Case Studies: Mobiles for Development

This report presents the key findings of the Mobiles for Development project, a global research study commissioned by UNICEF.

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# Introduction

This report provides analysis and write-ups of 10 M4D Case Studies (5 from within UNICEF, and 5 from the broader M4D landscape) regarded as being of potential interest to UNICEF programming areas. The table below briefly summarises all 10 M4D Case Studies.

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<thead>
<tr>
<th>Project</th>
<th>Category</th>
<th>Country</th>
<th>Description</th>
<th>Organisation / Developer</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAFDAC Mobile Authentication Service (MAS)</td>
<td>Health</td>
<td>Nigeria</td>
<td>The service is to verify the users’ medicine as genuine. The user uses an SMS service to check whether their drugs are fake or not by texting in codes on the medicine container.</td>
<td>Sproxil, NAFDAC, BIOFEM</td>
<td>Service</td>
</tr>
<tr>
<td>Freedom HIV/AIDS Game</td>
<td>Health</td>
<td>Malawi</td>
<td>Freedom HIV/AIDS is a gaming initiative that uses mobile telephones to engage people in entertaining, awareness-raising activities regarding HIV/AIDS.</td>
<td>Freedom HIV/AIDS, ZMQ Software Systems</td>
<td>Pilots, Projects and Programmes</td>
</tr>
<tr>
<td>GCash</td>
<td>mCommerce</td>
<td>Philippines</td>
<td>G-Cash is an SMS-based m-Commerce service that allows person-to-person money transfers and remittances, microfinance applications, bill payments, and purchase of goods and services.</td>
<td>Globe, RBAP</td>
<td>Services</td>
</tr>
<tr>
<td>DEWN</td>
<td>Humanitarian Environmental</td>
<td>Sri Lanka, Mongolia, Philippines, Lao PDR, Bangladesh</td>
<td>DEWN uses widely available mobile communication technologies such as short messages (SMS) and cell broadcasting (CB) to create a cost-effective and reliable mass alert system. The network connects mobile subscribers, police stations, religious/social community centres and the general public to a national emergency alert centre.</td>
<td>Dialog, DEWN, MicrolImage</td>
<td>Services</td>
</tr>
<tr>
<td>BBC Janala</td>
<td>Education</td>
<td>Bangladesh</td>
<td>BBC Janala uses mobiles through calls and SMS to teach English. Operators generate users through promotion on other services. It costs 20 tk to listen to a 20 minute lesson.</td>
<td>BBC Trust, English in Action</td>
<td>Services</td>
</tr>
<tr>
<td>Project</td>
<td>Category</td>
<td>Country</td>
<td>Description</td>
<td>Organisation / Developer</td>
<td>Type</td>
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<td>-------------------------------------------</td>
</tr>
<tr>
<td>Voice of Kibera</td>
<td>Socio-Economic</td>
<td>Kenya</td>
<td>Voice of Kibera, an initiative of Map Kibera, is a citizen reporting project based in Kibera, Nairobi - Africa’s largest slum. The project uses the Ushahidi platform to map reports submitted via SMS, email, and website.</td>
<td>UNICEF, Groundtruth Initiative, SODNET, KCODA</td>
<td>Pilots, Projects and Programmes</td>
</tr>
<tr>
<td>Mobile births</td>
<td>Health</td>
<td>Vanuatu</td>
<td>The birth registration system uses mobile phones through the software “iCount”. This innovative system simplifies the process of birth registration by entering information about a newborn baby into an already programmed mobile phone, which sends the data into a specific Civil Registry database.</td>
<td>UNICEF, Johannes Gambo, MoH, Ministry of Internal Affairs, Digicel</td>
<td>Pilots, Projects and Programmes</td>
</tr>
<tr>
<td>Logistics</td>
<td>Health</td>
<td>Nigeria</td>
<td>The Long Lasting Insecticidal Nets (LLIN) universal campaign in Nigeria aimed to distribute over 63 million bednets; the largest bednet distribution in history. The use of RapidSMS has increased efficiency and effectiveness of the LLIN campaign by providing real time information that has enabled managers to respond to challenges as they arise.</td>
<td>UNICEF, MTN, Zain, MoH, Dimagi, TimbaObjects Company, NuObjects Tech Services Ltd., Techno-Science Ltd.</td>
<td>Pilots, Projects and Programmes</td>
</tr>
<tr>
<td>Jokko Initiative</td>
<td>Education</td>
<td>Senegal</td>
<td>&quot;Jokko&quot; Initiative involves empowering people to improve their lives through Mobile Technology. Through Jokko’s RapidSMS Community Forum, a user can send an SMS text message to a “magic number” that then forwards the message to all phone numbers belonging to the network.</td>
<td>UNICEF, Centre of Evaluation for Global Action, Dimagi, Thoughtworks, Alioune Dia</td>
<td>Pilots, Projects and Programmes</td>
</tr>
</tbody>
</table>
### Analysis of Case Studies

The case study products can be categorised in a number of ways, and these are discussed in this section. However, possibly the most fundamental distinction is between target users:

- **Consumers** – people download Freedom HIV/AIDS games, they listen to BBC Janala recordings, receive DEWN alerts, transfer GCash, text codes to MAS, receive digests from Voice of Kibera, and send messages via the RapidForum.

- **Service delivery personnel** – specific data was gathered by trained data “senders” in the RapidSMS logistics system, and registrars were trained to use the iCount software in the Mobile births registration project.

### What makes a mobile so useful?

#### Accessibility

Among those services that are used directly by consumers, the ability of consumers to access services at the time and location of their choice is a key feature in overcoming barriers that have previously existed before the advent of the mobile phone. For example, women can access the BBC Janala service at home, and GCash users no longer have to travel to a bank or pawn shop to receive remittances.

The reach of mobile networks into remote areas is also a feature in data gathering applications – the value of the system is greater in locations where conventional systems (e.g. sending paper registration documents) is difficult, time consuming and expensive such as among the remote and scattered islands of Vanuatu.

#### Speed

The availability of timely, real-time data is essential for planning purposes. It is, therefore, the speed with which mobile based data collection systems can collate and analyse data at a central location that makes them so useful. Over the course of a four- to five- day bed net distribution exercise, the ability to identify problems as they occur helps ensure that more people receive bed nets. When dealing with **PGR** (Polymerase Chain
Reaction) testing, the ability to inform mothers of the HIV status of their newborn babies within a week, rather than waiting for 3 months, can make the difference between life and death.

When it comes to early warning alerts, such as DEWN, it is the combination of speed of communication and the fact that people often have a mobile with them (accessibility) that makes the mobile such a powerful tool.

**Women’s empowerment**

The BBC Janala project explicitly targets women, who may otherwise have limited opportunities for learning. Tostan targets women and girls even more specifically, as they account for 80% of participants in their training programmes. One of the most promising outcomes of the Voice of Kibera project is the coordination of local groups addressing gender based violence.

These reflect the gender neutral nature of mobile phones and their potential to provide interventions for women in communities or family units in which male dominance may make it difficult to do so by other means.

**Technology complementary**

Information communicated via mobile phones often forms part of a wider system employing a number of technologies. For example, data gathered by service delivery personnel is processed and accessed via a website. BBC Janala is part of a wider programme including a TV show and a website. Alerts sent by the DEWN system are also disseminated using radio. GCash can now be used for on-line shopping. Voice of Kibera also makes use of local radio and community newsletters.

**Value of the mobile service**

**Transformative Vs Improvements**

A number of products use the mobile to improve the delivery of services, typically by doing a task quicker, at lower cost, and with improved reliability – these offer benefits in terms of efficiency:

- RapidSMS logistics was applied to traditional paper tracking systems;
- Jokko Initiative’s RapidForum is designed to strengthen existing means of communication within communities;
- The mobile births registration system replaces the need to transport paper documents;
- Voice of Kibera offers a more effective means for the community to engage with service providers, such as local authorities.

Other projects can be regarded as transformative, offering a service that simply did not exist prior to the project:

- MAS
- GCash
- BBC Janala
- DEWN
- Freedom HIV/AIDS

Perhaps MAS is the best example because in most places there is no way of verifying authentic medicines. It can be argued that there are other ways of making payments, or of learning English, but it is asserted that the
mobile application renders the service accessible to people that would otherwise have no access e.g. GCash offers micro financial services to people without bank accounts, and BBC Janala can be accessed by women who could not attend conventional classes.

**Networking effect**

Most of these products involve a one way flow of information:

Repository to consumer:

- Freedom HIV/AIDS – consumers play game
- BBC Janala – consumer downloads audio file
- DEWN – system sends alert to consumer
- MAS – system sends confirmation to consumer

Data collector to repository:

- RapidSMS logistics – data senders send data to the system
- Mobile births registration – registrars send data to central database.
- Only a few rely on achieving a critical mass of users in order to provide a benefit:
- GCash – only becomes useful when enough people access GCash. There is an argument that it becomes useful when the right person uses GCash e.g. overseas remitter
- Voice of Kibera – becomes useful when enough people are submitting information of interest to consumers
- Jokko Initiative – the RapidForum becomes useful when enough consumers are registered i.e. when a message can be reliably disseminated.

**Scaling**

**Maturity**

Most of the case studies are regarded as either pilots or in their early stages of development (BBC Janala, MAS, RapidSMS logistics, Jokko Initiative, Mobile births registration). Most of these have already done some kind of research, albeit among a limited target group, in order to demonstrate the proof of concept e.g. Freedom HIV/AIDS tested learning among school students. The Voice of Kibera project is still at the proof of concept stage, describing itself as “experimental”.

Projects for which there are clear intentions to expand reach include:

- Freedom HIV/AIDS – driven by social enterprise ZMQ;
- BBC Janala – as part of a long-term English in Action funded programme
- MAS – driven by Sproxil, a start-up company
- Jokko Initiative – will include a training module as part of the curriculum for ongoing CEP training
- Mobile births registration – the government plan to roll out to all provinces in the country.

Projects that are more mature include:

- GCash
- DEWN
Achieving national reach

Where services are used directly by consumers, the product is offered to consumers using the marketing reach of national companies – mostly through mobile operators, although in the case of MAS it is the pharmaceutical company that promoted the service. These services have achieved national scale, as they can be accessed through mobile networks:

- Freedom HIV/AIDS
- BBC Janala
- DEWN
- GCash
- Sproxil

Voice of Kibera has only local relevance – duplicating it in another location would require duplication of many cost components e.g. community mapping, community mobilisation. The same is true of RapidForum (Jokko Initiative).

One of the challenges in the RapidSMS logistics project has been training. Rolling out the system to other parts of the country would require training of local data collectors. Training of government staff was also an integral part of the Mobile births registration process in Vanuatu.

The extent of training required depends on how easily people using the system (handset operators) can grasp the concepts involved. For example, receiving an alert warning of a storm is at one end of the spectrum, whereas Voice of Kibera, in which people struggled to understand the potential of community mapping, is at the other end of the spectrum.

Training is relevant to scaling because of the cost involved. Projects achieving national scale have been able to convey the concepts to consumers through media and marketing campaigns, although GCash needed to put people on the ground to show people how to use the system. Both data gathering systems and community communication systems require intensive training in each location, implying large marginal costs.

Financial implications

Development costs

From the limited number of instances where any kind of cost information was made available, it appears that M4D systems can be implemented for relatively modest sums – typically around $50,000:

- ZMQ estimated costs of development, marketing and launch were $80,000;
- Voice of Kibera estimated project costs, mostly personnel costs, were $60,000;
- The cost of implementing the pilot programme in Vanuatu (mostly training and travel) was estimated at $40,000.

Revenue generation

The sustainability of a M4D system depends on its ability to provide a return on investment – a business case - by generating revenue or reducing expenditure.
The case studies provide examples of the ways in which this can be achieved.

- **Consumer pays.** The strength of mobile based systems is in large volume, low margin transactions. Both BBC Janala and Freedom HIV/AIDS have lowered barriers to accessing services by making services available at low cost – typically less than 5cents. GCash charges are higher (minimum of 20cents), but the service involves a high value transaction with clearly identifiable financial advantage.

- **Company pays.** For MAS, the pharmaceutical company pays for the system, and benefits in terms of increased sales.

- **Service provider pays.** RapidSMS logistics, Project Mwana, and Mobile births registration projects were funded by UNICEF on the basis that these offered a cost effective means of fulfilling programming requirements. DEWN also fits into this category.

- **Community pays.** Voice of Kibera is designed to maximise the use of volunteers and minimise financial costs of maintaining the system; community based organisations or NGOs will need to meet ongoing costs.

Globe Telecom clearly regards GCash as financially viable, as it forms part of the business strategy. ZMQ feel that the Freedom HIV/AIDS products reached breakeven after 3 years. After the 3 month trial period, the pharmaceutical company paying for the MAS service increased sales by 10%, representing a return on investment of over 1,000%.

### Technical resources

#### Programming expertise

Despite the observation made by many UNICEF country staff that local technical capacity to lead an IT project tends to be lacking, the technical expertise for the development of several of the case studies was sourced locally:

- Freedom HIV/AIDS games were developed by social enterprise ZMQ
- BBC Janala is managed by international consultants and funded by UK donor, but was developed using Bangladeshi technical expertise (SSD-TECH)
- GCash was an initiative of Globe Telecom and developed using Asian expertise (Utiba)
- Sproxil is a US/Nigerian technology company, making use of local programmers for NAFDAC MAS
- DEWN was developed by Dialog Telekom PLC making use of a local Sri Lankan technology company (Mircroimage).

Having said that, most of these examples are taken from Asia where technical capacity is relatively high; most of the UNICEF country staff comments about the lack of local technical expertise referred to African countries. Most of the UNICEF case studies are based in Africa, and have relied on external technical expertise, often sourced through UNICEF:

- Voice of Kibera was part of the MapKibera concept devised by US volunteers, and has been developed by overseas expertise
- the RapidSMS logistics application was devised by UNICEF, and technical expertise was provided by UNICEF, with knowledge transfer to local programmers
- Jokko RapidForum was designed and developed by US technology companies, with knowledge transfer to local programmers
Mobile births registration software was developed by a programmer from New Zealand.

Role of operators

In 2 cases, the product was initiated and developed by a local operator:

- GCash (Globe Telecom, Philippines)
- DEWN (Dialog Telekom, Sri Lanka).

In other cases, the role of the operator is restricted to conventional items such as provision of shortcodes, toll free numbers, and provision of discounted or free SMS.

Conclusions

Analysis of the case studies highlights the following conclusions.

- Developing a mobile based system does not have to be expensive – costs can be as low as $50,000. However, the cost of developing a national platform, such as GCash, will be much higher.
- Mobiles are particularly effective in reaching women, due largely to the fact that women can use mobiles at times and in locations that are convenient to them e.g. at home.
- The value of mobiles tends to be leveraged when integrated with other media, typically websites for presenting and submitting data, TV and radio for disseminating information. However, some transformative services can provide benefit through the mobile platform alone e.g. MAS, and GCash.
- External case studies can be regarded as transformative, providing services to consumers that previously had no access. UNICEF case studies can be regarded as bringing efficiency improvements to existing tasks. It is not clear that any qualitative judgement is associated with the distinction i.e. one is better than the other.
- Simplicity of concept is key to achieving scale. Data gathering products tend to be complex and typically involve intensive training of handset operators, which can be challenging because the marginal cost of providing training when rolling out to new locations becomes high. Projects achieving national scale have largely been able to convey the concepts to consumers through media and marketing campaigns.
- Projects in Asia used local technical expertise to devise and develop products. Projects in Africa, mainly UNICEF projects, have relied on external technical expertise, often sourced through UNICEF.
- A number of revenue generation models can be seen among the case studies:
  a. consumer pays - large volume, low margin transactions, typically less than 5 cents
  b. company pays - and benefits in terms of increased sales
  c. service provider pays - offers a cost effective means of delivering service
  d. community pays - where it can identify community benefit.

Given that most case studies are in their infancy or pilot stages, it is not appropriate to make any qualitative judgement on the relative merits of these.
DEWN (Disaster and Emergency Warning Network)

The power of the mobile to save lives

In the tsunami of 2004, 35,000 lives were lost in Sri Lanka alone. The World Bank estimates that worldwide economic losses from natural disasters in the 1990s could have been reduced by $280 billion if $40 billion had been invested in preventive measures. The socio-economic impact is worst in developing countries, where disasters erode development gains.

DEWN has been designed to protect life in the event of disasters. It is a multi-modal communication system built on a suite of GSM technologies that warns people of impending disasters. It sends alerts both to mobile handsets and to portable alarm devices. It enables disaster information to be communicated securely and instantaneously to emergency personnel and mobile phone users anywhere in the country. A number of features make it particularly effective:

- it uses existing GSM infrastructure (near universal coverage in Sri Lanka);
- unlike traditional warning methods it has the ability to wake people up when sleeping by screen flashing and audible alarm tones;
- it is able to broadcast alerts where normal voice or SMS may fail due to network congestion;
- screen messages are presented in three languages.

The Target Audience

DEWN has the potential to cover 5 million mobile users (Dialog is the country’s top mobile operator) – that’s 1 in every 5 Sri Lankans. As the poor tend to live in areas that are hardest hit by disasters, the system effectively targets more vulnerable parts of society.

Alerts are sent to members of the emergency services, such as the police, fire brigade, and Disaster Management Centre (DMC) district coordinators, as well as key contacts in the community such as religious and social/ community centres.

As the impact of disasters on national economies becomes apparent, governments have a clear interest in protecting people and reducing the cost of disaster responses. In Sri Lanka, the government set up the Disaster Management Centre (DMC) under the Ministry of Disaster Management and Human Rights, and it is the

<table>
<thead>
<tr>
<th>Country</th>
<th>Sri Lanka</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle references</td>
<td>Dialog Website</td>
</tr>
<tr>
<td>Description</td>
<td>A mass alert early warning system that sends customised alerts to selected recipients instantaneously. Using SMS and CBM, DEWN sends alerts to handsets of emergency personnel, or mass alerts to consumer handsets in selected geographical areas. Coverage is extended through specially designed portable alarm units.</td>
</tr>
<tr>
<td>UNICEF focus area</td>
<td>Child survival and development</td>
</tr>
<tr>
<td>Maturity</td>
<td>Currently deployed</td>
</tr>
<tr>
<td>Contact</td>
<td>Sameera Wijeratna <a href="mailto:sameerawijeratna@gmail.com">sameerawijeratna@gmail.com</a> Dialag - University of Moratuwa</td>
</tr>
<tr>
<td>Creators</td>
<td>Dialog Axiata PLC</td>
</tr>
<tr>
<td>Sector</td>
<td>Disaster management</td>
</tr>
<tr>
<td>Funders</td>
<td>Dialog Axiata</td>
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<tr>
<td>Mobile tools/software</td>
<td>Java/Symbian</td>
</tr>
<tr>
<td>Similar M4D initiatives</td>
<td>n/a</td>
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</tbody>
</table>
DMC that currently manages the DEWN system at an operational level.

**How it Works**

When institutions such as the Pacific Disaster Centre and the Sri Lanka Meteorology Department send information of a potential disaster to the Disaster Management Centre (DMC), the information is first verified, and then customized alerts are issued. The DEWN server resides in a secure facility and is used by authorized persons to generate warning messages, which are sent using widely available mobile communication technologies such as Short Messaging Service (SMS) or CBM (cell broadcast message). Emergency alarms are relayed to end devices in seconds.

SMS is used for directed messages while Cell Broadcasting is used for mass-alerts. Cell Broadcasting is well suited to disaster operations since it is immune to network congestion (it makes use of an 88 byte message sent by base stations to all handsets in a cell area). Messages can be sent selectively, based on geographical area, to specific individuals or groups of recipients, or to the general public, as directed by the authority generating the message. The system is compliant with the Common Alerting Protocol (CAP), an internationally recognised standard that enables the authorised entity to distribute the same warning message to multiple media (radio and TV broadcast stations, cellular networks, satellite radio systems, fixed telephone networks etc.) in one operation.

Although warning messages can be displayed on any GSM handset, owners of Java / Symbian capable handsets (smart phones) can also download special phone software for free. The software causes the phone to ring continuously until acknowledged, and displays the alert message in any of three local languages.
In addition to mobile phone handsets, messages can be received by a special-purpose wireless alarm device, currently built on a 2.5G module, which is designed to be fixed indoors in public buildings such as places of worship, hospitals, markets, etc. It contains a loud siren, a flashing lamp, an LCD display, a radio, and inbuilt call-back facility. The radio can be tuned to a Disaster Frequency if available. It is powered from the mains supply under normal operation, and includes a backup battery that needs to be replaced every 2 years. The unit costs less than $50.

DEWN is a non-commercial value added service, offered to the nation as part of Dialog’s corporate social responsibility programme.

Operating Experience

The Disaster Emergency Warning Network (DEWN) was launched on 30th January 2009, after completing a successful pilot period. The pilot was implemented by Sarvodaya (a local NGO) and LirneAsia (a regional ICT policy think-tank) and demonstrated the successful operation of a hazard warning system for 4 southern coastal villages, with a population of over 100 families.

Fortunately, DEWN has not yet had to prove itself in the context of a disaster, but it has been evaluated by a number of leading institutions and has received a number of awards in recognition of its robust design and pragmatic functionality:

- Commendation at GSMA World awards – 2007
- National Best Quality Software awards – 2006
- National Awards for Science and Technology – 2006

Partners and their Roles

**Dialog Axiata PLC** was responsible for the development of the system, having conceptualised the system, funded its development and coordinated deployment. Dialog also negotiated policy positions with the Government of Sri Lanka on the impact of mobile phones for early warning and disaster mitigation.

**The Disaster Management Centre (DMC)** of Sri Lanka is the focal agency for disaster management in the country, and was involved in the implementation of DEWN as the de facto early warning system across the country. The DMC currently manages the system.

**Microimage (Pvt) Ltd.** is a Sri Lankan mobile technology company that designed and developed software for the system – both the backend software and the handset resident software.

**Dialog** – University of Moratuwa Mobile Communication Research Laboratory designed and developed the remote alarm device.

**Sarvodaya** is one of Sri Lanka’s largest NGOs – they used their grassroots contacts to pilot the system among coastal village communities.
Funding

Dialog Axiata PLC funded the entire research and development process, and met the costs associated with a dedicated server, VPN access to servers, and training and capacity building of DMC staff.

Microimage supported the initiative by developing the software free of charge.

Challenges

The greatest challenges were technical, particularly with bringing the system in line with the Common Alerting Protocol (CAP) standards. In August 2010, the OASIS open standards consortium (Organization for the Advancement of Structured Information Standards) announced approval of the Emergency Data Exchange Language (EDXL) Common Alerting Protocol (CAP) version 1.2.

Future Plans

In terms of extending the reach of the system, Dialog is considering enabling other networks to share the facility. DEWN would be an important value added service for the travel and tourism industry, and plans are currently under way to deploy DEWN in all coastal hotels in Sri Lanka.

An operator from Fiji has approached Dialog with a view to deploying the DEWN solution in Fiji with the assistance of the Fijian government.

Integration with 3G networks will enable the system to incorporate more advanced features such as GPS maps displaying on screen flashes to inform recipients of evacuation routes etc.
Freedom HIV/AIDS

Using games to promote awareness

Access to information on critical health challenges like disease prevention and treatment can often be the difference between life and death in underserved and isolated rural communities. In response to the HIV/AIDS epidemic in India, ZMQ developed a series of games in local languages to be played on mobile phones – the games were designed to help raise understanding of HIV/AIDS by making information available in many of India’s local language; India has 30 languages that are spoken by 1 million people or more.

Over a period of 3 years, 10.3 million game sessions were played in India. After the games were transferred to East Africa, 1.2 million sessions were played in a 2 year period.

Research with school children shows that playing the games is linked to improved learning on HIV/AIDS issues. A simple set of 5 questions asked before and after playing games also shows a link with improved learning. Key results include a reduction in misconceptions, a reduction in stigma against people with HIV/AIDS, and an increase in awareness of safer sexual practices.

Target Audience

ZMQ started in 2002 as a social enterprise addressing critical social challenges. At that time, India had the second highest HIV burden in the world, so the original set of 4 games were targeted at people most vulnerable to HIV infection, particularly school children and youth, as well as sex workers and migrant workers. Later on, more games were developed to address other communicable diseases as well as pre and post-natal care.

How it Works

Users access the games through Reliance, a leading mobile operator, which is a CDMA (Java) provider. Reliance has a WAP portal called R-World, which any Reliance subscriber can access. New content and updated games regularly appear on R-World. Every 15 days Reliance would send around a million SMS blast messages to a random selection of its users to promote the game on R-World. Subscribers with other operators downloaded

<table>
<thead>
<tr>
<th>Country</th>
<th>India, Kenya, Tanzania, Uganda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle reference</td>
<td><a href="http://www.freedomhivaid.com">www.freedomhivaid.com</a></td>
</tr>
<tr>
<td>Description</td>
<td>A set of games for playing on mobile handsets (J2ME, BREW). The games raise understanding of HIV/AIDS by displaying information messages at appropriate points in the game. All subscribers on the network have access to the games at low cost (5 US Cents per session).</td>
</tr>
<tr>
<td>UNICEF focus area</td>
<td>HIV/AIDS</td>
</tr>
<tr>
<td>Maturity</td>
<td>National Scale</td>
</tr>
<tr>
<td>Contact</td>
<td>Hilmi Quraishi ZMQ Software Systems Plot No. 113, Sector 7, IMT Manesar, Gurgaon, 122050 India Mobile: +91 98719811960 <a href="mailto:hilmi@zmq.in">hilmi@zmq.in</a></td>
</tr>
<tr>
<td>Creators</td>
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<td>Mobile tools/software</td>
<td>Java/BREW/Symbian/Fash light</td>
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<tr>
<td>Similar M4D initiatives</td>
<td>FreedomTB M4Dev</td>
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</tbody>
</table>
the game by typing the WAP link into their mobile browser.

There are 4 games available in India, and 2 have been developed for the Africa Reach Programme, all addressing HIV/AIDS issues:

1. **Safety Cricket** – mimicking a village cricket match.

2. **Ribbon Chase** – the objective of the game is to spread the message about HIV/AIDS all over the world.

3. **The Messenger** – In this game a dove is used to act as the messenger for HIV/AIDS awareness.

4. **Quiz with Babu** – the user is asked 10 questions about HIV/AIDS by the village boy, Babu.

5. **AIDS Penalty Shoot Out** – a soccer game in which the player has to save and shoot penalties.

6. **AIDS Fighter Pilot** – Juma and Wanjiku have dedicated themselves to spreading knowledge about HIV/AIDS in every corner of their village using their Glider.

Once downloaded, the games are stored on the handset and can be played many times.

Games are available in English, Hindi, Kannada, Marathi, Telugu and Bengali. The user has an option to choose the language of his choice from within the game itself.

The software used to develop the games are Java (J2ME), Qualcomm’s (BREW), Symbian and Flashlight. 85% of handsets in India are Java enabled, although the number of BREW phones is increasing.

**Operating Experience**

ZMQ had experience of computer based CD games on HIV/AIDS, then realised the potential of mobile phones to reach rural communities. There was no piloting of the mobile games prior to their launch as “Freedom HIV/AIDS” on World AIDS day in December 2005. ZMQ were confident that the absence of information on HIV/AIDS and the fact that kids love playing games meant that anything made available would be taken up enthusiastically.

Reliance Infocomm allowed the games to be downloaded for free by all their subscribers in India during the first year. Over a 3 year period, the games were made available to 42 million handsets (out of a total of around 150 million subscribers in India), and 10.3 million game sessions were downloaded. Almost 4.5 million of these were in the first year when it was free. Since then, games have been charged at a cost of 2 – 3 Rs (5 US cents), and a further 5.8 million sessions were downloaded. ZMQ is making the games available at a fraction of the cost of commercial games (typically 20 to 50 Rs).

In December 2006 a series of new games was launched in East Africa under the Reach Africa Programme, in Kiswahili and Shen languages. Over a 2 year period, games were made available to 6 million handsets, and 1.2 million game sessions were played.
67% of game sessions were played by customers outside of the main cities like Delhi and Mumbai – these customers live in areas where there is no access to proper healthcare information, indicating that the games are indeed being played by the target groups.

The launch of the games was accompanied by a series of promotion activities including:

- all major daily newspapers of India provided half page advertisement on World AIDS day to promote the games;
- a poster campaign in Reliance shops (recharge centres) and other buildings such as hospitals;
- an education programme showing people how to download and play the games that involved the Reliance shops and sending peer educators from village to village;
- Reliance Infocomm sent free weekly SMSs to their subscribers to inform about the availability of the games.

Research was conducted in 4 villages on the outskirts of cities; Allahabad, Saharapur, Patna and Sholapur, in India. In each region, 200-300 children were invited for a 2 day workshop. Children were initially asked to answer questions related to HIV/AIDS, they then spent around 2 hours playing the 4 games, and some time later they were again asked questions on their understanding of HIV/AIDS. The overall result was an increase in knowledge.

ZMQ has built a self-testing version of the cricket game. The game begins with a Pre-test form on HIV/AIDS with 5 Yes/No questions on safer sex, peer pressure, sharing of syringes, and myths and stigma about HIV/AIDS. The user plays the game 5 times and a post-test form is then generated with 5 similar questions. Out of 15,000 cricket games surveyed there was an increase in knowledge.

Partners and their Roles

ZMQ Software Systems, a leading Social Enterprise based in India, were the implementing partner and stakeholder behind the concept and innovation of the games. ZMQ Software Systems created the games from concept through to the final implementation of the games on the ground.

Reliance Infocomm, a leading Indian telecom operator in India, was the driving force behind the distribution and dissemination of the games. Freedom HIV/AIDS games have run on Reliance Infocomm networks since 2007.

Delhi State AIDS Control Society (DSACS), a nodal state committee on HIV/AIDS in Delhi as a knowledge partner, in order to authenticate the HIV/AIDS messages. DSACS was involved in the research, development and approval of the messages in the game. When the messages were developed they tested the messages on the ground and provided a final vetting of the messages.

UNAIDS were also involved through the final vetting of the HIV/AIDS messages in the games.

The National AIDS Control Organisation (NACO) and the Delhi State AIDS Control Society were involved at a national level to promote the games with their logo and adoption of the games for CD-Rom and the web. NACO was then involved in the promotion of CD-Rom versions of the games titled “Health Mela”.

HIVOS was the primary partner of ZMQ Software Systems to support the rollout of the Freedom HIV/AIDS mobile games in Africa under the banner “Africa Reach Program”. They were involved in the replication and scaling of the mobile games in East Africa, Kenya, Tanzania and Uganda.
Funding

Development of the games was funded entirely by ZMQ. The cost of development, marketing and launch is estimated at 80,000 USD. However, the distribution of the games (during the first year) was subsidised by Reliance Infocomm.

Challenges

Creating a business model that provides health information to the urban poor was a challenge. People in urban areas pay for commercial games, but the idea of asking people who cannot afford even one meal a day to “pay and play” was regarded as immoral. The business model which led ZMQ and Reliance to provide games for free then sell them at very low prices after they had become popular helped the partners break even in 3 years. Features included revenue sharing with the mobile operator, sponsorship (e.g. logos on the game), and customer subscriptions.

Games also had to be developed for multiple handsets (e.g. to fit different screen sizes), and low specification handsets (black and white) meant that the size of the game was constrained to 32k.

Future Plans

The Freedom HIV/AIDS games are no longer available because mobiles games have a limited shelf life – typically 4 to 6 months, and need to be replaced over time. ZMQ are currently working on new games addressing issues such as global warming, the environment, indoor air pollution and English language learning.

ZMQ are currently working on a Mobile Social VAS (Value Added Services) channel to be independent of mobile operators, working through group subscriptions and sponsorship. The VAS content will include mGames, mLearning Apps, Ring-tones, Wall-papers, cartoon strips, animated strips etc.

They are pursuing a multi-platform approach, making games compatible with J2ME, BREW, Android, Windows Mobile, and iPhone.
GCash

Banking without the banks

“The Philippines is one of the richest markets in the world for mobile payments” - Rizza Maniego-Eala, President of G-Exchange, Inc. (GXI) a wholly owned subsidiary of Globe Telecoms, one of the Philippines’ leading mobile operators.

This is due to a number of factors:

- 7,100 scattered islands makes travel and communication difficult and expensive;
- a large number of people living below the poverty line have no access to banking and financial services;
- a large number of ex-patriot migrant labourers regularly send money home;
- the Philippines is the texting capital of the world!

Out of a population of roughly 90 million, around one third live below the poverty line, yet mobile phone subscriber penetration rates are higher than 80%.

GCash is a mobile money platform that enables mobile phone subscribers to turn their phone into an electronic wallet. It is helping to bridge the gap for the unbanked and provide better access to micro-financial services for millions of Filipinos, offering a quick, low cost, secure, and efficient means of transferring money from one location to another. It also enables subscribers to make payments (for purchases, or settling bills), and deposit or withdraw cash using their mobile phone.

There are estimated to be between 8 to 11 million Filipino workers overseas, and GCash lets them send money home through a network of almost 900 outlets spread across over more than 25 countries.

Target Audience

Globe has identified 2 primary markets:

- The mass market using Globe’s mobile service brands Globe Handyphone and Touch Mobile - 99% of Globe’s 26 million subscribers are prepaid users and a large proportion belong to the middle class and low income markets.
- International remittances from the overseas Filipino worker population.

How it Works

To use GCash, a person (or a business entity) needs to have a GCash registered Globe or Touch Mobile (TM) SIM card. Registering and using the mobile wallet is done by simply accessing the GCash menu from the Globe
serviced phone / SIM menu and follow the instructions. Once registered, the user must then load GCash into their mobile wallet. This is done by visiting any Globe Store or partner outlet to do a “cash-in”. When doing a cash-in transaction, the outlet loads the user’s phone with GCash in exchange for cash. The cash-in is authorised when the user presents their identification. The cost of converting cash to GCash is $0.20 or 1 percent, whichever is higher.

To make a payment or send money, a user selects “send GCash” from the menu, enters the amount and their PIN, enters a message to the recipient (optional), enters the recipient’s 11 digit number, and finally confirms the transaction in order to send.

Operating Experience

GCash has been fully operational since 2004. In addition to being a key means of money transfer, it has become a key tool for online commerce, and is now the most widely used mobile payment method for online purchases in the Philippines.

GXII has pursued a number of initiatives that have improved the services and the reach of the service so that it now has 1.1 million GCash customers and 18,000 outlets nationwide. The expansion of the GCash service to international remittance was the most important of these, causing a surge in usage. Examples of improvements to the service include:

- Establishing a network of local resellers extended GCash’s reach into rural areas. The Rural Bankers Association of the Philippines’ Microenterprise Access to Banking Services (MABS) programme organised a group of 60 rural banks to identify small businesses to serve as resellers.
- GCash Click – enables customers to shop on-line and pay using GCash; participating on-line retailers offer a GCash Click button on the website as a means of paying.
- GCash Online – is a web based service that allows overseas users to send money to a GCash account in the Philippines.
- GCash REMIT – cash can be sent via international partners to the Philippines, where recipients (Globe subscribers or not) can pick up the cash from any accredited GCash REMIT outlet.
- Globe has implemented an integrated GCash strategy that includes rewards and incentives e.g. GCash REMIT users transferring remittances over P1,000 receive free airtime as long as they are Globe, Tattoo or TM subscribers.

From April 2008, GXII partnered with CGAP to extend the GCash service to 3 rural and low income provinces, and signed up 120,000 customers. GXII’s approach to marketing GCash appears to have worked well, and often involved an element of customer capacity building that enabled people to use the services. One feature was the
use of local sales agents who were able to train customers on how to use the service, and “roving” agents who visited people in their homes.

To date, the average transaction size has been $21. Large numbers of customers send similar amounts of money within the country using other services and typically pay 3 – 5% commission – GCash charges only 1%.

**Partners and their Roles**

GCash is an in-house Globe Telecom development. The Senior Executive Group adopted the concept of moving cash and credit cards from a customer's wallet into the mobile phone as a strategic imperative. They developed the technology, and designed the infrastructure required, including the business process for an e-money ecosystem.

**Consultative Group to Assist the Poor** (CGAP) was instrumental in developing e-money ecosystems in the remote areas of the Philippines, which were unserved by any bank or financial institution.

**Utiba**, an Asian mobile transactions technology company, were involved in technical mapping and implementation, and continue to maintain parts of the GCash platform.

**Oracle** is a technology provider that set up the database engine.

The **Central Bank of the Philippines** and the **Philippine Anti-Money Laundering Council** developed regulation for the mobile money industry.

Globe Telecom is partnering with mobile payments specialist **Boku** to expand acceptance of the Globe GCash service internationally.

**Funding**

GXI is a wholly owned subsidiary of Globe Telecom. The development, launch, and operation of GXI is funded by Globe Telecom.

**Challenges**

The main constraints to increasing the number of customers in low income communities are a lack of financial literacy and lower levels of literacy amongst older users. This is illustrated by factors that underlie the low uptake
of the service when it was introduced in three low income provinces (Bohol, Surigao del Norte and Palawan) in 2008:

- People were reluctant to change their behaviour from using pawn shops for remittances. Although commissions charged by pawn shops were well below international money agencies, at 3-5% they were still much higher than the 1% charged by GCash.
- Although texting is common in the Philippines, literacy levels are lower in poorer provinces and it is young people that were more comfortable with using the service.

**Future Plans**

Globe Telecom believes they are on the cusp of mainstreaming mobile commerce. Plans for the next phase of growth include:

- Developing a robust, mobile based financial service network of intermediaries that will serve GCash users;
- Propagating “branchless” models within target markets.
Jokko Initiative

Extending discussions under the tree

All across Africa people from remote and isolated communities are using mobiles to keep in touch, but mobiles can be used for so much more than just talking.

Under the Jokko Initiative ("Jokko" meaning "communication" in Wolof), local NGO Tostan are pursuing 2 objectives:

- Literacy can be improved by teaching people how to use mobiles – especially texting and menu navigation; learning to use the calculator function also improves numeracy, an essential business skill.
- Practical SMS applications can be developed that are relevant to users. For example, RapidForum is a community mobilisation tool that helps community members share information – villagers can send a text message to a server that sends a blast of messages to their peers.

Working mostly with women and girls in poor communities, the first phase of the project involves training on how to use a basic mobile phone. This then gives them the skills needed to use the SMS applications developed.

RapidForum not only raises awareness about events, but also involves the entire community in decisions; empowering women and youth to use cell phones widens their communication sphere, and allows them to be more effective change-makers and economic actors.

Target Audience

Jokko is part of Tostan's Community Empowerment Program (CEP). The CEP mainly intervenes in rural areas, and participants are usually very isolated, both socially and economically, and more than 80% are women and girls.

RapidForum is an open and non-directive system, meaning that anybody can use it. As a mobilising tool, people sending messages tend to be community leaders such as community health workers, teachers, women's group leaders, religious leaders, and chiefs. The other group of users is group members that receive information via SMS messages.
How it Works

The Community Empowerment Programme approach has been developed by Tostan over 20 years, and aims to provide communities with the skills and knowledge to improve their living conditions. The Tostan coordinator selects 10 villages that form a local network, they elect a Community Management Committee, and the 30 month programme enrols 50-60 people. Teaching people the basics of mobile phones (texting, menus, filing etc.) fits neatly into this approach, and helps reinforce other subjects including literacy, numeracy, and management skills.

To date, RapidForum is the only mobile based application that has been developed. This is based on the RapidSMS code developed by the UNICEF Innovation Unit. A user can send an SMS text message to a “magic number” that then forwards the message to all phone numbers belonging to the network. It’s as simple as that.

The platform supports multiple groups of people. For example, one village has created a discussion group exclusively for youth. The basics of this system work much like a group list for text-messaging, however, the sender is only charged for the cost of one local text message - Tostan covers the costs of text messages sent to the entire group.

For example, consider a community health worker who wants to organise an awareness raising session in her village about malaria prevention. She can join a virtual community by sending a simple, coded text message to a magic number. Once registered, all messages she sends to the magic number will be sent to her “peers”. One or two days before the event she can use the system to remind everybody about it. Community leaders will be among her “peers”, and they can then disseminate the information through their own networks.

RapidForum is intended to strengthen existing channels of communication (e.g. face to face, community radio) rather than to replace them – information can reach more widely than it would do through discussions “under the tree”.

Operating Experience

An initial testing phase took place over a 4-month period from June-September 2009. This included building, testing, and modifying the “community forum” application and web interface, and use of the system in 3 test communities.

In late 2009, the SMS curriculum launched in 20 villages that participated in the pilot study, and RapidForum was introduced in only 15 of these. RapidForum was available over a 5 month period from mid December 2009 to May 2010. A total of 570 messages were sent over this five month period. The types of messages sent were categorised as follows (ranked by popularity):

- Social mobilization and meetings;
- Personal messages;
- Environment e.g. village cleaning events, fires, desertification, etc.;
- Health including vaccination, health alerts, etc.;
• Education including announcement of courses, etc.;
• Religion including a call for prayers;
• Celebration including events such as marriage, baptism, religious events;
• Youth Activities e.g. school, social, cultural, and or sports, and business;
• Economic Activities such as markets, for sale notices, etc.

The pilot which ran from December 2009 - May 2010. There were two big Virtual Communities, one for each major local language: 219 in the Fulani community, 217 in the Soninke community. In addition, participants could register for a local community in their village. The baseline survey covered demographics (age, gender, education, income, and employment); cell phone usage; literacy and numeracy; and social networks. 609 people lived in villages receiving the Rapid SMS system and 196 in the 5 villages without the system.

• At baseline, 44% of respondents could correctly identified the symbol on the cell phone which represents service, that rate was almost universal (96%) at the follow-up
• Cell phone use rose to be nearly universal (98%), from 58% at the baseline
• At the follow-up 65% of the total population reported being able to send and receive text messages in addition to make calls with a cell phone, up from 8% at baseline. This steep increase in ability to send and receive messages on the follow-up survey is mirrored by the percentage of the total sample which reports being able to read the messages they receive- 73%.
• 36% of the SMS Community Forum users we called randomly were not enrolled in Tostan’s Aawde adult literacy class. In fact, 55% were not even in one of the villages with classes which received training on the SMS Community Forum.

The evaluation points out that texting was free to participants for the duration of the CEP training, so it is not clear how texting behaviour will change when users have to pay for texts.

Findings from operating experience to date include:
• You need to keep it cheap, or it won’t be used;
• You need to have someone local that can maintain the system;
• Technology by itself is not a panacea, although it can amplify the effects of a broader programme like Tostan’s CEP.

This is the first time RapidSMS has been developed for directly use by lay-people, as opposed to trained data collectors or health professionals.

Partners and their Roles

**UNICEF** provides the financing and the technical support for the design of the RapidSMS system and the overall financial support of 200 villages in rural Senegal currently undergoing the CEP program.

The **Center of Evaluation for Global Action** (University of California Berkeley) is designed and conducted evaluations of impact on literacy, numeracy, and social networking.

**Dimagi** and **Thoughtworks** are US based technology companies that provided technical programming expertise to develop the system.

**Alioune Dia** is a local programmer who was trained on RapidSMS by UNICEF programmers.

Funding

Tostan’s work is supported by foundations, agencies and individuals. UNICEF has been a long time collaborator, supporting the educational program. The UNICEF Innovation Unit funded the Jokko Initiative project.

Challenges

“You need to realise that some people are just not so keen on your cool RapidForum system” – the challenge is to encourage them to use it without making them antagonistic towards it.

It’s really tough to reach women and girls – it’s difficult to convince local leaders that access to technology is of value to girls. This requires careful social mobilisation, and strong champions (and championnes).
Setting up RapidForum in languages like Wolof, Pulaar and Diola was essential, and involved programming the system to support local language characters such as ‘ŋ’ and ‘å’ on mobile phones.

When targeting low-literacy users, the system needed to be easy to learn e.g. giving clear feedback, and making best-guess recommendations for mistyped commands.

At the moment, Tostan is still paying for broadcast texts. This raises certain questions of sustainability, although there is potential for collaboration with network providers.

Future Plans

The capacity building component will be scaled up as part of the ongoing CEP work – this is expected to reach 2,000 communities in the next 5 years. There are, however, no specific plans for RapidForum.

Tostan have plans to adapt the RapidSMS system to further applications including Jokko Diaspora, an SMS and web based system for reinforcing links between communities and their extended social networks.

Although Tostan buy phone credit from Orange, the mobile operators remain outside the initiative – there is an opportunity to create partnerships with local operators as this type of initiative generates additional traffic (and revenue) for them.
Monitoring Supplies

Tracking from Port to Point of Use

The universal Long Lasting Insecticidal Nets (LLIN) campaign in Nigeria aimed to distribute over 63 million bednets; that is something like 36 kilometres of trucks back-to-back - the largest bednet distribution in history.

The objective of the campaign is 100% coverage of households, and 80% utilisation by beneficiaries. This depends on:

- a logistics operation that tracks commodities from port to distribution point to ensure their presence on time and in correct quantities;
- a household mobilisation process to identify beneficiaries;
- training the team members so they understand how to collect information for reporting on daily progress.

The use of RapidSMS and mobile phones to collect data helps address one of public health’s most fundamental problems – getting timely, reliable data. The system has increased efficiency and effectiveness of the LLIN campaign by providing real time information that has enabled managers to respond to challenges as they arise.

Target Audience

The system was designed to meet the needs of Federal Ministry of Health agencies that had responsibility for the distribution campaign, principally the National Malaria Control Programme (NMCP), and the National Primary Health Care Development Agency. The mobile handsets were operated by the “data senders” on the ground – outreach health workers or ad-hoc recruits. The indirect beneficiaries of the system were poor households who might not have received a bednet had supplies ended up in the wrong place.

How it Works

Data senders were trained to send SMS messages containing data on the movement of bednets at various points in the supply chain:

- Warehouse stock managers reported incoming and outgoing supplies as well as stock balance
- Mobilization team leaders submitted data on the number of villages, number of people, number of coupons issued, and number of households to be revisited

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• Distribution point team leaders submitted data on the number of nets distributed and the actual balance; they also reported certain situations, which required immediate action such as shortages, discrepancies with stock balances, and refusals (non-compliance).

Programme managers at different levels were able to log on to a website and access the analysed data.

Before the nets were distributed, door-to-door visits were made to register households, issue net cards, and encourage participation in the campaign. RapidSMS was used to gather this data, which enabled the programme to deliver the right number of bednets to local distribution points.

Distribution took place over a 4-5 day period at fixed distribution points. RapidSMS was used to collect the following data:

• number of LLINs distributed – based on paper tally sheets;
• number of net cards exchanged;
• number of LLINs in stock at the start and end of each day.

Analysis of the data highlighted trends, coverage, and challenges (e.g. mobilising activities could be undertaken in response to low net card exchange rates), and discrepancies in the data identified where leakage was occurring.

Monitoring teams were able to focus their supervision on locations where RapidSMS highlighted difficulties e.g. non-compliance with delivery schedules.

The project took a training of trainers approach. Techno-Science provided training for master trainers at Federal and State levels, and they in turn provided training with the States.

Reporters send an SMS to the shortcode number. This message is sent to the content aggregator and from there it gets "pushed" to the RapidSMS server (hosted in an Amazon data centre).

Operating Experience

The system was first used in May 2009 for the distribution of over 4 million LLINs in Kano State. Over the course of fourteen days RapidSMS captured data for the distribution of 141,773 coupons, or 283,546 LLINs in total. During this time, 232 stock transfers were tracked, spread out over 226 unique locations. NMCP calculated that RapidSMS directly monitored distributions that met 69 percent of the projected demand in Kano State, or 652,919 beneficiaries.

Despite the size of the operation, this is still regarded as a pilot – the team is learning valuable lessons, and the system is evolving as the Government of Nigeria is preparing to adapt the system for other distribution programmes.
Partners and their Roles

UNICEF came up with the initial concept and the Innovation Unit (which originally developed RapidSMS) provided technical expertise for developing the application, and has worked to transfer knowledge to other partners. The country office has appointed a project manager, who interfaces with government departments.

Mobile operators MTN and Zain provided toll free short codes for sending and receiving SMS messages.

The Ministry of Health was a partner in the design and deployment of the system, and appointed an individual from the NMCP to mainstream RapidSMS in the LLINs campaign. They also participated in monitoring the distribution.

Dimagi is a US based technology company that plays a leading role in the support and development of RapidSMS, and provided training for the project.

TimbaObjects Company and NuObjects Tech Services Ltd. are indigenous application developers that were involved from the initial design stage, and are now responsible for managing and maintaining the system.

Techno-Science Ltd. is an indigenous training consultancy company that was involved through the project from design to deployment.

Funding

UNICEF has been the sole funders to date, though the Federal and State governments have contributed staff time.

Challenges

Building local technical capacity is critical for in-country and regional support. At the outset of the project, UNICEF identified ten Nigerian programmers and provided a rigorous training on the code base for RapidSMS. Two outstanding programmers were then hired by UNICEF to continue providing support for the project. This
significantly decreased operational costs for the country office, while ensuring timely and appropriate responses to changing needs on the ground.

The process of selecting data senders did not include any kind of competency test, which resulted in problems in the quality of data received.

Not enough time was allocated for training. Within a 2 day training, only 1-2 hours was dedicated to RapidSMS, but this needs to be increased to around 4-6 hours. The training of trainers approach also needs closer supervision to ensure integrity of knowledge transfer.

There are still some bugs in the system that will be ironed out in time.

**Future Plans**

The NMCP has adopted RapidSMS to be an integral part of the campaigns to distribute LLINs in 24 out of a total of 36 states in the country. RapidSMS has already been used in immunization campaigns to track vaccine distribution and non-compliance. The system was deployed in 2 states in December 2009, and discussions are underway to ensure its deployment across all 36 states (over 28,000 distribution points) as part of ongoing MNCHW campaigns held twice yearly in May and November.

UNICEF is exploring the use of RapidSMS for reporting within the midwifery service, with the aim of increasing attendance of skilled personnel at births. Other possibilities include registration of births and deaths.
Project Mwana

Using SMS to plug the gaps

The project worked directly with rural clinics to identify gaps in the delivery of maternal, newborn and child health (MNCH) services. Out of a large number of initial ideas, the project has so far developed 2 mobile based tools using SMS:

Results160

Results160 is a secure results delivery tool. An early diagnosis of HIV in newborn children is crucial to survival - starting anti-retroviral treatment in children before 12 weeks of age reduces mortality by 76%. With advances in testing techniques, Dried Blood Spots (DBS) can now be transported from remote health facilities to high-tech testing facilities without refrigeration. Infants can be tested as young as 6 weeks of age. Delays in returning results to the field mean that mothers often receive a diagnosis after the 3 month peak mortality age. Results160 gets test results from the central labs back to the clinics faster by sending them straight to the phones of clinic workers via SMS. Shaving weeks off the time taken to deliver results can make the difference between life and death.

RemindMi

RemindMi is a birth registration, patient tracing and communication tool. For mothers and children diagnosed as HIV positive, one of the key constraints to providing successful anti-retroviral therapy is following up on patients who will often miss appointments for a variety of reasons. Health workers and community based agents (CBAs) receive automatic SMS updates reminding them to ask mothers and children to come in for post-natal care.

Project Mwana is finding appropriate and scalable ways that mobile technologies can strengthen health services for mothers and infants in rural health clinics.
DBS samples take too long getting back to mothers

Target Audience

The system users are rural health workers in remote clinics, and community based agents supporting health services in rural communities. These people own their own mobile handsets to send and receive SMS messages to Results160 and RemindMi. The cost of the messages is free to these users.

The website interface allows the Ministry of Health and participating NGOs to monitor the use of the system for research and to provide real-time assistance where needed.

How it Works

Users register themselves onto the system by texting in their name, Clinic ID number, and PIN number.

Results160:

1. When test results are ready, an alert is sent to the health worker “Please reply with your PIN to retrieve these results”;
2. The user sends their 4 digit PIN;
3. An SMS is sent giving sample ID number and a result – detected, not detected, or rejected;
4. The user is sent a follow up message reminding them to delete the results from their phone.

The results are sent to all trained workers in a facility and when they are received the other workers get notified creating accountability in the system.

On the laboratory side: when test results are entered onto a computer at the laboratory (in Ndola) they are automatically sent to a server based at the Ministry of Health in Lusaka, which hosts the RapidSMS application. That server then sends the messages to the correct facilities.

RemindMi is even simpler. Community based agents (CBA) register births by sending a simple SMS to the system e.g. “BIRTH Maria Banda 12-4-2010”. The systems then sends a message to the CBA asking them to find the mother and notify her e.g. “Hello Nancy! Maria Banda is due for her next appointment at Mansa Central Clinic. Pls ensure she visits in the next 3 days.” The messages are sent at intervals when a mother should visit the clinic (6 days, 6 weeks, and 6 months). The system can also be used to send messages between the clinic workers and community based agents for planning, patient tracing and general health related communication.

Both tools use SMS, are compatible with any handset, and health workers use their own personal phones, although messages are free of charge.
Additionally, there is a website which allows graphing and mapping of the data and real-time monitoring of both tools by the Ministry of Health.

**Operating Experience**

Early in 2010, a pilot system was implemented in 3 districts of remote Luapula Province, namely Mansa, Kawambwa and Nchelenge, and staff from 10 clinics were trained.

Early anecdotal evidence is encouraging and the system technically works well. The team needs to complete the ongoing monitoring and evaluation phase before they will be in a position to advise the government on the next steps. An independent, formal evaluation is being done by Boston University.

**Partners and their Roles**

**UNICEF** coordinated efforts from inception to implementation. The Innovation Unit co-developed the technological solutions (with the clinic workers), developed the training materials, ran the initial trainings and worked with the government.

**Zambian Ministry of Health** owns the tools, and assisted in all aspects of the project. They have a project manager involved in the entire process. Staff from the IT department were lead trainers. District MoH offices helped organise clinic visits, and wanted to receive reports on the number of samples being sent and number of results being received at clinics they were responsible for.

**ZPCT, World Vision**, and **UNFPA** are implementing partners that worked with clinics to coordinate field activities and deliver trainings.

**Zain**, a telecom provider, provided reverse billing SIM cards and if the project is scaled up would be approached as a potential partner.

**Zambian** and **US** based technology companies (**Caktus LLC** and **Dimagi**) provided software development skills through the design and implementation of the project. After the initial development phase, the local developers took responsibility for maintenance and feature development of the tools.

**Funding**

Funding for the first phase of the project came through UNICEF Programme Division at HQ in New York, although the money was provided by USAID and the UK National Committee.

If the government scales the project nationally, the operating costs for the first year will be around $100,000, which will be funded mostly by the UNICEF Country Office.

**Challenges**

It has been important to provide ongoing support to users, in order to make it as easy as possible for them to use the system. Initial effective training is needed, and for support the system incorporates a simple to use help function – users send an SMS with a description of their problem, then a member of a support team calls them back.

As users have their own phones, they are familiar with the technology, although some need training on how to use SMS.

Clinics in some areas were unable to use the RemindMi systems due to poor network coverage but all clinics were able to use Results160. If a clinic did not have coverage the clinic workers would collect the results while...
in an area with coverage, such as a market. On average the clinic workers travelled to such areas a few times a week.

During the pilot phase, Zain provided reverse billing SIM cards, enabling costs to be centralised and UNICEF funded the cost of the messages. If scaled the cost of SMSs will mount up and bulk SMS rates or other partnerships would ideally have to be used to lower costs.

**Future Plans**

If the M&E confirms the anecdotal success of the project, the government will be advised to scale the project nationally over a 3 year period. There are no barriers and other than training and the costs of the SMS messages to scaling.

The technology and training materials have already been adopted by an agency linked to Boston University, which has also piloted the system with a further 10 clinics.

The project is currently being deployed in Zambia and Malawi and, if successful, UNICEF has plans to raise funds to roll the project out across the region.
NAFDAC Mobile Authentication Service (MAS)

Scratch and Carry

Drug counterfeiting has become a $200-billion business annually, according to the World Customs Organization. The business is huge in Nigeria, where the WHO estimates that up to half of medicines circulating in Nigeria are fake. The trade makes millions of dollars for the unscrupulous people that import and sell fake products, while leaving consumers out of pocket and without the medication required to improve their health.

The Nigerian National Agency for Food and Drug Administration (NAFDAC) Mobile Authentication Service (MAS) is a free SMS service that allows consumers to confirm that a pharmaceutical product purchased in Nigeria is genuine simply by texting a PIN number to a shortcode number.

The MAS helps improve health by enabling consumers to use only authentic medication, especially those at the Bottom of the Pyramid who may be more likely to purchase cheaper, counterfeit products. It also has a number of indirect benefits:

- patients feel empowered in the fight against counterfeiting;
- regulators are able to get timely information about counterfeiting activities in the field by connecting directly with patients and consumers;
- it helps eradicate various types of criminality associated with the counterfeit drugs trade.

Target Audience

Consumers are the victims of fraud, by losing money and by failing to look after their health. The target population of the NAFDAC Mobile Authentication Service are consumers of pharmaceutical products in Nigeria who own or have access to a mobile phone with SMS functionality.

Drugs manufacturers and retailers also suffer as consumers loose trust in the products. BIOFEM paid for the system, and benefited in terms of increased sales.

How it Works

The NAFDAC Mobile Authentication Service works in three simple steps:

**Step 1.** Scratch a label on drug to reveal PIN

**Step 2.** Text PIN to NAFDAC short code 38353

<table>
<thead>
<tr>
<th>Country</th>
<th>Nigeria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle references</td>
<td><a href="http://www.sproxil.com">www.sproxil.com</a></td>
</tr>
<tr>
<td>Description</td>
<td>Consumers scratch off a panel on blister packs to reveal a PIN. On sending the PIN to a free shortcode number, they get a reply that confirms whether the package is authentic or not.</td>
</tr>
<tr>
<td>UNICEF focus area</td>
<td>Child Survival and Development</td>
</tr>
<tr>
<td>Contact</td>
<td>Dr. Ashifi Gogo CEO Sproxil, Inc +1 3148274434 <a href="mailto:ashifi@sproxil.com">ashifi@sproxil.com</a></td>
</tr>
<tr>
<td>Creators</td>
<td>Sproxil</td>
</tr>
<tr>
<td>Sector</td>
<td>Health, Diabetes</td>
</tr>
<tr>
<td>Funders</td>
<td>Sproxil/NAFDAC</td>
</tr>
<tr>
<td>Mobile tools/software</td>
<td>SMS and Cloud Authentication system</td>
</tr>
<tr>
<td>Similar M4D initiatives</td>
<td>mPedigree</td>
</tr>
</tbody>
</table>
Step 3. Get a response confirming “original” or “fake”

Each pharmaceutical product has a one-time individual pin number that are printed on blister packs by BIOFEM Pharmaceuticals and is encrypted, so that only Sproxil’s cloud computing servers can only verify it.

The Mobile Authentication Service is available nationwide and can be used by anywhere there is a mobile signal. Importantly the short code number is free to use, and is the same on all participating networks. The verification responses on the MAS platform are typically delivered within 1 minute, depending on the number of people using a mobile network at a time.

The MAS uses discounted, reverse billed SMS messages, which makes it free to end users. BIOFEM, a pharmaceutical company, met the cost of the SMS messages.

Operating Experience

A 100 day pilot project (February to May 2010) was successful in proving the concept and viability of the MAS. Glucophage (metformin), an anti-diabetes drug, was used in the pilot phase. The total number of packets labelled was 735,153. The total number of SMS messages sent and received was 22,638, and the total unique consumers served were 6,761. The pilot was rolled out in three major cities: Lagos, Abuja, and Port Harcourt, with 125 participating pharmacies. The SMS and Cloud authentication system had a responsiveness of 99.99% in the pilot stage. After the 100 day pilot, BIOFEM continued using MAS with Glucophage.

The new label design introduced to the market towards the end of the pilot helped double participation. The updated label provided better instructions with the provisions of the short code. The previous label design did not have the short code number due to security concerns, which were later relaxed.

During the 100-day pilot, 73.9% of SMS verification requests were sent through MTN, 18.1% through Zain, 7.1% through Glo, and 0.9% through Etisalat (who joined later). Overall, MAS had a 97.8% mobile network reliability factor during the pilot, factoring in all mobile networks during peak and non-peak hours.

BIOFEM Pharmaceuticals played an active role in raising awareness among its clients at the 125 pilot pharmacies in Nigeria.

Less than three months after implementing MAS, Glucophage sales increased by more than 10% in Nigeria and BIOFEM have seen a return on investment of over 1,000%.
Partners and their Roles

Sproxil, a technology provider of software and systems, was involved in the design and development of the Mobile Authentication Service through the development of the SMS and cloud-based symmetric encryption and verification technology. Since the service is cloud-based, it allows hosting in the United States of America, as the mobile application developers are based in the USA. However, to interface with the telecom companies in Nigeria, Sproxil used local technology experts to acquire mobile short codes for the MAS service. Nigerian technologists working with Sproxil continue to play a role in maintaining Sproxil’s connectivity in Nigeria by monitoring traffic, security threats posed by hackers and the continued service from mobile operators, while developers in the USA keep adding new features to MAS.

The Nigerian National Agency for Food and Drug Administration (NAFDAC) endorsed Sproxil’s work and conducted technology showcase events for the private sector (pharmaceutical companies and distributors) to evaluate technologies, leading to the launch of MAS at their Lagos offices.

BIOFEM Pharmaceuticals is involved in the importation and distribution of the products on which the scratch-off codes are applied. They provided a Merck Soreno product, which they have sole importation rights to, as the product used for the 100 day pilot period. BIOFEM Pharmaceuticals also increased public awareness of MAS and its benefits through the use of mass media.

MTN, Zain, Glo, and Etisalat, all the mobile phone multinationals in Nigeria, participated in MAS by providing a total subscriber base of 70 million people. The operators were involved from the implementation of the pilot stage onwards. MTN and Zain participated for the whole 100 day period of the pilot stage, while Glo was involved for 91 days (9 days lost due to network upgrades). Etisalat joined later and was involved for only 26 days of the pilot. The major mobile operators see value in MAS because it allows them to use their networks to save lives and presents them with viable business case.

Funding

Sproxil used internal resources to fund the technology development, delivery and maintenance of the system. Grants obtained to support Sproxil’s work to date include a $10,000 grant from the Clinton Foundation, and a $100,000 grant recently received from USAID and Western Union for promoting private sector development in Africa.

Both BIOFEM Pharmaceuticals and NAFDAC have funded campaigns to raise awareness and encourage the private sector to adopt MAS.

Pharmaceutical companies pay for SMSs on behalf of consumers. Sproxil is able to negotiate lower SMS rates via volume discounts, as it grouped multiple pharmaceutical companies under the same short code. Importantly MAS implementation costs incurred by BIOFEM have been more than offset by sales recovery and brand retention.

Challenges

The challenges to date concern the need for security and protection of the service. The Mobile Authentication Service has to be constantly updated so that counterfeiters are not able to duplicate this technology.

The telecom providers involved in the Mobile Authentication Service also need to continually monitor their networks to prevent downtime so that MAS is always available in Nigeria.
Lastly, civil society groups and the government should keep up with awareness raising efforts to let every Nigerian know about the service, in order to empower them to identify counterfeits and genuine drugs to maintain or improve their health.

Future Plans

For now, at this introductory phase of the solution, Glucophage is the first product in Nigeria to adopt the Mobile Authentication Service. Sproxil and partners expect the service to grow as more pharmaceutical companies join MAS and it extends to cover more products.

The pharmaceutical industry associations and trade groups in Nigeria continue to support MAS and provide feedback on how to scale up the services so it can be used for other drugs.

NAFDAC continues to promote MAS and has embarked on an awareness raising campaign, using public events, speeches, newspaper reports and other forms of mass media, to increase public awareness so that more consumers use MAS. Costs of this public awareness raising campaign are being met by NAFDAC.

In due course, Sproxil hope to expand to other developing nations fighting against counterfeit drugs, and also plan to apply their authentication technology to a range of other applications e.g. university degrees.
Mobile Births Registration

An inalienable human right

Birth registration – the official recording of the birth of a child by a state administrative process – is ‘an inalienable human right’. Yet 28% of births in East Asia and Pacific countries between 2000 and 2008 have not been registered – that’s 51 million children.

Mobile registration makes the whole process more efficient:

- existing paper systems are vulnerable to vermin and natural hazards such as flooding;
- it is difficult to search through paper systems, which can result in duplicate registrations;
- remoteness (especially in island states) can make travel to registration centres difficult;
- people do not see registration as a priority, so providing a mobile service makes it simpler to register a birth.

High registration fees act as a further barrier to registration – costs associated with transporting papers from remote islands to the capital are to be covered by parents. Making the process more efficient can reduce costs, thereby providing opportunities to reduce fees.

Target Audience

The system needs to be put in place by the national registrar (the Civil Status registry in Port Vila), as handsets send data directly into a specific Civil Registry database. Local registrars are equipped with handsets that are loaded with the software – in the pilot project in Vanuatu these included headmasters of schools, area secretaries, and rural health workers.

How it Works

Registration information on a newborn baby, entered into the phone by nurses and doctors, is sent via SMS to a receiving phone based in the Civil Registration Office in Port Vila. The latter then uses Bluetooth to send the data to the central computer located in the same office – the computer holds the Civil Registry database. All that the end user needs is a compatible handset loaded with the iCount software.

<table>
<thead>
<tr>
<th>Country</th>
<th>Vanuatu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle references</td>
<td>Update on UNICEF’s work for Pacific Island Children</td>
</tr>
<tr>
<td>Description</td>
<td>The birth registration system uses mobile phones through the software “iCount”. This innovative system simplifies the process of birth registration by entering information about a newborn baby into an already programmed mobile phone, which sends the data into a specific Civil Registry database.</td>
</tr>
<tr>
<td>UNICEF focus area</td>
<td>Child Protection</td>
</tr>
<tr>
<td>Maturity</td>
<td>Pilot</td>
</tr>
<tr>
<td>Contact</td>
<td>Brenda Nabirye, UNICEF Child Protection</td>
</tr>
<tr>
<td></td>
<td>Johannes Gambo (for copy of software)</td>
</tr>
<tr>
<td>Creators</td>
<td>Johannes Gambo</td>
</tr>
<tr>
<td>Sector</td>
<td>Governance</td>
</tr>
<tr>
<td>Funders</td>
<td>Johannes Gambo, UNICEF</td>
</tr>
<tr>
<td>Mobile tools/software</td>
<td>iCount software, compatible handsets (Nokia 6500)</td>
</tr>
<tr>
<td>Similar M4D initiatives</td>
<td>RapidSMS but uses Nokia 6500 which is a smart phone</td>
</tr>
</tbody>
</table>
The iCount software, developed by Mr Gambo, uses SMS and associated Short Message Transport Protocol (SMTP - not to be confused with simple mail transfer protocol for email) for data transmission. The SMTP transmits in connectionless mode so the system is able to work with poor quality signals and unreliable connections.

The technology does not keep personal information, which is only stored on one computer. Its reliability therefore is guaranteed as data is secured and can always be corrected if mistaken.

The system uses prepaid cards from the local Telecom companies (Digicel and Telecom Vanuatu Limited during the trials in Vanuatu) so users do not need to enter into any contracts.

Lack of access to electricity, unreliable power supplies, and poor network coverage are common problems faced by mobile phone users. The system uses solar power to charge mobiles to overcome energy issues. It also stores the data into drafts when network coverage is missing, then automatically resends them when a network becomes available.

Operating Experience

The system was developed by Johannes Gambo, a Masters student from Unitec, New Zealand. It was initially trialled for 4 months at Burumba, on the island of Epi, Vanuatu. Two out of three health facilities participated, including Vaemali Health Centre, where most children are born (others are born in other clinics or at home).

Early in 2009, when the system was still in its initial stages of development, UNICEF experimented with using mobile phones to support traditional paper based systems as part of a birth registration campaign in Tafea Province (a group of the most southerly islands in Vanuatu). The trial of the system resulted in the registration of close to 17,000 children in the province. The national average rate of children 0-5 years registered is 25.6 percent and registration in Tafea Province is especially low at 12.5 percent (according to 2008 MICS).

Towards the end of 2009 mobile phones were distributed to health workers in Sanma province, where they continue to be used to notify births – an average of 60 per month.

During the registration campaign in Tafea, registration was free of charge, and a number of awareness raising activities and training sessions were conducted. The Civil registry conducted awareness training on the importance of birth registration in different communities. Training was provided for senior government staff as well as teachers, nurses, chiefs and other community leaders on their role in the birth registration process. There is widespread familiarity with SMS, so no special training was needed.

Partners and their Roles

Johannes Gambo designed the system, developed the iCount software, and was responsible for implementation in the field as well as evaluating its performance. This was done as part of his postgraduate research.
UNICEF has working relationships with the Government of Vanuatu, and was able to work with government partners to get the system up and running. It also provided financial support for associated activities such as training.

Ministry of Health personnel are mandated to register births, given that 80% of children are born in health facilities. The Ministry of Health also had permission to conduct surveys, which covers the use of mobiles to collect personal information.

Ministry of Internal Affairs has responsibility for registering births and hosts the Civil Registry – they provided access to the central computer that holds the Civil Registry database.

Digicel, one of the local mobile operators, provided 6500 Nokia handsets to be used in the provincial level rollout.

Funding

There was no external funding for the development of the system. The initial development of the system was self-funded by Mr. Gambo in order to avoid any influence on the outcomes.

During subsequent pilots, UNICEF have met the costs of travel to the islands, and provided training for health workers, at a total cost of around $40,000. This does include indirect costs associated with the time and effort they have put into supporting the system.

Challenges

The Pacific Island nation of Vanuatu was chosen for testing this technology because of the tough conditions the country faces. Mr. Gambo’s view was “If it works in Vanuatu, it can work everywhere”.

The solution had to be suited to the local environment, for example:

- the skill levels of intended users
- existing infrastructure; the mobile network capacity was limited – research indicated that there was no GPRS service in most islands, and it required subscriptions, so the system was designed around SMTP for data transmission
- the prevailing technology; 6500 Nokia phones were given to the assigned persons, a reasonably high specification phone with 3G and camera.

Despite Digicel offering wider network coverage than Telecom since its entry to the market in 2008, coverage is still largely limited to population centres. The extent to which the registration system could be rolled out will be constrained by network coverage.

Future Plans

Implementation of the system in Sanma is regarded as only the beginning of a process under which UNICEF will support the government acquire more mobile phones and rollout the project to other provinces. As with the pilot project, the rollout initiative will be accompanied by advocacy at policy level, training of staff, and awareness-raising at a community level.
There are plans to extend its use beyond health centres and health staff, to link with other social services and administrative structures to facilitate birth registration at the village level.

The high cost of collecting data in a nation of small, scattered islands, makes the system especially attractive, and UNICEF have plans to use it to gather data for other practitioners e.g. immunisation, deaths, school enrolment. They recognise the need not to congest the system – “keep it simple”.

Mr. Gambo has pointed out that the technology could be used not only to register births, but also for other applications involving the exchange of data to a central location, such as ordering medical supplies. These types of applications will save time as orders could be sent directly to suppliers in Port Vila without having to walk long distances to send the order.

Mr. Gambo has made the software freely available to any organisation in the Pacific; this will not only foster widespread adoption of the system, but also make it easier for others to adapt the technology for alternative applications.
Voice of Kibera

Making the most of mapping

Voice of Kibera is a citizen-reporting project based in Kibera, Nairobi - Africa's largest slum. It is an initiative of Map Kibera – a project that in 2009 enabled Kiberans to create the first public digital map of their own community, which had previously been a blank spot on the map.

The original idea behind the mapping project was to shape a better understanding of what's happening on the ground, in order to help service providers, such as local government, respond more effectively to needs. Voice of Kibera is one of several channels used to repackage and communicate information gathered from citizens – others include the Kibera Journal, published by KCODA, Pamoja FM community radio, and a Flip camcorder video team.

Kibera residents use SMS to submit reports or local news on anything they feel is of interest to Voice of Kibera. Citizens can then receive updates and subscribe to thematic SMS reports, which are also available on the website.

Target Audience

Due to the participatory nature of content generation, local residents are the principal users of the system – both in the submission of information and accessing reports.

Local community organisations and informal groups are eager to learn how they can make use of Voice of Kibera to highlight their activities.

The aim is for service providers such as local authorities and NGOs to use Voice of Kibera as a source to inform their policy and work plans.

How it Works

To submit an SMS report to Voice of Kibera, citizens send a message to the short code 3002. The SMS must include the word "Kibera" in the text, as much information as possible, and location information, all in 160 characters or less. The cost of an SMS is 5 KSH (6 US cents) across all networks in Kenya and only works within the country. Messages can also be submitted by email or on the website.

Messages cover information about local organisations, opinions about local businesses and services, problems encountered, events, and local news (good or bad).
The general public can sign up for alerts via SMS based on specific categories. For example, someone interested in sporting events could text in: “Kibera alerts sports” and then receive an SMS every time a report tagged “sports” is approved.

People who have signed up to receive the “alerts digest” receive an SMS at the end of the day with a summary of news from the day.

The Editorial Board is responsible for administration of the website, compiling the alerts digest, and for verifying incoming messages – they decide which messages are relevant to post on the site. The Board members also act as SMS reporters within their community, sending in messages to let Kibera and the world know what is happening around them. The Board is made up of 6 young volunteers from Kibera who were picked because they are committed to community work, and were quick to learn the technology.

Voice of Kibera is distinct from MapKibera, which used open source mapping to create a map of Kibera, although the map is used to present information gathered. Aggregating information on the map is done using Ushahidi, an open source platform that gathers data via SMS, email, or web, and visualises it on a map.

Operating Experience

The Voice of Kibera Editorial Board was formed in May 2010 and the programme is fully operational. A listing of posts on the website indicates around 70 messages a month are verified.

The open mapping project (MapKibera) has successfully demonstrated that it is possible to generate high quality maps at low cost using open source software. However, the challenge of getting information into the hands of service providers remains. The Voice of Kibera project is still described as “experimental”, but there are encouraging signs – a network of local groups combating gender based violence (GBV) are excited about the potential of the system, and have already created a detailed child protection and girls’ vulnerability map.

Partners and their Roles

UNICEF identified the potential value of situation mapping to their programme planning (e.g. vulnerability to HIV/AIDS through GBV) and supported the project through grant funding, and personnel.

Groundtruth Initiative generates maps using OpenStreetMap; it is a group of technology professionals set up by the founders of the MapKibera project, who conceived Voice of Kibera as part of the overall vision.

SODNET is a local NGO that works with NGOs to make better use of technology, and was a source of local technical expertise.

KCODA is a local CBO promoting citizen journalism as a means of securing improvements in Kibera. It was instrumental in communicating the vision and mobilising the community.
Funding

Overall costs were around $60,000, most of which covered personnel costs e.g. technical, management. UNCEF Kenya funded this in full.

Once the system is up and running, costs of maintaining the system are minimal and should be manageable by local NGOs, such as SODNET.

Challenges

The trickiest part of the overall vision is to build a platform that works for the various groups that use the information i.e. getting information into the hands of service providers.

Acquiring a short code can be difficult and expensive. SODNET already had a shortcode that they used for Voice of Kibera.

External organisations tend to be regarded as a source of funds, especially in Kibera, which has many NGOs. KCODA played an important role in fostering volunteerism and community ownership.

People did not understand how the map could help them, and the concept of achieving change through sending an SMS is difficult to grasp.

UNICEF grant allocation procedures make no special provision for small grants, so dealing with administration was time consuming, and payments were delayed.

Future Plans

Groundtruth Initiative is committed to the MapKibera project, and plans to pursue a programme of development towards the ultimate goal. They have recently won funding from UN-Habitat. Groundtruth Initiative also have plans to replicate the approach in other locations.

It is proposed that community mapping offers a high quality, low cost alternative to current approaches to creating maps for UNICEF operations, especially in emergency response situations.
BBC Janala

A new way of learning

BBC Janala is the first large scale mobile-based English language teaching service in the world.

There is a huge demand for English language skills in Bangladesh – both from employers who want to compete in the global marketplace, and from families across the country – a BBC World Service Trust survey indicated that 99% of Bangladeshis now want their children to learn English.

With over 50 million mobile users in a population of 160 million, a mobile based service is an effective way of reducing barriers to learning English. It is simple to use - users follow voice prompts and press keys on the handset. It is inexpensive - each lesson is a 3 minute call, costing about 3 taka (4 US cent). It is accessible – using any handset, from any network. It is convenient – users can access lessons wherever they like (as long as there is a signal) and whenever they like.

BBC Janala is just one component of “English in Action”, a 9 year programme aimed at increasing English.

<table>
<thead>
<tr>
<th>Country</th>
<th>Bangladesh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle references</td>
<td>BBC Janala</td>
</tr>
<tr>
<td>Description</td>
<td>By dialing 3000, audiences can choose from a menu of bilingual audio lessons costing 4 cents each. Learners can also test their English language skill via audio quizzes.</td>
</tr>
<tr>
<td>UNICEF focus area</td>
<td>Education</td>
</tr>
<tr>
<td>Maturity</td>
<td>Operational</td>
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<tr>
<td>Contact</td>
<td>BBC World Service Trust</td>
</tr>
<tr>
<td>Creators</td>
<td>BBC World Service Trust</td>
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<td>Sector</td>
<td>Education</td>
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<tr>
<td>Funders</td>
<td>DFID</td>
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<tr>
<td>Mobile tools/software</td>
<td>IVR, SMS and WAP - IVR and SMS accessible via any device; one WAP site for low-end data phones</td>
</tr>
<tr>
<td>Similar M4D initiatives</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Target Audience

BBC Janala is aimed at younger people (18 – 35 year olds) living on less than £2 a day. It is targeting people from lower socio-economic classes (B, C, and D).

The English in Action programme was initiated at the request of the Government of Bangladesh, which recognises how improved English language skills can contribute to the economic growth of the country. The programme has a national reach through mobiles (Janala), TV and schools.

How it Works

By dialing 3000, audiences can choose from a menu of bi-lingual audio lessons. The selection can be made by pressing a number on a handset, after listening to a short series of Bengali voice prompts. Lessons are organised into series, and according to the level of difficulty. Learners can also test their English language skills via audio quizzes. A new lesson is made available every day, five days a week. The previous week’s lessons are available via a simple archive.

The BBC WST has negotiated a reduction of standard mobile tariffs (peer to application) of up to 75% to make the service affordable to people with limited incomes. The 3 taka (4 US cent) users pay for a 3-minute lesson is - less than the price of a cup of tea from a stall in Dhaka. The service is accessible by users of all six operators in Bangladesh.
Bangladesh via a single shortcode – providing a simple, memorable point of entry for a potential audience of 50 million plus mobile users.

BBC Janala also offers an SMS service, and a mobile internet site for the growing number of mobile internet users. Users of the site can download all the audio lessons free, upload their profiles, and interact with other users.

Under the English in Action programme, BBC Janala is closely linked with Buzz, a weekly TV show broadcast on satellite channel ATN Bangla. Using a lighthearted format, this presents features around inspirational Bangladeshi individuals in both Bangla and English. Within 4 weeks it had become the second most popular programme in its prime-time Friday evening slot.

Operating Experience

Launched in November 2009, the service is less than a year old, yet more than 1.5 million people have already used it. One third of users of the service are repeat users – this is impressive when compared with other value added services that typically achieve a return rate of 5%. After three months, the online community at the website had reached 56,637 registered users.

The project is taking a serious approach to evaluating its achievements. Not only is there a real-time reporting system tracking calls and users, but baseline surveys have also been carried out – a survey towards the end of 2010 will then assess impact on language ability and attitudes towards learning English.

The BBCWST are assessing impact via a nationally representative ‘cohort panel’ of 160 people and via another panel of 40 mobile phone users. They test members of the mobile phone panel every six weeks, through sit down formal written and spoken English tests, and there is no doubt about the impact – regular users of BBC Janala are learning and retaining the functional English language and vocabulary that is taught via mobile phones.

The BBCWST still regard the project as being in its due to the potential of the project in the future and the processes in order to reach that potential are still at the beginning stages.

Partners and their Roles

**BBC World Service Trust** (BBCWST) designed, developed, implemented, and marketed the service from inception to ‘go live’ and beyond, continuing to maintain it.

All six mobile operators in Bangladesh - **Banglalink, Citycell, GrameenPhone, Robi, Teletalk**, and **Warid** have been involved from the launch by providing connectivity; marketing; end-user support; guidance and feedback.

**SSD-TECH** developed the application and is responsible for hosting and maintenance of the platform, including content management and reporting (statistics).
Bangladesh Telecommunication Regulatory Commission (BTRC) authorized the service, facilitated a reduction in standard tariffs, and supported negotiations with mobile operators. They also helped with reviewing services during development.

Ericsson Consulting (in Bangladesh and Singapore) analysed the BBCWST research and helped develop the business case as part of the initial project design.

Gray Advertising, Bangladesh participated in designing the marketing campaign strategy (at launch and ongoing) including television and press adverts etc.

**Funding**

UKaid for the Department for International Development (DFID) has committed to providing £50 million to English in Action over nine years, as part of the English in Action project in Bangladesh, which then helps fund BBC Janala.

**Challenges**

Most users have to learn how to use the service themselves, which can be a major challenge in Bangladesh. Users have a lack of confidence and a fear of learning, due to poor teaching practice and negative experiences of formal education at school. Many poor people (principal target group) also have limited ability to use the phone – in particular, they struggle with navigating IVR (interactive voice response) menus.

**Future Plans**

Reducing end-user tariffs to further expand the reach of the service to people on low incomes.

Developing personalised, progressive learning functionality to provide individual users with tailored courses.

The BBCWST has a global presence and, if the service proves to be effective as it appears, could roll the project out in other countries (contingent on funding approval).
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