

The Australian Space Agency

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Introduction

It is absolutely an honour to be here for the Royal Society of New South Wales and the Joint Academies Forum in what is a very timely and important gathering, and I appreciate the chance to be able to be here. I also pay my respects to the knowledge and traditions of the Gadigal people of the Eora Nation.

What I wanted to do today was give you a quick update of where we are with the Australian Space Agency. I also wanted to turn my attention to the recent announcement by the Prime Minister that Australia would join the United States on the “return to the Moon and on to Mars.”

Establishing the Australian Space Agency

Nations establish space agencies for many different reasons. It may be to demonstrate global dominance in technological development. Other countries look to the inspirational capacity of science, and we’re seeing that now with India inspiring a whole new nation of young graduates coming forward in that country. The Australian Government’s case was absolutely clear that the purpose here was to diversify our economy. I think we’ve been surprised as well by the capacity of space to inspire this country.

So we set ourselves the purpose of transforming and growing Australia’s space industry, to lift the broader economy and improve the lives of all Australians. We

know as a small country we simply cannot do that without the global partnerships that we will need to participate in. This is one of the most commercially focused purposes of any space agency in the world.

There are some very important values that we used to establish the Australian Space Agency. We wanted to be known as a responsible citizen in space. We felt there was a real role for us, not just globally, but also in our region over time to be that very important voice for a rules-based order in space and to do our bit at the global table.

We have the entrepreneurship, we have the “can do” attitude, we absolutely have the ideas and the talent, we have the capacity to run through the legs of giants — we’ve just got a little bit of catching up to do, and these are some of the values that absolutely run through the Agency.

In terms of what we’re responsible for, it is civil space policy and strategy for the regulatory piece. We coordinate civil space activities, and we are also looking to inspire and engage the Australian community. This is within the broader context of supporting the growth of the Australian space industry, and not just growth, we truly want to see and facilitate, and encourage and catalyse as much as possible a transformation of the industry.

Year one for the Australian Space Agency

One of the first things we needed to do was to modernise our legislation. Very early on,

after the establishment of the Agency in July, in August 2018 our team managed to update the Civil Space Act into the *Space Activities Amendment for Launches and Returns*. A couple of key things in there: we needed to make sure our rules and laws covered the launch of spacecraft from aircraft, something it didn't actually anticipate, and also high-powered rockets. The Agency has been in consultation around the country and has written the rules for that, and we're now working with the industry on implementing those rules.

We set ourselves the goal of engaging the nation. We actually set ourselves the goal of five million Australians in our first year would hear, see or read about the Agency. We felt that one in five was actually a pretty good target, but we blew past that literally in the first few weeks. By October 2019 we now have touched 110 million Australians. Now, I know we don't have 110 million Australians; it means that people are seeing and hearing about this new endeavour multiple times.

Importantly, if you're going to transform an industry, you need to get out to where the industry is which is in the states and territories. We have worked very extensively with the Premier's and First Minister's Office in each of the states and territories. In fact in our first year, every 12 weeks myself, my deputy and a team visited every state and territory to engage in that dialogue because the states and territories themselves need to have strategies for the growth of high-tech jobs.

We set ourselves the goal of stimulating an investment of \$2 billion into the space sector, a billion of which we wanted to come from outside Australia into the country. This was not about moving around money inside the country because it's the investment of capital in the sector that truly grows jobs. We set ourselves that goal to do that in the

next few years — we're already at \$1.6 billion of forward-projected capital project pipeline, and that includes R&D investment, and \$700 million of that is inbound capital.

If we looked at that two years ago, it was literally just a couple of hundred million. So this investment of capital is also the world and others taking the signal from the Australian Government and the stimulus that we're seeing around the states and territories, and saying Australia is serious about space. As a result, it has created a good platform for investment.

One of the things that the nation told us is to do what is not being done. We love what CSIRO is doing, we love what Geoscience Australia is doing, we even like what ACMA is doing (the regulator), but we need one door. We need one door, one voice — we're missing out on these opportunities that can truly only be brokered from government to government and through agency to agency.

We're now partnering with multiple agencies around the world. That's as well as the most recent agreements that we've had in the last month with New Zealand, DLR, and we've updated as well with ESA and the Italians. So we really are starting to open doors for the purpose of our researchers and industry to walk through those doors.

We're at the cusp of a transformation from the investment in space by governments. Decades ago it was 80 per cent government funding, 20 per cent commercial. That has now completely flipped around and we're seeing government still having a very significant role here. We're seeing the commercial entities now dominating the investment, and we're seeing the industrialisation of low-Earth orbit in itself, so we knew we needed a mechanism to be able to join together with industry partners to be able to grow and transform this industry.

As part of this we formed the Statements of Intent and Cooperation. These basically outline our strategy, and ask industry what they are going to do to support the objectives of the Agency, what they are going to do to invest in internships in R&D and in establishing facilities here in Australia, and what they are going to do to stimulate jobs. I think these have helped generate that interest that we're seeing and the investment.

National civil space priorities

We are a small country, so we need to focus on those things that work well for us and where our competitive advantage is.

- *First of all; position navigation and timing.* Australia has made the commitment to bring our positioning in our maritime, our land and our airspace up to 10 centimetres accuracy. Importantly, the decision to move to precise positioning in our capital cities where we can take additional corrections from the mobile phone towers and get down to perhaps three to four centimetres. That means you can automate transport, you can do all sorts of things, so a really wonderful start to that investment. Geoscience Australia will do that.
- *Earth observation:* the next generation of communication, laser optics, laser radio, some extraordinary work there.
- *Space situational awareness:* taking our role here in the Southern Hemisphere as important.
- *Leapfrog R&D:* was actually a grab bag for all of the things that we're really good at, but we need to be world class and out there in the supply chains.
- *Robotics and automation:* a clear leader for Australia.

- *Access to space:* when we first started it was like "It's not about rockets," but it is about rockets now.

In terms of the NASA announcement, we will join NASA to "return to the Moon and on to Mars." It's a \$150 million program over five years. We'll do demonstrator projects that showcase our capabilities. We'll also work on some very significant major projects and support access of companies and researchers into the supply chains.

One of the key things of going back to the Moon and Mars will be the search for water. You need an awfully big rocket now to do this. One of the rockets; the Space Launch System, is a payload of 26 tonnes. This is the NASA program Artemis 1 first of all orbiting the Moon, so taking human spacecraft, then taking humans in an orbit around the Moon, then building out the components of the Gateway, the power propulsion, the human habitat, and then also making sure that there's a lunar lander on there. Then Artemis 3 will be the crewed mission to the Gateway and the lunar surface from 2024.

The next phases of this, and Australia has the capacity to join in this up to Artemis 7, this is really living and working now on the Moon and testing those technologies and things that we will need to go to Mars. In December 2013 the LADEE mission noticed that there was water vapour coming particularly connected with meteorite showers, so one of the first tasks of the mission to the Moon will be to see if we can tap into that water that sits possibly below the surface.

Conclusion

Overall, we're working very hard to build an Agency of which Australia, hopefully, will be proud. Thank you.

