

The Advertiser

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Elon Musk Is Planning To Colonise Mars

—SA News

How South Australia could propel itself to a big share of the \$400 billion global space economy

Matt Smith, The Advertiser
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- [Adelaide astronaut Andy Thomas calls for national space agency](#)
- [Billionaire Elon Musk to reveal plans for Mars in Adelaide](#)
- [Post-Holden cash could boost South Australia's space industry](#)

IN two weeks, Adelaide will welcome an estimated 4000 space industry heavyweights from around the globe.

The International Astronautical congress, which has been held every year since 1950, is the premier meeting of the global space community.

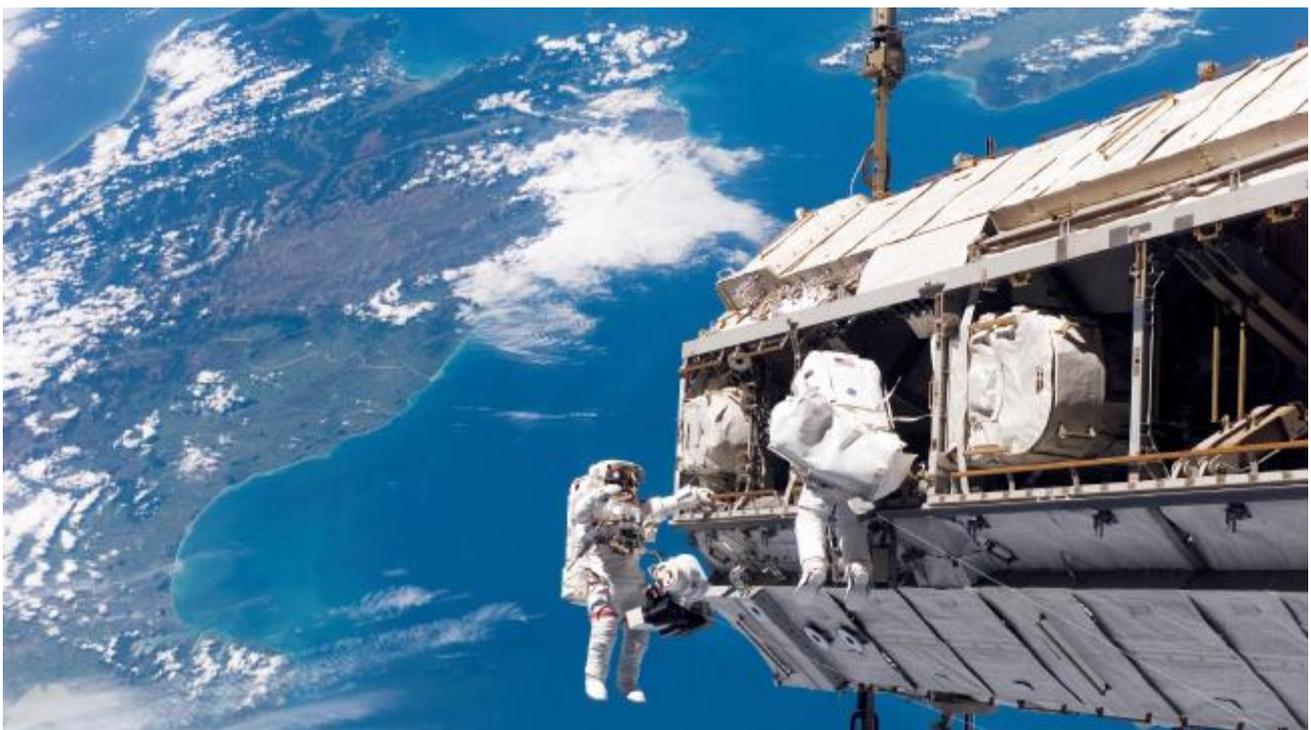
Hosted by the International Astronautical Federation, International Academy of Astronautics and International Institute of Space Law, this year's event will include lectures and presentations about life on Mars, outer space settlements, solar sailing, space junk retrieval missions and South Australia's role in the development of space tugs and buses.

Founder and chief executive of Space X and Tesla, multi-millionaire businessman Elon Musk, plans to provide delegates with an update on his plans for colonising Mars.

South Australian-born astronaut Andy Thomas will deliver a keynote address at a networking event with guests including heads of space agencies, astronauts, international parliamentarians and senior industry representatives.

One of the world's leading science educators, Planetary Society chief executive Bill Nye,

will discuss solar-sailing spacecrafts that are seen as the possible future of interstellar space travel.



 A view of Earth as astronauts perform a spacewalk at the International Space Station.

The theme for the congress is “Unlocking Imagination, Fostering Innovation and Strengthening Security” and the State Government and the Space Industry Association of Australia believe the event comes at a perfect time for Australia as the push for a space agency grows.

This year, the congress will be targeting secure access to satellites that provide communications, timing and navigation services and remote-sensing data — a sector in which SA has proven expertise.

It is only the second time in the event’s history that an Australian city has hosted the event — after Melbourne in 1998.

SPACE DURING THE COLD WAR

IN the mid 1950s to the late ’60s, Cold War rivals the United States and the Soviet Union were engaged in what was referred to as the “space race”.

It spawned pioneering efforts to launch satellites, space probes and, finally, human spaceflight.

On April 12, 1961, Soviet cosmonaut Yuri Gagarin became the first human in space, making a 108-minute flight on Vostok I.

On February 20, 1962, John Glenn he became the first American to orbit the Earth, circling it three times in the spacecraft Friendship 7.

The space race peaked with the July 20, 1969, landing on the moon of America’s Apollo 11.

When Australia launched its first satellite — from South Australia in 1967 — it joined a select group of countries known at the time as “The Space Club”.





📷 The International Space Station. Australia launched its first satellite from South Australia in 1967.

Members included the US, the USSR, France, Italy and Canada.

It is often claimed that Australia was the third or fourth country in space. However, Australia in Space author Kerrie Dougherty believes Australia was beaten to the feat by France and Italy, making it the fifth country in space.

Regardless of the placing, Australia was seen as a national leader in space during the 1950s.

In the ensuing years, Australia has played a key role in space exploration and surveillance.

The Honeysuckle Creek NASA earth station, near Canberra, received and relayed to the first TV images of astronaut Neil Armstrong setting foot on the moon.

Pine Gap, near Alice Springs in the Northern Territory, is operated by both Australia and the US and is partly run by the Central Intelligence Agency, the National Security Agency and National Reconnaissance Office.

The station is a key contributor to the NSA's global interception efforts.

Despite Australia's assistance in a number of space operations, we still do not have a dedicated space agency — the only OECD country not to.

There are 79 space agencies in the world including a number of joint collaborations.

The space agencies of the US, Japan, China, India, Russia and the ESA (a consortium of national space agencies of several European countries) are regarded as the biggest in the world.

Even smaller and lesser-known nations such as Costa Rica, Azerbaijan, Thailand, Kazakhstan, Lithuania, Mongolia, Uzbekistan and Turkmenistan have a space agency.

The Federal Government is currently reviewing Australia's space capability and whether there is a need for a space agency.



📷 A rocket launched at Woomera Rocket Range in the 1950s.

JOINING THE SPACE CLUB

AT 2.19pm on Wednesday, November 30, 1967, Australia launched its first satellite into space.

The 1.59m-high, 45kg satellite known as WRESAT was fired using a modified American Redstone rocket from the Woomera Test Range in the state's Far North.

A large party of journalists and VIPs, including then Supply Minister Sir Norman Henry Denham Henty, watched on as the white rocket, emblazoned with a blue kangaroo logo, launched in a move that cemented the nation's reputation as a world leader in space exploration.

The Liberal Government of the day had not shown much interest in developing a space program and Senator Henty reportedly had to get Cabinet approval for the project on the promise of gaining international acclaim.

Australia became the seventh nation to launch an Earth satellite and, it is understood, the third to launch one from its own territory — after the Soviet Union and the United States.

A front-page story in *The Advertiser* the next day proudly boasted that “Australia last night confirmed its membership of the exclusive ‘space club’ as her first satellite continued in orbit after a copybook launching from Woomera in the afternoon”.

The launch prompted congratulations from US President Lyndon B. Johnson, who was quoted as saying “WRESAT shone as brightly as the Southern Cross”, according to Kerrie Dougherty in her book *Australia in Space*.

The *Advertiser* reported Prime Minister Harold Holt as describing the “most notable scientific achievement” as a remarkable advance in the space field for Australian scientists.

History shows that moment of glory was short-lived — WRESAT 1 was never followed by a WRESAT 2.



📷 Flinders University's Dr Alice Gorman is a leading figure in space archeology.

“The fact that WRESAT had no succession was not due to any failure on the part of its technical and scientific development teams but to government disinterest and

an inability to perceive the long-term benefits to Australia that could have accrued from a homegrown satellite program built upon the success from WRESAT 1,” Ms Dougherty wrote.

Australia is currently the only OECD country without a dedicated space agency — a situation described by the State Government as embarrassing.

But on the eve of Adelaide hosting the 68th International Astronautical Congress, a gathering of space industry heavyweights, there are hopes that Australia could soon make the first steps required to lead it back to a proud member of the “space club” as it had done so proudly 50 years ago.

DR SPACE JUNK

Sitting in her upstairs office at Adelaide’s Flinders University, surrounded by Star Trek and space paraphernalia, Alice Gorman — an internationally recognised leader in the emerging field of space archeology — points to WRESAT 1 as an example of what can be achieved in SA.

“When you think about that, it is extraordinary but most Australians don’t even know about it,” Dr Gorman tells the Sunday Mail.

“We have forgotten that, once upon a time, we were right up there with the leaders of space exploration.

“We’ve forgotten about all of that expertise, all of that infrastructure and all of that achievement in space.”

Dr Gorman says the upcoming Congress — which is set to attract more than 3000 national and international delegates, including the world’s leading space agencies and billionaire space company owner Elon Musk — is “the wake-up call” for Australia.

“We have to get back into that position we once held, which was out there as a space leader,” Dr Gorman says.

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International Space Station captures view of Hurricane Irma

“It makes a lot of sense for SA to be a catalyst for this. We have Woomera, we have a number of the space start-up companies, we have a lot of support from Defence SA and we have State Government support.

“So there is an idea that SA is the space state. My little vision is that this will be a numberplate that we see in the future.

“It’s almost like we’re afraid that if we stick our little poppy head into orbit and someone else, probably the US, is going to come along and go ‘Chop, gone. See you shouldn’t have done that’.

“It seems there is a culture of timidity in being seen to being ambitious in space.”

Dr Gorman agrees with the sentiment of retired Canadian astronaut Chris Hadfield, who says Australians need to leave the country if they wish to become astronauts.

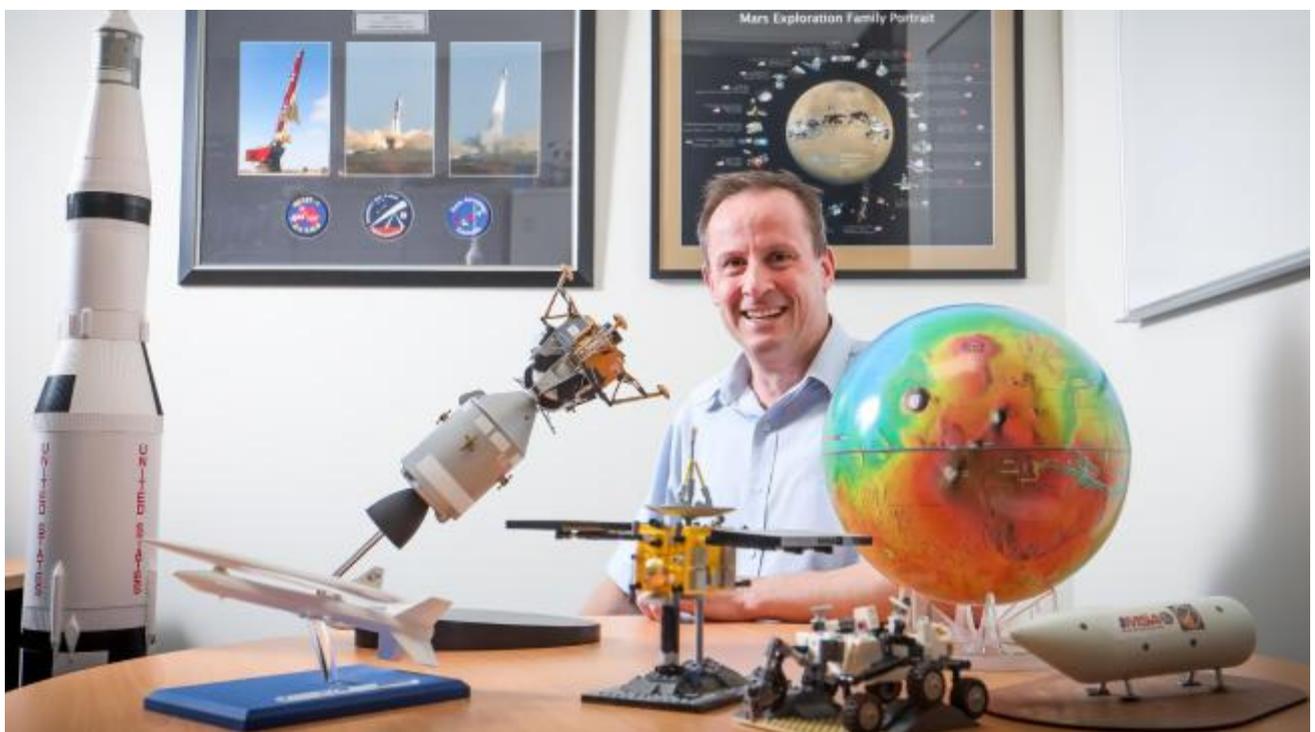
But she believes there are still opportunities for Australians to become space-ready.

“For a lot of Australians, human space flight is what they think space is about. And it’s a shame there’s not something we can offer them,” she says.

“Maybe we’re not going to start our own astronaut-training programs but, hey, that isn’t the worst idea.



supporter for an SA space agency.



 Peter Nikoloff one of Australia's most respected figures in the space business industry.

As the co-founder of Nova Systems — a defence, aerospace and satellite communications company that has grown its space/satcomm revenue from \$1 million to \$15 million within five years — he knows the potential of the industry.

“We’re not asking for a NASA-style space agency that spends a huge investment in exploring the universe and going to the moon and things like that,” he says.

“Australia can’t afford that level of investment exploration. Virtually all of Australia’s investment in space, and what we do today, is around capabilities that benefit society and national security.

“That’s the focus. In SA, because we have a very strong defence and electronics sector, it’s a perfect place to grow the sector.”

The Australian space industry currently generates estimated annual revenues of between \$3 billion and \$4 billion. It employs between 9500 and 11,500 people from its 0.8 per cent share of the global space economy.

Mr Nikoloff believes there is an opportunity to double the industry within five years.

“That’s only if the Australian government is prepared to commit to the establishment of an Australian space agency to lead a cohesive national space strategy,” he says.

“The agency should have an aim of capturing four per cent of the world market for Australian industry within 20 years — a fivefold increase in the industry’s current global market share.”

The State Government has raised concerns that, without a strategic plan, Australia will be unable to invest in opportunities including space tourism and commercial space flights, satellite-based navigation systems, 3D printing for space applications, reusable launch vehicles and robotic-servicing technologies for space applications.

Mr Nikoloff says companies are getting close to launching vehicles into suborbital flight.

“I think that, in the next few years, it will really take off in the US and, once people see that it’s safe and they’re having lots of fun, I don’t see any reason why they can’t launch out of the Southern Hemisphere. Australia could have a good opportunity to attract the Asian market.”

He says that, in the more immediate term, Australia just needs to focus on niche sectors in the space ecosystem that will provide more jobs in the future.



📷 South Australia is poised to become one of the world's space industry capitals.

“In Australia, we’ve got a bunch of young, really passionate people who are just passionate about space,” Mr Nikoloff says.

“We’ve just recently lost one of our guys to do some research with the Japanese space agency (JAXA).

“There’s a whole bunch of people who’ve have left and gone to NASA or the European Space Agency because of their exciting programs. We’re a smart country but we need to focus.”

THE POLITICS

In the past three decades, numerous federal and state government reports have examined the virtues of a dedicated and co-ordinated space policy.

In 1984, the Madigan Report — commissioned by Australia’s first Science Minister, Barry Jones, and written by mining magnate Russel Madigan — raised concerns about how little had been achieved since WRESAT.

“It is incomprehensible that this leadership over most of the world would lapse,” the report said, adding that Australia’s “space potential is fragmented and

dispersed and requires to be drawn together and fostered under a national space policy”.

Thirty years later, and the same arguments are being mounted.

But there are hopes that the new Review of Australia’s Space Industry Capability — commissioned by the Federal Government — will finally lead to Australia creating a space agency.

To that end, SA is seen as leading the way in the development of a space economy.

The State Government last year released a Space Innovation and Growth Strategy Action Plan, listing multiple “areas of opportunity” including security, safety, e-connectivity, climate environmental services and more efficient public sector services.

Last month, Premier Jay Weatherill signed a memorandum of understanding with ACT Chief Minister Andrew Barr to work together on the creation of a Canberra-based agency with a prominent presence in Adelaide.



📷 Retired Canadian astronaut Chris Hadfield during his time aboard the International Space Station.

THE ASTRONAUT

On a recent visit to Sydney, retired Canadian astronaut Chris Hadfield pointed to Australia's space history and its credentials.

"You have all of the expertise and raw material that you need. You have the brilliance, you have the people, the question is: Do you want them to stay or leave? And, up to this point, the answer has been 'leave'," he said.

"Most countries choose the same thing. But if you're looking for a parallel, Canada did not.

"Australia has world-leading satellite dishes. When we drive Cassini into the atmosphere of Saturn next month, the signals are going to come through Australia.

"When Neil Armstrong stepped on the moon, those signals came through Australia. The technology exists in Australia but the benefits didn't come here.

"And so, I think, it's just a decision of how — what part of the exploration of the rest of the universe should be within Australia's purview."

When asked whether it was important for Australia to pursue space programs, Mr Hadfield said: "Almost everything exists beyond Earth."

"It's an extremely egocentric and narrow, tiny fragmented bit of the universe that is our planet.

"So it's sort of like saying, 'Why should a teenager ever leave their parents' basement?'.

"You get everything you need in the basement. Your mum brings you food and you can read stuff so why would you ever have to go beyond that?

"Well, the world is a big wide place and much more nuanced and interesting and revelatory than the basement you grew up in. It's really just a question of scale."

THE INDUSTRY

SA's Defence Industries Minister Martin Hamilton-Smith says the space economy is one of five areas the State Government considers paramount in boosting the state's economy.

“Industry now needs to be based on intellectual property. The days of producing cars — a high-volume, low-value, low-margin, and ‘me-too’ technology that can be produced anywhere in the world is going out,” he says.

Mr Hamilton-Smith says Australia has slipped behind the pace in the space economy.



 Martin Hamilton-Smith says Australia needs to force its way into the \$400 billion space industry.

“It’s a \$400 billion industry globally and we need to elbow our way into the room. Our opportunity may be to put things on rockets and use data coming from rockets and satellites and to, perhaps, provide places such as Woomera for the launch of those rockets,” he says.

“But we may or may not be in the business of building the rockets — there may be others that do that better than us. We may need to work out where our niche is.”

Mr Hamilton-Smith warns Australia is at risk of becoming a consumer of new products based on space technologies.

“The tsunami that’s coming toward the global economy is artificial intelligence and self-conscious computing (computers that are aware of their own existence and can relate to the world as an entity),” he says.

“Combined with robotics and biotechnology, these are going to change the way the world economy functions.

“If we’re going to be a customer that doesn’t really understand the technology but buys it, then we become a beggar nation.

Mr Hamilton-Smith says he understands Mr Hadfield’s sentiments but feels it should not always be the case.

“The sort of partnerships you need to get Australians into space require a space agency,” he says.

“You are not a credible player in this industry if as a nation you do not have a space agency and a well-co-ordinated plan to participate.”