

# Chapter 1.1

## Ubiquitous Access to Information Through Portable, Mobile and Handheld Devices

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### INTRODUCTION

Use of mobile devices for supporting our everyday communication has become part of our daily routine. Recent statistics illustrate that the penetration of mobile devices in everyday use has reached (and in some cases even surpassed) the penetration of fixed communication devices (ITU, 2004). As a consequence, use of mobile devices for accessing data information also increases, assisted by the rapid development of new technologies especially designed to support multimedia communication. Within the next

years, third-generation (3G) wireless services will proliferate, offering multimedia capabilities such as streaming video (BERGINSIGHT, 2005; Raghu, Ramesh, & Whinston, 2002; UMTS forum, 2005). All of these, combined with the establishment of Internet and portal technology as the standard way for information exchange, entertainment, and communication, have created a new scenery that is characterized by access to data “anywhere,” “anytime,” and by “anyone” (or “any means”). Design issues concerning the particularities of access devices, communication technologies, and volume of information

exchanged are very important in the provision of mobile portal services (Microsoft, 2006).

In this article, we address the issue of providing portal services to users with portable devices such as personal digital assistants (PDAs) or smartphones. We propose a reference architecture for providing mobile portal services, based on the distribution of information between the portal servers and the user devices.

## BACKGROUND

The need for mobile portal services lies in the penetration of mobile devices in the global market. However, the services offered today are not widely adopted by the mobile users. Surveys that have been carried out have revealed that cost, both in terms of devices (such as PDAs) and operation/subscriptions, constitutes a prohibitive factor. Furthermore, complexity has been mentioned as another reason for avoiding such services. Many people have also expressed their interest in more personalized content tailored to their profile, or in having the ability to create their favourites and set their preferences. In addition, users consider access speed as a key factor, meaning that they prefer minimum-step navigation, since they are not willing to spend much time and money to reach the information. Last, but not least, the applications that offer mobile services are not offered by the mobile operators or are not preinstalled in the devices, but are sold by third-party vendors. Consequently, many people are not aware of available mobile services.

Despite the aforementioned impediments to the explosion of Web services offered to mobile users, mobile-enabled information and market will define the near future scenery. Besides, this story bears similarity to how mobile phones pierced the whole world. The transition from generic Web portals to mobile portals should not be only associated with the adaptation of the content to the display size of the mobile devices.

Mobile services should meet the varying needs of a “moving” user. A mobile user may need immediate access to crucial information, or may be in the process of waiting in a queue or for his flight to take off. Furthermore, mobile portals should focus on supporting concrete services for different target groups.

An attempt to organize mobile portal services into categories, according to global practice (GSA, 2002), leads us to the following categorisation:

- **Information Services:** General news, weather forecasts, financial, and sport news.
- **Food and Lifestyle:** Restaurants, bars, music halls, theater, cinema, events list.
- **Travel Services:** Flight/hotel listings, travel guides, maps, position location, and direction guidance.
- **Entertainment:** Online games, horoscopes, and quizzes.
- **Mobile Commerce (M-Commerce):** With real estate, Web banking, shopping, and auctions.
- **Messaging:** MMS, SMS, Chat, e-mail services.
- **Personal Information Management:** Calendars, contacts, photo albums.

The end-user experience is enhanced by the improved interfaces, use of graphics, touch pads, and technologies, such as VGA screens and cameras built into the devices (*Mobile Tech Review*, 2005). Many mobile portals have been launched combining information from the previously mentioned categories (GSA, 2002).

## REQUIREMENTS

The basic idea behind the reference architecture proposed in this article is to overcome the limitations imposed by the handheld devices capabilities (display size, battery) and the cost of

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