Providing Information about Older and Disabled Users to Designers

Joy Goodman, P John Clarkson, Patrick Langdon
Engineering Design Centre, Department of Engineering, University of Cambridge, Cambridge CB2 1PZ, UK
{jag76, pml24, pjc10}@eng.cam.ac.uk

In order to make a real difference to the products and services available to older people, we need to influence and equip those who design these products in practice. In particular, these designers need information about the end users. This paper discusses different formats that can be used to provide this information, such as personas, detailed disability information, simulations and contact with real users. It considers the advantages and disadvantages of the different formats and how they fit with designer's work practices. We also describe some of our work in producing information in these formats and outline plans for evaluating them with designers.

Inclusive design, designers, user information, design practice

1. INTRODUCTION

When considering HCI and the older population, it is not enough to produce suitable and useful applications for older people nor to figure out how to best design interfaces for them, although both of these are useful and important. If we are to make a real difference to the products and services that older and disabled people have access to, then we need to influence and equip those who produce and design these products commercially.

Persuading designers to consider older and disabled people is an important and sometimes difficult task, but, even once they are convinced, many designers find it hard to produce really inclusive designs. One key reason for this is that they feel they lack the knowledge and tools to do so [6]. In particular, they need information about older and disabled users, in order to create an understanding of their demands on and use of products. In actual fact, such information is already available, but it is often not used very productively. Preliminary research indicates that part of the reason for this may be that the information is not available in formats suitable for designers' use [4].

Our work therefore examines how to provide designers with user information in formats that they can use effectively. We look at designers' current information use and examine various alternative formats of user information, focusing on four promising types from across the spectrum of different formats.

2. DESIGNERS' INFORMATION USE

A study of design practice was carried out, comprising observations, interviews, surveys and a literature review [5]. Initial results indicated that designers tended to place an emphasis on information provided by the client and information from their own experience and prior knowledge. Other popular information sources were people (colleagues and experts), trade literature (such as magazines) and previous designs and case studies [7]. However, commonly used information often failed to provide in-depth insight into users. It is also worth-while to note that, in general, there was a tendency to use informal, exploratory, quick and cheap methods.

It seems that there is a need for user information that provides more in-depth insight into users and yet is quick and cheap to use and lends itself to use in informal and exploratory ways. Information is more likely to be used if it can be adapted to fit designers' requirements (like information obtained from colleagues and experts); and if it is visual and uses designers' "language" (like trade literature and product exemplars).

3. FORMATS OF USER INFORMATION

3.1 Personas

Personas are fictional users, often based on real people, who represent the end users during the design process [1]. They can be presented in multiple different ways, from textual descriptions through photographic montages to video snippets, and help to focus the designers' attention on the needs of the end users. If sufficiently detailed, they can help to create empathy with the end users and provide in-depth insight into their needs and lives.

Personas can be used informally and they allow and encourage the exploration of user needs. Different methods of presentation mean that they can be adapted to different situations of use, with visual methods showing particular promise for engaging designers. They can also be used cheaply and quickly. However, really reliable and representative personas can take a long time to create, especially if they are tailored for a particular project. In addition, personas are not well suited to presenting detailed technical information, e.g., about disability, and their focus on representative individuals can make it hard for them to communicate the range of abilities in a population.

We have developed a set of personas, grouped in families and neighbourhoods. This emphasizes the social links between people and the fact that people usually come in social units as well as individuals. It also highlights how abilities vary across social units, particularly with age. The personas are presented using photographs and brief textual descriptions and are backed up with video footage of them using a range of products.

3.2 Detailed Disability Information

Another important type of user information, particularly for inclusive design, is detailed information on capability and how it varies across the population. This kind of information provides a more detailed understanding of disability and how it impacts design. It also supports designers in making detailed decisions. However, it is often presented using methods such as tables and graphs, which are not well suited to designers, who are often more visually oriented [8]. It can therefore sometimes seem rather dry and it may not encourage empathy with users.

We are exploring alternative methods of presentation, such as a visually-based card pack or folder that uses photographs and diagrams to illustrate the effects of different capability restrictions. We aim to present the information in designers' "language" and encourage more empathy with the end-user. Different methods of presenting population data are being considered and design guidance is also provided.

3.3 Capability Simulators

We can also communicate about capability loss by simulating its functional effects. For example, spectacles can simulate various kinds of vision loss and arm restraints can restrict movement, simulating the effects of arthritis. These simulators can help a designer to sympathise with disabled users and to gain an internalised understanding of capability loss. However, there are limits on what can be simulated, e.g. suitable and realistic methods of simulating cognitive impairments have yet to be found. Simulators can also only communicate certain aspects of what it is like to have a disability, failing, for example, to account for context, support and coping strategies. We have produced a set of flexible and graded simulators for vision, dexterity and reach and stretch [2]. We are also investigating using software to simulate the effects of vision and hearing loss on image and sound files.

3.4 Contact with real end-users

Involving real users can create in-depth understanding and empathy, provide useful ideas and show what really works in practice. Like experts, users can provide information specifically suited to the designer's situation and this information is in an easily-accessible format. However, as with personas, it can be hard to communicate detailed information and information about the range of abilities in the population. User involvement can also be expensive and it can be hard to obtain a user sample that is really representative of the user population. We are therefore producing guidance on the selection and involvement of users and are investigating a variety of methods of involving users more cheaply and effectively.

4. DESIGNERS' RESPONSE

Initial versions of these formats have been presented to designers in training activities. Responses so far have been encouraging, suggesting that designers find them engaging and that they help to create understanding and empathy. However, the purpose of the workshops was to use a variety of information formats to equip and inspire designers and design managers, rather than to assess responses to different formats. Further work is therefore planned to compare the different formats, providing them to participants in an inclusive design competition [3]. Participants' use of information will be tracked and their responses to the different formats probed.

REFERENCES.

[1] Cooper, A. (1999) The inmates are running the asylum. SAMS, Indianapolis.
[2] Cardoso, C. and Clarkson, P.J. (2006) Impairing designers: using calibrated physical restrainers to empathise with users. Proceedings of the 2nd International Conference for Universal Design in Kyoto, International Association for Universal Design. Kyoto, Japan (in press).
[3] Design Business Association. DBA Inclusive Design Challenge. http://www.dba.org.uk/awards/challenge.asp. Accessed 9 Aug 2006.
[4] Dong, H. and Clarkson, P.J. (2005). The framework of an inclusive design toolkit. Proceedings of Include 2005, London, UK, 5-8 April 2005, Helen Hamlyn Research Centre, Royal College of Art.
[5] Goodman, J., Langdon, P.M. and Clarkson, P.J. (2006) Equipping Designers for Inclusive Design. Gerontechnology, **4(4)**, 229-233.
[6] Goodman, J., Dong, H., Langdon, P. and Clarkson, P.J. (2006) Increasing the Uptake of Inclusive Design in Industry. To appear in Gerontechnology, Special Issue on Universal Design.
[7] Goodman, J., Langdon, P.M. and Clarkson, P.J. (2005) Providing Strategic User Information to Designers. Proceedings of HCI and the Older Population, workshop at HCI 2005, 5 Sep 2005.
[8] Sims, R. (2003). 'Design for all': methods and data to support designers. PhD Thesis, Loughborough University.