

## Chapter 3.1

# A Technological Perspective of Mobile and Electronic Commerce Systems

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### **ABSTRACT**

*The emergence of wireless and mobile networks has made possible the introduction of electronic commerce to a new application and research subject: mobile commerce. Mobile commerce is a promising trend of commerce because Internet-enabled smartphones such as iPhones are becoming very popular these days. People use smartphones to perform daily tasks like browsing the mobile Internet and making phone calls anytime and anywhere. However, understanding or constructing a mobile or an electronic commerce system is not easy because the system involves a wide variety of disciplines and technologies and the technologies are constantly changed. To facilitate understanding and constructing such a system, this chapter divides the system into six components: (i) applications, (ii) client devices or computers, (iii) mobile middleware, (iv) wireless networks, (v) wired networks, and (vi) host computers. Elements in these components specifically related to the subject are described in detail and lists of current technologies for component construction are discussed.*

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## **INTRODUCTION**

The world has witnessed the blossom of electronic commerce in the past. Today, another form of electronic commerce, mobile commerce, is gradually replacing or complementing electronic commerce. Mobile commerce is defined as the exchange or buying and selling of commodities, services, or information on the Internet through the use of mobile handheld devices. The future of mobile commerce is bright according to the following studies:

- According to Gartner, Inc., a market research company, the numbers of units of PCs, smartphones, and cellular phones shipped in 2008 are:
  - 302.2 million PCs including desk-based PCs, mobile PCs, and X86 servers (Gartner, Inc., 2009a),
  - 139.3 million smartphones, which are mobile phones with advanced functions such as PC-like functions (Gartner, Inc., 2009b), and
  - 1.22 billion mobile phones (Gartner, Inc., 2009c).

The number of smartphones shipped is increased fast in recent years and it is a little less than half of the number of PCs shipped. It is expected the number of smartphones shipped will surpass the number of PC shipped in the near future.

- Cumulative sales of smartphones will reach 1 billion units by 2010 (Symbian Limited, 2009).

Mobile commerce is an effective and convenient way of delivering electronic commerce to consumers from anywhere and at any time. Realizing the advantages to be gained from mobile commerce, companies have begun to offer mobile commerce options for their customers in addition to the electronic commerce they already provide. However, it requires a tremendous effort to un-

derstand or construct a mobile or an electronic commerce system because it involves such a wide range of disciplines and technologies. To lessen the difficulty, this article will divide the system into six components: (i) applications, (ii) client devices or computers, (iii) mobile middleware, (iv) wireless networks, (v) wired networks, and (vi) host computers. Since each component is large enough to be a research area by itself, only elements in components that are specifically related to mobile or electronic commerce are explained in detail. Lists of the technologies used for component construction are also discussed. Related research on mobile commerce systems can be found in the article by Varshney, Vetter, & Kalakota (2000).

## **Requirements of a Mobile Commerce System**

A wide variety of technologies are used to build mobile commerce systems. No matter what kinds of technologies are used, the requirements for a mobile commerce system include:

- The system should be easy to deploy and adapt by content providers, telecommunication companies, and handheld device manufacturers.
- The system uses the state-of-the-art technologies.
- The applications can be accessed from a wide range of handheld devices.
- The applications should be easy to use as their counterparts of electronic commerce.
- It should allow end users to perform mobile commerce transactions easily, in a timely manner, and ubiquitously.
- It should allow products to be personalized or customized upon request.
- It should fully support a wide range of mobile commerce applications for content providers.

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