

Audio Wiki for Mobile Communities: Information System for the Rest of Us

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ABSTRACT

In this paper, we describe the idea of Audio Wiki – community information system that can be used with mobile phone. We also present the design and development of MobilED server empowering the Audio Wiki. The MobilED server makes it possible to use MediaWiki server as the Content Management System of an audio information system. User can make a query to the MediaWiki server by sending a search term as an SMS message to the service number. After a while the user will receive a call back from the server and a speech synthesizer will read the content found from the MediaWiki under the search term. During the call users may also add audio annotations to any of the sections of the article. In the paper we propose MobilED server to be the information system of people who do not or do not want to have access to Internet and WWW. We claim that the people with strong mobile phone user culture will probably more likely adapt to the use of mobile phones with communities information systems of their local and real communities than use of Internet and WWW in the same situation.

Categories and Subject Descriptors

H.4.3 [Communications Applications]

General Terms

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Keywords

Mobile tool, Wiki, information system, developing countries, communities, audio information systems

1. INTRODUCTION

Information and communication technologies (ICT) can offer powerful platforms for communities to manage, coordinate and develop their activities. Corporations and companies are no more the only communities using information systems. Internet and the World Wide Web (WWW) have made it possible to set-up simple systems for communities that are gathered around some common interests or hobbies. However, majority of people in the world do not have access to Internet and WWW. It is also possible that number of people will never be interested in to share their interest and hobbies with the global Internet community but would rather use ICT to have dialogue among their existing social circles. We assume that use of mobile phones and audio with advanced server-based information systems may be more usable

in places where there is a strong culture of mobile phones and where Internet and WWW are not widely used.

2. ONLINE COMMUNITIES

According to Langefors (1973), information system is a technological medium for collecting, storing, treating and distributing information. Internet and especially World Wide Web (WWW) has made it possible to develop information systems for new user groups. Online communities, that are sometimes called virtual or digital communities, are examples of these new kinds of information systems that are often made and managed from most part only by the people who also use them. The open nature of Internet and WWW technologies, and arise of number of online service providers with online community tool offering, have made it possible to have pretty self-organized information systems for small hobby and interest groups.

Characteristic for the online communities is that they offer a freedom of a same location and time for their member. The idea to gather everyone who is interested in some specific topic to a single online community to discuss and to share information about it, regardless where he or she is located at is strongly in-built to the idea of online communities. You are also expected to have the possibility to use the online community when it the best fits in your schedule. In the core of all online communities there are the asynchronous communication tools, such as news groups, discussion boards and file sharing services offering freedom of same time and space.

Internet and online communities being global and asynchronous are hard-coded to our culture of using them. Because of this the links between people in the majority of online communities tempt to stay relative weak. The freedom of same time and space results as weak links: you are free to join and leave online community whenever you want.

The nature of being global and having only weak links between the member can be speculated to be the reason why number of attempt to introduce Internet/WWW-based information systems for local geographically defined communities such as villages or city districts have failed. Village or city districts are naturally local – not global. Also with the people you share a physically space, the people you are living with, you rather want to have strong links than weak links.

On the other hand, Internet/WWW being global is also a myth. According to International Telecommunication Union the global Internet penetration in 2004 was 13 and the growth is very

slow. In 2004 the mobile phone penetration was 32% and the growth of the mobile phone subscribers is fast, especially in developing countries. In 2008 the global mobile phone penetration is expected to be more than 50%. (ITU Report 2006). We may expect that mobile communication is becoming – if it is not already – truly global phenomena.

However, millions of new mobile phone users do not have an experience of using Internet/WWW. For this reason we may assume that the concept of global Internet with global self-organized online communities may not break through among majority of people in the world. The possibility to have Internet connection and WWW browser in mobile devices does not change this, as the historical-cultural ways of using mobile devices does not support this kind of usage.

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3. MobilED SERVER – AUDIO WIKI FOR MOBILE COMMUNITIES

Mobile devices – especially phones – are technologies for building and keeping strong links between the people. We keep in our phone directory numbers of our family, friends, neighbours and colleagues. With the people in our phone directory we often share much more than an interest to some specific topic, as it is the case in online communities. In most of the cases the people in our “mobile networks” are also physically relatively close to us. Having strong links and physical closeness is hard-coded to the culture of use of mobile devices.

Nevertheless, the current mobile phone and mobile operator infrastructure does not support people to build their own information systems. With mobile phones we can send group SMS messages and have phone conference, but we cannot search for information, access news or have asynchronous discussions with our peers. We may not set-up a mobile portal for our village or bridge club that is physically meeting every week.

We have developed a MobilED server that is targeted for mobile users interested in to set-up their own audio information systems. The server is designed and developed in MobilED Initiative operating in South Africa and Finland. In general the MobilED Initiative is designing learning environments that are meaningfully enhanced with mobile technologies and services. However, we consider learning and learning environment very widely and include in it people learning in informal setting – in their own communities – out of formal school or educational context. For this reason we try to come-up with design ideas that may empower mobile users to set-up their own information systems.

The current version of the MobilED platform offers an access to Audio Wiki – a collaborative information system. The server makes it possible to use MediaWiki (MediaWiki 2006) server as the Content Management System of audio information system. Mediawiki is a feature-rich Open Source wiki engine written primarily for Wikipedia, the Free Encyclopedia

(Wikipedia 2006). According to Wikipedia, “wiki is a type of website that allows users to easily add, remove, or otherwise edit all content, very quickly and easily, sometimes without the need for registration”.

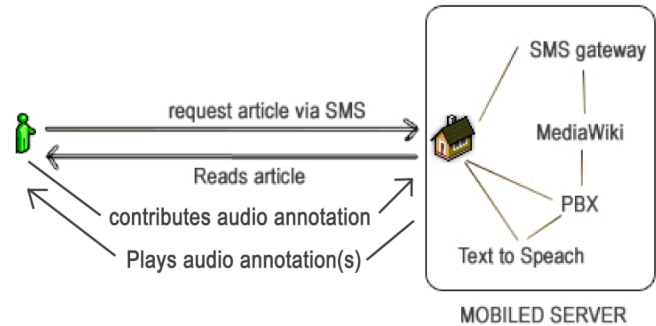


Figure 1: MobilED server use case

The MobilED server installation (see Figure 1) allows a user to make a query to the MediaWiki server by sending a search term as an SMS message to the service number. After a while the user will receive a call back from the server and a speech synthesizer will read the content found from the MediaWiki under the search term. During the call, users may navigate the article with phone’s touch tone keys by either jumping from one section to another or by going to the table of content and choosing a sections from there. During the call users may also add audio annotations to any of the sections of the article. User may push button number three (3) and will receive voice guidelines how to add an audio annotation to the section.

4. SCENARIOS AND PILOTS OF USE

The design of the MobilED audio wiki was started with the scenario of offering Wikipedia’s Encyclopedia content for mobile users. The primary user groups have been schools, teachers and school children in places with little access to learning materials. On the other hand we have considered the MobilED system with Wikipedia content to be a public service in areas with no libraries or other easy ways to access reference materials.

The first pilot was conducted with three classes of grade 11 (15- 16 years) students in school in South Africa. The theme of the pilot was HIV/AIDS. The project followed the principles of Jigsaw cooperative learning technique (Aronson et. al 1978), where each student is a member in two groups. The first kind of group is “home group”; in our case we called them “audiocasting groups”, referring to the idea of podcasting or radio show. The second group is “thematic expert groups”. Each thematic group consists of one member from each home group.

The thematic group discussed different aspects of HIV and used the MobilED server with the English Wikipedia content to search information related to their theme. The results of the information seeking and discussions were then reported back to each student audiocasting groups.

The home groups then discussed the most relevant issues of HIV/AIDS for their own age groups and communicated the results to the whole school community as a audiocasting show that was recorded back to the MobilED server’s MediaWiki. To access the audio encyclopedia and the audiocasting service, each group of the student were given a Nokia 3230 smartphone and Nokia Music Stands MD-1 (speaker for the Nokia 3230).

The pilot showed that the students learned to use mobile phones very fast in the small groups. During the first lesson, we only gave the student groups the mobile phones and the speakers and let them to figure out how they worked. One group found that there was a radio applications and they started to play on the music with the speakers. Other group needed less than five minutes to figure out the radio in their own phone. Students basically learned to use the main features of the phones just by trying them and following each other use. While still getting to know the phones, they found the contact number of “MobilED”, which was the only number saved in the phones. The students only needed a laminated paper guideline how to use the MobilED server to try the service themselves.

Students learned to use the audio encyclopaedia only by reading the guidelines and by discussing with their peers how it worked. Yet, by an accident, we found out that the students were more used to interact with a mobile technology than with tape recorder. In one of the groups, the MobilED service collapsed. We decided to provide tape recorders for students to make the recordings as they already had script-written their show and been ready to record it. When doing this, we noticed that some students were not familiar with tape recorders at all.

During the contextual interviews, the students told that they found the pilot very interesting. Recording own audio was the most exciting part of the pilot. Students searched for information, wrote scripts, played and recorded their own shows about HIV/AIDS. Several groups came up with a “radio play” with several characters whereas some groups made a “rap” about the theme. The number and the groups’ names were shared among all students who took part in the experiment with the purpose that everyone could listen to each other recordings with their own mobile phones.

In addition to the pilots in schools and use of the Wikipedia encyclopaedia we have come-up with several new scenarios of use that will be tested in future. We know that there are many groups and organizations in a huge need to deliver and share information with their mobile devices. For instance communities, mobile teams, associations and organizations could use MobilED. They could publish their “business critical” information on a Wiki, update the “news” –page regularly and have a “feedback” or “forum” page for people to add and listen audio notes add by their peers. Everything would work “on demand”: You send a query term (e.g. “news”) to the server and the server would then call back to you and read the latest news for you. A possible user groups where MobilED could be used are:

- NGO’s (non-governmental organizations) with field workers. MobilED could be used for delivering news, guidelines and for sharing point of views and giving feedback from the field.
- General governmental information services with information about: “health”, “education”, “elections” etc.
- Village information services with information about “water”, “shops”, “clinic” and “forum” for public speech / feedback.

- Nurses taking care of patient in patients’ homes with access to the latest news related to their job and more statistics “book of references”. They could also share their point of views vrelated to their work over MobilED.

5. DISCUSSION

According to the activity theory, learning is a complex result of tool mediated interactions (Engestrom 1996). The theory can help to understand, for example, how a computer or a mobile phone as cultural tool, can facilitate learning and how people are changed and transformed by the tool over time (Hardman 2005). Understanding the cultural-historical conditions of the people using existing technology help designers and developers to come-up with new solutions that are likely taken in use.

From our preliminary studies and experiments with the MobilED audio Wiki, we may claim that mobile phones have the potentiality to become more than a “call and messaging” tool. Mobile phone may become a common technology denominator, due to its wide acceptance among people, in addition to their readily available infrastructure. To become a community platform we need technology that makes it easy for people themselves to start-up and install services for their communities. MobilED audio wiki is a step to this direction.

The next stage of the MobilED initiative will hopefully make us to understand more the use of mobile information systems among groups of people who are not use to use them. We expect to gain results from number of pilot users who will be implementing Audio Wiki services in their own community activities.

6. REFERENCES

- [1] Aronson, E., Blaney, N., Stephin, C., Sikes, J., & Snapp, M. (1978). *The jigsaw classroom*. Beverly Hills, CA: Sage Publishing Company.
- [2] Engestrom, Y. (1996). *Perspective on Activity Theory*, Cambridge University Press, Cambridge.
- [3] Hardman, J. (2005). *Activity Theory as a Potential Framework for Technology research in an Unequal Terrain*, SAHJE 19 (2). Unisa Press.
- [4] ITU report (2006). [online]. What's the state of ICT access around the world? <http://www.itu.int/newsroom/wtdc/2006/stats/index.html>, Retrieved 28th April 2006.
- [5] Langefors B. (1973) *Theoretical Analysis of Information Systems*. Fourth edition, Studentlitteratur, Lund.
- [6] MediaWiki (2996). [online]. <http://www.mediawiki.org>, accessed 3 May 2006.
- [7] WikiPedia (2006). [online], accessed 3 May 2006.