From Workshop to Prototype: A Project about the Development of a Conference Application Based on the Use of UIM

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Abstract. This project investigates how User Innovation Management (UIM) can be used to organize a design process based on a request for a mobile application for the Persuasive Technology Conference in Aalborg in 2020. Furthermore, the target users were not yet defined, and the design process attempted to take this into account. Therefore, other conference mobile applications were examined, and a workshop was held in order to gain insights into the act of going to a conference. As a result of an analysis, requirement specifications became the foundation for making a prototype. This prototype was evaluated, and a final prototype was constructed. The need for information about transportation, conference agenda, and social activities during the conference, was identified as the most significant factors. These were included in the design by adding features that address and support said areas..

Keywords: User Innovation Management, Workshop, Prototyping, Co-design, User-Centered Design

1 Introduction

This project examines how a design process can be organized on the basis of the method User Innovation Management (UIM), as it is presented by Anne Marie Kanstrup and Pernille Bertelsen (2016). This has been done in relation to a case, where the outcome was a design concept for an application to the 15th International Conference on Persuasive Technologies (Persuasive 2020 conference). One of the objectives for the conference organizer is to promote the conference and Aalborg as *green* regarding printing and transportation between venues. The project lasted from March to May 2019.

When the project was made, the target users were not defined, and the design process attempted to take this into account. Furthermore, the compiled design of the application tries to oblige the needs of the users while these are not yet precisely determined. It can be argued, that the act of participating in a conference is a well-known activity for some people, and that the setting is fairly alike. It is not an activity, where people necessarily have a shared practice beside participating in the same conference, but it is the shared understanding and physical presence that unites them. This is called *nexus of practice*

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by Scollon & Scollon (2004), which is activities where people have a shared understanding, but which is not a *community of practice*. As such, the project raises the following research questions:

1. How can a design process be organized on the basis of User Innovation Management in such way that the system meets the needs of unknown users?
2. How can these needs be satisfied through an application?

2 Research Method

The project is composed on the basis of UIM, which has a participatory approach to innovation and design (Kanstrup & Bertelsen, 2016). The Design Research Map by Sanders (2008) were used to declare the design perspective as the project aims to include potential users as co-creators of the concept, with a design-based approach.

The UIM method is divided into three themes which are 1) *Cooperation*, 2) *Context*, and 3) *Concept*, and each of these have two steps. In the first step, Cooperation, the participants were selected and a method for data collection was chosen. The participants were researchers from multiple departments at Aalborg University, who have participated in one or several conferences. The collaboration was based on a workshop, because this method allows, among other, an inquiry into current and future needs of the participants. The workshop was inspired by *participatory workshops* (Chambers, 2012), and the main focus was to compile data generated by the participants through different activities that encourage them to be creative and elaborate on chosen topics related to their former conference activities. Furthermore, a workshop could contribute to establish visions for the application and its content.

In the next step, Context, insights were gathered and visions for the future were created on behalf of the workshop. Insights into the problem area were obtained via two different approaches, of which the first was an analysis of existing apps designed specifically for conferences. This contributed with insights into what needs these apps already try to fulfil and also contributes with inspiration to the development of the concept for this application. In addition, insights were also obtained through the workshop, from which requirement specifications were made based on an analysis of the different codes identified in the transcript of the workshop.

In the third step, Concept, a prototype based on the before mentioned requirement specifications was composed. According to Houde and Hill (1997), prototypes can generally be used to explore three dimensions of a system. These are 1) *Role*, 2) *Look and Feel*, and 3) *Implementation*. Because the application could not be implemented before the conference, and the main purpose for composing the prototype was to include information useful for users at the conference, this prototype was primarily used to examine the Role of the application. As such, the most important part of the prototype was to illustrate how the application could fulfill a role for the user. However, the prototype was made fully functional.

The presentation step, which is a part of concept, were not included in this project. Instead there was added an extra step based on a model for interaction design by Preece, Rogers and Sharp (2015), which is evaluation This has been included in the design process to detect potential errors and omissions, which have then been regulated in a new design. This design was then evaluated in a think-aloud test with the participants

of the workshop, and new requirement specifications were developed on behalf of an analysis of the think-aloud test results.

3 Results

Requirement specifications were composed on the basis of an analysis rooted in a participatory workshop, but also a description of the conference and needs provided by the conference organizer. Therefore, the requirement specifications take both the users' and the stakeholder's needs into consideration.

Identified requirements were divided into 1) General, 2) The Conference, 3) Social Aspect, and 4) Way Finding in Aalborg. Each topic contains a number of requirements, which were supplemented with the source, a priority, scope of action, and the final action in order to fulfill the requirement. The participatory workshop provided insights in what should be considered afterwards in the following design process, and the importance of each discussed feature. The final requirements for the prototype can be seen below:

- The requirements in General are *an application*, *less printing*, *application should only be used on the conference,* and *tickets should be available through the application*.
- The requirements related to the conference are *personal calendar*, *notifications when cancelled*, *full program*, *list of attendees*, and *abstract and papers*.
- The requirements that belong to the Social Aspect are *possibilities for networking*, *chat-function*, *possibilities for coordinating gatherings*, and *attendee-lists for the different events*.
- Finally, the requirements for Way Finding in Aalborg are *information about transportation*, *direct link to 'NT Tickets'*, *direct link to 'Journey Planner'*, *clarify the possibility to walk around Aalborg*, *a map of Aalborg*, *a map of the conference buildings*, and *a map of less well-known landmarks in Aalborg*.

In general, the requirement specifications clarified how the needs of conference attendees could be addressed in an application. Additionally, it became clear how the requirements gained from the stakeholder could be implemented. The application facilitates profiles for every conference attendee in order to make it possible for every attendee to personalize the application, both the profile and the calendar, in which it is possible to add the preferred events ("Personal Agenda"). The participants in the workshop generally experienced a lack of information regarding the opportunity to go around town by either public transportation or walking, because they had a general wish to explore the hosting city in which a conference takes place. Therefore, the application values public transportation and walking by explaining how to go by bus and illustrates different walking routes around Aalborg. This also aligns with the conference organizer's wish to promote the conference and Aalborg as green. Furthermore, the application contains sections where it is possible for the attendees to make other, social events and send messages.

New requirement specifications were made based on the think-aloud test conducted by using the prototype. These requirements are based on the prototype, and therefore

they are divided into three topics: 1) *Changes*, 2) *Repositioning*, and 3) *Additions*. Generally, the requirement specifications regard labels, icons and functions which were difficult to find, and no major adjustments were made in this process.

4 Conclusion

The project presents one of many opportunities related to organizing a design process to ensure an application, in this paper an application for the Persuasive 2020 Conference, meets the needs of yet unknown conference attendees. UIM is a process model for user involvement, and along with UIM, participatory workshop was used as a method for generating insights and a general understanding for conference activities both socially and conference related. UIM has given us a structured approach for the design process, and it has been a way to make sure that the participants and their needs have been at the center of the process. The work with participants as representatives of similar potential users has given us an understanding of the challenges related to user involvement, but it has also given us insight into the great value potential users can add to a design process. It has been important for us to perceive the participants as expert conference-goers, because we needed an insight in and understanding of the problems and needs related to this.

The most important needs that have been identified based on the workshop and a subsequent think aloud user tests are the need for information about transport, the program, and the facilitation of social contact besides official activities during the conference. Because of this the design concept includes features such as “Transport”, “Personal Agenda”, “Other events” and “Messages”. Each of these functions are included with the purpose of fulfilling the needs of the potential users.

It is important to emphasize the need for future iterations of the process. The application has not yet been implemented, and therefore other insights might be necessary to include in future research. However, the participatory workshop provided us with valuable data and knowledge about activities we were not familiar with, and the method might be ideal to include in another iteration.

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