

# Location-based and Personalized Information Services for Spas

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## 1 Introduction

In recent years a new form of healthcare tourism evolved. Tourists spend their holidays at a spa and receive massages or take mud-baths. The kind of treatments are numerous and include classic mineral springs, aim at detoxification, or apply modern Thalasso therapy. While seeking mainly recreation, tourists spent their spare time for multiple activities within the spa or in the nearby environment.

As many people obtaining treatments do not come from the vicinity their knowledge of leisure facilities and special events varies and is strongly dependent on their experience and the information offered by the wellness-centre about local destinations. Destination management includes marketing material such as brochures, pamphlets, street advertisement and more recently online resources accessible via the world wide web. Guests at a spa tend to be overwhelmed by the multitude of material. The main drawback of paper-based information delivery is its static nature hence not permitting to address people personally. While abandoning paper-based material, we aim at emphasizing individualized online information, provided mainly through mobile phones.

To provide individualized information, potential users can be identified by a number of attributes. The two main groups are patients attending a cure or rehabilitation and tourists being on holiday and thus interested in offers of the spa. Given these two user groups temporal constraints about the attendance of patients and tourists can be derived (see section 3 for details). Many patients are elderly people and hence may experience some form of print disability especially in relation to mobile phones [1]. Previous research revealed that the paradigm of “one document for all” (as is inherent also to paper-based information) is not directly suitable for the heterogeneity of print-disabled people [4]. Thus all content delivered by mobile devices implicates an added value only if it becomes accessible through adaptation.

The following section describes the three main usage scenarios. Additionally, examples are given for each of the scenarios. Personalization issues are covered in section 3. The technical architecture is then presented in section 4 and finally a conclusion is given in section 5.

## 2 Service Scenarios

The MEAD project arranged with a spa carrier in northern Germany examines new information delivery channels dealing explicitly with the problem of which information to deliver when and how. A location-based MMS push and pull service in combination with a web-based portal is developed offering individualized information under consideration of temporal constraints. Special geographic map-based information must be prepared because the service is mainly intended for pedestrians.

Two main services are offered by the information system. Firstly, a web portal is developed delivering content for mobile devices. The portal serves as the main information source for patients and visitors of the spa thus delivering information about healthcare offers as well as events and special occasions in the near environment. Secondly, a MMS-based pull and push service is offered providing personalized and location-based information. The difference between the services is described subsequently.

*Scenario 1 (single pull):*

Using single pull services the user sends a SMS with a key word to a given service number. He then receives information associated with the key word and his current location either by SMS or MMS. For example consider a user who is located within the range of the information portal and who wants to know the nearest restaurants. He sends a SMS containing the key word “restaurant” to the service number. Based on the user’s current location a list of appropriate restaurants is then send to the him via SMS or MMS.

*Scenario 2 (continuous pull):*

Using continuous pull services the user gathers the designated information via a special web portal allowing the access via mobile phones. The portal offers information for tourists edited with special regard to the current location of the user. Considering the previous example, the user browses the portal and accesses the link “restaurant”. After determining the user’s current location a list of appropriate restaurants is presented. Additionally, geographic information is offered, i.e. the route to the restaurants from the user’s location.

*Scenario 3 (push):*

Using push services the user’s location is tracked permanently. If the user enters points of interest (i.e. touristic locations) a MMS is automatically generated and send to the user’s mobile phone. The points of interest are determined based on user preferences. The user can decide if additional information is necessary because links to further resources offered by the portal are included within the MMS. Examples for automatically generated information are notices for events like a guided museum tour or special offers by restaurants.

### **3 Personalization Issues**

As mentioned previously in the introduction users can be divided into two main groups namely patients and tourists. Patients normally attend the spa for at least two weeks and four weeks at maximum. During the first two to four days patients tend to orientate themselves at the spa while searching the places where treatments and therapies have to be attended. After patients gain routine with the schedule of treatments they explore the near environment and hence need new orientation concerning geographic aspects as well as information about events and special occasions. The information requested by patients depends on these two phases during their attendance – an initial orientation phase followed by an exploration of the near environment with the aim of making use of spare time. Because many patients are elderly people and hence may be afflicted with print disability the information must be prepared for an accessible presentation. One of the main goals is thus the development of accessible MMS formats. Such formats depend on the user profile and can contain settings in font style or background contrast.

Tourists residing at the spa impose slightly different temporal constraints on the information delivery. The period tourists stay varies greatly – starting from one or two days (weekend) and ending with two full weeks of holiday. Regarding the short period of a few days at maximum, tourists need information delivered instantaneously about special events and occasions. At this point no orientation phase can be incorporated – the user must be provided with all necessary information at once. Regarding the long period with at least on week of attendance a division into two phases similar to patients can be conducted.

Besides the temporal constraints another important difference of the two user groups must be taken into account. Patients normally attend their treatments and therapies solely and receive visitors from time to time. To build personalized information for patients exclusively the profile of the patient must be taken into account. In contrast, tourists normally use the spa for holiday together with their family or friends. Regarding for example families, also information about events and special occasions for children may be important. Thus the service cannot rely exclusively on the profile of one person but further information must be taken into account.

When dealing with personalized information one has to consider privacy and security issues [6]. The user data must be protected from external access. Furthermore the gathered data must not be used for purposes other than necessary for the information system including for example marketing objects of unrelated business.

Despite parameters derived from the user profile the current user's location must be taken into account. If a user requests information about near restaurants the system must not consider restaurants that lie outside the distance the user is able to pass by feet. This distance again depends strongly on parameters delivered by the user profile, i.e. if the user has certain disabilities that would restrict his mobility.

## 4 Technical Architecture

The basic technical architecture developed for the MEAD project is presented in Figure 1. The localization of users is realized by tracking the corresponding mobile phone. For GSM networks the localization can be realized by using its LCS (LoCation Service) [2]. When a user requests information, his location and personal profile (through an identity management like P3P [5] or using EPAL [3]) are taken into account to provide personalized and hence more suitable information. The portal additionally offers visual map-based applications that show the user the route to the destination of the chosen event or location.

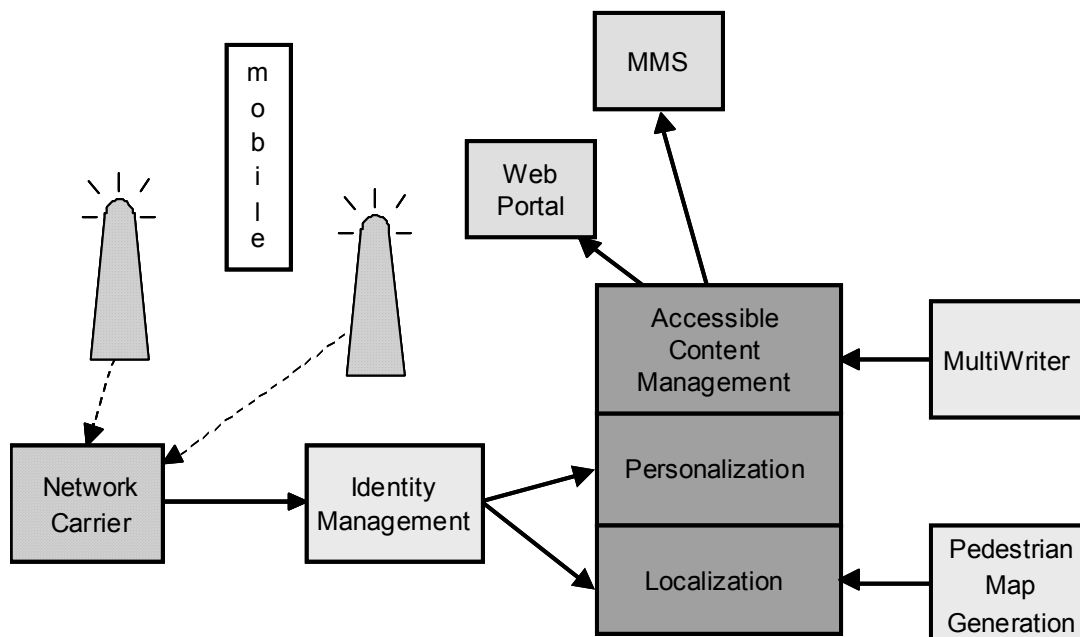


Figure 1: Architecture of the Information System

The personalization depends on an identity management incorporating data available at the spa carrier. This data serves as a basis for the generation of presumptions about the person's behaviour. Examples include the distance the person is able to pass by feet or certain preferences about events and special occasions, i.e. people using a wheelchair might not be interested in a dancing class. Further data can be gathered during the attendance of the user thus providing a better basis if the person visits the spa the next time.

The MultiWriter application is an authoring tool based on previous work (see [7] for details) allowing non-specialists to create enriched multimedia contents. To give an example, restaurants can use the application to create their own offers and advertisements when planning special events. MultiWriter assists authors with the modelling of content that can be individualized for the need of heterogeneous user groups (note that the actual personalization of the content is processed automatically by the system).

## 5 Conclusion

This position paper describes the basic concept and architecture for a location-based information service for spas. The localization is realized by tracking the mobile phone of the user which additionally serves as the main device for receiving information. The personalization is done by analysing and evaluating the personal data acquired by the spa carrier. At this point special information about the person must be taken into account to provide suitable information, i.e. a rock concert may not be suitable for elderly people but a classical concert certainly is.

The personalization for patients attending treatment at the spa is temporally divided into two parts, namely an initial orientation phase and a subsequent phase where patients explore the near environment and hence need information about suitable events and special occasions. The personalization for tourists spending holidays depends strongly on the period of time they attend at the spa. If tourists only spend a weekend no orientation phase is provided but quick information about events is offered. In case of a longer stay the previously mentioned two phases are applied.

By incorporating a personal profile as well as the location of the user a sophisticated information service is built delivering individualized and hence more accessible content for heterogeneous user groups. However, privacy and security considerations must be taken into account. Because almost all mobile phones available at the market support the MMS standard, a broad range of content can be prepared to be appropriate for all users. Main goals of the MEAD project are therefore the developments of accessible MMS formats and authoring tools facilitating their design. Authoring tools enable multiple content providers preparing information and thus participating in creating the information space.

## 6 References

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