Social networks, novel communication applications and needs in mobile contexts

Claudia Brazzola
University of Applied Sciences of Lugano, Dept. of Social and Administrative Sciences
claudia.brazzola@supsi.ch

Abstract

This paper deals with how some communication technologies and applications intervene in modeling and changing the characteristics of our modern society structure. It starts from the concepts of mobility, of strong and weak ties and concludes by analyzing some examples of novel communication applications with focus on applications for mobile ad hoc networks and by presenting some results from studies about the elderly and new technologies of communication, conducted within the MobileMAN project.

1. Introduction

The aim of this paper is to reflect on communication applications, with particular interest in mobile applications of ad hoc networks and the implications that this has on the structure of our modern society. Some of the content is the result of studies conducted within the MobileMAN project that had the focus on the potential consequences of ad hoc networks on users. The MobileMAN project is a EU project of the Information Society Technologies area that aims to design, implement and validate a new paradigm of ad hoc networks, from the technical, economic and social points of view.

2. Modern Social Networks

One's social network is the complex of relationships with other individuals. Strong ties are those such as kin relations and close personal friends, whereas weak ties are loose acquaintances such as those connections made at a party. Following Granovetter's thought [1] we consider both types of ties as vital for an individual and analyze in what way technology and existing or future applications can help maintain and build both weak and strong ties.

3. Mobility of Individuals – New Needs and New Opportunities

3.1. Internet + Mobility = ?

We start from two central concepts that we are identifiable in our society: the increasing importance of the Internet connectivity and the high mobility of individuals. Internet has been changing the way we live our life. The next element is mobility: numerous workers are commuters and many people are rarely at home. Portability of communication means that individuals are virtually able to communicate and connect to networks anywhere and anytime. They must not wait to be in a particular place [2]. Putting together these two aspects, a whole range of needs result. In one of his articles, Rheingold writes "[...] participants in online communities will remain in continuous contact over multiple platforms on desktops and in mobile devices, and will be used to coordinate group activities in the geographic world, thus blending affinity-based and local-acquaintance-based social communication." [3] He speaks of the combination of the Internet world and the mobile world, with which the user will interact continuously.

3.2. Implications for MobileMAN – New Applications / Scenarios: an Experiment with a Wiki Website

Mobile phones allow people to communicate in many ways such as SMS, MMS, e-mail. However, they do not allow expanding social networks – they only help individuals in managing existing contacts. In fact, "mobile communications are organized around known social networks. People call and message people they already know. Most often, you communicate with people who are already in your address book." [4]. This is also supported by data from a study on mobile phones and ad hoc networks currently ongoing at SUPSI. So far, participants in this qualitative study agree on saying that mobile phones

do not help expanding social networks, but maintaining and developing existing relationships.

We believe that there is an untapped market for applications that allow expanding social networks, more than those applications that enable individuals to manage existing relationships. MobileMAN could exploit this opportunity by developing applications that are oriented to this opportunity. An experiment of participatory design, conducted within the MobileMAN project and involving a number of students of Helsinki University of Technology aimed at developing new applications and scenarios for ad hoc networks through group collaboration either using offline medium (paper) or online medium (wiki website [5]). A wiki is a particular type of site whose content is quickly editable through any browser without the need for the user to have any programming skill. The experiment had also the objective to verify the appropriateness of wiki as a tool for participatory design activities in technological and innovative fields. Students created some scenarios of use for MobileMAN in small groups, and in a second round were asked to complete and comment on any three chosen scenarios among the developed. This exercise was within one course of their curriculum in networking and was not compulsory; who participated received a reward for the course final grade. Participation was not too extensive – 27 students (of a class of 112) worked in the scenario developing activity, and only 20 collaborated until the end of the exercise by also filling in a questionnaire, which covered various topics, from an evaluation of the exercise itself to opinions about the future development of ad hoc and infrastructure-based networks. We interpreted this low participation with the abstractness of the concept of ad hoc. The exercise, in fact, revealed also the difficulty to imagine applications that are exclusive for ad hoc networking devices, most likely because of the abstract nature of the ad hoc concept. Being based on cooperation of the users, it relies on a completely new model of low-level architecture. Applications that run on top can be the same as those that run on mobile phones or others. The hypothesis is that innovative applications that empower the user to expand their social network will be more interesting and appealing. Ad hoc networks are infrastructure-less and consequently (ideally) with no use cost for the user. This, however, cannot be the only driving motive that pushes for adoption – especially if the quality of service is not as high as is now the quality of mobile phones applications (voice clarity, network availability). In this vision, applications can play a fundamental role in the adoption process of the technology. We present the summarized content of two scenarios that are particularly valuable, developed by two groups of students.

- **Public festival scenario** – a public festival is an occasion where there are many people gathered in a limited area and it can happen that base stations are stuck because of overload. In such situation ad hoc would be helpful. In the developed scenario, three boys use their MobileMAN device to micro coordinate themselves and to receive real-time information about facilities. Another application in this scenario is a profile manager that alerts the user if there is in close vicinity some user that matches their profile. This is an application designed for extending social networks. Although some aspects of this scenario need further analysis of realistic realization it provides interesting ideas to work on.
- **Where to party scenario** – big cities often offer far too many options to spend free time and it may be difficult to make a choice. This application would combine location information, by informing of opportunities in the user nearby, social networking expansion, by viewing the structure of the network, with for example, friends of their friends, and the digital equivalent of "word of mouth", that is, MobileMAN users post information and broadcast it to the network of persons they are connected to.

SMS has been the killer application for mobile phones with millions of messages sent every day. However, chat-SMS[1] have not so far had great success because "SMS connects people very inefficiently. Those who design future services would do well to search for more efficient ways of connecting people." [6] The last example of scenario could be a response to this need for more efficient applications of sending messages.

3.3. MobileMAN Whiteboard

Within the MobileMAN project, a peer-to-peer multicast application called whiteboard is being developed. It can be considered as a first version of a distributed chat platform for text writing or graphic drawing. Comparing this application with traditional SMS written and sent by mobile phone, we can say that it is certainly interesting, since it places in between SMS and chat. Being a multicast system, it would

[1] Chat-SMS is a system where users subscribe to a chat service (channel) and receive each message sent by all other participants to the channel. The dubious issue in this service is that "it remains to be seen how willing the participants in the chat groups are to pay for EVERY message sent to the chat channel". [7]

increase the limited efficiency of SMS – something that is in line with Saarikoski's thought [6].

3.4. The Elderly – the "Grey Digital Divide"

The elderly constitute a particular target when defining applications and services for specific groups: they have a range of needs that at the moment are unaddressed. MobileMAN expressed the intention to privilege this group of individuals and potential end users of MobileMAN, based on the belief that technology can help elderly people improving their life. Therefore, a study of their relationship with new ICTs is currently being carried out at SUPSI within the project. The study focuses on technologies like TV, VCR, DVD, computer and internet, mobile phone and telecare wristalarm[2]. All participants had a telecare wristalarm installed and were interviewed about their personal and social situation, existing relationships and activities and technology they use in their everyday life. 10 out of 11 interviewed lived alone (which was the reason why they adopted the telecare wristalarm). The initial idea was that for elderly people living alone, new ICTs would have been particularly valuable as they would have allowed a higher communication and interaction with society, even if physically impaired (difficulty to go out and walk e.g.). However, findings demonstrated that the elderly have a very low interest in new ICTs, even if these can help them overcoming their isolation, which is – as said – very often a characteristic of their social and personal situation. As a consequence, it is very difficult to involve this category of people in participatory design activities within MobileMAN. We explained this disinterest towards innovative communication technologies (mobile phone, internet, chat) as related to their particular life path: they lived through war time, and lived generally without all the communication means we dispose of nowadays. This belonging to a different world is very clear in the fact that almost all the interviewed elderly expressed the inability to understand the need for communication and therefore considered as useless communication empowering technologies (chat, email, internet in general, mobile phones). This result confirms findings of Millward [8], who researched the issue of "grey digital divide". This way of thinking about new ICTs, however, is probably only typical of this generation of elderly: in 15-20 years the old people will have a different relationship and opinion about them. The "grey digital divide" might diminish naturally with time.

[2] This is a system created for elderly who live alone and are at risk of falling or have health problems. It is wrist button that can be pushed in case of necessity and that contacts directly the emergency station, which deals with the situation. This system has proven very useful since there is no time loss due to the inability of the person to reach the phone in case of emergency.

4. Conclusions

In this paper we have started from the networked structure of society. We presented two scenarios developed by two groups of students within an activity of the MobileMAN project, one application (whiteboard) currently being implemented by MobileMAN partners that can provide some interesting ideas for novel applications to be developed for ad hoc network devices. Moreover, we presented some results of a study conducted with a number of elderly people on their relationship with new communication technologies. The main results confirm the existence of a "grey digital divide" that might however diminish with time.

5. References

[1] M. Granovetter "The Strength of Weak Ties: A Network Theory Revisited", *Sociological Theory Vol.1*, New York, 1983, pp. 201-233

[2] B. Wellmann, "Physical Place and Cyberplace: The Rise of Personalized Networking", *International Journal of Urban and Regional Research 25*, Special issue on "Networks, Class and Place" ed. Talja Blokland and Mike Savage, Toronto, 2001

[3] H. Rheingold, "Mobile Virtual Communities", 2003, published on www.thefeature.com

[4] H. Rheingold, op.cit.

[5] http://mobileman.projects.supsi.ch/wiki/index.php

[6] Saarikoski quoted in H. Rheingold, "Email, Scale-Free Networks, and the Mobile Interne", 2005

[7] www.m-indya.com/mwap/sms/user_appl.htm

[8] P. Millward, "The 'grey digital divide': Perception, exclusion and barriers of access to the Internet for older people", 2003, published on www.firstmonday.dk

6. Acknowledgments

Many thanks to Prof. Dr. Christian Marazzi and Dr. Jennifer Duyne for reading this article and for their precious comments and suggestions.