Open Data Kit (ODK)

Modular Open-Source Tools for Mobile Data Collection

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http://code.google.com/p/open-data-kit

Organizations in developing regions inefficiently collect mostly textual data.

Data Collection Issues

- Current practice is paper-based forms
  - Physical collection tends to be slow and expensive
  - Data transcription errors are plentiful
  - No access to relevant historical data
  - Significant lag time to usable information
- Moving to electronic devices has problems
  - Limited processing, storage, transmission on PDAS
  - No location and multimedia on basic phones
  - Hard to setup and maintain databases

Project Goals

- Make tools modular and customizable so they can be easily adapted and composed.
- Build on open interfaces and standards so that solutions are not expensively "siloed".
- Establish data collection tools which can evolve easily with technology.
- Build an open source community to drive the project.

With mobile phone growth comes infrastructure that makes this possible

ODK Collect

ODK Collect, our Android client, renders a form, survey, or algorithm into prompts that support complex logic, input constraints, repeating questions, and multiple languages.

Forms are based on the JavaRosa XForms standard and support a variety of data types, like location, photos, audio, video, and barcodes.

Data can be sent to any JavaRosa compatible server.

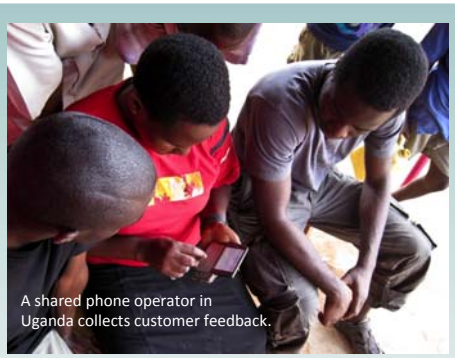
ODK Aggregate

ODK Aggregate is a ready-to-deploy "cloud" server that hosts forms and submitted results and provides interfaces to extract data such as spreadsheets, queries, and maps.

Aggregate is build on Google's App Engine, a free, reliable and scalable service where each organization is responsible for their own "instance".

Upcoming Tools

Voice based forms for automated follow up
Remotely manage forms and applications on devices
Simple drag and drop form designer
On phone patient portal for clinicians
Local (non-cloud) server storage
Task assignment and workflow management
Visualization and reporting of collected data
Usable encryption for storage and transfer
External sensors to enable field medical devices such as ultrasound and stethoscopes



A shared phone operator in Uganda collects customer feedback.

Grameen AppLab in Uganda

- ODK Collect has been used by AppLab since November 2008 by shared phone operators (SPO) in rural Uganda collecting 1000s of surveys.
- The SPOs survey their customers about available phone-based services and the results are used to guide the development of services like Google's Clinic Finder and Farmer's Friend.
- One user noted that unlike their old paper surveys, "The survey process is real time as opposed to the paper forms where we had to wait for a month to be picked up...".

An HIV counselor scans a patient's demographic information into ODK Collect.

HIV Counselors in Kenya

- AMPATH is the largest HIV treatment program in sub-Saharan Africa and is Kenya's most comprehensive initiative to combat HIV.
- Over the next two years, ODK Collect will be used in a home-based testing and counseling program where hundreds of phones will be used to survey, train and follow up millions of people.
- The collected data will be submitted to OpenMRS, a medical records system, for analysis and followup.

Surui tribe members in the Amazon monitor the forest with ODK tools.

Forest Monitoring in Brazil

- The Brazilian Forest Service is piloting ODK for in-situ monitoring of the Brazilian rainforest.
- ODK Collect will be used to confirm satellite imagery of the forest and document forest structure throughout the Amazon.
- ODK Aggregate will be used to generate live updating Google Maps with geocoded images and survey data.

Others include decision support for patients in Tanzania, documenting war crimes in the Central African Republic, and monitoring school attendance in India.

Growing Community

- Developers are checking in code and implementers are helping each other.
- Organizations as large as Google.org are training their staff and others on ODK.
- University of Washington is teaching a grad/ugrad class on extending ODK's functionality.
- Papers and demos are being published in academic conferences and the public press.
- Cost/benefit tradeoffs are being measured and smartphones seem worth the investment.

An external developer gathers user feedback in a rural village in Kenya.

See also CommCare: A Framework for Mobile Tools for Community Health Programs