

MobileEssence: Meeting Capture on Smartphones

Anthony Johnson
MIT Media Lab

20 Ames Street

Cambridge, MA
+1 857 204 2305

anthonyj@media.mit.edu

Ted Selker
MIT Media Lab

20 Ames Street

Cambridge, MA
+1 617 253 6968

selker@mit.edu

ABSTRACT

We demonstrate a software system that runs on the Symbian smartphone platform, and allows a group to capture the essence of a face-to-face meeting or remote conference call in a decentralized manner. We show how the users setup a meeting, record elements from the meeting, and are able to continue the collaboration after the original meeting has ended. We show how the information collected during the meeting can be used by members to analyze the collective impression of the meeting, as well view consensus or differences of opinions.

Categories and Subject Descriptors

D.5.3 [Information Systems Applications]: Computer Conferencing

General Terms

Design, Human Factors, Teamwork

Keywords

Mobile Devices, Platform, Shared Displays

1. INTRODUCTION

Meetings are fundamental elements of most organizational structures, providing a central mechanism for coordination and information sharing. The meeting, however, has been characterized by a problem of persistence after the fact – the information is often lost once the meeting is over. As a result, a number of projects have attempted to provide tools to record and transcribe the events in meetings. Most of the research in the field of *Computer Mediated Communication Systems*, however, has not focused on the mobile device. There is an interest in the intersection of collaboration tools with ubiquitous computing, in large part due to the advent of the Smartphone[1].

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee.

MobileHCI '06, September 12–15, 2006, Espoo, Finland.
Copyright 2006 ACM 1-58113-000-0/00/0004...\$5.00.

Meeting systems such as Xerox Collab have given computers to each person in a meeting, but also use a large shared display to display this information. We believe that this type of large shared display can provide benefits for collaboration. Other systems have focused on different environments, such as classrooms[3,4,5], offices[6,7], conferences[8] or other formal environments[9,10].

Most of the work that has taken place with mobile devices has focused on remote collaboration, with the underlying assumption that mobile devices should only be used when larger systems are not available. MobileEssence denies this assumption, and uses the mobile phone as a platform for normal face to face meeting recording.

The Smartphone is a platform we consider to be ideal for the implementation of the type of fact to face interaction and recording. These systems are small, always on, and provide an ideal system to create applications which move and record with the users' normal daily interaction. These systems, however, have not been really used in real-time personal interaction, except as backchannels during meetings when users send SMS to one another. Our system focuses on trying to use the mobile phone as a mechanism to extend the notion of note taking as a basis for the capturing and meta-tagging of contextual information such as sounds, location, topics and people.

2. MobileEssence

MobileEssence is a smartphone-mediated collaboration system for the recording and persisting of meetings. It allows users to record others comments, annotate them, tag them and add comments of their own, resulting in a final product which is a collaboratively generated set of meeting notes. It is currently deployed on the Nokia 6630 Smartphone.

3.1 MobileEssence Architecture

MobileEssence is based on a client-server architecture. The various clients communicate with the central server, which maintains information about which meetings are currently in progress.

The client is written in a combination of Java and C++ for native functions. The java front-end provides the user interface, and the C++ backend provides low-level sounds

recording functions. These communicate through a difference client-server channel using a localhost socket.

3.1 Human-Computer Interface

One of the main goals in the design of the MobileEssence interface was to minimize the distraction of the user by the device. As such, not only does the user interface try to be simple, but also navigable with the minimal number of keystrokes. With this constraint in mind, we were able to reduce the interface to two different inputs modes: one user centric with a list of all participants in the meeting; one with a set of simple recording and annotation functions.

The user is able to switch between these two different views by using the navigation button in one click, allowing for non-visual navigation of the systems function.

In addition, in order to further reduce the user attention required away from face to face interaction, we assume that the users are viewing the results on a shared meeting display.

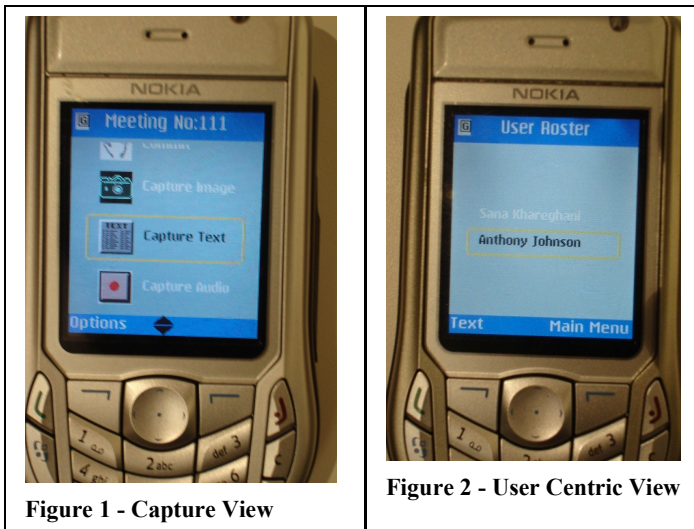


Figure 1 - Capture View

Figure 2 - User Centric View

3.2 Web Client

In order to aid the persistence of information, the MobileEssence system captures all the notes in a central web server. This information can be presented in real-time as a shared display accessible to all meeting participants, or just as a manner of going back and exploring the notes taken. The information is presented in a linear timestamped manner, so that it is possible to see the over all structure of the presentation, information captures, and who was responsible for each piece of content.

In addition, once a meeting has finished, certain elements which have been marked as “follow-up” items are tracked. The user who is responsible for the information must replace audio snippets captured during the meeting with a more descriptive and informative piece of text, otherwise, they will continue to receive emails reminding them to act.

3. REFERENCES

[1] N. Belov, I. Braude, W. Krandick and J. Shaffer. Wireless internet collaboration system on Smartphone. In J. Castro and E. Teniente, editors, *Workshop on Ubiquitous Mobile Information and Collaboration Systems (UMICS)*, 17th

International Conference on Advanced Information Systems Engineering (CAiSE 2005), volume II. Faculdade de Engenharia da Universidade do Porto, 2005.

[2] A. Johnson, T Selker, MeetingEssence: A Mobile Meeting Distiller. Submitted to CSCW 2006.

[3] Abowd, G.D., “Classroom 2000: An experiment with the instrumentation of a living educational environment”. *IBM Systems Journal*, 1999, 38(4). Pp. 508-530

[4] Mukhopadhyay, S. and Smith, B. “Passive Capture and Structuring of Lectures. In *Proceedings of ACM Multimedia 1999*. October 30- November 5, Orlando, FL), 1999, pp. 477-487

[5] Davis, R.C. *et al.* “NotePals: Lightweight Note sharing by the Group, for the Group.” In *Proceedings of CHI 1999*. (May 15-20, Pittsburgh, PA), 1999, pp. 338.345

[6] Moran, T. P., Palen, L., Harrison, S., Chiu, P., Kimber, D., Minneman, S., van Melle, W., Zellweger, P., “‘I’ll get that off the Audio’: A Case Study of Salvaging Multimedia Meeting Records” In *Proceedings of CHI 1997*.

[7] Wiberg, M., “Knowledge management in mobile CSCW: Evaluation results of a mobile physical/virtual meeting support system.” In *Proceedings of the 34th Hawaii International Conference on Systems Sciences*, 2001.

[8] Dey, A.K., *et al.* “ The Conference Assistant: Combining Context-Awareness with Wearable Computing,” in *Proceedings is ISWC 1999*, pp. 21-28

[9] Chiu, P., Boreczky, J., Girgensohn, A., Kimber, D., “LiteMinutes: An Internet-Based System for Multimedia Meeting Minutes”, *Proceedings of Tenth International World Wide Web Conference (2001)*, pp. 140-149.

[10] Whittaker, S., Hyland P., and Wiley, M. “Filochat: Handwritten notes provide access to recorded conversations.” In *Proceedings of CHI 1994*. (April 22-28, Boston, MA), 1994, pp. 271-277