P-023

THE ROLE OF MAPS IN WEB- AND MOBILE COMPUTER-TOOLS TO SUPPORT TRAVEL PLANNING

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BACKGROUND AND OBJECTIVES

Within the framework of R&D-project, a web-based travel planner is optimized aimed at integrating individual requirements into the planning procedure. The main component for interaction is a map which enables users to access interesting locations (e. g. POI) for the trip and to plan a route. A challenging point is to consider individual requirements of users as much as possible in the planning process. The system's conception is as follows: The user plans the trip in advance using a web-based system. After the journey has been started, changes can occur during the trip. To ensure users support even in such situations, a mobile component of the travel planning system was developed. It uses the original plan of the traveller and enables users to modify the original plan wherever and whenever needed.

A WEB-BASED AND MOBILE TRAVEL PLANNING SYSTEM - APPROACH AND METHODS

The goal is to optimize a smartphone-based travel planner in terms of individualization, and context-sensitivity (Pundt & Spangenberg 2010).

Mobile tools provide only small displays. This has consequences for the visualisation of maps. The web-based travel planner in its basic form is shown exemplary in figure 1.

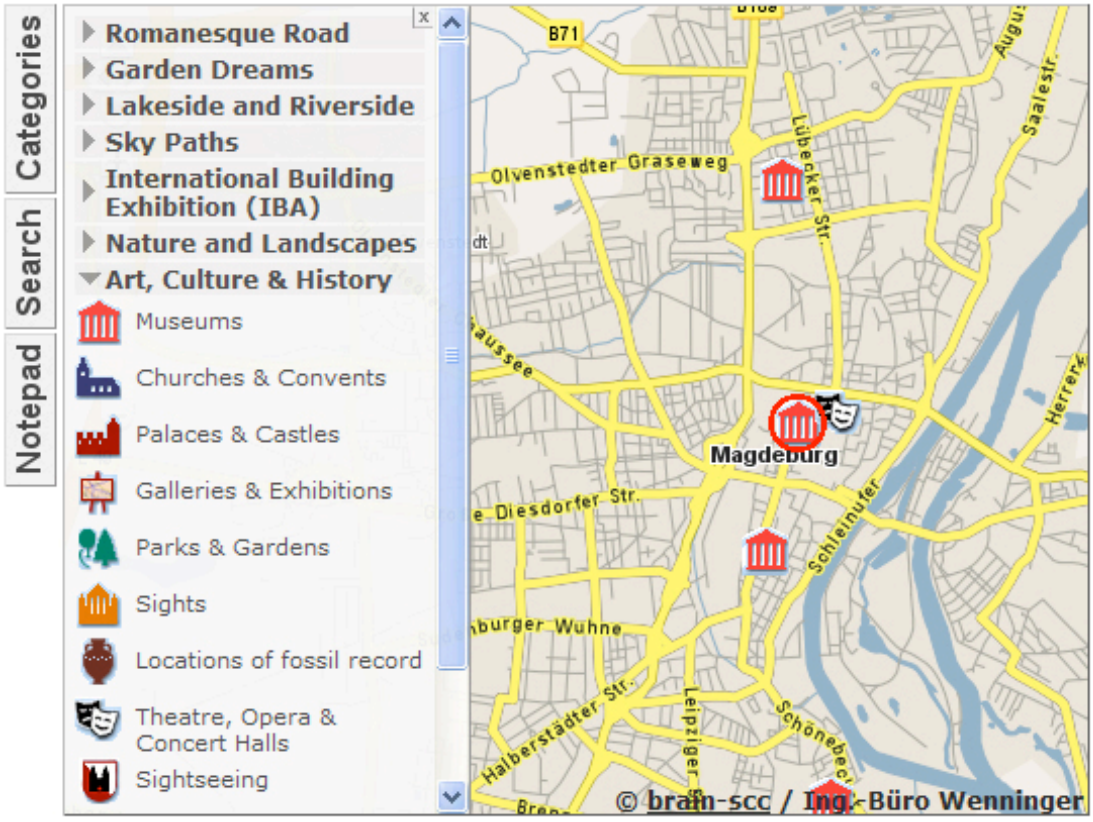

Figure 1: The multi lingual travel planner as web-based system.

The web-based application offers a map, textual and symbolic information. The smartphone-based component, however, has limitations concerning display size and other hard- and software specific properties (Figure 2).

Figure 2: The mobile travel planning system, running on a Smartphone under Android OS

For the mobile system, context-sensitivity means to detect and provide information close to the current location of a user. Such information is often offered unexpectedly to users, as described in the following example:

A user has planned a hike using the web-based travel planner. The trip information has been transferred to the mobile component. The mobile system shows the hike as planned originally. It contains a GPS receiver, and possibly other sensors, e . g. an air pressure sensor. During the hike, the system detects a sudden decrease of air pressure. It evaluates this as possible weather change, a rapidly approaching bad weather front, thunderstorm, or alike. The system provides a warning and the user can react, e. g. ask the system to get back to the hotel on the shortest path. However, the mobile system enables users to ask for support to develop alternatives.

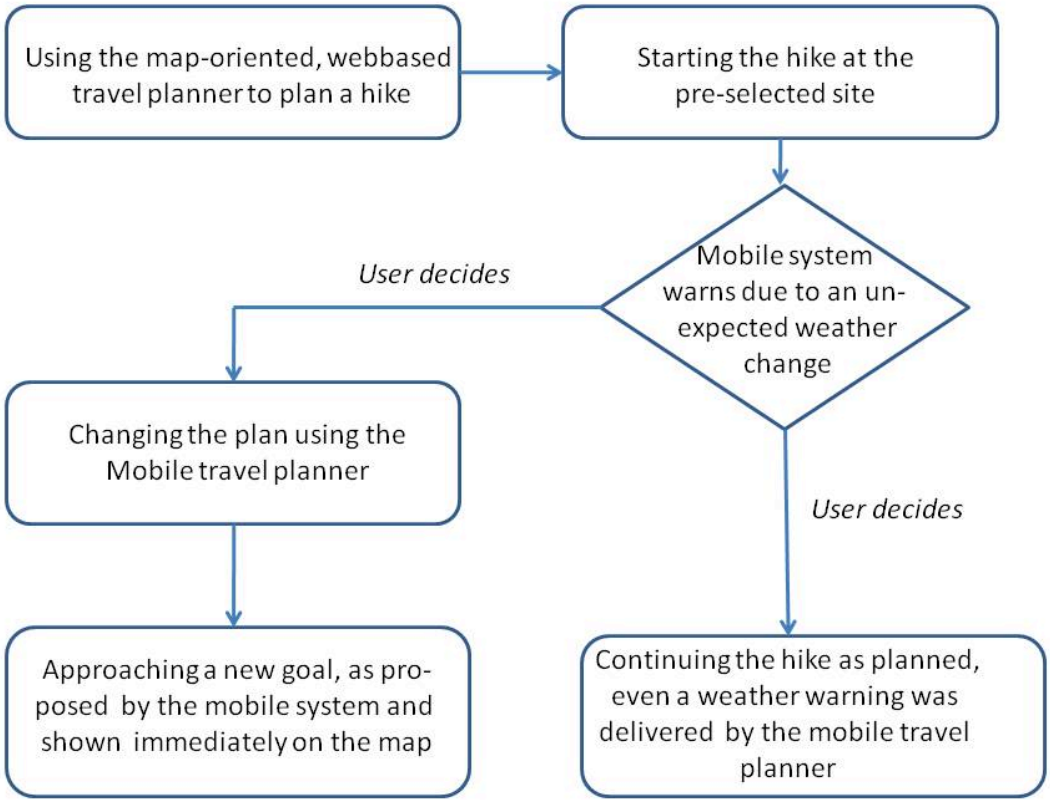

Figure 3: An exemplary workflow: The mobile travel planner supports users during their trip.

CARTOGRAPHIC IMPLICATIONS

"Although cell phones and other small mobile devices can pack a lot of usefulness into a small package, miniaturization does nothing good for the visibility of their displays." (OptoIQ 2003). The originators of the latter citation meant the visibility concerning the exposition to sun light, shadow, etc. However, it can also be interpreted in terms of the visibility of content which is displayed. Ogg (2009) presents a typical navigation app for a smartphone based on Google Android (figure 4); the question is, if such maps satisfy users in general. Those maps often lack the characteristics of "good maps". The consideration of cartographic rules and principles is often not done properly (Kraak 2002; Richter & Duckham 2008).

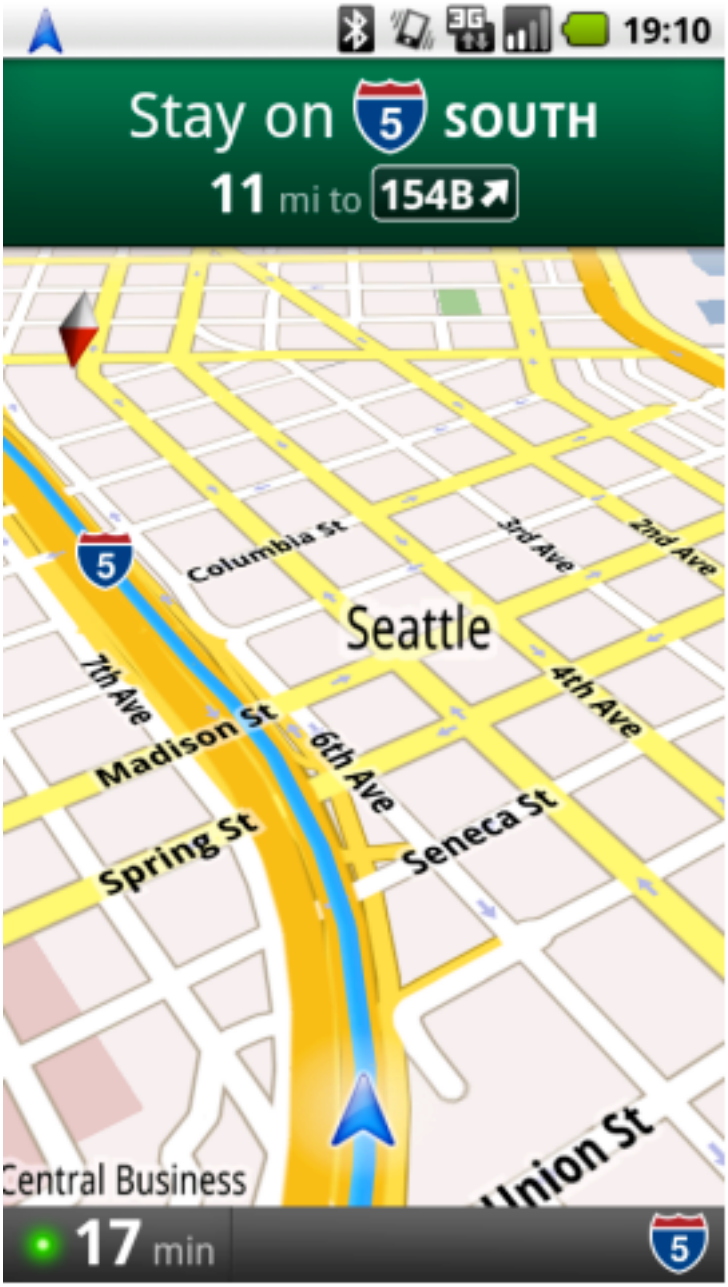

Figure 4: A typical navigation application (Ogg, 2009).

One of the possible ways to deal with the map design is to simplify the maps according to the user's aim and cognitions in order to reduce the unnecessary map information (Ulugtekin & Dogru 2008). These authors discuss the following cartographically relevant issues in connection with small displays of cell- and smartphones:

- Point-, Line-, and Area symbols
- Lettering
- Colour & Texture
- Legend

The goal should be to consider such map elements in the development process for the mobile app, and/or to design the application as intuitive as possible.

CONCLUSIONS AND FUTURE PLANS

The main option for the mobile travel planner is to reduce information without risking interpretability of the maps. The decision, which information is or is not relevant, is dependent from the user's context, and therefore difficult envisaging a flexible, individualized mobile app. To find adequate solutions in R&D in

this field of web-based and mobile, spatial applications, is one goal in a new project ("KOGITON") that will run 2011 - 2013.

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