

## Chapter II

# Location-Based Services: Opportunities and Challenges

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### ABSTRACT

*Location-based services are expected to play an integral role in the mobile-commerce domain. Mobile network operators and service providers have the opportunity to add value and create additional revenue streams through a variety of personalized services based on location of individual wireless users. However, strategic thinking in this area is still evolving. Many issues surrounding location data such as ownership and their use by network operators and third parties, privacy concerns of consumers, and business models for these services are not well understood. This chapter provides (1) an overview of location-based wireless services and their related technologies, (2) an examination of the LBS value chain, and (3) strategic implications for network operators and service providers.*

### INTRODUCTION

With the roll-out of 3G networks and related infrastructure, the hype surrounding location-based services (LBSs) is finally beginning to get translated into reality. These services represent a significant development in the mobile business world. These services use location

data of mobile customers to provide a variety of location-specific services. The data and shopping services that can be tailored to a specific consumer's location and time parameters clearly differentiate the mobile experience from the wired experience and open the possibility for creating a wide range of new applications. Unlike many existing wireless data applications

that are merely Internet based, location-based services are specifically based on ability to dynamically locate the user (Kalakota & Robinson, 2002).

The success of these services is critical for mobile operators for several reasons. First, many of these operators have made large investments running into several hundred million dollars in technology relating to determining locations of mobile users. It is logical for network operators to seek returns on their investment through commercialized location-based services. Second, LBSs provide a means to create competitive advantage in an increasingly competitive market. Finally, LBSs represent a viable route to create value and increase average revenue per user (ARPU) through new revenue streams. Current indications are that ARPUs might go up 4 to 5% per year (Faggion & Trocharis, 2004). However, introduction of these services has been slow.

One of the reasons for the slow growth is failure on the part of carriers to invest in resources beyond the basic infrastructure that can enable the full potential of LBSs to be realized. Strategic thinking in this area is evolving, and there is a need to understand implications to different players in the LBS value chain. Key issues such as the ownership and management of location-specific data, transaction and data security, and consumer privacy are still to be resolved.

There are three main goals of this chapter. First, it provides an overview of location-based mobile-wireless services and related technologies. Second, it provides an examination of the LBS value chain and the dynamics within this sector. Finally, it examines the strategic opportunities and challenges for key players in the LBS value chain. The primary focus is the emerging LBS sector in the U.S. market.

## **BACKGROUND**

Spatial and geographic information have been used by businesses for store location and merchandizing decisions since the advent of modern retailing in the early twentieth century. Location and physical proximity were important factors for attracting customers and improving sales (Christensen & Tedlow, 2000). The rapid adoption of electronic commerce seemingly made such location information less important because consumers could shop anywhere in the world without stepping out of their homes. However, the new technologies of location-enablement make location information mission critical in ways that were simply not possible earlier. It enables businesses to potentially offer timely and highly personalized services that are location specific. For the first time, marketers would be able to link existing knowledge of the consumer's identity, financial status, and buying history with the LBS parameters of a purchase including its exact time, place, purchasing behavior, and situational context as it happened in real time.

Mobile location services have evolved rapidly over the last few years. The difference between the earlier services and the new services lies primarily in the generation of location data. The former requires the manual input of location data, such as street intersection or zip code. This approach does not require investment in special location equipment, and generates less concern over privacy issues. However, the weaknesses of such systems are apparent. Consumers may not know their location, and consumer-supplied location information limits the ability of marketers and network operators to proactively offer a range of personalized services (Robinson, 2000). For the new services, the location data is automatically generated and updated by the network or the

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