

# Chapter V

## Developing Mobile Commerce Applications

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### ABSTRACT

The recent advances in wireless and mobile communication technologies enable users to conduct commercial activities anywhere and at any time. In this new environment, the designing of appropriate applications constitutes both a necessity and a challenge at the same time in order to support effectively the movable user. This article investigates the environment in which these applications operate, identifies possible categories of them and proposes guidelines for their development process.

### INTRODUCTION

The exponential growth in wireless and mobile communication technologies, coupled with the impressive mass adoption of mobile phone and the increasing number of users that possess other

handheld devices, such as personal digital assistants (PDAs) and smartphones, pave the way to the extension and evolution of e-commerce to m-commerce.

*Mobile commerce* or *m-commerce* is defined as any activity that is related with a commercial transaction (or a potential one)—an exchange of services or goods for money—and is conducted via wireless and mobile communication networks and uses wireless and mobile devices as user interface. A few of the existing e-commerce services can be successfully expanded to the new mobile environment and brand new services can be built by reason of the distinct attributes of the mobile setting (Durlacher, 2000; Turban, King, Lee, & Viehland, 2004). These special attributes include:

- **Ubiquity:** It refers to the advantage of a mobile device to be available at any time and anywhere, fulfilling the need of both

real-time information and communication independent of the user's location.

- **Reachability:** Holding a mobile terminal, the user can be instantly reached at any time.
- **Convenience:** It has to do with the easiness that the user interacts in the mobile environment, just using a smartphone or a PDA, without booting up a PC or placing a call via a modem.
- **Instant Connectivity:** It relates to the ability of the mobile device to connect easily and quickly to the Internet, intranets, other devices and wireless networks.
- **Context-Sensitiveness:** It refers to the ability of the mobile applications to sense and exploit the context—the information that surrounds the human-computer interaction—in order to offer personalized, localized and generally purpose-suitable services.

In this article we discuss issues related to the development of mobile commerce applications. We describe the framework in which the m-commerce operates and the possible categories of m-commerce applications. We also address the important issues of context and context-awareness and propose guidelines for the development process.

More precisely, in the section entitled "*The Framework of Mobile Commerce*" we present the most important participating entities in m-commerce operations. Regarding the section "*Mobile Commerce Application's Categories*," we describe some of the possible m-commerce application categories. In the section "*The Special Issue of Context and Context-Awareness*," we discuss the concept of context and highlight an important dimension of it, the location. In this section we also define the context-aware applications and the requirements that these applications should meet. In the section "*Guidelines for M-Commerce Applications Development*" we propose

some guidelines for the m-commerce application development process organized in the following categories: (i) management-related propositions, (ii) development process-related propositions, (iii) user-related propositions and (iv) context-related propositions. The section "*Conclusion*" concludes the article.

## THE FRAMEWORK OF MOBILE COMMERCE

Mobile commerce is a complex process and involves a number of participating entities that constitute the m-commerce value chain (Giaglis, 2004). Although an analysis of the strategic goals, the key advantages and the values which these entities share is beyond the scope of this paper; we address them briefly in order to have a comprehensive view of the framework in which the m-commerce operates.

The value chain of m-commerce consists of the following:

- **Mobile network operators (MNOs):** The main role of MNOs is to implement and operate the countrywide mobile networks. They also act as mobile service providers by owning a portal, exploiting the already known billing relationship with the customer.
- **Network equipment providers:** They consist of companies that manufacture the infrastructure and equipment needed to operate a mobile or wireless network.
- **Device manufactures:** The manufactures of all kinds of mobile devices are found under this category.
- **Technology platform vendors:** They deliver the operating systems and microbrowsers for portable devices.
- **Wireless internet service providers (WISPs):** They either provide access to Internet through mobile networks or they

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