Mobile Virtual Communities

Christo El Morr
York University, Canada

INTRODUCTION

The adoption of mobile phone technology on a large scale in today's societies turned mobile phones into a universal tool. Phone companies are deploying 3G mobile technology and planning for 4G; nevertheless, the "killer" applications are yet to be developed. Meanwhile, *mobile virtual communities* (MVCs) are emerging, and their applications are diverse: they range from education, to entertainment and lifestyle. Our vision is that mobile virtual communities will be a major trend and could create a momentum for 3G and 4G mobile phone applications. In this article we analyze the different types of mobile virtual communities, and we draw some research perspectives and applications.

BACKGROUND

Computer-supported collaborative work (CSCW) is a multidisciplinary field of research that incorporates people from computing, sociology, psychology, economy, as well as other fields. CSCW research goes back to the 1980s; indeed the first CSCW conference goes back to 1986 (Grudin, 1994). CSCW research aims to study the different human aspects of a group of people working together (a community). Research in CSCW strives to understand how people collaborate together in groups and organizations, and to analyze how computers affect their way of work and how computing can support collaboration between members of a community.

Online communities emerged in beginning of the 1990s with the development of the World Wide Web. Online communities are part of the CSCW field of research, and they can be considered as a kind of a social system. In general, we can identify two types of *social systems* (Preece, 2000): the organization type and the association type. The organization type is designed for a specific aim, and the association type is formed out of individuals' dedication for shared objectives or beliefs. An *online community* is a kind of social system that consists of: (a) socially interacting people; (b) performing special roles or satisfying their needs; (c) a purpose, which is the reason behind the community; (d) policies to govern people interaction; and (e) a computer system that supports social interaction (Weissman, 2000).

Virtual communities (VCs) are online communities where the meeting place is virtual; in fact, the community members in a virtual community are not in the same physical place, rather they are "associating" in a virtual space that is the Internet. *Mobility* emerged in the 1990s and added other aspects to virtual communities. People started to use mobile technology to communicate, to notify each other about events, and to collaborate on common objectives while they are on the move—mobile virtual communities (MVCs) emerged. Mobility shaped new challenges on the technological level and opened new opportunities on the application level; furthermore it incurred new aspects/changes in the community environment that impact the way people interact together and collaborate. The need to understand the types of mobile virtual communities and to explore their application perspectives is of major importance, and a lot of effort is still to be done in this regard. In the next two sections we will first define the different types of virtual communities and then draw some suggestions on pending questions and research perspectives.

TYPES OF MOBILE VIRTUAL COMMUNITIES

To determine the different types of mobile virtual communities, we will begin by looking into the different research areas in the field. Obviously, an overview of MVC research cannot be exhaustive but mostly indicative of the research directions that are taking place. Indeed, MVC research does cover a wide variety of areas such as the infrastructure needed to enable MVC applications, the diverse applications that can serve mobile users/consumers, and the user needs elicitation and user experience analysis.

Some research projects cover the *technology needs* of virtual communities and are concerned with investigating the right hardware and software technologies that could help in establishing a rich and seamless mobile practice in a community. This research area is involved in establishing the infrastructure requirements such as the network and services design, as well as the platform design (Kaji, Ragab, Ono, & Mori, 2002; Pedro Sousa & Garlan, 2002). It also tackles the user interface usability, the wearable devices' impact on the field, and the opportunities that intelligent mobile agents' technology can offer to the MVC experience. *Work*-related research is more oriented towards determining the impact of mobility on the ways people conduct collaboration at work

and the kind of influence it has on their workflow (Geisler & Golden, 2003). Other research interest relates to *education* and is concerned with mobility impact on the learning experience. Even though e-learning has been around for a while, mobility added a component to e-learning communities that is pushing learners to further their educational experience, since it enables learners to have access to information while they are on the move (e.g., in the case of field trips) (Farooq, Schafer, Rosson, & Caroll, 2002). In this respect, researchers investigate the way in which collaborative and matchmaking tools can support e-learning. Recently we have witnessed a very promising research orientation in the *entertainment* field. One thinks of mobile gaming, which started to take more and more interest in the last few years; and the huge success of the Apple iPod shows the potential of music virtual communities, while emergence of the interactive TV (iTV) as a community support is opening the way for new opportunities (CHI2006, 2006). Another type of research activity is *lifestyle*-related research that strives to organize and simplify users' daily activities. Visiting a city (tourism), collaborating with colleagues (study, work), and organizing leisure time with friends are all examples of such lifestyle communities (Brown et al., 2005; Silverstone & Sujon, 2005). The most recent aspect of virtual communities is in health care. Indeed, *health* collaborative communities such as the COSMOS project are very recent in MVC research. COSMOS, for example, proposes to build a virtual community to support cancer patients (Leimeister, Daum, & Krcmar, 2004), though mobility is not envisaged yet in the project. Research in the health field is very promising (Johnson & Ambrose, 2006). Finally, *security* as well as trust models are still a universal concern in virtual communities and more specifically in health (Sillence, Briggs, Fishwick, & Harris, 2004).

These different research domains suggest that virtual communities have evolved and are now covering diverse areas such as entertainment and health. While virtual communities emerged from the CSCW field of research, it is becoming a standalone field. The complexity of today's environment at work, the lifestyle that is pushing towards more and diverse entertainment experience, the strive of governments to reduce health care cost, the evolution of the tele-worker concept, as well as the strive of communication companies to generate profit (especially after the stock market crash in 2001)—these are all factors pushing research in different areas of interest. We believe that mobility is a major investigation field for the coming years; indeed, young generations are technology savvy, and mobile technology is widespread driving communication demand. The future picture is one where the mobile environment permits mobile access anytime, anywhere to communities of interest (entertainment, health, education).

RESEARCH PERSPECTIVES

MVCs represent a great potential for mobile network companies; indeed companies are searching for the "killer" application—that is, the application that will embrace the 3G and 4G mobile market; we believe that MVC applications can provide potential services that may drive the demand for the next mobile technologies.

Nevertheless, overcoming the screen size is an issue in mobile devices; this fact is fueling research for a "suitable" graphical user interface and the most appropriate way to organize the letters on the keypad. Mobile usability will continue to stimulate research, but beyond the device the usability of mobile virtual communities is still in its infancy since mobile virtual communities are still emerging.

Several research opportunities in MVCs are still ahead. One can think of the health-related (mobile) virtual communities to see the tremendous potential of MVCs: patient support communities and health promotion communities are only two examples of such potential applications of MVCs; we expect the impact of MVCs in the health field to be tremendous.

The study of members' motivation in order to understand participation and interaction dynamics is still evolving. In this context, artifacts such as the value of the contribution of a member is being proposed to enhance participation (Rashid et al., 2006), and longitudinal studies of newsgroup members' behavior are performed in order to draw conclusions on possible tools to enhance community interaction (Arguello et al., 2006).

Questions related to security and privacy are under investigation; nevertheless we believe that beyond the traditional approach to security and privacy, new research directions related to policymaking (in case of health for example) are still not investigated due to the relatively recent emergence of MVCs and the lack of mobile applications in real life.

We believe that MVC research is an emerging field that needs to be tackled in a multidisciplinary way; notably a joint approach from the CSCW area and the Usability area can lead to several innovative solutions. MVC research is promising to lead to innovative applications if intertwined with upcoming technologies such as 3G/4G mobile phones and pervasive computing.

REFERENCES

Arguello, J., Butler, B., Joyce, L., Kraut, R., Ling, K., & Wang, X. (2006, April 22-27). Talk to me: Foundations for successful individual-group interactions in online communities. *Proceedings of CHI2006* (pp. 959-968), Montreal, Canada.

Related Content

Building Applications to Establish Location Awareness: New Approaches to Design, Implementation, and Evaluation of Mobile and Ubiquitous Interfaces
D. Scott McCrickard, Miten Sampatand Jason Chong Lee (2009). *Mobile Computing: Concepts, Methodologies, Tools, and Applications (pp. 3320-3332).*
www.irma-international.org/chapter/building-applications-establish-location-awareness/26726

Progressive Data Synchronization Model for Mobile Devices
Mehdi Adda (2012). *International Journal of Mobile Computing and Multimedia Communications (pp. 1-20).*
www.irma-international.org/article/progressive-data-synchronization-model-mobile/69530

Overlap Sliding Window Algorithm for Better BER in Turbo Decoding
Pushpa Velu, Ranganathan Hariharanand Palanivelan M. (2021). *International Journal of Mobile Devices, Wearable Technology, and Flexible Electronics (pp. 1-25).*
www.irma-international.org/article/overlap-sliding-window-algorithm-for-better-ber-in-turbo-decoding/298660

Mobile Health Systems for Bipolar Disorder: The Relevance of Non-Functional Requirements in MONARCA Project
Oscar Mayora, Mads Frost, Bert Arnrich, Franz Gravenhorst, Agnes Grunerbl, Amir Muaremi, Venet Osmani, Alessandro Puiatti, Nina Reichwaldt, Corinna Scharnweberand Gerhard Troster (2014). *International Journal of Handheld Computing Research (pp. 1-12).*
www.irma-international.org/article/mobile-health-systems-for-bipolar-disorder/111344

Mobile Portal Technologies and Business Models
David Parsons (2009). *Mobile Computing: Concepts, Methodologies, Tools, and Applications (pp. 805-810).*
www.irma-international.org/chapter/mobile-portal-technologies-business-models/26547