

# Chapter 18

## Design and Implementation Approaches for Location-Based, Tourism-Related Services

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### ABSTRACT

*The globally observed recession of mobile services market has pushed mobile network operators into looking for opportunities to provide value added services on top of their high cost infrastructures. Recent advances in mobile positioning technologies enable services that make use of the mobile user location information, offering intuitive, attractive applications to the potential customer. Mobile tourism services are among the primary options to be considered by service providers for this new market. This chapter presents the key concepts, capabilities, and considerations of infrastructures and applications targeted to the mobile tourist, covering data and content delivery, positioning, systems' interactions, platforms, protocols, security, and privacy as well as business modelling aspects.*

### INTRODUCTION

During the last decade of the 20<sup>th</sup> century, wireless data networks have invaded everyday life and have gradually started taking over areas

traditionally considered as being only suited to wired applications. Due to their versatility, wireless telecommunications systems have become a widespread standard, leading to hardware price drops and radical quality increases. Today there exist a bunch of technologies that allow the delivery of information to mobile or wireless devices and

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their users, all presenting different characteristics in performance/ quality, autonomy and cost. These technological advances accompanied by the reach of the saturation level (Ellinger, Barras, & Jackel, 2002; Gruber, 2005; Gruber & Verboven, 2001) in the mobile telephony market pushed hardware vendors and network and service providers into looking for new business opportunities. The needs of tourism-related information provision and services were amongst the first to be considered for new applications in the field of communication devices.

In traditional fixed systems, the location of a terminal and its user was a part of its identity and remained constant for a long period during its lifetime. In this new mobility era, this observation no longer holds: the physical position of the user might be highly variable, introducing a whole new range of issues and opportunities to be taken into account. The use of intelligent systems that exploit the positional information of the client, accompanied by the ability to provide feedback over a wireless medium, can lead to the provision of innovative highly intuitive services that were not available in the near past (Grajski & Kirk, 2003; Kakalettris, Varoutas, Katsianis, Sphicopoulos, & Kouvas, 2004; Rao & Minakakis, 2003; Staab & Werthner, 2002; Yilin, 2000).

But, although mobile telephony networks offer maximum mobility, they are not the only means for providing location-based services (LBS) for tourism. Local fixed wireless networks in their various forms are another of the modern and popular technologies facilitating relevant services. In addition to telecommunication systems and from a technological perspective, there are a wide range of other systems such as global positioning system (GPS) (Dana, 1994; ETSI, 2006; GARMIN, n.d.), or ID tags (Bohn & Mattern, 2004; Tarumi, Morishita, & Kambayashi, 2000) which might have a significant role in the development and deployment of e-tourism applications based on location information.

This chapter presents the technological concepts associated with the provision of location-aware tourism-related services under a service-oriented approach capable of supporting open value chains and to lead financially viable open and powerful communication systems. The rest of the chapter is organised as follows: The “Background” section presents the technological and business background of location-based services; the “Technology Overview” section gets into details of the technological aspects and issues raised in the domains of positioning and data/content delivery, which are fundamental elements of the examined class of services; the section on “Mobile Tourism Services” captures the specific needs and opportunities in the specific application area and presents issues and considerations with respect to integrating the various parts into an open system capable of delivering such services. In the “Conclusion,” technology and market conclusions and trends are presented. Finally, due to the large number of acronyms and the frequency of their appearance, a table of acronyms is provided at the end of the chapter in order to ease reading through it (see Appendix).

## **BACKGROUND**

The application of the above-mentioned technologies and concepts in tourism gave birth to the ubiquitous tourism<sup>1</sup> concept (OTC, 2003), which refers to the existence and access of tourism related services at any place, any time. Although tourism-related services are mostly related to content provision, more applications can be identified. In its entirety, content provision for e-tourism covers a large number of thematic areas: culture, urgencies, transportation, events, and so on. Thus, content might be both temporally and spatially labelled (LoVEUS, 2002; M-Guide, 2002). In addition, information seeking and avalanche-like content provision might guide the user to areas quite outside her/his initial focus areas.

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