A Mobile Scenario for the XX Olympic Winter Games – Torino 2006

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ABSTRACT

The domain of major sporting events provides an interesting context for the design of mobile scenarios. Its complexity challenges the user centered design discipline in several ways and on different levels. The concept design of a mobile application for the visitors of the XX Olympic Winter Games - Torino 2006, is here presented as an example to highlight the issues that need to be faced by the design discipline when working on the creation of mobile applications in this scenario. Compelling usability issues have to be considered, as well as the logistic and economic impact of the designed product on the event organization.

In this multifaceted context, design has the chance to play a key strategic role combining the visitor’s needs and the event management’s ones.

Keywords: design, mobile, Human-Computer Interaction, sporting events, scenarios, usability

1. Introduction

To date, service providers, marketing and research institutes have invested a big effort in attempting to foresee what domains and applications will be of interest for the nomadic users, once the technological infrastructure will enable mobile high-speed data transmission. Due to the progressive development of wireless communication technologies, indeed, the cultural phenomena of nomadism and globalization are deeply affecting diverse aspects of our lifestyles (social relationships, nomadic communities, m-commerce, nomadic working, m-learning…), thus requiring a deeper understanding of the users’ needs and preferences, and an original approach to user centered interface design.
The domain of major sporting events provides an interesting context for mobile applications. Its complexity challenges the user centered design discipline in several ways and on different levels. The problem setting needs to take into account a double point of view, that is, a point of view that considers both the user experience and the economic relevance of the designed product, thus implying a more strategic approach.

2. The Goals of the Project

The concept design of a Personal Digital Assistant for the visitors of the XX Olympic Winter Games - Torino 2006 is here proposed as strategic solution to combine issues of mobility and communication in the context of a global sporting event such as the Olympics. The visitor's needs of way finding, transportation, enhanced access to venues and events, social interaction, event and city information are taken into account and matched with the organization's need of mobility and event management. The aim is to provide a mutual benefit to visitors and event organization by information exchange: in this sense, the strategic potential of personalized and localized communication is evaluated. The double point of view, visitor's and organization's ones, together with the complexity of the scenario, imply well structured analysis in the user experience design process.

3. The Analysis Phase

The analysis concentrates on 3 main areas, in order to achieve a deeper knowledge of the issues that can contribute to accomplish the goals above:

- Intelligent Transport Systems and Services (ITS)
- Information retrieval systems for the visitors in the past Olympic Games
- The context of use and its implications in the user experience design.

The observation concerning ITS focuses on how the information delivery can contribute to optimize the traveler experience and the transport provider logistics tasks. ITS describes any system or service that makes the movement of people or goods more efficient and economical. The Advanced Traveler Information Systems (ATIS) and the electronic payment systems are evaluated as possible tools of mobility improvement. The ATIS analysis, referring to the results of European research projects such as Infopolis 2 [4] and Peptran [8], considers the travel as cognitive process and the traveler information needs in the different
travel phases: pre-trip, wayside and on board. The outcomes of this observation confirm the need of personalized, localized and real-time information to efficiently support the traveler in his choices. Concerning the electronic payment systems, value-storing-products (which are based on the use of smart cards and network- or software-based products) provide a suitable solution for the mobile condition: thanks to SIM cards and Bluetooth technologies implementation, mobile transactions as well as enhanced wireless access to the venues are enabled. The past 7 editions of the Olympic Games were analyzed focusing on how the routing, transportation and event information was delivered to the visitors, which means of communication were adopted and in which relevance the information provided to the visitor enhanced the event management. As result, it is remarkable how communication moved from static and one-way, to a more interactive, real-time information exchange between visitors and organization. The context of use, the mobile situation, the sport features, and global proportions of the event, the weather conditions, the multicultural environment, the transport and access to the venues have an important relevance in designing the user experience. Because of the complexity of the context, the design activity faces different issues and deserves therefore to be discussed more deeply in the following paragraphs.

4. The Architecture

The service architecture allows the visitors to register and buy the mobile device and the application (see the prototype in Fig. 1) on the Olympic Organizing Committee web site, providing personal data concerning their visit to the Olympic event (length and purpose of stay, hotel, competitions and events they are going to watch, etc.).

Fig. 1: prototype of the mobile digital guide to the Olympic event.
The device is based on GPS, UMTS, and Bluetooth technologies, enabling Localization Based Services, data transmission high-speed and wireless communication with other devices. This enhances context-sensitive information delivery, concerning for instance the best way to reach a venue according to weather or traffic conditions. At the same time, easy access to the venues is made possible thanks to the Bluetooth technology, which allows contact less data transmission between the portable device and the access control terminals.

5. The Design Problem Statement

Designing the mobile application requires to look for solutions referring to different fields of the design discipline itself, as well as to other disciplines, in order to cover multiple kinds of issues.

**Product design:** what device features can best suit the target needs, preferences and the context of use? What display sizes, hardware controls, device semblances are to be provided? Can wearable technology solutions enhance the user’s interaction? How will the sport equipment (gloves, hat, sunglasses…) affect the interaction?

**Interaction design:** what information about the user and the context can be relevant in order to make the system aware of and adaptable to it? And how can they be sensed and measured? Which are the most suitable user input controls (keyboard, pointing, gesture, speech…)? How can the information be retrieved in a suitable usable way and in which modality (audio, video, physical behavior…)?

**Information architecture:** what information can be most relevant to the user and should be most easily accessible? How can the user reach the information quickly and easily while “on the go” (searching navigation vs. browsing, horizontal vs. hierarchical information structures)? Should forward and backward options be provided or rather a window system with open/close options be applied? How can labeling be consistent, intuitive, short and clear at the same time?

**Graphic design:** given the limited screen sizes, how can the graphic interface best exploit the available space? How big should icons and text be in order to be readable and easily selectable with a touch screen pen when necessary? How can the interface design be consistent and intuitive? Which metaphors could be effective? How can branding and usability issues be combined in the layout? Can embodied agents enhance the interaction and help the user?
6. Design Solutions

The issues due to the aim of the project and the context of use previously described influence the design solutions in different aspects.

In prototyping the device, we attempt to adapt to the sport, mobile context by providing a wearable solution (see Fig. 2): the device can indeed be worn on the wrist or on the arm.

Fig. 2: proportions of the prototype and wearable features.

The interaction takes place via touch screen pen, speech recognition command and back and forward hardware controls. Concerning the information architecture, the solution privileges a demand-answer interface, implying a rather horizontal structure in order to limit the number of clicks necessary to access the searched information. In addition, the system can learn from the user interaction, and, thanks to intelligent agents, deliver a more and more tailored information service that foresees the user's needs. Instant alerts and embodied agents retrieve real-time, personalized messages. The navigation works on a window frameset (see Fig. 3): the windows can be minimized and recalled when the information is needed. The semantic categories of the information architecture are color coded. The icons, are designed ad hoc for the application in order convey consistency and avoid labeling when possible.

Fig. 3: screenshots of the application featuring the graphical solutions.
7. Conclusions

Usability tests would be necessary to evaluate the effectiveness of the solutions proposed in the concept design. The main aim of this contribution, though, is to highlight the potential of major sporting events as interesting domain for mobile applications. At the same time the complexity of mobile application design is brought out, together with the need to deeply analyze the specific scenario the application is designed for and in which context it will be used.

References
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