Proposal for workshop presentation

Distance design: planning and evaluating interactive systems for developing regions

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I am a student pursuing a Masters Degree in Interactive Technology at the University of Tampere, Finland. I come from Brasilia, Brazil, where I have lived all my life, before moving to Europe in 2006 to study.

My current research is closely related to one of the themes proposed in the workshop Ethics, Roles and Relationships in Interaction Design in Developing Regions in Interact 2009, namely the kinds of participation for gathering requirements and evaluating design solutions aimed at users from developing regions.

In my study, which will serve as basis for my Masters thesis, I will develop a public transportation information system accessible to illiterate and functionally illiterate users. The thesis will include the design and evaluation of a prototype of a web-based system for the city of Brasilia. The research will also provide a set of general guidelines for building public transportation information systems aimed at this special group of users.

In Brazil, according to statistics from 2007, around 32% of the population is illiterate or functionally illiterate [3]. This percentage is roughly equivalent to 61 million people, about the same as the population of the United Kingdom. Although the Brazilian government is making a considerable effort to implement e-government services in compliance to internationally recognized accessibility standards, those services still do not take into account the needs of the large group of users who are unable to understand written text—ironically, the group that probably needs government services most.

Designing at a distance. Developing interactive products aimed at a group of users that is geographically far away brings the impracticality, if not impossibility, to meet the users for gathering requirements and for testing the end product. What should be done when the target group is geographically far away and it is not possible to travel to another country to contact the users directly?

Fortunately, we can find possible solutions in previous studies that had similar difficulties. My intention is to present a review of these methods, as well as their outcomes and the motivations that led to their use. I will also present my own approach, heavily based on this review. Although the main idea is to offer a view of the possibilities, I am also hoping to obtain valuable feedback from others facing the same problems.

Gathering requirements. A thorough specification of the user, the technology, the uses of that technology and the environment, as proposed by Huenerfauth [2] in his Hypothetical User Design Scenarios methodology, provides a valuable template to help in the design phase, and often exposes open research questions. Nevertheless, as noted later by Lalji and Good [4], making assumptions about the user and the environment when there is no contact at all with the target user group is a risk.

Due to the special condition of the target group, the use of traditional questionnaires is not possible. The solution found in my project is to use technology and partnerships with local projects to collect more accurate data. In this way, it will be possible to recruit users and conduct interviews using video-conferencing. A successful preliminary contact has already been made with a project that promotes digital inclusion in the area.

Evaluating the prototype. Evaluation is critical to ensure that the system effectively meets the needs of its target users. In my project, there will be the need to employ one or more alternate evaluation methods. Below are the possibilities that have been considered in my research.

The first approach, seen as a preliminary step in the building of the final product, is to propose techniques for presenting public transportation related information in a non-textual way. The effectiveness of these techniques will be evaluated against textual presentation of the same information. This approach is useful to evaluate a set of options in controlled settings, so that it is possible to perform usability tests with local users.

In a second moment, a local group of users that shares some characteristics with the target group might offer a valuable opportunity to collect data. This method was used by Deo et al. [1] while developing a digital library software for illiterate users. Being unable to test their prototype with illiterate users, the researchers recruited a group of students who were literate in their native language, but with low literacy level in English. However, as pointed out by van Linden and Cremers [6], there are differences in cognitive abilities of functionally illiterate persons when compared to literate persons that are relevant to the use of information and communication technology; those differences have to be taken into account when analyzing test results.

Absolute illiteracy is rare in developed countries, but statistics indicate that functional illiteracy is still a problem even in those areas [5]. Finding and recruiting users with low literacy levels in developed countries, although probably a difficult task, may provide more reliable results than the previous approach.

Testing with users who have similarities with the target user group is cost-effective, but it does not account for the differences between the environment in developed and developing regions. More reliable results may be obtained through partnerships with local universities and NGOs, which could make it possible to perform remote usability tests, again using video-conferencing technologies.

As previously mentioned, my proposal for the workshop presentation does not have the ambition to provide answers to the difficulties faced when designing solutions aimed at special groups of users in developing regions. My intention is to review the possibilities and to use my research as a starting point for discussion.

References

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