Chapter 5.2
Mobile Virtual Communities of Commuters

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INTRODUCTION

Commuting forms an integral part of our lives, whether we are commuting for leisure or business. The use of location-based services and mobile computing has potentials to improve commuting experience and awareness. For instance, printed bus schedules have been only recently complemented with online systems to provide bus timing information for the community of public transport commuters. Commuters can nowadays inquire about bus timings by the use of telephony systems and the Internet. However, the information provided to users is statically produced, just like the still in-use old fashion bus route tables, and does not take into consideration delays and cancellations. The next step in the evolution of these schedules must produce live information, track bus movements, and alert commuters of bus arrivals and timings. The experience of commuting using taxis can also be improved beyond the use of telephony, while the most common way of asking for a taxi continues to be by hand waiving. Such improvements are more crucial for commuters that are not completely aware of their surrounding environment, such as tourists and business visitors.

This article envisions the formation of networked organizations of commuters, through the use of mobile and location-based services. We discuss scenarios and use cases of such organizations and propose an example software implementation for the supporting services.

BACKGROUND

Worldwide, the adoption of smart wireless technologies is taking place at a large scale. For example, about half a billion users carry handheld phones that can run Java and in 2005, mobile manufacturers shipped about 400 million Java enabled phones (Mobile Monday, 2005). There are about 150 wireless operators supporting Java and there are 300 to 400 different phone models that can run Java (Mobile Monday, 2005). This huge and rapid adoption of Java-enabled mobile devices is not fully exploited by the industry, with probably the exception of mobile gaming industry. It is the authors' conjecture that software tools that support the formation of mobile networked virtual organizations and communities is a strong candidate for such exploitation.

Virtual Communities

As early as 1999, Palloff and Pratt (1999) realized the need to redefine the meaning of a "community" due the emergence of the Internet. Preece (2000) defined an online community to consist of: socially interacting *people*, performing special roles or satisfying their needs; a *purpose*, which is the reason behind the community; *policies* to govern people interaction; and *computer systems* that support social interaction.

The proliferation of mobile devices and wireless technologies gave users the ability to practice their roles in online communities while they are on the move. Mobility has tremendous effects on the nature of the tools that enable mobile user participation in a community, such as the human computer interaction (HCI) requirements for mobile devices. Kristofferson and Ljungberg (1999) noted that mobility enforces constraints on HCI so that new interaction styles, characterized by little visual interaction, should be created. Mobile users work in a more context-sensitive environment than classical stationary Internet users. Dix et al. (2000) argued that the participation of a mobile user in a community has an impact on the set of awareness tools that should be used in the community. Mobile users can act to a large extent differently from stationary users.

Some work like the one conducted by Grather and Prinz (2001) focused on the cooperation requirements in a mobile Web-based community and demonstrated the importance of metaphors during cooperation. Luff and Heath (1998) indicated that taking into account the mobility factor in collaboration may result in more innovative approaches to designing collaborative technologies and mobile devices. Few researchers like Watanabe et al. (2000) described the use of mobile phones for awareness support between friends and suggested that collaboration awareness stimulates the need for communication.

For the purpose of this work, a *mobile virtual community* (MVC) consists of user members, the majority of which are practicing their roles using mobile devices, purpose, policies, and technologies supporting interaction among members (El Morr & Kawash, 2007).

MOBILE VIRTUAL COMMUNITIES OF COMMUTERS

Scenarios

This section presents two scenarios, which illustrate the formation of MVCs of commuters, the type of users, and the required supporting technologies. In the following sections, we will see that these MVCs can be captured by a simple collaboration model and an example software implementation that enables such MVCs.

Scenario 1: Live Bus Schedule

Maria is a tourist that has just arrived to Toronto and she decides to visit the CN Tower. She notices the problem of traffic jams in Toronto and she doubts the accuracy of the printed bus schedules.

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