

# Chapter XVII

## Software Engineering for Mobile Multimedia: A Roadmap

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### ABSTRACT

*The abstract should be changed to this new abstract: Research on mobile multimedia mainly focuses on improving wireless protocols in order to improve the quality of services. In this chapter, we argue that another perspective should be investigated in more depth in order to boost the mobile multimedia industry. This perspective is software engineering which we believe it will speed up the development of mobile multimedia applications by enforcing reusability, maintenance, and testability. Without any pretense of being comprehensive in its coverage, this chapter identifies important software engineering implications of this technological wave and puts forth the main challenges and opportunities for the software engineering community.*

### INTRODUCTION

A recent study by Nokia (2005) states that about 2.2 billion of us are already telephone subscribers, with mobile subscribers now accounting for 1.2 billion of these. Additionally, it has taken little more than a decade for mobile subscriptions to outstrip fixed lines, but this still leaves more than half the world's population without any kind of telecommunication service. The study states that this market represents a big opportunity for the mobile multimedia industry.

Research on mobile multimedia mainly focuses on improving wireless protocols in order to improve the quality of service. In this chapter, we argue that another perspective should be investigated in more depth in order to boost the mobile multimedia industry. This perspective is software engineering which we believe it will speed up the development of mobile multimedia applications by enforcing reusability, maintenance, and testability of mobile multimedia applications. Without any pretense of being comprehensive in its coverage, this chapter identifies important software engineering impli-

cations of this technological wave and puts forth the main challenges and opportunities for the software engineering community.

## **ORGANIZATION OF THIS CHAPTER**

The next Section presents the state of the art of research in mobile multimedia. The section “What Software Engineering Offers to Mobile Multimedia?” argues on the need for software engineering for mobile multimedia. The section “Contributions to ‘Mobile’ Multimedia Software Engineering” surveys initiatives in using software engineering techniques for the development of mobile multimedia applications. The section “Challenges of Mobile Multimedia Software Engineering” highlights the main challenges of mobile multimedia software engineering. Some of our recommendations for successfully bridging the gap between software engineering and mobile multimedia development are presented. The last section concludes this chapter.

## **STATE OF THE ART OF CURRENT RESEARCH IN MOBILE MULTIMEDIA**

I remember when our teacher of “technical terms” in my Engineering School introduced the term “Multimedia” in the middle of the 1990s. He was explaining the benefits of Multimedia applications and how future PCs will integrate such capabilities as a core part of their design. At this time, it took me a bit before I could understand what he meant by integrating image and sound for improving user’s interactivity with computer systems. In fact, it was only clear for me when I bought my first “Multimedia PC.”

Multimedia is recognized as one of the most important keywords in the computer field in the 1990s. Initially, communication engineers have been very active in developing multimedia systems since image and sound constitute the lingua franca for communicating ideas and information using computer systems through networks. The broad adoption of the World Wide Web encouraged the development of such applications which spreads to other domains such as remote teaching, e-healthcare, and advertisement. People other than communication engineers have also been interested in multimedia like medical doctors, artists, and people in computer fields such as databases and operating systems (Hirakawa, 1999).

Mobile multimedia followed as a logical step towards the convergence of mobile technologies and multimedia applications. It has been encouraged by the great progress in wireless technologies, compression techniques, and the wide adoption of mobile devices. Mobile multimedia services promote the realization of the ubiquitous computing paradigm for providing anytime, anywhere multimedia content to mobile users. The need for such content is justified by the huge demand for a quick and concise form of communication—compared to text—formatted as an image or an audio/video file. A recent study driven by MORI, a UK-based market researcher (LeClaire, 2005), states that the demand for mobile multimedia services is on the rise, and that the adoption of mobile multimedia services is set to take off in the coming years and will drive new form factors. The same study states that 90 million mobile phones users in Great Britain, Germany, Singapore, and the United States, are likely to use interactive mobile multimedia services in the next two years.

*We are looking at the cell phone as the next big thing that enables mobile computing,*

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