“QUOD INVENIAS EXPLORANS SPATIUM PROGRESSUS EST HUMANITATIS”

“HUMAN PROGRESS IS IN SPACE EXPLORATION”

Disclaimer: The information contained in this Directory is intended as a guide only. The list of organisations included in this Directory is not intended to be exhaustive, nor does it include all organisations in the South Australian space sector. The Government of South Australia does not sponsor, promote or endorse any of the organisations, products or services specified in this Directory. No warranty, express or implied is made regarding the accuracy, adequacy, completeness, reliability or usefulness of any of the information contained in this Directory. You should make your own enquiries and satisfy yourself of all aspects of the information contained in this Directory. Any use or reliance on any of the information contained in this Directory is at your own risk in all things. The Government of South Australia disclaims all liability and responsibility for any direct or indirect loss or damage which may be suffered by any person through using or relying on any of the information contained in this Directory.

Note: The Capability Categories contained in the skill capability matrix are broadly based on the categorisation used by APAC in the “Australian Space Activities Survey 2011”, commissioned by the Space Policy Unit (SPU) within the Department of Innovation, Industry, Science and Research (DIISR). Defence SA is not responsible for the methodology used in devising the information contained in the Survey and has tailored the categories for the purposes of this Directory.
South Australia is rapidly enhancing its reputation on the international stage as a hub of innovation and growth. Our State’s space industry is a crucial part of this trend, and the sector is leading the way in the development of a space economy for our nation as a whole.

New space-related technologies are critical to the operation and ongoing productivity of a wide range of industries, and to the broader fabric of Australian society. Government and private companies are increasingly using satellites, including in agriculture, energy, communications, entertainment, telemedicine, distance learning, geospatial tools, national security and surveillance.

Within the growing space economy, commercial activity now far surpasses that of government projects. Technology is becoming more affordable, with the global capability of small satellites increasing and the associated costs falling.

South Australia is extremely well positioned to benefit from these developments. We are home to significant capabilities across a range of space-related activities, including ground infrastructure and the processing of spatial information. We have a vibrant, entrepreneurial space ‘ecosystem’ including private companies, universities and research centres.

Also, in September 2017, Adelaide will be the centre of world attention when it hosts the 68th International Astronautical Congress – an event expected to bring together more than 3000 people.

Our State’s impressive capability in the space industry is evident in this 2016 South Australian Space Capability Directory, which is the first publication of its kind in Australia. This document details a first sample of organisations that make up our sector and their particular fields of expertise. The directory also serves as a platform for those organisations to showcase themselves to the world. This initial publication is a step toward mapping the community, and it will be updated periodically as more companies and research organisations become involved.

From the State Government’s perspective, the work of our space industry complements many of the goals set down in South Australia’s 10 Economic Priorities. These goals include fostering innovation, commercialising our research and forming international connections.

Through space activity in South Australia, we intend to continue to amass a high-end skills base and world-class competency, and to foster technological advancement, job and industry growth, and the rise of even more start-ups. Also, by promoting the State’s science, technology, engineering and mathematics capability within the space sector, we can ensure our skilled-workforce needs can be met in the future.

My Government is embarking on an exciting journey toward a strong space industry for South Australia, and we are determined to work in partnership with all the key players to create wealth, jobs and opportunities in this thriving sector.

Hon Jay Weatherill MP
Premier of South Australia
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<thead>
<tr>
<th>Private Companies</th>
<th>Launch Activities</th>
<th>Ground Systems</th>
<th>Space Enabled Services</th>
<th>Support Services</th>
<th>R&amp;D</th>
<th>Other</th>
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<tbody>
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ORGANISATION OVERVIEW

Aerometrex is a mapping service company, expert in mapping from all types of imagery including satellite, large-format aerial, medium-format oblique aerial, and small-format UAV systems. The company also has LiDAR capability through its subsidiary company Atllass-Aerometrex in Queensland. Aerometrex is a sales agent for e-Geos satellite imagery including Cosmo-SkyMed radar satellite imagery and the full range of satellite imagery offered by Airbus-EADS.

EXPERTISE AND CAPABILITIES

- Expert in mapping from all types of imagery, photogrammetry, orthophoto production, 3D modelling, DTMs and DSMs, LiDAR.

UNIQUE SELLING POINTS

Aerometrex is a world leader in 3D modelling by photogrammetry and has received numerous awards and international recognition for its 3D service aero3Dpro. Its imagery and DTM products have underpinned most of South Australia’s and many interstate major construction and engineering projects. It has a skilled workforce and services approximately 15 major industries.
**ORGANISATION OVERVIEW**

Airbus Group Australia Pacific is part of Airbus Group, a global pioneer in aerospace and defence related services whose companies include Airbus, Airbus Helicopters and Airbus Defence and Space.

Wholly owned by Airbus Helicopters, Airbus Group Australia Pacific represents Airbus Group in Australia, New Zealand and the South Pacific.

In the space sector, Airbus DS Geo Australia Pty Ltd is a wholly owned subsidiary of Airbus DS Geo S.A. The Geo business line provides earth observation satellite imagery and associated products and services through direct sales and a network of resellers. The satellite imagery provided through Geo is obtained from a constellation of four optical and two radar earth observation satellites that are either owned by or operated on behalf of Airbus DS Geo.

Airbus Defence and Space provides decision makers with sustainable solutions to increase security, optimise mission planning and operations, boost performance, improve management of natural resources and, last but not least, protect our environment.

**EXPERTISE AND CAPABILITIES**

- Provision of earth observation satellite imagery and associated services and solutions from the Airbus operated constellation of four optical and two radar satellites.
- Provision of x-band secure satellite communication services.

**UNIQUE SELLING POINTS**

From a single provider, Airbus Defence and Space cover the broadest range of optical and radar satellite imagery products. They have an extensive global network of resellers who can adapt their satellite imagery for the local context. They excel in regular large area (whole state/whole country) satellite imagery coverages and regular monitoring services.

Airbus Defence and Space owns and operates Skynet 5, the UK’s military satellite communications system. With spot beam up to global coverage capabilities, Skynet 5 offers a commercial route to protected, secure and resilient communications to Government users worldwide.
AUSPACE

ORGANISATION OVERVIEW

Auspace is a systems integrator with a machine to machine (M2M) communications specialisation, focused on delivering turnkey, bespoke solutions by enabling systems for the integrated management of lone workers, vehicle management systems, industrial infrastructure and assets. Auspace joined the Nova Group of companies in 2007 and in 2012 was re-purposed to focus on an in-service M2M specialisation.

EXPERTISE AND CAPABILITIES

MACHINE TO MACHINE COMMUNICATIONS

Many enterprises deploy a range of portable and mobile assets in addition to their vehicles and lone workers, some of which require tracking and monitoring in order that their business performance is optimised. An integrated Internet of Things (IoT) approach to managing portable and mobile assets with the vehicles and workers who deploy them, can provide very low cost improvements in asset control and coordination. Data is managed by the Auspace Global Alerting Platform portal for real-time exception management and visualisation, providing a harmonised environment for the management of people, vehicles and assets. Alerts, alarms, track and trace and reporting can be consistently generated, visualised and integrated into the enterprise where required. Capabilities include:

- asset and attribute monitoring
- asset control
- data collection
- decision support
- enterprise integration.

LONE WORKER SAFETY

Lone workers require personnel solutions matched to the various operating risks across their enterprise. This requires a range of physical hardware, various communication systems, and a platform to provide a common virtual map visualisation and decision support capability. Auspace deploys a family of personnel solutions from smart phone apps through to bespoke vehicle installations, across satellite, radio and cellular spectrum; matching specific client needs with the most cost effective and compliant solution. Its visualisation and decision support systems integrate the various sources of field data and deliver a seamless employee safety, productivity and situational awareness platform, that may be used stand alone or integrated into the client’s enterprise. Capabilities include:

- duress notification
- man down alarm
- welfare and status reporting
- location tracking
- emergency management.

UNIQUE SELLING POINTS

Australian owned.

Provision of cost effective bespoke hardware and decision support systems for asset and personnel safety management.
AXIOM PRECISION MANUFACTURING

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ORGANISATION OVERVIEW
Axiom is a Precision Machining/Manufacturing company that manufactures for the Aerospace, Space, Defence and Medical Device Industries. Axiom is a 38 year old, family-owned South Australian business that is Certified to AS9100C (Aerospace) and ISO13485 (Medical Devices).

EXPERTISE AND CAPABILITIES
Axiom has 2 facilities in Adelaide with 36 precision CNC machining centres and 3 co-ordinate measuring machines (CMM's). We manufacture low volume (sometimes quantity of 1) through to very high volume. We also use our 3D printers for R&D and low volume production.
Axiom provided Precision Machined Components and Assemblies to ATK Space (Utah) and Raytheon Australia for the Mulwa Redevelopment Program. Project was for Fuel Cell manufacturing components.

UNIQUE SELLING POINTS
Axiom is a highly certified AS9100C (Aerospace) and ISO13485 (Medical Devices) Precision Machining/Manufacturing company. Our facility is an ITAR secure facility that securely controls electronic data and hardware. We are currently manufacturing many BAE Australia/UK components for the Lockheed Martin F-35 Joint Strike Fighter (JSF) and many other high quality aerospace and defence projects.
ORGANISATION OVERVIEW

BAE Systems Australia is Australia’s largest and most versatile defence and security company working with government and industry to enhance the country’s defence capability through the delivery of innovative solutions.

BAE Systems delivers the world’s most advanced technology-led defence, aerospace and information security solutions.

EXPERTISE AND CAPABILITIES

BAE Systems Australia has an Australian leading capability to deliver complex integrated technology solutions – based at its headquarters in South Australia. Applied to the space sector, its advanced manufacturing and systems engineering capability allows the development and delivery of broad solutions from full system applications down to discrete component development and production.

BAE Systems has local teams specialising in the development and servicing of advanced radio frequency, electronics and optical products and systems. Through its work with the Department of Defence it also has significant experience in the support of satellite ground stations, and as a global company has delivered key components for over 250 satellites.

BAE Systems’ advanced manufacturing capabilities in South Australia allows it to produce mechanical and electronic components on site, using some of Australia’s most advanced machining, printed circuit board assembly and environmental testing capabilities. Its Edinburgh Parks site is also the hub of its Australian additive manufacturing capability.

UNIQUE SELLING POINTS

As the Australian capability leader in defence and aerospace products and systems, BAE Systems offers an end-to-end product lifecycle solution from system concept and development through operational data management and analysis. Its sustainment capabilities support a broad range of system integration, software and hardware upgrades and modernisations.

BAE Systems is a global leader in defence and aerospace, and has reach-back to the global organisation with over 40,000 people working in electronic systems development and support.
BOEING

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Mike deLaChapelle michael.delachapelle@boeing.com
+61 466 323 179

ORGANISATION OVERVIEW
Boeing is the world’s largest aerospace company and a leading manufacturer of commercial jetliners and defense, space and security systems. A top U.S. exporter, the company supports airlines and U.S. and allied government customers in 150 countries.
Boeing products and tailored services include:
• commercial and military aircraft,
• satellites,
• weapons,
• electronic and defense systems,
• launch systems,
• advanced information and communication systems, and
• performance-based logistics and training

EXPERTISE AND CAPABILITIES
For 100 years, Boeing has been and continues to be a leader in aerospace innovation.
The company employs approximately 160,000 people across the United States and in more than 65 countries, and leverages the talents of skilled people working for Boeing suppliers worldwide.
Boeing’s engineering expertise is extensive: with more than 50,000 engineers around the world, global modeling and simulation, and research and development capabilities.
In 2015, Boeing was again named in the Thomson Reuters Top 100 Global Innovators Index.

UNIQUE SELLING POINTS
Boeing and its heritage companies have been integral in every major endeavor to escape Earth’s gravity. From the first Mercury capsule, to the current International Space Station, and beyond to the Space Launch System, Boeing has and will take humans and technology farther than they’ve ever been.
Boeing has been designing, building and launching satellite systems since Syncom, the world’s first geosynchronous communications satellite.
Today, Boeing offers the 702 spacecraft family including the Wideband Global SATCOM, which Australia participates in.
Boeing also offers the Boeing 502 satellite for customers who require a satellite between the large geosynchronous spacecraft and nanosatellites.
COBHAM AVIATION SERVICES

CONTACT DETAILS

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SA 5950

www.cobham.com.au

Contact:
Anthony Patterson
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+61 412 671 610

ORGANISATION OVERVIEW

Cobham is an aviation and aerospace service provider to the commercial, government and defence sectors under long term performance based contracts. Its space related activity is currently airborne satcom and the time critical transmission of collected sensor data and imagery for surveillance operations.
Elementrex focuses on innovation. Through bringing together technology specialists across a range of areas, Elementrex is able to provide customised solutions that truly meet the complex requirements of our customers. Our SaaS approach enables us to keep costs down while delivering high quality, client-based solutions.

**CONTACT DETAILS**

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SA 5005  
http://www.elementrex.com  

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+61 488 662 466

**ORGANISATION OVERVIEW**

Elementrex works with customers and technology capability partners to deliver data-driven solutions for specific environmental outcomes. By acting as a business integrator, we take the time to understand customer requirements in order to design the best solution. Elementrex aggregates data from a variety of sources, including satellite data and ground-based sensors. This data may then be further analysed and processed to suit client needs. Our areas of interest include:

- Water resource management
- Fire risk mitigation and management
- Infrastructure monitoring
- Agriculture
- Mining

**EXPERTISE AND CAPABILITIES**

Elementrex, in conjunction with our diversified group of strategic partners, delivers complex solutions, which include:

- Cloud-based data aggregation and analytics
- Satellite observation data and processing
- Sensor data
- Data fusion
- Communications services
- IoT integration

**UNIQUE SELLING POINTS**
ORGANISATION OVERVIEW

Fleet is an agile space company making it faster, simpler and cheaper to connect the world’s Internet of Things (IoT) devices, connecting the IoT around the world using a massive fleet of small low-cost satellites.

It provides direct, global access to a secure low-cost low-bandwidth connectivity platform ideal for machine to machine data exchange and deploying IoT sensor networks at scale. With simple device setup and management through a web interface and powerful cognitive analytics built in, the IoT is about to take a giant leap forward.

EXPERTISE AND CAPABILITIES

Fleet is a truly agile space technology start-up building connectivity as a service platform. Scalability and iterative development are built into its business model and infrastructure. Its core expertise is nano-satellite manufacture and deployment, satellite propulsion systems, IoT connectivity and software as a service platform development.

UNIQUE SELLING POINTS

Fleet is using nanosatellites to form a global communications network in Low Earth Orbit and allowing users to connect directly to the service via the web. By 2020, with a network of 100 nanosatellites, we will have the capacity to connect over a billion devices every day, anywhere on the planet.

- Free and complete IoT connectivity solution
- Simple plug and play deployment for users
- Ubiquitous global coverage
FULLARTON SPACE BIOTECH PTY LTD

ORGANISATION OVERVIEW
Fullarton Space Biotech Co. Ltd. is a Fullarton Group-invested company specifically focused on scientific research into space microorganisms and the business incubation and industrialization possible from these microorganisms.

Our company works with the world’s best scientific research institutions, universities and manufacturers in China and around the world to develop high-quality products and services in the health and nutrition sectors.

Fullarton Space Biotech also aims to:

- improve microbial fermentation, product quality and production efficiency
- develop functional foods, dairy and alcoholic beverages from space microorganisms
- develop sifting procedures for pharmaceuticals from space microorganisms
- research and develop supplementary products based on space microorganisms
- use microorganisms to improve humans’ intestinal health

EXPERTISE AND CAPABILITIES
Fullarton Space Biotech follows an innovative development model that integrates production, education and research, and international ties with world-leading research institutes and universities in China and other countries.

We have built research teams with specific expertise in bio-pharmaceutical development and food science, and joint labs for research in food and pharmaceuticals, based on space microorganisms and its global platform of space microorganism research.

Our research and development teams are:

- researching and exploring the mutation mechanisms of microorganisms in outer space
- sifting space microorganisms to produce high-quality cultures to provide a high output
- exploring the application of and conducting research in space microorganism pharmaceuticals
- researching the functions of primary and secondary metabolites of space microorganisms
- exploring eco-friendly production modes.

UNIQUE SELLING POINTS
Fullarton Space Biotech is a world leader in understanding the potential for space microorganisms to boost the quality and production of pharmaceuticals, health care products and food and beverages and improve the health of people around the world.

We have built and own a library for space microbiological culture collection (FSMCC) that is driving our research and development and promoting the scientific and technological development of space microorganisms.

While we’re in the early stages of development and commercialization, it’s already clear that space microorganisms will lower production costs and increase the efficiency of products in our target sectors. The result will be measurable improvements in the productivity and quality of food, pharmaceuticals and skincare products, and the sustainable development of biological fodders.

In the past five years, Fullarton Space Biotech has owned 2 patents in the field of Lactobacillus plantarum spaceflight and ground applications, and has some achievements in Se-enriched yeast, reduction blood glucose and curd time of lactic acid bacteria.
ORGANISATION OVERVIEW

Geoplex specialises in the delivery of Enterprise geographic information system solutions and professional services. This includes the sale of geospatial data collected using satellites, via partners such as Planet Labs (Earth Observation imagery) and Spire (Satellite - Automatic Identification Systems maritime tracking).

Geoplex also partners with US software company, AGI, to offer the physics modeling software Systems Tool Kit (STK) in Australia. STK allows engineers and scientists to perform complex analysis of ground, sea, air, and space assets, and share results in one integrated solution.

EXPERTISE AND CAPABILITIES

With respect to earth observation, Geoplex works closely with the customers who consume and add value to the data collected by satellites.

For example, decision makers in agriculture, understanding their problem domain and identifying the type of data to meet their requirements.

Geoplex partners with organisations capturing data using next generation satellite technologies, such as Planet Labs and Spire who use cubesats.

It has the tools to allow engineers to model and evaluate potential solutions, significantly reducing costs but continuing to develop intellectual experience, by allowing testing to occur in a simulated environment.

UNIQUE SELLING POINTS

Geoplex offers Australians access to the world’s largest constellation of satellites, with extensive experience with cubesats in an operational environment.

Through world leading modelling software STK, it helps Australians design the next generation of satellite and ground station solutions.

Its full ecosystem is supported by an open Application Programming Interface, which allows users to get access to information in a timely manner.
Greenhouse Gas Monitor Australia Pty Ltd (GGMA) was formed to develop and commercialise state-of-the-art capabilities to measure, monitor and understand the behaviour of greenhouse gases (GHGs) in the atmosphere.

GGMA’s main activities are to:

- develop and commercialise novel instrumentation and methods to measure CO₂ and CH₄ in the atmosphere, supported by field measurements
- develop atmospheric models to attribute measurements of GHGs to sources and sinks and predict the transport of GHGs in the atmosphere
- provide GHG data products to industry, legislators, traders, and to the agricultural community through interpretation of Earth-based and space-based sensors.

GGMA principals have a long history of remote sensing of trace gases in the atmosphere and in the development of related terrestrial and space-based instruments. GGMA has a pedigree of pioneering the field of space-based sensing of trace gases in the atmosphere, and providing key expertise in the development of a carbon dioxide (CO₂) sensor successfully deployed on NASA’s Orbital Carbon Observatory (OCO). GGMA provides expert analysis and interpretation of data from both OCO and Japan’s Greenhouse Gases Observing Satellite. GGMA is also supporting Lockheed Martin to develop novel instrumentation to measure CO₂ from a geostationary platform.

GGMA has developed novel technology to measure and map atmospheric methane and is well advanced in extending this technology to measure nitrous oxide. GGMA has developed:

- an autonomous, unmanned aerial vehicle-based instrument to measure methane spectra of sampled gas
- software to:
  - extract sub-1ppm trace gas concentrations from measured spectra
  - produce 3D gas concentration fields
  - understand surface fluxes and transport of trace gases
  - infer location and strength of trace gas sources through a fusion of terrestrial and space-based measurements.

GGMA’s technology offers a unique capability to measure and understand the production and behaviour of GHGs to support economic, political and research objectives.
INOVOR TECHNOLOGIES PTY LTD

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**ORGANISATION OVERVIEW**

Inovor Technologies has two business streams: defence contract research and development, and nanosatellite technologies. It designs and integrates small satellites, providing a full development service from customer needs to requirements, through design, build, integrate and test. Its specific capabilities are mission design, satellite guidance, navigation and control, systems engineering, structures and power management, with commercial off the shelf hardware being used where necessary. Partnered with a defence prime and the University of Adelaide, it is developing a nanosatellite-based space situational awareness system to monitor defence and commercial space assets from both accidental and malicious threats.

**EXPERTISE AND CAPABILITIES**

Inovor has a small team with expertise in guidance navigation and control, embedded systems and software design and development, with a balanced split between graduate level, mid-career and subject matter experts. Areas of expertise and experience in space systems:

- systems engineering and mission design;
- spacecraft integration and test;
- attitude determination and control - precision pointing;
- spacecraft navigation and positioning;
- space object detection and tracking;
- flight/ground segment software development;
- spacecraft structures.

- Inovor has two prototype space subsystems and associated Intellectual Property.

**UNIQUE SELLING POINTS**

Inovor is a small agile company with a capable team of specialists as well as considerable experience commercialising technology and building international collaborative teams. It has both a deep research and development culture, with the majority of the team coming from a research background, and expertise in systems engineering, which enables it to engineer quality assured products that meet user/customer needs. Inovor is geographically close to the booming Asia-Pacific region and has a less restrictive export control regime, allowing free access to this growing market.
IRRISCAN AUSTRALIA PTY LTD

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ORGANISATION OVERVIEW

An Adelaide based company jointly held by Australian interests with Italian investment and technical foundations provided by Ariespace, a spinoff company of University of Naples Federico II. Using satellite based information and regional meteorological data, the company has been established to deliver user-friendly and cost-effective analysis of crop development or landscape condition on a regular in-season basis and which will:

- guide irrigation delivery and management of other inputs and sensors
- highlight variation between and across blocks/fields to direct scouting for
  - pest and disease issues
  - maturity assessment
  - weed or other stress
- support landscape and natural resource management.

EXPERTISE AND CAPABILITIES

Irriscan innovative technologies and competitive advantages are based on the conjunction of competencies developed in different contexts and unified in a young, dynamic and multi-disciplinary working team.

- Earth observation techniques
- High resolution map classification, multi-date, multi-resolution image segmentation approach to estimate land-cover classification maps
- Detecting forest extension and degradation, modelling forest biomass and its change
- Spatial processes analysis and land monitoring
- Crop water balance and crop development based on remote sensing data
- Designing and developing web based Geographic Information Systems (GIS) and decision support systems varying in size, complexity, and computing environment
- Ground based measurements, validation and calibration.

UNIQUE SELLING POINTS

- Rapid turn around.
- Relatively low costs compared with alternative technologies.
- ‘Dashboard’ presentation for grower clients; linkage with in-field practice.
- Geographic Information Systems (GIS) interface for water providers and Natural Resource Management clients.
LAUNCHBOX AUSTRALIA PTY LTD

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ORGANISATION OVERVIEW
Launchbox is an education company that puts space technology in the hands of school students. Its kits allow classes to build their own model satellites and conduct real space experiments!

Founded in 2014 by a team of scientists and entrepreneurs who want to see the Australian space industry thrive, Launchbox was created to change the way students understand space science.

It aims to move the field from a distant dream to a tangible, tactile experience in the hands of Australian students.

EXPERTISE AND CAPABILITIES
Launchbox is focussed on developing science, technology, engineering and mathematics (STEM) education technology products for use in Australian schools. Using a variety of launch methods, it teaches students about cubesat technology using a hands-on, in-class approach and real components.

Launchbox aims to drive an understanding of the applications of a STEM career path, self-efficacy and general interest in further STEM learning.

UNIQUE SELLING POINTS
Launchbox provides a STEM course in line with the national curriculum. The 3D printed Cubesat kit introduces students to several aspects of space engineering, such as system engineering, weather predictions, electronic and software design. Launchbox, in partnership with the Horus team, organizes stratospheric launches, allowing students to experience the entire cycle of satellite development, from design to launch.
LOCKHEED MARTIN

ORGANISATION OVERVIEW

Headquartered in Bethesda, Maryland, Lockheed Martin is a global security and aerospace company that employs approximately 125,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services.

Lockheed Martin Australia (LMA) has grown to over 1000 staff currently engaged throughout Australia - from Queensland to Western Australia, South Australia and many points in between. Lockheed Martin Space Systems Company is actively involved in Australia by:

- being a contributing partner in the Space Environment Research Centre
- developing a ground based space situational awareness sensor in Western Australia.

EXPERTISE AND CAPABILITIES

Lockheed Martin Space Systems Company (SSC) has more than 50 years’ experience in space system design, development, operations and sustainment. Its portfolio extends across:

- commercial space - remote sensing, commercial SATCOM, and wind energy management
- military space - protected communications, narrowband communications, navigation, weather, early warning, space protection
- civil space - human exploration, planetary exploration, weather and environment
- advanced technologies - optics, Radio Frequency and photonics; advanced manufacturing and nano systems; and space science and instruments
- launch capability – medium and heavy through United Launch Alliance, our joint venture with Boeing.

UNIQUE SELLING POINTS

Lockheed Martin is an innovative company that uses research and development to solve some of the world’s most complex problems. By combining skilled staff with an experienced management team, and through a customer oriented contracting approach that offers real value-for-money solutions, Lockheed Martin aims to continue to grow and establish itself as a major presence in Australia and the Asia-Pacific region. As part of this growth Lockheed Martin seeks to partner with niche Australian high technology companies and provide those companies with reach-back to access deep technical expertise, market and supply chain opportunities.
MYRIOTA

ORGANISATION OVERVIEW

Myriota’s breakthrough technology makes it incredibly easy and affordable for the world’s essential industries to collect and access the critical data they need to optimise their operations.

EXPERTISE AND CAPABILITIES

Satellite communications.

UNIQUE SELLING POINTS

Myriota creates small, self-contained modules to connect things to the internet via satellite at disruptively low prices using locally developed cutting edge technology. Myriota is making the internet of things an economic reality for a whole new range of industries and devices.

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ORGANISATION OVERVIEW
Neuman Space is dedicated to developing our revolutionary plasma propulsion system. With through our facility for on-orbit verification and testing, we can help other organisations get their hardware into space for testing, research and development.

EXPERTISE AND CAPABILITIES
We have a group of brilliant people collaborating on an innovative technology. Our main strengths are in engineering and physics, with specialisations in mechatronics, robotics and plasma physics.

UNIQUE SELLING POINTS
The Neumann Drive has a fuel efficiency that could revolutionise the space industry. As part of our on orbit test process, we are able to offer space, in space, for anyone, as part of our agreement with Airbus’ Bartolomeo program.
NODESAT PTY LTD

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ORGANISATION OVERVIEW

The mission of NodeSat is to provide disruptive use of data and communications technology for the small satellite industry, aerospace sector, and cyber fields. NodeSat helps Australian and international organisations by creating customised, client-focused communication solutions that address both technical and regulatory challenges.

EXPERTISE AND CAPABILITIES

• Spectrum management & consulting
• Spectrum-based technologies
• Spectrum sharing

UNIQUE SELLING POINTS

• Solutions for data transfer, storage, processing and security requirements for multiple industries that require large volume, time-critical data; including, the small satellite industry and Earth observation data users.
• Data integration engine for internal and third party service integrations.
• Easy and efficient access to communication technologies and smart use of spectrum, especially within the space environment.
• Interest in long distance satellite communications networks
NORTHROP GRUMMAN AUSTRALIA

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ORGANISATION OVERVIEW
Northrop Grumman is a leading global security company providing innovative systems, products and solutions in autonomous systems, cyber, command, control, communications, computers, intelligence, surveillance and reconnaissance, strike, and logistics and modernisation to government and commercial customers worldwide.

Space Systems designs, develops, manufactures and integrates spacecraft systems, subsystems, sensors and communications payloads in support of space science and C4ISR. Key programs include:

- the James Webb Space Telescope, a large infrared telescope being built for the National Aeronautics and Space Administration that will be deployed in space to study the origins of the universe.
- advanced extremely high frequency payloads providing survivable, protected communications to US forces. restricted programs.

EXPERTISE AND CAPABILITIES
- Complex digital space payloads.
- Facilities for classified system integration.
- Dedicated Gallium nitride and Indium phosphide semiconductor fabrication.
- Application-specific integrated circuit and field programmable gate array design.
- High speed radio frequency and laser communications space ground and space links.

UNIQUE SELLING POINTS
Northrop Grumman provides complete space systems solutions including systems engineering, spacecraft manufacturing, precision sensors, space instrument design, ground stations development and orbiting space platforms. Northrop Grumman’s space capabilities have transformed concepts into realities for a wide variety of missions.
ORGANISATION OVERVIEW

Norseld is an Adelaide based designer, manufacturer and exporter of unique Laser platforms specifically designed to provide systems that are technical and performance leaders for their applications and has developed a world leading specialty Diamond Like Carbon (DLC) coating capability called “CoolDiamond DLC TM”.

Norseld operates on a worldwide basis with distribution partners in more than 30 countries. Norseld is ISO9001 and ISO13485 certified with ITAR accreditation pending.

EXPERTISE AND CAPABILITIES

We are the only Diamond Like Carbon coating company in Australia that can coat at room temperature.

30 years of laser and vacuum knowledge and expertise.

Advanced Diamond Like Carbon coating solution for protection of optics and friction surfaces including plastics.

CoolDiamond DLC gives superior wear protection against dust, sand, salt spray, other 2nd body particles and various thermal and electrochemical applications.

Tetrahedral bonded Diamond Like Carbon CoolDiamond DLC offers a Sp3 percentage up to 85%.

DLC application is wide and varied e.g. infra-red optics, thermal imaging, light weight head gear (e.g. night vision goggles, HUD), engine parts (tribology), sensors and components.

UNIQUE SELLING POINTS

Coating at room temperature enables coating of specialty materials including plastic.

The Norseld process is unique in its superior quality and speed.

Our amorphous structure is not discernible even under the highest magnification SEM, benefits include the prevention of deterioration and delamination due to ingress. Average surface variation at 100nm thickness is <0.3nm RMS.

Coatings are produces in UHV and are a logical choice for working in space conditions.

Cost effective coating solution means a cheaper alternative to current methods.
NOVA SYSTEMS

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ORGANISATION OVERVIEW
Nova Systems is a professional service provider, specialising in the provision of engineering and management services, providing industry and government with world-class independent expertise in delivering complex projects and solving technologically challenging problems. Nova Systems’ heritage is in supporting complex military systems, including a significant footprint in military SATCOM and now growing into the commercial sector.

EXPERTISE AND CAPABILITIES
Nova Systems SATCOM comprises a satellite communications team with high quality, experienced people that cover multiple disciplines encompassing project specification, requirements definition, engineering, integration, installation, test and evaluation, operations and International Launch Service. Our experts deliver successful commercial and Defence projects and provide expert advice and guide clients through all aspects of SATCOM project establishment, delivery and support including:

- project management
- satellite payload design and in-orbit testing
- Earth station design and testing
- commercial/military certification testing
- SATCOM systems modelling and simulation (Satelite Tool Kit, Qualnet)
- link budget planning
- network management systems
- through life support planning
- SATCOM training
- asset and personnel tracking
- space launch.

UNIQUE SELLING POINTS
Australian owned.
Member of the Defence Security Program.
Largest employer of SATCOM/COMS specialists in Australia.
SHOAL ENGINEERING

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ORGANISATION OVERVIEW
Shoal is a leading systems engineering services firm that works across the aerospace, military, transport, and intelligent infrastructure domains.

Based out of Adelaide, with a distributed team across Australia and North America, work is undertaken in multi-disciplinary teams to achieve quality results for clients.

Space system engineering is a significant part of Shoal’s heritage. The team has extensive experience in space system design and development, requirements elicitation, technology trade studies and research projects.

Shoal is also an active participant in the space community, and delivers numerous space system training courses and continues to provide expert guidance and engineering support for a wide-range of clients in Australia abroad.

EXPERTISE AND CAPABILITIES
Expertise in the development and design of large-scale, complex capabilities. Shoal is a recognised leader in capability definition and system conceptual design, and has presented on these topics at numerous international conferences.

Alongside their design work, Shoal has an active flight safety analysis program, which leverages high-fidelity analytical techniques to model the behaviour of launch and re-entry vehicles, aerospace test vehicles and guided weapons for clients. This capability has been applied to the Japanese Hayabusa spacecraft return, the HIFiRE hypersonics research program and numerous other aerospace vehicles.

UNIQUE SELLING POINTS
Shoal is a small, smart and agile company, which has grown from a strong heritage in developing space systems and providing space-supporting services within Australia.

The team at Shoal are comprised of leading specialists in big, complex, socio-technical systems, many of whom have come from strong research and development backgrounds. This means that Shoal has established a reputation as problem solvers on a large scale, with a long history of helping their clients to clearly define complex problems before designing innovative solutions that can be trusted.
Small World Communications specialises in the design of error control encoders and decoders used in digital communications. Error control codes are used to correct errors caused by noise, interference and signal distortion. Its products consist of software cores that are used in field programmable logic arrays (FPGA) and application specific integrated circuits (ASIC). Many of its products are designed for and used in satellite and deep space communication systems. These include encoders and decoders that are compatible with the Consultative Committee for Space Data Systems (CCSDS), GEO-Mobile Radio (GMR), Inmarsat and Intelsat standards as well as custom coding solutions.

**EXPERTISE AND CAPABILITIES**

Design of error control encoders and decoders and research in error control codes. Expertise in convolutional, trellis, turbo and low density parity check (LDPC) codes.

**UNIQUE SELLING POINTS**

Small World Communications has a large range of Viterbi, trellis, turbo and LDPC decoders and associated encoders. The company is able to provide cores for both FPGAs and ASICs as well as custom coding solutions. It is also able to design encoders and decoders with high performance and encoding and decoding speeds over one billion bits per second.
ORGANISATION OVERVIEW

SpeedCast is a leading global network and satellite communications service provider offering high-quality managed networks services in over 90 countries; and a global maritime network serving customers worldwide. With 33 international sales and support offices and 31 teleport operations, SpeedCast has a unique infrastructure to serve the requirements of customers globally.

With over 5000 links on land and at sea supporting mission critical applications, SpeedCast has distinguished itself with a strong operational expertise and a highly efficient support organisation, which are the foundation of SpeedCast’s success. SpeedCast is publicly listed on the Australian Stock Exchange under the ticker SDA (ASX:SDA).

EXPERTISE AND CAPABILITIES

SpeedCast’s major strengths lie in its areas of focus, including radio frequency engineering, high integrity network design, implementation, integration, operation and maintenance of satellite ground systems and maritime RF networks around very small aperture terminal technology. SpeedCast also supplements very small aperture terminal networks with mobile satellite service and terrestrial connectivity via its global multiprotocol label switching network.

UNIQUE SELLING POINTS

SpeedCast is a truly global service provider with a growing network of over 30 Earth stations worldwide. In Australia, SpeedCast owns and operates its own network infrastructure consisting of three Earth stations; equipment hosting and co-location in other landmark teleports; country-wide point of presence; and an uncontended and redundant backbone network connecting all its teleports to the core data centre infrastructure.

Recently partnering with Airbus, SpeedCast provides unique secure satellite communication services primarily to government and Defence on Skynet 5A satellite.
TOOLCRAFT PTY LTD

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ORGANISATION OVERVIEW
Toolcraft has manufactured most of the mechanical components for the HiFire Scram Jet Projects 4, 5, 7 and engines.

EXPERTISE AND CAPABILITIES
Toolcraft is able to manufacture rocket components to high standards.

UNIQUE SELLING POINTS
Twenty three years of experience in precision machining.
INDUSTRIAL ASSOCIATIONS
ORGANISATION OVERVIEW

The Adelaide Section of the American Institute of Aeronautics and Astronautics (AIAA) was established in 2002, and is a technical society dedicated to promoting the Aerospace profession in Adelaide and South Australia. Locally, the Adelaide Section of the AIAA hosts a number of events each year, including talks from visiting Astronauts, international industry professionals and local experts. The Adelaide Section is supported by a vibrant student branch at the University of Adelaide. Many of the AIAA Adelaide Section’s events are public events, and the section also focusses on STEM outreach.
DEFENCE TEAMING CENTRE

ORGANISATION OVERVIEW
The Defence Teaming Centre (DTC) is an industry association with membership of about 200 organisations that employ in excess of 17,000 workers in South Australia. DTC members include Prime contractors (Primes), small to medium enterprises (SMEs) and professional service providers (PSPs) who are actually or potentially involved in supplying and/or supporting defence and related capabilities and/or are influenced by Defence and related business policies or purchasing decisions.

In addition to other activities the DTC is responsible for project managing two alliances/clusters, of one of which is the Australian Aerospace Alliance (AAA) that includes space.

EXPERTISE AND CAPABILITIES
The DTC’s AAA major strength is identifying companies operating within the space industry as well as identifying those companies with relevant capabilities that can add value within the space sector and bringing them together within the AAA.

UNIQUE SELLING POINTS
The AAA is a national alliance that brings together company capabilities and provides access to market opportunities that otherwise would not have been accessible if were companies to operate in isolation of the AAA.

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SPACE INDUSTRY ASSOCIATION OF AUSTRALIA

ORGANISATION OVERVIEW
The Space Industry Association of Australia (SIAA) (formerly the Australian Space Industry Chamber of Commerce) is a national organisation formed to promote the growth of the Australian space industry. It speaks with authority and credibility on behalf of its members on policy and commercial issues connected with the Australian space industry.

The SIAA takes a leading role in advising government on behalf of the space industry. It also provides a forum to promote networking and collaboration among members. Through meetings and events held in various Australian locations, it engages with its members to devise and communicate policies to support the development of the Australian space industry. It actively promotes and facilitates commercial, industrial and research opportunities for its members nationally and internationally.

The SIAA also harness the skills and expertise of its membership to address issues of common concern to corporations, businesses and individuals involved in, or seeking to become involved in, the benefits of the space sector in Australia and internationally.

EXPERTISE AND CAPABILITIES
• Policy formulation and submissions.
• Industry and government connections.
• Legal and regulatory expertise.
• International connections and relationships.
• Connections with universities and research institutions.
• Major event organisation.

UNIQUE SELLING POINTS
The SIAA has over 20 years’ experience as the peak space industry voice in Australia. Its corporate memory goes back to the early 1990’s. It has a broad membership of large international corporations, Australian companies, universities, consultants and students. It is well respected in the Australian space sector for its industry focused well-researched policy positions, its advocacy and its networking events. SIAA is delighted to be selected as the host organisation for the world’s most prestigious space event, the International Astronautical Congress to be held in Adelaide in September 2017.
“MY GOVERNMENT IS EMBARKING ON AN EXCITING JOURNEY TOWARD A STRONG SPACE INDUSTRY FOR SOUTH AUSTRALIA, AND WE ARE DETERMINED TO WORK IN PARTNERSHIP WITH ALL THE KEY PLAYERS TO CREATE WEALTH, JOBS AND OPPORTUNITIES IN THIS THRIVING SECTOR.”

HON JAY WEATHERILL MP
PREMIER OF SOUTH AUSTRALIA
ACIL ALLEN CONSULTING

ORGANISATION OVERVIEW
ACIL Allen Consulting is one of Australia’s leading economic and public policy consulting firms, specialising in economic analysis, program evaluation, and strategic advice to government and business. It is highly regarded for its analytical skills, experience in stakeholder consultations and the quality of its reports.

Established in 2013 by the merger of ACIL Tasman and the Allen Consulting Group, the firm collectively has over four decades of experience in consulting. It is the largest independent consulting firm in Australia, with around 80 staff located in offices across the nation.

ACIL Allen Consulting has extensive experience in undertaking complex economic impact studies of industry sectors, organisations, projects and government programs, including those relating to the space industry, science, research and innovation.

ACIL Allen pioneered the economic and policy work on the value, management and use of spatial data and has over 15 years’ experience in advising clients on the economics and application of space based technologies.

EXPERTISE AND CAPABILITIES
Examples of projects undertaken include:
• In 2008 ACIL Allen undertook the first economic value analysis of spatial information in Australia
• The economic value of earth observations from space (2010)
• The Economic Value of the proposed Square Kilometre Array (2005)
• The value of spatial information in Australia (2008) — for the Cooperative Research Centre for Spatial information
• The economic value of augmented positioning services (2013) Innovation, Science, Research and Tertiary Education
• Advice on valuing geospatial assets (2012)
• Economic benefits of high resolution positioning services (2011)
• Benefit cost evaluation of GPSnet for farming (2011)
• The economic value of an integrated geoscience research infrastructure (2005)
• The economic value of an integrated research infrastructure for Astronomy (2005).

UNIQUE SELLING POINTS
ACIL Allen Consulting has undertaken a wide range of industry studies which have examined capability, economic impact and strategic positioning for various sectors of the economy. Examples of studies include:
• the economic importance of the construction industry in Australia
• the economic value Australian Naval Shipbuilding
• benefits realisation review of the Excellence in Research for Australia (ERA)
• economic, social and environmental impacts of the Cooperative Research Centres Program
• an evaluation of the costs and benefits of the Commonwealth Science and Industrial Research Organisation’s (CSIRO) ongoing research in the period 2011 – 2015.

The benefits of space to the Australian and South Australian economy are not yet fully appreciated. There is an opportunity in the lead up to the IAC 2017 to better quantify and capture the opportunities for the South Australian economy and develop a detailed investment strategy to help capture medium and longer term benefits.
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**ORGANISATION OVERVIEW**

Professor Coutts is a respected member of the telecommunications community with national and international contacts and a broad spectrum knowledge and experience in the fields of commercial radio technologies and telecommunications covering fixed line, private and public mobile, and internet communications.

Reg has advised governments on telecommunications policy, appeared as an expert witness giving opinion on the technical workings of mobile phone networks relevant to legal argument, and participated as a technology start-up board member.

Reg is available to consult to interested parties seeking to better understand the telecommunications market place, the inner workings of the telecommunications industry, government policy in relation to telecommunications, broadband, spectrum issues, and commercialisation of information and communications technology.

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**EXPERTISE AND CAPABILITIES**

Reg Coutts’ expertise encompasses the following fields:

- wireless technologies and spectrum management
- telco regulation and policy
- the Australian broadband industry
- IP strategies, innovation and commercialisation
- expert witness
- board advisor.

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**UNIQUE SELLING POINTS**

- Both within Telstra till 1993 and running the Centre for Telecommunications Information Networking in the University, Professor Coutts evaluated new satellite systems such as IRIDIUM.

- Professor Reg Coutts was appointed on the government’s National Broadband Network expert panel in 2008 with the goal to advise the Government on the awarding of a A$4.7 billion contract to part fund the construction of the national broadband infrastructure. The Government proceeded as recommended with the Ka band satellite system.

- In October 2010 Professor Reg Coutts was appointed as part-time member of the Australian Communications and Media Authority for a five year term bringing expertise on satellite matters.

- Professor Coutts initiated the Satellite Services Group with the Communications Alliance (CA) to ensure satellite issues were adequately addressed by the industry.
ORGANISATION OVERVIEW

Frazer-Nash Consultancy is an independent consultancy that has been supporting major procurement programs internationally for over 20 years.

The company is multidisciplinary in nature and offers a broad range of systems engineering, safety and environmental, and applied technology services that we are able to apply to the Space Systems domain.

Our Australian workforce of around 40 employees covers a wide range of engineering expertise. Frazer-Nash is confident in their ability to provide long-term in-country support for the various Space Surveillance Systems acquisitions programs – offering unparalleled capability, flexibility and knowledge.

EXPERTISE AND CAPABILITIES

Offer a comprehensive suite of services relating to engineering management, including:

- design
- system engineering
- integration and requirements development
- management and assessment.

Provides safety management systems development, including safety case generation and assessment along with integrated logistics support and analysis.

Frazer-Nash Consultancy is experienced in the identification and management of integration (internal and external systems) and technical assurance and acceptance of the supplied system/s striving to understand clients’ needs in order to derive innovative and cost-effective solutions that meet the unique requirements of customer projects.

UNIQUE SELLING POINTS

Frazer-Nash Consultancy is a multidisciplinary consultancy company with proven results in providing customers the help and necessary support they need to be able to conduct their business. Consider client requirements in detail to develop individual, tailored solutions aligned with international best practice, to support the client in identifying and implementing fit-for-purpose solutions to complex problems.

In achieving this support Frazer-Nash take ownership of the problem on the client’s behalf, reducing client risk and level of effort.
KASCOMM PTY LTD

ORGANISATION OVERVIEW

Jeff Kasparian started KasComm Pty Ltd in 2015, and is committed to having customers succeed in developing and delivering compelling bids and programs of work in the space and telecommunications-related fields.

Jeff has worked extensively with the Institute for Telecommunications Research (ITR), Australia’s largest university-based wireless communications research and development group.

He has over 25 years’ experience in satellite communications, including engineering, management and business development, as well as group director. His work has included engagements between ITR and satellite industry in Australia, as well as overseas, including US, Canada, UK, Italy, France and Singapore.

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MINTER ELLISON

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ORGANISATION OVERVIEW

Minter Ellison is an international law firm, with a key presence in Adelaide, specialising in commercial law, projects, construction and infrastructure, technology and IP law. It provides specialist legal services to the Australian defence and space industries, partnering with clients to provide integrated, innovative solutions in delivering legal services. It thinks beyond the law and applies a commercial approach and creative thinking to projects and transactions. The extensive capability of the Adelaide office is supported by the wider Minter Ellison network throughout Australia, and relationships with leading law firms around the world to deliver seamless service to clients.

EXPERTISE AND CAPABILITIES

Minter Ellison is a full service law firm, operating from Adelaide, with access to the national and international resources of the Minter Ellison Legal Group throughout the Asia/Pacific region. Minter Ellison has a dedicated team of commercial lawyers who are experienced in all aspects of commercial contracting, procurement and major projects delivery and intellectual property protection. Skills include advising on, negotiating and drafting a range of commercial structures and agreements, including joint ventures, risk-sharing agreements, consortium agreements and agreements for use in all procurement models (goods/services supply, project management, design and contract, engineering, procurement and construction, engineering, procurement and construction management, build, own, operate, build, own, operate, transfer etc.)

UNIQUE SELLING POINTS

Minter Ellison:

• is a specialist commercial law firm, based in Adelaide, with efficient and responsive access to SA-based defence and space industry participants
• provides clients with direct access to specialist lawyers
• provides innovative, cost-effective, client-focused solutions to a range of complex legal issues
• has experience in a wide range of commercial legal issues relevant to the defence and space industries
• uses a range of fee arrangements to suit client requirements.
“THROUGH SPACE ACTIVITY IN SOUTH AUSTRALIA, WE INTEND TO CONTINUE TO AMASS A HIGH-END SKILLS BASE AND WORLD-CLASS COMPETENCY, AND TO FOSTER TECHNOLOGICAL ADVANCEMENT, JOB AND INDUSTRY GROWTH, AND THE RISE OF EVEN MORE START-UPS.”

HON JAY WEATHERILL MP
PREMIER OF SOUTH AUSTRALIA
EDUCATION & RESEARCH ORGANISATIONS
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ORGANISATION OVERVIEW
Airborne Research Australia (ARA) is a not-for-profit research institute engaged in environmental research from aircraft. It has expertise in sensing technologies, platform integration and data processing. ARA has substantial office/workshop/instrumentation facilities, a fleet of research aircraft specially designed and configured as sensing platforms and an unmatched suite of science-grade remote sensing and in-situ meteorological instrumentation. ARA platforms are ideal for airborne testing of instrumentation and other spaceborne payloads, also for conducting independent measurements for satellite cal/val purposes.
ARA has test-flown space hardware (both developmental and flight hardware) and been heavily involved in cal/val and instrument retrieval algorithm development.

EXPERTISE AND CAPABILITIES
INSTRUMENTATION AND INTEGRATION EXPERTISE
Unmatched suite of science-grade remote sensing instrumentation for research and development purposes (lidar, hyperspectral, multispectral, passive microwave, thermal).
In-situ measurement of atmospheric parameters (gases, temperatures, turbulent motion, aerosols, etc).
Science payload integration and test Carriage (and airworthiness approval) of visitor instrumentation.

UNIQUE SELLING POINTS
• Typically very fast airworthiness approval and airborne operation of payloads, fully supported with integrated infrastructure
• Large in-house payload capacity and long flight endurance.
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Science and Engineering Contact:
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ORGANISATION OVERVIEW
Flinders University is a modern research-intensive university with key space-applicable capabilities in a wide variety of areas including materials science, nanotechnology, robotics, mechatronics, earth observation, science education and policy, geospatial sciences, space heritage, and medicine. Flinders is ranked in the top 2% of universities worldwide.

Flinders is an institutional member of the International Astronautical Federation and the Space Industry Association of Australia.

EXPERTISE AND CAPABILITIES
Flinders Centre for Nanoscale Science and Technology researches and produces innovative materials and coatings with relevance to the space industry. Our nanotechnology research group can manufacture and test coatings and new materials in-house. The Centre scored a top ranking of 5 in the most recent Excellence in Research for Australia (ERA) assessment.

A key technology in future off-Earth mining is the use of biological agents for mineral extraction. A Flinders research group is studying the interaction between bacteria and mineral surfaces using advanced synchrotron nanospectroscopic techniques.

The University’s Physics Group has a long tradition of innovative space physics research. Flinders also conducts innovative research in haptics and telecommunications that are space-capable.

Flinders’ Centre for Science Education in the Twenty First Century supports science, technology, engineering and mathematics education in secondary schools through student and teacher-focused projects. The Centre runs a degree program in Science Communication and Policy.

Airborne Research Australia (ARA) is Australia’s only national research facility operating aircraft for environmental and atmospheric research. ARA operates a number of aircraft from Parafield Airport. The core activity of ARA is the use of airborne platforms (special mission aircraft) for a wide range applications and projects, mainly in the environmental research and development area. These projects are based on collaborations with colleagues and institutions within Australia and internationally.

UNIQUE SELLING POINTS
Flinders University conducts cutting-edge research in the emerging field of space archaeology, in which Dr Alice Gorman is a globally recognised leader. Dr Gorman has expertise in space heritage, social and ethical aspects of orbital debris mitigation and off-Earth mining, and space environmental management frameworks. She contributes to Australian space policy directions through the Space Industry Association of Australia.

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Flinders University’s research infrastructure in science and engineering is outstanding and the University’s Tonsley campus provides space for research-industry collaboration in South Australia. Facilities at Tonsley include a Faraday cage, underwater vehicle development and testing capacity and a large hexapod robot for biomechanical testing, in addition to a wide array of manufacturing and prototyping facilities.

Flinders has a dedicated Defence Partnerships Director, tasked with fostering industrial applications and research collaboration with defence science and technology.

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**ORGANISATION OVERVIEW**

Hamilton Secondary College is South Australia’s only Space School. As the result of collaboration with the Victorian Space Science Education Centre and with government support, the College has established a purpose built facility to enable the delivery of space education for South Australian students. This includes a simulated Mars surface, and Mission Control and Briefing Rooms.

The College is a designated STEM Focus School. Mission to Mars is one part of a whole College STEM program which includes the STEM Innovation Academy. This includes the delivery of unique and contemporary interdisciplinary curriculum using problem based learning opportunities for students with passion and interest in this area.

**EXPERTISE AND CAPABILITIES**

Hamilton Secondary College has been the home of the South Australian Space School since 1997. This is a three day residential program for Year 10 students from schools around the state.

Teachers from Hamilton Secondary College are actively involved in the delivery of the program, together with input from tertiary providers and industry professionals. Partners in the program include NASA, the European Space Agency and the Japanese Aerospace Exploration Agency.

Using a problem-based learning approach, students will be able to role play real space experiences, including mission briefings, flight control and simulated space exploration on the surface of Mars.

The College has the capacity to work with schools and pre-schools to design tailor-made outreach programs from as little as one hour to a residential holiday program delivered over a number of days.

**UNIQUE SELLING POINTS**

Hamilton Secondary College is the only South Australian School with this unique facility and skilled and experienced staff.

By combining our staff expertise with that of our tertiary and industry partners, the College is able to deliver exciting and innovative STEM programs of learning for other education providers.
MULLARD SPACE SCIENCE LABORATORY

ORGANISATION OVERVIEW

Mullard Space Science Laboratory (MSSL), Australia, is the Adelaide branch of MSSL (UK), the official name of the Department of Space and Climate Physics of University College London. MSSL undertakes a broad program of space related research across a broad range of science themes; astrophysics, planetary sciences, solar physics, space plasma physics and climate extremes. The group has participated in over 200 sounding rockets and over 40 satellite and space probes. Its world-leading science program is supported by extensive technology capabilities applicable to space research including cryogenics, detector physics, electronic engineering and manufacturing, imaging, mechanical and thermal engineering and manufacturing, software engineering and computing, optics, cleanliness and contamination control, quality assurance, project management, systems engineering and test and calibration.

MSSL Australia has specific expertise in management of space instrumentation projects, systems engineering and detector development.

EXPERTISE AND CAPABILITIES

MSSL specialises in the full lifecycle of instrument development for scientific payloads. Driven by international science goals it develops concepts, designs and manufactures scientific instrumentation for scientific spacecraft from all the major space agencies. Its in house facilities include mechanical and electronic design offices and workshops (including surface mount capability), clean rooms (ISO class 5, 6 and 8), test equipment (calibration chambers, thermal vacuum chambers, and vibration test facilities) and operations facilities. These capabilities allow it to design, build, test, and operate its own bespoke scientific instruments.

UNIQUE SELLING POINTS

Development of bespoke scientific instrumentation using in-house scientific expertise, design, manufacture, testing and analysis of data products. World class facilities for design, manufacture and testing of space hardware. Post graduate teaching and professional development training in space science and engineering, technology management, systems engineering management and managing complex projects.
SOUTHERN HEMISPHERE SPACE STUDIES PROGRAM

ORGANISATION OVERVIEW

The Southern Hemisphere Space Studies Program (SH-SSP) is conducted each year in Adelaide by the International Space University (headquartered in Strasbourg France) (ISU) in partnership with the University of South Australia. From 2011 to 2013 the program was supported by the Australian Space Research Program.

The program is for:

- professionals in industry, government and the defence services
- graduate researchers
- science, technology, engineering and mathematics educators
- undergraduate students in the final two years of their studies.

To date 179 participants from 23 countries have completed the program. Forty nine percent of the participants came from Australia. Other countries sending participants include Brazil, Canada, China, France, Italy, Korea, Malaysia, New Zealand, South Africa, UK and US.

EXPERTISE AND CAPABILITIES

The program is an intensive, five week live-in experience in the southern hemisphere summer. The program provides an inter-disciplinary understanding of the following subjects:

- space science and exploration
- space applications and services
- space security
- human spaceflight and life sciences
- space systems engineering and technologies
- space policy and economics
- space business and project management and
- space law and regulatory issues.

The program is taught by ISU and UniSA faculty and over 40 volunteer space experts from Australia and overseas.

UNIQUE SELLING POINTS

The SH-SSP is the only program in the Southern Hemisphere that provides a holistic understanding of the key activities and areas of knowledge required by today’s space professionals, based upon the international, intercultural, and interdisciplinary educational philosophy for which the International Space University (ISU) is renowned.

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TAFE SA

ORGANISATION OVERVIEW

TAFE SA is one of the largest providers of vocational education and training in Australia with over 70,000 students in 1,300 courses.

TAFE SA skills training supports space-related industries in the following program areas: Electrical and Electronic Engineering; Fabrication, Machining and Welding; Software Development; Cyber Security; Electro-technology including solar and renewable energies; Finance; Project Management; Workforce Development; and Leadership. Skills are delivered through short courses and Certificates level I to IV; Diplomas; Advanced Diplomas; Associate Degrees; Degrees and Vocational Graduate Diplomas.

TAFE SA works with industry, enterprises, schools and higher education institutions to deliver relevant, high-quality training that links graduates with real job opportunities, creates further study pathways and encourages lifelong learning.

TAFE SA provides skills training across the majority of industries in South Australia. As such, TAFE SA’s training has the potential to reach a large percentage of the space-related value chain as the sector grows in South Australia and nationally.

EXPERTISE AND CAPABILITIES

TAFE SA trains over 70,000 students a year in a wide range of both higher education and vocational qualifications. TAFE SA’s higher level qualifications include Associate Degrees in Electrical Engineering, Electronic Engineering and Biomedical Engineering. TAFE SA delivers vocational training from Certificate to Advanced Diploma level in Instrumentation and Control; Electronics and Communications Engineering; Computer Systems Technology; Network and Cyber Security; Data and Voice Communications; Engineering – Fabrication Trade; Engineering – Mechanical Trade; Surveying; Programming and Software Development; and Project Management and Leadership.

TAFE SA employs over 1,000 lecturing staff, many of whom have current or recent experience in defence-related supply chains in Australia. TAFE SA has credit transfer and articulation arrangements with the University of Adelaide, University of South Australia and Flinders University. TAFE SA trains managers, staff and apprentices from the majority of Defence Prime Contractors and serves the skills needs of hundreds of supply chain SMEs in South Australia and nationally.

TAFE SA is an independent statutory corporation of the Government of South Australia.

TAFE SA provides tailored training services that extend beyond traditional training methods to incorporate:

- Recognition of current skills and prior learning.
- Development of skill sets specifically to meet sector-identified skills gaps.
- Use of industry job profiles to undertake functional analysis and workforce planning.
- Customised full courses, developed in consultation to meet industry-specific needs.
- Development and accreditation of industry-specific curriculum.
- Blended training methodologies incorporating online and face-to-face approaches.
- 3D simulated training.
- Augmented reality training.
- Extensive physical and online training infrastructure, with over 40 campuses in South Australia and thousands of online courses.
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ORGANISATION OVERVIEW

The University of Adelaide is a member of the Group of Eight, a coalition of research-intensive universities in Australia. The University has a proud history of excellence in research over 150 years and has been the home to many scholars of international distinction. The University constitutes a vibrant and diverse community with over 25,000 students and over 3,500 members of staff across our three main campuses.

The University of Adelaide comprises 5 academic faculties:

- Faculty of Health Sciences
- Faculty of Sciences
- Faculty of Engineering, Mathematical and Computer Sciences
- Faculty of Arts
- Faculty of the Professions

The University has relevant research, infrastructure and test capability through such areas as:

- The Institute for Photonics and Sensing (IPAS)
- Mechanical Engineering: acoustic and vibration testing, wind tunnel, laser diagnostics
- Adelaide Radar Research Centre: expertise in Radio Frequency systems, antennas signal processing and networking.

EXPERTISE AND CAPABILITIES

The University of Adelaide is research intensive in areas such as engineering and science including:

- sensing systems, image and signal processing, software systems, mechanical systems, autonomous and robotic systems, RF and communication systems, range safety, test and evaluation.
- The University has dedicated centres such as: the Adelaide Radar Research Centre and the Institute for Photonics and Sensing, directly relevant to national requirements. It has experimental, design and test facilities where significant investments (over $100m) over many years enables it to participate from the research phase through to launch and management of capability.

The University Research Unit on Military Law and Ethics (RUMLAE) established to examine legal and policy issues relevant to military and security matters, has significant expertise in space law, teaching Strategic Space Law and it has launched a major international and interdisciplinary research project (partnering with McGill University, Montreal) on governance of outer space.

UNIQUE SELLING POINTS

Unique capabilities include:

- wind tunnel test environment
- engTest capability (electronic, mechanical and civil engineering test capability)
- acoustic, vibrational and laser diagnostics capabilities
- 6 Degrees of Freedom simulation table
- software simulation environment
- space weight and power modelling for on-board processing capability
- extensive simulation and modelling capability
- ability to build prototypes, test and evaluate
- access to various field ranges
UNIVERSITY OF SOUTH AUSTRALIA

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ORGANISATION OVERVIEW
The University of South Australia (UniSA) is Australia’s university of enterprise and is an innovative, globally-focused, locally-engaged institution.

UniSA is committed to providing an outstanding learning experience and offers degree programs across a wide range of subjects.

Research at UniSA is inspired by challenges and opportunities, partnered with end-users and communities, and underpinned by excellence with 97% of its research rated at or above world class standard. The University’s flexible and responsive approach to engagement and collaboration has resulted in effective partnerships with research end users from industry, government and the community.

EXPERTISE AND CAPABILITIES
UniSA’s Institute for Telecommunications Research (ITR) has more than 25 years expertise in satellite communications applied to telecommunication services, earth observation, remote sensing and defence. ITR developed and operates ground station equipment and communication payloads on-board satellites.

Key expertise includes: telecommunications, geospatial science, remote sensing, imaging and positioning, as well as planetary and space science. Teaching and research laboratories operate for each of these areas, including multi-band satellite ground station facilities.

UniSA translates planetary and space science, with a focus on the observation and investigation of terrestrial planets in the solar system.

UniSA’s Future Industries Institute (FII) and Defence and Systems Institute (DASI) along with the Schools of Information Technology and Mathematical Sciences are a source of key enabling expertise and infrastructure.

In addition, UniSA’s sleep and fatigue researchers are using state-of-the-art time isolation, live-in research facilities to study the fatiguing and stressful psychosocial confines of space.

UNIQUE SELLING POINTS
Technology developed at ITR enhances global communications and earth observation systems.

ITR’s research led to three spin-off companies – two of them in the field of satellite communications – and ITR’s facilities provide services for earth observation, launch tracking of spacecraft and communication with CubeSats.

FII’s mission is to transform the industries of today and seed the industries of tomorrow.

The Southern Hemisphere Space Studies Program is jointly organised by the International Space University and UniSA. It’s a unique, five week live-in experience that attracts students from around the world to work on challenging interdisciplinary space projects.

UniSA has the only Mars capable laboratory in Australia, with links to NASA and European Space Agency Mars mission scientific teams.
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ORGANISATION OVERVIEW

The Bureau of Meteorology is an Australian Government agency providing environmental intelligence across a range of domains such as weather, water, climate and space, and is a strong user of spacecraft derived products.

EXPERTISE AND CAPABILITIES

Space related activities include satellite reception capabilities, space data processing, support for international missions, product generation, international engagement and space weather effects on technological systems.

UNIQUE SELLING POINTS

The Bureau has a deep reservoir of scientific and technological expertise and experience, holding a pre-eminent national role in its key areas of competence. In the space domain it has a long history of utilising spacecraft data in real-time and for research, and predicting space weather effects on defence and civilian technologies.
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ORGANISATION OVERVIEW
Wide Area and Space Surveillance Systems Program Office (WASS SPO) is located within the Edinburgh Defence Precinct, and is part of Defence’s Capability Acquisition and Sustainment Group. Its role includes acquisition, integration, and sustainment of military space surveillance systems for operation by the Australian Defence Force (ADF). WASS SPO works closely with Air Force, the Defence Science and Technology Group, Space Command within the United States Air Force, and numerous defence industry companies in the United States and Australia.

EXPERTISE AND CAPABILITIES
The key strength of WASS SPO is its ability to quickly adapt emerging technologies and capabilities to meet Defence’s changing operational needs. This is achieved through smart partnering with a wide range of stakeholders, including Defence industry companies. WASS SPO is a provider and integrator of expertise including engineering, science, project management, commercial, contracting, and operations.

UNIQUE SELLING POINTS
WASS SPO is partnered with all prime stakeholders in the supply chain for ADF space surveillance systems.
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ORGANISATION OVERVIEW

Learning Improvement Division provides support for teaching and learning to 850 departmental schools and preschools, to develop students as forward thinkers, innovators, leaders and shapers of an adaptable knowledge-based economy and society. A STEM Learning Strategy (2017-2020) has been developed to underpin STEM learning from preschool to year 12, and develop cutting edge teaching and learning across our schools. One of our goals is to develop dynamic partnerships between industry and schools, to ensure learning is relevant, builds greater career awareness and meets industry needs. Students experience interdisciplinary STEM learning, applying their skills in new ways using collaboration, problem-solving and critical/creative thinking.

EXPERTISE AND CAPABILITIES

Learning Improvement has a network of 150 staff supporting STEM learning capacity through professional learning, direct site support in multi-disciplinary teams, educational research and strategic planning. 139 South Australian schools have received up to $3.5 million each on infrastructure upgrades to support STEM learning. We have specialised staff to assist in linking schools with industry to develop partnerships and support curriculum which is connected to a local/global industry context. Using an individualised approach, this provides benefits to students including STEM learning and industry exposure, and to industry by providing R&D, workforce and professional development and access to our state-wide networks.

UNIQUE SELLING POINTS

The STEM Learning Strategy includes co-designing career development approaches with DECD, industry and tertiary institutions to increase student awareness of STEM pathways, and an annual STEM Leaders’ Symposium to share best practice. Several high-performing STEM schools are also providing state-wide STEM professional learning. The federally-funded Advanced Technology Project supports 24 schools, developing STEM learning with links to advanced manufacturing, maritime, defence and space technology. Learning Improvement contributes funding towards external organisations to support systemic STEM learning. This includes NAMIG/STEMNation/Concept2Creation programs, Royal Institute of Australia’s ‘Australia’s Science Channel’ and related programs, and the Beacon Foundation.
DEPARTMENT OF ENVIRONMENT, WATER AND NATURAL RESOURCES

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ORGANISATION OVERVIEW
Department of Environment, Water and Natural Resources’s (DEWNR) role in managing the state’s natural resources ranges from policy leadership to on-ground delivery with regional Natural Resources Management Boards. The issues DEWNR works on include water security, climate change, sustainable land management, public estate management and biodiversity conservation.

DEWNR typically partners or procures space enabled services and earth observation services to support agency programs/projects. These largely result in acquisition or analysis of satellite imagery for South Australian Government needs.

EXPERTISE AND CAPABILITIES
Through panel contracts DEWNR procures or delivers projects in collaboration with government agencies, universities and research bodies.

These relationships with universities and private companies are typically to provide support for a specific project or tender rather than ongoing provision of programmed services.

UNIQUE SELLING POINTS
DEWNR provides practical advice to government, industry and communities to achieve productive and balanced use of natural resources and to help improve the condition and resilience of our natural systems.

It works closely with communities and a diverse range of research partners to help them make good decisions about how our natural resources are used and managed.
INVESTMENT ATTRACTION SOUTH AUSTRALIA

ORGANISATION OVERVIEW

Investment Attraction South Australia leads the State Government’s efforts in pursuing investment from both overseas and interstate companies. The agency’s mandate is to capture foreign direct investment which creates high value-adding industries and sustainable jobs.

EXPERTISE AND CAPABILITIES

Investment Attraction South Australia, through its Future Industries and Advanced Manufacturing sector, have the capability to link in with companies involved in the space industry to offer case management services and financial support (with Cabinet approval).

Investment Attraction South Australia has interacted with companies involved in the space industry and is open to investigating any further opportunities for investment in this industry in South Australia.

UNIQUE SELLING POINTS

We’re here to expose the world to the rich investment opportunities that exist in South Australia.

At Investment Attraction South Australia we’ll strive to understand your business and tailor a support package that meets your individual needs.

The speed and professionalism provided by our team means the process of securing your investment is streamlined to ensure your business is a success in South Australia.

How we will work with you:

• we’ll provide a dedicated point of contact for all your project requirements
• we’ll ensure you have the best support to expedite your project in what may be a new state or country
• we’ll simplify dealings with government and other business partners to streamline your path to a secure investment
• we’ll provide policy and regulatory assistance to accelerate your investment
• we’ll help you access the state’s skilled local workforce, ensuring you are connected to professionals who can deliver results
• we’ll link you to new technologies, services, skills or processes which may add value to your organisation.

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ORGANISATION OVERVIEW
Defence SA is a South Australian Government agency. Its mission is to facilitate the growth of sustainable defence industries in South Australia.

The Space Industry and R&D Collaborations Office which is part of Defence SA supports the growth of the South Australian space sector and space industries.

Through the Space Innovation and Growth Strategy (South Australia): Action Plan 2016-2020, we are committed to partnering with national and international stakeholders in industry and academia to build on the state’s strong space foundations.

We target investment and expansion opportunities, drive and support the delivery of major projects and facilities, and pursue the location of additional space assets in the state.

The Office also plays a key role in supporting the Australian Government’s strategic policy, particularly by increasing local industry participation and ensuring that state-of-the-art infrastructure and a highly skilled, industry-ready workforce is in place to underpin space projects.

EXPERTISE AND CAPABILITIES
The Office plays a key support role for the South Australian Government through:

- effective advocacy
- investing in strategic infrastructure, education, training, and research and development, and
- fostering a competitive business environment.

Space Industry and R&D Collaborations Office is also driving South Australia’s increased space activity and support of South Australia’s role in the 68th International Astronautical Congress to be held in Adelaide in September 2017.

The South Australian Space Council made up of Australia’s top space industry experts provides high-level strategic and policy advice and promotes growth through their extensive networks in space.

UNIQUE SELLING POINTS
The South Australian Government is committed to growing the state’s space industry.

Space Industry and R&D Collaborations provides a single point of contact for all space stakeholders, streamlining their interaction across the South Australian Government.
CONTACT DETAILS

If you would like to contact the Defence SA Space Industry and R&D Collaborations Office for information about this directory or to enquire about your organisation’s eligibility for inclusion in the next publication please contact us via:
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