

Inclusive Design Guidelines for HCI

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Keywords:

Guidelines, accessibility, inclusive design, HCI, human-computer interaction

Let us say you wish to design and develop a new product or technology. You want to ensure that as many people as possible are able to use it—not only is it politically and in some countries legally correct but with our ageing population it makes good economic sense. You want to follow existing design advice, of which you have been told there is much around. But where is the best place to look, and who do you go to for more specific information? You may decide to look for published materials, such as design guidelines. However, when you find guidelines, you cannot always be sure that they will be applicable to your specific product or technology. If you follow these guidelines, can you be sure that your product will be usable by more people?

A difficulty with guidelines is that by their very nature, they are simplifications that must be general enough to be applicable to a wide range of products and technologies. They are usually drawn from best available practice, sometimes applied to different situations and technologies and often not validated for your own specific area. Where guidelines are more precise, for example, by specifying particular dimensions, they are difficult to apply to other technical areas or are considered too restrictive by innovative designers. Where technological innovation is taking place, there may be no guidelines available and a designer may end up drawing from inappropriate design advice without questioning its validity. Frequently, it is also true that design recommendations are conflicting, not only between different sets but also within the same set of guidelines.

We decided that we wanted to produce a book on guidelines to focus on some of these more permanent issues about guidelines, such as their validity, availability and future direction, as well as examples of methodologies and tools to work with them effectively. Nevertheless, we would also include some existing sets of guidelines to ensure better understanding of these concepts, as well as providing pointers to designers to obtain more detailed information.

The idea for a book on these issues emerged through the Working Group 13.3 on *Human-Computer Interaction and Disability* of the International Federation for Information Processing (IFIP) (see www.ifip.or.at/ and www.info.fundp.ac.be/IFIP13-3/). At a meeting held in Lisbon, we decided to study, promote and disseminate knowledge about design guidelines for accessible systems. Through a series of workshops on this topic, we started compiling ideas and materials on inclusive design guidelines, although most of the chapters were in the end written specifically for this book. Entitled *Inclusive Design Guidelines for HCI* (or *Human-Computer Interaction*) it is edited by the authors of this paper and will soon be published by Taylor and Francis. Although we use the term HCI, we could easily say human-machine interaction, or user-system interaction. In fact, ‘computer’ should be understood in the very widest sense, since today’s complex products will now very often have a built-in or ‘embedded’ microcomputer.

The book includes the following parts:

- General issues in the design process (including, for example, the verification and evaluation of the guidelines by end-users, based upon the experiences of the authors within the Information Society disAbilities Challenge International Association (ISdAC).
- Tools for accessing and using guidelines (e.g., the Bobby tool which will test pages on the World Wide Web for accessibility and guide the repair process.)
- Existing guidelines (where a range of existing sets of general guidelines are introduced and advice is given on where to look for further information, including, for example, the W3C–Web Accessibility Initiative (WAI) and the ISO Technical Specification on *Ergonomics of human–system interaction—guidance on software accessibility*).
- Guidelines for specific application areas (where authors assess whether guidelines developed for specific users, activities and contexts of use can be relevant and applicable to other application areas, for example, telecommunications, public access terminals, systems for transport, home automation products, and computer-based instruction).
- The Future (where the author looks toward general approaches for making future products more flexible and easier to use for all).

Case Study

As an example of applying general guidelines to more specific application areas, take guidelines for accessible systems for transport. These systems can range from a route guidance and navigation system inside a vehicle or a public information system in a train or bus station. Design guidelines for such systems can draw from existing sets of guidelines such as the *Nordic Guidelines for Computer Accessibility* and also guidelines for public access terminals, described in chapters by Clas Thoren and John Gill respectively in the book.. However, there are certain aspects of the travelling environment where it is not easy to apply general guidelines without some additional information, interpretation or testing. This is particularly true of systems used in cars, where the travelling task is complex, the primary control task is very demanding and the environment is constantly changing. For these reasons, guidelines in the travelling environment ought to be based on highly valid, very applicable, often replicated and consistent data, but this is usually not the case. The European Union’s (EU) TELSCAN project made some progress in developing further prescriptive and process design guidelines specifically for advanced technologies in transport. These include, for instance:

- the design of the system interface (e.g., the recommendation that an adaptive cruise control system allow a longer headway, or distance to the vehicle in front, to accommodate the needs of all users)

- what type of specific information is needed by older and disabled travellers (e.g. whether the route between two train platforms is accessible), and also
- what methods and tools can be used to ensure that the needs of older and disabled people are considered in the system evaluation process (e.g. providing tips when inviting older drivers to participate in user trials in a driving simulator.)

Summary

We do not suggest that this book provides an exhaustive study of all existing design guidelines for HCI. However, we hope that the reader will gain a better understanding of a wide range which do exist and will be directed towards a more effective use of these and other guidelines. In addition, we hope to promote further discussion on issues such as:

- The need for full user participation during all phases of the design cycle, even more crucial because frequently designers overlook the special needs they should be taking into consideration
- The need for design students to be given training and experience in the use of guidelines for the design of accessible technologies. One useful technique to teach students to use guidelines is to put them in a ‘pretend’ design context and encourage them to take reasoned design decisions, based on the knowledge they can extract from guidelines.
- The need for guidelines to cover ethical and social aspects to ensure that social inclusion, privacy and decision-making are not overlooked. This would be especially relevant, for example, when designing and evaluating technology to be used in the care of people with dementia who are unable to consent to its use.
- The implementation of and adherence to accessibility legislation, which may well be the only way to encourage industry to comply with guidelines and standards for inclusive design.

Each one of us can become handicapped in certain environments, for example using controls when our hands are cold or when the lighting is low, or more generally when travelling in a foreign country. We believe that the guidelines and guidance presented through this book will contribute to a more inclusive design philosophy leading to more usable systems for all.

References

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