

Chapter 55

Location Based E-Commerce System: An Architecture

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ABSTRACT

Location-based mobile services (LBMS) are at present an ever growing trend, as found in the latest and most popular mobile applications launched. They are, indeed, supported by the hasty evolution of mobile devices capabilities, namely smart phones, which are becoming truer mobile pocket-computers; by users demand, always searching for new ways to benefit from technology, besides getting more contextualized and user-centred services; and, lastly, by market drive, which sees mobile devices as a dedicated way to reach customers, providing profile-based publicity, products, discounts and events. With e-commerce, products and services started arriving to potential customers through desktop computers, where they can be bought and fast delivered to a given address. However, expressions such as “being mobile”, “always connected”, “anytime anywhere” that already characterize life in the present will certainly continue to do so in the near future. Meanwhile, mobile devices centred commerce services seem to be the next step. Therefore, this paper presents a system architecture designed for location-based e-commerce systems. These systems, where location plays the most important role, enable a remote products/services search, based in user parameters: after a product search, shops with that products are returned in the

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search results and are displayed in a map, around the user present location; and services like obtaining more information, reserving and purchasing are made available as well. This concept represents a mix between traditional client-oriented commerce and faceless mass-oriented e-commerce, enabling a proximity-based user-contextualized system, being well capable of conveying significant advantages and facilities to both service-providers/retailers and users.

1. INTRODUCTION

Traditional commerce is characterized by a business relation that takes place in a store or commercial surface, with the physical presence of both client and seller. With such an approach, clients can observe, touch and try products which they are interested in, and ask for advices and place questions to the seller as well. Being a personalized, client-oriented type of commerce, where clients and sellers can become acquainted with, it helps, definitely, to maintain a regular set of clients. However, because usually price tags are only known at the store, clients can be forced to physically visit many stores before closing the deal, in search of the better overall business conditions.

On the other hand, e-commerce can be defined as a mass-oriented business relation that takes place at a distance, without a direct connection between clients and sellers. Questions and doubts are answered by using email or FAQ lists, without prior knowledge of the client profile. However, it allows a worldwide price and conditions consult, which usually makes it cheaper; it is, therefore, a fast and practical type of commerce, because products are ordered at a computer and delivered at the clients address. Security concerns regarding payment and delivery, not being able to experiment products – which is crucial in some business, like clothe – and the lack of a physical place to go in case of product flaw or defect, are the main detractors of this type of commerce. In this kind of commerce price is frequently the main choice criterion. There is no middle ground between these two main types of commerce. A client should be

able to look, feel and try products/services, get answers to questions and have a personalized treatment, but simultaneously knows, in real-time, what are the conditions, prices and location of a given product, using its present geographic location as a search parameter.

Mobile devices are one of the most commonly used electronic devices in the world, with a global penetration rate of 61%, by the end of 2008 (ITU, 2008). Today, it is rather common to find a rich set of technical features and functionalities in mobile devices. In fact, it has become quite ordinary to have devices equipped with a wide range of technologies, adding up to a significant processing capacity, different communication technologies like GPRS (General Packet Radio Service), UMTS (Universal Mobile Telecommunications System), 802.11x, Bluetooth, Infrared and NFC (Near Field Communication), and location capabilities, such as GPS (Global Position System), service providers network, wireless indoor networks and Bluetooth. With mobile devices, namely smart-phones, rapidly becoming true pocket computers (Want, 2009), the support of more complex applications and new services, which include LBMS, is quickly becoming a reality.

Bringing environment-contextualized information and services to users through their mobile-devices seems yet to be roughly explored as an electronic business, regardless of the fact this is quickly changing, considering the set of applications that appear to be boosting within the mobile market in the last months. For instance, those designed for the iPhone platform like Buddy Beacon, EarthComber and LightPole (Communications, 2009; Earthcomber, 2009; LightPole,

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