ICT helps the blind

By Wilma den Hartigh

30 Jan 2012

A portable voice-based computer for the blind, developed by the Council for Scientific and Industrial Research (CSIR), has been shortlisted in the South African Breweries (SAB) Foundation inaugural Innovation Awards.

The notetaker device is the first invention of its kind in South Africa and was developed by Willem van der Walt, a blind researcher at the CSIR.

Fellow researcher Gerhard van den Berg was also involved in the development of the product.

Van der Walt is respected in the field of information and communication technologies (ICT) for disabilities.

Rewarding innovation

The SAB Foundation Innovation Awards recognise individuals who have unique and practical ideas that can improve the lives of people living in low-income areas.

The main award is a grant of R1-million (US$128 000) with two runner-up awards of R500 000 ($64 000) each.

The notetaker is one of five recipients of a seed grant for further development. The grant includes funding for the commercialisation of the product, which will be supported by the SAB Foundation over a period of two years.

The notetaker was shortlisted as one of 18 inventions, selected from more than 100 entries, for improving the lives of blind South Africans.

According to 2009 statistics of the World Health Organisation, 314-million people worldwide live with some form of visual impairment. Of these, 45-million are blind, and 90% live in low-income countries. Cataracts remain the leading cause of blindness in middle- and low-income countries.

About 2.6-million South Africans are disabled, of which 24% have visual disabilities.

"As a blind programmer, I realised that a much more flexible, localised and cheaper machine could be built than other similar expensive accessibility devices for the blind, available from overseas," Van der Walt says.

Not your ordinary notebook computer

The notetaker is different from a standard notebook computer in that it does not have a screen and only uses speech as feedback to its user.

The computer has a keyboard for input and a voice synthesiser for output.

All its features are customised so that they can be used with a speech interface.

The device provides support for multiple local languages, including English, Sepedi, Afrikaans, Setswana and an experimental isiZulu voice.

Van der Walt says that finding a balance between cost and functionality was one of the biggest challenges of developing the notetaker.

"Finding the suitable hardware for the software was challenging," he explains. "For example, finding hardware with which one can make a good audio recording is not easy when cost, battery life and size is crucial."

The notetaker has been tested in the market at disability conferences and workshops, with successful results.

It is also supported by the South African National Council for the Blind.

The next phase of the project is to develop a production-ready prototype.

Commercialising the product

"I would like the notetaker to come into production and be available in the market through specialised companies such as those currently supplying accessibility technology to the blind," he says.

The customised computer device is easy to operate and can be used by young school children, university students and older people.

There is a gap in the market for an affordable computer for the blind. He believes that the product has the potential to have an immediate impact in the educational and employment sectors.

Blind people can use computers that are connected to Braille keyboards and screens, but the skill and technology is not widely available and is usually only imported.

However, if the product is manufactured locally and is cost effective, it could change the lives of thousands of blind people.

The National Accessibility Programme

Van der Walt's research was part of the National Accessibility Programme.

The main focus of the five-year research and innovation initiative is to help people with disabilities become more integrated into mainstream society, through the use of ICT.

The project was developed by the CSIR Meraka Institute in partnership with a representative group of Disabled Persons' Organisations and the former Office on the Status of Disabled Persons in the Presidency.

The Meraka Institutes the largest group in South Africa dedicated to ICT research.