

CAPABILITY STATEMENT

**SPACE AND AVIATION**

SUPPORTING THE GROWTH OF THE SPACE AND AVIATION SECTOR TO  
DEVELOP INNOVATIVE SENSING SOLUTIONS.

The rapid reinvention  
of **space and aviation**  
is generating  
endless commercial  
opportunities.



**From the development of an Australian civil space industry to the advent of autonomous aircraft, the space and aviation sector is undergoing rapid innovation that will underpin Australia's capabilities in transport, communication, agriculture, resources and maritime.**

Globally the space industry is worth US\$345 billion each year but only 0.8% is contributed by the Australian space sector. To capitalise on this growth opportunity the Australian Space Agency was launched in July 2018 to support the growth of Australia's space industry and to inspire the next generation of space entrepreneurs. Delta-V has been established as Australia's first Space Startup Accelerator and brings together 30+ NewSpace sector companies. NSW is in a unique position to capitalise on the establishment of the Western Sydney International Airport (Nancy-Bird Walton) and surrounding Western Sydney Aerotropolis. This precinct will be a thriving economic hub generating 200,000 new jobs for NSW.

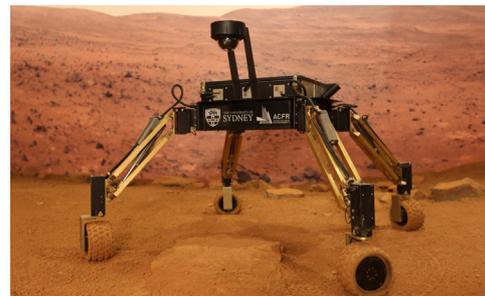
**At the heart of it all are smart sensors and NSW universities are at the forefront of smart sensing research**, exploring new frontiers in remote sensing including Space Situational Awareness (SSA), robotics, autonomous systems, and Positioning, Navigation and Timing (PNT). There are great opportunities not only for the space and aviation industry, but flow on effects for other sectors.

Partnering with the NSSN, companies can access expertise and technology from across NSW's leading universities and gain an enduring competitive advantage. Some of the exciting R&D projects already taking place throughout the network include:



Space is congested due to a growing amount of space debris, which places vital satellites at risk. Australia plays a significant role in monitoring such debris using ground-based SSA.

**Researchers at Western Sydney University** have developed the 'AstrositeTM', a space camera that can sense and track objects in space in real time and may help to avoid satellite collisions, allow daytime imaging of objects in low earth orbit and low-visibility environments and, monitor space debris. The AstrositeTM is modelled off the human eye and brain and was designed and developed with the RAAF as part of Plan Jericho for potential defence applications.



**Researchers at The University of Sydney's SpaceNet** have a number of key research capabilities in spacecraft development, instrumentation, robotics, computational tools, the integration of space data and Earth Observations from Space (EOS). This includes the development of new instruments and spacecraft systems for EOS applications in imaging and spectroscopy.

Sydney SpaceNet in collaboration with ACFR (Australian Centre for Field Robotics) develop planetary rovers, unmanned aerial vehicles, and related robots to design and test sensors and satellite systems. These applications include Mars rover designs and planetary/soil analogue research.



**The Australian Centre for Space Engineering Research (ACSER)** based at **UNSW** have research strengths in Global Navigation Satellite Systems (GNSS) receiver design, Earth observation satellite systems, CubeSat development in radiation tolerant FPGA's, novel satellite structures utilising rapid manufacture and GNSS remote observation. Researchers from ACSER and UNSW are currently using remote sensing technology to explore the commercial viability of mining water on the moon.

**Working with the NSSN simplifies the process of engaging with universities** by creating a single point-of-contact for the leading research-intensive universities in NSW & ACT. NSSN member university **ANU** hosts the Advanced Instrumental Technology Centre (AITC) and the CRC for Space Environment Management. These centres work with industry to develop advanced space capabilities from tracking space junk threats to developing high performance instrumentation for astronomy and space science.

Access to cutting edge research equipment can be difficult to arrange without university partners, and with over 50 centres of excellence, collaborative research centres and industrial training centres spread across the NSSN, access to cutting edge equipment is readily available.

**Navigating the ever-changing space and aviation ecosystem is challenging, working with universities should not be.** With the support of the NSW Government, the NSSN is your one-stop shop for multi-disciplinary expertise and technology.

**To find out how the NSSN can help solve your challenges, please contact Amanda Hayes at (02) 9385 5451 or [amanda.hayes@nssn.org.au](mailto:amanda.hayes@nssn.org.au)**

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