



Kobus Roux

“South Africa’s telecoms operators have failed the masses, judging by the poor fixed-line penetration in this country.”

BY LAURA FRANZ-KAMISSOKO

AFRICA HAS some 850 million broadband-unconnected people, and it is with these masses in mind that the CSIR launched its Wireless Africa project a few years ago.

Now under the stewardship of ICT-focused national research institute, Meraka, the project is beginning to produce some viable solutions for connecting the rural unconnected, predominantly in the field of mesh networking.

Kobus Roux, who oversees the Wireless Africa project in his capacity as competence area manager: Wireless and Access Technologies, relates that, in 2003, the CSIR redirected its focus to doing more fundamental research into national priorities, in this case in the telecoms space, under the stewardship of newly-appointed president and CEO of the CSIR, Dr Sibusiso Sibisi.

“South Africa’s telecoms operators have failed the masses, judging by the poor fixed-line penetration in this country. But irregular electricity infrastructure and low population densities are also to blame,” he

PROFILE

First inch in the last mile

The CSIR’s Wireless Africa project begins to make strides into mesh networking know-how that could help connect Africa’s 850 million unconnected

admits. The initial research team weighed the various technologies addressing some of these challenges abroad, and settled on mesh networking, based on the success of the technology in community networks in Germany, India and the US, among others. “Mesh networking is low-cost, easy to configure and very reliable,” explains Roux.

“Over time we’ve increased the depth and scope of research into mesh networking technology, and we’ve also considered the social effects of the technology and researched the business models required to make its usage viable,” he says.

Today, the Wireless Africa team is made up of 15 scientists, who are mostly electronic engineers, with access to just under R10 million in annual funding from government and various donor funds.

MESH LEARNING

Its first big project was involvement in the International Development Research Centre-funded ‘First Mile, First Inch’ project in 2005, whereby communications network infrastructure and applications were established with communities in Angola, Mozambique, Zimbabwe and Eastern Cape and Mpumalanga, in SA

Roux indicates that the first equipment was installed in 2005, but that it was several months before the networks were permanently and effectively up and running. “This project was the biggest learning platform for our scientists outside of the internal laboratory,” he admits.

This internal laboratory today consists of a wireless mesh grid of 49 mesh radio nodes housed in the lab at the Meraka Institute. “The reason why we built it was to get beyond the PC simulations. We use it mainly to benchmark protocols – the protocols that apply for a mesh network in a high-density city community differ quite substantially from those of a low-density rural area,” points out Roux.

Thereafter it also got involved in the Zambian LinkNet project, through the

Netherlands Organisation for Applied Scientific Research. After visiting the CSIR, a team from Zambia observed the mesh technology in action, and successfully deployed it.

PUTTING IT INTO PRACTICE

Back home, the Wireless Africa team has a pilot running in Mamelodi, is in the process of setting up a mesh network for a community in the Moutse area, just outside Groblersdal, and has provided its know-how for a private project in Scarborough, a small town in the Western Cape. It is also planning three more pilot community networks in KwaZulu-Natal and, together with Nokia and the Finnish government, is to pilot a mesh network in the Eastern Cape.

“While we get some grant funding from government for our research, we’re always looking for funding for projects,” acknowledges Roux.

Typically, it drives the incremental roll-out of a mesh network to schools, clinics, hospitals and police stations. “We build on government infrastructure, as these institutions generally have electricity and someone to monitor the network,” says Roux.

“Our model is good for operators, because while we work in areas where it’s not commercially viable for them, we do increase demand for broadband links. The mesh networking technology may be contained within a community, but, eventually, everyone wants to get on the internet, and for that you need an outgoing line. While community members can’t afford this line individually, they can as a community, so players like Telkom will still generate some revenue,” he explains.

And as for the longer-term future, the Wireless Africa team continues to probe the challenges that plague rural connectivity – lack of access to power and enabling the technology to cover bigger distances than is currently the case. Watch this space!