

# Communicative Ecologies and Mobile Phones: Forging a Way to Increased Citizen Engagement

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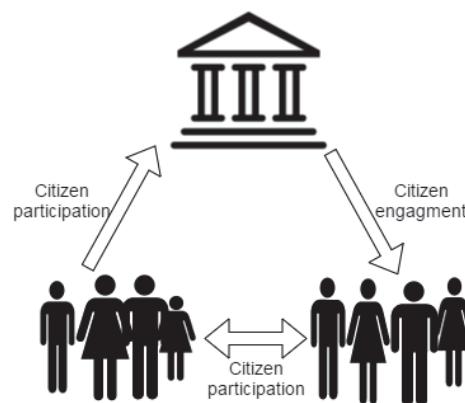
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**Abstract:** Over the past decades there has been a worldwide shift towards calls for greater transparency and accountability in government. As part of this shift, the way citizens and the state interact with each other has evolved from the traditional top-down governance that has been popular until quite recently, to include more bottom-up governance where citizens initiate interactions with the state. At the same time there has been much discussion amongst academics about the potential of using technology to facilitate greater interaction between these two parties. This paper describes the MobiSAM project, reflecting on the five year research intervention in a small municipality in the Eastern Cape of South Africa. It reflects on the results of two surveys (2014 and 2016) that were undertaken to understand citizens' access to and use of technology, and participation in local government, to highlight key changes in these areas. It uses the concept of communicative ecologies to identify existing networks within communities and map current communication patterns, enabling digital citizen engagement efforts to be embedded in the existing information and communication structure. The paper then draws from these findings to show how the surveys informed the redesign of the MobiSAM intervention to meet the changing needs of citizens and the municipality.

**Keywords:** ICT4D, mobile applications, citizen participation, citizen education, communicative ecologies

## 1. Introduction

There has been a shift in the way citizens and states are interacting with each other, from traditionally top-down governance to include bottom-up governance, where citizens initiate interactions with the state. Often the terms of citizen engagement and citizen participation are used interchangeably, but in this research we seek first to distinguish the terms and then to describe the types of interaction our project, MobiSAM, seeks to support.



**Figure 1:** Relationship between citizen engagement and participation

**Figure 1** provides an illustration of the interrelationship between citizen engagement and citizen participation. Citizen engagement is a state-led (or traditionally a top-down) activity, where spaces are made by the state to solicit involvement of citizens in order to “orient government programs towards community needs, build public support, and encourage a sense of cohesiveness within neighbourhoods” (UNDESA, 2008). The term citizen participation on the other hand, refers to more informal and citizen led initiatives, designed “to increase their [the citizens’] influence on public policies and programmes, ensuring a more positive impact on their social and economic lives” (Armstrong, 2013, p. 5). Both citizen engagement and participation have the same goal of improving service delivery, but they are led by different actors. Also, both citizen engagement

and participation can be seen as powerful tools to increase the accountability and transparency of government. In our definition of citizen participation, we also include citizen to citizen, or horizontal communication, in an attempt to highlight the importance of citizens interacting with each other in order to improve service delivery (see **Figure 1**).

One of the cornerstones of an open society is an accountable government (Open Society Foundation, 2016). There are a number of dimensions of accountability including: *answerability* and *enforceability* (Goetz and Jenkins, 2005) as governments obligation to explain what they are doing, and public's ability to impose consequences on any violations that occur; *transparency* (Moore and Teskey, 2006) as the access to reliable and timely information supporting government decisions; and *responsiveness* (Gloppen et al., 2003) as response by government to citizens voices. Social accountability is a horizontal or bottom-up form of accountability, where citizens aim to hold the state accountable for the services that they provide. Grandvoinnet, Alsam and Raha (2015) note that information and communication technologies (ICTs) can facilitate and enhance social accountability due to their accessibility and inclusiveness. They warn however that:

“...ICTs are not a silver bullet for SA [social accountability]. They work best when they are embedded in SA [social accountability] institutions, processes, or systems and not stand-alone solutions. ICTs are a supplementary channel for information, participation, and collaboration, not a replacement. The design and implementation of ICTs also need to be user centric—that is, they need to give users more control, more choices, or more flexibility” (Grandvoinnet et al., 2015, pp. 126–127)

When designed poorly, Grandvoinnet *et al.* find that the use of ICTs for social accountability can risk further excluding the already excluded members of a community, suggesting instead a hybrid approach which includes both online and offline tools for participation.

The Mobile Social Accountability Monitoring (referred to as MobiSAM) research project was founded in 2012 by local researchers in South Africa who were frustrated by the poor service delivery in their municipality (Thinyane and Coulson, 2012). MobiSAM began as a purely citizen participation project, aimed at amplifying citizen's voice in their demand for better service delivery. By the end of the first phase (2015) of MobiSAM, they realised that a lack of government responsiveness was primarily due to a lack of ability to communicate internally within the government, as well as with citizens. Researchers realised that they would need to work to strengthen the municipality's communication capability first, allowing them to be in a better position to interact from citizens. Now in phase two, MobiSAM has evolved, and is currently being used as a tool for both citizen engagement (led by local government) and citizen participation (led by citizens and CSOs).

In this paper we propose the use of the communicative ecology theoretical framework to provide a holistic understanding of community's current patterns of communication, in order to design tools, and citizen engagement and education interventions that are user centric. It first introduces the concept of a communicative ecology, and then presents the two baseline studies that were undertaken as part of the first and second phase of the MobiSAM project (respectively) in order to understand communication patterns and participation in local government. It then presents an analysis of these findings, relating them to the design and implementation of the MobiSAM platform, to support citizen engagement initiatives.

## 2. Communicative Ecologies

This research proposes the use of Tacchi, Slater and Hearn's (2003) definition of communicative ecologies to understand a community's existing information ecologies, ICT infrastructure, and use of ICTs. Tacchi et al. define communicative ecologies as “processes that involve a mix of media, organized in specific ways, through which people connect with their social networks” (2003, p. 17). By using an ecological metaphor to understand the interaction between ICTs, formats (platforms) and activities which organize communication within the confines of a specific locale or geographic space, this theory seeks to recognize significant social processes that play a role in the social organization of the daily lives of individuals and communities (Altheide, 1994). The ecology or network metaphor underlying this framework supports “the possibility of network analyses of relationships between agents in the ecology” (Foth and Hearn, 2007, p. 9), and supports a nuanced approach to uncovering these “communication activities” because, “in order to understand one aspect of

communication within a particular setting, you need to understand how it fits into the wider communicative ecology” (Tacchi, 2006, p. 6).

This interrogation of the use and value of communication networks and the platforms which facilitate these ‘channels’ has been refined identifying three core aspects involved in both conceptualizing a “communicative ecology” as well as methodologically seeking to locate and organize the various ‘levels or strata’ of activity. By understanding these networks as an arrangement of technological, social, and discursive elements allows the research to interrogate the, “multi-modal communication connections, shaped by particular social and cultural conditions” that are used by people to “construct knowledge and achieve goals” (Broad et al., 2013, p. 328). The technological layer consists of the connecting media and devices that enable communication. This can range from no tech interventions (e.g. face to face communication), to low tech (e.g. community radio), and high tech (e.g. Internet, social media) (Gigler and Bailur, 2014). Interactions in the technological layer can be differentiated by the types of communication that is facilitated: one to many, many to many, one to one, and peer to peer communication (Foth and Hearn, 2007, p. 9). The social layer consists of people, and ways that the people are organized (informal social networks, associations, communities, legal entities). The discursive layer consists of the content that is discussed between different groups of people, using different technologies.

Social systems consisting of the three layers of technological, social, and discursive elements evolve through time by: adapting through a process of minor modifications; changing through a process of radical innovation; or ceasing to exist (Hearn et al., 2014). The layers themselves are also not distinct and have an impact on one another. From an ICT for development perspective, an important layer to consider is the technical layer of a communicative ecology, as it “affects the evolution of the social layer... ICTs not only change in their own right, thus affecting the technology layer of a communicative ecology, but they also mediate both the discursive and social layers of communicative ecologies” (Hearn et al., 2014, p. 8).

### **3. MobiSAM**

Three methods of m-government have been identified, namely: supplement, expand, and innovate (Goldstein et al., 2012). The first method, supplement, may be defined as mobile tools which include an additional channel to supplement the way that government services are currently provided. An example of this would be in South Korea, where the e-government services have been expanded by adding wireless portals and interfaces to access existing e-services (Rufino, 2011). The second method, expand, helps to extend the reach of traditional government services, so as to include previously underserved citizens. HealthLine, a telephonic service offering medical advice to citizens in Bangladesh, provides an example of expanding traditional e-government reach (“HealthLine, Bangladesh,” 2006). The service reduces the need to travel to clinics and waiting in health centre queues. The third and final method, innovate, include mobile tools which are used to “develop new services for service delivery and governance” (Goldstein et al., 2012, p88). The MobiSAM system falls into the third category, aiming to enable innovative ways for local government to interact with and involve citizens.

MobiSAM consists of two separate yet equally important components. On the one side is the SAM methodology, which provides a way of engaging meaningfully with governments’ service delivery processes. The second component is the proposed mobile polling and service delivery ticket application that allows municipalities to collect, collate, and visualize information around the provision of service delivery to its constituents (Thinyane and Coulson, 2012).

Developed by the Centre for Social Accountability at Rhodes University, the Social Accountability Monitoring (SAM) methodology is a “rights-based and evidence-based framework for understanding and participating in government service delivery processes” (Thinyane and Coulson, 2012, p174). SAM is a rigorous methodology that tracks the phases of the municipal financial cycle: planning and allocation of resources, expenditure and implementation; accountability to oversight.

The proposed MobiSAM application is a framework that allows questions to be posed by the municipality, and to be made available to registered users who can answer them either on their mobile phone or a desktop computer. Furthermore, we intend for residents to be able to report problems with service delivery using any one of the following: SMS; native mobile applications; mobi-site for use in mobile internet browser; and Facebook. The MobiSAM application thus consists of three main functions:

- Reporting a problem (service delivery tickets); This function allows users to report specific service delivery problems through the creation of a service delivery ticket to the municipality. Reports are grouped into a number of service categories, each of which the municipality is mandated to provide, for example: water, electricity, sanitation, and roads.
- Answering service delivery polls; The answering of service delivery polls aims to provide the municipality with information relating to the satisfaction levels of the basic services it provides residents. As with the service delivery tickets, different poll types are grouped into specific categories, e.g.: water monitoring, electricity monitoring, sanitation monitoring, and roads monitoring. Users are presented with a list of available polls within the various categories (for example, “How is your water pressure today?”). Responses to polls vary depending on the type of poll: Likert scale responses, yes/no answers, text responses and customized responses. In order to promote transparency, results are collated in real time and visualized using bar and pie charts, timelines, heat maps and simple tables.
- Updating the user profile; Users are able to update their names, preferred language, password and subscribe/unsubscribe to MobiSAM SMS and e-mail updates. Available languages are English, Afrikaans and isiXhosa, shown by the 2011 National Census and reiterated by the baseline study to be the most widely used languages within Grahamstown (Frith, 2012). All UI text is shown in the preferred language. In addition, the user’s preferred language indicates to the MobiSAM backend server which version of the poll questions to display to the user (for example, if the user’s preferred language is Afrikaans, they will view the Afrikaans version of the poll question). The current suburb indicates to the backend server which area within the municipality a ticket or service delivery poll corresponds, allowing for the more accurate monitoring of specific suburbs and grouping of poll results.

It is intended that media practitioners be included in MobiSAM as key partners in the process. The media are believed to play a key role in increasing participation and dialogue between a municipality and its citizens as they provide a space for the dialogue to be held, and can follow up on issues stemming from the data generated through the use of the MobiSAM framework.

To this end, we proposed and undertook the two baseline studies within the Makana municipality to better understand how many residents have access to mobile phones, how they currently use those mobile phones and how they currently interact (if at all) with the local municipality.

#### **4. Research Methodology**

This research project can be construed as a case study. Robson defines case study methodology 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). Case study research does have its drawbacks in that it cannot be easily generalized, but if it is “contextualised and carefully described [. . .] then others can consider its usefulness in other contexts and examples” (Wisker, 2001). As Pawson (Pawson, 2004) explains: “At the extreme, we can still learn from a negative net effect of a single evaluation study, since the application of an initiative to the wrong subjects and in the wrong circumstances can leave behind vital clues about what might be the right combination”.

##### **4.1 Phase One Baseline**

The initial baseline study (2014) was undertaken solely within Grahamstown, the largest city within the borders of Makana Municipality. According to the 2011 census results, 72.8% of the population self-identified as Black African, 14.29% as Coloured, 11.22% as White, and 0.94% as Indian / Asian. (Although these terms stem from Apartheid’s racial categories, they are still used in statistical publications and census data. For these reasons, we have chosen to use these terms throughout this paper.) For this baseline, stratified sampling with simple random sampling within each strata (race and gender demographics) was used in order to obtain as representative a sample as possible. In order to achieve this, participation was solicited in public areas across Grahamstown: communal areas in the township; common areas near the Assumption Development Centre; pedestrians walking down main roads in Grahamstown; and by referral from existing participants. (The term township in the South African context refers to a, typically underdeveloped, urban area that was reserved for non-Whites during the Apartheid era. They are typically located on the outskirts of towns or cities.) In total, 105 Grahamstown citizens took part in this study (refer to **Table 1** for a breakdown of participants by race and

gender). The questionnaire consisted of three sections: demographic information; mobile phone usage; and service delivery satisfaction and current participation.

**Table 1:** race and gender strata for phase one and phase two baselines

	2011 Census (%)	2014		2016	
		Total	(%)	Total	(%)
Black African	73%	77	73%	292	76%
Coloured	14%	11	10%	26	7%
White	11%	13	12%	60	16%
Indian / Asian	1%	4	4%	4	1%
Male	52%	54	51%	178	47%
Female	48%	51	49%	204	53%

The questionnaire was completed orally, with the researcher questioning and transcribing participants' responses. In the process of piloting this questionnaire, this was found to be quicker than asking participants to complete the form themselves. Although the questionnaire was only available in English, interviews were conducted in either English or isiXhosa, as directed by the participant. This was done to ensure that written literacy levels did not interfere with the accuracy of the results obtained.

#### 4.2 Phase Two Baseline

The second baseline study took place in 2016 and was undertaken across the whole of Makana Municipality, with representative samples across each of the 14 wards that make up the municipality. The results reported in this study however, only discuss participants who are from wards that lie within the boundaries of Grahamstown, so as to allow a comparison to be made with results from phase one. For a representative sample of the 80,390 citizens within Makana Municipality, a minimum sample size of 382 was calculated (confidence level 95%, confidence interval 5), and a total sample of 440 was collected (additional in case of errors during data capture). Of this sample, 396 were from the Grahamstown area (wards excluded were rural wards 1 and 14), and then due to data cleaning a total of 382 were used in this evaluation. Table 1 shows a breakdown of participants by race and gender.

The questionnaire developed for phase two was based on the instrument used in phase one, but there were some significant differences. As such a direct comparison cannot be undertaken across the two studies. The results presented below provide a comparison of findings related to use of technology and current methods of citizen participation.

### 5. Findings from MobiSAM baselines 2014 and 2016

Both the baseline studies conducted (in 2014 and 2016) asked participants about their use of technology and more specifically mobile phones, as well as their current methods of citizen participation with local government. In this section of the paper we limit our focus to how citizens made use of mobile phones, how they participated with local government and how (if at all) were they using their mobile phones to participate with local government, in both 2014 and 2016.

Across all results, responses are classified into the following race groups: Black African / Coloured, Indian / Asian, White. These combinations are performed for historical reasons as they refer to the classifications used in the former dispensation. Although Apartheid has long since passed, these classifications are used in order to determine the ongoing inequalities experienced in South Africa.

#### 5.1 Citizens use of Mobile phones

The results from the 2014 baseline reflected that 95.24% of people surveyed had access to a mobile phone – 90.48% owned their own phone while a further 4.76% had access to a shared phone. The remaining 4.76% did not own a phone, and did not have access to a shared phone. Correspondingly, in the 2016 baseline study (only focusing on those citizens who lived in Grahamstown) reflected that 90% of the Grahamstown respondents own their own mobile phone and 5% had access to a shared mobile phone. Thus a majority, of 95% of Grahamstown respondents have access to a mobile phone. The remaining 5% neither owned a mobile phone nor had access to a shared mobile phone. This represents a slight decrease in the percentage of owners

of mobile phones and access to shared mobile phones between the 2014 and 2016 base line studies. However, there remains an overwhelming majority of respondents living in Grahamstown with access to a mobile phone.

In terms of use of the mobile phones that citizens had access to, we concentrated on how citizens were making use of their access to data services from their mobile phones in both baseline studies. Consequently, we asked respondents about which data based messaging, social media and online content (such as news and information sources) they accessing using their mobile phones. The results from the two studies are reflected in **Table 2**.

**Table 2:** Use of messaging services, social media and online content in the 2014 and 2016 baseline studies

	Male		Female		White		Indian/Asian		Black African/ Coloured	
	2014	2016	2014	2016	2014	2016	2014	2016	2014	2016
<b>SMS</b>	80%	80%	69%	87%	92%	98%	75%	75%	72%	81%
<b>WhatsApp</b>	76%	43%	56%	50%	92%	90%	75%	75%	61%	38%
<b>Mxit</b>	20%	15%	13%	6%	0%	0%	0%	0%	19%	12%
<b>Email</b>	41%	38%	19%	38%	77%	90%	75%	75%	20%	38%
<b>Facebook</b>	76%	39%	46%	46%	92%	95%	50%	75%	57%	32%
<b>Wikipedia</b>	27%	25%	7%	25%	46%	87%	0%	100%	14%	12%
<b>News</b>	33%	-	19%	-	69%	-	25%	-	19%	-
<b>Local News</b>	-	29%	-	29%	-	82%	-	75%	-	19%
<b>SA News</b>	-	24%	-	23%	-	68%	-	50%	-	15%
<b>Intl News</b>	-	29%	-	26%	-	80%	-	75%	-	17%

From the results reflected in **Table 2** it can be seen that of the messaging services that SMS is still the most utilized of the messaging services by respondents, followed by WhatsApp and Mxit. The percentage of respondents using SMS typically increased or remained unchanged between 2014 and 2016. Conversely, the percentage of respondents who made use of WhatsApp decreased, in some cases significantly, between 2014 and 2016. That said, typically female respondents made proportionally better use of messaging services as compared to their male counterparts. In addition, White people in Grahamstown tend to make more use of messaging services as compared to the other race groupings. The use of email has increased or remained unchanged across all the race groupings, while the number of females using email increased proportionally and the number of men decreased proportionally.

Use of the social media, specifically the social media giant Facebook, also reflected a decrease in overall percentage of users making use of the service. Again, in some cases that drop in percentage was significant. From the table one can see that initially men reported to make more use of Facebook (in 2014) but later more women reported using Facebook (2016). Furthermore, proportionally more White Grahamstown respondents reported using Facebook as compared to the other race groupings.

Lastly, in terms of news, in the 2014 baseline respondents were asked if they accessed online news in general, while in 2016, they were given the options of local news (i.e. local to Makana Municipality), South African news and International news. Anecdotally it would seem that the use of phones to access news in general has either increased or remained unchanged across the race and gender groupings. When considering the 2016 results, it is interesting to note that typically respondents favoured reading international news over South African national news. Furthermore, the table reflects that men and White citizens are proportionally more likely to read the news online than female or other race groupings.

## 5.2 Citizen participation with local government

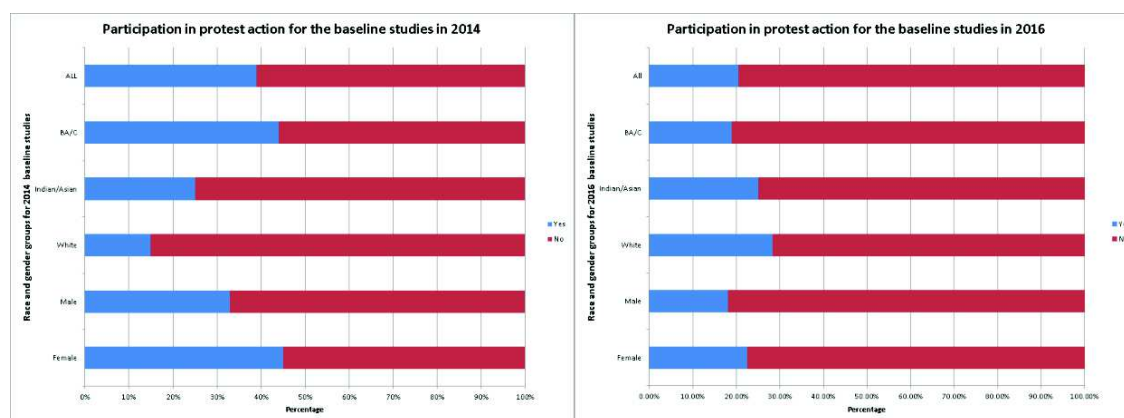
In both baseline studies participants were asked how they currently participate with local government in the area of service delivery. When asked if they had made complaints to their municipality, 58% indicated that they had complained in the 2014 survey, while 81% indicated similarly in the 2016 survey; representing a significant proportional increase in respondents willingness to lay complaints with the municipality. **Table 3** reflects how citizens were lodging their complaints with the municipality in 2014 and 2016.

**Table 3:** Method of complaint to Makana Municipality from citizens in the 2014 and 2016 baseline studies

	All		Male		Female		White		Indian/Asian		Black African/ Coloured	
	2014	2016	2014	2016	2014	2016	2014	2016	2014	2015	2014	2016
Emailed the municipality	-	9%	-	9%	-	8%	-	12%	-	11%	-	3%
Never made a complaint	-	3%	-	4%	-	3%	-	1%	-	0%	-	8%
Legal clinic / organised group	-	3%	-	5%	-	1%	-	2%	-	0%	-	4%
Local newspaper	-	5%	-	4%	-	6%	-	7%	-	0%	-	4%
MobiSAM	-	6%	-	0%	-	9%	-	8%	-	11%	-	1%
Phoned municipality	7%	17%	0%	17%	13%	19%	0%	18%	0%	22%	7%	19%
Ward Councillor	20%	10%	20%	15%	19%	9%	0%	4%	0%	0%	22%	19%
Facebook page	2%	8%	3%	6%	0%	8%	0%	9%	0%	11%	2%	4%
Signed a petition	25%	14%	27%	15%	23%	14%	80%	17%	0%	22%	20%	10%
I spoke in person municipality	46%	16%	50%	16%	42%	15%	20%	15%	100%	11%	46%	19%
I wrote a letter	2%	7%	0%	8%	3%	6%	0%	7%	0%	0%	2%	7%
Not specified	-	0%	-	1%	-	1%	-	1%	-	11%	-	1%

From **Table 3** it can be seen that the favoured methods by respondents of communicating service delivery complaints to Makana Municipality were: speaking face-to-face or phoning someone from the municipality; signing a petition; or talking to their ward councillor. In 2016, the table reflects how the use of social media (particular the Grahamstown Municipal Services Outage Reporting Facebook page) and MobiSAM had become avenues for citizen engagement with Makana Municipality, particularly amongst female respondents. Both men and women favour speaking face-to-face with someone at the municipality, while White race participants favoured signing a petition and Black African or Coloured citizens prefer to speak face-to-face to a municipal staff member. Indian/Asian race grouping favour either of these two options.

Participants in both surveys were also asked if they had participated in a service delivery protest within the last 12 months. The results of this are reflected in the graph in **Figure 2**. From the graph in **Figure 2**, one can see that proportionally fewer Grahamstown residents are participating in protest actions in 2016 as compared to 2014. The only group to have increased its level of participation in protest action over the two years was the White race group.

**Figure 2:** Stacked bar chart reflecting levels of participation in protest action across race and gender groups for the two MobiSAM baseline studies (2014 and 2016)

### 5.3 Citizen use of mobile phone for participation with local government

From the results described thus far it can be seen that in the 2014 survey Grahamstown residents surveyed did not use their mobile phones to interact with the municipality other than to phone in complaints. This, despite the high proportion of residents owning or having access to a mobile phone. However, in the 2016 survey, Grahamstown residents were using their mobile phones to interact with the municipality via Facebook and via MobiSAM, in addition to the phone calls that they had also been making to the municipality in 2014.

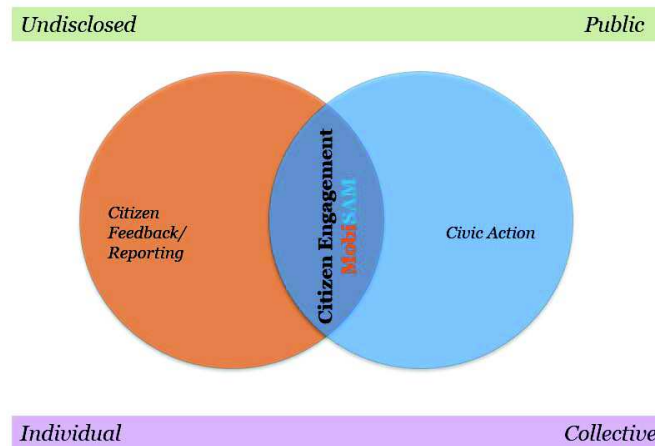
## 6. Analysis and Discussion

From the results of the 2014 baseline study, it could be seen that despite almost prolific access to mobile phones residents of Grahamstown in the Makana Municipality were not using mobile phones to interact with the municipality other than to phone them. Residents preferred more personal, individualistic forms of communication such as face-to-face meetings or one-on-one phone calls in order to engage with the municipality about their service delivery issues. However, at the time of the baseline study in 2016, post the first pilot study of the MobiSAM system and citizen participation drive and education programmes, it could be seen that there had been uptake of the use of both MobiSAM and social media (such as Facebook groups like the Grahamstown Municipal Services Outage Reporting page) as additional means of meaningful communication with Makana Municipality, especially amongst women. Furthermore, there had been a general downward trend in the proportional number of residents engaging in protest action.

The results and comparison of the baseline study contribute to a reflection on the approach that MobiSAM should adopt to build on the existing/emerging communication ecologies of residents in Grahamstown. The results show how the approaches do differ among individuals, based on social aspects (race and gender), which also relate to place and location (urban vs. township/rural). Each individual or group has a unique way of understanding and communicating issues around service delivery, therefore, a one-size-fits-all communication approach would not be effective ((Foth et al., 2008)). Leveraging off an understanding of existing ecologies, Foth and Hearn (2007) argue for a holistic dualistic approach that recognises the needed interrelationship between the two kinds of interaction – *collective* interaction for discussion about place, and *networked* interaction for sociability in place. From the context of citizen engagement and participation, these two approaches are described as follows:

- *Collective Interaction*: This is based on the interaction of collective groups to invoke action for change in service delivery. These can be government-led, or citizen-led. Examples include, government public forums on service delivery aspects, civil society meetings (e.g. Grahamstown Residents Association meetings, and Street Committee meetings), protests, etc. Currently, such interactions are naturally face-to-face, however, with the growing use of Facebook and social media, existing groups in Grahamstown have emerged to support collective action and discussion among citizens who may not at first know each other personally.
- *Networked Interaction*: this is more individualistic, and relies on social interactions between people who know each other, or are more familiar with each other's culture. In simplest of forms, this is supported by personal interactions using Facebook, WhatsApp, and even SMS; all of which are commonly used by the general population of Grahamstown. Currently, people complain amongst friends and family about the poor service delivery in Makana with few individuals taking action. However, with the growing dissatisfaction in service delivery there has been a need for collective action to support networked engagements.

The most favoured approach to communicating with the municipality has been of a networked individualistic nature whereby people either prefer to call or interact with the municipality on a face to face basis. However, with the growing number of civil society groups and alternative communication platforms such as, the Grahamstown residents Facebook page and MobiSAM, there is a need to leverage off the different ways in which citizens communicate or engage with government. MobiSAM provides a space where not only individual reporting can take place by people utilising old and new media (SMS, website, phone call, ward councillors) but also a space where individual reports can be collated (through interactive maps and summary reports) and used to achieve a collective goal – improved service delivery. Moreover, it is also a space where the municipality can provide feedback to suit both collective and networked means of communicating. Citizens have the freedom and space to move between the 'collective features' and 'network features' of various communicative ecologies. As highlighted by Foth et al., (2008) there is a "need to design for fluid oscillations between collective and network sociality", which further leads to more impactful social accountability by citizens. MobiSAM needs to play a strategic role of bringing together individual and collective action with real time access to mechanisms to report issues to all stakeholders (both government and citizen) – this is illustrated in Figure 3, which is adopted from Peixoto and Fox's (2016) depiction of citizen engagement.



**Figure 3:** What Citizen Engagement Means in MobiSAM (adapted from (Peixoto and Fox, 2016))

Therefore, the redesigned MobiSAM application attempts to leverage the two kinds of interaction, collective and networked. The new ticketing system incorporated into MobiSAM supports the individual in making personal and individualistic complaints to the municipality regarding their service delivery issues; much like the residents current methods of networked complaint.. In addition, the ability of the new MobiSAM system to collate tickets , reports and polls (made by all users of the system) into reports that can be used by communities and individuals to support evidence based engagement with the municipality attempts to facilitate collective interaction around the issues of service delivery. It is hoped that through further engagement with Makana Municipality and its residents, MobiSAM can contribute to supporting the creation of a space where meaningful dialogue can take place between the residents and the local government.

## 7. Conclusion

This paper has discussed the use of the communicative ecology theoretical framework in providing a holistic understanding of a community's current patterns of communication, in order to design a mobile application that is user centric. It introduced the concept of a communicative ecology, and then presented the two baseline studies that were undertaken as part of the the MobiSAM project. The analysis of the findings suggested that the new MobiSAM application should leverage off both collective and networked interactions. We argue that the inclusion of a ticketing and corresponding reporting system within the MobiSAM system afford the creation of a space where meaningful dialogue can take place between the residents and the local government around issues pertaining to service delivery.

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