

WATCH THIS SPACE

DR VALANATHAN MUNSAMI, CEO OF THE SOUTH AFRICAN NATIONAL SPACE AGENCY (SANSA), TALKS ABOUT IGNITING THE SPACE ECONOMY AND ITS COLLATERAL BENEFITS

WORDS EUGENE YIGA

HOW IMPORTANT IS THE SPACE ECONOMY TO AFRICA?

Within the African Union, you have eight commissions. And if you look at the 40 objectives in total, 35 of those require the use of space applications. So, in effect, 90% of the work of the African Union is reliant on space applications.

How is SANSA supporting this?

In the last few months, we've been able to secure just over R4.5 billion that we'll spend to strengthen our infrastructure. What this would mean, if you follow the value chain, is that we'll have a suite of satellites that we'll be contracting out to industry, which has this capacity and capability to build them. We'll put a number of these satellites into orbit and then beef up our ground segment. In fact, this ground segment is also being positioned in conversation with NASA for their Deep Space Network.

What does this involve?

NASA is going back to the moon and to Mars. It requires a ground segment that talks to the various spacecraft on these missions. So we're looking at hosting the fourth Deep Space Network (there's one in Australia, one in Spain, and one in the US). If it's approved, that will see four 34 m diameter dishes in a town called Matjiesfontein in the Western Cape that will essentially be able to talk to some of these satellites. We're hoping that the green light will be given soon.

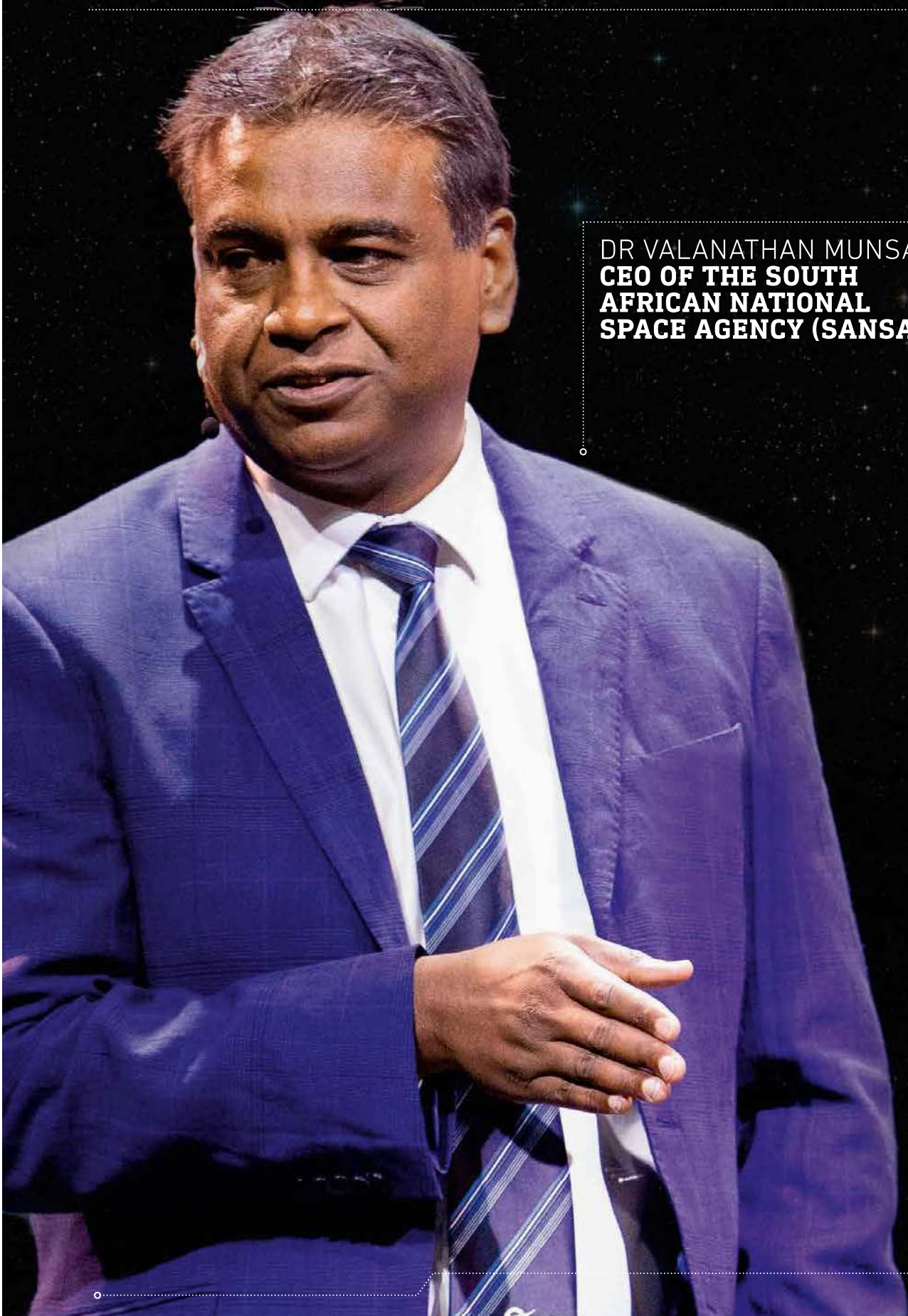
The unveiling of South Africa's [OSR] Optical Space Research Laboratory.



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movers and makers **TECH**

DR VALANATHAN MUNSAMI
**CEO OF THE SOUTH
AFRICAN NATIONAL
SPACE AGENCY (SANSA)**



TECH movers and makers

What is the role of the ground stations?

As the satellites pass by, you communicate with them to look at the housekeeping in terms of the batteries and whether the electronics are functioning okay. And then you'll also bring the data back down. Once you've downloaded the data, you then push it through into the data segment. So we're looking at setting up a new capacity in terms of cloud storage and processing.

What other new technologies are you working on?

We have a data archive that extends back to 1972. But if you had to look at a series of satellite imagery from any particular location in South Africa, since the 1970s to the present day, it could take you up to six months to process. So we're bringing in a system called a data cube. The system packages the data in such a way that processing will take you three hours as opposed to six months.

SANSA CEO Valanathan Munsami (right) with NASA's Marcus Watkins (left).



How do you define the success of a space programme?

We're finding convenient ways – given big data, artificial intelligence, and the Fourth Industrial Revolution – to streamline and ensure that processes are much more efficient than we're used to. And in that particular value chain, we also bring in the industry. But at the end, we also want to produce products and services. That essentially defines the success of a space programme. It's about whether we're able to deliver on the products and services to the various government departments.

What is SANSA's role within government?

In this domain, we're speaking to what's called the district delivery model. There are a number of districts that we have to push government services into. And so that's what we're looking at from a public goods perspective, even a commercial perspective – to pull through that data, repackage it into information, and bring it down into the ground where it can be used.

How does your funding get allocated?

In terms of actual expenditure along that value chain, 75% of the cost is on satellites, 8% is on the ground segment, another 8% on the data segment, another 8% in terms of producing products and services, and at least 1% on human capital development. At the moment, we train and support about 50 Masters and PhD students in space science and technology. But we're looking at upping that investment in the next few years to get more people as the system starts to grow. **T**



SANSA CEO, Dr Valanathan Munsami (right) and CSIR CEO, Dr Thulani Dlamini (Left) signing renewed Memorandum of Understanding (MoU) between the Department of Science and Technology (DST) and the African Union (AU).

Africa in Context

Africa covers 20% of the Earth's land surface and accounts for 15% of the world's population. Geographically, you could fit in the continental United States, Europe, India, China, and Argentina, into the 30.3 m km² that Africa takes up. This makes it clear that the scale of the environmental issues we're dealing with is way bigger than any of these countries put together.

If you look at it from the disparity point of view in terms of developing countries versus developed countries, what Africa spends on space technology is insignificant versus other countries. The US, for example, spends \$40 billion per year. In Africa, we're not even reaching \$100 million. That gives us insight into our environment.