2019\)](#);
- [Australian Civil Space Strategy 2019-2028](#);
- [National Defence Strategy 2024](#);
- [Telecommunications Act 1997](#).

'The Australian Space (Launches and Returns) Act 2018' aims to achieve a balance between the encouragement of private sector participation in the national space industry and the safety of space activities, and the implementation of some of Australia's international obligations under the United Nations space treaties. The Act requires launch approval by the Minister for Science and Technology of various space activities including launches of high power rockets and approvals extend to Australian nationals carrying out space activities abroad. Approvals are classified as (i) launch facility licences; (ii) launch permits; (iii) high power rocket permits; (iv) overseas payload permits; (v) return authorisations; or (vi) authorisation certificates. Furthermore, the Act regulates liability for damage caused by space objects or high power rockets and the registration of space objects in a publicly available Register of Space Objects (Committee on the Peaceful Uses of Outer Space Legal Subcommittee, 2025).

Other critical regulations

In addition to the Australian Space Agency, several other regulatory bodies also play a critical role in Australia's space industry.

- **The Australian Communications and Media Authority (ACMA)** manages the radio frequency spectrum, which is critical for satellite communication.
- **The Civil Aviation Safety Authority (CASA)** regulates the use of Australian airspace, which is relevant for the launch and return of space objects; and works with the Australian Space Agency to ensure rockets and other space activities passing through or over Australian airspace are administered safely (Law Business Research Ltd, 2019).

Memorandums of understanding/statements of intent



© Australian Space Agency 2025. UK Space Agency CEO Dr Paul Bate (left) and Head of the Australian Space Agency Mr Eric Palermo (right) at the signing of the UK-AU Space Bridge Agreement.

The Australian Space Agency has entered into formal partnerships with a number of counterpart agencies in the United States (NASA; U.S. Office of Space Commerce), the United Kingdom (the UK Space Agency), Europe (European Space Agency), New Zealand (The New Zealand Ministry of Business, Innovation and Employment), France (the National Centre for Space Studies), Canada (the Canadian Space Agency), Germany (German Aerospace Centre), Italy (Italian Space Agency), the United Arab Emirates (the UAE Space Agency), and Korea (Korea Aerospace Administration) (Australian Space Agency, 2025b; Law Business Research Ltd, 2019).

These partnerships are designed to promote increased collaboration and cooperation between the agencies and help them develop their respective space programmes and capabilities. For example:

- 2024: '**Technology Safeguards Agreement**' with the United States will allow United States space technology (rockets and satellites) to be launched from Australia.
- 2025: '**Space Framework Agreement**' with the United States will streamline government-to-government cooperation in space by reducing legal and administrative barriers.

(Australian Space Agency, 2025b; Law Business Research Ltd, 2019)

Conclusion: Key messages

1. The Australian space sector is defined as “a set of space-related activities along the space value chain and is part of the broader space economy”.
2. Many Australians are unaware of space activities, and how deeply integrated and vital space technology is to their daily lives.
3. Investments in space exploration yield significant returns on Earth - economically, sustainably and socially, e.g., navigation (GNSS); banking and finance; weather forecasting; climate monitoring and advancement in medicine.
4. Careers in the space industry are diverse and accessible.
5. While clubs and societies are distributed nationwide, public awareness of these local organisations may be limited; and grassroots enthusiasts could be better connected with government policy and industry.
6. Australia has a rich spacefaring history, which is greater than many Australians realise.
7. In 2025, Australia hosted the International Astronautical Congress - the world’s premier global space event - to share knowledge, foster partnerships (99 countries attended), highlight cutting-edge innovation and educate the broader community about ‘why space matters’.
8. Australia has a well-established space sector with world-leading infrastructure in the ground segment, notably extensive ground station networks and deep space communication capabilities, but is still developing sovereign space flight and manufacturing capabilities.
9. Australia's space industry is governed by a combination of national policy, legislation, and international treaties that provide the legal certainty, safety standards, and international alignment necessary for industry growth, national security, and responsible activity.

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“Earth is a small town with many
neighbourhoods in a very big universe.”

Ron Garan (retired NASA astronaut, decorated combat fighter
pilot, and humanitarian)