

## Diagnostic and Treatment Support

### Project 43: Cell Phone Applications for Clinical Diagnostic Therapeutic and Public Health Use by Front Line Healthcare Workers

**Country:** Mozambique

**Sponsoring Organization and Partners:** Microsoft Research, Department of Information Systems and the University of Melbourne

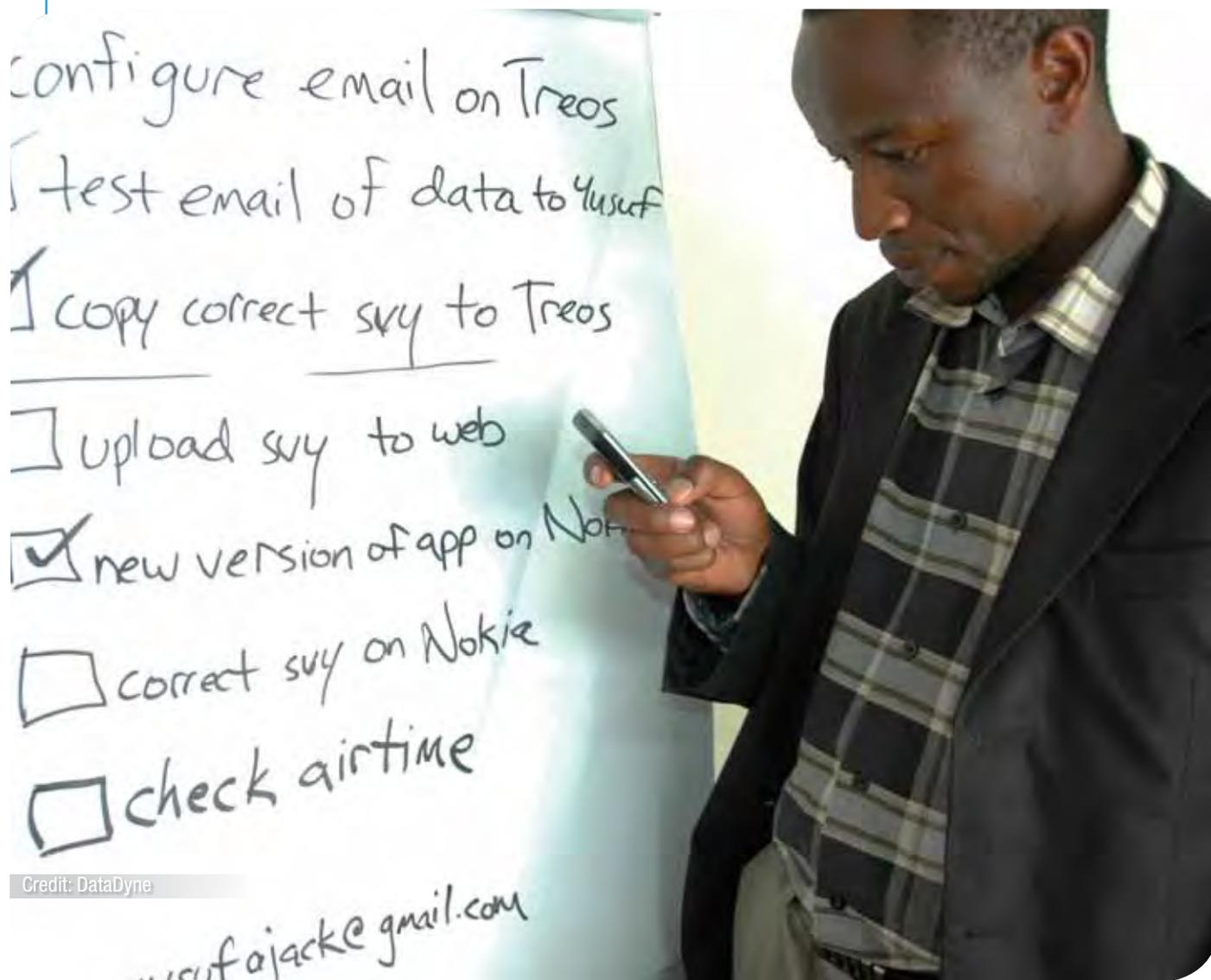
**Application Area:** Diagnostic and Treatment Support

Despite being one of the world's poorest countries, Mozambique has extensive cellular network coverage and a high percentage of health workers who own mobile phones. This project, supported by Microsoft Research, aims to take advantage of Mozambique's 'wired' reality. The project principals, researchers from the University of Melbourne, have created a suite of applications that can run on standard mobile phones. The applications provide Mozambican health workers with diagnostic and analytical tools including reference material in the phone's memory, a calculator for determining drug dosage, and a program for analyzing inputs from medical sensors (e.g., low-cost pulse oximeter probes or a simple electrocardiogram). The project runs from March 2008 to March 2009 and will conclude with an evaluation of the impact and efficacy of the applications suite.

Reference sources:

[http://research.microsoft.com/en-us/um/redmond/about/collaboration/awards/cellphonehealthcare\\_awards.aspx#E2B](http://research.microsoft.com/en-us/um/redmond/about/collaboration/awards/cellphonehealthcare_awards.aspx#E2B)

<http://www.ni.unimelb.edu.au/Research%20and%20Activities/Projects/cell.html>



Credit: DataDyne

## Project 44: Digital Inclusion Kit in Health and Higher Education

**Country:** Argentina

**Sponsoring Organization and Partners:** University of Buenos Aires, Fundapers (an Argentinean NGO) and the Microsoft Research Digital Inclusion Program

**Application Area:** Diagnostic Treatment and Support

Patients in marginalized areas in both urban and rural Argentina lack access to specialized medical centers, which are often the only sites where vital diagnostic tools are available. Researchers at the University of Buenos Aires are creating a Digital Inclusion Kit in Health and Higher Education (DIKHAE), which will allow smartphones to wirelessly connect to diagnostic tools like electrocardiograms, enabling sophisticated diagnoses to be conducted remotely. The test results can be stored on the smartphone until it is in range of a cellular signal, and then uploaded to a patient records system. A pilot conducted in 2006 received high marks from medical professionals for the system's usability. Project sponsors also envision that the DIKHAE will be able to connect to X-ray, MRI, and other tools in the future.

Reference sources:

<http://isc.dc.uba.ar/digital-inclusion>

<http://research.microsoft.com/enus/us/collaboration/papers/buenosaires.pdf>

## Project 45: Ericsson and Apollo Hospitals Initiative

**Country:** India

**Sponsoring Organization and Partners:** Ericsson and Apollo Telemedicine Networking Foundation (ATNF)

**Application Area:** Diagnostic and Treatment Support

In summer 2008, Ericsson and Apollo Telemedicine Networking Foundation (ATNF) signed a Memorandum of Understanding to “implement telemedicine applications over broadband-enabled mobile networks” in India. The initiative is anticipated to both decrease costs and improve health care outcomes, particularly for rural populations. The project specifics have not yet been announced, but mHealth will play a central role. According to the Chairman of Apollo Hospitals Group: “With the availability of wireless technology, mobile health will be integrated into the healthcare delivery system. The new mantra could well be ‘Healthcare for anyone, anywhere, anytime.’ ”

Reference source:

<http://www.ericsson.com/ericsson/press/releases/20080605-1225191.shtml>

## Project 46: HIV Mobile Decision Support

**Country:** South Africa

**Sponsoring Organization and Partners:** Dimagi, Inc. (privately held software company), D-Tree International, the Harvard School of Public Health and the Harvard University Program for AIDS (HUPA)

**Application Area:** Diagnostic and Treatment Support

Dimagi and its partners have been working since 2005 on a software program for handheld mobile devices that will help field health workers screen HIV/AIDS patients and determine their medical needs. Dimagi is partnering with the Harvard University Program for AIDS (HUPA) to develop the solution. A three-month pilot program was implemented in several hospitals in Tygerberg, South Africa. For this pilot, health workers were able to use any Windows Mobile 5 device, including most PDA's and Windows Mobile-based smartphones. The software was designed to be sensitive to local needs, providing support in several local languages and a general user-friendly experience. Data were entered and stored in an embedded MySQL database, and then synchronized with a host computer via Internet or USB connection. Though this project focused on HIV/AIDS screening, the software and devices could be modified to assist with screening for other illnesses, or with triage and diagnosis.

Reference sources:

<http://www.dimagi.com/content/hiv-support.html>

<http://www.d-tree.org/index.html>



Credit: ENACKOT

### **Project 47: M-DOK: Mobile Telehealth and Information Resource System for Community Health Workers**

**Country:** Philippines

**Sponsoring Organization and Partners:** UN Development Programme (UNDP) and the Philippine Council for Health Research and Development (PCHRD)

**Application Area:** Diagnostic and Treatment Support

In the Philippines, like most island states, many remote communities do not have access to medical specialists. Technology may be limited in these areas and although basic mobile communication is common, data services such as Internet access may not be available. M-Dok was designed to allow rural community health workers to use simple SMS technology, with a specially designed graphical user interface, to send diagnosis and treatment information to specialists in urban areas. M-Dok requires a Java-enabled mobile phone with Adobe Acrobat Reader software. The project was given a one-year grant by the UNDP, and part of those funds will be used to develop a network of community health workers and referral physicians for the system.

Reference sources:

<http://www.synapsehealth.com/portfolio.htm>

<http://www.apdip.net/resources/case/rnd54/view>

[http://www.idrc.ca/en/ev-81925-201-1-DO\\_TOPIC.html](http://www.idrc.ca/en/ev-81925-201-1-DO_TOPIC.html)

## Project 48: Mobile E-IMCI

**Country:** Tanzania

**Sponsoring Organization and Partners:** Dimagi, Inc. (privately held software company), D-Tree International, the Rockefeller Foundation, WHO and the Jerre D. Noe Professorship

**Application Area:** Diagnostic and Treatment Support

Often, health protocols are instituted but implementation falls short due to lack of resources in developing countries. D-Tree International, Dimagi, and other partners conducted a joint study that used PDAs to improve adherence to the Integrated Management of Childhood Illness (IMCI) protocols in rural Tanzania. The WHO and UNICEF developed the IMCI as part of their strategy of combating some of the most common diseases afflicting children in the developing world. While the IMCI has shown positive results in Tanzania, a lack of adequate supervision, insufficient training, and less-than-rigorous implementation have weakened its potential impact. The project's research team attempted to address these problems by creating a program called e-IMCI, which runs on a PDA and guides health workers through the IMCI process with step-by-step instructions. The pilot results for e-IMCI were encouraging, suggesting that the technology employed is user-friendly enough for clinicians to use, and that both patient care and caregiver efficiency can be improved. Larger-scale and long-term studies are needed to bolster this argument, but early indicators are positive.

Reference sources:

<http://www.dimagi.com/content/mobile-e-imci.html>

<http://www.d-tree.org/index.html>

<http://www.cs.washington.edu/homes/bderenzi/Papers/chi1104-bderenzi.pdf>

[http://www.who.int/child\\_adolescent\\_health/topics/prevention\\_care/child/imci/en/index.html](http://www.who.int/child_adolescent_health/topics/prevention_care/child/imci/en/index.html)

## Project 49: Mobile Telemedicine System

**Country:** Indonesia

**Sponsoring Organization and Partners:** Institut Teknologi Bandung (ITB), the International Development Research Centre (IDRC) of Canada, the United Nations Development Programme's Asia-Pacific Development Information Programme (UNDP-APDIP), Sukabumi Health Office, the Local Authority Development of Sukabumi and the Information and Communication Department of Sukabumi

**Application Area:** Diagnostic and Treatment Support

Providing adequate health services in all locales in Indonesia, like most island states, is extremely challenging. To overcome this challenge, a large number of technical and health-oriented organizations are collaborating on a prototype mobile telemedicine system. The system will enable remote consultation and diagnostics and also facilitate the collection of patient data. Depending on the communications infrastructure available at a specific location—radio, mobile, or landline phones, and the Internet—information will be shared between patients at 'mobile telemedicine units' and doctors at 'medical service centers.' As a first step, researchers conducted field surveys in West Java to inventory health and communications infrastructure. The results of these surveys informed the prototype development. Further enhancements to the system are being made and the team reports that "the project is challenging" as it integrates so many disciplines and technologies.

Reference sources:

<http://www.researchsea.com/html/article.php/aid/1998/cid/3?PHPSESSID=92ae156683bf>

[http://www.idrc.ca/en/ev-81916-201-1-DO\\_TOPIC.html](http://www.idrc.ca/en/ev-81916-201-1-DO_TOPIC.html)



Credit: RAMP

## Project 50: Nacer

**Country:** Peru

**Sponsoring Organization and Partners:** Voxiva, USAID-funded Pathfinder International program, Ministry of Health of Peru and Peru's Regional Health Directorate of Ucayali

**Application Area:** Remote Data Collection, Remote Monitoring, Diagnostic and Treatment Support, and Disease and Epidemic Outbreak Tracking

Maternal and child mortality remains excessively high in most developing countries. Nacer was created to decrease by half the number of maternal and infant deaths in the Ucayali region in Peru. The Nacer solution allows remote healthcare workers to share data with other remote workers, medical experts, and hospitals, using any telephone (mobile, satellite, or fixed-line telephone systems—personal or public) or Internet technology. A centralized database hosts all of this data and allows for real-time access. Through Nacer, the entire health ecosystem can send and receive information in order to monitor patient health, provide referrals and follow-up care, and track supplies and disease outbreaks. Madhu Krishna of Voxiva claims that, "should health personnel report symptoms that are indicative of a serious, underlying health condition in a pregnant woman, regional health workers can review her records and send voicemail messages and other support to ensure the woman is receiving appropriate care."

Reference sources:

<http://www.voxiva.com/casestudies.php?caseid=29>

<http://www.i4donline.net/articles/current-article.asp?articleid=350&typ=News>

## Project 51: TeleDoc - Jiva Healthcare Project

**Country:** India

**Sponsoring Organization and Partners:** The Soros Foundation and Jiva Institute

**Application Area:** Diagnostic and Treatment Support

A shortage of doctors spells inadequate treatment for many in the developing world, especially in remote rural areas. Connecting health workers in rural areas with doctors through mobile technology is a promising solution to this endemic problem. TeleDoc uses Java-enabled mobile phones to connect village-based healthcare workers with doctors in urban areas for remote diagnosis and treatment. Doctors receive real-time diagnostic information entered by the healthcare workers and prescribe appropriate treatments. TeleDoc field workers prepare any prescribed medicines at regional offices. These medications are delivered directly to the home of patients in rural areas by a combination of pharmacies and delivery personnel. In the spring of 2003, TeleDoc was tested in 15 villages in Haryana, India. The program won the World Summit Award for eHealth at the World Summit on the Information Society in Geneva in 2003, and has aggressive plans for expansion.

Reference source:

<http://www.comminit.com/en/node/116145> ■



Credit: DataDyne