Chapter 7.22
Location-Based Services in the Mobile Communications Industry

Christopher Ververidis
Athens University of Economics and Business, Greece

George C. Polyzos
Athens University of Economics and Business, Greece

INTRODUCTION

Advances in wireless communications and information technology have made the mobile Web a reality. The mobile Web is the response to the need for anytime, anywhere access to information and services. Many wireless applications have already been deployed and are available to customers via their mobile phones and wirelessly connected PDAs (personal digital assistants). However, developing the "killer" wireless application is still a goal for the industry rather than a reality. One direction for developing such applications points to location-based services (LBSs). LBSs are services that are enhanced with and depend on information about a mobile station's position. Location information by itself is not the ultimate service, but if location information is combined with content, useful services may be developed. These services offer the capability to users and machines to locate persons, vehicles, machines, and resources, as well as the possibility for users to track their own locations (GSM Association, 2003). The focus of this article is the analysis of the most critical success factors and challenges for LBS.

BACKGROUND

In order to show the domains on which LBS may have an impact, a list with the LBS categories,

Table 1. Standardized LBS types and corresponding application domains

Application Domain	Standardized LBS Types
Public Safety Services	Emergency Services Emergency Alert Services
Tracking Services	Person Tracking Fleet Management. Asset Management
Traffic Monitoring	Traffic Congestion Reporting
Enhanced Call Routing	Roadside Assistance Routing to Nearest Commercial Enterprise
Location Based Information Services	Traffic and public transportation information City Sightseeing Localized Advertising Mobile Yellow Pages Weather Asset and Service Finding
Entertainment and Community Services	Gaming Find Your Friend Dating Chatting Route Finding Where-am-I
Location Sensitive Charging	
Service Provider Specific Services	

as defined by the Third-Generation Partnership Project (3GPPP, 2004), is presented in Table 1. Also, based on the information-delivery method, we identify three types of LBS: pull, push, and tracking services (GSM Association, 2003). In the case of a pull service, the user issues a request in order to be automatically positioned and to access the LBS he or she wants. A use-case scenario demonstrating a pull service used broadly in the LBS literature (Poslad, Laamanen, Malaka, Nick, Buckle, & Zipf, 2001; Zipf, 2002) is the following. A tourist roams in a foreign city and wants to receive information about the nearest restaurants to his or her current location. Using a mobile device, the tourist issues an appropriate request (e.g., via SMS [short messaging service] or WAP [wireless application protocol]), and the network locates his or her current position and responds with a list of restaurants located near it. On the contrary, in the case of a push service, the request is issued by the service provider and not the user. A representative example of push services is location-based advertising, which informs users about products of their interest located at nearby stores. In this service, users submit their shopping-preference profiles to the service provider and allow the provider to locate and contact them with advertisements, discounts, and/or e-coupons for products of interest at nearby stores. So, in this case, the service provider is the one who pushes information to the user. Finally, in a tracking service, the basic idea is that someone (user or service) issues a request to locate other mobile stations (users, vehicles, fleets, etc.).