Chapter 12
Towards a Design Rationale for Inclusive E-Government Services

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ABSTRACT

The tendency of computer use spreading out into more and more areas of life has the potential to bring benefits to people's lives. Examples are electronic government services in areas such as public health or social assistance. The same phenomenon, however, could leave behind people who face different barriers regarding the access to those services, for example people with disabilities, low literacy or low computer skills. This work sheds light on the question of how to facilitate the interaction with those services considering people with diverse physical and intellectual conditions. This study analyzes design ideas utilized in four prototypes of a registration service and explored by user representatives. The results of this analysis inform a design rationale in order to support designers in making design decisions tailored to the respective application and social usage context.

1. INTRODUCTION

Information technology is becoming ubiquitous and is being diffused into more and more areas of life. Consequently, its audience is more diverse than ever, demanding special considerations re-

garding the user interface and interaction design issues. Bødker (2006) used the term "the third wave of HCI (Human-Computer Interaction)" to discuss some of the related phenomena: whereas second wave HCI focused on work settings and users interacting in well-established communities

of practice, the focus of third-wave HCI shifts to computer use in private and public spaces, from workplaces to everyday life. A problem that arises with this third wave is that it might not reach all people, a problem that is also known as the digital divide. In order to cope with the digital divide, many initiatives are underway, often driven by government agencies (e.g. European Commission, 2006).

In developing countries, the gap between those who have access to information and those who have not is the widest. Two of the reasons are the high illiteracy rates and the limited access to information technology in these countries. In Brazil, for example, approximately 14% of the Brazilian people have some kind of impairment (auditory, visual, physical, etc. (IBGE, 2000)), 38% of the population have only basic literacy skills (i.e. are only capable of extracting information from short texts), 37% have no or rudimentary literacy skills (i.e. do not read at all or are only able to extract explicit information from very short texts, e.g. newspaper headlines (IPM, 2005)). In 2008, according to a survey of the Center of Studies about Information and Communication Technology, an agency responsible for producing indicators and statistics for the Brazilian Institute of Geography and Statistics, only 25% of Brazilian households possessed a computer. 61% of all Brazilians aged 10 or older had never accessed the Internet (CETIC, 2008). The high illiteracy rate and the large number of people with limited access to computers make the situation in Brazil significantly different from that in developed countries. Nevertheless, aligned with principles of Universal Design or Universal Accessibility (Stephanidis et al., 1998), the findings presented in this paper should also be useful for the context of developed countries.

In 2006, the Brazilian Computer Society (Sociedade Brasileira de Computação, SBC) addressed the problem of the digital divide defining one of the five Grand Challenges for the Brazilian Computer Science Research as: "Participative and Universal Access to Knowledge for the Brazilian Citizen" (SBC, 2006). One important facet of this challenge is related to HCI specific topics. In response to this challenge, this paper elaborates the question of how to design user interfaces that are accessible to our target audience, i.e. users with all kinds of competencies and needs, including low or no literacy skills and low or no computer skills. Even within the community of HCI practitioners, this question is still challenging.

Whereas one can find a substantial amount of literature about accessibility addressing the necessities of visually or physically impaired users, literature addressing the difficulties of users with low literacy skills hardly exists. Hornung et al. (2008) present some examples of relevant literature and point out the fact that existing solutions usually require a considerable amount of prior knowledge from the user, for example training in the use of a screen reader.

Electronic Government (eGovernment) services could make a difference in terms of promoting access to the digital world for those who are not yet connected. Consider the following scenario: today, a user of the Brazilian public health system has to go to one of the public health centers to schedule an appointment with a physician. Normally he or she has to wait in line for a couple of hours (or might even have to return the next day because the numbers have already run out) and gets his or her appointment marked for some days or weeks thereafter. In regions with a low population density, the trip to the health center alone requires considerable time and effort. The benefits of electronically scheduling an appointment on a public access terminal are obvious.

To reach this goal of promoting the access to digital information, an inclusive approach to web design is a necessary aspect to be considered, as these services must be made available to the entire community, including the elderly, those with disabilities, and individuals with a low level of education.

In this paper, we present and discuss results of observing people in the Brazilian scenario

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