

Thesis Writing Fall 2008

Experiment/Research Brief: Core Version

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## **1. Current Thesis Concept**

I am currently looking into how accessible communication technology can provide a richer experience and be more affordable for people with limited technological access in developing nations. Additionally, I want to research what it means to deliver the Internet to people with limited technological access in developing nations, because many people in developing regions do not have traditional Internet access.

These questions have developed from my summer paper through conversations with my classmates. This week, I brought the questions “what technologies or systems can most effectively enable people living in poverty to ‘transcend space and time?’” and “what does it mean to deliver the Internet (in developing regions/emerging markets)?” to class. The word poverty seemed problematic. When the word poverty was mentioned, people seemed automatically assume I meant extreme poverty. Removing the word poverty and replacing it with ‘people with limited technological access in developing nations’ more specifically identifies my audience.

## **2. Experiment/research objective**

This week, I focused on rough implementation and, through that, user experience. I created system maps of both Pigeon and my proposed beeping-based system to describe both the basis of the technical implementation for each system and how a user would move through the systems. I intended to create a plan of how to logically organize both systems, start a framework for the programming needed to carry out either system, and compare the strengths and weaknesses of the two systems individually and in comparison to each other.

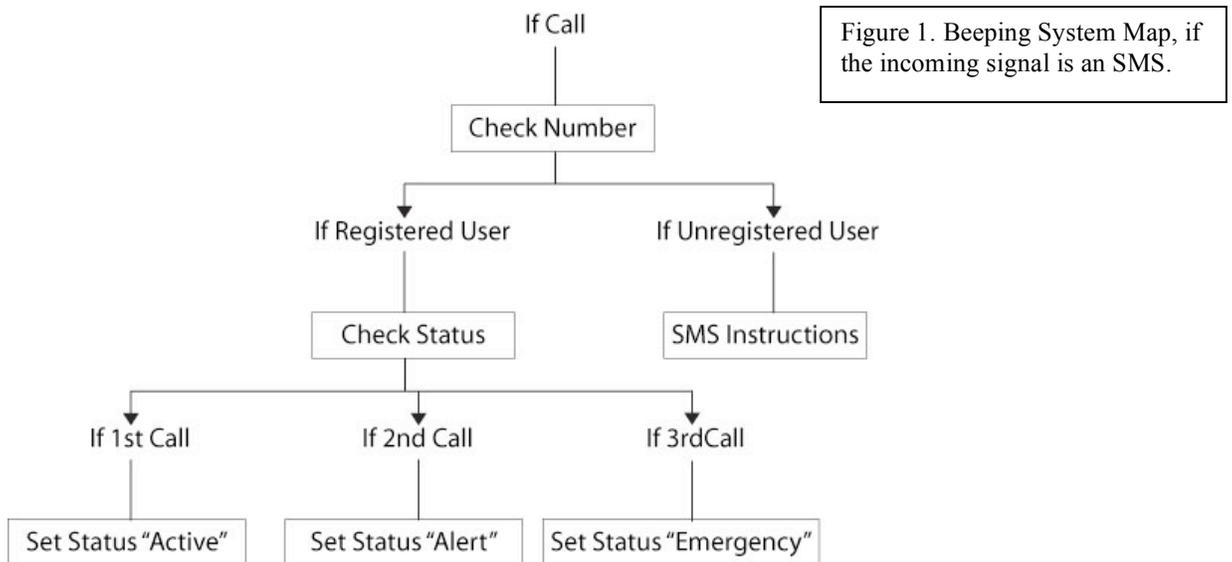
## **3. Design Questions**

The beeping system would be implemented completely differently than Pigeon; while, Pigeon is interfaced with via auditory cues and a phone keypad, the beeping system would be based on missed calls and text messages for navigation. In either system, the organization of the system must be considered carefully to allow a user to easily and naturally navigate, as these are complex systems built on a nontraditional interface.

#### 4. Experiment/research description

The Beeping system maps are found in Figures 1 and 2. To register for the beeping system, an SMS would be sent with the first word “register” to a particular number. The rest of the text message would contain with a desired username. Twitter has a similar SMS-based registration system. The beeping system would record both the number from which the text message was sent and the username. This system is built on the assumption that users have individual access to mobile phones, which is generally true in Belize for the younger users this system would probably attract. Text messages would also be used to establish contacts, or make friends on the system. By sending an SMS with “friend” as the first word and the username or number of a contact, a user would add a contact or friend to their network. If “friend” or “register” were not the first word of the incoming text message, then an SMS with instructions about the system would be sent to the phone number that sent the message. Again, with Twitter users are allowed to begin following a feed by simply texting a username preceded by the word “follow.”

**Beeping System Map, If Call**



## Beeping System Map, If SMS

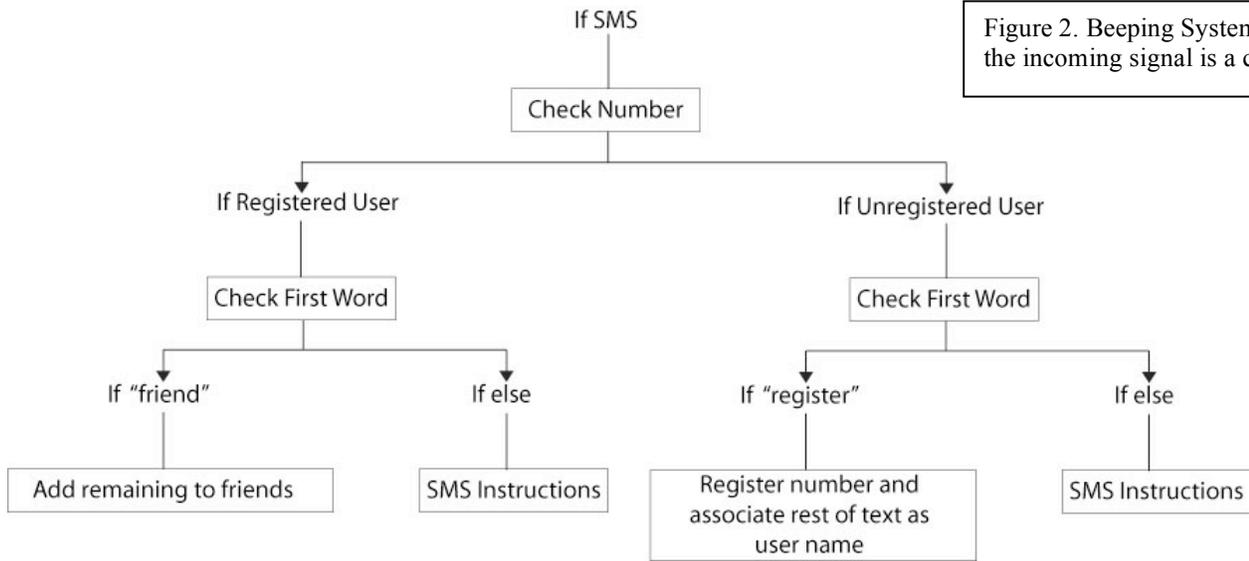


Figure 2. Beeping System Map, if the incoming signal is a call.

Figure 3 shows the potential structure of Pigeon’s dialogues. The numbers in the diagram show the keypad numbers that would be pressed to access that particular feature. The existing version of Pigeon does not have working contacts, direct message, or groups sections, so those subsection are the areas being most explored.

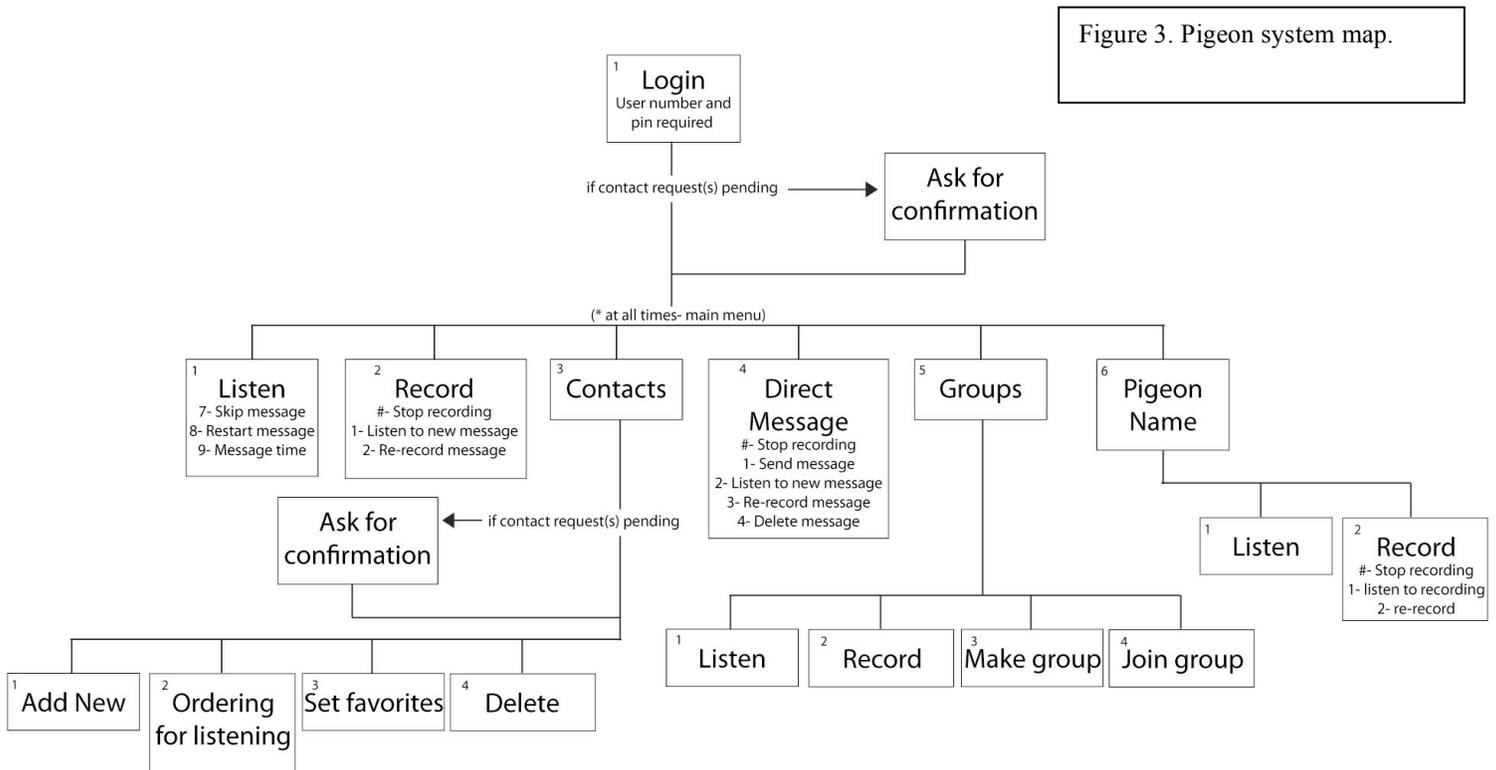


Figure 3. Pigeon system map.

## 5. Results and Conclusion

The system maps helped begin to establish the framework for full technical implementation and began to show how a user would navigate both systems. By having a more clear structure for both systems, it became easier to compare and contrast the two approaches. The beeping system seems to less well fit into my thesis concept. Though it does provide a very affordable solution, the method of interfacing with the system is complicated and does not provide a rich, or intimate, communication experience as well as Pigeon. Pigeon uses voice instead of a computer generated text message, which seems like it would provide the conduit for stronger human connection. Pigeon also seems like it would appeal to a broader audience.

In addition, the beeping system is not particularly scalable to other developing regions outside of Belize. Young people everywhere do not own their own cell phones. Pigeon can be accessed through any type of phone. To use the beeping system, the user must have a personal cell phone. The beeping system does not provide an easy communication tool for people with limited technological access. The beeping system could possibly be a partner product to Pigeon.

It may be useful to have optional SMS features integrated into Pigeon. Users could be alerted via SMS if contact has sent them a message or updated their public message. They would have to spend extra time on the phone, and therefore extra money, setting up these options, but in the long-term they may save money, as they would not get on the system unless they knew a particular message was available. Joining Pigeon could be potentially also facilitated, as a second option to signing up over the phone, through SMS.

In addition to address the larger thesis concept, many specific questions arose concerning the projects themselves. In Pigeon, it might be useful to have a way to save favorite messages even after they have been copied over to make room for a new message in the main listen cue. Also in Pigeon, there is currently no plan for if a user number or password is forgotten. As the system is over any phone, hints and information must be suggested via auditory means. Perhaps they can record a reminder about their PIN. If the user number is forgotten, perhaps it can be sent via text message to a mobile phone, but this would not help people who do not own a mobile phone.

After logging on, direct messaging from just one user to another, in Pigeon, is something that many test users mentioned desiring. The map is the first attempt at structuring direct messaging. There are several ways people might like to be able to choose to whom to send

messages. Perhaps, there could be some type of favorite contacts list through which messages could easily be sent. Additionally, direct messages be put in the main listen cue or could be stored separately.

The same goes for group messages. Should they be in the main cue or accessed separately? The idea of groups, in Pigeon, was more fully explored in the system map than it had been previously. Groups would, perhaps, be useful only if a person had a large amount of friends and wanted to broadcast specific messages to only a few contacts. The feature may or may not be useful to a majority of users.

## 6. Next Steps

One potential way to keep exploring these new questions would be to revise and expand my existing script for Pigeon, integrating it with the new system map. A partial implementation prototype allowing for users to test making contacts would encourage further investigation into how to organize the section. Belizeans have not tested the existing roughly prototyped system, as I do not know how to affordably acquire a local telephone number to hook to the VoiceXML system. Business models and the value of Pigeon from a cost perspective must be considered immediately to make in the field development possible. To develop a sustainable business model, it may be beneficial to contact experts in the ICT4D field, who work with mobile phones. All of these explorations will help me continue to explore Pigeon as a potential answer to how accessible communication, such as the phone line, can provide more meaningful connection to other people and be more economical in areas where technological access is limited.

## 7. Bibliography

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