

Richard Anderson

Mobile Technology for Health Systems Strengthening

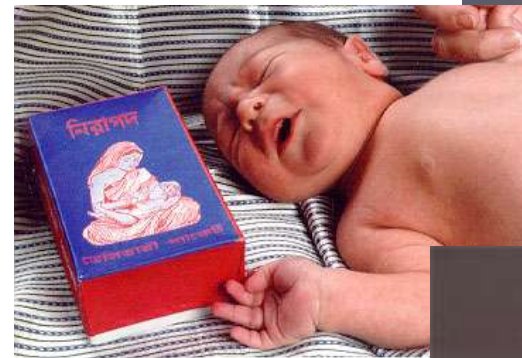
About Me

- University of Washington, Computer Science and Engineering
 - On faculty since 1986
 - Professional interests
 - Computing for low resource environments
 - Educational technology
 - Pen Based Computing
 - Algorithms
 - Sabbatical at PATH 2009-2010
- Research projects
 - Digital StudyHall
 - Software to support the vaccine cold chain
- CSEP 590b, Computing and Global Health
 - Wednesday 6:30-9:20 pm
- anderson@cs.washington.edu



About PATH

- Seattle based NGO working in health technologies
- Program for Appropriate Technology in Health
- Approximately 1000 employees world wide, 400 in Seattle
- Focus areas:
 - Maternal and Child Health
 - Reproductive Health
 - Immunization
 - Infectious diseases
 - Safe Water



Mobile Technology for Improving Health Care in Low Resource Environments

- What is the role of mobile technology?
- Service delivery
- Health system strengthening
- Public health
 - Changing health practices

Health System Domain
1. Community Based Services
2. Facility Based Services
3. Diagnostic Services
4. Commodities Supply Chain (Logistics)
5. Human Resources in Health
6. Environmental Services
7. Stewardship & Management
8. Finance Resources for Health
9. Knowledge and Information Resources
10. Infrastructure Resources

Growing Beyond Pilots

- Large number of small, short term projects
- Critique: too many pilots
- What does it take to establish and sustain a technological intervention?



Health Systems



BILL & MELINDA
GATES foundation



- Public health bureaucracy
 - Ministry of Health
 - Regional offices
 - Highly structured and political
- International organizations
 - UNICEF, WHO
- Donor funding
 - Large scale
 - Often narrowly focused
- NGO's



सत्यमेव जयते
Ministry of Health
and Family Welfare



World Health
Organization



Technology Landscape

- Rapid technological change
- Digital divides
 - North – South
 - Urban – Rural
- Internet infrastructure
- Technology workforce
- Of course, cell phones are everywhere
 - Cell phone coverage
 - GSM/GPRS/...
 - Pricing issues



Sustainability



- Systems with sufficient benefit that someone is willing to cover costs
- Business case
 - Benefit must align with funding
- Total cost of deployment
 - Up front costs
 - Ongoing
 - Airtime, maintenance, tech support, upgrades, losses, training, licensing, . . .



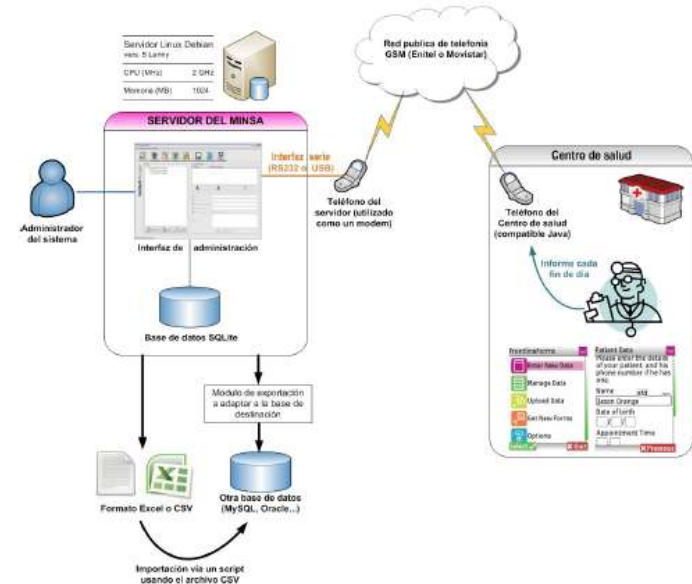
Data Collection

- Data sent from mobile device to central server
- Multiple technologies
 - Custom SMS messages
 - Java applications
 - GSM/GPRS
 - Smartphones, ODK
- Many business processes
 - Stock reporting
 - Case reporting
 - Surveillance data

Compose and send an SMS message to: 15009



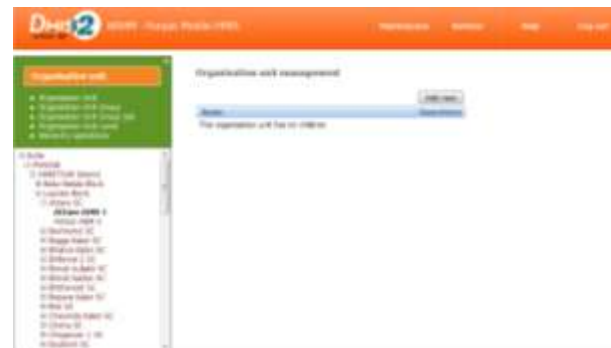
Stock information is visible on Google Maps



HISP/Punjab mobile phone deployment



- ANM – Auxiliary nurse midwife
 - 1 or 2 ANM's per subcentre (5000 people)
 - Maternal and child health
 - Regular reporting
- 5000 phones deployed by Punjab State and HISP India
- Java application communicating by SMS to a server
- Integrated into state reporting system DHIS



Household Visit Support (CHW)

- Health workers not permitted to treat patients
 - CHW, ASHA, VHV, ...
- Tracking pregnancies, promoting health practices, identifying disease suspects, collecting information
- Mobile applications
 - Job aids, data collection, supportive supervision
- Technology issues
 - Usability, low cost phones



CommCare

Mteja

Elimu ya TB
Tuma taarifa ambazo hazijaenda(0)

Select

Select Action

Sajiri Mgonjwa Mpya
Matokeo ya Rufaa
Dalili za Kifua Kikuu

Select Back

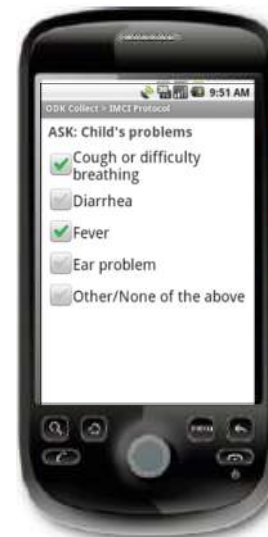
Household Visit Support (ANM)

- Midwives
 - Conduct household visits
 - Perform medical tests
 - Prescribe medications
 - Provide Treatment
- Basic care
 - ANC: Antenatal Care
 - PNC: Postnatal Care
- Mobile device intervention
 - Clinical protocols
 - Data collection
 - Diagnostics
 - Education



Mobile Midwife Project

- Mobile device to assist midwives
 - Decision support and visit check lists
 - Data collection
 - Videos for maternal education
- Smart phone application
 - Android phone with Open Data Kit
- Partners
 - ARTH, Action Research and Training for Health
 - University of Washington
- Support existing PNC program



Education and Persuasion

- Promote behavior change and adoption of practices
- Maternal and child health focuses on small number of interventions
 - Taking iron pills
 - Exclusive breast feeding
 - Keeping babies warm
 - Promoting institutional delivery
 - Birth preparedness
- Mobile Interventions
 - Multimedia playback
 - Reminders
 - Community building
 - Spam



Comments? Questions?

- Other applications
 - Diagnostics
 - Medical devices
 - Decision support tools
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