

Developing Cross-media Service to Promote Citizen Participation in Northern Uganda

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ABSTRACT

We have conducted an ethnographical field study in northern Uganda, using a participatory design approach for the analysis of technology engagement and usage, in order to design a service solution that can be used to report public service issues and facilitate communication through ICT, based on existing technology.

Categories and Subject Descriptors

H.5.2 [User Interfaces]: Voice I/O User Interfaces, Evaluation;
H.1.2 [User/Machine Systems]: Human Factors

General Terms

Design, Human Factors.

Keywords

Cross-media, ICT, ICT4D, VOIP, Participatory design, Cooperative design, Uganda

1. INTRODUCTION

It is widely realized that there are severe issues with a lack of public service delivery (the delivery of services such as education, healthcare and public infrastructure) in Uganda. Past experiences show that efforts in increasing civic participation and the reporting of service delivery issues can lead to a better state of service delivery and therefore generally raise the living standard in such situations [1].

Furthermore, there is substantial evidence that efficient use of ICT (Information and Communication Technology) can support civic participation efforts, not only by simplifying bottom-up reporting approaches, but also by supporting communication horizontally, among the citizens. In order to enable civic participation, the contributions of individuals need to reach a broad audience of their peers, so that they get a chance to influence and take part in public affairs. Reports, specifically on public service issues, need to reach the responsible bodies.

Given this context, our project seeks to address problems of civic participation in northern Uganda through the use of ICT4D (Information and Communication Technology for Development). “*People’s Voices: Developing Cross Media Services to Promote Citizens Participation in Local Governance Activities*”¹ [2] was a project funded by the “Swedish Program for ICT in Developing Regions” (SPIDER) as a collaboration between Linnaeus University (Sweden), Makerere University (Uganda) and the “Women of Uganda Network” (WOUGNET).

By this stage, WOUGNET has conducted several workshops for another SPIDER funded project², where Voluntary Social Accountability Committees (VSAC) discussed about the use of mobile phones and cameras in order to report bad governance and poor service delivery to the respective authority as evidence of their concerns. Moreover, a web platform called *Ushahidi*³ is used to handle the reports from the volunteers, but due to the high-cost of telephony network services and the complexity of making reports (for their low level of education and high level of illiteracy), it did not become as popular as it was expected.

According to [3], using a combination of inexpensive and widely available tools in Social Media can empower citizens to organize themselves and to improve their civic responsiveness. Furthermore, these technologies allow citizens to be informed, encourage the gaining of civic knowledge, and facilitate the flow of information and the discussion about current issues.

While access to the internet is not easily affordable and unfamiliar to the communities in rural Northern Uganda, mobile phones are not. Almost every village has at least one mobile phone and this amount is growing. Moreover, the available technologies (radio and mobile) in that region are able to create powerful tools that can contribute to the way that information is delivered.

Therefore in order to accomplish the aims of our project, we decided to explore which kind of cross-media⁴ services could be developed in order to promote novel ways of citizen participation in local governance activities.

The paper is structured as follows; section 2 describes the background concepts behind using ICT in developing countries, as well as some related work and challenges on voice-based systems. The design process is discussed in section 3. Based on the requirements and limitations at this section, we then introduce the prototype of our system. We conclude with possible directions for future work.

2. RELATED WORK

Various approaches have been taken in order to tackle the issue of supporting civic participation in Uganda and other developing countries. It appears that such efforts do indeed support the quality of public service delivery [1]. Additionally, the use of ICT for the purpose of improving public service

¹ <http://peoplesvoices.org>

² Empowering Local People and Communities to Monitor Districts Services Delivery Through ICTs

³ <http://www.ushahidi.com/>

⁴ The use of a wide variety of media channels in an integrated manner

delivery [4] and to fight corruption [5] has shown promising potential in previous research.

One specific approach was the establishing of an incident reporting platform [4] using *Ushahidi*, which is run by *WOUGNET*⁵. This approach aims to enable civic participation by offering a public listing of incidents, but requires web access and literate users in order to access and interact with the platform.

In the context of fighting corruption in Uganda, a project called “*Not in my country*”⁶ was launched in May 2012⁷ and targets the corruption faced by students in Uganda. This project relies on a website to collect reports of corruption incidents. However, there are still some fundamental problems which hinder its usefulness to act as the main approach of collecting such incident reports. Two of these factors are 1) the project just supports reports related to academic issues focusing the attention on corruption, and 2) since the project resides on an internet based portal, access to this portal is impractical to many because of poor internet access and literacy in rural regions, a similar situation to the one faced by *Ushahidi*.

Another relevant study [6] related to ours evaluated how voice forums can help rural Indian farmers to ask and respond to agriculture-related questions, and to browse other users’ questions and responses in various categories of interest. Having access to an online community through a toll-free number does not only make these communities immediately available to people in order to report their issues or get advice, but it also the interaction between experts and their peers faster and easier.

Based on the existing literature, it would appear that approaches that are based on tailoring solutions according to the actual requirements of end users in rural, impoverished areas are underrepresented. Constraints may not be considered enough [7].

3. DESIGN PROCESS

In our study we decided to take an approach based on designing a solution that considers peoples’ needs. Hugh Bayer and Karen Holtzblatt [8] proposed such a method called *contextual design*. It consists of ethnographical methods for gathering data relevant to the product via field studies, rationalizing workflows, and designing human-computer interfaces. In practice, this means that researchers aggregate data from customers in the field where people are living and applying these findings into a final product.

3.1 Field Study

We conducted a field study in Northern Uganda and collected data about the common cases and situation in the field. We used ethnographical methods for analyzing the different communication processes and their implication for the design of cross-media services. We took field notes, captured voice and video recordings of dialogues with the different stakeholders, and conducted interviews and observations that were connected to authentic situations. The justification of using such

ethnographic methods has to do with “*coming closer*” to different situations in real settings, and find out how communication is taking place.

The interviews that we conducted followed a similar path, starting with: a) what had it happened, b) how was the information flow from the moment the incident happened until the case was reported and solved, c) which ICTs were used to report the case and disseminate it, and finally d) how did they think that the use of ICTs would have improved the overall case.

3.2 Results and Analysis

During our field visit we archived approximately 20 hours of video and audio recordings. These were transcribed and further analyzed in the period following the trip, before proceeding to develop our prototype system.

Based on statements made during the workshops in Uganda, clear requirements could be identified. We grouped these requirements according to factors such as the number of people affected, the ICTs that were already involved, and how long the process took.

We identified the most important ones from these selected factors based on user’s emphasis during interviews and the scale at which they contributed and potentially inhibited the process of reporting and disseminating information. Based on this information a solution could be tailored that caters to these requirements, enabling easier communication between multiple participants as well as allowing easier reporting of public service delivery issues.

This data contained 12 cases that took place in three different districts (*Apac*, *Oyam* and *Gulu*) and were considered to be the most representative ones for the problems that occur in that area.

3.3 Typical Case

According to [9] the typical case illustrates what is considered to be a typical set of values, which can give a general view of the phenomenon. In this respect, a case should be chosen based on a set of descriptive characteristics and then to figure out for causal relationships.

We used this typical case to identify the requirements, a complete list of limitations and also as the testing playground for our future solution. We do think that if our solution works for this typical case, unambiguously it will be helpful for the rest of cases as well. We identified a set of variables and examined each of these 12 cases we were told during the field visit. The variables differ from amount of people affected to type of ICTs involved in the reporting process. After examining them, a case involving the sale of young goats in the *Oyam* district was identified as our typical case in terms of information dissemination.

This case was about a community of members who had decided to contract a supplier to deliver goats for the farmers. The problem occurred when the supplier was supposed to provide farmers of mature goats but supplied young goats instead. This resulted in more costs for the farmers (in order to feed the young goats, whereas mature goats are less costly) and the contractor got the same amount of money as for mature ones. A low level of ICT was involved (only mobile phones) and a wide range of people were affected. These were the two main reasons to choose this case as the typical case.

⁵ <http://wougn.net.org/ushahidi/>

⁶ <https://www.notinmycountry.org>

⁷ <http://www.universityworldnews.com/article.php?story=20120921130937930>

3.4 Identifying the Problem

If the farmers used our system, they could have a quick and easy way to report this problem, what would lead to more farmers knowing about this goats supplier and this maybe would have stopped this bad conduct. For instance, the first farmer who was cheated could have reported his case to the platform. Immediately after he had finished reporting, his case would be available to be listened by more people. Other farmers, hopefully before buying goats from this dishonest supplier, could have accessed our platform to check if any report had been reported about this person.

3.5 Limitations

Based on the results of our study, we identified a list of limitations that we used as a base to create the model of our prototype. Among all the limitations that we found, we can emphasize three, which were taken into consideration during the creation of the prototype:

- Illiteracy of population: Due to the low level of education in most rural areas in the Northern Uganda, solutions based on text (such as mobile SMS) should be preferably avoided.
- High-cost of telephony services: Prices for calling and sending messages remain quite expensive in those areas.
- Low level of technology: Almost every village has a single, shared mobile phone.

3.6 Requirements

Based on the typical case scenario and the limitations we identified above, we can then specify the requirements of our prototype:

- Disseminate the information to a wide audience: the system should provide information access to the public.
- Easy to use: people with low education should be able to use it. The system should avoid complex menus and long interactions with the user.
- Accessible over existing technology in the region: taken into consideration available technology in the area, like basic mobile phones, radio, newspapers and limited access to the Internet.
- Avoid the use of text: due to high level of illiteracy of the population, preferably, system should use voice as the main channel to deliver the information.
- Free access: user can access the system without paying for phone services.

3.7 Conceptual Design and Prototype

At the design phase, following the requirements and limitations mentioned above, we created a functional prototype that can show the main features of our system. Trying to satisfy the needs of the different stakeholders, we implemented a mock-up of the system where basically a user can call to a number and s/he is guided through an audio menu in order to create or listen reports. The different stakeholders can access this system according to the technologies available to them (Figure 1).

Our prototype is based on the *VoIP Drupal*⁸ platform that permits the creation of voice driven applications. In order to allow people to create reports and listen to the ones already created, we developed a “reporting system” module for the Drupal platform based on the *AudioBlog* module created by the *MIT Center for Civic Media*. This module, in combination with the VoIP Drupal module and several service modules, create a reporting system platform. We used the *Tropo*⁹ telephone services provider to connect the reporting system with the telephone network. Basically, the role of a telephone provider system is to intermediate between the user of the application and the application interface. It also offers main functionalities like playback, text-to-speech, as well as serving a local number to access the reporting system application.

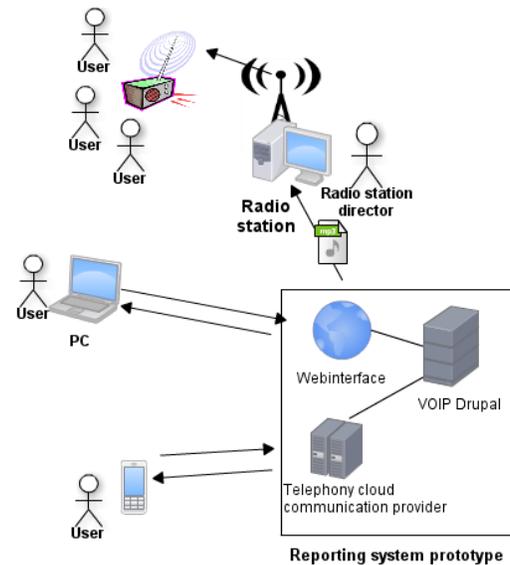


Figure 1. Overview of the system: access the data by different stakeholders.

People who have access to a mobile phone can report their cases and listen to submitted reports by calling a local number (for the testing of the current prototype we temporarily used a Swedish number). Navigating through the different options of the voice menu they can choose the reports they might be interested in and listen to them.

Another group of users who has access to the Internet using a personal computer, for example *WOUGNET* staff, can access the data over the website. The data (reports) are presented on the website in the main page and they are sorted in the order they were submitted to the system.

People who have only access to the radio can listen to a digest of the data in the system. The possibilities of collaboration with a community radio station were discussed during the field visit to Uganda. Therefore, the director of a community radio station can access to the reports submitted to the system over the website. After defining the cases (reports), s/he can download

⁸ <http://drupal.org/project/voipdrupal>

⁹ <https://www.tropo.com/>

the reports from the website in order to broadcast them during the community radio program.

4. CONCLUSION AND FUTURE WORK

As it was found during our field visit, the most popular technology used in this area to interact is the mobile phone. Preferably, people use voice the communication feature to communicate over mobile phone due to the high level of illiteracy. The main feature of our developed system is that, apart of being thought to be used in very basic mobile phones, it is voice based, which implies it can be used by a big vary of people independently of their level of illiteracy.

From our literature research, we can conclude that mobile phones have the potentiality to become more than a tool for calling and messaging. They may become a common technology denominator due to its wide acceptance among people. The high costs of the phone services still remain as one of the principal issues but it will not represent a problem in our system since a toll-free number will be used.

Apart from the voice solution, we have connected to the system a web interface from which it is also possible to report cases, read or listen to the ones that are stored, annotate them, browse through them and even download them in audio format. This web interface could provide to the administrators a good view on to what is currently happening according to what people are reporting.

Although the radio as a passive media distributor has not been properly integrated in our solution yet, we expect, as part of future work, to improve the collaboration between the radio stations and this project work.

The integration of these three cross-media tools can be used to support effectively the sharing of community information by providing access to this information through these interfaces to the different stakeholders.

Moreover, what makes our study different is that we are not going to develop new technologies, as it was done before. We used existing free technologies and open-source tools that fit best to people's requirements. Utilizing them, our solution will also be open-source and could be adapted in the future to other situations in different areas not only in Uganda.

In future, we plan to deploy our system in Uganda and extend the system's functionalities. We would like to investigate how to make user-generated voice content easier to navigate, developing user-friendly voice-based interfaces, developing an ontological semantic retrieval method for voice-based content are interesting problems to look into, to name just a few.

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