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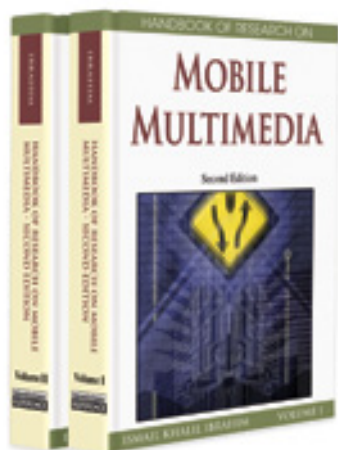


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## Context-Awareness in Mobile Tourist Guides

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## Abstract

Today's tourists expect to get personalized access to tourism information at anytime, from anywhere with any media. Mobile tourist guides provide the user with such a ubiquitous access. The prerequisite for this is the notion of customization, requiring awareness of the applications context together with appropriate adaptation mechanisms. Currently, there is a proliferation of mobile tourist guides, proposing an unmanageable number of diverse functionalities. This chapter sheds light on those approaches by identifying their strengths and weaknesses, thus providing the basis for next-generation mobile tourist guides. For this, an evaluation framework is used comprising detailed criteria for the two orthogonal dimensions of context and adaptation.

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## Introduction

E-commerce and m-commerce have dramatically boosted the demand for services which enable ubiquitous access. Ubiquity offers new opportunities and challenges in terms of time-aware, location-aware, device-aware and personalized services which can be achieved by using customization, that is, adapting an application towards the current context (c.f. Kappel, Retschitzegger & Schwinger, 2003). The roots of customization are manifold and can be found in user interfaces being either adaptive (Good, Whiteside, Wixon & Jones, 1984) or even intelligent and advisory (Carroll & Aaronson, 1988), information filtering and recommender systems (Loeb & Terry, 1992), adaptive hypertext and hypermedia (Brusilovsky & Maybury, 2002) and mobile computing (Altmann, Leonhartsberger, Pichler, Schwinger, Hofer & Retschitzegger, 2003; Oppermann & Specht, 1999). The pre-requisite for realizing customization is that an application is aware of its context (Abowd, 1999). For this, the classical user model employed for personalization purposes (Kobsa, 2001a) should be generalized to a context model adding primarily environmental data in terms of time

(Kleinrock, 1996) and location of access (Großmann, Leonhardi, Mitschang & Rothermel, 2001), together with device (Fox, Brewer, Gribble & Amir, 1996); Rodriguez et al, 2001) and network capabilities (Badrinath, Fox, Kleinrock, Popek, Reiher & Satyanarayanan, 2000).

One of the application domains particularly suited for providing ubiquitous access on basis of customization is the tourism domain, not least since in this way, tourists can be assisted not only in the preparatory phase of a vacation but especially during the vacation itself (cf., Beer, Fuchs, Häpken, Rasinger & Werthner, 2007; Kramer, Modsching, ten Hagen & Gretzel, 2007; Garzotto, Paolini, Speroni, Pröll, Retschitzegger & Schwinger, 2004), allowing access with any media, at anytime, from anywhere (cf., Berger, Lehmann & Lehner, 2003). Such applications supporting the tourist on the move by means of location-based services are often called mobile tourist guides. They provide the tourist, for example, with personalized on-site tourism information about points of interest (POIs) (e.g., environmental and landscape attractions or gastronomy), or assist the tourist in organizing an individual tour. A series of such mobile tourist guides have recently been proposed, offering a wide range of functionalities with respect to context-awareness and adaptation.

This chapter addresses the urgent need for identifying the strengths and weaknesses of existing approaches. For this, the chapter focuses on an in-depth survey of existing mobile tourist guides providing the basis for next-generation mobile tourist guides. In contrary to other surveys like (Baus, Cheverst & Kray, 2005) this chapter deals with mobile tourist guides which are web-based, applying a broad view on context-awareness comprising not only location and device capabilities but also personalization and other context properties like time or network. In the light of that, this chapter applies an evaluation framework comprising detailed evaluation criteria for context and adaptation for evaluating web-based mobile tourist guides.

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## Key Terms in this Chapter

**Ubiquitous Computing:** A paradigm shift where the environment becomes intelligent by integrating information processing capabilities into everyday objects and activities.

**Context Awareness:** Refers to the use of context information (location, time, etc.) within applications so that they can be aware of the user's environment and react to it in a proper manner.

**Location-Based Services:** Services that exploit the position of a user/device in order to provide information that is relevant to the current location of the user or device.

**Customization:** Refers to the exploitation of context factors in order to adapt an application to the current situation of an user.

**Evaluation Framework:** The evaluation framework in this chapter describes how the different mobile tourist guides are evaluated based on certain evaluation criteria.

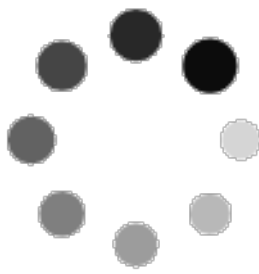
**Mobile Tourist Guide:** An application that support tourists on the move by means of (location-based) services.

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