

Chapter 12

Mobile Governance: Applications, Challenges and Scaling-up*

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12.1 Introduction

During the past 10 years, we have witnessed how mobile phones and the simple functions of voice and text messaging (SMS) can empower citizens and affect the way citizens interact with each other and with the society as whole. Mobile phones are also thought to open up for a deepened democracy through citizen participation and insight into state affairs, through influencing the political decision making process, and helping in holding governments accountable. Is this the case?

Few African government institutions have adopted the idea of using mobile phones as a tool for service delivery and a way to communicate with its citizens. Drawing on secondary data, statistics, desk based research, and fieldwork carried out in Uganda in 2009–2010 (a number of interviews, meetings and focus group discussions with key stakeholders in East Africa where also conducted), this chapter describes a few interesting cases and pilots, focusing mainly on East Africa, where mobile phones and mobile applications have been used for improving governance, either independently or as a compliment to other methods and strategies. The chapter critically examines some of the challenges as well as the main opportunities for improving good governance through mobile phones and present ideas on how these projects could effectively be scaled-up.

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12.2 What Is Good Governance?

Governance encompasses the relationships between three actors – state, market, and civil society – and how these actors organise themselves and make decisions according to a set of informal and formal rules. Democracy is a mode of governance and there exists a symbiotic relationship between the concepts democracy and good governance. Good governance can therefore be seen as an umbrella term for a functioning democratic system where freedom of expression and a sound juridical system is in place.

The concept of good governance is not readily defined. UNDP, in a comprehensive policy document from 1997, states that good governance is characterised by participation, the rule of law, effectiveness and efficiency, transparency (built on the free flow of information), responsiveness, consensus orientation, equity, accountability, and strategic vision. Similarly, the Asian Development Bank defines the four elements of good governance as accountability, participation, predictability and transparency (Coffey 2007). According to DFID, good governance centre upon three main concepts (DFID 2006):

- State capability: the ability to get things done, to formulate and implement policies effectively.
- Accountability: a set of institutionalised relationships between different actors that might help bring about responsiveness.
- Responsiveness: when a government or some other public authority act on identified needs and wants of the citizens.

Why is good governance important? Simply put, poor governance will not lead to a society's development. Inefficient use of state resources, corruption and unstable systems will not lead to poverty reduction. Poor governance threatens not only the countries socio-political sustainability but also the environmental and economic sustainability. However, good governance is not the sole determinant of sustainable development but it sure makes a difference. Easterly states that “[b]adly governed countries are poor countries” and that “good governance tend to come together in packages, so it is hard to tell which one is causing economic development” (2006: 130–131).

It is proven that access to information and communication in its own right plays an important role in promoting good governance (Coffey 2007). Further, information delivery to public is a key task of government and it is their responsibility to keep citizens informed of what is happening around them. In a policy note, DCERN (Development Communications Evidence Research Network) concludes that if “we accept the view that governance requires an inclusive public space based on informed dialogue and debate – an environment in which voice and accountability are central – then it is clear, in theory at least, that communication must have a positive impact on good governance” (DCERN 2007: 5). Can mobile phones facilitate this inclusive public space, or at least access to it, where dialogue and debate are key?

12.3 Rationale: Why Mobile Phones?

There is no need to re-emphasize just how appropriate information and communication technology (ICT) systems are for the capture, processing, storage, organisation and presentation of data and information. ICT used as a tool to improve governance, i.e. e-governance, facilitates openness and transparency and creates a freer flow of information between departments, institutions and layers within government. ICT, as seen in many developed countries, also facilitates a freer flow of information between government and citizens and opens up for opportunities for citizens to participate more directly in influencing decisions that affect them.

In developing regions, where computer use and Internet access is low but mobile penetration is high, gives the potential to use mobile phones as a new interface between government and citizens and to make public services more accessible to citizens. Can slow government processes be combined with mobile phones that are ever-changing, quick and direct in their usage? Are mobile phones and services just another hype that often accompanies the latest technical breakthroughs? We have seen cases where mobile phones help to create an informative, connected, innovative, participative and converging society all over the world. Often quoted examples include the successful SMS chain letter campaign in the Philippines when Joseph Estrada was forced to resign from the post as the Philippines president (Salazar 2006) and in Iran, following the 2009 Iranian Election where Twitter and mobile updates was used as a rallying tool and as a method of communication with the outside world after the Iranian government blocked several other modes of communication.

What is the rationale for governments and institutions to use mobile phones for good governance in East Africa?

1. Access and reach. Penetration rate is ever increasing and even more have access through shared usage and ownership. Due to its mobility and network infrastructure, mobiles reach areas where there are infrastructure constraints and no other means to offer public services. Related to access is that mobile phones add the dimension 'anywhere and any time': due to their mobility and that mobile phones are switched on most of the time, meaning that public services offered via mobile phones are accessible everywhere and at all times. In cases of natural disaster as well as man-made crises like riots, election violence and land slides etc., mobile phones have often remained the only viable way to reach people (Hellström 2010).
2. Adoption. As mobile phones become an integral part of people's lives, mobile solutions will be a normal way to interact with government institutions which will lead to an increased public demand for easy accessible and personalised services.
3. Interaction. Mobile phones make it possible for real-time, two-way dialogue as opposed to TV, radio, brochures, posters, etc.
4. Affordability. The relatively low cost of mobile phone ownership has lowered the entry barriers for poor people. Affordability is still a concern though – somebody needs to pay for the infrastructure, communication and services.

Table 12.1 Mobile statistics in East Africa

| Country | Subscribers, Q4 2009 (millions) | Penetration rate (%) | Mobile coverage (population) (%) | Mobile expenditure of disposable income, 2007-08 (%) | Operators |
|----------|---------------------------------------|-------------------------|-------------------------------------|--|-----------|
| Kenya | 18.5 | 46 | 84 | 53 | 4 |
| Rwanda | 2.0 | 20 | ~100 | 66 | 3 |
| Tanzania | 17.5 | 43 | N/A | 29 | 6 |
| Uganda | 11.8 | 36 | ~100 | 49 | 7 |

Sources: Industry data, ITU (2010), CCK (2009), TCRA (2010), and Chabossou et al. (2009)

5. Efficiency. Due to high access, its reach, good adoption and real-time interaction mobile phones offer efficient solutions to governments communication challenges.
6. No other option? In developing regions with poor infrastructure, going mobile may be the only viable option.

Table 12.1 shows the total number of subscribers, penetration rate (percentage of people with an active SIM card), percentage of the population covered with a mobile signal, monthly mobile expenditure as percentage of monthly disposable income, and number of mobile operators in each of the four countries.

Much as penetration rates are increasing, universal access is not yet achieved in East Africa. Operators do their best to close the market efficiency gap, i.e. move into new areas that are considered commercially viable. And organisations and companies come up with innovative ideas to cut the total cost of ownership for the end user like village phones etc. However, the two dimensions poverty and geographic isolation do and will create an access gap. The issue of access is a strong argument why mobile phones can not be seen as the only solution for improving communication in governance. Traditional channels (physical visits and meetings, billboards, radio, information brochures, various e-government initiatives etc.) that build on an effective back office still need to be functioning – mobile solutions just add an extra dimension.

However, looking at the main concepts of good governance described above, it builds on the concept of action: to create relationships, to listen, inform, act and deliver government services in a sustainable and transparent way. If implemented correctly, mobile applications can support these actions by creating a higher efficiency in information sharing and communications and to create access to the inclusive public space that is a prerequisite for good governance.

12.4 Mobile Applications for Good Governance

This section is divided into “what?” and “how?” “What” characterises the activities and applications that have been implemented that seem to work (in terms of supporting good governance through mobile phone usage). “How” deals with practical considerations, experiences and how these projects could be scaled-up.

12.4.1 *What? Cases in East Africa*

There is a very wide range of *potential* governance related services which can be delivered and communicated via mobile phones, including services relating to health care, agriculture, education, employment, transportation law and order, tax, judicial and legal systems, etc. In most cases, the mobile phone is used as a platform for information dissemination. Government news, information, updates, alarms and notifications related to emergency and disaster management, elections, traffic and weather etc. A few application work on the concept of citizens-to-government communication: applications that tries to open up an interactive channel between the citizens and the government. Mobile payments, now available in all East African countries, open up for even greater opportunities and possibilities for transactions: bill, loan, fine payments, and a variety of public services like transport and school fees. However, integrating systems and back-end is complex. For example, how to go ahead in a country like Uganda where there is no functioning ID-system in place?

Table 12.2 summarizes, structures and map some of the existing initiatives in East Africa related to good governance (for a more extensive list, see Hellström 2010).

12.4.2 *Anecdotal Usage*

Mobile applications related to elections have been fairly well explored in East Africa and have been used in various ways to make elections more meaningful exercises. For example, in the run-up to the Ugandan elections 2006 and Kenyan elections in 2007, text messaging was used to advertise political parties. In Kenya, President Mwai Kibaki called potential voters who could then listen to his pre-recorded voice (Limo 2007). Mobile phones have been instrumental in encouraging better voter registration (in Kenya 2007) and voter turn out (in Uganda 2005 where the Ugandan Electoral Commission with help from the company SMS Media sent out 500,000 SMS to remind potential voters for an upcoming referendum). SMS technology has also been used for post-election monitoring like in Kenya 2007/2008. Also in Kenya, media houses provided election results via SMS at a premium rate and breaking news (Limo 2007). Mobile applications used for election observation and monitoring have so far not been tried out in East Africa but plans are under way to involve both accredited and trained observers as well as citizen reporting of elections in the 2011 elections in Uganda.

In Kenya, post election 2007, threats and misinformation was floating around using SMS. The government authorities intervned with the help of mobile operators and sent out a mass SMS stating:

The Ministry of Internal Security urges you to please desist from sending or forwarding any SMS that may cause public unrest. This could lead to your prosecution (AllAfrica 2008).

Another example using bulk SMS to communicate en masse was during the riots in Kampala in September 2009. Subscribers, mostly on the Zain network, received

Table 12.2 Mobile enabled good governance initiatives in East Africa

| Application area | Location | Project | What? |
|---------------------------------------|----------|----------------------------|---|
| Government news, information, updates | Kenya | Road Safety | Allows commuters to report public vehicles contravening traffic regulations run by Transport Licensing Board of Kenya. The dedicated SMS hotline is 2333. |
| | Kenya | E-Service Delivery Project | Information on progress of identity card (text 2031) and status of passport (text 2032). The government will expand this service to cover other key areas of service delivery such as land and health. Run by Ministry of Migration and Directorate of e-Gov. www.e-government.go.ke/ |
| | Kenya | Election results | Mobile Planet provided up-to-the-minute election results by text message in 2002 and 2007 Kenyan elections. As the results were tallied, subscribers were sent updates via SMS. www.mobileplanet.co.ke/ |
| | Kenya | Voter registration | In the run-up to the 2007 Kenya elections, the Electoral Commission of Kenya (ECK) launched a voter registration service where you could SMS the register by sending your ID number to receive verification of voter registration. They later tried to sell the application. |
| | Kenya | Community News | The community news service is distributed free to subscribers in Kibera, Kangemi, Kawangware, Mathare and Mukuru. It provides a channel for sending out information on events in the community, send out alerts in cases of fire outbreaks and mobilising residents to take part in environmental clean-up activities. www.mobile4good.biz/services.html |
| | Tanzania | VodaFLAVA | Starfish Ltd. offer information on demand on weather, tides, ferry boats (Dar es Salaam, Pemba, Zanzibar), crops, stock exchange, national and international news headlines, exchange rates. Send the correct keyword as a SMS to 15500. www.vodacom.co.tz |
| | Uganda | Farmer's Friend | Mainly a searchable database for agricultural advice (crop and livestock pest and disease control information, planting, storage and harvesting tips) but also a regional three day and seasonal weather forecast service. The technical farming information for the service Farmer's Friend is provided by the NGO BROSDI-Weather reports are provided on a daily and monthly basis by the Government of Uganda's Department of Meteorology within the Ministry of Water and Environment. www.google.co.ug/mobile/sms/ |

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| Law enforcement/ safety | Kenya, Tanzania, Uganda | Lake Victoria Project | Enhance mobile coverage on Lake Victoria for better communication. Saves lives on the lake in call of accidents. Run by ZAIN and Ericsson. www.gsmworld.com/ |
| | Kenya, Tanzania, Uganda | Misc. short codes | Even though designed for voice they are worth mentioning: regional numbers are 112 for emergency/police/SOS, 114 for fire and 115 for ambulance. In Kenya and Tanzania there are some designated short codes for 'Crime Stoppers' (111) and 'Anti-corruption' (113). In Tanzania, if you call 113 you will come to the Prevention of Corruption Bureau (PCB). In Uganda, one can leave anonymous complaints on a special hotline (347387) to the Inspector General of the Government (IGG) "for rapid response to complaints" (IGG 2009). Kenya Anti-Corruption Commission (KACC) have a similar system in place. |
| | Kenya | Zain 911 | Zain 911 Rapid Response Service is a Zain Kenya initiative in conjunction with security firms KK Security and EARS. The hotline connects to the emergency response teams from KK Security that are located all over Nairobi and respond to any emergency situation like residential robberies, roadside emergencies including fuel delivery and ambulance services. Trouble-spot SMS alerts are sent out too to subscribers. Service is available to all Zain subscribers in the greater Nairobi area only. Other urban centres including Mombasa, Kisumu and Eldoret will be covered by end of 2010. Monthly rate is KES 2,500. www.ke.zain.com |
| | Tanzania | Albino hotline | Police handed out free mobile phones to 350 Tanzanians with albinism. "Each phone comes with a "hot line" to the police. Albinos text in their location if they suspect they are being tracked by gangsters determined to kill them and harvest their body parts." (The Economist 2009). Vodacom offered free top-up vouchers, while both Vodacom and Zain offered equipment to the police to record incoming SMS messages. Also anecdotal but worth mentioning. Many albinos have been killed in the last few years (especially in Tanzania and Burundi but also in Kenya and Uganda) supply witch doctors with organs, teeth, limbs and hair. |
| | Tanzania | Public Alert System | Tanzanian police implemented an SMS alert system to allow for anonymous reports on crimes, wrongdoing by police officers, or request emergency services. Run by E-Fulusi and Tanzania Police. No longer active. http://police.efulusi.co.tz/ |

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Table 12.2 (continued)

| Application area | Location | Project | What? |
|------------------------|----------|---------------------------|---|
| Citizens-to-Government | Uganda | Emergency, Police and SOS | Option of contacting the police through SMS to report emergencies. Available to Warid Telecom subscribers. SMS to 112 or 999. |
| | Kenya | BungeSMS | Empowers citizens to influence local governance in their constituency through the use of SMS and web. It intends to strengthen citizen-to-government (bottom-up) communication in governance. An SMS to a Member of Parliament (MP) is sent to a designated number and routed to the BungeSMS website. On the BungeSMS website, it is mapped onto Google Maps using the Ushahidi platform. Run by Made In Kenya Network. Send SMS to 3454. www.bungesms.com |
| | Kenya | Budget Tracking Tool | The Budget Tracking Tool is a collaborative platform for grassroots communities to pro-actively engage in public resource management. It enables citizens to monitor and track both disbursements and utilisation of development funds, projects funded by Constituencies Development Fund (CDF; www.cdf.go.ke/), Local Authority Transfer Fund (L-ATF; www.localgovernment.go.ke/), Women's Fund and Youth Fund. The tool can be accessed via web and by SMS by sending a text message to 7002, e.g. constituency#project (westlands#water). It can also be used for feedback in the format #constituencyname#projectname#comments. The tool has been developed by the Social Development Network and designed by Infonet. www.sodnet.org www.opengovernance.info |
| | Kenya | Martus | Martus is an online reporting tool for documenting human rights violations. It is open source, has tight security to protect the identities of individuals and organisations, it is encrypted on both the local drive and the remote server, and records are stored in a distributed system involving multiple servers. A SMS module for human rights reporting and feedback is developed in Kenya to further increase usage and access. www.martus.org/ |
| | Kenya | 2888 | An SMS service that allows Kenyans to send information, suggestions, complaints etc. via SMS to number 2888 to the Office of Public Communications. The aim is to increase the citizen-to-government communication and sensitize the government spokesperson to the priorities of Kenyans. The service will also help in tracking and apprehending corrupt officials and was used during the food crises in 2009 as a way to ease communication. Launched in June 2005. www.communication.go.ke/ |

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| Uganda | Tracking School Attendance | <p>Twaweza is collaborating with SNV Uganda on a project to facilitate monitoring of teacher and pupil attendance and absenteeism in primary schools by using an SMS based information system. The project will pilot an SMS based application that generates frequent and detailed overviews of teacher and pupil attendance in 100 primary schools, selected in two districts. The information will make the dynamics around teacher absenteeism transparent and will inform district and sub-district government officials for their appropriate short, medium and long term action, as well as non state actors at (sub) district level.</p> <p>http://twaweza.org/</p> |
| Tanzania | Daraja | <p>Daraja is a Tanzanian NGO that aims to develop tools and encourage citizens to report waterpoint functionality in their areas. The information from citizens (via SMS or other mobile telephony) will go to a database that has water point mapping information of the area. Twaweza is providing support to Daraja to (a) share information about water point functionality to the public in accessible formats, primarily through the media and (b) enable citizens to update functionality information in real time via SMS, and (c) analyze and publicize responsiveness of government to citizen notification.</p> <p>http://twaweza.org/</p> |
| Kenya | txteagle | <p>A mobile crowd-sourcing application launched by txteagle and Safaricom. It enables people to earn and save small amounts of money by completing simple tasks on their phones for companies who pay them either in airtime or cash. Partnership between txteagle and Safaricom initiated 2009.</p> <p>http://txteagle.com/</p> |
| Kenya | Kazi560 | <p>A job information service that allows employers to post job listings and job seekers to get personalized text messages based on the kind of work they are looking for. It offers jobs in more than 78 categories from managers to drivers. Kshs 10 per SMS received. Run by Mobile4Good and OneWorld Kenya.</p> <p>www.kazi560.co.ke/</p> |
| Uganda | Job Platform | <p>Employers are able to access the labour force and recruit instantly through a SMS service. All the job seekers need to do is type an SMS with credentials and availability and send it to a designated number for a cost of Ushs 1,000 per SMS (USD 0.5). Details will be listed in the following Wednesday's edition. Job providers can send their details at the cost of Ushs 3,000 per SMS (USD 1.5). Offered by one of Uganda's biggest daily, Daily Monitor, in collaboration with the value added service provider True African.</p> <p>www.monitor.co.ug</p> |

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Table 12.2 (continued)

| Application area | Location | Project | What? |
|---|------------------------|--------------------------|--|
| Disaster and crises management | Kenya, used world-wide | Ushahidi | Crowdsourcing tool to exchange and distribute information via mobile and web about natural, social and political crisis. The platform allows anyone to gather data via SMS, email or web and visualize it on Google map or timeline. Open source. Grew out of the post election violence in Kenya in 2008. www.ushahidi.com |
| Agriculture services: commodity prices, market information, awareness | Kenya | Violence-Prevention Tool | Involved in supporting mobile monitoring and reporting of post election violence. Created a SMS Nerve Centre; a hub for real-time information about actual and planned attacks between rival ethnic and political groups. The messages were then sent to local Peace Committees for action and response. Initiated by Oxfam GB with help from PeaceNet. www.oxfam.org.uk/applications/blogs/kenyacrisis/2008/02/pushing_for_peace.html |
| | Kenya | DrumNet | Transaction platform linking small holder farmers to markets, finance and information. DrumNet partners with buyers and sellers (farmers) of produce. Stockists of farm inputs, farmer intermediary organisations, banks to provide finance. Run by Pride Africa since 2003. www.drumnet.org_ina@drumnet.org |
| | Kenya | SMS Sokoni | SMS Sokoni is a service that enables farmers to receive market prices in various market centres around Kenya via SMS. Run by Kenya Agricultural Commodity Exchange (KACE), which is a private initiative launched in 1997. Their aim is to link sellers and buyers of agricultural commodities and provide relevant and timely marketing information and intelligence. Works in partnership with Safaricom through their Get It 411 services. www.kacekenya.com/ www.safaricom.co.ke/index.php?id=322 |
| | Rwanda | eSoko Project | A platform used to collect and distribute agricultural market price information using SMS and web. The system is built by Ghanaian software company BusyLab. It allows farmers to access prices of agricultural commodities via SMS, web and in the near future via IVR (voice). In Rwanda eSoko Project is being implemented in 2010 by the eRwanda Project and Ministry of Agriculture. Three thousand and five hundred mobile phones will be distributed to farmers through cooperatives and at least one cooperative in every district will benefit from the project. www.esoko.com/wilson.muyenzi@rita.rw |

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| Kenya | National Agriculture Information Service (NAFIS) | Interactive voice-based service that converts text to voice providing agricultural information in English and Kiswahili. Intended to serve farmers' needs in rural areas. Run by National Agriculture and Livestock Extension Programme (NALEP) of the Ministry of Agriculture and Ministry of Livestock development. In collaboration with Teknobyte (Kenya), Speechnet Ltd., Popote Wireless, Agriculture Information Resource Centre (AIRC), University of Nairobi. Service accessible by calling 020-47NAFIS or 020-4762347. www.nafis.go.ke/ www.teknobyte.co.ke/ |
| Uganda | CKW Search | A series of forms, presented in Java, guides the user through a menu to search for agronomic techniques for banana and coffee production. Content provided by Uganda's National Agricultural Research Organisation, Uganda Coffee Development Authority, and the International Institute for Tropical Agriculture (IITA). www.grameenfoundation.applab.org |
| Uganda | Input Supplier Directory | An SMS-based keyword search service that gives the location and contact details of shops offering specific agricultural inputs, such as seeds, pesticides and fertilizer. Content provided by Uganda National Agro-input Dealer Association (UNADA). www.grameenfoundation.applab.org |
| Uganda | Agricultural Market Information System (AMIS)/Acacia II | It was implemented in 2004 in western Uganda by African Highland Initiative funded by IDRC through establishing ICT-centres, telecentres and village information centres where mobile phones were used for data collection and information dissemination. Project is now handed over to the National Agricultural Advisory Services (NAADS), which is a program of the Government of Uganda put in place to increase the efficiency and effectiveness of agricultural extension service. www.naads.or.ug/ |
| Kenya | BloodBank SMS | BloodBank SMS was developed to improve the communication between local district hospitals and Kenya's centralized blood banks. The system enables medical workers at the local district hospitals to provide information about their remaining blood stock directly to their centralized blood bank. http://eprom.mit.edu/bloodbank/ |
| Health projects (selected projects where the Ministry of Health is involved) | | |

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Table 12.2 (continued)

| Application area | Location | Project | What? |
|------------------|------------------|--|--|
| | Kenya, Uganda | EpiSurveyor | Open source mobile data collection system that enables users to easily create a handheld data entry form, collect data on a mobile device, and then transfer the data back to a server or laptop for analysis. Mostly used in health, for example by Ministry of Health officials in Kenya to collect data about vaccine programmes. Run by Datadyne and Ministry of Health since 2003. www.datadyne.org |
| | Rwanda, Tanzania | Phones for Health | Support for community health workers in various health interventions. It uses computers and mobiles to establish a national electronic reporting system that eases delivery of public health care at the village level. Implemented by Voxiva, GSMA Development Fund, the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), Accenture Development Partnerships, Motorola and MTN. Ministry of Health Rwanda and Ministry of Health Tanzania involved. www.pepfar.gov/c21414.htm |
| | Rwanda | NACC Hotline | A free national hotline for information on HIV prevention, care and support services provided by National AIDS Control Commission (NAAC). The hotline works from 7 a.m. to 8 p.m. on 3334 and 3335. www.cnls.gov.rw/hotline.php |
| | Rwanda | HealthWatch | A disease surveillance solution run by Voxiva. HealthWatch is an integrated surveillance platform used by the public health agency to support integrated disease surveillance, syndromic surveillance, and coordinated response. www.voxiva.com/ |
| | Tanzania | IMCI, HIV/AIDS, TB, Diabetes, CommCare, Malaria, Reproductive Health | Runs a number of projects all based on a decision support system for health workers to check patients' condition before going to see doctors. A system of protocols, that are delivered from mobile phones, allows community health workers to deliver high-quality and effective care where there is no doctor. The mobile phones take the health worker step by step through the diagnosis and treatment options for a range of illnesses. Implemented by D-tree International together with OpenROSA, Ministry of Health among others. www.d-tree.org/ |

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| Uganda | ICT4MPOWER | The proof of concept project “ICT4MPOWER” aims to increase the effectiveness of the Ugandan health system and empower Community Health Workers for better health outcomes of the rural population. This will be achieved by developing an all encompassing electronic health record and referral system, unique client ID system as well as strategic delivery of eLearning and tele-consultation. Run by Ministry of Health, SPIDER, Makerere University, Karolinska Institutet. https://service.projectplace.com/pub/english.cgi/0/163130653 |
| Uganda | MOH Malaria Monitoring Platform | System to allow clinics send in their weekly disease and malaria data via a multi-SMS report. This involves replacing the Ministry of Health form with a “SMS-able” paper version. Web dashboard provides overview of disease burden, including specific malaria treatment and diagnosis data and ACT drug levels to help report stock outs. Using the RapidSMS system. Run by FIND Diagnostics, Earth Institute, Ministry of Health Uganda. |
| Learning and education (content, examination result) | Kenya Examination results | Kenya Certificate of Secondary Education (KCSE) national examination results and orders of merits can be accessed by candidates and parents through SMS. Type KCSE (Full Index Number) and send to 2228. Run by Kenya National Examinations Council and Ministry of Education. www.examsCouncil.or.ke/ http://kcse.info/ |
| Rwanda | eNota Project | A mobile based system that will allow students (primary leaving and secondary leaving students) to access their national examination results via their mobile phones. Implemented by e-Rwanda, Ministry of Education and Rwanda National Examinations Council (RNEC). www.mec.ac.rw/ |

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Table 12.2 (continued)

| Application area | Location | Project | What? |
|------------------|----------|---------|---|
| | Tanzania | BridgIT | BridgIT combines mobile phone and TV to deliver digital, multimedia materials to teachers and students. In practice, teachers use mobile phones to access a library of science, math, and English videos. Once selected, videos are downloaded via GPRS to the phone which then is connected to a TV in the classroom. Opens up for distance learning programs. Public-private partnership between Ministry of Education, International Youth Foundation, Nokia, Vodacom, Pearson and FAWE. www.moe-go.tz www.yfnct.org/document.cfm/751 |
| | Uganda | ExamSMS | UNEB in conjunction with SMSMedia launched a registration and exam results SMS platform in December, 2009. Students, parents and guardians will be able to check their results via their mobile phones by typing a keyword e.g. PLE <space> Index No and send this to 6600. Each SMS sent will cost Ushs 500 and available on MTN, ZAIN, and UTL Networks. www.uneb.ac.ug/ www.smsmedia.ug/ |

at least two text messages urging people to calm down. Both sent on Saturday the 12th of September 2009:

Dear Ugandans, be reassured Kampala is safe. All hooliganism and thuggery has been stopped. Enjoy your weekend

Dear Ugandans, our city is safe. Do not be intimidated or alarmed by hooligans. Today is a normal working day. For God and my Country

The riots continued the whole of Saturday and it was not safe in the capitol Kampala until Sunday. This example highlight the complexity of using bulk SMS to communicate: not all Ugandans received the text and those who did receive it did not trust the source, i.e. the sender of the messages “UGANDA”.

Even though these are anecdotal examples they are interesting and shows that the state and the operators do work together in the event of crises. According to Uganda Communications Commission (UCC), operators are obliged in the interest of public safety to operate their networks in such a manner as to alleviate a state of emergency as well as provide access to emergency services free of charge. However there is still need to define clear operational procedures in case of an emergency looking at the Uganda laws of the country.

A question that must be asked is if only because it is technically possible, do you have to do it? For example, are Governments really interested in hearing from each and every citizen? The president in Uganda tried it out some few weeks prior the 2007 Commonwealth Heads of Government Meeting (CHOGM), which Uganda hosted. As an engaged citizen, you could mail/post or SMS question's and concerns “directly” to the President. He simply re-invented the black hole (i.e. no replies) and the service was disabled when CHOGM was over. To create this window of citizen involvement using SMS as a mean of providing feedback to many government leaders is tempting but failure rate high!

There has been a number of political actions taking place in East Africa using the mobile phone as a complementary tool. Nairobi People's Settlement Network used mobiles to get organised against evictions in Kibera, Nairobi. BBC reports: “[t]hey used what we would call flashmobbing to call people from across the many different and rival settlements together where big evictions were planned, and threatened to sit down in front of the bulldozers” (Mason 2007). Yet another example of political mobilisation was the Save Mabira Forest campaign in Uganda, where the Anti-Corruption Coalition Uganda (ACCU) played an instrumental role together with other civil society organisations in mobilising the citizenry to oppose government plans to give away one third (roughly 70 km²) of the Mabira Forest to the Sugar Corporation of Uganda Limited (SCOUL), owned by the Mehta Group (which to 51% is owned by the Government), for sugarcane plantations. The most successful part of the campaign was to urge people, through SMS, to boycott sugar produced by the company (ACCU 2008). The blogger Abubaker Basajjabaka writes: “Over the weekend, packets of Lugazi Sugar have been piling up in supermarkets besides some business owners withdrawing them from their stalls” (Basajjabaka 2007). The government consequently suspended the idea of giving away the forest.

12.4.3 *How?*

How to design a successful mobile governance project? Donner et al. (2008) list a set of choices that the ICT4D literature identifies as being correlated with project success:

- Evolutionary (vs. revolutionary)
- Embed the mobile component into an already ongoing initiative (vs. being on its own)
- Use existing practises as a starting point (vs introducing totally new behaviours or patters)
- Basic skills (vs complex and/or additional skills needed)

The applications and services listed in Table 12.2 more or less fall into this success template. Most of them are evolutionary and are being part of an already ongoing initiative. Existing practices are used as the starting point and no additional skills are needed (only a few exceptions). Further, the applications/services listed are mainly used for information gathering and sharing and for coordinating actions (i.e. more targeting a mass-public and breadth). Mobile applications for policy and other political deliberations (in depth) are complex and not that common. Many of the projects have a strong local technological partner, which makes it easier to manage, integrate and sustain the application. Successful m-governance applications rely on a functioning, effective backend for content and support. Partnering with a local technological firm makes the adoption of technologies much easier, the responsible body running the service hardly needs to know more than the end-user.

The identified m-governance applications all have a decentralised approach where the retrieval of information is decentralised rather than a centralised. This must be considered good since an information society cannot be centrally planned. However, an information society can be centrally facilitated and coordinated, which is generally not the case in the East African countries (Rwanda being an exception). A decentralised, uncoordinated approach makes it extremely hard to identify projects and initiate collaborations and partnerships. For the end user, i.e. the citizen, this is extremely problematic – there is no central m-governance hub or portal. How can a citizen know that a particular service exists? There is no search function and no short code that gives meta information about available services run by other ministries, organisations and companies. And running campaigns promoting every new service is way too costly.

Related is another challenge in that East African economies generally have only to a limited extent been controlled by governments. The majority of the East Africans citizens survives through the informal sector. A citizen can spend a whole life without being involved in any formal sector transactions. There is a clear need for government–citizen interaction but do citizens want to deal with the government? How can trust be built and awareness of citizen rights and state obligations best be communicated? How to protect your identity when airing opinions and sending inquiries to the government?

Other identified challenges regarding adapting and implementing m-governance applications include but are not limited to (Hellström 2009, 2010):

- Costs, payment, and revenue sharing: who should pay for the services?
- Content, who should produce and update content? Can this also be done by ordinary citizens? Generally, people tend to be consumers of the available services and applications rather than provide and create content themselves.
- Usability issues and the limitations of mobile phones – small screens, short messages, complicated commands. Advanced phones with bigger, colour screens that are data enabled are still too expensive for the East African masses.
- Some services are tied to a specific operator – interoperability issues between operators and roaming between countries must be solved. Compatibility and a variety of platforms are related challenges.
- How to promote mobile penetration and increased accessibility in areas that are not commercially viable? Universal funds and rural communication funds are used but they are not efficient enough.
- Regulation and legal aspects of mobile applications and use of the services are lagging behind in East Africa. The content providers are far ahead.

Most of the applications in Table 12.2 are very harmless, non-political and for personal information needs. Could it be that mobile phones challenge the traditional means of service delivery and existing power structures? If so, how to go around it and implement applications that really empowers the citizen, even if it is at someone else's expense? People with power will not let it go that easy.

This leads to the question of ICT double potential for control and freedom. ICT may empower not only citizens but also the state – for good and for bad. As East African regimes learn how to manage and engineer information flows, promotion of and protection of free speech becomes really important. In Uganda for example, there has been a long discussion regarding the Interception of Communications Bill which seeks to authorise security agencies to intercept phone, email and postal communications with the motive to fight terrorism and make the country safer. It is a controversial suggestion from the Government and the opposition from Members of Parliament are worried about the real intentions of a Big Brother executive. Operators are concerned about the costs involved of purchase and implement the wire-taps and the costs related to registering each subscriber. Journalists are concerned about the threat to sources. Civil liberty groups that defend the individual right to privacy are just concerned in general. Even Uganda's regulator, the Uganda Communications Commission (UCC), means that if passed in its current form it will violate the Constitution and the UCC Act. Maybe we must be more realistic about the true extent of ICT transformational potential.

12.5 Scaling-up

There are many governance related pilots and implementations in East Africa but still few successes at scale. Scale is important for impact reasons and for sustainability issues – scale reduces the unit cost and makes the intervention more cost

effective and efficient. Having scale in mind is of extra importance when designing m-governance applications meant for national, inclusive, public services to make sense – there is a need to get away from pilots and projects and rather promote a service delivery approach. How to go from successful pilots to national scale?

Some ideas have already been mentioned: a central body that facilitate and coordinate m-governance activities and make them visible. Marketing and awareness campaigns are highly needed and lacking at the moment. Citizens are often not aware of existing applications and there is no information regarding where to find the existing services.

Also, an innovative billing plan and a sound business model is needed for m-governance to become sustainable. Cost factors and affordability issues constitutes major challenges in East Africa. For example, most of the subscribers in East Africa are on a prepaid scheme where they top-up (load airtime) when they need to make a phone call, beep or SMS. Most of the time there is no credit on the phone which means that if the system is designed in a way where the citizen are supposed to pay for the service, the completion rate will be low. The billing platform only works if there is money on the subscribers' phone but no money, no service.

Sustainability needs to be designed into the end product from start and the simpler the merrier – low complexity of business model and the technical solution has proven to be a success factor (Hellström 2010). There are many costs during implementation phase too, see Tactical Technology Collective's checklist of possible costs when implementing a project involving mobile phones (www.mobiles.tacticaltech.org/).

So, despite of all the rapid developments in mobile applications, there is a lack of scale. Analysing mobile applications for social and economic development, a number of success factors have been identified (Hellström 2010):

- Do the homework and avoid re-inventing the wheel
- End-user driven and look at needs
- Fit into already existing patterns
- Consider open standards/content and build a user community
- Focus on usability and design with the end user in mind – applications addressing poorer segment of the society should work on existing phones to ensure access
- Interface richness should correspond to the task at hand – there is no need for extravagance to display simple information for example
- Involve right stakeholders, forge strong partnerships and use local capacity
- Collaborate with other organisations doing similar interventions
- Documentation is a key element throughout the project and to share lessons learned, successes as well as failures, benefit all

In the implementation phase:

- Set measurable goals
- Have a viable business model and/or predictable funding flows
- Involve end-users in content creation where applicable
- Use technology that align with the needs of the program it is designed to support – try to keep it simple
- Implement a decentralised solution rather than centralised

- Cross network instead of working only with one operator when possible, however, close partnership with operators seems to be crucial for most applications
- Educate the end-user
- Have a proper marketing to get a critical mass of users
- Let it take time

When designing m-governance applications an important aspect of the architectural framework is to really understand and capture the existing knowledge about processes and work-flows. What is working, what is not working, how could things be done better? Next step is to map the solutions into an abstraction that then can be translated into applications. Too often a mobile “solution” is designed for a problem that never existed in the first place (and too many solutions looking for problems). Applications should be developed having the end users point of view, not the application as such.

Government ministries and agencies related to the planned m-governance application should be highly involved in the planning and implementation phases. This will ultimately lead to a change in attitude towards provision of services and transform their models of providing public information to citizens.

12.6 Conclusions

There is a lot of hype surrounding m-governance and its potential to transform the society and make it more dynamic, participatory and democratic. The mobile applications identified in East Africa will at this stage not open up for a deepened democracy and create inclusive public spaces. Government institutions are not really sharing information or giving insight into state affairs, at least not through mobile applications. Few of the identified applications will influence the political decision making process and help in holding governments accountable. However, governance is a complex phenomenon, so is implementing innovative mobile phone applications in its right context. It will take time to find a good, sustainable, scalable match. There are many challenges in regard to good governance, there are also many small solutions ready available – imagination, innovation and courage is the limitation.

Do mobile phones empower citizens? Technology does not empower anyone, citizens empower themselves. And with right and better tools, this will become easier. M-governance is about identifying and solving real problems, come with realistic solutions involving the state, market and civil society state in order to improve the way people live. Many, small solutions together will eventually empower the citizens. Applications do not work in isolation, the more services available, the more active end-users and transactions, the better the mobile ecosystem of stakeholders will be. This is a mutually re-enforcing process.

Do mobile phones affect the way citizens interact with each other and with the society as whole? The ever popular and totally unpredicted beeping culture in East Africa is a good example on how mobile telephony has changed the way people communicate. The concept of “anywhere and any time” has made the society more

flexible and to some extent, more responsive. Do mobile phones open up for a deepened democracy? Observing cases from East Africa, the general public is usually not responding too well to initiatives. There could be many reasons to this but three reasons stand out; (1) if the solution is offered at a premium or even at a minimum cost it must bring clear, direct value for the end user, (2) if the solution is not marketed and promoted enough no one will use the service, (3) citizens have little trust in government services and do not feel engaged, and do not think that the government will become more transparent, accountable, obedient etc.

References

- ACCU (Anti-Corruption Coalition Uganda). 2008. Annual Report January–December 2007. Retrieved September 1, 2008, from <http://www.anticorruption.or.ug>
- AllAfrica. 2008. Kenya: Campaigns benefit from technology boost. Retrieved September 1, 2008, from <http://allafrica.com/stories/200801080868.html>
- Basajjabaka, A. 2007. Battle to Halt Mabira Forest giveaway taken to cyberspace. Retrieved September 1, 2008, from <http://blogs.bellanet.org/index.php/?archives/199-Battle-to-halt-Mabira-Forest-giveaway-taken-to-cyberspace.html>
- Communications Commission of Kenya (CCK). 2009. Sector Statistics Report April–June 2008/09. Retrieved March 15, 2009, from <http://www.cck.go.ke/UserFiles/File/SECTOR%20STATISTICS%20REPORT%204th%20Quarter.pdf>
- Chabossou, A., C. Stork, M. Stork, and Z. Zahonogo. 2009. Mobile telephony access and usage in Africa. In Proceedings from 3rd International Conference on Information and Communication Technologies and Development, 17–19 April 2009, Carnegie Mellon University in Qatar Education City, Doha.
- Coffey International Development. 2007. The role of communication in governance: detailed analysis. Retrieved March 15, 2009, from http://www.icdev.info/portal/documents/Governance_SummaryPaper_003.pdf
- DCERN. 2007. Governance: Impact of communication in development. Retrieved March 15, 2009, from <http://www2.ids.ac.uk/gdr/cfs/pdfs/CARframeworkDRCweb.pdf>
- DFID. 2006. Eliminating world poverty – making governance work for the poor. Retrieved March 15, 2009, from <http://www.dfid.gov.uk/wp2006/default.asp>
- Donner, J., K. Verclas, and K. Toyama. 2008. Reflections on MobileActive08 and the M4D Landscape. In Perspective. *Proceedings of 1st international conference on M4D 2008, general tracks*, ed. J.S. Petterson, 61. Sweden: Karlstad University Studies.
- Easterly, W. 2006. *The white man's burden*. New York: Penguin Books.
- Hellström, J. 2009. Mobile democracy: Challenges and way forward. In *Big brother and empowered sisters*, ed. L. Rudebeck, J. Hellstrom, and M. Melin. Sweden: Uppsala University.
- Hellström, J. 2010. The innovative use of mobile applications in East Africa. *Sida Review* vol 12. ISBN: 978-91-586-4129-7, Retrieved June 10, 2010, http://upgraid.files.wordpress.com/2010/06/sr2010-12_sida_hellstrom.pdf
- Inspector General of Government (IGG). 2009. Frequently asked questions. Retrieved March 15, 2009, from <http://www.igg.go.ug/faq.htm#12>
- International Telecommunication Union (ITU). 2010. Measuring the information society – 2010. http://www.itu.int/ITU-D/ict/publications/idi/2010/Material/MIS_2010_without%20annex%204-e.pdf, Retrieved May 30, 2010
- Limo, A. 29 Dec 2007. How electronic technology helped to boost election campaigns. Retrieved March 15, 2009, from <http://allafrica.com/stories/200712310130.htm>

- Mason, P. 2007, January 9. From Matatu to Masai. *BBC News*. Retrieved March 15, 2009, from <http://news.bbc.co.uk/2/hi/technology/6242305.stm>
- Salazar, L.C. 2006. Applying the digital opportunity index to the Philippines. Retrieved May 30, 2010, from <http://www.itu.int/osg/spu/digitalbridges/materials/salazar-paper.pdf>
- TCRA. 2010. Telecommunications statistics from 2000 to December 2009. Retrieved May 30, 2010, from <http://www.tcra.go.tz/publications/telecom.html>
- The Economist. 15 Jan 2009. Albinos in East Africa: A horrendous trade. Retrieved March 13, 2009, from http://www.economist.com/world/mideast-africa/displaystory.cfm?story_id=12948633&CFID=38699839&CFTOKEN=49565382
- UNDP. 1997. Governance for sustainable human development. Retrieved March 13, 2009, from <http://mirror.undp.org/magnet/policy/>