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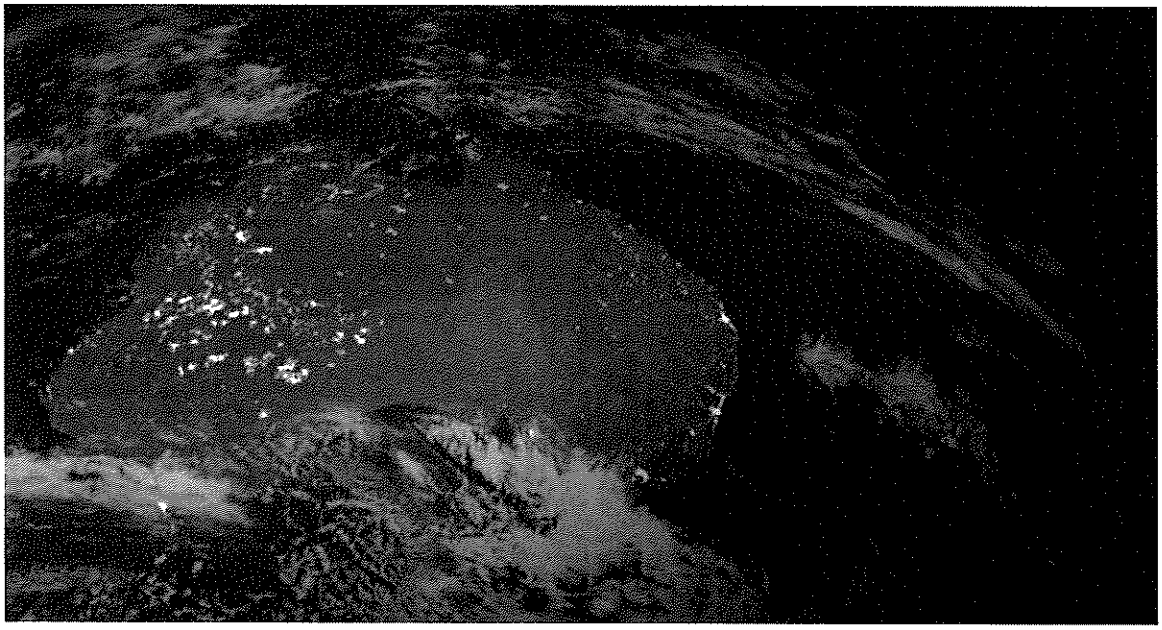
Australia's leading space organisation prepares for take off

UNCATEGORISED

The head of the recently formed SmartSat CRC explains how recent global events reinforce the importance of Australia developing its own sovereign capability in space.



The new SmartSat CRC has grown to include 100 different organisations that have invested more than AUD$190 million that, together with $55 million in Australian Federal Government funding, represents a $245 million research effort over seven years.

SmartSat CRC CEO-Designate Professor Andy Koronios said the partners range from international defence primes to universities and startups and have all been tasked to create sovereign game-changing technologies to make Australian industries more competitive and secure

Prof Koronios said recent global events point to a more uncertain and unpredictable world and illustrate the importance of having a sovereign technological capability, especially in defence and national security.

"For example a no-deal Brexit could mean that the UK may cut its umbilical cord from the EU, and this in turn may shut them out from space work that they are currently working in and paid for, programs like the Global Navigation Satellite System, Galileo program which provides GPS type positioning and navigation services or Copernicus which provides global, continuous, autonomous, high quality, wide range Earth observation capability," Prof Koronios said.

He said the UK would now be without much sovereign capability in these important areas.

By developing its own capabilities, according to Prof Koronios, Australia would not only protect its national security from unforeseeable future events like Brexit but also improve the economic outlook in the important industries.

"When people talk about Industry 4.0 you cannot achieve much of that without some space mediated technology. That's what we have to provide and help build an Australian sovereign capability in that area. At the moment, we are just simply buying external products and earth observation services."

Being able to control satellite applications was especially important in agriculture Prof Koronios said.

"We collaborate very well on crop yields with the Chinese Academy of Science. The Chinese have so much advanced modelling, and of course they've got their own satellites, that they can actually have a very good understanding of our crop yields. And they give us that information. But we receive this information late, they use it first, and then give it to us," he said.

This means Australian agriculture relies on estimated yields from mobile ground inspectors for future trading, which isn't as accurate as satellite information.

"This gives the Chinese an advantage in future price negotiations because they know more about our yields than our farmers know and that's not a good thing."

Another reason to develop Australian technologies was to ensure the country is not bound by other nations on price or access.

"If we don't develop the science ourselves we are beholden to what prices the provider puts on us accessing that technology," Prof Koronios said.

"And also very important is that you never get your own capability built so over time you become dumber and dumber and more reliant on the technologies of others."

"For example, if someone sells us a satellite technology, say, at 15 per cent profit and let's say another 10 per cent goes towards R&D to improve the next generation of their satellites, this means we are paying 25 per cent, and I'm guessing these figures, for them to become smarter than us. That's dumb."

He said it's the same argument for people questioning why the Americans want to go back to the Moon.

"People ask 'why are you going to the moon? Fix the problems here.' But by going to the Moon, you are getting the knowhow and building that technology that you can actually apply on the earth and make our lives easier, healthier and more comfortable."

Based in Adelaide, South Australia, the SmartSat CRC will tackle these sovereignty issues by bringing together experts in advanced satellite technologies around communications and IoT connectivity, sensors and intelligence, and next generation Earth observation data services.

Prof Koronios said they have now established the five advisory boards that will begin satellite technology projects by January 2020 in the specific areas of defence, mining, agriculture, logistics and transport, and telecommunications.

"These are among the biggest industries that we have in Australia," Prof Koronios said.

"For example our end-user advisory group on transport & logistics will be very critical as we are a very big country and therefore we need to ensure that our logistics and transportation systems are enabled by satellite technologies. The telecommunications advisory group will tell us how we can best augment the terrestrial communication systems so that when you leave Adelaide and you go 500 kilometres north, you still have seamless mobile connectivity".

"These groups will tell us what is the best research for us to do that has the biggest impact for our society and our industry," Prof Koronios said.

This integrated capability will allow industries and other countries needing solutions to problems to look to the SmartSat CRC for expertise in Australia.

"We are a coalition of the best universities, research organisations and industry with space capability in Australia," Prof Koronios said.

"That means that we can become a one-stop-shop for collaboration with other countries. Our mission is to become one of the space R&D powerhouses in the region."

To achieve these goals Prof Koronios acknowledged that the SmartSat CRC needs to build its capability and is doing this through a number of initiatives.

"We have offered co-investment with a number of universities for them to establish professorial chairs and bring international people to their universities to fill the gaps in capability," he said.

"The other initiative is that we will provide scholarships to about 100 Australian and international PhD students to study in the areas in which we will be doing R&D to produce highly rated researchers and therefore build Australian capabilities substantially.

"At the same time, we will be working with the universities and the VET sector to produce more than 400 space engineers, scientists, IT professionals, data scientists, and technicians.

"And of course as the industry grows we will encourage 'innovation immigration' where we look at the various other countries that have capability and build relationships with them and attract many of these experts in Australia."

The SmartSat CRC has a unique opportunity to pull together what Prof Koronios calls "fabric of knowledge" by attracting the best brains to the centre.

As Australia's newest large-scale space organisation the CRC has taken the opportunity to ensure that not only its science is cutting-edge but its governance is also best practice and has a balance between geography, generations and genders.

"We are looking to help the new generation of space scientists and engineers, which is primarily not as gender balanced as it should be," Prof Koronios said.

"At the moment with engineers and IT people, if you get 12 per cent (women in a organisation) you are doing well. We want to change that and say 'no, you still have a long way to go and you are doing well when you have 30, 40, 50 per cent women in space engineering organisations, not 12'.

"This is not just about equity, which of course is reason enough, but also about economics. If you have a balanced workforce it's more profitable because you have many more of the best brains, instead of losing out of the smart capability of females because they do not find it attractive to participate in this sector."

The SmartSat CRC has also created a subsidiary company within CRC which will have as its members the more than 40 space startups that have joined the CRC. The role of this company will be to have a strong voice within the CRC and to undertake activities such as provide expert advice to start-ups, access to satellite fabrication and testing facilities as well as other specialist space infrastructure that will help these start-up companies survive and thrive in this internationally competitive area.

Prof Koronios and the SmartSat CRC would help host nearly 900 space leaders, entrepreneurs, researchers and students at the 8th Space Forum and the 19th Australia Space Research Conference beginning next week in Adelaide, South Australia.

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