

Computing and Global Development

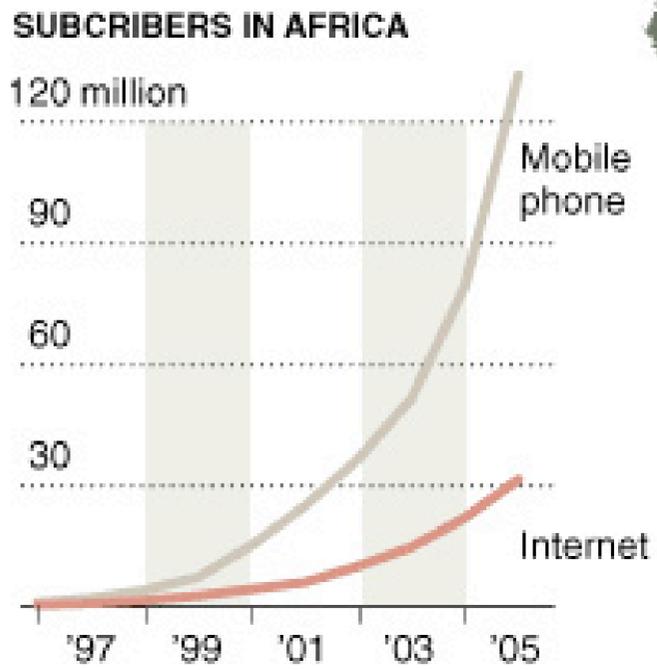
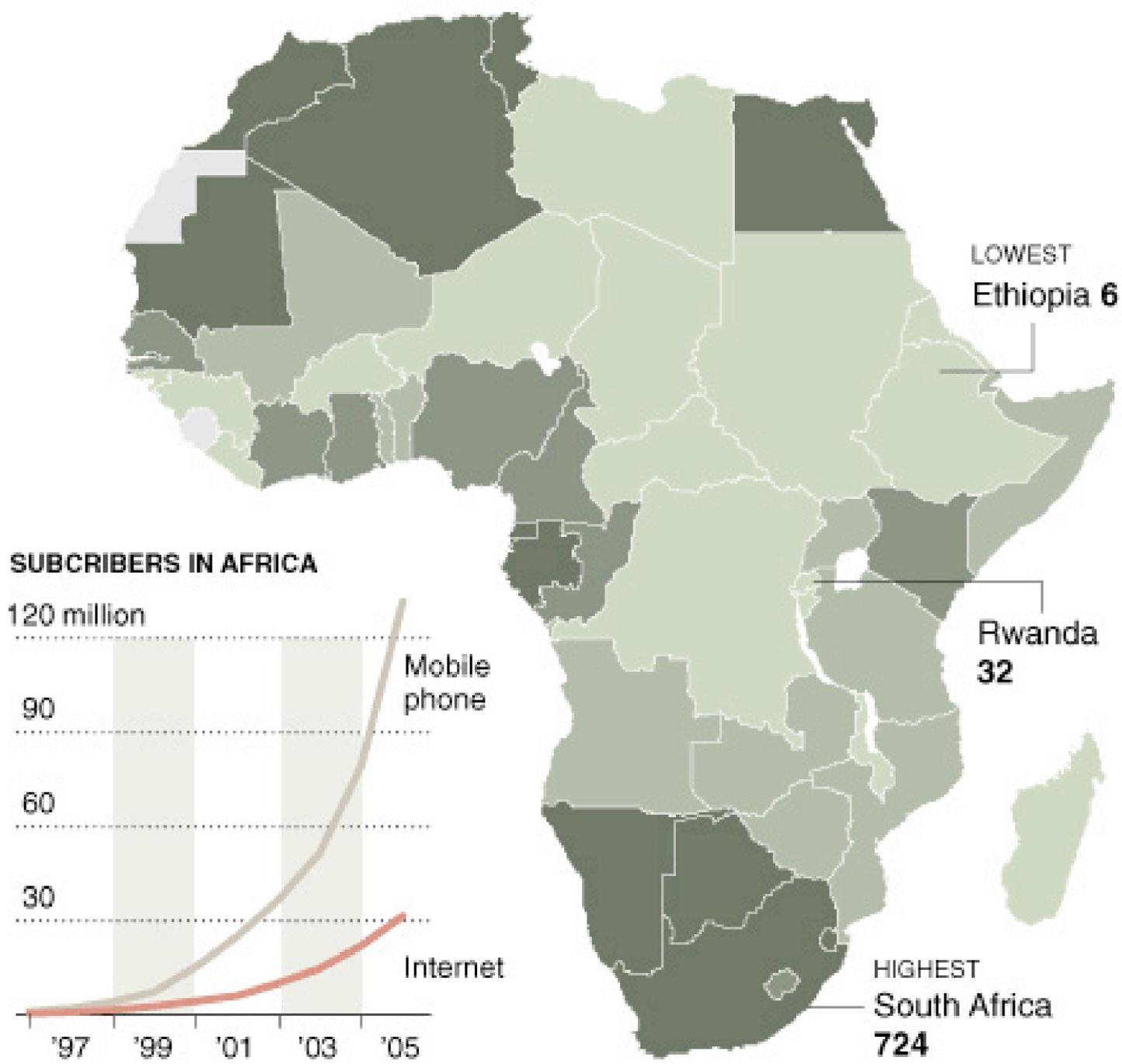
Yaw Anokwa

hello, my name is yaw anokwa and do research on computing systems for developing regions.

i'm originally from ghana. i came to the states when i was about ten, studied computer science and electrical engineering.

i worked in the defense industry and as a computer consultant before coming to grad school. my early research was in hci and ubicomp (mostly phone and research). these days, i primarily work in east africa on medical records or data gathering systems.

Mobile phone subscribers per 1,000 people, 2005



if you take one thing away from this talk, it is that computers are in developing regions and they are changing the way people live. beyond the actual device, the infrastructure that comes with the phone is critical to solving some of these really big problems.



agriculture

this is my uncle. he farms palm nut trees in ghana. he has a cell phone which knows how to use. that technology can help him answer questions he has.

like, what are the best practices for growing palm nut trees? of the five near by markets, where should i sell my palm oil?

education



this is a child at a rural hospital in rwanda. good teachers don't like working in rural places where children like these live. education is the key to surviving in the global market place.

how do we educate the children of the poor? could we give them phones with educational material? or ship video recorded from the best school in the country to them?



microfinance

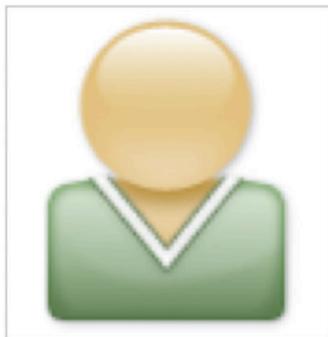
this is off the coast of tanzania where local fishermen are being squeezed out of their waters. to compete, they need to organize and maybe get a loan.

if they do, what are low cost ways for the microfinance agency to track payments?
software automation and transactions performed over a cell network can help drive down costs.

healthcare



this child likely has an ear infection which can easily be treated. but what about his mother? if she has hiv an tb. how will her complex care be managed at a rural hospital? recording keeping is important and computers can help here.



Paul Persil Patient

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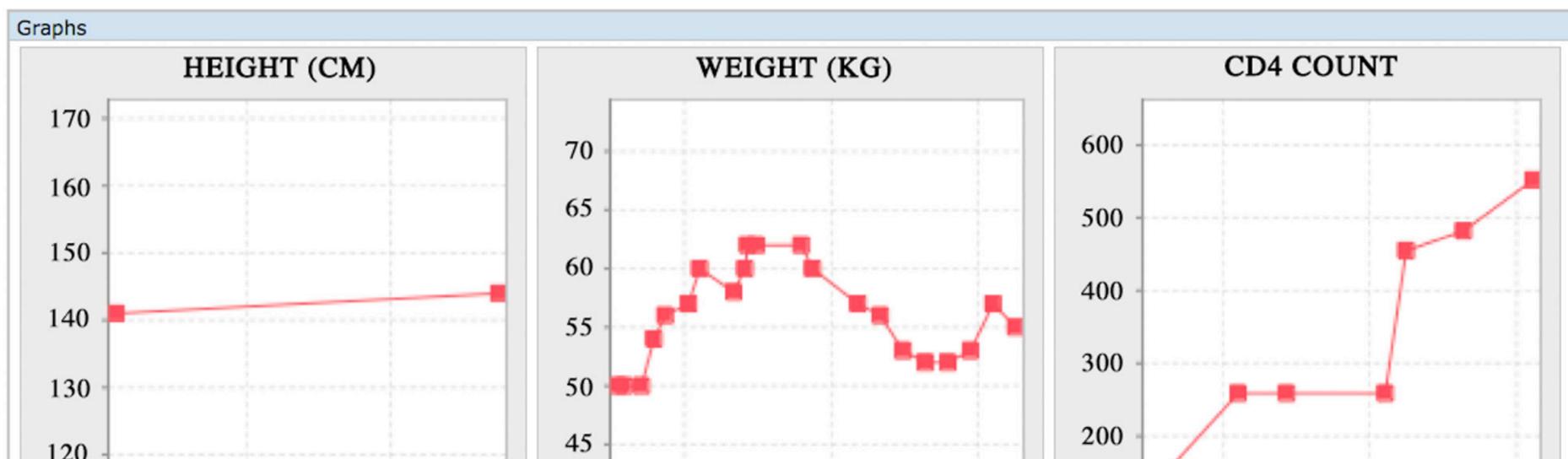
Gender **Male**
Age **44 years** (~ Jun 01, 1934)
Last Visit **1 week ago** (Aug 14, 2008)
Doug Doctor, Rwinkwavu Hospital

TRACnet ID: 12345
Carte d'Identité: 1234567

IMB ID **12345678-A**

Drug Order	Dose	Frequency	Start Date	Stop Date	Notes
AZT+3TC	1.0 tab(s)	2/d x 7 d/w	Sep 13, 2007		
D4T	150 mg	1/d x 7 d/w	Aug 02, 2007		
Triomune-40 (stopped)	1.0 tab(s)	2/d x 7 d/w	Sep 01, 2007	Sep 13, 2007	Unexplained facial rash
EFV 600 (stopped)	1.0 mg	1/d x 7 d/w	Aug 02, 2007	Sep 13, 2007	

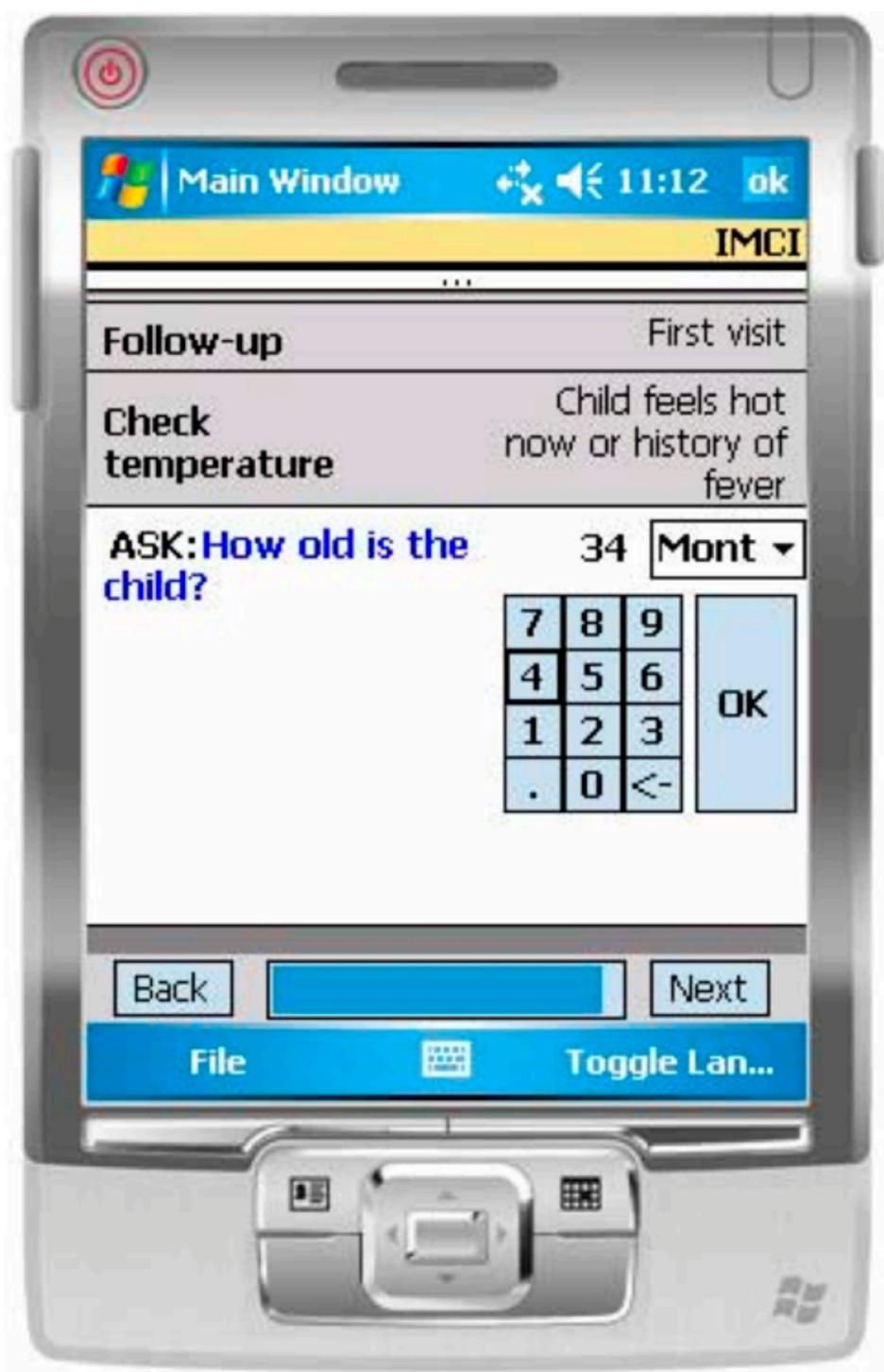
Lab Test	Result	Date	Notes
CD4	512	Aug 15, 2008	Ordered by Dr. Doctor
CD4	259	Aug 01, 2008	



In 2005, the Rwandan Ministry of Health asked Partners in Health to help build a national health care system. A small town named Rwinkwavu was chosen as the home of one of the first comprehensive health care systems in Africa.

To help manage patient records and lab results in the district hospital, an electronic system was needed. OpenMRS, an open-source medical record application, chosen as the solution.

To do this work needed living in rural Rwanda, observing clinical care, managing data entry process, installing infrastructure at clinics, and training staff. Results include generating patient summaries, and building a one click installer



e-IMCI a program that runs on a PDA and guides a health worker step-by-step through the IMCI treatment algorithm.

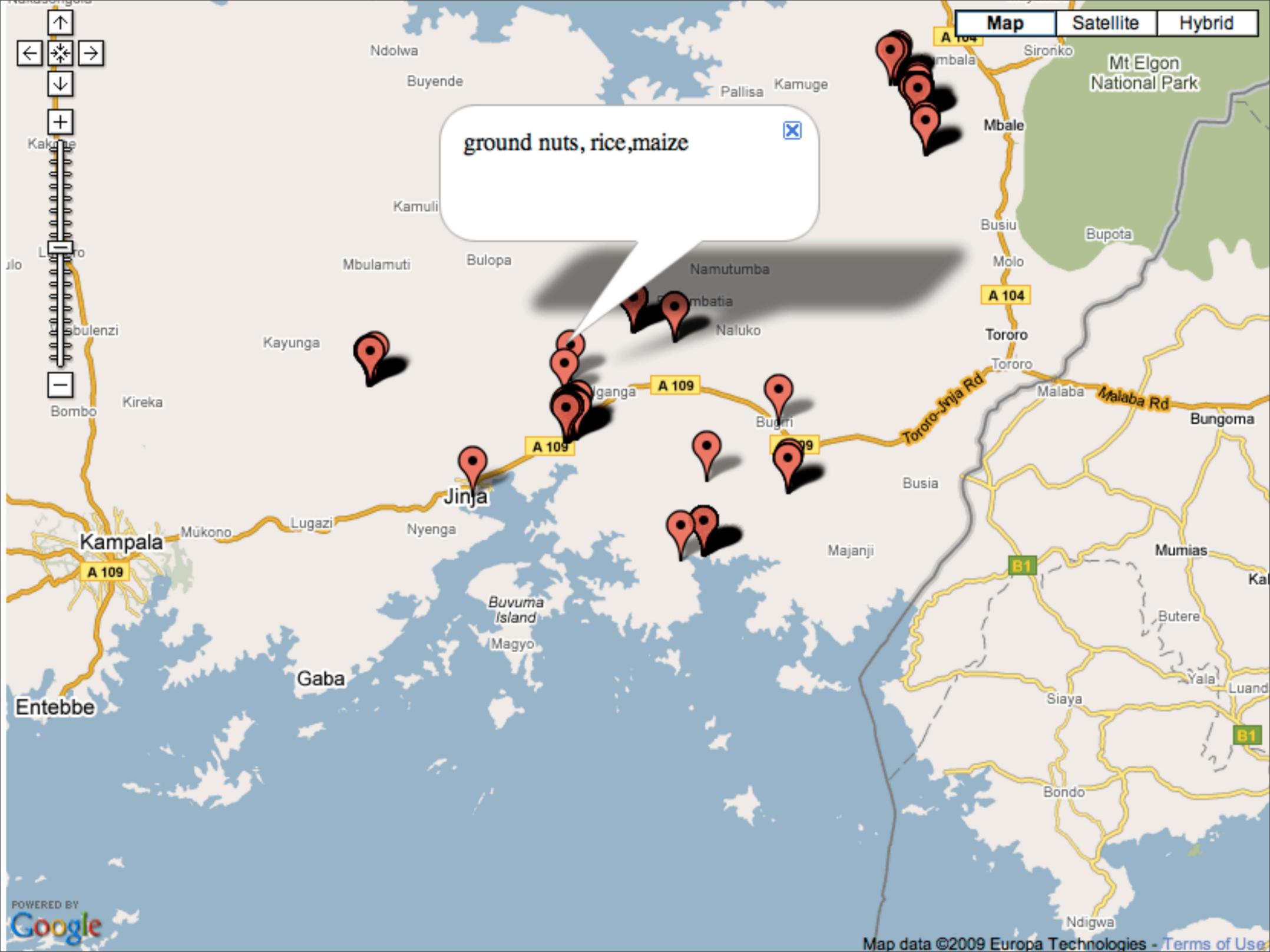
Using the e-IMCI prototype, clinicians performed 84.7% of investigations required by IMCI, a significant improvement over the 61% of investigations observed during conventional practice. ($p < 0.01$). Our current prototype is almost as fast as the current practice, where the book is rarely referenced.

The training time for e-IMCI was less than 20 minutes, after which clinicians were easily able to train each other. The four clinicians unanimously preferred e-IMCI, citing it as faster and easier to use than the chart book.



Open Data Kit (ODK) is a suite of tools to help organizations collect, aggregate and visualize their data.

Touchscreen UI with swipe navigation and progress bar, XForms compatible GPS and photo support, question grouping, repeats and constraints, answer defaults and constraints, logic and branching in forms, adding and removing forms, and multi-language support.



The server runs on the cloud (Google Infrastructure). It is free to run, super reliable, maintenance free. Organizations can grab a CSV file and plot the data if necessary.



if you are interested, go to this site, and sign up on the mailing list and we can work together! you can also email me and we can chat.