Developing A Self-Reporting Tool, Mobile AP, for Design Data Collection

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Abstract: In recent years, research based on the user-centered approach to co-designing is changing the design process itself, creating new domains of collective creativity. If there were a tool that could capture a user’s reported experiences and awareness, and categorize these together with an associated photograph, it would make a fruitful addition to the creation of written scenarios in the design process. In this study, we have developed a self-reporting system, Mobile AP II, a potentially valuable tool for developing a comprehensive context classification, and to demonstrate how different types of photo contexts and their relationships may be identified.

Key words: Self-Reporting, user experience, data collaborative

1. Introduction

The use of user experience in the design process to get a good concept has drawn increasing attention as a research subject in recent years. The focus of design methods has shifted over the past few years from user-centered design towards a collaborative design process performed by users. A good communication device makes it easy to gather the collective user experience, but with the rapid growth of the collected data, the designer will find himself overwhelmed by a mass of unorganized and undigested data and unable to make quick and accurate decisions. A designer needs to incorporate new design approaches in standard design practices, taking advantage of technology to manage the collected data and to facilitate understanding of the factors underlying user experience and behavior. Design research methods have come to rely on high levels of efficiency, optimization, and quality development to deliver value. The purpose of the design research methods has been to find ways to incorporate new technology that encourages the designer to develop collaborative and creative approaches to obtaining highly-valued concepts for users and designers[1]. A designer must observe user activity in a wide range of circumstances, and to discover the user’s point of view and issues. In this study, we seek effective solutions to the design problem: how to enable the designer to recognize as much of the context of user experience as possible from a collected body of user experience.

The concept of user experience-based design has been discussed for a long time. The designer involves users in every stage of the project. Understanding the design value of listening to the user's experience and perspective is just the first step. Since the collected user experience has become more abundant and complex, traditional design
methods no longer stand up to the analysis of the collective user experience. As designers become better connected and better acquainted with technology and the available tools, they gain more power in the design process. Developing creative, agile, and experience-focused approaches will be essential for cutting edge design methods. One way to create such a design method is to collaborate with the users so as to share their awareness and focus on their real lives.

Increasingly, collaboration with users is seen as important in creative design and essential to a designer’s ability to evaluate and justify their conclusions; to gather knowledge from others; to share their expertise with others; and to transform their existing understanding as learners in a constant process of mutual personal and social development.[3] We believe that co-operative design is critical throughout the development of all technology and the users should be treated as designer partners, not subjects of study of user experience. Experience design concentrates on moments of engagement between people and their environment, and the memories these moments create. User experience research allows a designer to understand and take into account the behaviors and motivations of users, and their contexts. [2] [4]

Design research uses many methods. Self-reporting is an excellent tool for longer studies in multiple locations, when it would be impractical to send designers to conduct all of the research in person. Self-reporting is a qualitative approach to research focused on gaining a deep understanding of user experience. It generally involves examination of the life of the user under study and spending time observing and talking to them. Self-reporting differs from other design approaches such as interviews and focus groups in a few important ways. Sharing an experience avoids a dehumanizing distancing effect, while vicariousness maintains the required level of objectivity.

Understanding of context is becoming even more vital to design success, as well as a more explicit part of the design process, regardless of where the user experience is being provided. Including these contextual aspects in the collected data can greatly improve final designs. Finding empathy helps the designer grasp the mechanisms that drive user behavior, as opposed to just observing external actions.

Design is often poorly understood and practiced, and its public image is only recently catching up with its potential. Designers are often confused about how to get the context and relationships from collected user experiences with design approaches that can vary widely. Design, in the right hands, can achieve new design concepts or extend a designer's inventory of assets and capabilities. Generating the concept for a new design is fundamentally important to the success of designer. Concept maps represent concepts and relationships between collected data. Concept maps are effective in identifying both valid and invalid ideas held by a designer. Now the understanding of context is becoming even more vital to design success, as well as a more explicit part of the design process, regardless of where the user experience is being provided. Taking the contextual aspects in to account can greatly improve final designs.

In this paper we present a self-reporting system called Mobile AP II, designed for a collective and collaborative user experience with knowledge models represented as concept maps. The system offers a series of functions and
procedures for developing concepts in the design process. Our aim is to better understand the role that our system can play in the design process.

2. System Architecture

The greatest challenge in design arises when dealing with complex problems where the outcome is unclear, many stakeholders are involved, and the boundaries are fuzzy [5]. A powerful design method needs to integrate several techniques and use resources effectively. We hope to provide designers with a new tool to help build concepts, hypotheses, and models from the details of collected user experiences.

Self-reporting is a qualitative approach to research focused on gaining a deep understanding of user experience. Where the user provides a coherent experience, the designer must organize the data meaningfully. We are building a self-reporting system that gives a stakeholder the ability to provide a comprehensive representation of his experience. This system also allows organizations to handle uncertainty and reduce ambiguity. We hope that designers will use the new tools to build concepts, hypotheses, and models from the details they uncover in the collected user experience.

Sharing camera phone photos with friends and parents has become a popular and increasingly important part of everyday life in Japan. We have developed a system called Mobile AP II that accumulates a user’s experiences by using a camera phone and the mail function of a PC, and provides support to organize and share a user’s experience with a designer (Figure 1).

We intended to create a universal platform, and to motivate a subject to accumulate his awareness as a user by using the camera and mail functions of a mobile phone, and to support the creation of a design concept in cooperation with a developer. The system provided more accurate data than those that rely on users to recall events after the fact and then creating a self-report. We constructed a platform as shown in Figure 2 that consists of three parts. We have presented a general framework to perform verification of this new tool in the design process.

Our system is based on Adobe Flash Action script 3 and Flex. In the first step, our system provides a self-report photo sharing system for the design process that allows the subject to store and share images and to attach...
positive or negative judgments, wishes, and comments associated with the picture in a convenient and user-friendly way.

Tagging has become hugely popular, and is a very useful way of categorizing data that makes it very easy for users to search and browse. In the next step, we provided a way to simply add tags to the photo edit page. Each photo in the system can be assigned a number of tags by the user. The purpose of tagging is to make better creative and collaborative tools to support users. Finally, our system creates a concept map and categories to provide perceptually and cognitively effective tools to facilitate display and interaction with different data.

![Figure 2: The Mobile AP II process](image)

### 3. Method

This research is a two-phase study designed to explore the user experience as collected, and perform a context analysis of the design development process. To ensure some homogeneity of social background, all subjects were selected from the student population at Future University–Hakodate. Following the test, subjects were interviewed to determine their opinions on our system.

Initially, we give users an exclusive camera phone mail address for every event in our system, and we invited subjects to record any event or a specific activity in daily life by camera phone and send it to our Mobile AP II system. The structure of uploaded photos includes a title and a short description of positive and negative responses connected with the photo, all of which can be delivered by the camera phone to a PC (Figure 3).

![Figure 3: Overview of Mobile AP II client user interface (left) and detail (right)](image)
Designers need to be able to trigger communication with their team members, and to be generally aware of their team members’ behavior. Our system allows users and designers to browse other users’ uploaded photos, and to add their own comments and opinions about the photo (Figure 4), even calling attention to key features by marking them with circles. Designers and users depend on the comments from other team members, using another tool, to create a concept map to discover contexts and potential relationships among the collected data. We hope that our system will provide something like a probe that can lead participants to a deeper understanding of one another.

Figure 4 Comment user interface (left) and an inserted circle of focus (right)

Collected data can be interpreted from multiple viewpoints. Users can start with a comment from a team member, and use another tool to create a concept map to discover contexts or potential relationships in the collected data (Figure 5). In this step, we analyze data describing the perceptions of the users by categorizing them and creating a concept map. We expect each user to create their own concept map and to perform deep analyses of the complex relationships among the data, and finally to share this with each other.

Figure 5 Category user interface (left) and a tag-based relationship photo (right)

4. Discussion

Using our system, team members play a role in providing their experiences, which enables everyone to share the understanding of users and gain a vision of the experience. When asked to comment on our system in the post-study interview, the subjects were generally positive about the use of a concept map. The system was viewed favorably as part of the design process, as shown in the following comment:

1. Use of a new tool to get empathy helps the designer grasp the analysis mechanisms that drive the design process.
2. Using the concept map tool of our system, the designer will gain the potential for greater insights and able to understand the stakeholders more honestly and completely.

3. At the stage of collecting and analyzing user experience, this system performed well in addressing complex problems where the outcome is unclear.

The study exhibits several weaknesses:

1. Because the script that accompanies uploaded photos suffers from the difficulty of writing text with a camera phone, participants often write only a title with the photo, and the rest of their input such as positive and negative comments are entered later on a PC from memory. It does not really record their experiences or awareness “live” at the moment.

2. In this study, subjects always used their notebooks for our test, and as the concept map grew, the size of the available display space was a problem when displaying the map.

3. The greatest challenge is how to efficiently communicate with team members when more data is collected than they can possibly look at and understand. We need to consider these issues when designing concept maps.

5. Conclusions

User’s adoption of a self-reporting tool to give insight into their life has important implications for design research and development. Mobile API CA can provide a more realistic view of people, especially with regard to the emotional, contextual, and cultural aspects of their lives. It has proven to be a useful and effective tool for building a collaborative concept map. However, there are still many areas that require further development. Our system can provide some insights that may produce a formidable competitive advantage. However, it might not always be successful with every project, but provides one useful tool for design methods to incorporate qualitative and contextual information. More research is needed on the effects of designer attitudes toward designers from different cultures.

6. References


