

Gathering User Requirements for a Children's Mobile e-guide

Lynne Baillie
FTW
Donau-City-Strasse
Vienna, Austria
baillie@ftw.at

ABSTRACT

We discuss in this short paper our thoughts and ideas surrounding the problem of building a mobile e-guide for children aged 6-10. We are in the process of building a mobile e-guide for a Children's World in Vienna. The proposed project will investigate how to design such a guide for children and will examine the usability and user acceptance of such services as video streaming, audio streaming, and location based games, from a child's perspective. The project is also interested in assessing how this age group navigate in such a space i.e. we think that children may navigate using landmarks rather than signs. On the technical side the project will investigate the viability of two location technologies and their inter-working with context aware content delivery.

Categories and Subject Descriptors

H.5 Information Interfaces and Presentation (I.7); H5.2 User Interfaces: User-centered design

Keywords

Mobile users and services, mobile devices and applications, user workshops, participatory design, action scenarios, and mobile guides.

1. INTRODUCTION

It is widely acknowledged that mobile companies need users to use mobile data services and applications, however there is currently a lack of practical and useful applications. The overall vision of the project is to provide children with a fun and engaging mobile guide experience whilst at a children's theme park but also to provide education and an interactive learning experience. The majority of mobile guides have focused on guiding adults around a city center, however what are the differences and similarities to be found when building a guide for children?

We believe that when designing an application for children we should be aware of the wider aspects of user experience. For example, current usability goals are: effective to use, safe to use, have good utility, easy to learn, easy to

remember, and efficient to use. For children we feel that the user experience needs to be wider and encompass issues such as: fun, rewarding, entertaining, enjoyable, emotionally fulfilling, motivating, aesthetically pleasing, supportive of creativity, and so on. How to build these goals into an application and assess success at integrating these goals into a good interactive user experience for children will be a major part of our project. In addition, the proposed project will investigate children's reaction to such services as video streaming, audio streaming, location based services, and location based games.

But how do we start to involve children in such a project? Most of the major telecommunications operators and manufacturers still use laboratory studies to assess the usability of a mobile device [2], even though this use of laboratories can produce results which could be said to be unrealistic as the user is generally in a noise free environment with an excellent network connection [7]. Some studies have taken place in the field and have produced useful data for research [3], however, these studies focused primarily on adults.

Therefore, we are facing the following challenges:

- The methods that are available from HCI have mainly been built for the workplace and for adults.
- The research results from other researchers who have undertaken studies of the usability of mobile guides may or may not be applicable to our work.

For these reasons we felt that it would be appropriate to put together our own plan (the first phase of the plan can be seen in Table 1) to facilitate children's involvement in the design and evaluation of our mobile guide application.

<i>Focus</i>	<i>Method</i>	<i>Phase I: Requirements gathering</i>
<i>Part 1: Discovering Current practices</i>	Reconnaissance	Essential
<i>Part 2: Facilitating discussion with users</i>	Multimodal Scenario Discussion	Essential (conceptual scenario)
<i>Part 3: Investigating current problems and Future Possibilities</i>	Action Scenarios	Essential
<i>Part 4: Contextualising ideas for the application</i>	Atelier	Essential

Table 1. The table shows the format of the requirements gathering phase.

We were familiar with some of the methods in the above plan and had used them to aid us in the design of multimodal applications for adults. To use the same methods with children we realized that a review of the methods would need to be undertaken. As others have pointed out most user centered design methods have been devised, documented, and applied successfully in situations where the intended users are adults [9]. It could be hypothesized that most of these methods may need to be adapted, if they can be used at all, when the intended users are children. Also, it has been claimed that most evaluation methods focus on the main concepts of usability and not enough on other issues such as fun, aesthetics etc [11], which could be said to be more important in the design of an application orientated towards children. As a consequence we outline in this short paper the methods we have decided to use in the hope that it will generate further discussion at the workshop.

A short description of each part of the requirements gathering plan is presented in Section 2 (parts 2-4 took the shape of a workshop). The paper concludes with a short discussion of the benefits we foresee in using this plan. At the time of writing this paper we had undertaken the reconnaissance missions at Zoom, a children's museum here in Vienna. The other parts of the study we propose to undertake at the Children's World itself once it is completed.

2. PHASE I: REQUIREMENTS GATHERING

To acquire monies for the project we needed to obtain funding from telecommunication companies. We were required therefore, to have a plan of work and some

conceptual scenarios. We realized that these conceptual scenarios were not based on real user experiences and we were not children and so could not begin to write a more concrete scenario until we had undertaken some user studies. As a result we set aside the first three months of the project to undertake user studies and move from conceptual scenarios to a concrete scenario to aid us to progress to the first development phase of our mobile guide application. By undertaking the first phase of the framework we hoped to: discuss potential problems and benefits of our applications with children, discover more about the potential use of multimedia within the applications and find out how and in what ways the children imagined using the guide. We describe in the following sub-sections how we propose to do this and how we have adapted some methods so that they may be more suited to gathering requirements from children.

2.1 Reconnaissance

Some researchers have followed users from place to place, observing their use of mobile devices [12, 6, 8]. From this they have gathered interesting and useful requirements for design; we do not have the time or the manpower in which to undertake such field studies. Also it would be difficult, if not impossible, to obtain permission to follow children. We did know from previous studies that children navigated very differently from adults. For example, it was found in one study that some children navigated their way to school by rubbish bins! As a consequence we realized that we would need to carry out some studies of how children navigated in space. It was decided, therefore, that reconnaissance missions would be undertaken to study how children navigated round a current local tourist attraction. We were lucky enough to gain admittance to the local children's museum in Vienna: 'Zoom'.

The museum gave us permission to be present when children were visiting the museum and to observe them, with the proviso that the parents or guardians gave their permission. When undertaking the reconnaissance missions, we were particularly interested in how the children approached various artifacts and navigated around the different rooms and exhibits. We also gave the children a picture phone with which to take pictures when moving around the museum and to take pictures of the exhibits they liked, enjoyed or found interesting. The reason that we thought that this would prove to be successful was because of two other projects involving children. In these projects the children were asked to either take or send pictures in a fun and entertaining way. For example, the CHIMER [4] project is in the process of gathering data from children all over Europe for mobile heritage. The children involved in the project were asked to take pictures of their local area and send them to the project thereby, it was

hoped, creating a dynamic local history. In Normaks' [10] study the children were asked to throw virtual snowballs (pictures they had taken earlier) at passing cars. His aim was to develop tools to support interaction between children and the road-users that they passed on their way to school. He found that to develop such an application requires the designer to develop an understanding of how the roadside – as an interactive design space - is utilized by children. We therefore felt that using pictures taken by children was a useful way to gather information which would prove fruitful in our studies and feed information into our concrete scenario.



Fig. 1. Children Enjoying an Exhibit at the Zoom Museum in Vienna

Many findings from the reconnaissance missions are currently influencing our conceptual design ideas. For example, we found that the children liked to be quite tactile with the objects and exhibits, touching them, pulling at them and so on. Therefore we realized that our guide should potentially offer similar possibilities.

2.2 Multimodal Scenario Discussion

We wanted to discuss with the children our conceptual scenarios for the guide. The reason for this was that scenario discussions have proved to be a useful tool for early exploratory design situations and evaluations [1]. One of the researchers in our project group had undertaken workshops with children before in schools and in homes. She found that children between the ages of 6-10 do not react well, and were quite uncommunicative when scenarios were presented to them on their own or in pairs. However, if the children were presented with the scenarios when they were in a group they were found to be more talkative. In addition, it was found to be better if the children were split into roughly their own age group as older children being present seemed to have an intimidating affect on the younger children and their level of response. We therefore

propose in our study to have four groups of five children, one group for each year we are trying to build the guide for. A facilitator will present the conceptual scenarios to the children. The facilitators will be the education assistants from the children's museum and researchers from the design group who have undergone an educational training session from the museums head of education.

We hope the discussion will provide us with feedback on any parts of the scenario the children feel need changing, that they do not like, or they do not understand.

2.3 Action Scenarios

In an effort to discover more about how our guide will be used in context we propose to use Action Scenarios. We will ask the children in their groups if they would be willing, or would like, to act out how they would use the guide in the Children's World. We will ask them to move around the Children's World with a mobile phone acting out their use of the guide singly and in groups. We hope that by linking a scenario with a physical activity the children will be able to provide us with a richer description of their interaction. We hope that the children will engage in this activity and find it fun. We were worried, however, as a design team, that action scenarios may not be appropriate for children and that they may not engage with this activity. We therefore asked the head of the children's museum about this. The head of the museum reassured us that the children who visited the Zoom museum undertook many similar interactive experiences. Therefore, the head of education did not think such an activity would be problematic for the children as long as the facilitators provided acceptable support and encouragement.

We hope that the Action Scenarios will give us insights into how the children will navigate in the space and how they think they would interact with the guide.

2.4 Atelier

In this part of the workshop we aim to recreate the idea of an Atelier in a workroom at the Children's World. We will ask the children to sketch some concepts of how they imagine the guide. We will also ask them to make a sculpture or model of the guide using clay or other craft materials. We hope this will lead to a more fun and interactive experience for the children. A further reason for undertaking the atelier is that other researchers have found that inviting children to conceptualize their ideas in the form of a drawing has encouraged fuller participation in design projects [5]. The children's drawings/sculptures will be analyzed in three ways: interesting points of the overall concept; different parts of the design that may be interesting to incorporate into our design; a list of likes and dislikes of that particular child. The models of the guide that

the children make will be located in the design teams' workroom to remind them of how the children envisage the guide.

3. DISCUSSION & CONCLUSION

In conclusion, we hope that the requirements gathering techniques we use will provide an efficient and fun way of obtaining information from children, yield data about the look and feel of the guide, and provide a way of gaining information about the potential deployment of the guide. This last point, we think, is the most important as the guide could easily fail to entertain and be an effective assistive tool for a child. We would welcome any discussion and feedback from the participants at the workshop on our ideas and how to tackle the complex issue of designing a mobile guide with and for children.

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