Initial Draft: Annotated Bibliography

Topic: UI/UX

**Beul-Leusmann, S., Samsel, C., Wiederhold, M., Krempels, K., Jakobs, E., & Ziefle, M. (2014). Usability Evaluation of Mobile Passenger Information Systems. *Design, User Experience, and Usability. Theories, Methods, and Tools for Designing the User Experience Lecture Notes in Computer Science,*217-228. doi:10.1007/978-3-319-07668-3\_22**

This conference paper evaluates the design of an intermodal passenger information app. The authors built an app which was loosely based on principles of gamification, specifically in the way that it made extensive use of navigation aids. The app was tested by volunteer users, and evaluated using a questionnaire.

*Description of app design*

Information is given according to the situation. Users only have information to reach the next target to keep the user focused on the current objective. The app has three main views: planning, selection of route, and navigation/assistance.

In the plan view, users can select their current geolocation to begin their trip. There are two modes: to plan a route, or to reschedule an active trip. Selection view displays possible itineraries as a table. Assistance view - trip is segmented into steps, in map view. Progress and position markers on the route are displayed. Users follow a ‘compass’ functionality, guiding the direction of their route; each next step (eg, name of street while walking) is displayed, as well as estimated distance. A progress bar shows how much of the journey is left to complete.

*Description of evaluation method*

Users were given three tasks, to complete each using the test app and another established app. Tests were carried out both in the lab, and in the field. Each user used both apps, and then answered an evaluation questionnaire. Half of the testers used the test app first.

*Results*

The prototype took 14 seconds longer than the established app to carry out the task.

The minimalist design was appreciated by users, as well as the door-to-door routing functionality, and the use of icons.

Some users criticised a lack of information; one user wanted to be able to see all steps, rather than one at a time. Other negative comments mentioned missing features (techincal problems) or missing information; one female participant said, *“I had the impression that [the DB Navigator] retrieves more [results] with less information than the prototype. It suffices to insert a street name and it detects the street in the correct city [automatically].”*

*Conclusions*

The study concluded that users had certain expectations of the app. They expected the app to use their actual position when calculating routes, and to offer assistance with directions as well as information on routes. For walking modes, users especially appreciate the visual aids given in each step, and the small amount of information; however, users seemed to prefer having the option for additional overview functionality - that is, preferred a large map or list view as well as a detailed breakdown of steps. The authors raise the question of the extent to which users trust information apps.

*Evaluation of paper, potential application*

This paper gives a very general description of design guidelines; results and insights are descriptive, rather than correlative or experimental. The test group was small, and there are limited details on the two apps used in the study.

This paper is useful for our project in:

* Thinking about the amount of information that users want. Too much will overburden our users, but they may not trust the app if it offers too little.
* The app design is interesting in how it focuses heavily on assistance in navigation, and offers lots of detail. This is very useful in building a ‘multimodal’ transport app like ours.
* Design of app is loosely based on gamification. Could we use any game elements in our app?
* It is useful in thinking of how to structure our information. This app used three stages: plan, select, navigate.

Useful note:

“According to a study investigating pedestrians’ informational requirements, landmarks are the most valuable navigation cues and are way more important than street names or distance information.”

Topic: Data Analysis and Machine Learning