CommScape & OpenII

Lessons learned so far
Agenda

- First attempts: CommScape, OpenII
- Field work
  - Data mgmt a large HIV/AIDS treatment program
  - Community healthcare workers
- Next steps
  - New CommScape
  - Improving data entry
  - Grass-roots business intelligence
CommScape motivation

- Healthcare in Developing Regions
  - Life expectancy of 1 billion poorest people is 35 years less
  - Few doctors, inadequate infrastructure like electricity, roads
  - Rely on Community Health Workers (CHW)
Community Health Workers

- Responsibilities
  - Home visits, basic care and referrals
  - Disease prevention education
  - Monitor population health

- Challenges
  - Little health training and high staff turnover
  - Data rarely captured
  - Minimal supervision
  - Isolated, poor infrastructure
But really…

- I make databases… people need clean water
  - Coordinate! Hey Tap… Uh, Joe…
- Stuffing in “research”
  - Multi-tenancy data architecture
  - Replication semantics
  - Collaborative visualizations
  - Delay tolerant networking
Maybe something like this...?
CHWs doing analysis?

Figure A. Form entry on a household visit

Figure B. House map and a timeline of visits to a patient

Figure C. Selecting a part of a visualization and annotating

Figure D. Viewing annotations associated with a visualization
CommScape, original recipe

- “ahead of its time reality”
Getting feedback

- Talk to people who know what’s up
  - Thanks to Tapan & friends, TIER folks
  - Talk, talk, talk
- Apply for funds
- Get side-tracked…
OpenII motivation

- What is data integration?
- Data management in NGOs
  - Nature conservancy
  - International rescue committee (IRC)
- Open source information integration
  - Leverage existing tools
  - $
Schema search and visualization

- A first step for OpenII
How to make it relevant?

- Talk...
- Read...
- Listen...
- Plan a trip...
Field work

- Do something useful
- Find partners, be flexible, observe
- Fun!
MDH data consultation

- Lost-to-Followup
- A legacy workflow
- Paper forms, 11 clinics
- Data entry multiple times over
- MS Access and SAS
- Prioritizing research and clinical care
MDH Take Away

- Give: a solution, future recommendations
- Get: insight, data, partner on the ground
- It’s all about data quality & decision making
  - A vicious cycle
Helping CommCare
Community health workers

- Find real scenarios
  - CommCare household canvassing
  - Map cues automation, sensors
  - Extending telemedicine
Time to rethink things...

- Take an inventory of the real problems, tools and methods you know
- Pattern: do something, rethink, repeat
New direction

- “Data enablement” for developing regions
  - Focus on NGO/community organization capacity
- Context appropriate data systems
- Data quality & decision support
New CommScape

- Focused on validated use cases
- Data quality at time of entry
- GPS navigation, and other sensor-based enablement
- Distributed decision support
Improving Data Entry

- Address data quality at time of entry
- Assess cost / benefit of data entry widgets
- Statistical model of forms based on
  - value distributions, cross-field correlations, info gain from questions answered, widget cost/benefit
- Information theoretic approach to
  - Question ordering, formulation, repetition
  - Widget configuration
    - Selection, default values, type-ahead, auto-complete
- Make it harder to enter incorrect data
Data Ecosystem Vision

- Start with data managers at NGOs
  - Integrate local DBs and spreadsheets
  - Facilitate day-to-day tasks (OpenII)
- Create community for sharing metadata
  - Let them tag, vote, create code-books, argue
  - Extend to form creation, visualization, analysis
CommScape + OpenII = Grass-roots business intelligence!

- Like enterprise data warehousing and business intelligence
- Harmonizes data sources
- Summarizes into analytical representations (visualizations)
- Shares aggregate information
- Enables everyone to participate in analysis.
Questions