Mobile Group Interaction with Interactive Video on Large Public Display

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1. Introduction

We describe the MobiLenin system, which allows a group of people to interact with an interactive music video on a large public display using their personal mobile phone. The proposed system strives for addressing the challenges associated with interactive public displays. Firstly, how to entice people to interact with them [Brignall and Rogers 2003]? Secondly, while shared displays typically offer greater conceptual power and larger presentation space, they often limit interaction to one user at a time [Paek *et al.* 2004]. Mobile devices, on the other hand, disperse control and access to participating users, though limited conceptual power and smaller screen sizes often hinder dynamic interaction. Thus, connecting shared displays to mobile devices is an obvious way to leverage the best of both worlds. According to Paek *et al.* [2004], interactive shared displays are most suited for certain types of applications, including "collaborative tools allowing multiple people to contribute to a single goal", and "arena applications involving competitive interaction" – the MobiLenin system relates to them both.

2. The MobiLenin system

Motivated by the ubiquity of large displays and mobile phones the MobiLenin system attempts to provide enriched entertaining and social experiences to groups of people. The mobile phone appears suitable user device for our purpose, as it allows anonymous and mobile participation in a joint social public group interaction. Further, the mobile phone provides a reliable return channel for delivering confidential user specific information to the user. The MobiLenin system is realized with a client-server architecture which comprises of three components: the Symbian client application running on the mobile phone, the server application running on a PC, and a large public display showing the interactive video. Figure 1 shows the state diagram of the system.

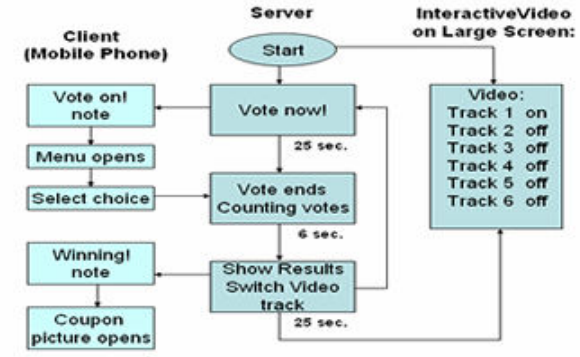

Figure 1. State diagram of the MobiLenin system.

The principal idea of the MobiLenin system is that each user can with his/her mobile phone interact with an interactive music video shown on a public display. The video consists of six linear tracks of exactly the same length but different content (performance styles of the music artist), of which one is visible at a given time. Each user can individually vote for one of the tracks by selecting the corresponding choice from the menu provided by the Symbian client (Figure 2). The server counts the votes and the track receiving most votes is shown. The system provides a lottery mechanism as an incentive for interaction. If at least an adjustable minimum number of votes are cast, then with an adjustable probability a winner is chosen among the users having voted in this round. A coupon displaying a beer or a pizza is sent to the winner's phone (Figure 2).

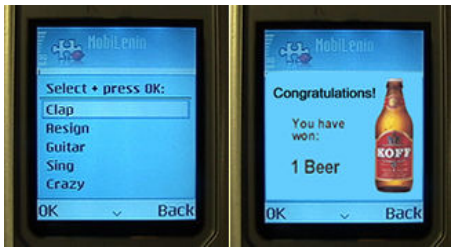

Figure 2. Screenshots of the UI of the Symbian client.

The large display serves as the main user interface for the user's interaction. In addition to showing the music video it indicates the start and end of a voting interval, the voting results, and notifies the audience of somebody winning in the lottery.

3. User evaluation

The MobiLenin system was tested in a real world setting in a local restaurant in Oulu, Finland (Figure 3). The music video looped three times for the total duration of 11.5 minutes with 13 voting rounds. A very clear observation was that people enjoyed using the MobiLenin system in small groups. This was expressed by laughing, happy faces, good mood, and celebrations upon winning in the lottery. People stated that the system was easy to use and regarded personal mobile phones suitable for interacting with the public display. Based on the evaluation the proposed system could offer a new form of entertainment in pubs and other public places. Future work includes exploring different types of interactive content allowing more dynamic changes over time.

Figure 3. User evaluation in a real world setting on-going.

4. References

Brignall, H. and Rogers, Y. 2003. Enticing people to interact with large public displays in public spaces. In *Proceedings of INTERACT'03*, 17-24.

Paek, T., Agrawala, M., Basu, S., Drucker, S., Kristjansson, T., Logan, R., Toyama, K., AND Wilson, A. 2004. Toward universal mobile interaction for shared displays. In *Proceedings of CSCW'04*, 266-269.

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