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Agenda

9:00 – 9:30	Introduction: Disabilities, Assistive Technology & Universal Design
9:30 – 10:30	Experience Sessions (Round 1)
10:30 – 11:00	Break
11:00 – 12:30	Experience Sessions (Round 2 Legislation & Regulation
12:30 – 2:00	Lunch
2:00 – 3:30	Issues and Strategies for Info Tech Products (demos and exercises)
3:30 – 4:00	Break
4:00 – 4:45	Issues and Strategies for Web Access (demos and exercises)
4:45 – 5:15	Accessibility and Emerging / Future Technologies
5:15 – 5:30	Resources for Information, Training, Technical Assistance Conclusion

Course Overview

In designing today's information technologies, it is increasingly important to make them usable by individuals with a much broader range of abilities and limitations. The driving forces behind this trend are twofold: changing demographics (an aging population) and Federal regulation (most recently, Section 508 of the Rehabilitation Act).

This full-day tutorial is focused on commercially practical strategies for enhancing the interfaces of information technologies so that they are more flexible and accommodate a wider range of users. In addition, it highlights research areas having to do with modality independent interfaces and machine readable, operable, and comprehendible interfaces and document formats, all of which are critical to next-generation data mining and AI agent-based interfaces.

We have found that the best way to enable designers to evaluate and improve the usability of their products for those who have limitations is to provide hands-on experience with products while operating with limitations, and then look at some of the key strategies used to provide accessibility. We will spend most of the morning engaged in "experience" activities to achieve this objective.

Another key to understanding how to design more usable and accessible products and Web sites is to differentiate the "essential" issues and strategies from those that enhance usability and accessibility. In the afternoon, we will engage in some exercises to gain an understanding of these concepts.

At the end of the tutorial, we will take a look at what may be coming in future technology, and discuss the challenges and opportunities it presents for improving accessibility. We will also provide an overview of resources available to draw on for additional information, training, or technical assistance.

Learning Objectives

1. To introduce participants to the different disabilities and develop a basic understanding for the major problems faced by people with different disabilities in using computers and information technologies (including the World Wide Web).

2. To show how the problems and solutions for disability access parallel the constraints and solutions needed for the mass market customers (e.g., for data mining, mobile computing, etc.).

3. To provide hands-on experience with accessibility issues and solutions.

4. To demonstrate low-cost strategies for building access into standard products (and increasing mass market ability simultaneously).

5. To help separate key accessibility issues from lower priority issues.

6. To acquaint participants with the resources available to draw on for additional information, training, or technical assistance.

Introduction: Disabilities, Assistive Technology & Universal Design

Basis for the approach

We are disabled when we cannot adapt to the world as it is currently designed.

Disability is …

… not the condition of a person
… but rather the result of the intersection
- of a person's abilities
- and the requirements of their environment.

- If everyone else had wings …
… we would all suddenly be disabled.

- Not because we can't fly …
… but because they would design the world differently.

Three ways to address the problem

1. Change the person and their capabilities
Surgery, Rehab, Training, Personal Assistive Technologies

2. Install adaptations in the environment
AT Adaptations

3. Change the way things are designed
- So that they are more widely usable

- Universal / Accessible Design

All part of a continuum

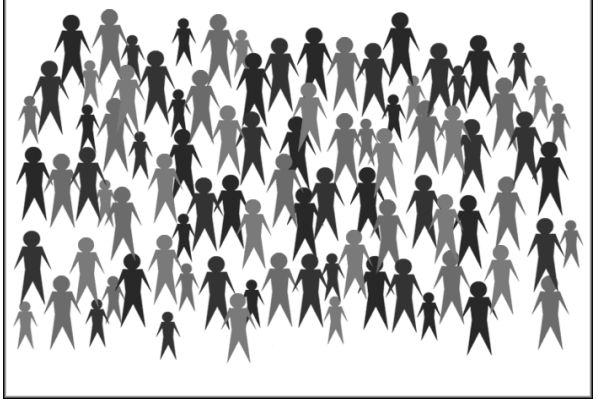
- No clear line between disability and “able bodied”

- Census results: many households list no one as disabled, but one or more people with missing limbs.

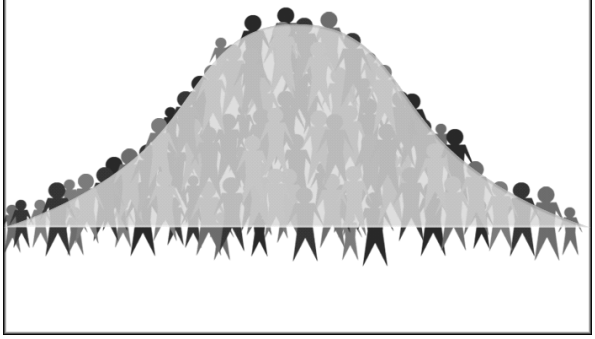
- Person may have trouble with one product (be “unable”), yet be a power user on another product or design.

- Many people have no “disability,” but have trouble using products.

For Any Given Product or Function



Users Form a Usability Curve



Users who have no trouble using any part of the product (power users)

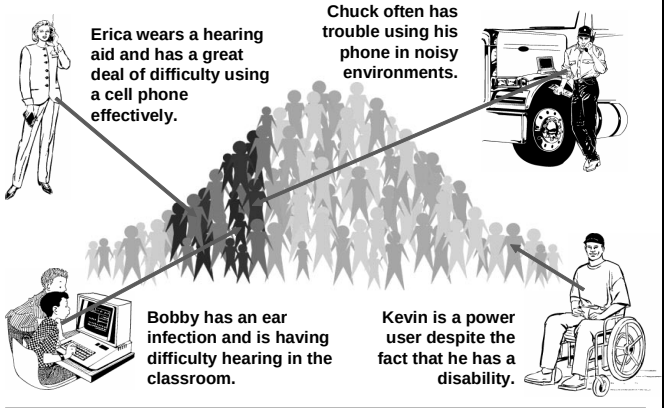
Users who only have a little trouble using the product

Users who have trouble using some product features but can use the product pretty well.

Users who find it hard to use some or all of the product

Users who are unable to use the product

Different reasons for usability problems



Traditional human factors work tries to maximize the number of people who have little or no trouble using a product.

Disability access professionals try to minimize the number of users who have difficulty or cannot use a product.

In fact, it's all part of a continuum and the lines tend to move together with better (or worse) design.

Functional Limitations –Causes

-- At birth

-- By disease or misadventure

-- With aging *(see pages 7 –8)*

-- Temporary

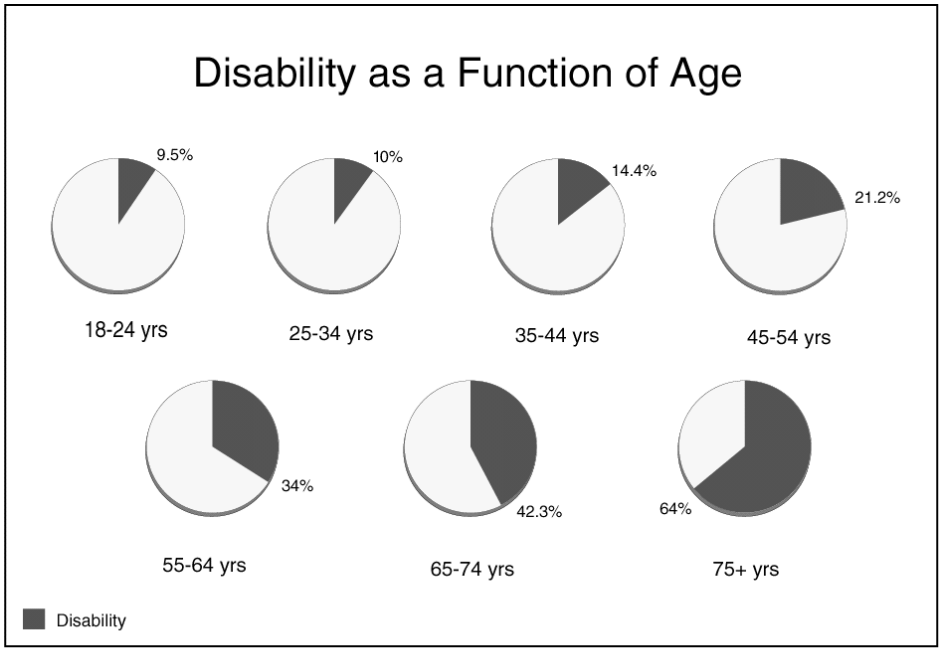
-- Circumstance

Disability As a Function of Age

Trace Center
College of Engineering
University of Wisconsin-Madison

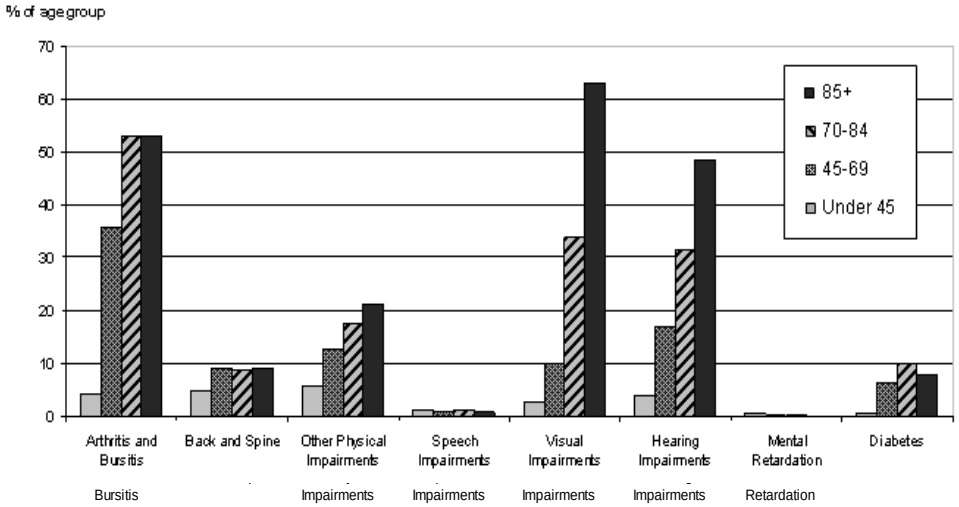
Source: U.S. Census Bureau Report on Americans with Disabilities: 1994-95, P70-61 (August 1997)

Based on Survey of Income and Program Participation, Oct. 1994-Jan. 1995



Source: U.S. Census Bureau Report on Americans with Disabilities: 1994-95, P70-61 (August 1997)
Based on Survey of Income and Program Participation, Oct. 1994-Jan. 1995

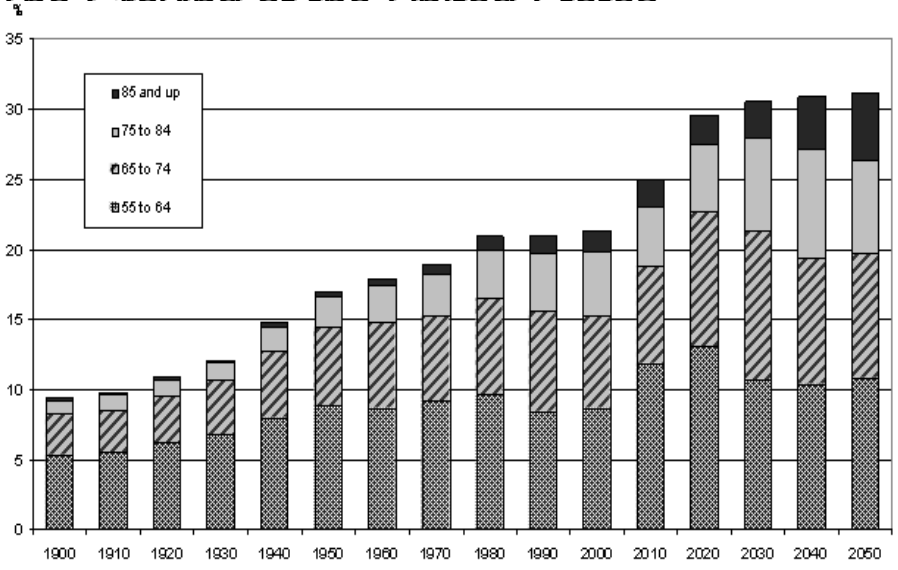
US Prevalence of Selected Impairments



Type of Impairment

Survey: National Health Interview Surveys, 1983-1985: tabulations from public use tapes
Based on data from LaPlante (1988)

The Graying of the United States



Sources: 1900-1980: U.S. Bureau of the Census, Decennial Censuses of Population. 1990: U.S. Bureau of the Census, Projections of the Population of the United States, by Age, Sex, and Race: 1983 to 2080. Current Population Reports, Series P-25, No. 952, May 1984. Projections are middle Series. 2000-2050: U.S. Census Bureau, Projections of the Total Resident Population by 5-Year Age Groups, and Sex with Special Age Categories, Middle Series, 1999 to 2100, (NP-T3), January 2000.

If a product is:	It will be accessible to:	And also usable by:
Operable without vision	People who are ***blind***	• People whose ***eyes are busy*** (e.g., driving your care & phone browsing) • People who are ***in darkness***
Operable with low vision	People with ***visual impairments***	• People using a ***small display*** • Or in a ***smoky environment*** • Or who just ***left their glasses in the other room***
Operable with no hearing	People who are ***deaf***	• People in ***very loud environments*** • Or whose ***ears are busy*** • Or are in ***forced silence*** (e.g., library or meeting)
Operable with limited hearing	People who are ***hard of hearing***	• People in ***noisy environments***
Operable with limited manual dexterity	People with a ***physical disability***	• People in a ***bouncing vehicle*** • Or who are in a ***space suit or environmental suit***
Operable with limited cognition	People with a ***cognitive disability***	• People who are ***distracted*** • Or ***panicked*** • Or under the ***influence of alcohol***
Operable without reading	People with a ***cognitive disability***	• People who just ***haven't learned to read 'that' language*** • People who are ***foreign visitors*** • People who ***left their reading glasses behind***

Universal Design

Definition: The process of designing products so that they are as usable to people with the widest range of abilities and constraints as is commercially practical and profitable.

This includes:

- Accommodating the widest range of abilities as is practical
- Being directly usable when practical
- Being usable via assistive technologies when direct use is not practical

"Products" includes devices, systems, environments, services, processes, etc.

Process, <u>not</u> Outcome

There are no universal designs.

- There are always people who cannot use some or all of the product

Therefore, Universal Design must be approached – and presented - ***<u>as a process only</u>***.

Is a product 'universally designed"if it requires the user to have or use an assistive technology?

This is a misdirected question.

- UD is not an outcome, but a process
- ***Did you try to make the product as usable as practical to everyone?***
  (Then you practiced UD even if it is not usable by someone – or even many. It may not be a good example of success, but it is an example of UD practice.)

In trying to practice UD –BOTH direct access and compatibility should be considered.

Think about accessible buildings or universally designed houses and people who use wheelchairs.

Assistive Technology (AT) Adaptations

Examples
- -- Screen readers
- -- Special keyboards
- -- Adaptive software

Role for AT
- -- Tuned to type of person
- -- Person knows and has practice with
- -- Tuned to the type of equipment and task
- -- All add up to efficiency
- -- Also no need to learn

Its Limitations
- -- May not have one for the type / model of device
- -- May not have with – when they encounter your product
- -- May not be able to attach (physical issue, or no permission)
- -- Cost for AT
- -- Admission and stigma of having to purchase and use an assistive device

Personal Assistive Technologies

Definition: AT that acts as an extension of the person and enhances their general abilities.

Examples:
- -- Wheelchair
- -- Glasses
- -- Headstick, mouthstick, brace
- -- Personal remote console / controller

Its Role:
- -- Tuned to the person – including body-mounted
- -- Person knows and has practice with
- -- Can provide interfaces that are too expensive to build in (e.g., dynamic Braille)
- -- All add up to efficiency
- -- Also no need to learn

Its Limitations
- -- Ability to work with standard technology is dependent on standard technology's design (compatibility issue)
- -- Cost for electronic PAT
- -- Admission and stigma of having to purchase and use an assistive device

AIAP: Alternative (User) Interface Access Protocol

In development by the V2 technical group of National Center for Information Technology Standards (NCITS)
-- an industry consensus standards group

Purpose of V2:
To provide standard mechanisms for people (including those who have disabilities) to be able to change the user interface on standard mass market (target) products to an alternate user interface that they can operate or operate more easily.

V2 working on the 4 different ways to provide alternate interface to the user.

NOTE: Personal AT does ***not*** have to be ***on*** the person.

It just has to be WITH the person (whenever they encounter the technology/product).

If a person is always connected to the net
(or always connected when they use a technology / product),

THEN
-- ***network based services*** or capabilities ***are*** "with the person" when they encounter the product,
-- and can therefore serve as Personal AT.

Web Accessibility and Training Information on the Web

January 2002

The following is a compilation of resources for Web guidelines and policies that individual Trace Center staff have found particularly useful.

Accessible Web Guidelines

- **Web Content Accessibility Guidelines 2.0** (Working Draft) is the first step toward incorporating feedback received from the Web Content Accessibility Guidelines 1.0 published in May 1999. It is the first attempt to write checkpoints that may be applied to a wider range of technologies and that may be understood by a more varied audience.
  http://www.w3.org/TR/WCAG20/

- **Web Content Accessibility Guidelines 1.0** explain how to make Web content accessible to people with disabilities. The guidelines are intended for all Web content developers.
  http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505/

  - **Techniques for Web Content Accessibility Guidelines 1.0** is the gateway to a series of related documents that provide techniques for satisfying the requirements defined in Web Content Accessibility Guidelines 1.0. It covers core techniques as well as HTML and CSS specific techniques.
    http://www.w3.org/TR/WCAG10-TECHS/

  - **Errata in Web Content Accessibility Guidelines 1.0** lists corrected information in the Web Content Accessibility Guidelines since it was published in 1999.
    http://www.w3.org/WAI/GL/WAI-WEBCONTENT-ERRATA

  - **Checklist for Web Content Accessibility Guidelines 1.0** provides a list of all checkpoints from the Web Content Accessibility Guidelines 1.0, organized by concept, as a checklist for Web content developers.
    http://www.w3.org/TR/WCAG10/full-checklist.html

- **508 E&IT Requirements** includes links to the final 508 standards, a summary of the standards and public comments on the FAR rule.
  http://www.section508.gov/508law.html

Reference Materials for Creating Accessible Web Sites

- **WAI Quick Tips Reference Card** is an introduction to the key concepts of accessible web design.
  http://www.w3.org/WAI/References/QuickTips/

- **Getting Started**: Making a Web Site Accessible is a resource for learning and understanding Web Accessibility.
  http://www.w3.org/WAI/gettingstarted

- **Alternative Web Browsing** offers a collection of pointers to information demonstration versions of alternative browsing methods.
  http://www.w3.org/WAI/References/Browsing

Training Resources

- **W3C WCAG Curriculum** highlights one guideline and has a link to a page with one or more "checkpoints" that an author may consider when ensuring the accessibility of a page design.
  http://www.w3.org/WAI/wcag-curric/overgid.htm

- **Web Accessibility Training Overview** outlines strategies and resources that may be useful in preparing training sessions on Web accessibility.
  http://www.w3.org/WAI/training/Overview.html

- **Section 508 Universe** currently includes an online course to train Webmasters how to develop Web pages that meet the 508 standards for Web pages as specified in §1194.22 of the Federal Register published on December 21, 2000.
  http://todl.anteon.com/508/

- **Optavia Corporation** offers a variety of workshops that enable organizations to integrate essential usability and accessibility design principles into their basic development processes.
  http://www.optavia.com/training/

- **WebAble's Accessibility Training Program** focuses on developing a strategy for designing accessibility into corporate web environments, including the Internet, in-house intranets and collaborative extranets.
  http://www.webable.com/services/seminar_description.html

- **EASI Barrier-free Web Design Workshops** focus on web design issues relevant to accessibility and are offered at beginner and advanced levels.
  http://www.rit.edu/~easi/workshop.htm

- **WebAIM Tutorials** provide specific examples for implementation of the Web Content Accessibility Guidelines.
  http://www.webaim.org/tutorials/

- **HTML Writer's Guild Accessible Web Design Course** shows how to ensure your web site can be used by as broad an audience as possible.
  http://www.hwg.org/services/classes/