Chapter IX
Context Sensitive Mobile Services

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ABSTRACT

The advancements in mobile technologies make the collection of customers' context information feasible. Service providers can now incorporate context information of customers when providing personalized services to them. This type of services is called context sensitive mobile services (CSMS). Context refers to the environment around customers when there are business transactions between customers and service providers. Location, time, mobile device, services, and other application specific information are all possible components of context. Compared to other types of mobile services, CSMS can fit to customers' demands better. CSMS can follow push model or pull model. Different context sensitive services are sensitive to different context information with different degrees of sensitivity. In the future, CSMS can find good support from data mining approaches to understand customers better. Security is currently an important issue for CSMS.

INTRODUCTION

Due to the fast penetration of mobile phones, mobile telecommunication services are becoming more and more popular. From the research done by Gartner Dataquest (Businessweek, 2005), it is known that there will be more than one billion mobile service subscribers in the Asia/Pacific region. It is expected that the number will reach 1.4 billion in 2009. Research analysts of Gartner Dataquest also estimated that over 39% of the people in China will use mobile phones at that time. In another country in Asia, India, the penetration rate of mobile phones is also expected to

increase from 7% in 2005 to 28% in 2008. The Yankee Group has also reported a growing trend of mobile service revenues from 2003 to 2009 not only in the Asia-Pacific region but also in the U.S. It is further expected that the market for m-commerce will reach $25 billion in 2006. With the mature wireless and mobile technologies, more and more information about the environment that the customers are in can be collected easily and rapidly with higher accuracy. The existence of this type of information can help service providers picture the context of services and context of customers so that they can understand customers' demands better. These types of services, which take into consideration the contextual information of customers, are called context sensitive mobile service (CSMS). According to the studies done by Analysys (2001), the number of people who subscribe to CSMS such as location services will reach 680 million by 2006. It is also estimated that in Europe the revenue from location services will be over 32 billion Euro by 2005 (Strategies Group, 2000).

In this chapter, we discuss the following issues. What is context in general? What are the key elements of context for CSMS? Why do we need CSMS? What is the business model of CSMS? What types of CSMS are there in reality? And finally, what business strategies can be adopted with regard to CSMS. This chapter is organized as follows. First, we give some background information about CSMS by providing the definition of context and the benefits of CSMS. Then we discuss CSMS as a type of information manufacturing system as well as the pull and push models of CSMS. The third part of the chapter discusses the classification of CSMS. We also provide analysis on the relationship between context and each type of CSMS in the fourth part of the chapter in order to find suitable strategies for carrying out CSMS. The fifth part of the chapter is the discussion on the future development of context sensitive mobile services. The last part provides a summary of this chapter.

BACKGROUND

Mobile services are services delivered to customers via mobile technology artifacts such as mobile networks and mobile devices. One characteristic of mobile services is that they can be delivered to customers anytime and anywhere due to the ability of mobile technology. Thus, it is believed that mobile services are highly related to the environment that the customers are in at the time the services are needed. Location may be one of the most important factors used to describe environment. People may have different needs when they are in different places. For example, when a person is driving, what he wants is the direction to get to his destination, whereas when he is in the office what he wants is important information related to his business. Location-based services can be defined as "services that integrate a mobile device's location or position with other information so as to provide added value to a user" (Spiekermann, 2004). However, there are other elements in environment besides location, such as time which is related to "context." In fact, in Spiekermann's (2004) definition we notice the mention of "other information." "Context" may be defined as "any information that can be used to characterize the situation of entities that are considered relevant to the interaction between a user and an application, including the user and the application themselves." Context is typically the location, identification, and the state of people, groups, and computational and physical objects" (Dey, Abowd, & Salber, 2001). This definition actually gives a very complete list of components of context. Since this definition is not provided for mobile services the question still remains: what should be included as part of context for mobile services? Zhang (2003) mentioned that there are preferences of mobile services users, mobile devices, and the wireless network. Rao and Minakakis (2003) suggested that time, reason customers are in the location, means by which customers come to this location, and preferences

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