

Participatory design for accessible e-tourism: the case of people with visual impairments

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ABSTRACT

Provide accessible tourist information not only involves providing a website that meets accessibility standards but also provide information on physical and communicative accessibility of the tourist place or service. To this end, this paper presents an accessible participatory design methodology involving both users with visual impairments and website "owners". Advantages over other participatory design methodologies are discussed.

Author Keywords

Inclusive design; Participatory design; People with visual impairments; Web accessibility; e-Tourism; Screen reader users; User interface.

ACM Classification Keywords

D.2.2 Design Tools and Techniques; H.5.2 User Interfaces.

INTRODUCTION

Despite the significant development of e-tourism, i.e. the promotion of tourism and its associated services via the Web, accessible tourist information for visually impaired people is still quite limited. Provide accessible e-tourism not only involves providing a website that meets accessibility international standards (WCAG) but also provide information on physical and communicative accessibility of the tourist place or service that is being promoted [5]. It is therefore necessary to implement a design process that does not only pursue standards compliance but also consider the user expectations and needs [2] as well as the website "owners" strategy [4].

Participatory design is a design perspective that aims to collaborate with end users throughout the design process, rather than designing for them. Traditional methods of participatory design, like paper prototyping, are not adapted to people with visual impairments. This article makes an adaptation of participatory design in order to respond to the singularities of people with visual disabilities. In this way, it presents an original design methodology that was implemented to design accessible e-tourism in the city of Rosario (Argentina). Advantages over other participatory design methodologies are finally discussed.

RELATED WORK

Participatory design including people with visual impairments was implemented, for example, using scenarios to design a search interface [6]. First, people with visual impairments were observed using search engines to identify what features the interface should have. Second, a

scenario was narrated around these features. Finally, the designer and each user dialogued on the basis of this scenario, simulating the interaction.

NaviPlan [1], a software to plan itineraries for people with visual impairments, was also designed in a participatory manner. This project was started by a meeting with users to understand their needs and their displacement perception. Then, brainstorming sessions were made between users, designers and a trainer on locomotion to produce design ideas. These ideas were implemented in programmed prototypes that were tested by users.

Regarding accessible design applied to e-tourism, although there are specific solutions [7], works on participatory design applied to e-tourism have not been gathered.

PROPOSED METHODOLOGY

The proposed design methodology points to both the target users and the website "owners" are actively involved throughout the design process. In the case under study, the website "owner" was the Rosario tourism agency and users were people with visual impairments. The methodology is divided into the following 5 stages:

Step 1. Survey of expectations and ways of use

It is performed under the focus group modality (Figure 1). In addition to the target users and the website designers, the website "owners" are involved in order to listen to first-hand user feedback. In the case under study, users with blindness and low vision were called together, in a wide range of ages and different levels of digital literacy. On behalf of the Rosario tourism agency, executives and communication managers were present. The research team fulfilled the role of designer and moderator. They invited users to give their opinion on web accessibility barriers in general, on their ways of using the Web and on their expectations for tourist information.

Step 2. Design proposal

The designers together with the website "owners" made an initial design proposal taking into account both the users expectations and the "owners" communicative strategy. The design proposal takes the form of visual mockups, as it was done in the case under study.

Step 3. Getting an early feedback

Designers discuss the design proposal with users using the dialogic prototyping technique [3]. Dialogic prototyping is a kind of low fidelity and "Wizard of Oz" prototyping in

which the designer simulates the screen reader reading and the user interacts orally. In the case under study, the design proposal was discussed with some of the users with blindness who had participated in step 1.

Step 4. Development

The definitive design is developed taking into account accessibility standards. The case under study is currently at this stage.

Step 5. Final Test

Users perform a test on the final version of the website in their daily work environments and report the results. This step was still not executed in the case under study.



Figure 1. Focus group with target users, website designers and website "owners".

CURRENT RESULTS

The proposed design methodology in this paper makes contributions in the field of participatory design in general, in the field of participatory design with people with visual impairments in particular and in the field of accessible e-tourism.

On the one hand, the methodology brings together the website "owners" and the target users throughout the design process. This way of working leads to a negotiation between the users' expectations and the "owners" communication strategy.

On the other hand, the technique of focus group versus the observation technique [6] has the advantage of creating a more relaxed environment where users do not feel "under study". In addition, there are not observers who draw conclusions from the users' ways of use but users who draw conclusions from their own ways of use. Compared with including a person with visual impairments in the research team [6], the focus group technique has the advantage of providing feedback from many and diverse users.

Compared with programmed prototypes [1], the dialogic prototyping technique presents the benefits of a prototype that requires no programming (such as paper mockups): it is produced quickly and may be modified during the discussion. In addition, the dialogic prototyping validates the appropriateness of key elements for accessibility, such as names of hyperlinks, buttons and labels; alternatives for images; headers content; among others. Also, the screen

reader simulation made by the designer is more realistic than the narration of a scenario [6] and allows the user to build a more concrete idea of the interface.

Finally, participatory design is a relevant perspective for developing accessible e-tourism because it allows providing not only accessibility compliant websites but also tourist information that is accessible from the user point of view.

ACKNOWLEDGMENTS

The author is a fellow of the Université Paris 8. The project received financial support from the Argentinean Ministry of Science and Technology, the Secretariat of Tourism of Rosario, the Centro de Investigaciones en Mediatizaciones and the Universidad Abierta Interamericana.

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