Interactive In-Situ Requirements Gathering:
Extending Beyond Questionnaires and Interviews

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ABSTRACT

Developing a usable tourist information system necessitate the gathering of requirements from tourists and visitors in situ. Traditional methods alone are argued as not sufficient for such needs. Thus, Wizard-of-Oz tests conducted with tourists in the intended environment of use are proposed as a complementary requirements gathering method.

Categories and Subject Descriptors

D.2.1 [**Requirements/Specifications**]: Elicitation methods, Methodologies, Tools. H.5.2 [**User Interfaces**]: Prototyping, User-centered design.

General Terms

Design, Experimentation, Human Factors.

Keywords

Tourist information system, rapid prototyping, Wizard of Oz.

1. INTRODUCTION

Early user involvement in the system design process, along with empirical measurement and iterative design, has for a long time been argued to be the basic principle for ensuring a high degree of usability [6]. However, interactivity requirements can be hard for users to specify, and difficult to visualize (as explored by Karlstad researchers before me, e.g., [9], [10]).

Presently, I am investigating the possibility to use the Wizard-of-Oz technique to extend beyond the limits of questionnaires and interviews when gathering requirements for information kiosks and similar systems in a tourism context. The Wizard-of-Oz (WOz) technique is a method where the intelligence of a non-fully developed system is simulated by a human experimenter, a "wizard" [7], [5]. As WOz tests can be carried out on prototypes or partly developed systems, collection and visualization of interactivity requirements before programming is possible. Commonly, the user is unknowing of the human involvement in the interaction, i.e. the user is deceived into believing that he/she is interacting with a fully computerized system. There are therefore ethical issues to consider in using the WOz techniques, such as ensuring that the user's unawareness is not exploited and that the user is not put in a compromising situation [3].

In order to avoid setting up specific WOz systems for every test run, I am using the Ozlab system at Karlstad University.

2. THE OZLAB SYSTEM

The idea behind Ozlab is to provide a pre-programmed framework for the mock-up in which the wizard will simulate the interactivity (www.kau.se/en/Ozlab). The Ozlab system was first based on Macromedia's Director and used at Karlstad University for some 10 years. Since the redevelopment of the Ozlab system started in late 2012, the tool has been web based. By using Ozlab, graphical mock-ups of various systems and applications can be created and tests can be conducted in the web browser Google Chrome. No programming is needed when creating mock-ups, rather pictures (scanned sketches or digitally created images), text and generic HTLM-objects are used (such as input fields, buttons or drop-down menus). A set of behaviors can be added to the objects, enabling the wizard to fully or partly replace the mock-upped system's functionality. The wizard can follow the user's actions and thus generate appropriate 'system' output and responses on-the-fly. The web-based Ozlab is meant to support wizards conducting user tests on different kinds of devices, such as smartphones, in both laboratory and field environments (Fig. 1).
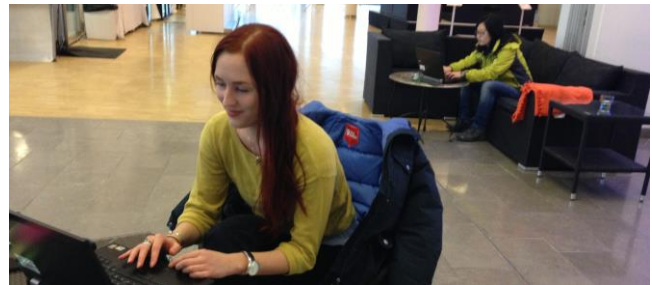

Figure 1. Wizard-of-Oz experiment in field (the student in the background is acting tourist).

3. RESEARCH PROJECT OVERVIEW

Presently, I participate in research on interactive means of collecting information, namely information to systems developers about end-users' needs or requests. As mentioned, I investigate the utility of Ozlab for this purpose. The ambitions include exploring Ozlab's feasibility for providing information and other responses to tourists in 'real' use of a faked system. Naturally, sometimes the manual Ozlab system might indeed be the core functionality rather than a requirements gathering method: for certain short-term events there might not be time enough to do a final design of a system, which is why a WOz support can be useful (but more advanced than mere chat functions as seen in, e.g. Now Interact, www.nowinteract.com).

Ozlab has already been used for more than testing; discussions based on a manually "interactive" system are claimed to be an efficient way of developing mock-ups [10], p. 83).

For the present investigation it might be noted that other, sometimes similar, methods and techniques already exist. The aim is to find out what additional information might be obtained by an interactive, ostensibly already operational system, rather than asking: Is the Wizard-of-Oz technique superior to using surveys and web questionnaires, in-depth interviews, paper prototyping or conducting classical user tests on prototypes? Thus, my question is instead: What added information can be obtained by using the Wizard-of-Oz technique in requirement gathering? The question about additional information also pertains to information collected by analysing e-mails and telephone calls/messages to tourist centres (or other relevant institutions) and web statistics. Such sources reflect what is already present to the tourist. They are not a means of introducing new elements.

4. TRADITIONAL REQUIREMENTS GATHERING METHODS

Some arguments for bringing in WOz as an active requirements gathering method in addition to surveys, interviews, and prototype testing are presented below.

Using surveys is a possible method for requirements collection. Surveys, however, are static and will only generate the users' thoughts on what they are being asked.

Interviewing is better, but is limited in two respects: (i) tourists might simply not find it worthwhile to be interviewed (and a great deal of such information has already been gathered); (ii) the specific needs served by an automaton might not be realistically addressed. The latter reason is also found in ordinary systems development, and for this reason many usability experts advocate using prototyping to elicit systems requirements. [2]

User tests on prototypes in a laboratory are less static than surveys. The lab test will take into account the usage and users' interaction problems. However, the environment-specific and situation-dependent conditions are neglected. User testing on site with a working system would be ideal, but this means that many requirements are already settled.

Paper prototyping can allow for more explorative 'system' reactions. However, it is not so easily conducted with random tourists and perhaps outdoors as in the imagined scenario for this study. Furthermore, the participant may find the technique intrusive [12].

Neither of these methods is really suitable for information collection from the tourist or visitor-on-the-run. They are also hard to adapt to new language requirements.

5. INTERACTIVE REQUIREMENTS GATHERING

By using interactive requirement gathering, i.e. WOz-based information systems, the wizard can adapt to specific users' needs without the researcher distracting the tourist. Ozlab allows for introducing new 'system' responses as the wizard receives more and more user input and gains more ideas during repeated test sessions. This is also more valuable for the tourist/visitor, who can obtain actual information when using the explorative information kiosk. The occasional visitor-on-the-run would probably prefer an information kiosk (or app or even website if

she/he quickly understands how to access it), rather than answering questions from a market researcher. Admittedly, an initial WOz trial with library visitors at lunch time showed people to be prone to leave after one question/input. Lab testing is easier when lacking real representatives of the target group.

Some tourist/visitor systems have been developed after WOz prototyping and live tests (e.g. [11],[1],[8],[4]). However, this method does not seem to have been explored for the development of pure information kiosks (websites etc.).

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