

MontaPhone

Location-based mobile hiking narratives

(Extended Abstract)

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Abstract—This paper outlines the development and background for a non-intrusive light-weight location-based mobile hiking story guide. The system comprises a mobile application and a remote media server, and can be used on a large variety of mobile phones available today. Our system allows a tourism agency to put up location-based narratives for points of interest that will be “visible” to users on their current mobile phone on their hiking tour. Equipped with a GPS, users can receive location-based information and listen to geo-referenced narrated audio content about their whereabouts. Referring to our region of interested, the Montafon region in Austria, our system is called the *MontaPhone*.

I. INTRODUCTION

Today, mobile devices are a day-to-day companion for many people during their daily lives, even when they enjoy a vacation in the mountains. Most applications in the tourism domain, however, are very specialized and complex systems, featuring a wide range of information for a user who likes to be well-informed and entertained. Typically this requires special hardware and/or software—a simple cell phone is typically not enough. For the casual user, however, this might not always be wanted or possible. We therefore propose a lightweight tourism application that allows for a casual interaction on wide spread devices without any need for very specialized equipment. The application follows known and acquired means of interaction since it is runs on a common device and uses known interfaces of a cell phone. To this end, we utilize the wide range of mobile phones already in user’s hands today. Our system has to be designed to be available to a maximum of users and thus, a maximum of mobile phones.

The MontaPhone is a small easy-to-use application that runs on mobile phones. Via an of-the-shelf external or internal positioning receiver, a user’s current position is constantly compared to a list of included points of interest (POIs). At any time, the user can at a glance get an overview of all POIs in his or her vicinity. On approach to a POI is signaled to the user who can then proceed to look up information about the POI in question. Narrated prepared audio information is available on a media server and can be listened to through the application dialing the corresponding number and initiating a

phone call. In our scenario, the user can carry device all the time in the pocket and can be sure to be alerted if he or she gets near a POI thus generally having the hands and eyes free for hiking and enjoying the surroundings.

II. TOURISM RELEVANCE

Today, conventional tourism uses techniques such as numbers at signposts to refer to additional information. This can be then a number on a printed map but it can also be a phone number that can be called at this specific location to receive more detailed information about the spot. However, sign-posting can be the solution for only a limited number of locations as the effort is high to maintain and even extend them on a large scale. In addition, they refer to information that is the same for all visitor—any personalization towards special interest and target groups becomes even more difficult. Therefore, we aim to introduce a virtual sign-posting to the individual user. The signposts are hence geo-referenced virtual points that refer to location-based information. Whenever a hiking tourists bypasses the spots of interest he or she will be informed non-intrusively about the available information. The tourists are offered phone numbers in the display that, if called, let the user listen to narratives about the tour. The light-weight MontaPhone combines location-based techniques with a familiar device and the familiar task to phone.



Fig. 1. The application in action on user’s mobile phones

The presented solution appeals to a large number of users who can use the application just on their personal mobile phone. This is expected to increase the general acceptance of mobile hiking assistants. Since the route a user is on will most likely be one that is properly declared by signposts or arrows brushed or painted on rocks along the track a full navigational aid is not necessary and touristic aspects come into focus. Still, within a larger frame of development, this application is but an intermediate step towards deploying a full-scale PDA application for those users who demand a full multimedia experience while on the hike.

For family-oriented hiking tours, mobile devices might still be an unusual sight as seen in Figure 1, but we are confident that this will change in years to come.

III. SYSTEM DESIGN

Based on our research background in mobile applications and context-aware and multimodal interfaces, we developed a lightweight mobile phone hiking assistant application. We used selected modules of our mobile application development framework [1][2] and adapted it for use on a Java-enabled phone. Complementing existing approaches of accessing broadband networks [3], the application relies on standard GSM phone services. Employing the Mobile Java (J2ME) Bluetooth capabilities, any mobile phone equipped with it can be used to query an external positioning receiver for current location. For the growing number of mobile phones with an integrated GPS-receiver the application can utilize that directly as well.

The content design provides general descriptive information for each point of interest as well as narrative audios giving background information about the point of interested prepared by a professional speaker. The mobile application comes equipped with POI metadata and initial content already on the phone to allow looking up local viewpoints and proximity detection. Once more information is desired, the POI's associated phone number within a telephone server can be dialed for audio content. The approach of initially bundling the POIs with the application eases the deployment for both user and service provider. Download and installation of the application can be done by PC-based transfer or wirelessly over-the-air.

With the inherent ability of a mobile phone, it is very natural for a user to use it to initiate a voice connection. Using the telephone metaphor inside the application can be an interesting way for media distribution, especially for heterogeneous information sources such as small packets of general information and large audio contents.

The system forms a tiny unobtrusive companion that employs different modalities to actually meet the users in the concrete situation of hiking and allows them concentrate and enjoy the tour by still informed. Then the users can actually decide if they accept the offer for further information by the MontaPhone or just walk and talk on.

Current GPS-Receiver work at much improved accuracy; still, some areas prove difficult even for current technology such as dense forests. We are hopeful that this situation will

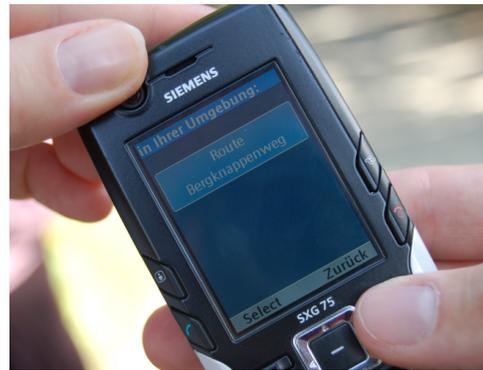


Fig. 2. Screenshot of the application showing one POI in the vicinity

improve once the european satellite system Galileo is up and running. Even with no exact position available, the application can fall back into a mode where only basic information is displayed.

Mobile phones hardware is being improved and enhanced continuously and we expect positioning receivers to be integrated in larger numbers in the years to come. Similar to digital cameras, which have proven to be a commercial success, positioning will gather momentum and enable a multitude of interesting new applications for everyday use.

The full paper will elaborate further on design challenges and demands and also explain aspects of the client-server collaboration. We will also present the results of our first in place evaluations of the system and the experience made both with the hardware software but also with the test users. Relevant related work in the field will be discussed.

IV. CONCLUSION

We have shown how development of a lightweight location-based can be used to increase the awareness of their vacation area for tourists by using known and familiar devices and metaphors. The application has low requirements wrt the device and enables though the user to easily explore his or her whereabouts. Reaching casual and experienced hikers alike, the MontaPhone application is a new and innovative way to easily retrieve in-depth spoken narratives just on the way.

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