Mobile Governance: Empowering Citizens to Enhance Democratic Processes

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Abstract: This paper offers an overview of the emerging domain of mobile governance as an offspring of the broader landscape of e-governance. Mobile governance initiatives have been deployed everywhere in parallel to the development of crowdsourced, open source software applications that facilitate the collection, aggregation, and dissemination of both information and data coming from different sources: citizens, organizations, public bodies, etc. Ultimately, mobile governance can be seen as a tool to promote the rule of law from a decentralized, distributed, and bottom-up perspective.

Keywords: governance, mobile technologies, mobile governance, rule of law, crowdsourcing
Categories: H.2, H.4

1   Introduction

Mobile governance is an umbrella term that covers a number of initiatives involving the use of mobile technologies (i.e. SMS, USSD, geolocation, etc.) in the domains of citizens' participation, public awareness, management of emergencies and crisis, provision of public services, information, etc. to reach wider population segments (as compared to those currently accessing the Internet). It is well known that mobile phones have become in recent years the most ubiquitous communication device world wide, with higher penetration rates than the Internet. In 2010, the number of mobile cellular subscriptions globally is expected to reach five billion [ITU, 10]. Mobile technologies provide therefore greater opportunities for social impact than any other ICT, while being more affordable and, also, less demanding in the skills and training required [Kinkade *et al.*, 08].

While deeply intertwined to e-governance, mobile governance (or m-governance *tout court*) emerges as a new domain with two-fold objectives: on the one hand, it aims at improving the provision of basic public services, specially to the less favoured populations; on the other, it bolsters the participation of citizens, grass-root organizations, NGOs, etc. in awareness campaigns, electoral processes, oversight of governments and public policy making [Hellstrom, 08]. In Hellstrom words, "mobile phones make it possible to create a bottom up participation and ultimately–what m-governance is all about–empowerment [Hellstrom, 08]. This paper presents a brief overview of this nascent domain and makes a case for considering m-governance as a crucial development of the broader domain of e-governance.

2   Governance, e-Governance, and m-Governance

For some years now, the concept of governance has been defined and measured in multiple ways by scholars, international organizations, think thanks, practitioners, etc. While some definitions emphasize the relationship between governments and citizens or markets, others highlight how institutional structures, procedures, and processes need to be implemented to deliver public services under the rule of law. Despite the variety of approaches, the notion of good governance is generally related to the principles of rule of law [Kaufmann, 08], transparency, accountability, and public participation [Sasaki, 10].

The use of the Internet and other information technologies (IT) to support governance mechanisms has lead to the new paradigm of e-governance. This paradigm is broad enough to include (i) *IT supported* governance—where IT support the provision of conventional, offline public services, (ii) *IT enhanced* governance— where IT provide a complementary online channel to facilitate the relationship between government agencies and citizens, companies, organizations, etc., and (iii) *IT enabled* governance—where IT open unprecedented venues to empower citizens with improved access to government information and data (i.e. the movement of Open Data in different countries).[1] While these different uses of IT for governance usually coexist in many countries, their effective impact on making governments more transparent and accountable, or making citizens more participant should be analyzed separately. Recent case studies show that while more and more government agents publish information on their activities and budgets, they may do so "in ways that are not easily accessible or comprehensible" [Sasaki, 10]. Similarly, recent empirical research provides contradictory results on the impact of the Internet on public participation. Main debates focus on whether the Internet and other information technologies are valid sources of the skills and resources, and mobilization needed for participation—according to the "civic voluntarism" model [Verba, 95]—, and even on different conceptualizations "of the meaning and empirical referent of political participation" [Anduiza, 09]. As Hattotuwa grimly puts from his Sri Lankan experience [Hattotuwa, 08]:

Good governance in 2008 is no better and arguably in a condition far worse after the introduction of e-Governance than before it. This is not to say that e-Governance initiatives per se have contributed to the deterioration of democracy, but suggest instead to the heady telecentre idealists who reside in the stratosphere that on the ground, few citizens access telecentres to strengthen and interact with mechanisms and institutions of (local and national level) governance that are failing them daily. Some Government forms are readable and downloadable on PCs (and that too not always in Tamil), and one can see how the local government representative looks like on a webpage (for one never see him in real life) and get the numbers of telephones and faxes that are many-a-times outdated and dysfunctional.

The Sri Lanka example applies to many other countries. On the one hand, Internet penetration rates are low or very low in developing countries—18 users per 100 inhabitants—and remain modest in global terms: roughly one quarter of the world

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[1] http://www.data.gov/

population (26.8) has access to the Internet [ITU, 10]. On the other, adding IT to governance mechanisms requires physical infrastructures and operational designs that are lacking at different levels. And even if governments are willing to provide services or public information on their activities, they may fail the attempt: transforming information reports or budgets—usually both lengthy and/or highly technical—into meaningful data that people can visualize, compare, contrast, comment, etc. is not a straightforward road to travel through.

Mobile governance, or the use of mobile technologies to enhance the provision of online services and enable new communication channels may certainly contribute to remove some barriers to the delivery of electronic services and the participation of citizens and groups in public affairs. In this regard, Kaisalam includes within the domain of mobile governance both G2C and C2G interactions (i.e. providing relevant information to citizens and complaining about services, respectively), mobile services (i.e. transactions and payments), mobile democracy (i.e. use of SMS for citizen input to political decision-making), mobile administration (i.e. a seamless environment for governmental agencies) and government management of emergency situations (i.e. in the aftermath of natural disasters) [Kailasam, 10] .

While it "also rel[ies] on good back office ICT infrastructure and work processes: governance networks and databases, data quality procedures, transaction recording processes, etc." [Kailasam, 10], mobile governance is generally considered to offer better perspectives than PC-based e-governance models. A frequently repeated argument for the extension of mobile governance relies on statistics unanimously showing how the numbers of mobile phone owners outnumber by far those of wired lines and Internet users. Potentially, then, broader population segments can be reached. A number of recent studies have indeed proved how mobile governance initiatives are currently been developed in rural areas with poor or none Internet access [Kinkade and Verclas, 08; Kaisalam, 10]. From the citizens' perspective, mobile governance holds the promise of shaping conversations and information services to make them more "decentralized, two-way, adaptive, resilient, and pervasive" [Hattotuwa, 08]. But will the mere possession of relatively inexpensive hand-held devices make citizens more aware and vigilant towards state institutions? Will make them more prone to public participation, in whatever form this may take? These are for sure updated research questions relevant to the well established domains of governance and political participation. To address these questions in full is out of the scope of this paper, but we will approach them by reviewing some bottom-up initiatives that have flourished from the collaboration between groups of technologists and activists, civil society organizations, and NGOs. Often referred to as "mobile activism", these initiatives are coincident in the use of disruptive, low-cost, little-learning-curve technologies such as SMS and may provide transparent testbeds for large mobile governance programs.

3   Mobile Technology for Citizens Engagement

On March 13, 2004, forty-eight hours after the terrorist attacks of March 11 in Madrid, thousands of people concentrated before the headquarters of the Popular Party, then in office. The demonstrators wanted to know the truth on the responsibility for the attacks, the government having put the blame on the Basque terrorist

organization ETA from the immediate outset. The concentration was organized in a decentralized way by means of SMS. The use of mobiles to bolster political mobilization was replicated, among other places, in the Philippines to protest against a reform on taxes (2004), in the independence referendum in Montenegro (2006), in Burma during the Saffron Revolt (2007), in Kenya, India, or Iran after the respective electoral processes and in several countries in Africa [Ekine, 10]. Specifically, mobile activism has also a significant impact on the monitoring of the electoral processes, where it can influence the way in which the elections are organized [Schuler, 08]. According to Miard, mobile phones shape this particular form of activism by bringing into the front three important factors: mobility, personalization and multimodality [Miard, 09]:

Mobility adds a spontaneity factor to potential mobilization, because users can react instantly and emotionally to events. Personalization is given through the typically person-to-person and social type of contact. Finally, the mobile phone is multimodal because it can transmit voice, images, and sounds, making it a tool for live transmission of events to be shared on the network.

Over the last few years, new horizons and opportunities for the development of mobile governance initiatives have incredibly expanded all over the world. While the core domains of application in the area of governance are citizens' activism and public participation, monitoring of election processes, advocacy, reporting of crimes and human rights violations, new creative uses are constantly emerging out of the practical needs of citizens, organizations, and public institutions. Innovation does not lie in the design of high-tech or sophisticated technology, but in the use of an appropriate and disruptive technology such as an SMS service: appropriate in the sense that it is suited to the environment in which it is used [Schumacher, 73], which is this case is composed of citizens owning and interacting with a mobile phone, and disruptive in Christensen's sense [Christensen, 97] insofar it exploits the most basic capacities of already existing technologies to reach broader population segments which otherwise would not have had access to more costly and sophisticated mobile technologies (i.e. the mobile Internet). In this line, a number of new open source software applications and tools have simultaneously emerged and there are teams of developers around the globe cooperating in a decentralized way to improve alpha and beta versions of the software. Table 1 below summarizes the main features and functionalities of the software applications recently developed and tested in a number of world areas:

Platform	Ushahidi	Frontline SMS	RapidSMS	Swift River	SlingshotSMS	SMS Turks	Freedom Fone
Developer	Ushahidi	Kiwanja	UNICEF, Dimagi, MVP	Ushahidi & Meedan	Development Seed	Ushahidi	Kubatana Trust
Release year	2008	2005	2009	2009	2009	2010	2009
Status	Version 1.0	Version 1.5.5	Alpha	Alpha 0.0	Version 2.0	Not available	Version 1.5
Main purpose	Submit crisis information through text messaging using a mobile phone, email or web form	Enable mobile users to send and receive text messages with large groups of people through mobile phones.	Support the creation of personalized interdependent platforms for diverse use-cases	Determining the veracity and accuracy of news during a crisis	Provide a gateway to act as a bridge between mobile phones and the web.	Help volunteers manually parse information out of text messages	Create and conduct polls via SMS, collect opinions via telephone and make them available online
Functionalities	SMS, email & web-based data gathering + Geolocation + timeline	Create forms to be sent to a Java-enabled mobile phone through a text message. Data collection functionalities	Collect quantitative and qualitative data through SMS. Used in Supply Chain Management, Patient Tracking and Decision Support	Database and user interface to gather and filter streams of data through both machine based algorithms and humans to understand their veracity	A minimal SMS server which connects GSM modems to websites and applications via a HTTP interface	Allow translation, categorization and basic geocoding of all incoming messages	Voice menu, SMS polls, leave-a-message voice menu, information callbacks
Interoperability	Mapping applications (Google, Yahoo, MSN, OSM maps), FrontlineSMS, Clickatell, IntelliSMS, Twitter, StatusNet	Integration with Ushahidi	Has developed Rapid Android. Used by CommCareHQ	First used as a complement to Ushahidi. Builds on Twitter Vote Report	Uses pygsm, sponsored by UNICEF. Integration with Managing News	Integration with Ushahidi	
Use Cases	Kenya, Lebanon, Mexico, Madagascar, Afghanistan, Gaza, Philippines, India, DR Congo, South Africa, Haiti, Chile	Worldwide (used in + 40 countries)	Ethiopia, Kenya, Nigeria, Somalia, Malawi, Uganda, Rwanda, Tanzania, Senegal, United States	India		Haiti	Zimbabwe, Tanzania

Table 1: Open source software applications for m-government

- Ushahidi—"testimony" in Swahili—is a platform that allows its users to gather distributed data via SMS, email or web and visualize it on a map or timeline.[2] Through Ushahidi people report real time information of events such as political disruption or natural disasters and the platform aggregates this incoming information for use in a crisis response. The website was created at the beginning of 2008 as a simple mashup, using user-generated reports and Google Maps to map reports of violence in Kenya after the post-election fallout, and it has been used in a number of election processes afterwards. But Ushahidi has really come to age with the Haiti earthquake of January 2010 with the coordination of aid and relief agencies to support rescue operations, situational awareness and near real-time online mapping of incidents related to the disaster.

- Frontline SMS was started in 2005 and it enables users to send and receive text messages with groups of people through mobile phones. It works with existing plans on all GSM phones, modems and networks.[3] Frontline is mostly used in areas such as human rights monitoring, disaster relief coordination, natural resource management, and election monitoring.

- RapidSMS is a web-based platform for data collection, logistics coordination, and communication developed by the Innovations and Development team of UNICEF.[4] With the RapidSMS web interface, multiple users are able to access the system simultaneously and to view incoming data as they arrive, export new data-sets, and send text messages to users.

- Swift River is a toolset for crowdsourced situational awareness.[5] The first use of Swift was as a complement to Ushahidi to monitor the Indian 2009 Elections. Swift River embraces Semantic Web open standards "such as FOAF, iCal, Dublin Core, as well as open publishing endpoints such as Freebase" to add structure to crisis data and make them shareable.

- SlingshotSMS is a lightweight SMS gateway that can run on a laptop or a USB drive.[6] SlingshotSMS sends and receives text messages on behalf of a web application. It builds on the work of pygsm, a Python library developed by UNICEF Innovation to deal with AT-compatible modems.

- SMS Turks is a very recent application developed by members of the Ushahidi community to help volunteers working with Ushahidi to manually parse information out of text messages immediately after the Haiti earthquake. The system, to be newly rewritten, allows translation, categorization and basic geocoding of all incoming messages.[7]

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[2] http://www.ushahidi.org
[3] http://www.frontlinesms.com
[4] http://www.unicefinnovation.org
[5] http://www.swiftapp.org
[6] http://www.developmentseed.org
[7] http://blog.ushahidi.com/index.php/2010/02/07/sms-turks/

- Freedom Fone allows media organisations to create and conduct polls via SMS, collect opinions via telephone and make those results available online.[8]

The vast majority of these software applications are mostly SMS-based and do not necessarily need to be connected to the Internet to operate, which is a critical asset when, as is frequently the case, networks are down or shut off for either natural or political reasons (it may happen with mobile networks as well, but in this case is easier to re-establish the services or search for technical alternatives). The applications considered so far focus primarily on information gathering and sharing and on coordinating direct political actions, but less on decision making for public policies and other political deliberations [Hellstrom, 08]. The software applications have some key defining features in common, which have already been identified in recent research on crowdsourced systems: open teams, mashability, unknowable, overlapping or conflictive requirements, continuous evolution, focus on operations, sufficient correctness, unstable resources, and emergent behaviours [Kazman and Chen, 09].

While there is no template to design a successful mobile governance project, the literature on mobile governance has already identified some key features that seem to be present in successful case studies [Kinkade and Verclas, 08]:

- Evolutionary (vs. revolutionary)
- Embedding the mobile component into an already ongoing initiate (vs. casting the mobile service as itself the development effort or otherwise asking the technology to lead the effort)
- Using the mobile technology to reduce transaction costs or increase productivity of existing practices, versus introducing entirely new behaviours via the mobile
- Requiring only basic literacy or skills from users, versus requiring additional technical knowledge or support

More specifically, a number of choices have been identified relating to: intended users (general public, population niches, professional groups, etc.), technical accessibility of the solution offered (i.e. low feature handsets vs. smart phones), self-contained solutions vs. links to other external platforms and services, and requirements from manufacturers or operators (i.e. cooperation with network operators on SIM cards or USSD channels, or with handset manufacturers). As Hellstrom also reminds, most projects have a strong local technological partner making it easier to manage, integrate and sustain the applications, so that the responsible body running the service hardly needs to know more than the end-user [Hellstrom, 08]. Successful m-governance applications, in sum, rely on a functioning, effective backend for content and support from a local technological partner facilitates the adoption of technologies [Hellstrom, 08].

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[8] http://freedomfone.org

4   Crowdsourcing and its Effects

One of the distinctive features of the systems being currently developed is the crowdsourcing of incoming data through SMS. The notion of "crowdsourcing" was coined by Howe to describe the outsourcing of a task to "an undefined and generally large group of people in the form of an open call" [Howe, 06].

Crowdsourcing data collection with mobile technologies enables faster feedback mechanisms for more informed decision-making in rapid response situations. However, it also brings new issues to the table: quality and accuracy of incoming data, validation, priority criteria, privacy of users reporting data, misuse, etc. Conversely, crowdsourcing can also be extended to the response or supply side, but then the main issues—especially in large disasters—become how to track such a distributed and decentralized response in order to effectively address the needs of the populations at risk and coordinate the relief or aid tasks [Meier, 10]. The initiatives considered in this paper apply different strategies to deal with the side-effects of crowdsourcing: creating persistent identities/anonymies, tagging of incoming data, developing algorithms that filter relevant information from the noise, etc. While this may not necessarily be an issue when crowdsourcing environmental data collection (i.e. an unknown number of volunteers regularly sending reports or samples on water quality or air pollution, and then verifying those date with further test and analysis), it may raise serious concerns when the data being crowdsourced report fraud-marred elections, criminal offences, or violations of human rights in the midst of conflict events.

Crowdsourcing data collection through mobile networks holds the promise to improve decision making in emergencies, crisis and conflict events, and also to foster public participation and citizens' awareness. But it also poses important challenges, such as accuracy (of the information provided), reliability and trust (of the multiple information sources) and, last but not least, privacy. In Shilton's words:

At the extreme, mobile phones could become the most widespread embedded surveillance tools in history. Imagine carrying a location-aware bug, complete with a camera, accelerometer, and Bluetooth stumbling, everywhere you go. Your phone could document your comings and goings, infer your activities throughout the day, and record whom you pass on the street or who engaged you in conversation. Deployed by governments or compelled by employers, 4 billion "little brothers" could be watching you [Shilton, 09].

Recent examples of political violence in Myanmar, Iran or Sri Lanka have shown not only the growing citizens' use of social media as outlets for real time reports and data on violent incidents (i.e. the use of Twitter after the 2009 Iran election) but also the exposure to government abuses when citizens use mobile networks for the same purposes. According to Martucci, ad hoc mobile networks, which "consist of computers, often mobile, that establish on demand network connections through their wireless interfaces, enabling instantaneous networking independently of the presence or aid of any central devices" [Martucci, 09] require the design of new privacy protocols:

Thus, most of the protocols employed in wired networks are not suitable for ad hoc networks since such protocols were designed for network environments with defined borders and highly specialized devices, such as routers, servers that provide

network addresses, firewalls, and network intrusion detection systems. Moreover, such an absence of infrastructure potentially augments the risk of losing control over personal information since data is routed and forwarded through many unknown devices and users can easily be monitored. Hence, information regarding a user's communicating partners and even the contents of transmitted messages can be obtained by devices forwarding packets on the behalf of a user, if proper security measures are not implemented. Furthermore, data collection is especially not transparent in ubiquitous environments since invisible interfaces can greatly reduce the users awareness regarding when and what personal data is being collected by the ubiquitous environment [Martucci, 09].

While crowdsourcing offers a number of advantages to mobile governance initiatives and projects, their side-effects in terms of quality, accuracy, trust, and privacy also need to be addressed to avoid the consequences of technological misuse and subsequent risks for citizens.

5   Conclusions

The emerging field of mobile governance is not a substitute for e-governance. Rather, it is a complementary domain that shares the goal of providing better public services to citizens by improving access to information and data and, conversely, by opening new avenues for public participation in policy making and political debate. E-governance and m-governance share also similar concerns regarding technological choices, target populations, scalability of projects, etc. Addressing these issues and harnessing the full potential of the existing technologies available in both areas will certainly contribute to an evolutionary but sound transform of how public institutions, organizations, and citizens alike promote the rule of law on daily bases.

References

[Anduiza, 09] Anduiza, E., Cantijoch, M., Gallego, A. 2009. Political Participation and the Internet: A Field Essay. *Information, Communication and Society*, Vol. 12: 860-878.

[Christensen, 97] Christensen, C. 1997. The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail. Boston: Harvard Business School Press.

 [Ekine, 10]   Ekine, S. (ed.). *SMS Uprising: Mobile Activism in Africa*. Oxford: Fahamu Books, 2010.

[Hattotuwa, 08]   Hattotuwa,   S.   2008.   Mobiles   for   Better   Governance?,
http://ict4peace.files.wordpress.com/2008/06/mobiles-for-gov

[Hellstrom, 08]   Hellstrom, J. 2008. Mobile Phones for Good Governance: Challenges and
Way Forward, http://www.w3.org/2008/10/MW4D_WS/papers/hellstrom_gov.pdf

[Howe, 06]   Howe, J. The rise of crowdsourcing. Wired 14, 6 (June 2006);
http://www.wired.com/wired/archive/14.06/crowds.html

[ITU, 10]   ITU, http://www.itu.int/newsroom/press_releases/2010/06.html

[Kailasam, 10] Kailasam, R. 2010. Leveraging Mobile Technology to Extend the Reach of e-
Governance,   http://www.mgovworld.org/.../m-governance-leveraging-mobile-technology-to-
extend-the-reach-of-e-governance.pdf

[Kaufmann, 08] Kaufmann, D., Kraay, A. 2008. Governance Indicators: Where Are We, Where
Should We Be Going?. *The World Bank Research Observer*: 1-30.

[Kazman and Chen, 09] Kazman, R.; Chen, H. M. 2009. The Metropolis Model: A New Logic
for Development of Crowdsourced Systems. Communications of the ACM, Vol. 52(7): 76-84.

[Kinkade and Verclas, 08]   Kinkade, S., Verclas, K. 2008. Wireless Technology for Social
Change: Trends   in   Mobile   Use   by   NGOs,
http://mobileactive.org/files/MobilizingSocialChange_full.pdf

[Kinkade *et al.*, 08]   Kinkade, S., Verclas, K., Toyama, K. 2008. Reflections on MobileActive
2008   and   the   M4D   Landscape   Wireless   technology   for   social   change,
http://mobileactive.org/files/DVT_M4D_choices_final.pdf
[Martucci, 09]   Martucci, L. 2009. Identity and Anonymity in Ad Hoc Networks. Ph.D. diss.,
Karlstad University Studies 2009 (25).

[Meier 10]   Meier, P. 2010. Using Mechanical Turk to Crowdsource Humanitarian Response.
iRevolution, 5 February 2010, http://irevolution.wordpress.com/2010/02/05/mechanical-turk/

[Miard, 09] Miard, F. 2009. Call for Power? Mobile phones as facilitators of political activism,
ISA 50th Annual Convention New York, Feb. 15–18, 2009,
http://www.miard.ch/papers/phonesandpowerII.pdf

[Sasaki, 10] Sasaki, D. (ed.). 2010. Technology for Transparency: The Role of Technology and
Citizen Media in Promoting Transparency, Accountability, and Civic Participation,
http://globalvoicesonline.org/wp-content/uploads/2010/05/Technology-For-Transparency.pdf

[Schuler, 08]   Schuler, I. 2008. National Democratic Institute: SMS as a Tool in Election
Observation. *Innovations*, Vol. 3 (2): 143-158.

[Schumacher, 73] Schumacher, E.F. 1973. *Small is Beautiful: The Study of Economics as if
People Mattered.* New York, NY: Harper & Row Publishers.

[Shilton, 09]   Shilton, K. 2009. Four Billion Little Brothers? Privacy, Mobile Phones, and
Ubiquitous   Data   Collection,   ACM   Queue,   vol.   7(7),
http://queue.acm.org/detail.cfm?id=1597790

[Verba, 95]   Verba, S.; Schlozman, K.L.; Brady, H. E. 1995. *Voice and Equality: Civic Voluntarism in American politics*. Cambridge (MA): Harvard University Press.