Chapter 21
Towards an Inclusive Walk-in Customer Service Facility

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ABSTRACT

It is estimated that 15% of the world’s population has some sort of physical or sensory disability, according to the World Health Organization (2011). In an era marked by the rising of new technological devices, the inclusion of this public in digital environments still faces many obstacles, what frequently lets it out of this informational society. In this sense, Companhia Energética de Minas Gerais – CEMIG, one of the biggest Brazilian electrical energy utility company, has started to design and deploy a high-tech, user-friendly, inclusive customer service facility aimed at rendering a wide range of services by means of several gadgets such as self-service kiosks, tablets, and interactive panels and tables to help address the digital divide. For doing so, the applications to be developed and run on those devices need to be carefully studied and previously tested in order to meet the needs and expectations of the target audience. This paper describes the process of designing these innovative solutions to meet the demands of this new service channel.

INTRODUCTION

Currently, with the increasing growth of Information and Communication Technologies (ICTs), more and more people have access to technologies. This access, however, is not always done the right way. People with disabilities – approximately 15% of the world population (World Health Organization (2011)) – for instance, still face many obstacles to use technological devices, what excludes them from this growing informational society.

In Brazil, approximately 24% of the adult population (ranging between 14 to 64 years old) has at least one of the following disabilities: visual, hearing, mental, or motor (IBGE, 2010). Among the elderly (over 65 years old), this percentage reaches more than 67% of individuals (IBGE, 2010). These numbers, however, do not include illiterate or semiliterate people who are unable to read contents presented by electronic devices, as well as the visually impaired. In 2000, more than fourteen percent of the adult population had some sort of disability (IBGE, 2010), which represents a considerable growth in ten years. In Minas Gerais, the second most populous state of Brazil, for instance, data indicate a growth

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rate of 5.08 per year of the handicapped population between 2000 and 2010, which grew from 2,667,714 to 4,432,186 individuals most recently (Baptista & Rigotti, 2013). Considering these numbers one can see the importance of using the so-called socially aware design, in other words, the design concerned not only in creating systems that make sense for the whole population, but also aware with the human development of this population (Baranauskas, 2009). The ethics code of the Association for Computing Machinery – ACM (1992) argues that:

*In a fair society, all individuals would have equal opportunity to participate in, or benefit from, the use of computer resources regardless of race, sex, religion, age, disability, national origin or other such similar factor.*

In this sense, it is important to emphasize the need of designing products that satisfactorily meet the population in its great diversity. This positively contributes to the integration of all social profiles in this growing digital society. Furthermore, according to Shneiderman (2000):

*Accommodating a broader spectrum of usage situations forces researchers to consider a wider range of designs and often leads to innovations that benefit all users.*

In the theory of action, Norman (1988) defines the so-called gulfs of interaction (depths of interaction), in other words, hypothetical use scenarios that hold off expectations of users and designers. In this sense, Norman emphasizes the need of shortening these gulfs by approximating systems to users’ cognitive load, building interfaces that meet expectations of both parts.

In this context and considering the scenario previously described concerning the technological growth, it is possible to think about creating solutions that meet the population in its great diversity, by shortening gulfs previously commented, which makes applications more friendly and accessible. Therefore, it was proposed by CEMIG (Minas Gerais Electric Utility Company) in partnership with CPqD (Telecommunications Research and Development Center), a project to conceive innovative solutions to serve its consumers (an inclusive walk-in customer service facility), including elderly, semiliterate, with disabilities (visual, hearing or motor impaired), or with some temporary mobility restriction. The major goal of this project is to create a walk-in facility that enables customers of all profiles to autonomously interact with devices and request services related to electrical energy with little or no assistance. This is expected to be done with the help of multimodal technological devices such as self-service kiosks, interactive tables, and tablets using specially built inclusive apps to satisfy users’ needs.

Self-service kiosks can be described as convenient solutions that provide services for different types of contexts such as malls, banks, and airports. Many of them, however, are not accessible for all users. For instance, most of the kiosks are not accessible for blind people since they are solely based on a touch screen panel without audible feedback. The hearing impaired who can communicate only through sign language is also usually excluded from most of these machines.

Creating solutions for this vast diversity of people with different abilities and needs is a challenge for designers. It is hard to precisely tell the current demands of each group of users (blind, deaf, elderly, etc.) without consulting them. Several works have tried to address most of accessibility problems; however, most of them only treat one or at most two users’ concerns (Sandnes et al., 2012; Hagen & Sandnes, 2010). Their contributions represent, nevertheless, a huge step towards more accessible solutions.