Chapter 2.10
Convergence Broadcast and Telecommunication Services:
What are Real Users' Needs?

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ABSTRACT

The aim of this chapter is to present an example of the user-centered design cycle for the development of innovative convergence services and technology of broadcast and mobile networks. We will describe three main phases that encompass our work. During the first phase, we focused on the validation of the scenarios developed as well as requirements for the services portrayed in the scenarios, taking into consideration cultural differences among countries. Then we studied in-depth requirements for specific services (mobile TV and personalized alerting). Last, we performed a usability test in three countries to test navigational aspects, users' understanding of icons and menus, and user acceptance of the mock-up. We will explain how combining different methodological approaches (that is, contextual research, experimental studies, and usability tests) have proven to be very useful in gathering and validating user needs, scenarios, and interfaces for these complex services. In general, we would like to highlight that technology developers have to be careful about the amount of information presented, since users are very sensitive to information overload both for mobile TV and for alerting systems. Once again, for mobile services, less is more.

INTRODUCTION

This chapter will describe the work that has been carried out in the INSTINCT project (2004-2006) in order to define users' needs for mobile broadcasting services (e.g., mobile TV). Our goal was to illustrate how a combination of diverse methodologies during different phases of convergence service development could be very

fruitful, even when the technology is in the early stages of definition.

INSTINCT is a European project with the goal of assisting DVB in realizing the commercial provision of convergent services in mobility with a special focus on the DVB-T, DVB-H and DVB-MHP standards in conjunction with the concept of wireless communications networks (notably GPRS and UMTS) combined with terrestrial DVB broadcast networks. Converged technologies are seen as the new leap forward in integrating the latest advances on various digital mobile radio networks. Nevertheless, the new levels of flexibility that these technologies could introduce raise the complexity for the users and potentially lower the usability, especially for services like mobile TV. Therefore, our studies are critical for understanding and properly meeting user needs for these services.

USER-CENTERED DESIGN (UCD) IN DESIGNING MOBILE SERVICES

The UCD process is a well-known approach to bringing user expectations and needs into technology development, shifting the emphasis in a project from the development of technology "for technology's sake" to the development of systems that support particular user needs in an accessible and usable way. It is widely recognized that there is a big shift from a device-driven world to a service and experience-centered world. Therefore, how the users perceive the service and the emotional impact and pleasure that the service creates and maintains is becoming more and more important.

In recent years there has been an increasing amount of research in applying UCD in mobile services in general, and some on convergence services. Nevertheless, after a review of 102 publications of major journals and proceedings in the area, Kjeldskov and Graham (2003) concluded that there is bias towards building systems and a lack

of research for understanding user requirements for these technologies. Even when user studies are performed, they seem to be a "trial and error" strategy for mobile technology development. For instance, field studies are mostly being used for the purpose of evaluation, instead of for the exploration of use context and users needs to guide technology development. Their data revealed that most (71%) mobile device evaluations were done in laboratory settings. Among possible reasons for this, the authors claim that the data reflects the strong bias towards engineering and evaluating systems in the two fields where mobile human computer interaction (HCI) has strong roots, namely, computer science and human computer interaction. The bias could be due to the difficulties of finding appropriate methodology for

For instance, Kjeldskov and Graham's (2003) data could be interpreted as data collection techniques such as think aloud, video recording or observations being difficult in the field. Because of that, we consider very important to focus mobile HCI research into the development of efficient and well recognized methodologies for gathering information that can inform the development of mobile contexts.

In recent years, we have started to see publications focused on methodologies for users' studies for mobile technology. For instance, Kaikkonen, Kallio, Kekäläinen, and Kankainen (2005) conducted several studies comparing the trade off between effort and quality of the information gathered between laboratory studies and field testing. One usability of a consumer application was tested in two environments: in a laboratory and in a field with a total of 40 test users. Interestingly, they tested an application designed for consumers. Kaikkonen et al. (2005) claimed that

the users may not have any specific and clear goals during their free time, or the goal can be vague, for example, time killing or entertainment. Users of consumer applications can also be more explorative and creative with their actions than professional users. Being explorative and non-task

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