Creating an ICT Portfolio at PATH

Richard Anderson
David Lubinski
Kate Wilson
Reflections on Educational Technology for the Developing World

- Planned talk
  - Digital StudyHall evaluation study
  - Distance learning project with University of Namibia and I–Tech

- Today’s talk
  - What I’m doing on my sabbatical
  - Affiliated with a newly formed ICT group at PATH
PATH

- Seattle based NGO working in health technologies
- Founded 1977
  - Now working in 70 countries
- Formerly: Partners for Appropriate Technologies in Health
PATH focus

- Solutions for emerging and epidemic diseases, like AIDS, tuberculosis, and malaria.
- Health technologies designed for low-resource settings, by the people who will use them.
- Safer childbirth and healthy children.
- Health equity for women, among the world’s most vulnerable—and influential—populations.
- The basic protection of vaccines for women and children around the world.
Path Mission Statement

Our mission is to improve the health of people around the world by:

- Advancing technologies
- Strengthening systems
- Encouraging healthy behaviors
Where does PATH work?: PATH has over 800 staff located in 19 countries and have worked in over 70 countries
Who funds PATH’s projects? *Funding largely comes from private sector and ranges across topics.*

2008 Revenue: $187M
- Emerging & epidemic diseases: 26.6%
- Vaccines & Immunizations: 32.7%
- Health Technologies: 12%
- Maternal and Child Health: 9.5%
- Reproductive Health: 19.2%
- Other foundations 4.6%
- US government 27.3%
- Other governments, NGOs, Multilaterals 4.5%
- Individuals/other 1.5%
- Investments 1.2%
- Gates Foundation 60.9%
Path Projects: Cold Chain
Path Projects: Safe Injection
Path Projects: Reproductive Health
Path Projects: Diagnostics
Why PATH formed ICT group? *Increasing ICT demands from donors, country and projects for ICT expertise.*

**Donors**
- **Situation:** Funding ICTs embedded in larger global health projects
- **Need:** Want coherence and replication of ICT hardware (HW) and applications (Apps) across projects

**Countries**
- **Situation:** Dealing with multiple project ICT apps & data without a coherent back-end
- **Need:** Standardized measurements & inter-operable systems at the national level

**PATH**
- **Situation:** Incorporating ICT HW and Apps into projects across PATH with no standard approach
- **Need:** Resource base that can provide consulting services on “best practices” for projects and manage ICT aspects of projects with software/hardware partners.
How is PATH organized? *Global Health projects managed either by global programs or by field programs.*

ICTG housed in Technology Solutions but consults to all field and global programs
Health Information
1. Number of Antenatal visits: 124
2. No. of at risk ANC Cases: 8
3. No. of pregnant woman immunized: 83
4. No. of pregnant women: 124
5. Total No of deliveries: 11
6. No. of maternal deaths: 0
7. No. of infants immunized: 144 (DPT3, BCG, OPV3)
8. Total No. of < fives Examined: 1761
9. No. of bod note distributed: 381
10. No. of pregnant women that received IPT: 345
11. Did your facility run out-of SP drugs continuously for 2 weeks during the reporting month? 12. Did your facility run out-of anti-malaria drugs continuously for 2 weeks during the reporting month?
**MINISTRY OF HEALTH AND SANITATION**  
**MONTHLY PHU SERVICE UTILISATION REPORTING FORM**

- **District**: Western Area  
- **Name of facility**: Wilberforce  
- **Year**: 2006  
- **Month**: November  
- **Type of Facility**: CHC  
- **Estimated catchment size**: 35,000

### TETANUS TOXOID REGISTER

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- **Total Visits**
  - 9 visits
  - 1 visit
  - 2 visits
  - 3 visits
  - Total Visits: 29
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<th>15-44 YRS</th>
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Date: [Handwritten] Nov 2006

Compiled by: [Handwritten] M F 24 21

District
Health Facility (PHU)
Chiefdom/Zone
Date: 11/11/06
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<th>SERIAL NO.</th>
<th>CHILD'S NAME</th>
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<th>MOTHER'S NAME</th>
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**AGE GROUP**

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**DISEASE**

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**PLANNING**

**DEPARTMENT OF SIERRA LEONE**

**MINISTRY OF HEALTH AND SANITATION**

**NEONATE'S HEALTH REGISTER**

**UNITED STATES OF AMERICA**

**PLANNING**
PATH’s Vision: “ICT is not a silver bullet; it is only one component of strengthening health systems.”

A world in which….

Information is the catalyst for strengthening national health systems
Health providers and managers have accurate, up to date data from which they can make decisions
User considerations are designed in to the technology before it gets built.
Donor dollars are spent on sustainable systems that last after the project ends
Health System Architectures
People that would benefit from technology have a difficult time talking to the people that create it. Scott Adams captured it brilliantly...
I'll need to know your requirements before I start to design the software.

First of all, what are you trying to accomplish?

I'm trying to make you design my software.

I mean what are you trying to accomplish with the software?

I won't know what I can accomplish until you tell me what the software can do.

Try to get this concept through your thick skull: the software can do whatever I design it to do!

Can you design it to tell you my requirements?
PATH’s ICT team aspires to bridge this gap for global health projects
Unsystematic & Irrational
What is our focus?: *We are not software developers. Focus on designing, modeling and evangelizing ICT.*

- **Architect:** Create replicable frameworks oriented around country information system needs.
- **Model:** Implement frameworks nested in larger projects to validate and document “the possible”.
- **Recommend:** Bridge public/private gaps around existing ICT and market opportunities to spur external development.
- **Convene:** Expose existing ICT best practices, public health needs and model projects to public health community and ICT experts. Evangelize “architecture” model to ever larger groups.
What is an example of architecture project? “SARA” will design core ICT approach for PATH projects

- **Systematic** – characterized by, based on, or constituting a system, carried on using step-by-step procedures, purposefully regular; methodical, of or relating to classification or taxonomy.
- **Architected** – to produce an architecture that represents a style and method of design and construction, and is an orderly arrangement of parts.
- **Rational** – having or exercising the ability to reason, of sound mind; sane, consistent with or based on reason; logical.
- **Approach** – the act of coming close or closer, a proposal or suggestion made to a person, the way or means of reaching a place; access, an approximation.
# Health System Domain Reference Model

<table>
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<tr>
<th>Health System Domain</th>
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<tbody>
<tr>
<td>1. Community Based Services</td>
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<tr>
<td>2. Facility Based Services</td>
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<tr>
<td>3. Diagnostic Services</td>
</tr>
<tr>
<td>4. Commodities Supply Chain</td>
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<tr>
<td>5. Human Resources in Health</td>
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<td>6. Environmental Services</td>
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<tr>
<td>7. Stewardship &amp; Management</td>
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<tr>
<td>8. Finance Resources for Health</td>
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<tr>
<td>9. Knowledge and Information Resources</td>
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<tr>
<td>10. Infrastructure Resources</td>
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</table>
Towards a More Systematic & Rational Approach

Medicines supply systems: proposed model

Coordination mechanism: National needs / Funds

Basket funds: Supply driven financing or Demand driven

Reinforce and use existing system

Measure the results

Dr. Magali Babaley, Mrs. Helen Lega Tata – WHO
What is SARA built on? Approach fuses common ICT design and development steps drawn from the Open Group Architecture Framework (TOGAF) among others.

1. Global Consortium
2. Membership Focused (50% of WW IT spend represented)
3. Technology/Vendor Agnostic
4. Outputs Approved by Members
5. Uses Existing Industry Standards
6. Contributes to Evolving Standards
7. Practitioner Certification Program

www.opengroup.org
What do we mean by “architecture”?: *There are distinct phases of ICT development that our process will follow.*

- Architecture is grounded in user analysis, requirements and systems design grounded in the situational context.
- Solutions (by design) will need to be scalable past discrete pilot projects and integrate with country HMIS.
Our Initial Work Focuses on Phase 1: Analysis

1. Analysis
   - Context
     - Problems
     - Users
     - Processes
     - Requirements
     - Glossary

2. Design
   - Specifications
     - Data Model
     - User Interface
     - Device types
     - Interfaces
     - Standards

3. Develop
   - SDLC*
     - Dev Tools
     - Data base
     - OS*
     - Network
     - Road map

4. Deploy
   - User Training
     - Migration plan
   - Infrastructure
   - TCO*/budget
   - Support staff
   - Maintenance
Target Domain: Supply Chain

- Develop model of medical logistics distribution
- Validate in country with Cold Chain and Commodity Supplies
  - Vietnam
  - Kenya
  - Senegal
Supply chain modeling

Delivery

1. Order Ready for Delivery
2. Create Delivery Record
11. Sign Delivery Record
12. File Record
End

National Store/Intermediate Store
Transportation
Logistics

1. Receive Delivery Record
4. Transport Order
10. Return Delivery Record

Intermediate Store/Service Delivery

5. Receive Delivery
6. Inspect Delivery
9. Sign Delivery Record
13. Store Stock
End

8. Update Delivery Record
7. Damage Discrepancies
SARA Requirements Workshop

- Held in Tanzania with Health Care workers
- Determine workflow around TB diagnosis and treatment
- Two days, ½ day in Swahili, 1 ½ days in English
- Participants working with paper artifacts proved very useful
- Successfully generated activity diagrams of workflow
- Developers observed workshop
Smart Connect

- Last mile connection (digital dial tone)
- Device targeting occasional, low bandwidth communication
- Sample applications
  - Vaccine Refrigerator temperature monitoring
    - Status reports and alerts
  - Updating stock information
- Determine feasibility for scaled deployment
Augment solar power refrigerator with smart connect
Cold Chain Equipment Management

- CCEM – tool developed by Path to predict the number of vaccine refrigerators a country will need.
Cold Chain Equipment Management

- Develop and deploy application
  - Spin off to another organization
    - WHO + Codeplex
- Automate Data Collection
- Reengineer process to simplify
- Nationwide equipment survey
  - Goal: use technology to reduce overall cost of survey
ICT at PATH

- Major theme: health system strengthening
- Computing is not the core mission
  - But still useful
- Take projects to scale
  - DL: “No more pilots”, No “computer science projects”
  - Partnership requirements
    - Private sector, donors, governmental
- Identifying opportunities across organization