CROWD SOURCING EXPERIMENTS IN HIGH CONFLICT/LOW STABILITY AREAS

Starting in the spring of 2010, a team of researchers conducted a series of crowd-sourcing experiments to learn how a combination of (a) modern communications devices (e.g. phones, smart phones, laptops), (b) culturally-appropriate social networking and careful choice of participating sub-populations and goals, and (c) incentive strategies could result in such reliable self-reporting of local conditions and sentiment in Afghanistan.

The More Eyes project was designed to explore methods to overcome the difficulties accompanying traditional methods to gather, store, and display data to support assessment and planning of stability operations. The project's first challenge was to generate and capture crowd-sourced data. The approach was to catalyze interaction among local residents by enabling and incentivize the local population to participate in mobile phone and web applications. In theory, these interactions will reveal unbiased raw data that can be used to evaluate stability conditions on the ground. The challenge was to generate this data in formats that could be conveniently collected, standardized and integrated.

Several pilots were developed to catalyze electronic communications among the local population. Each of these pilots was designed to provide prompt data directly from the local population that could be used to understand security and stability conditions in the field.

The pilots were conducted using the most appropriate mobile communications technologies to elicit information from remote areas.

Building on the lessons learned from the More Eyes project, the IST Research team has launched several efforts in various domains all centered on our Data Collection Interface. The system was designed to seamlessly launch collection tools across a number of different modalities enabling the largest possible proliferation of input mechanisms. Data collection by local populations in high conflict scenarios requires simple, reliable, technical collections means.

Specific Use Cases

Disease Early Warning System

Developed an Android-based information collection and dissemination architecture focused on providing information for rapid epidemiological analysis in a post massive disaster scenario. Built from work with Afghan Midwives effort where highly detailed medical informatics were collected and shared via SMS.

MIST Operations SOUTHCOM

Deploying Android-based SMS gateways in South America to serve as an information tool for the military information teams to send and receive messaging to the local population. This effort will be couple with participatory mapping efforts across the continent.

CJPOTF Afghanistan

Launched nationwide media campaigns with SMS feedback mechanism to measure penetration of CJPOTF messaging products (print and radio). The Data Collection Interface was enhanced for this effort to quickly start and stop pilot projects with little or no technical or administrative support. Project enabled the collection of demographics of participants through numerous methods.

Community Trust Evaluation Mixed Media Methodology

The technology framework allows for a range of technologies to be flexibly integrated to suit the media and technology available to the citizens under consideration. The first step is to monitor available media such as broadcasting or publicly accessible social media to collect background and longitudinal data to guide the effort. See the following page for details on this effort in support of DARPA's SSIM project.
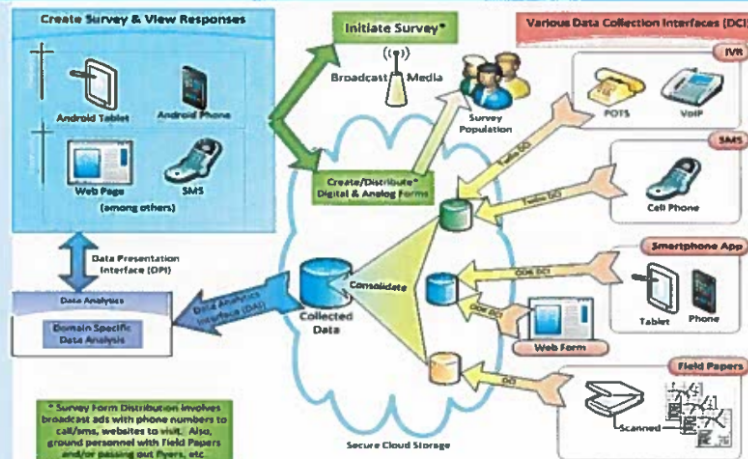
DATA COLLECTION INTERFACE USING INDIGENOUS COMMUNICATIONS

The Data collection interface is comprised of three major components: 1) SMS and Interactive Voice Response (IVR) Field Surveys, 2) Smart Phone mapping and data collection tools, and 3) Paper-based collections.

Our experiments in Afghanistan, Haiti and Colombia have shown that the collection of highly structured data from the local population via SMS is not only possible but also quite easy to achieve. The addition of the modalities of voice response, paper based collection, and smartphone entries makes the system rapidly deployable to any part of the world and usable by more than 70% of the worlds population.

The Data Collection Interface makes it possible for the user to begin a survey from any device (computer, tablet, smart phone, dumb phone), launch collections across multiple modalities. On the back end is a single consistent data structure prepared to receive, normalize and visualize collected information.

The future of conflict, crisis, and development will rely on high-resolution data at every stage of assessment, guidance, and evaluation of projects. Aggregate 30 k foot statistics are no longer sufficient for sophisticated and efficient project planning and management. A new data collection interface is needed, with tools for determining information needs, stating questions, and administering data collection. Dynamic and evolving environments require similarly agile collection methods to for effective intervention.

IST RESEARCH CONCEPTS APPLIED TO MONITORING AND EVALUATION

Recent moves by the aid and development communities have indicated high interest in remote monitoring and evaluation (M&E) capabilities for development efforts in high conflict areas. A recent Request For Information (RFI) from USAID for their Monitoring and Evaluation efforts in Afghanistan indicate that they are interested in spending upwards of 7% of their $4.6B development budget towards M&E. The RFI specifically calls the tools, techniques and methodologies that IST Research has been developing over the last 24 months. Our assessment of the aid and development market is that there will be a move in the next 24 months to adopt crowd sourcing and participatory mapping techniques into their portfolios to aid in reducing the M&E costs.
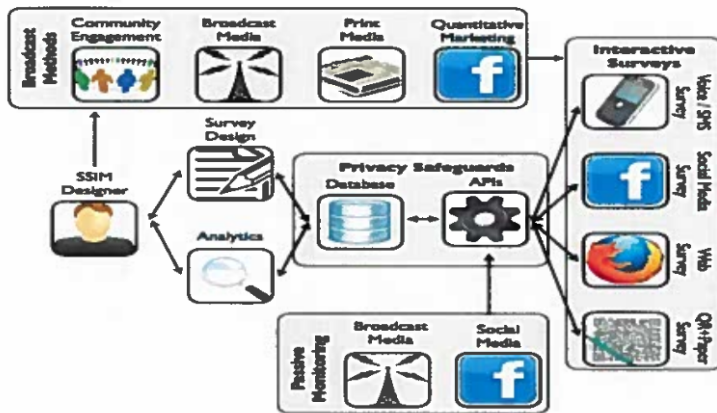
STRATEGIC SOCIAL INTERACTION MODULES (SSIM)

The team designs information to be broadcast to the civilian population for participation in interactive surveys, using the media types accessible by the relevant communities such as community engagement, broadcast media, or quantitative marketing. The designed surveys are made available using methods accessible by the population, including interactive voice response, text messaging, web surveys, social media surveys, and paper based surveys with QR codes. The data is brought into a secure database via the various APIs, and the data is aggregated and anonymized to protect privacy. Data for analysis is made available to the SSIM team for evaluation purposes or as a design feedback loop to guide the next iteration of surveys.

Android/Envaya Based SMS Gateway

IST Research has developed and deployed an Android/Envaya based SMS gateway to Afghanistan and Colombia in support of various projects. The solution comes with unique features that make it very attractive to deployments in areas with limited communications connectivity.

Redundancy

The combination of the SMS transmission protocols, the light weight nature of the Envaya application, and the power and communications redundancy of the Android smart phone means that this gateway operates flawlessly in areas with intermittent communications and power connectivity. In 4 months of operations in Afghanistan the 4 channel gateway did not drop a single inbound SMS message.

Remote Connectivity

The app has the ability to remotely control the SMS application when the phone is connected to a cellular or Wi-Fi data connection. From the United States we are able to send and receive thousands of SMS messages through a local Afghan phone number with no need for special gateways or telecom access

Background Operations

The application operates in the background while the carrier can continue to use the device as a personal mobile communications device.