



## The HMIS HIP Portfolio: Bridging Computing and Global Health

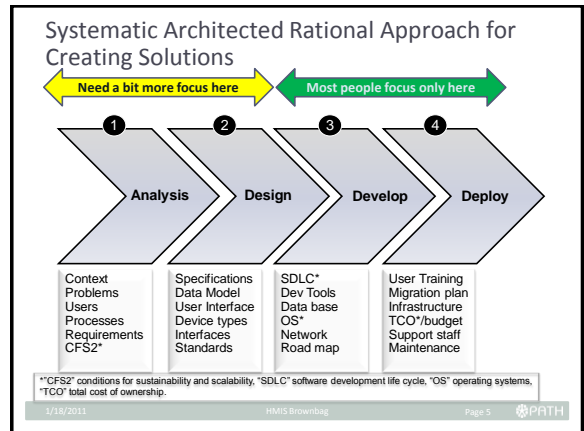
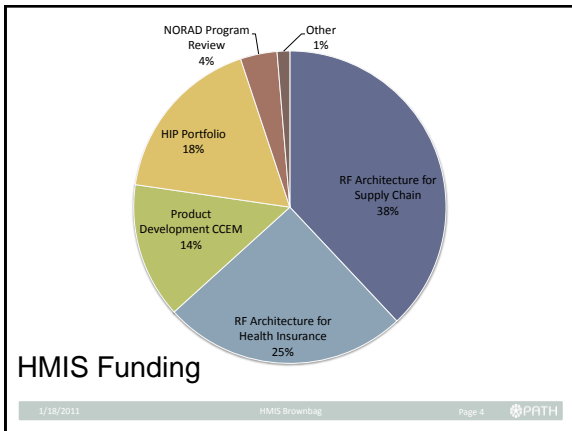
Richard Anderson  
David Lubinski


## Imagine a World Where...

*All the country level health data required to manage and monitor existing and future programs is routinely collected, managed, analyzed and used by a country's ministry of health in a sustainable health information system.*

1/18/2011 HMIS Brownbag Page 2 PATH



### The HIP Portfolio

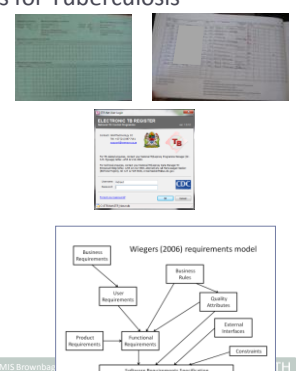


	Analysis	Design	Develop	Deploy
SARA for systems requirements: TB surveillance in Tanzania	High	Medium		
Job aids for community health workers: Mobile phones for TB screening	Medium		Low	High
SmartConnect: Data communication for EPI	Low	High	High	Low
Mobile Midwife Project: Smart phones to support post natal care	Medium	Low	Medium	Medium

1/18/2011 HMIS Brownbag Page 7 PATH

### Systems Requirements for Tuberculosis Surveillance

- Use SARA process to derive requirements for national reporting
- Evaluate feasibility of electronic data reporting from facility to district to national level
- Work in context of existing surveillance process defined by MOHSW of Tanzania
  - Existing forms: TB01, TB02, TB03, TB04, . . .
  - National level system: ETR



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### What We Learned

- Information flow
  - Clinic TB 03 register
  - District TB 04 register
  - National electronic register
- Clinic
  - Maintain patient register
  - Unofficial registers used in conjunction with TB 03
- District
  - District supervisor collects information for TB 04 register on facility visits
  - Quarterly reporting to ETR
  - Additional reporting requirements
  - Case ID numbers generated by district manager

Category	Requirement
DR-1	General Checklist
DR-2	General Checklist
DR-3	General Checklist
DR-4	General Checklist
DR-5	General Checklist
DR-6	General Checklist
DR-7	General Checklist
DR-8	General Checklist
DR-9	General Checklist
DR-10	General Checklist
DR-11	General Checklist
DR-12	General Checklist
DR-13	General Checklist
DR-14	General Checklist
DR-15	General Checklist
DR-16	General Checklist
DR-17	General Checklist
DR-18	General Checklist
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DR-43	General Checklist
DR-44	General Checklist
DR-45	General Checklist
DR-46	General Checklist
DR-47	General Checklist
DR-48	General Checklist
DR-49	General Checklist
DR-50	General Checklist

1/18/2011 HMIS Brownbag Page 10 PATH

### Project Status and Next Steps

- Decided NOT to focus on clinic level data entry with mobile phones
  - Wrong device for registry management
  - Unresolved platform issues
- Current focus
  - District level TB register
  - Initial patient registration

1/18/2011 HMIS Brownbag Page 11 PATH

### Mobile Phones for Community Health Workers

- Joint project with PATH Tanzania
- Assist tuberculosis case identification by CHWs in Tanzania
- Small pilot in Kisarawe District, Tanzania
  - April through August 2010
- D-Tree / CommCare
  - Diagnostic checklist
  - Data collection
  - Reminders
  - Case tracking
  - Supervision

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### Workflow for Household Visit

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### What We Learned

- The basic technology works
  - Cell phone data entry to web accessible server
- Suspect identification is a common pattern
  - TB, pregnancy, severe diarrhea, ...
- Total cost of deployment is high
  - Training, software updates, field visits
- Business case for technology needs to be articulated

1/18/2011 HMIS Brownbag Page 14 PATH

### SmartConnect: Data Communication for Peripheral Health Facilities


- How can a digital dial tone be established with remote health facilities?
- Technical question: What type of device do we use to establish a data connection?
- User needs question: What would a health clinic do with a data connection?
- Health system question: How does a data connection link to the sustainable information processes of the health system?



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### Technical Solution: SmartConnect

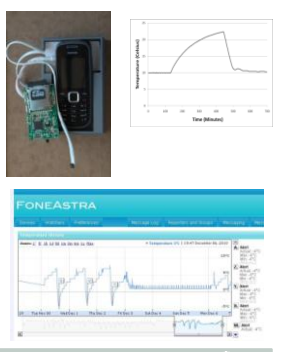
- Take advantage of cellular network
  - SMS Connectivity
- Partner with Inveneo to develop custom device
- Focus on facility owned communication appliance
  - Not a user programmable device
  - Not a mobile communication device
- Core scenarios
  - Surveillance reporting
  - Stock management
  - Diagnostics
  - Monitoring



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### Alternate Solution: FoneAstra

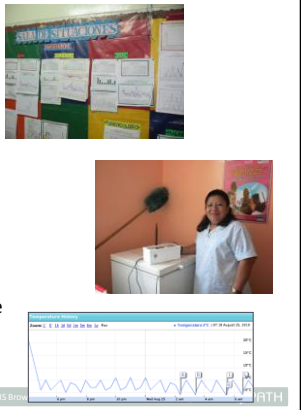
- External hardware attached to low cost phone
  - Microprocessor and sensor interface
- University of Washington project
  - Rohit Chaudhri / Gaetano Borriello
- Temperature monitoring via SMS
  - Data reporting
  - Out of range alerts
- Pilot in Albania with Optimize
- Temperature monitoring for flash heating of breast milk



1/18/2011 HMS Brownbag Page 17 PATH

### What We Learned

- Validation of data usage scenarios
- Complexity of hardware / software development
- Separation of SmartConnect and FoneAstra domains
- Potential of wide scale monitoring
- User interest in the device
- Broader design space for facility device



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### 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 post natal care program



1/18/2011 HMS Brownbag Page 19 PATH

### Analysis and Design

- Visit to Udaipur, November 2010
- Field visits and requirements workshop
- Introduce technology to existing program
- Key results from visit
  - Documentation of processes
  - Substantial data collection taking place during midwife visits
  - Education an important component of visits



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## Project Status and Questions

- Working in a strong program
- Base ODK technology is stable
- Usability and acceptability by midwives a key question
- Evaluate benefits of device
  - Data collection
  - Visit protocols
  - Information for midwives
  - Educational tool
- System costs and benefits
- Broader use of platform



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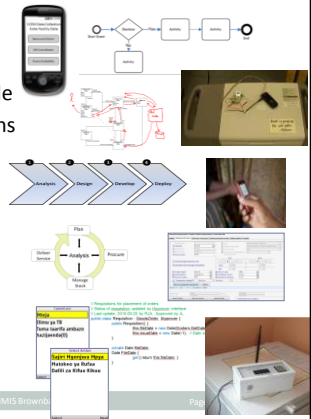
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Page 21



## Portfolio Summary

- Span development cycle
- Emphasize contributions early in cycle to ensure public health impact
- Range of technologies
- Identify common patterns that appear across domains



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Merci

شكرا لك

謝謝您

Cảm ơn bạn

Thank You

Asante

Shukran

Danke

Grazie

Dank je

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Page 24

