



PRESS RELEASE

Tellumat
March 29 , 2011
Page 1 of 1

MeerKAT engineers SA innovation

Duncan Alfreds

Cape Town - The MeerKAT radio astronomy project has illustrated the engineering prowess of local companies in delivering world class hardware.

The development of the hardware to process the signal for the MeerKAT (Karoo Array Telescope) is one such example that was designed in SA and the second generation PC board is being manufactured by a local company.

"Every one of the components on the Roach board is critical, not just in terms of placing, but also checking," **Tellumat** business development manager Eugene van der Watt told News24.

The Roach (Reconfigurable Open Architecture Computing Hardware) is integral to the MeerKAT project which aims to place 64 linked radio antennae near Carnarvon in the Northern Cape Province.

This project is part of South Africa's bid to host the SKA (Square Kilometre Array) telescope in competition with Australia. The MeerKAT forms a test bed to determine which technologies will best suit the international project.

Second generation

The MeerKAT team have been designing hardware to survive the harsh environment of the province and there have been ongoing design modifications as the instrument is fine-tuned.

Three cold receivers are installed and the remaining four should be ready by May. These receivers amplify the signal received by the antenna, without adding any radio noise which would destroy the radio waves from deep space.

"We're still doing engineering tests and toward year-end, we'll do science tests and then there'll be more images," said SA SKA project director Dr Bernie Fanaroff.

The first generation Roach board was manufactured in the US, but the second generation was designed and manufactured in SA.

The board has other applications because of its use of field-programmable gate array technology.

"It's got very high speed networks and could be used in telecommunications," Roach lead designer David George said.

He said that the team was looking to take advantage of Moore's Law which postulates that computing power will double every 18 months to build better hardware in the future.

"**Tellumat** has skills in design and manufacturing and we guided the SKA team in small ways. They supplied all the components, and we populated the two, but it takes a full day to produce this board," said Van der Watt.



PRESS RELEASE

Tellumat

March 29 , 2011

Page 2 of 2

In comparison to an ordinary computer motherboard which has around 700 - 800 components, the Roach board has 1 414 components, some of which are quite expensive because of the specialised functions they are required to perform.

Van der Watt rejected suggestions that shipping manufacturing of the board to China would be more cost-effective.

Ecosystem

"This is specialised production and because you need world-class manufacturing, you can't just ship off to China.

"Sure, in some areas where the margins are tight it's okay to move manufacturing overseas, but where you need this level of quality, that may not be appropriate."

The Roach board is open sourced which means that the SKA bid team has opened the specifications to any company to build and sell the boards.

It is hoped that this will create an ecosystem where the board's functionality can be expanded into other fields that require digital data processing and the team is already looking at the next generation of the hardware.

"We're definitely looking at Roach 3 or whatever it will be called," said George.

"If you've got a bunch of digital data, then this is the board. And if the boards are sold, it builds a community," said Van der Watt.

"For **Tellumat**, it's a confirmation of our world class ability."