

UCT CENTRE IN



ICT for Development Centre
University of Cape Town, South Africa

ICT4D @ UCT



Introduction

In response to a growing need within industry and academia, in 2008, the University of Cape Town created a research centre to investigate the use of ICTs in a developing world context.

The field of ICT4D remains poorly defined globally, and the goal of this centre is to provide academic leadership and shape this field so that it best serves those peoples and regions yet to fully engage with digital technology. We are currently producing highly acclaimed MSc and PhD students in this field and are in the process of developing taught courses so that others can gain the necessary skills to work in ICT4D.

At present, this centre is the only multi-disciplinary group based in Africa working in ICT for Development.

Philosophy

The centre takes a multi-disciplinary, human-centred approach to the creation of technology. The solutions we create are based on ethnographic studies of needs within the target community or are built at the request of Non-Government Organisations who have a deep understanding of the communities the work with.

Our technology deployments within a community usually follow an Action Research approach, in that we work with the community to create and evaluate the systems we deploy. However, all our work is conducted according to international best practice as witnessed by our numerous publications in prestigious academic conferences and journals.

Expertise

The staff working in the centre have an excellent track record in capacity building and research in the field of Experimental Computer Science - the kind of Computer Science that builds real systems and then critically evaluates their effectiveness. It attracts students from South Africa, African countries and internationally, and has long been involved in researching the use of ICT for sustainable development. In 1996 Edwin Blake conducted some of the first internationally recognised research in this field, with the CyberTracker project. In 2007 Gary Marsden was awarded the ACM "Social Impact Award" in San Jose, California for his work in this field. In 2008, the group was successful in bringing the ACM DIS conference to South Africa with a special focus on ICT4D; this is the first time an ACM international conference has been held in South Africa.

UCT's Department of Computer Science, from which most of the centre staff are drawn, is one of the top Computer Science departments on the continent (e.g. they have won the "Middle East and Africa" award at the international AMC & IOI competitions). UCT is an optimal location for a research centre in ICT4D to act as a bridge between the developed world and the issues concerning development in Africa. The enrollment of Masters and Doctoral students is steadily increasing and the department has some of the largest numbers of postgraduate students compared to similar departments in Southern Africa.

Research Team

- A/Prof. Gary Marsden: Is a global expert in mobile interaction design; a research field concerned with creating appropriate and effective software for mobile devices. Given the prevalence of mobile handsets in the developing world, many regard mobiles as the de-facto computing platform for the developing world. He has over 10 years' experience in this field and with Matt Jones, wrote a highly popular book on this subject in 2006.
- Prof. Edwin Blake: Is an expert on technology for development and methodologies for working with groups of users who have had no previous experience in digital technology. He has conducted pioneering work in the field, creating user interfaces for 'illiterate' animal trackers in South Africa's national parks.
- Dr Marion Walton: Is an expert in semiotics, communication and digital media. In particular her research has focused on create educational systems for school children and semi-literate adult users.
- Prof. Nic Bidwell: Is a highly accomplished ethnographic researcher. She has conducted long term studies of indigent people both in Australia and Africa (Eastern Cape of South Africa and Mozambique). She is currently Head of Department at the James Cook University in Cairns, but is joining the ICT4D Centre as a Senior Research Fellow in 2009.

Research Collaborations

Our work is carried out with a number of collaborators, both local and international

- NGOs: Much of our work is done with NGOs who already have access to the community with which we wish to work. This includes large national groups such as the Institute for Democracy (www.idasa.org.za) to local groups based in a township (www.learntoearn.org.za)
- University of the Western Cape: We work with the other university in our area which specializes in network infrastructure and its use in development projects. This is complimentary to our own work in that we create the applications that run across such networks
- Hasso Plattner Institute Research School: The HPI has an interest in ICT for Development. It has provided three PhD bursaries for African students studying within the centre.
- Meraka/CSIR: Currently the ICT4D Centre is in negotiations with the South African national centre in ICT research, the Meraka Institute, to see how the two institutions could work together to create national expertise in ICT4D.

Industrial Collaboration

NOKIA

Nokia Research (Kenya & Tampere) are currently funding a research project on the use of digital stories in knowledge preservation within the centre



Nokia-Siemens Networks are currently funding work on handset interfaces to help users manage cost for fixed-mobile convergence in cellular networks

Microsoft
Research

Microsoft Research (Cambridge) are funding work on distribution of multimedia content to cellular handsets within communities

Microsoft Research (India) use researchers within the centre when conducting studies comparing ICT usage in India and Africa



Apple Computer (Education) are funding research into the use of cellular handsets as a platform for learning in tertiary institutions in the developing world

Example Research Projects



Mobile location aware data capture and presentation

In this area we investigate the use of converged mobile phones/Personal Digital Assistants (PDAs) for location aware data capture and guides. This involves further work on the CyberTracker which we first developed in 1996 to allow semi-literate animal trackers to record observations in the field. This has been further extended in our work with Cell-life (www.cell-life-org.za) in using mobile handsets to gather data on patients being treated with anti-retrovirals.



Mobile and wireless rural communication

We have now developed and tested the third iteration of a rural wireless tele-health communication system. MUTI has been deployed in two remote rural areas of the Eastern Cape since 2004. We are currently switching from using laptops to high-end mobile phones that support WiFi and GPRS. We have found that the interface is the single most significant obstacle/opportunity to/for user take-up.



Mobile Deaf communication

Deaf users have expressed the need for a Deaf-to-Deaf remote communication system to give a practical way of communicating South African Sign Language. We have worked with this community for several years.



Mobile multimedia capture and presentation.

Exchanging multi-media content has been a surprising need for mobile phone users who do not have access to PCs and printers. We are developing applications to allow users to share and edit such resources collaboratively.



Mobile Finance

The use of mobile phones constitutes a cheap, safe and effective way of making financial transactions for poor communities. This is a new application area that we are beginning to explore.



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