

Mobile and Ubiquitous User Experience: Design Principles and Best Practices

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Abstract. Over the past decade there has been significant development in the domain of mobile and ubiquitous devices, services and applications. From the initial ideas and prototypes in the late 90s, things have moved to pilot deployments and finally commercial endeavors. Yet only a few early ideas that have been put to test have reached univocal successes and broad adoption, while many others have languished around and have eventually been abandoned. In this workshop we would like to provide a forum for discussion of design principles and best practices for mobile and ubiquitous user experience, especially focusing on applications and services. We would like to share successes, failures and lessons learned and, as a community, suggest new venues for research.

Keywords: mobile, ubiquitous, design, principles, user experience, applications, services

1 Introduction

The last decade has witnessed significant developments of mobile and ubiquitous devices, services and applications. From the initial ideas and prototypes in the mobile domain, things have moved to pilot deployments and finally commercial endeavors. Some early ideas that have been put to test, such as text messaging or payments using RFID cards have reached success and broader adoption. Other technologies, such as invocation of services using QR or Semacodes have enjoyed considerable success in some markets, but missed the mark in others (e.g. Cue Cat in the North American market).

In this workshop we would like to provide a forum for discussion of mobile and ubiquitous user experience, especially focusing on the applications and services. What are the important elements of this unique experience? What makes certain applications and services sticky? What strategies lead to broader adoption? We would like to share successes, failures and lessons learned. As a community, we would like to move towards the formulation of *design principles and best practices for mobile and ubiquitous use experience*.

2 Workshop Themes

The goal of this workshop is to provide a platform for sharing and discussion of the lessons learned in mobile and ubiquitous design for applications and services. Our past experiences and research suggest several themes and principles that are important in building these applications and services, especially when it comes to mobile internet access.

Think uniquely mobile, not a mini PC. Some of the well established lessons from prior research and commercial developments suggest that accessing internet on the mobile phones is difficult. The obstacles include difficulties of text input through phone keys, small screen size, network speed and latency, perception of cost (perceived value and lack of cost transparency), problems with navigation on sites that are not optimized for mobile devices, etc. Yet, despite the challenges, people are accessing the internet via their mobile phones. The specific cases of access can be motivated by saving money (e.g. accessing Yellow Pages on the phone vs. calling 411), maintaining privacy (e.g. access to personal stock portfolio at work) or habits (e.g. ordering pizza via phone call be easier than calling). However, in a PC-centric cultures, such as those in the North America or Europe, availability is not enough. In general, the value of the information and content accessed on the phone has to be uniquely suited for the situation and context, rather than being a directly downsized application or a web site.

Think always with you, not just on the go. People use their mobile phones to access internet not only while on the go (in transportation, public venues, stores, etc.), but also when they are not mobile (at home, in the offices and schools, while visiting friends, etc.). The context in which internet can be accessed on the phone is as vast and variable as a day in one's life. More powerful than "on the go" is many users common need to always be in close physical proximity to their phone. The nature of the always at hand device that can provide information plays an important role in a decision whether this device will be utilized in a particular context. However, mobile device also needs to win over alternative in a complex constellation of a need, motivation/urgency, physical environment, and alternatives of which many could be fairly mundane and low tech.

Think building and reinforcing common ground and identity. The research has demonstrated that people use mobile phones to make solo activities social. For

example, while shopping for a piece of clothing, many have reported sending images to friends and family members to seek advice on a purchase. Many phone users describe text messaging as a remedy for loneliness and a quick and easy way to bring other people into the experience. The phone also acts as a signifier to its owner, reinforcing who they think they are and who they aspire to be, in addition to providing a way to express accomplishment and share a story. Through storytelling, people are reinforcing existing relationships and shared understandings. Their continued conversations build on the common ground and are not necessarily focused on accomplishments of a particular task with an identifiable beginning and end.

Think access to what's essential, not just browsing. “Browsing” is a great metaphor that has worked very well for the PC, but has not been as successful for accessing internet on mobile phones. Browsing the internet on a phone for many feels like looking at the world through a keyhole. Limited scale makes it difficult to see and interact with information. Borrowing the “browser” metaphor creates conceptual understanding, but also frequently sets up false expectations. Certain new approaches have been developed to provide remedies (e.g. Nokia Minimap browser) but the widespread adoption is yet to happen. Rather than thinking about directly accessing internet sites developed for PC access, perhaps a better goal is to provide direct connections to all things that are essential.

Consider what Emerging Markets have to teach us about the fundamentals of being mobile. Emerging markets such as those in India, parts of Asia-Pacific and Africa have much to teach us about peoples’ ability to adapt elementally simple mobile technologies to coordinate fairly sophisticated actions and ad-hoc applications. While the generative need for these applications has been based largely on the lack of availability of 2G-2.5G network infrastructure, the fundamental needs that these applications serve are very telling. They are typically operated purely via SMS and center around activities as varied as group coordination for agricultural needs, public health alerts, voting on controversial issues, dating, prayer time notification, among many others. The combining of two or more technologies to produce modalities that better fit the needs of undereducated or illiterate populations, such as Voice SMS (via the Grameenphone in India) are also indicative of people’s ability and willingness to adapt simple technologies to better fit their needs. Upon examining the needs that these simple technologies serve, it becomes clear that being mobile is much less about technology, and much more about culture, connectedness and fundamental human needs.

3 Workshop Format

In this workshop we aim to foster a discussions among a diverse group of researches and practitioners. The workshop is design to be highly interactive and cover the following aspects:

- Short presentations: introductory presentations will be given by all attendees at the beginning of the day.

- In order to stimulate thinking from the users' point of view, we will provide several real user posters and materials such as video clips from recent ethnographic studies. The attendees will be divided into brainstorming groups to discuss potential ideas and propose design solutions. The design will be carried out using low fidelity methods (pen and paper).
- Open format discussion. The attendees will have an opportunity to propose topics and hold discussions in smaller groups. As an alternative, we may select some specific questions and hold a panel session.
- Joint discussion. At the end of the day all participants will take part in the joint discussion with the goal of defining several most important research topics and questions for future study.
- Workshop workspace: in order to capture questions, comments and reflections, as well as to stimulate discussion before and after the workshop, a joint workshop wiki or blog will be set up for all attendees.

3.1 Process and Participants

The number of participants will be limited to 25 people, selected based on their submission and reviewed by the organizers. Participants are asked to submit a position paper describing their interest and experience in this field (about 2-3 pages in the SIGCHI conference publication format). The organizing committee will select participants based on these extended abstracts.

Deadline for submission..... June 1, 2007
Announcement of acceptance..... July 1, 2007

3.2 Format and Preliminary Schedule

The preliminary timetable for the workshop is:

09:00-09:15	Welcome, setting the context and introduction of the daily schedule
09:15-10:15	Individual Short Presentations
10:15-10:30	Break
10:30-12:00	Brainstorming groups and design exercise
12:00-1:30	Lunch break
1:30-3:00	Design exercise continuation and reports
3:00-3:15	Break
3:15-4:15	Open space discussions or a panel
4:15-5:00	Joint discussion on future directions
5:00-5:15	Wrap-up

3.3 Workshop Outcome

The workshop proceedings will be put together from all position papers. The workshop proceedings will be published as a technical report or an edited collection of papers and made available via the web. In addition, a report of the workshop may be published in a major journal.

3.4 Activities Before the Workshop

The call for participations will be distributed via the Ubicomp 2007 publicity channels. Additionally, the call will be announced in newsgroups and mailing lists related to the subject. The position papers selected from participants will be published on the workshop website prior to the workshop. In addition, a workshop blog will be set up in the weeks leading to the workshop in order to introduce attendees to each other and initiate the conversations.

3.5 Organizers

In recognition of the diversity in mobile and ubiquitous device technology and practices in different regions and among different cultures, our organizing committee represents a range of perspectives; we will strive to attract an equally diverse set of participants.

Mirjana Spasojevic is a Senior Principal Scientist at the Nokia Research. Her research focus is on design and deployments of mobile and ubiquitous computing technologies. She has recently been involved in global mobile studies evaluating needs of mobile phone users in several countries, including North America, Europe and Asia. She has served as the lead organizer of two previous Ubicomp Workshops on Pervasive Image Capturing and Sharing (PICS 2005 and 2006) and is currently serving as the general chair of the upcoming HotMobile 2008 workshop.

Rachel Hinman is a design strategist for Adaptive Path. Her focus is on developing insights about people and using those insights to create valuable user experiences that support business goals. Rachel's passion for people, design and business has been the driving force of her 10-year career in user experience design. Before receiving a Masters Degree in Design Planning from the Institute of Design in Chicago, Rachel spent the first seven years of her career working as an interaction designer and user experience lead. Prior to joining Adaptive Path, she worked within Yahoo's mobile group, employing user-centered methods to inform the design and strategy of Yahoo's mobile products. Her clients and previous employers have included IDEO, Microsoft, Yahoo, General Motors, Clorox, and Kaiser Permanente.

Mor Naaman is a Research Scientist at Yahoo! Research Berkeley, where he leads development of a mobile imaging application called ZoneTag. He graduated from the computer science PhD program at Stanford University in 2005. At Stanford he did his

PhD research as part of the Stanford InfoLab (formerly known as the database group) and was also affiliated with the HCI group. In previous lives, he was a professional basketball player, a software engineer, and a college radio DJ.

Virpi Roto is a principal scientist with Nokia Research Center, Finland. Her background is in computer science, but she has a long career in usability of software solutions. During the previous years, she has investigated user experience of Internet on handheld devices. Her doctoral dissertation about mobile web browsing user experience [1] was accepted with distinction in December 2006 and has been downloaded more than 10.000 times since. The most visible outcome of her research is the Minimap web page visualization method, currently used in the Web browser of Nokia S60 mobile phones.

Will Dzierson is a mobile interface designer at Google. His focus is on designing highly usable mobile experiences that are grounded in a firm understanding of user needs, habits, motivations and context. Will began work in mobile six years ago designing and developing enterprise solutions for the mobile workforce and for higher education, including Harvard Medical School. He has since designed and developed mobile experiences for companies including Yahoo!, SoftBank/Yahoo! Japan, PepsiCo, Bose, Caterpillar, AholdUSA/Stop&Shop and the Smithsonian Institution. His current major areas of interest and design research center around mobile design solutions for emerging markets and the developing world and mobile group coordination and decision making.

[1] Roto, V. Web Browsing on Mobile Phones – Characteristics of User Experience. Doctoral dissertation, TKK Dissertations 49, Helsinki University of Technology, Finland, 2006. http://research.nokia.com/people/virpi_roto/dissertation.html