

**Adaptive Mobile Tourist Guide:  
Analysis, Concept and Business Case**

**Diplomarbeit**

Zur Erlangung des Grades einer Diplom-Ökonomin der  
Wirtschaftswissenschaftlichen Fakultät der Leibniz Universität Hannover

vorgelegt von

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Hannover, den 17. 06. 2008

First of all I would like to thank all people that assisted me during the time when I was preparing and writing this thesis. Especially Prof. Dr. Michael Breitner supported the choice of this innovative research area and was always helpful with his detailed knowledge and creativity. Prof. Dr. Alexis Papathanassis gave insights to the field of tourism and to the practical side of the subject.

Furthermore I thank all the people who supported me and cheered me up during the long time of writing – my parents, Annika, Katii, Lena and Nicole, my roommates. Thanks to James, James and Rachel to find the right English words.

## **1 Introduction**

### **1.1 Motivation and Relevance of Work**

Mobile phones were originally developed for phone calls outside of the home or office. With the transmission of the first SMS in 1992 mobile phones began to serve as a device capable of sending and receiving information. Today mobile phones are personal media devices with a wide range of functions. The mobile phones, smart phones and other mobile devices are multimedia enabled with interfaces to broadband networks. Over and over again organisations and scientists admit that mobile technologies have great potential. Despite the reasoning behind these prospects, many mobile themes face disapprovals. Nevertheless, they are not going through the same crisis as the internet in the beginning of the 21<sup>st</sup> century. Elaborate business models as well as the underlying network and device technologies allow a success of innovative mobile services in the long-term.

Besides the mobility of devices and services, the human being is becoming more mobile and faces a shrinking world. The globalised economy, the improving infrastructure and changing lifestyles have made the number of travels rise. It is therefore reasonable to create M-Business applications for tourists. The keyword is M-Tourism. Tourists can use their phones to order and carry tickets, to pay in stores, to demand weather forecasts or to find nearby attractions. The idea to integrate tourist guides into mobile devices is not a recent one. One can exploit the specific characteristics of mobile devices, as for example the personalisation or the localisation. Due to high data transfer rates, high performance devices and cooperative business models, a broad range of different Mobile Tourist Guides are entering the market these days. As of this year for example, Nokia maps are extendable with electronic guides of Polyglott, WCities and Berlitz.

A lot of research has been undertaken in the past few years. The majority of this research has been in handling the development of intelligent guides adapting to the usage context. CRUMPET is one of the intelligent agent systems which use semantic technology to bypass a dedicated database. These systems use complex algorithms to be as convenient for the users as possible. It is proven that especially the local, personal and technology related context adaptations are improving the user experience. The research concerning CRUMPET was made use of to develop the Adaptive Mobile Tourist Guide 'Heidelberg mobil'. Heidelberg mobil is a website designed for mobile devices that uses GPS coordinates as well as manual personal adjustments to adapt to the usage context.



Figure 1: The Mobile Tourist Guide of Polyglott<sup>1</sup>

Most systems in the market differ a lot in underlying technologies, purpose and prices. There are proprietary guides which are limited to a specific area, like the solutions for single museums, or ones which are expensive, like the MERIAN scout Navigator for 779€. Other guides which are free-of-charge seem to exist as experimental versions or to boost the usage of the mobile internet. There is still a need to analyse the adoption pattern in the market as well as the business design from the companies' point of view<sup>2</sup>. Who is currently providing which kind of Adaptive Mobile Tourist Guide and how do the underlying business models look like? What kinds of effort does it take to offer one of these guides? Is it possible for me to develop an Adaptive Mobile Tourist Guide without financial investments for one specific event? I intend to create and program a 'throw-away' application and distribute it free-of-charge via the student organisation MTP.

## 1.2 Methodology

After a basic section declaring and characterising the fields of E- and M-Business, I introduce the tourism sector. In the tourism market, the business travellers, or the M.I.C.E. segment, are particularly attractive due to their technology affinity. I take a look at their needs, bringing the 6A framework into play. The framework describes several attributes of a destination. Keeping them as well as technology acceptance issues in mind, I introduce Adaptive Mobile Tourist Guides and explain their underlying technological realisations.

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<sup>1</sup> Langenscheidt (2008), pp. 10 - 12

<sup>2</sup> Cp. Papathanassis, A., Buhalis, D. (2007), p. 2

I intend to figure out how these electronic guides are entering the market. Therefore, I draft four sample business models. The models are designed as they are, can or could be realised by several kinds of organisations. I begin with Mobile Service Providers who could integrate these guides into their product portfolio to boost the mobile internet. Subsequently, I regard business models of companies specialised in the IT field. There is in fact a substantial quantity of exemplary businesses launching a wide range of different Mobile Tourist Guides. Next, I ask, how one of the big Tour Operators like TUI could realise a guide. Finally, I analyse which destinations organisations can exploit this kind of business in which way.

The fifth business model is handling the student organisation MTP, offering the Adaptive Mobile Tourist Guide for one four-day event. It is targeting the alumni, which I can group into the lucrative segment of business travellers. In the final part of this thesis I use a system life cycle model to develop the guide. I go through the analysis and design phase to develop a client for smart phones and later-on in the realisation phase I program a reduced prototype. It is supposed to prove the concept of a cost-free ‘throw-away’ application which can be realised by students.

### **1.3 Scope and Limitations**

In this thesis I am regarding several technological realisations of Adaptive Mobile Tourist Guides and business models bringing them into the market. The business models are first of all sample constructs, trying to describe several ways how different organisations can generate profits or reach other goals with electronic guides. I try to find explanations, why they are realised or why not. In this context, I ask for what kind of organisations Mobile Tourist Guides can be useful and why some very well-thought technologies are not implemented. I find qualitative answers and thought-provoking impulses using findings from research articles and theories. The sample business models are simplifying the view on the market and do not intend to include all elements of the real world.

In the second part of chapter 3 I am developing a simple Java client and an html site using Google maps. The development is limited due to the financial restriction, time, programming experience, the target group and event. Furthermore, I am finishing the system development with the realisation phase including a test. The realisation is a shortened version of the conceptualised guide to prove the concept of a throw-away application. I intend to show that it is possible to develop an Adaptive Mobile Tourist Guide with a minimum of efforts. I

compare it with the electronic guides in the market. Nevertheless, the development can only deliver vague forecasts on the adoption. The more so as the available systems today differ a lot in the price, technology and purpose.

#### **4 Conclusions and Applicability of Concept**

The tourism sector is particularly interesting when it comes to M-Business. The focus in this thesis lies on Adaptive Mobile Tourist Guides, electronic guides which adapt to the usage context. There are several underlying technologies. I described the access to stationary websites, offline and client systems. Each has its advantages and critical issues. Websites can deliver actual information, but the user needs a connection to the mobile internet. Offline systems can be used ubiquitously, but the purchase prices are high and the amount and actuality of information is limited. Clients can theoretically unite the advantages of offline systems and websites. Intelligent agent systems like CRUMPET and Gulliver's Genie which are designed to function with a wide coverage and retrieve local information through semantic technology are not yet available. As well as technological reasons, there are no comprehensive business models which allow the implementation of these guides.

To analyse ways implementing Adaptive Mobile Tourist Guides in the market, I drafted four sample business models. Mobile Service Providers can integrate these guides into their product portfolio to boost the mobile internet, but Adaptive Mobile Tourist Guides which exceed the functions of friend finder applications or navigation systems are still in the experimental phase. E- and M-Business companies offer in fact a substantial quantity of different Mobile Tourist Guides. They can take advantage of their core competencies and cooperate with Mobile Service Providers, for example, to distribute the guides. Tour Operators like TUI could offer electronic tourist guides, but their interests are not in line with the purpose of Adaptive Mobile Tourist Guides.

The fifth business model is handling the student organisation MTP, offering the Adaptive Mobile Tourist Guide for one four-day event. It is targeting the alumni, which I can group into the M.I.C.E. segment. Especially the M.I.C.E. segment, or the group of business travellers, is particularly attractive due to their technology affinity, independence and travel budget. The designed prototype is a client, retrieving and providing event relevant information as important contact information, the agenda, a night guide and navigation functionality. The realised prototype is the night guide 'unique', a website containing descriptions of bars, clubs and cafés in Hanover and links to Google maps, which illustrate the position of these locations. As shown with this business case, it is possible to develop a simple Adaptive Mobile Tourist Guide without financial investments and a minimum of efforts.

As a conclusion I can state that the possibility to create and realise low-budget mobile applications will make it more difficult for producers of costly systems to be successful in the market. People are already used to free information in the internet and can access a wide range of tourism related sites today in the mobile internet as well. Business models that intend to charge the users must have underlying electronic guides with a certain value. Systems specialised for biking or hiking which function offline in a wide area, for example, can offer such a value.

For further research I suggest examining the success of the electronic tourist guides in the market and take a look at their actual adoption rates. The planned networks as well as the beta versions of several providers will be able to display their success in the coming months and years. One can furthermore enhance the Mobile Tourist Guide which I developed. Overcoming the timely and financial restrictions, as well as broadening the scope of the application may give more detailed results. Finally, I would find it interesting to examine the adoption when the service is implemented.