Just Ask: Integrating Accessibility Throughout Design

Accessibility in User-Centered Design:

Background

The goal of incorporating accessibility into User-Centered Design is to follow a "process of creating products (devices, environments, systems, and processes) which are usable by people with the widest possible range of abilities, operating within the widest possible range of situations (environments, conditions, and circumstances), as is commercially practical."[1]

While Part II of this book is focused primarily for people who are familiar with User-Centered Design (UCD) and have a basic understanding of accessibility, this chapter provides brief introductions and links to resources for those not familiar with UCD or accessibility.

This chapter does not fully cover UCD or accessibility. It briefly introduces the following topics:

- What is Accessibility?
- What is User-Centered Design?
- Incorporating Accessibility in User-Centered Design

What is Accessibility?

Accessibility basically means that people with disabilities can use a product. More specifically, accessibility is making user interfaces perceivable, operable, and understandable for people with a wide range of abilities. It encompasses all

disabilities, or functional limitations, including visual, auditory, physical, speech, cognitive, and neurological disabilities. This includes temporary conditions, such as when you break your arm, or lose your glasses.

Accessibility also makes products more usable by people in a wide range of situations. Situational limitations come from circumstances, environments, and conditions, and can affect anybody—that is, people *without* disabilities as well. For example, situational limitations include using the Web on a mobile phone when your eyes are busy (such as driving), in bright sunlight, in a dark room, when your hands are full, in a quiet environment (where you don't want it to make noise), in a noisy environment (where you can't hear well), and in an emergency (when you may not be thinking clearly).

Thus, while access to people with disabilities is the primary focus of accessibility, it also benefits people without disabilities and organizations that develop accessible products because designing for functional limitations overlaps with designing for situational limitations.

For a more comprehensive introduction to web accessibility, including specific examples of how web accessibility benefits organizations and individuals, see the *Understanding Web Accessibility* book chapter.

Accessibility related to usability

Accessibility has a technical component and a user interface component. Accessibility of user interfaces can be approached through usability. International Organization for Standardization (ISO) 9241-11 defines usability as the "extent to which a product can be used by specified users to achieve specified goals effectively, efficiency and with satisfaction in a specified context of use." [2] Accessibility focuses on including people with disabilities as the "specified users" and a wide range of situations, including assistive technologies, as the "specified context of use".

Put more simply, usability means designing a user interface that is effective, efficient, and satisfying. Accessibility makes sure the user interface is designed to be effective, efficient, and satisfying for more people—especially people with disabilities, in more situations—including with assistive technologies.

Accessibility is about designing user interfaces so that *more people* can use your product *effectively* in *more situations*. [3]

The relationship between accessibility and usability is discussed in more detail in "Distinguishing Between Accessibility and Usability Issues" in the *Reporting Usability Testing* chapter, and in the online resource *The Relationship Between Accessibility and Usability*.

The next section discusses adapting a User-Centered Design process to design accessible products.

What is User-Centered Design?

User-Centered Design (UCD) is a user interface design process that focuses on usability goals, user characteristics, environment, tasks, and workflow in the design of an interface. UCD follows a series of well-defined methods and techniques for analysis, design, and evaluation of mainstream hardware, software, and web interfaces. The UCD process is an iterative process, where design and evaluation steps are built in from the first stage of projects, through implementation.

ISO 13407 *Human centred design process for interactive systems* states: User-centered design "is an approach to interactive system development that focuses specifically on making systems usable. It is a multidisciplinary activity." [4]

While the basic principles and techniques are the same, there are different variations of user-centered design processes. The following example is typical of a UCD process for designing software user interfaces.

Example UCD process phases and steps

> ***For an example User-Centered Design project redesigning a website**, see "WAI Web Site Redesign Project".*

User-Centered Design can be broken into three main phases: Analysis, Design, Evaluation.

The Analysis Phase typically includes steps such as:

1. Vision, goals, objectives
2. User analysis
3. Task analysis
4. Information architecture analysis
5. Workflow analysis

The Design Phase typically includes:

1. Conceptual/mental model, metaphors, design concepts
2. Navigation design
3. Storyboards, wireframes
4. Detailed design
5. Paper or other low-fidelity prototypes
6. Medium-fidelity prototypes, for example, online mockups
7. Functional, high-fidelity prototypes

Evaluation uses techniques such as:

1. Design walkthroughs, cognitive walkthroughs
2. Heuristic evaluations
3. Guidelines reviews
4. Usability testing: low fidelity through high fidelity; informal through formal

> ***For an example usability testing protocol****, see "WAI Web Site Usability Test".*

For a list of books and online articles that cover UCD in detail, see "User-Centered Design" in the *Appendix: Resources*.

Incorporating Accessibility in User-Centere

As stated previously, UCD is a process for designing usable products, and user interface accessibility can be approached as a subset of usability. It follows then that designers can use UCD to design products that are accessible. In practice, accessible design techniques do fit well into established UCD processes.

With a few additions and adaptations, design teams can use typical UCD practices to focus design on accessibility. Incorporating accessibility into UCD means designers include the widest range of possible users and situations.

Below is just a sample of how accessibility fits into UCD:

- **Business and usability goals** include meeting accessibility requirements
- **Understanding user characteristics** includes users with various disabilities
- **Environmental aspects** for a mobile device include hands-free operation
- **Workflow scenarios** include use of an assistive technology
- **Usability testing** includes participants with disabilities

The rest of this book guides you through incorporating accessibility into User-Centered Design processes.

References

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Some of the information in this chapter was previously published in:

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