South Australia has a long history and a depth of space expertise with space exploration and space-related activities, unique among the Australian states and territories. In 1947, Australia and United Kingdom signed an agreement which led to the creation of the Woomera Test Range. In 1949, the first missile was launched from Woomera, and by 1957 the first research rocket Skylark was launched by the British. During the 1960s and 1970s, over 200 Skylark rockets were launched for the British, European, German, and American space programs.

Australia made further steps towards its own space program in 1967, joining Russia and the United States to become the third country in the world to build and launch a satellite from its own soil. This satellite, WRESAT 1, was the result of a partnership between the Weapons Research Establishment and a team from the physics department at the University of Adelaide.

Australia had something of a space ‘hiatus’ until 2002, when the Commonwealth-funded FedSat scientific research satellite was launched. Steps towards further participation in the space sector took another great leap forward recently. At midnight on Tuesday 19 April 2017, three Australian QB50 cubesats blasted off for space. Among these were the Adelaide-designed SuSAT, which launched with 35 other small satellites (1.3 kg each) to study Earth’s thermosphere.

South Australia also has a home-grown connection with space, with our own astronaut Andy Thomas leading South Australia into space in 1996 aboard the Space Shuttle. South Australia is now a key hub for space research and industry, with at least 60 space-related organisations, and strong government support. In November 2016, DefenceSA launched the Space Innovation and Growth Strategy (South Australia) Action Plan 2016-2020, which aims to consolidate a strong commercial and government-based space industry in South Australia. Commercial space activities now make up over 75% of global space related revenue, with space industry start-ups now attracting significant investment and contributing to the growth of a sector which currently attracts about US$323 billion annually.

South Australia’s space future

South Australia is extremely well positioned to lead Australia’s foray into the space economy, which currently employs about 10 000 people, but is only 0.8% of the global space economy. We have the ground infrastructure, defence-related industry and private enterprise, university and research base that is now supporting a well-connected and innovative space ecosystem to develop around the strong South Australian space community.

Schools and our students provide the seeds for Australia’s space future, and science, technology, engineering and mathematics (STEM) learning and collaborative problem-solving, critical and creative thinking are the foundation for the innovation needed to tackle our world’s current and future challenges.
Space technology supports mobile phones, navigation systems, emergency response systems and into the future, the rise of the ‘Internet of Things’. Adelaide is leading the way as a ‘smart city’, with ultra-fast internet connections now supporting entrepreneurs across innovation precincts. This will lead to the next step in the Internet revolution, allowing everyday objects to be connected to computer networks, opening up an infinite world of opportunities which are yet to be imagined, and currently exists only in the minds of our children.

Space technology also holds the keys to exploring a human future beyond earth. Exploration throughout the solar system will help us develop technologies such as advanced robotics, health and medicine, transportation, power generation and energy storage. The global nature of space exploration encourages trust and diplomacy between nations, collaborative research, and international preparedness for potential catastrophic events such as asteroid strikes.

NASA aims to send humans to an asteroid by 2025, and to Mars by the 2030s, to join the two operating rovers, Opportunity and Curiosity. Billionaire Elon Musk, founder of SpaceX, is even more ambitious, with a vision for manned missions to Mars by 2022, using successfully tested reusable rockets. Technologies like this are bringing costs for space flight down significantly and accelerating change.

South Australian start-ups like Fleet (who have a vision for 75 billion ‘Internet of Things’ devices connected by an army of nano-satellites by 2025) and Neumann Space, are leading the charge in South Australia.

The SA Schools Space Mission and Neumann Space

Neumann Space’s signature invention is the ‘Neumann Drive’, a solar-electric ion thruster that uses cheap and readily available magnesium metal as fuel. This technology promises to revolutionise space travel, potentially enabling space-based return trips to Mars without refuelling. The Neumann Drive is ready for a year of space testing, and South Australian students now have an unparalleled opportunity to hitch a ride to the International Space Station with Neumann Space, sending physical experiments into space with their Facility for Australian Space Testing (FAST) program.

Neumann Space partnered with Airbus Defence and Space (Airbus DS) – the world’s second largest aerospace company, signing the world-first commercial contract to access Project Bartolomeo – an innovative external commercial payload platform aboard the International Space Station (ISS). DECD have signed the first agreement to purchase an initial 1kg of space on the Bartolomeo platform via Neumann’s FAST program.

Students from South Australian government schools are now able to pioneer Australian school space experimentation, in this Australian-first opportunity to send physical experiments into space. The SA Schools Space Mission supports schools to link with South Australian industry and the wider education sector to design and implement ‘non-returnable’ space experiments (2017-2018) to be launched in February 2019 on a supply mission to the ISS. Data will be collected from the space experiments for a year after launch until early 2020.

Every school application (5 minute multimedia presentation) will be showcased in the DefenceSA/DECD exhibition area at the 68th International Astronautical Congress (25 to 29 September 2017). This will facilitate feedback from the space community, with 4000 national and international delegates attending this major South Australian event at the Adelaide Convention Centre.

More information and extra detail will be presented at the Mission Information Evening on Tuesday 13 June (5.30-8pm) at the Education Development Centre, 4 Milner St, Hindmarsh.