

MobiSAM: Reflections from a four year case study using technology to increase participation in local government in South Africa

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This paper reflects on a four year evaluation on the use of a mobile platform, MobiSAM, to support increased participation in local government. It describes the lessons learnt in the design, development and evaluation of the initiative. MobiSAM uses a community based co-design methodology, emphasizing the importance of community's voices throughout the design and evaluation of the project. Attention is drawn to the education and awareness raising interventions undertaken in order to scaffold the deployment of the system. A discussion of the findings of the project is also provided in order for other actors in the field to learn from MobiSAM's successes and failures. Special attention is focused on the political stability and communication capacity required to successfully undertake initiatives such as this.

Introduction

The South African Constitution (Republic of South Africa, 1996) makes municipalities responsible for delivering (among other things) basic services such as electricity, water, sanitation, and refuse removal. Because of their proximity to citizens, they are also constitutionally mandated “to provide democratic and accountable government for local communities” and “to encourage the involvement of communities and community organizations in the matters of local government”. South African municipalities are

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therefore responsible for ensuring service delivery, accountability and participation at the local government level in order to realize meaningful developmental democracy.

Local government in South Africa (for the most part) falls far short of this mandate. Prominent commentators have attributed this lack of delivery of basic services across the population to a lack of accountability at local government level, particularly with respect to a lack of public participation (Heller, 2009). More recently Pravin Gordon, the then (2014) Minister for Co-operative Governance & Traditional Affairs noted that the main problems faced by local government in South Africa are “a communication breakdown between councils and citizens; no accountability; political interference in administrations; corruption; fraud; bad management; violent service delivery protests; factionalism; and depleted municipal capacity” (Lund, 2014, p. 1).

Despite the numerous challenges, local government structures offer meaningful opportunities for increased citizen participation. The immediacy of people’s needs and the proximity of government to those who elected them provide increased motivation for participation. The key to success, however, is to ensure the meaningful, informed and effective participation of citizens in government processes, and to provide the mechanisms and skills to hold service providers to account for their performance in managing public resources and delivering services.

This paper reflects on a four year, Ford Foundation funded research project, MobiSAM, investigating the use of mobile phones as such a mechanism for increasing communication between citizens and their government. MobiSAM consists of two separate, yet equally important, parts. Firstly, it offers a sound methodology which enables civic actors to engage in evidence-based monitoring in order to participate meaningfully in local governance processes. One of the most rigorous and successful methodologies is Social Accountability Monitoring (or SAM), developed by the Centre for Social Accountability and now used by civic actors in several SADC countries. Secondly, it offers a set of popularly accessible tools and mechanisms to facilitate participation in local governance processes. Mobile phones offer civic actors an opportunity to express their needs and engage with local governments in ways that have not yet been harnessed. The final section of this paper presents a discussion on the latter of these, by illustrating the process of designing, developing and evaluating the MobiSAM tools. The remainder of this section describes the SAM methodology.

The SAM methodology offers civic actors a rights-based and evidence-based framework for understanding and participating in government service delivery processes. It is premised on the argument that social accountability is the:

right to obtain justifications and explanations for the way in which public resources are managed (whether by public officials or private service providers) and to obtain justifications for the way in which these resources serve to progressively realise people’s human rights (in particular their socio-economic rights). This definition requires that officials take corrective action in response to instances of the ineffective use or abuse of resources in order to prevent their recurrence (Centre for Social Accountability, 2011, p. 1).

According to SAM, the way in which public resources can be effectively and accountably managed is through the implementation of a social accountability system consisting of five inter-dependent processes:

- Process 1: Resource Allocation and Strategic Planning
- Process 2: Expenditure Management
- Process 3: Performance Management
- Process 4: Preventative and Corrective Action
- Process 5: Accountability to Oversight

These five processes map onto the public resource management system. While municipalities need to effectively implement these five processes in order to deliver services, each process also represents an opportunity for civic actors to meaningfully participate in local government. The SAM methodology describes tools and activities for citizens to engage in each process by interrogating the government documents the processes produce (including budgets, plans, financial reports, performance reports, audit findings and oversight committee minutes). Equipped with both findings and an understanding of how government processes (should) operate, citizens are able to engage in evidence-based advocacy, demanding justifications and explanations for government performance and, where necessary, corrective action. Furthermore, by engaging with each of the five processes over time, citizens can ensure systemic issues hampering service delivery are addressed. For example, should a municipality fail to deliver a service (despite available funds) due to a lack of suitably skilled staff, citizens can advocate that funds are allocated and plans developed to build capacity in the municipality (whether through training or recruitment) the following year to ensure that the service is delivered in subsequent years. By strengthening each of these five processes through active citizen participation, both service delivery and accountability are improved. MobiSAM represents an innovative opportunity to enhance SAM work at the local level by complementing the desk-based analysis of official government documents (such as budgets, plans and reports) with real-time input and feedback from citizens.

Another important player in the MobiSAM project is local media. The aim of MobiSAM is to increase communication between citizens and local government. Part of this project sought to identify the role that local media could play in this, by engaging with local government on behalf of citizens.

Related Work

MobiSAM focuses on increasing citizen participation in local government. Although not e-government in itself, a number of lessons can be learned from e-government and m-government projects. This section first defines these terms, provides a discussion on existing projects, and relates them back to the context of developing countries.

In recent years there has been a great deal of interest in using technology to deliver government services to citizens, a process broadly seen as e-government. This consists of facilitating interaction between citizens and government (C2G), between government agencies (G2G), and between government and citizens (G2C) (Fang, 2002). A number of different proponents argue:

that the use of ICTs may help to overcome some of the problems of traditional participation methods, such as accessibility of information to citizens, facilitation of collecting, and analyzing and hence using the citizen views, as well as the cost-efficiency of the process (Ertiö, 2013, p. 1).

M-government initiatives consist of a subset of these e-government systems that involve the use of mobile phones to facilitate the interaction between the parties. Although used around the world, m-government initiatives are particularly popular in developing countries, where access to fixed line infrastructure and desktop computing facilities is limited. As noted by Poblet, these mobile systems can take advantage of “the most basic capacities of already existing technologies to reach broader population segments which otherwise would not have access to more costly and sophisticated technologies” (2011, p. 503).

It is important to note that ICTs are being increasingly used to shift the paradigm of political communication. There have been numerous cases recently of mobile devices being used to help gather people for protests and the like, for example Ushahidi in Kenya (O'Donnell, n.d.) and Arab Springs facilitated by the use of Facebook and Twitter. Despite the potential of the devices, more is required than access to a new technology. As Otieno notes, “the reality of widespread poverty, language barriers, and cost issues” are important to remember when considering the use of mobile phones (2009). Wasserman also warns that access to mobile devices does not explicitly entail increased participation:

[the] discourses around mobile phones make an interpretive leap from access figures to speculation about the impact of mobile phones on democracy and development without examining context (2011, p. 150).

Although researchers are unable to prove a causal link between participation and access to technology, there are a number of recent examples in Africa where the use of mobile phones has resulted in increased citizen participation. Ushahidi is one example. Ushahidi, meaning “testimony” in Swahili, was designed to “harness the benefits of crowdsourcing information (using a large group of people to report on a story) and facilitate the sharing of information in an environment where rumours and uncertainty were dominant” (Okolloh, 2009). This webpage was developed after the post-election violence in Kenya, when a wave of censorship of information in the media was felt. The Ushahidi platform has since been successfully used in a number of different countries around the world. As stated by Wasserman, technologies such as Ushahidi are successful for “amplifying a brief political campaign or event but less successful in ensuring ‘ongoing and higher levels of accountability’”(2011, p. 152). However, as also noted by Wasserman, “the surveillance of government also has to happen in between the

‘ritual of elections’... through ongoing social movement and civil society campaigns” (2011, p. 152). This gap is where MobiSAM is situated, particularly focusing on ongoing accountability and citizen monitoring outside of electoral cycles.

Providing a tool to support citizens in reporting service delivery issues is not a new concept. Take for example Find & Fix by Intervate¹, that allows citizens to report problems with roads in Johannesburg (traffic light issues, potholes, problems with signage, problems with drainage). In some ways, MobiSAM offers a similar functionality but includes a number of other considerations. As with Intervate, MobiSAM allows citizens to report problems with service delivery issues directly to their local government. On top of this though, it includes a methodology for monitoring local government, specifically around the systemic issues that may result in poor levels of service delivery. From the citizens’ perspective, it also facilitates active citizenry, with multiple flows of information: upward, downward and lateral. Upward refers to the flow of information mentioned above, where citizens report cases to local government. Downward refers to communication from local government to citizens, with updates on reported cases and news of planned and unplanned outages. Finally, MobiSAM supports lateral communication, where citizens can see outages reported by fellow citizens. As will be described in the discussion section, citizens found this to be a very useful feature of the system.

Research Methodology

A few definitions are required to understand how this research is situated within the broad field of citizen participation in local government. This section starts with a discussion of the viewpoint taken by this research in understanding the governance relationship between citizens and government. This is then followed by our definition of citizen participation.

This research uses a rights-based perspective to understand the governance relationship between citizens and government. Using this perspective, governance represents the balance between rights and responsibilities as citizens, and governments have the responsibility for providing, respecting and fulfilling citizens’ rights. An equally important component of this relationship is citizens having the responsibility to the state and to each other, in holding the government accountable for its responsibilities. These responsibilities include: monopoly over the legitimate use of force; revenue generation; safety, security and justice; basic service delivery; and economic governance (McCloughlin, 2009). Citizens’ rights to basic service delivery (as well as other areas) can be secured through citizen participation and government responsiveness.

Arnstein (1969, p. 216) defines citizen participation as “the redistribution of power that enables the have-not citizens, presently excluded from the political and economic processes, to be deliberately included in the future.” She goes on to define a typology of eight levels of participation and non-participation (referred to as the ladder of citizen participation): manipulation, therapy, informing, consultation, placation, partnership,

¹ For more details see <http://www.intervate.com/Solutions/Pages/JRA.aspx>

delegated power, and citizen control. From lowest to highest rungs in the ladder, there is more inclusion of the citizen's voice, as well as power to make sure their views will be considered. One of the first steps in facilitating citizen participation is to ensure two way communication can occur between local government and citizens, which is the foundation of this research.

The MobiSAM project aims to improve communication between local government (municipalities) and its constituency (citizens), creating a two-way dialogue. The hypothesis, like the problem, is two-fold:

- *The MobiSAM application can improve the way citizens communicate with their municipality.* Citizens registered with MobiSAM are able to report service delivery-related concerns easily and efficiently. This hypothesis seeks to determine whether and under what conditions technology can facilitate better communication from citizens to their municipality.
- *The MobiSAM application can improve the way municipalities communicate with citizens.* A municipality is able to provide quick, accurate feedback in response to citizens' reports. They are also able to communicate scheduled outages and other important information to citizens. This hypothesis seeks to determine whether and under what conditions technology can facilitate better communication from municipalities to citizens.

A by-product of the use of the MobiSAM system is accurate logs of service delivery issues. Importantly, these logs are available to all participants. These logs can be used by:

- local government, for short term (job scheduling, performance monitoring), and long term planning (identification of needs of the community, long-term planning procedures such as Water Services Development Plans)
- citizens, civil society and local media, to support evidence based engagement with local government.

It is assumed that improved communication will directly result in improved service delivery. For example, by reporting water outages or faults directly to those responsible for fixing them, the response time by the service providers will improve. In the case of burst pipes, water losses will be reduced with the improved response time and the water reticulation system is strengthened.

It is also assumed that improved communication will improve the relationship between citizens and the municipality. By responding to reports by citizens, and reporting to citizens the work being done and the success of interventions made to address long-standing service delivery problems, citizens will see that 'something is being done' and their voices are heard. This may improve citizens' perceptions of the municipality and increase their willingness to engage constructively with them to ensure the improvements continue. This may, in turn, foster a culture of citizen participation in the affairs of local government.

This project takes an interpretivist research approach, viewing the uptake and use of ICTs as “a process intertwined with social change – that is, a sociotechnical process as understood by social construction theory” (Gigler, 2015, p. 65). Stemming from this contextual view of the embeddedness of technology, this research uses a case study approach. A case study is defined as a “strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon in its real life context using multiple sources of evidence” (Robson, 1993, p. 52). This approach allows researchers to focus on the primary strength of case study methodology, that it “enables the uncovering of events or processes that one might miss with more superficial methods” (Erickson, 1986, p. 238). In doing so it allows researchers to investigate questions such as “how” ICTs can be used to increase citizen participation. Critics of case study research often argue that it is too specific, and that findings of this type of research cannot be generalised to another population. Yin argues that case studies, “like experiments, are generalizable to theoretical propositions and not to populations or universes... The investigator’s goal is to expand and generalize theories and not to enumerate frequencies” (1994, p. 10).

This research used a community based co-design approach, which:

is a way of exploring a design space in a way that alleviates the restrictions of the designer's own viewpoint and bias. In a cyclical fashion the designers develop according to their skills and learning and according to the users' expressed requirements and their learning. The researchers and the users are the design team. The combined approach, fusing action research, industrial design approaches, education and other societal measures was named “Community based co-design” (Blake, Tucker, Glaser, & Freudenthal, 2011).

In this research, the “community based” research focuses on Makana Municipality, a small municipality in the Eastern Cape Province of South Africa where stakeholders worked together to design and evaluate MobiSAM. The “co-design” component of the approach emphasises the importance of the stakeholders’ voice in the design process. The next section will provide contextual information on the municipality and the stakeholders who were involved in the research.

There are a number of different interventions that are required to achieve the goal of improving communication between citizens and local government in the area of service delivery: an understanding of the current status quo; citizen education and awareness raising; and system development and evaluation. Later on in the paper there is a description of each of these interventions separately, followed by a discussion.

Context

Makana Municipality is situated in the Eastern Cape, one of South Africa's poorest provinces. The 4,375 km² municipality is home to an estimated 80 389 people or 21 388 households (Makana Municipality, 2010). The area experiences a high unemployment rate (63.4%) and low levels of education (39.2% of Makana citizens have received only primary level education or none at all) (Makana Municipality, 2010). The result is that 55.5% of Makana citizens, in 2011, lived below the poverty line (Makana Municipality, 2010) (defined by Statistics South Africa as earning less than R801 per month, which equates to the earning bracket above the poverty line). The number of South Africans in total at the same time living below the poverty line was 45.5% (Statistics SA, 2012). Efforts to alleviate poverty are hampered by a sluggish economy and there is an increasing dependency on social grants, with 45.5% of the total Makana population receiving some form of government grant in 2011 (Makana Municipality, 2010) (compared with approximately 29% of the national population receiving some form of government grant in 2011 (Statistics SA, 2012)). This places a significant burden on the municipality, particularly in delivering basic services. Despite a R266 million budget in 2009/10 (South African Treasury, 2010), only 21% of Makana citizens have access to potable water and only 35% to sanitation (Makana Municipality, 2010).

The municipality was ranked as the third worst performing municipality in the Eastern Cape Province in 2011, with 2,507 instances of misspending (R19.8 million), making up 9% of the total misspending in the province (Mini, 2011a, 2011b). The Supreme Audit Institution (in South Africa called the Auditor-General, or AG) has repeatedly found the municipality unable to adequately account for the use of public resources. In 2011/2012, the AG could not obtain sufficient appropriate audit evidence to support over R48 million of municipal expenditure (Mngxitama-Diko, 2013). This was the fourth successive disclaimer that Makana had received (Mngxitama-Diko, 2014). Consequently Makana was named in the top five of worst-run municipalities in South Africa in 2012, with massive misspending and poor leadership.

In 2012 the AG found that the municipality was in over R20 million in debt, and there was irregular, unauthorized, and wasteful expenditure of over R60 million (Mngxitama-Diko, 2013). At the end of 2012, both the Municipal Manager and Chief Financial Officer were removed from their posts and legally charged with misconduct (Mjekula & Mngxitama-Diko, 2014). At the end of 2013, the new Municipal Manager and the Strategic Manager in the mayor's office were suspended pending an investigation into the fraudulent acquisition of a R3 million payout. Furthermore, in 2014 a report, referred to as the Kabuso Report was released which named a number of senior municipal officials in alleged financial and management irregularities (Mjekula & Mngxitama-Diko, 2014).

Towards the end of 2013, the bulk water and reticulation system in Grahamstown (the largest city in the Makana Municipality and where the bulk of this research has been conducted) got to such a point that the entire city was without water for almost two weeks. The matter was taken to the Presidency, who intervened and later that year Amatola Water and MBB Consulting were appointed to address bulk water

infrastructure and reticulation respectively within the city of Grahamstown. To a large extent, the intervention by higher levels of government resulted in a temporary solution to the problem of water service delivery in Grahamstown. Over the next five years, Amatola Water and MBB Consulting are addressing the long-standing issues which resulted in Grahamstown's water crisis. To the extent that they are successful, the main problem of Makana's poor performance in service delivery in Grahamstown is (temporarily) being addressed. While the problem of water service delivery is being fixed, however, Grahamstown citizens continue to experience water outages, poor water pressure and poor water quality. The problem of poor communication remains between citizens and the municipality, despite an eagerness on the part of service providers to communicate effectively. The situation in Makana Municipality is comparable to most local municipalities across South Africa, where "local government capacities are in short supply and financial sustainability is frequently in doubt. This hampers total government ability to perform traditional functions such as service delivery and regulation, collecting rates, user charges and fees" (Mogale, 2007). This is not a problem that is unique to South Africa, but has been demonstrated on numerous occasions and across a number of different contexts. A recent cross-country, empirical evaluation found similar evidence across developing countries around the world (Bardhan & Mookherjee, 2000).

Stakeholders

To this end, the stakeholders that were involved in the community based co-design of the MobiSAM application were:

- Rhodes University: Computer Science Department and MobiSAM employees (SAM mentor, MobiSAM coordinator, media liaison)
- Makana Municipality: Municipal Manager, Head of Communications Dept, Communications Dept, Head of Complaints, Technical and Infrastructure Division, City Engineer
- Service Providers: Amatola Water, MBB Consulting
- Community members from across Grahamstown.

Existing Techniques for Communication

To understand how to improve communication between two parties, it is important to understand the means by which they currently communicate and improvements that can be drawn from them. It is hoped that improving communication between the two parties (local government and their constituency) will result in increased, meaningful participation at the local government level from local citizens. This study used two main interventions to understand the existing techniques for communication: a baseline study; and municipal interviews. These two interventions incorporate both quantitative and qualitative methods of data collection in order to improve the internal validity (trustworthiness), external validity (transferability), and dependability (reliability) of findings (Rossman & Wilson, 1985).

Baseline study

A representative baseline evaluation was undertaken in 2014 in the Makana Municipality, in the Eastern Cape of South Africa. The survey aimed to understand citizens’ current use of technology and current participation with local government. Stratified sampling with simple random sampling within each strata (race and gender demographics), was used in order to obtain as representative a sample as possible². In order to achieve this, participation was solicited in public areas across Grahamstown (the largest city within the municipality), with one hundred and five (n=105) Grahamstown citizens taking part in the baseline study.

The survey consisted of three sections: demographic information; mobile phone usage; and service delivery satisfaction and current participation. Questions pertaining to citizens’ current ways of participating with local government were informed by the Citizen Scorecard developed by the African Centre for Citizenship and Democracy (ACCEDE, 2013). A complete discussion of the findings of this survey can be found elsewhere (Thinyane, Siebörger, & Reynell, 2015), but for ease of reference the key findings are summarised below.

Results from the baseline study indicated that the majority of citizens surveyed were dissatisfied with the level of service with regards to the provision of water, parks and recreational facilities and roads and sidewalks (see Table 1).

Table 1: Levels of satisfaction regarding municipal services amongst participants

Municipal service	Satisfied	Not satisfied	Unsure	No response
Electricity	82.86%	17.14%	-	-
Water	16.19%	83.81%	-	-
Refuse removal	73.33%	26.67%	-	-
Sanitation	61.9%	35.24%	1.9%	0.96%
Parks and recreation facilities	20.95%	74.29%	4.76%	-
Roads and sidewalks	21.9%	78.1%	-	-

However, only 58.1% of dissatisfied respondents had formally laid a complaint with the municipality. Almost 40% of dissatisfied respondents noted that they were both dissatisfied and had never made a complaint to someone in their municipality. Of those that had laid a complaint: 45.9% made their complaint by going in person to the municipality; 24.6% signed a petition; 19.7% raised their concerns with their ward councillor; 6.6% tried to call the municipality; and 1.6% wrote a letter to the municipality. When asked informally why so few citizens chose to call the municipality,

² Race and gender demographics from the South African Census 2011 were used to inform the strata

most citizens stated that nobody answers the phone when you try to call them, so if you go in person at least you know someone has heard your complaint.

The technology related section of the baseline study found that 90% of those surveyed owned their own phone, while a further 5% had access to a phone that they could make use of. The most popular brands of phones were Nokia (36.8%), Samsung (26.3%), and Blackberry (11.6%). To gain an understanding of the capabilities of different handsets, the make and model of devices were recorded so that specific technical details could be investigated later. Our later analysis found that 60% of mobile phones had access to data services (either 3G or WiFi). It was also found that the most popular operating systems on handsets were (in order of popularity) Android, Java (MIDP 2.0 or higher), Blackberry, iOS and Windows Mobile.

Municipal Interviews

Throughout the four years of the MobiSAM project, a number of rounds of brainstorming sessions and semi-structured interviews were held with municipal officials and other service providers. It was found though that the richest information was discovered during informal discussions with staff whilst completing training sessions and information sessions. The findings are summarised below according to three themes: current ways of communicating with citizens; methods of lodging and tracking complaints; and methods of responding.

The municipality currently communicates with citizens in a number of ways. Firstly they use Ward Councillors and Community Development Workers (CDWs) to pass on their messages to citizens. They also hold community meetings and indabas to communicate with large groups of citizens at a time. The municipality uses a number of different forms of media: they pass written notices on to ward councillors to distribute to their ward; they include notices in monthly rates bills; they send information using the local radio station (Radio Grahamstown – primarily isiXhosa radio station), and local newspaper (Grocotts' Mail – primary English newspaper); and they distribute important messages on different email lists including Grahamstown Parents Network, and Rhodes University staff mailing lists.

Citizens can lodge service delivery problems by contacting the municipal offices during the day, or by phoning the fire station after hours. Most citizens lodge complaints in person or via phone. When a report has been made, it is recorded either in a log book or on a separate piece of paper (depending on which office the report is made to). There is no way of tracking a report once it has been made. The municipality and citizens both recognised that a major problem and tension between the parties was a lack of accurate communication. The municipality was so aware of this problem that it was the reason they agreed to participate in the MobiSAM project, in order to improve their communication with citizens.

Once a service delivery problem has been reported, it is passed on to the respective department (service delivery problems are usually handled by the Technical and Infrastructure Division (DTI)). If a complaint was made at the head office, then it would be on a piece of paper that would be physically dropped off on the desk of the DTI

secretary. If on the other hand it was made to the DTI originally, it would be in the log book already. Municipal employees cited a lack of communication between departments, and factionalism within the municipality as adding to delays in responding to reports. A lack of finances also contributes to delays in responding to reports. If for example the report is about problems with roads and the municipality has no money left in that budget for the year, then often what happens is they take the report and do not communicate why the problem cannot be dealt with immediately.

Discussion

As well as the barriers mentioned above, there are a number of enablers on the part of the citizens and the municipality in the area of reporting service delivery problems. Firstly and most importantly, both parties agree that there is a problem that needs to be fixed. From a technology perspective, the baseline study showed us that most citizens are already using mobile phone technology and rank data services as very important to them (see (Thinyane et al., 2015) for more details on this). Municipal officials are also already using mobile phone technology, particularly WhatsApp to communicate between division heads and the service delivery contractors and so are familiar with these tools and technologies. It is important however to remember that not all citizens have access to data services, so SMS facilities should also be available. On top of this it is important to note that often the citizens who would require SMS facilities are also amongst the low income earners, so cost considerations should also be kept in mind.

From a technology perspective, the following mobile operating systems / environments should be targeted to provide the most coverage of mobile handsets: Android, iOS, Blackberry, Windows and Java (MIDP 2.0).

Both the municipality and citizens also agree on the importance of feedback. The system should therefore allow citizens and the municipality to communicate with each other.

Education and Awareness Raising

The importance of education and awareness raising cannot be stressed highly enough in a project around participation. Even if a system is developed that meets all the requirements that have been suggested, if people do not know how to use it or that they have the right to expect certain services, then it will not make a difference. This section describes the education and awareness raising campaigns involved in the MobiSAM project.

Municipality

From the municipality perspective, the importance here is ensuring that people who are supposed to be monitoring for reports understand firstly how to use the technology, how to help others (citizens) use the technology, and how to include it as an additional stream of reports in their workflow. This final point is critical to the success of the system, as if reports are not responded to then citizens may blame MobiSAM for “not working” rather than seeing it as an underlying problem with communication in the municipality.

Once Makana Municipality agreed to participate in a one year-pilot study using MobiSAM, a series of training sessions began. Municipal staff from the Communications Department were provided with intensive training from 1 June – 31 August 2013 on how to use the MobiSAM application. The initial training phase focused on registration of users and how to access reports on service delivery outages. This then shifted to a focus of training-the-trainer, where the communications department staff were taught how they could teach people to use MobiSAM.

When staff from the Communications Department seemed confident in the use of MobiSAM, we shifted the focus of our support to look at the integration of MobiSAM into their existing workflow. Although we had trained seven communications officers, Makana Municipality delegated one of them to be the MobiSAM Officer. One of her primary tasks became responding to reported outages on MobiSAM. She was provided with one on one mentoring support by the MobiSAM coordinator in the municipal offices. This support focused primarily on the day to day usage of MobiSAM and how it was incorporated into the information flow of the municipality.

At the same time Community Development Workers (CDWs) were provided with basic training on the use of MobiSAM. CDWs are hired by government and act as an interface between government and citizens. Their role is to work within a particular community and be the face of the local government, helping citizens to access services that they are entitled to. Further information of their role will be discussed later as their role was to provide information for citizens.

Later we worked closely with the Complaints Department, where we similarly began training two members of staff.

Media

As mentioned in the introduction to this article, part of this project was to look at equipping local media houses in SAM. The aim behind their inclusion was to provide a space where there could be more dialogue and a place to follow up on problems that were highlighted in MobiSAM. For example, if the logs show that every weekend there is no water in high lying areas of a city, then local media could (a) identify the problem by consulting logs (b) investigate and (c) present their evidence as well as a response from the municipality about why it occurred and what is being done to ensure that it doesn't happen again.

Two short courses were developed and presented to Grocott's Mail staff in order to build their capacity to monitor Makana Municipality using the SAM methodology³.

- *Course 1: SAM, Budgets and Plans.* The first course was presented in 10 training sessions, focused on introducing SAM and the first social accountability process: resource allocation and strategic planning. The sessions explained how resource allocation and strategic planning should work at municipal level using key municipal legislation. The sessions also identified key municipal budgeting

³ These short courses have since been developed into an online self-study module and are available from <http://mobisam.net/page.aspx?view=sam>

and planning documents and explained how each of these documents could be evaluated using the SAM approach. Practical sessions used Makana municipality's 2012/13 Annual Budget, Integrated Development Plan and Service Delivery Budget Implementation Plan to help participants practice the relevant monitoring tools. The final two sessions focused on using SAM findings in municipal reporting.

- *Course 2: Expenditure, Performance, Preventative and Corrective Action and Oversight.* The second course covered the remaining four processes of the social accountability system. The course explained how each process should work and how it fits into the Social Accountability System. Key legislation governing each process at municipal level in South Africa was also identified together with key events and key process documents. Theory was followed by practical work, allowing Grocott's Mail staff opportunities to 'learn by doing' in evaluating Makana Municipality's expenditure, performance and oversight reports for the 2012/13 financial year.

Feedback from both courses suggests that they effectively transferred SAM skills to participants. When questioned about the overall impact of the training, one participant said "I think the course was extremely valuable because it gave us confidence to interrogate municipal documents." Both the Editor and Municipal Reporter who attended the training sessions found the courses to be "extremely valuable" and have subsequently conducted more rigorous monitoring of the municipality using the SAM methodology, in particular requesting and interrogating official documents and attempting to obtain justifications and explanations from municipal decision-makers regarding the allocation and use of public resources. According to one participant: "... [since the] training we have been better informed about municipality's legal obligations and we have been able to interrogate documents with more confidence ... we will be able to contextualise [the upcoming IDP Community meetings] and understand their value". After the completion of the training, a series of "water watch" articles was published in the newspaper. These articles had a specific focus on Makana's water service delivery to Grahamstown citizens and some were published during the water crisis in early 2013. The articles showed an improvement in terms of the depth and clarity of information that they provided and it was clear that the reporter was acting as a "watchdog" in providing the public with important information and holding local government to account for their water-related actions. After attending the second course, one participant responded that now she was able to "ask the right questions at the right time" and she felt better prepared to monitor Makana Municipality "because I have more knowledge now than before I did the MobiSAM course." Since undertaking the training, Grocott's Mail have published over 50 articles (in the print edition alone) about the poor delivery of basic services in Grahamstown, particularly the supply and quality of water, as well as the poor maintenance of water and sanitation infrastructure. Since the training with newspaper staff, there has been a marked improvement in the depth and quality of the municipal reporting, as well as the significant inclusion of the regular "civic updates" column.

Beyond the transfer of SAM skills, the training courses helped to solidify the relationship between MobiSAM and Grocott's Mail, securing Grocott's buy-in to the idea that the SAM methodology is an effective way to monitor the municipality and that the MobiSAM application offers exciting opportunities to enhance SAM.

Citizens

Local government resources are public resources, collected mostly through taxation. Therefore, citizens and civic actors have the right to obtain justification and explanations for the way they are allocated and used. In addition, both public officials and private service providers who manage public resources must account for their decision-making and performance, and where public resources have not been used effectively and efficiently, to realise people's most pressing needs, they must take corrective action. This obligation to justify and explain decision-making and performance enables civic actors to participate in local government processes and to hold public service providers to account. Often, citizens do not know that they are able to request local government to account for their usage of public resources. The first citizen awareness raising task that was undertaken as part of MobiSAM was running a series of articles in Grocott's Mail around this theme, informing citizens of their rights and responsibilities as active citizens.

Alongside this has been a campaign to encourage Grahamstown citizens to register and make use of the MobiSAM application. In order to promote the application, the following activities were undertaken:

- *Local Media.* The use of the MobiSAM application was promoted through several articles in Grocott's Mail. MobiSAM was also promoted through interviews (conducted in isiXhosa) on Radio Grahamstown.
- *MobiSAM Facebook page.* In July 2013, a MobiSAM Facebook page was launched as a platform to reach a wide variety of citizens, to encourage MobiSAM registration, to create a space for community discussion, to easily and effectively share important information and to equip and encourage citizens to participate in their local government. To date the page has over 1,275 likes and a peak reach of more than 1,900 people, and citizens often use the page to report problems and ask questions about service delivery.
- *Grahamstown Parents Network (GPN) and other email-based lists.* The GPN reaches over 2,000 households each week and is an ideal way to reach citizens as they receive the newsletter directly in their inbox.
- *Theatre.* The MobiSAM play, "Sam, pity our water", was written and directed by the MobiSAM coordinator. It has been performed in a number of different venues including Fingo Festival⁴ (a National Arts Festival venue in the

⁴ <http://fingofestival.co.za/>

township⁵ of Grahamstown); and a number of schools in Grahamstown East, thereby allowing us to reach a different group of citizens that may be unlikely to have access to forms of communication such as Grocott's Mail and the GPN. The play was mostly presented in isiXhosa. The aim of the play was to publicise MobiSAM in a way that children would understand, relate to and remember. At the end of the performance, was a workshop with a brief question and answer session, where the cast encouraged participants to tell their family and friends what they have learnt. They also received a clear and colourful flier outlining how to register to use MobiSAM in three easy steps, which were represented pictorially.

- *Community Development Workers.* CDWs were provided with basic training on how to use MobiSAM, and how to help citizens to register on MobiSAM. They were provided with training over a two day period. On the first day they were trained on how to use the system, and the second day they were mentored as they trained others to use the system. After the training period they were asked to spread the word about MobiSAM and given fliers to distribute in their community. They were asked to simply tell people about MobiSAM and if citizens were interested, they would contact the MobiSAM coordinator who could present at a community meeting and provide hands on help with registration and answers to questions. This additional support was provided because some CDWs did not seem familiar with technology.
- *Leaflet.* A leaflet was designed and developed with Makana Municipality to be included in rates bills and provided to CDWs and Ward councillors for distribution throughout the municipality. The leaflet provided an overview of the MobiSAM project and showed that it was supported (and would be monitored) by Makana Municipality.

System design and development

The MobiSAM system was developed using a cyclical approach, with each prototype co-designed with various stakeholders in the project. This section provides a high level discussion of the system development and evaluation. More details can be found in the following papers on the design and evaluation of cross platform applications (Reynell, Thinyane, & Siebörger, 2014; Thinyane, Siebörger, & Edward Reynell, 2014), and visualisations for small screen devices that would be appropriate given the types of information involved (Lebusa, Thinyane, & Siebörger, 2015). An overview of the system is presented in Figure 1.

As this figure shows, the backend of MobiSAM stores all information in a SQL database. This database is accessible through a PHP framework, which in turn can be called directly or through a REST API. As was highlighted earlier, it was important to

⁵ This paper uses the South African definition of “township” which refers to an under-developed (and typically under-served) suburb, where “non-whites” were forced to live during Apartheid. Although segregation is no longer enforced, townships are still primarily inhabited by community members from low socio-economic strata.

support a number of different platforms in the design of the system. As shown on the left of Figure 1, citizens can make use of MobiSAM using one of four different clients: website; mobi-site; cross platform application; or SMS. The website⁶ provides full access to MobiSAM, and is the portal that can be used by both citizens and the municipality to interact with the data. The mobi-site is the version of the website that can be accessed via a mobile phone. The site is customised for the small screen that is available on this end device. A problem with mobi-sites is that they depend on the capabilities of the Internet browser installed on the mobile device, which often does not provide the same support as a desktop Internet browser⁷. This means that the functionality that the user has access to is dependent on the capabilities of their mobile device. As such, a cross-platform application was developed that provides clients with a native application for their device. A study was undertaken of different cross-platform frameworks, and the Codename One framework was selected (refer to (Reynell et al., 2014) for full details). Finally, an SMS gateway was developed to provide support for low end devices that cannot install the cross platform application, or access the Internet.

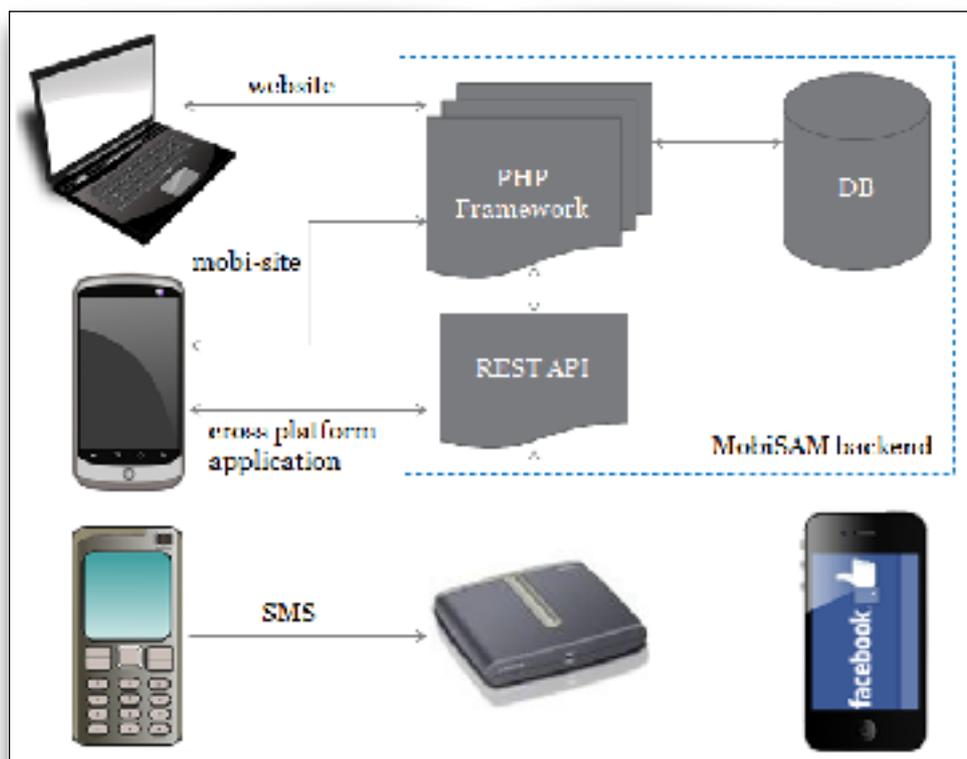


Figure 1: High level view of MobiSAM system

The final technique included in Figure 1 for reporting service delivery problems is through the use of Facebook. Although the page was originally made as a tool for citizen education, citizens soon began to report their service delivery problems using it.

⁶ www.mobisam.net

⁷ As an example, see <http://mobilehtml5.org/> for an overview of the different mobile browsers and their support for HTML5

Reports on this page are manually forwarded to the municipal Communications Department, who then treat them as another channel of reports into their existing workflows.

The basic functionality behind MobiSAM is that it allows municipal users to create questions that can be asked to registered citizens. These questions can be about anything at all, but in this project we limit them to being about basic services. Once a question has been answered, the responses are collated and where possible, the responses are automatically analysed and presented using different types of graphs. The most popular type of a graph provides a heat map which allows all users to quickly identify “hot spots” where citizens are reporting a problem more than in other areas. Graphs support a number of interactions, including: investigating different reporting patterns by date, filtering visualisations by suburb, and filtering by report.

A key concern in MobiSAM was to increase communication between citizens and local government, and there are a number of ways that this is facilitated. From the citizens’ perspective, they are able to report service delivery problems by answering “questions” that the municipality has already formulated. Examples of these questions could be “Do you have water now?”, which could be answered to with a yes / no response. Or “Please provide the location of a sewerage leak, and if possible send us a picture” which could be answered by either typing in an address or using a GPS on a higher end phone to record its current address. These questions were formulated with the help of Makana Municipality, and MBB consulting (who are responsible for reticulation of water in Grahamstown). MobiSAM staff analysed the previous years’ service delivery reports with municipal staff in order to ensure that the most frequently reported problems were included in the list of questions. More open ended questions are also provided in case the citizens’ concerns are not included in the list. Answers to open ended questions are not visualised in the same manner as the other questions.

From the municipality’s side, a number of additional features are available. Firstly, the visualisations available support richer interactions than those available to other users. In particular, as well as the interactions mentioned above, municipal users are able to select groups of registered users (by suburb, by city, or by report), and respond to them via SMS. Responding by suburb or city could be used to inform citizens in particular parts of a municipality of scheduled / unscheduled outages that are going to occur. Responding by report filters the list of users in a particular suburb / city, to only send a message to those users have reported a problem. This could be used for example to tell citizens that their report has been received and that a municipal staff member is on their way to fix a problem.

Lessons Learned

This section provides a discussion of the lessons learned from this community based co-design research.

From the beginning of this engagement, participants in this community based co-design research were cognisant of how MobiSAM would contend with inclusion (and therefore exclusion). A primary goal of MobiSAM was to increase participation with local

government but because it focuses on the use of technology, it could possibly further exclude communities from this dialogue that do not have access to such technology. A number of activities were performed to try to ensure that MobiSAM served to include citizens in communication with the municipality. Firstly, the baseline study was undertaken to identify how citizens currently use technology. This informed the design of the system (in the types of clients to create), as well as the citizen education interventions that were undertaken. As described earlier, a number of citizen engagement programmes were carried out to ensure that people who had access to the technologies understood the mandated role of local government (in the provision of basic services), and how they could participate. These programmes were undertaken in a variety of different formats and languages, to attempt to reach as many citizens as possible.

A number of user studies were undertaken throughout this project to evaluate stakeholders' perceptions of different components of the client applications (for more details refer to Reynell et al., 2014). The most common comment made by citizens across each of these evaluations was that they really appreciated being able to see where outages were occurring within the municipality. In particular citizens mentioned that they liked that they could see if they were the only ones experiencing an outage, or if it was their neighbourhood, or if it was more widespread than that. This information was used by participants to facilitate what we have referred to as lateral communication with other citizens, which is most evident on the Facebook page. Often when service delivery related updates are made on the Facebook page, they are followed by replies from citizens who offer access to the service that is being disrupted for some citizens. For example if an update shows that there will be a water outage in one particular suburb in town, then often people who live in another suburb will tag friends and ask if they have heard of the outage, and if they would like to come to their house to use their water instead.

Some citizens commented that they appreciated the maps of outages to see the spread of a problem so they could get an understanding of which suburbs experience the most outages. Under Apartheid, South African infrastructure was developed more in the town ("white") areas of a city than the township. Although it has been more than two decades since the end of Apartheid, townships still suffer from lower levels of service delivery than their counterparts. A number of citizens commented that the outage maps gave them a real understanding of the levels of service that different suburbs receive.

One of the most significant lessons we learnt in this project was about the power of information. The remainder of this section will discuss this as it relates to the different levels of local government.

In South Africa, each municipality can be seen as two halves: the elected members who are appointed to represent their constituents' views and to make decisions on their behalf, and the civil servants who implement the work of the municipality (Education Training Unit for Democracy & Development, 2015). When initially engaging with the municipality, we met with the municipal manager and department heads. These civil servants were interested in using MobiSAM primarily for its support for communication

with citizens. From the beginning of our relationship, the municipal administration have been strongly advocating the use of MobiSAM from within Makana Municipality. They garnered support for the pilot study from the council, in the form of a council resolution to: use MobiSAM to increase communication with citizens; advertise the use of MobiSAM in local and provincial newspapers; and provide the resources (staff, computing facilities) to do so.

After the Council passed the resolution to participate, we began to interact with the councillors. We believed that their support for the project would be critical in reaching their constituents. We began to organise a one-day workshop to be held either at the university or in the municipal offices, and were told in no uncertain terms that Councillors would not attend unless it took the form of a multi-day workshop at one of a select number of 5 star game lodges in the neighbouring areas. We politely refused, but the relationship with Councillors became soured. At this point in time, our motivations for undertaking the pilot study were questioned by both Department Heads and Councillors, with members asking if we were affiliated with particular political parties. One of the Department Heads also started to question how to delete reported outages from MobiSAM – a feature that we had not included by design. We explained to him that one of the fundamental ideas behind MobiSAM was to increase transparency and access to information, but from our interaction we could see that he was not happy with this feature.

After having little success with Councillors, and on the instruction of our municipal liaison, the Strategic Manager and Municipal Spokesperson, we ran training sessions for the CDWs. As their role is to ensure that citizens know of government services that are available to them, they seemed to be an ideal vehicle as part of the citizen awareness raising component of the pilot. The CDWs showed little interest in participating with MobiSAM, and we were told later they only attended the training because their boss told them it was mandatory. It was only later when informally discussing this with other civil servants that they mentioned in passing that CDWs felt threatened by MobiSAM. We initially thought this was in reference to the technology itself, but the civil servant informed us that the CDWs were threatened by the way that MobiSAM could divert the flow of information around them. The civil servant pointed out that typically CDWs were seen as important in a community because they would pass on information to people in their area about planned and unplanned outages. The civil servants believed that the CDWs were not interested in technology because it was seen as subverting their authority in their community.

This same fear seemed to be mirrored later on from Councillors who had now been directed by Council to participate in the pilot study. They showed apprehension in using MobiSAM, and we were told this was because they would no longer be the channel of information for their community. This is interesting to note, in particular in light of the fact that there already were existing ways of reporting service delivery problems that did not involve them.

It is important to note that throughout the period of the pilot study, there was significant political instability within the municipality. Throughout the period of engagement with

the municipality: there were four changes in key leadership positions of Municipal Manager / Acting Municipal Manager; the Strategic Manager / Municipal Spokesperson and Municipal Manager were suspended and later fired for fraudulent activity; the Mayor and Speaker were implicated in a number of irregularities; and the municipality was later put under administration. This instability undoubtedly contributed to the lack of success in the pilot study. Existing research in other developing countries mirrors this finding, with researchers finding a direct correlation between political stability and e-government programme success (Salem & Jarrar, 2008).

Despite the political instability within the municipality, there were a number of successes in the pilot study. Firstly, we believe that MobiSAM has demonstrated its potential to facilitate communication between local government and citizens. Within Makana Municipality, the community itself was very enthusiastic about having a mobile phone based communication channel with the municipality. Service providers and members of the Complaints Section and Communications Section of the municipality were also enthusiastic about being able to support citizens in reporting problems with service delivery. One particular member of the Communications Section was so supportive of MobiSAM that she took the pivotal role of directing reports from the MobiSAM Facebook page to the Heads of different divisions within the municipality using WhatsApp. Secondly, from a technical perspective, a suite of mobile clients and backend software have been developed and evaluated by a broad spectrum of users. These tools can be used to facilitate communication between local government and citizens, supporting a wide variety of mobile clients. Finally, a guide has been developed and successfully used to train civil society and local media around how to use the social accountability monitoring methodology to monitor local government.

Let us return then to the initial hypotheses that this work sought to address. The first hypothesis was that MobiSAM can improve the way that citizens communicate with their municipality. This paper has demonstrated how MobiSAM was used to improve the way that citizens communicated with their municipality. This occurred despite the fact that the bulk of the communication was not using the technology that was collaboratively designed and then developed with stakeholders in the project. Our key lessons that we have learned surrounding this hypothesis are:

- Citizens may not know what rights they have to services, and the responsibilities that these rights entail. Citizen education therefore needs to be included in an m-participation project.
- Be flexible and open to change. All stakeholders were involved in the design and subsequent re-design of the MobiSAM system. This process was seen to refine in participants' mind what they actually needed and wanted.
- Citizens will use the technology that gets them the quickest solution to their problem, even if it is not using the bespoke software that they asked for. After three years of designing, developing and evaluating the MobiSAM system, more citizens chose to report cases using the Facebook MobiSAM page as the municipality was more responsive using this technology. This fostered both

vertical communication (between citizens and local government), and horizontal communication (between citizens).

- Until there is enough momentum in municipal responsiveness, there is a role for an intermediary to ensure responses are provided to citizens. This process involves continual probing of municipal staff to check on progress of reported cases.

The second hypothesis was that MobiSAM can improve the way that municipalities communicate with citizens. As demonstrated in this paper, although the improvement did not occur to the extent that it was hoped for, the municipality has demonstrated that it can improve the way it communicates with citizens using MobiSAM. Our key lessons that we have learned surrounding this hypothesis are:

- Real change cannot occur where there is political instability within a local government. Any efforts that are made will be interpreted through the lens of the internal politics of the municipality
- External pressure from citizens will not force a municipality to listen.
- When a municipality is in a dysfunctional state, it needs to work to strengthen its own internal communication before it can be expected to improve its communication with citizens.

Conclusion and Future Work

This article has discussed the MobiSAM project, a four year investigation on the use of mobile phones to increase participation in local government. It describes the lessons learnt in designing, developing and evaluating a mobile tool to support increased communication between local government and citizens. A community based co-design methodology was utilised in the research, emphasising the importance of stakeholders' perspectives in the design of the system. The importance of scaffolding citizen education and awareness of the role that local government should play was emphasised in this article, with a significant discussion of the municipal, media, and citizen based initiatives that were undertaken. The article also highlighted the important role that political stability and sound communication practices within a municipality play in an m-participation initiative.

A second phase of this pilot evaluation is being undertaken in 2016-2017. Like the initial pilot study of MobiSAM, the second pilot (referred to as MobiSAM v2.0) again aims to investigate how ICTs can be used to increase citizen participation in local government. Instead of taking an adversarial approach as was undertaken in the initial pilot, assuming that external pressure would *force* municipalities to improve their service delivery, the MobiSAM v2.0 aims to *capacitate* municipalities to improve their internal communication first, and then provides tools to communicate externally with citizens.

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