



# Section 508 Policy, Requirements and Refresh

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Issues and Answers in  
Digitization  
CENDI/FLICC/FADGI/NSF  
Workshop 6

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# Agenda

- Introduction & Background
- 508 Overview
- Textual Equivalence
- Electronic Content and the 508 Refresh
  - File Formats
  - Examples using Word
- @@ Wrap Up
- Other ADA/508 Implications
- Q&A



# Introduction



# Access Board Overview

- Architectural Transportation and Compliance Board, 1973
  - Independent Micro-Agency (28 staff)
- 25 Board Members
  - 13 Public Presidential Appointees
  - 12 Senior Federal Agencies Representative
- Develop and maintain design criteria
  - Built Environment (*includes library facilities*)
  - Transit Vehicles
  - Telecommunications Equipment
  - ***Electronic and Information Technology***
- Provide Technical Assistance and Training



# Access Board Authority

- Communications
  - Section 255 of Telecommunication Act
    - Telecommunications Act Accessibility Guidelines
  - Section 508 of the Rehabilitation Act
    - ***Electronic and Information Technology Accessibility Standards***



# Rulemaking

- Open & Inclusive Process
  - Public advisory committee (2 years!)
    - Public informational meetings
  - ANPRM, 22 March 2010
    - 90 day public comment period
    - <http://www.access-board.gov/sec508/refresh/draft-rule.htm>
- Currently refreshing 508/255
  - Ad hoc drawn from board members, board delegates, and a few ex officio Federal employees
  - Work is pre-decisional and discretionary
    - Economic impact study, but only after draft text completed
  - NPRM late 2011, early 2012



# Accessibility



# Three A's

- Three important terms:
  - Accessible / Accessibility
  - Accommodation
  - Assistive Technology
- Terms are ***not*** interchangeable
  - Terms do overlap...



# Accessible

- Focuses on ensuring the E&IT is functional for people with disabilities.
  - An example would be ensuring that the agency time and attendance system works, so that persons accommodated with screen readers can successfully use the system to get paid.
- Accessible design allows the ***use*** of assistive technology



# Accommodation

- Focuses on the individual, on providing needed technology to allow end-users to do their jobs.
  - An example would be providing a screen reader to a visually impaired person.
- Assistive Technology can be provided as an accommodation, but requires accessible E&IT to be useful.



# Assistive Technology

- “any item, piece of equipment, or product system, whether acquired commercially, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities”
  - “Tech Act” of 1998



# Accessibility vs. Accommodation

- Accessibility is technology-centered,
  - Accommodations are person-centered.
- Accessibility occurs ahead of time,
  - Accommodations happen after there is a problem.
- Accessibility focuses on mainstream technologies,
  - Accommodations primarily focus on Assistive Technologies.



# Usability vs. Accessibility

- Usability makes products easier to use.
  - Accessibility makes a product possible to use.
- Making a product more usable does not necessarily lead to conformance with 508 standards
  - Not all accessibility complaints are 508 complaints!
- Usability problems frustrate everybody
  - Research-Based Web Design & Usability Guidelines
  - <http://usability.gov/guidelines/>



# 508 Basics



# What is Section 508?

- 508, the ***Law***:
  - Applies to E&IT that is procured, developed, used, maintained
  - Goal of “comparable access”
- 508, the ***Standard***:
  - Issued by the Access Board, under authority of the statute
- The FAR (Federal Acquisition Regulations)
  - Incorporated the 508 Standard



# Purpose of Section 508

- "... to build as much accessibility as is reasonably possible into [electronic & information technology] developed, **procured**, maintained, or used by agencies." (65 CFR 80503)
- Law gives equal weight to all four terms, but in practice, most focus is on procurement because that is where enforcement is easiest.



# Why is Section 508 Important?

- Supports employment of people with disabilities
- Improves public access to government IT services
- Reduces the need for individual accommodations
- Encourages improvements in accessible design
- Increases availability of accessible products
- Raises general awareness of disability issues
- Secondary benefits:
  - Usability
  - Aging Workforce



# Section 508 Applicability

- Applies to all Federal agencies and departments when they develop, procure, maintain or use E&IT.
- Newly procured or developed E&IT after June 25, 2001
- Modifications and/or upgrades to existing E&IT after this date must also be compliant.



# Two Approaches for Accessible Design

- Built-in or “direct” accessibility
  - Ex., talking interface
  - Equivalent Facilitation
- Compatibility or Interoperability
  - AT interoperates with IT
  - Electronic curb-cut analogy
  - Compatibility not required for *all* AT
    - § 508 details how much compatibility is required
- Equivalent Facilitation is an option



# AT Complements IT

- Information Technology (IT):
  - Accessible [web or software] applications
- Assistive Technologies (AT):
  - Screen Reader
  - Voice Recognition
  - Alternative Keyboards / Pointing Devices
  - On-screen Keyboard



# 508 Overview



# Outline of E&IT Accessibility Standards

- Preamble
  - Hint: Read this last!
- Subparts A – D
  - General
  - ***Technical Standards***
  - Functional Performance Criteria
  - Information, Documentation, and Support
- <http://www.access-board.gov/sec508/standards.htm>



# Section 508 Subpart B

- Subpart B — Technical Standards
- 1194.21 – 1194.26
  - Software applications and operating systems
  - ***Web-based intranet and internet information and applications***
  - Telecommunications products
  - Video and multimedia products
  - Self contained, closed products
  - Desktop and portable computers



# Libraries use software!

- Software applications and operating systems
  - 1194.21(a)
    - When software is designed to run on a system that has a keyboard, **product functions shall be executable from a keyboard** where the function itself or the result of performing a function can be discerned textually.
  - 1194.21(b)
    - **Applications shall not disrupt** or disable activated features of other products that are identified as **accessibility features**, where those features are developed and documented according to industry standards. Applications also shall not disrupt or disable activated features of any operating system that are identified as accessibility features where the application programming interface for those accessibility features has been documented by the manufacturer of the operating system and is available to the product developer.



# Libraries produce video!

- Video and multimedia products
  - 1194.24(c)
    - All training and informational **video** and multimedia productions which support the agency's mission, regardless of format, that contain speech or other audio information necessary for the comprehension of the content, **shall be open or closed captioned.**



# Digital Copier?

- Self contained, closed products
  - 1194.25(a)
    - Self contained products ***shall be usable by people with disabilities without*** requiring an end-user to ***attach assistive technology*** to the product. Personal headsets for private listening are not assistive technology.
  - 1194.25(j) — Reach Range



# Textual Alternatives



# Web Content Provisions (Overview)

- General
  - Text Equivalents
  - Usability issues that can be barriers
    - Don't **only** use color
    - Default reading and navigation order
- Current 508 is Very Technology Specific
  - Explicit HTML Orientation
    - Image Maps
    - Data Tables
    - Frames
    - Scripts
    - Forms



# What is a “text equivalent”?

- Most often, it is a **short** description of **purpose**
  - ``
- Graphical text (logos, masthead) must be reflected in alternative text
- Often, images do not convey information
  - ``
- Ask yourself, why is the image here?
  - ``
- Missing ALT is never good: it always causes ambiguity
- What if it is something that *cannot* be discerned textual?
  - Provide descriptive identification of the non-text content

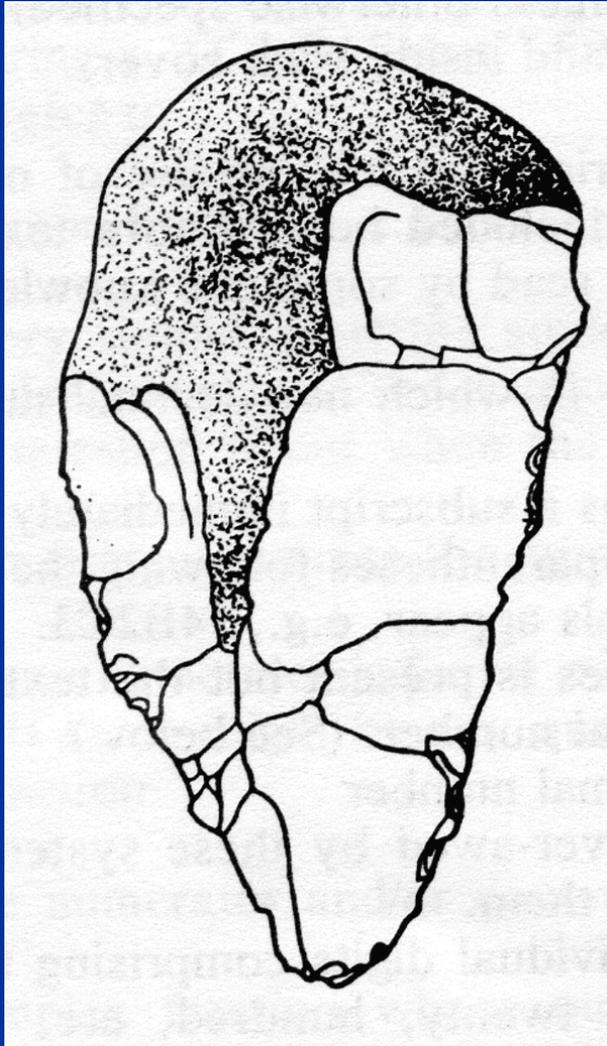


# Textual Alternatives

- How would you describe over the phone?
- Descriptive identification *may* be enough!
- Sometimes, a “text equivalent” means going into rich detail.
  - Excerpts from the National Braille Association Tape Recording Manual, Third Edition
    - <http://www.w3.org/2000/08/nba-manual/>
  - NCAM Accessible Digital Media Guidelines, Guideline A: Images
    - [http://ncam.wgbh.org/invent\\_build/web\\_multimedia/accessible-digital-media-guide/guideline-a-images](http://ncam.wgbh.org/invent_build/web_multimedia/accessible-digital-media-guide/guideline-a-images)



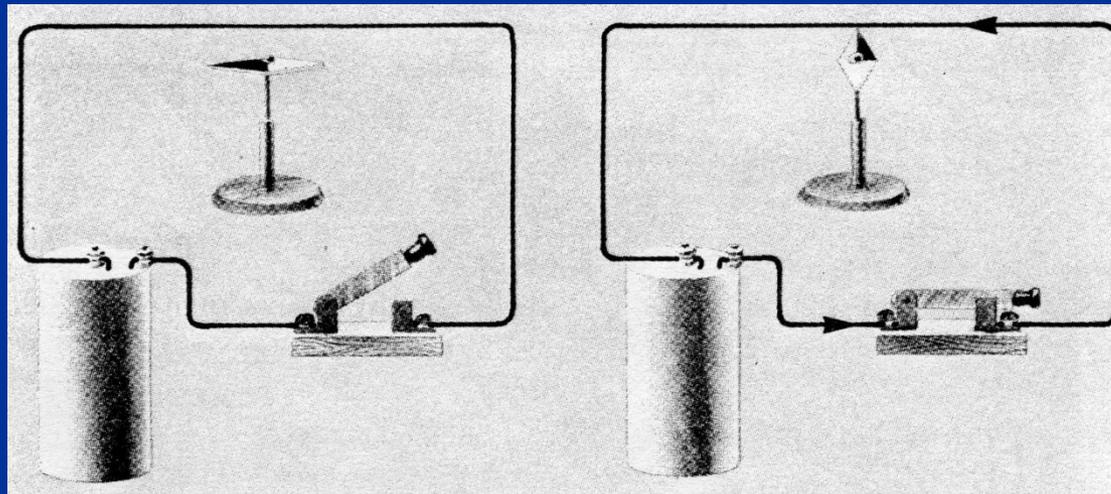
# Full Text Equivalent example 1 of 2



- Figure 2 shows an oval rock. The top of the rock is in its natural state, but as we go down towards the bottom, bits of the rock have been chipped away, until the bottom has become thin, pointed and sharp. End of Figure 2



# Full Text Equivalent example 2 of 2



- Figure 91 dash one is a diagram in two parts. In both drawings, each end of a large, rectangular shaped wire loop is connected to a cylindrical shaped dry cell, one end to the positive terminal, the other end to the negative. In each diagram, there is a switch along the length of the wire a short distance from the dry cell. The switch in the first drawing is open; in the second drawing it is closed. As is indicated by arrows, the current in the second diagram flows in a counter-clockwise-direction. In each diagram, a compass needle is placed beneath a horizontal leg of the wire rectangle. The compass needle in the first diagram, through which no current is flowing, is parallel to the wire; in the second, through which current passes, the needle is at right angles to the wire. Text.



# What about non-HTML? Flash / PDF / Word, etc.

- 1194.22(m):
  - When a web page requires that an applet, plug-in or other application be present on the client system to interpret page content, the page must provide a link to a plug-in or applet that complies with §1194.21(a) through (l).
- Applies to Flash and Java apps.
- Applies to ***viewers*** and ***readers***, not so helpful for non-HTML documents.



# Electronic Content and the 508 Refresh



# 508 Refresh Big Picture

- Big Change:
  - More Documents, More of the Time, for More People
    - Full scope TBD
- What are some expectations for accessible electronic documents?
  - Using WCAG 2.0 Success Criteria as benchmark
  - Examples of using MS Word for making accessible documents



# Advantages of HTML format

- Accessibility is Transparent
- Built-in Accessibility Features
- Lots of Tools and Advise
  - Many resources are freely available
- Use resources from champion for format:
  - <http://www.w3.org/WAI/gettingstarted/>



# WCAG 2.0 Virtues, Continued

- Robust Linked Resources
  - Understanding Documents
    - Intent
    - Background Material
    - Examples
    - References
  - How To Meet Documents
    - Sufficient Techniques
    - Common Failures
- <http://w3.org/tr/wcag>



# Disadvantages of HTML format

- Accessibility is Transparent!
- Same limitations as for people without disabilities:
  - No page numbering
  - No real footnotes
  - Authoring still not as easy as it could be



# Disadvantages of non-HTML web formats

- Accessibility standards very HTML-centric
- Accessibility features were afterthoughts
- Some structures, like multi-level data tables, not supported.
- May required specialized tools
- Accessibility techniques may not map directly to 1194.21 provisions



# PDFs

- Accessibility is **possible** but not automatic
- Free Adobe Reader conforms to 1194.21
  - Even includes speech synthesis!
  - Under best circumstances, complaints still likely
- Know **why** you are posting PDFs
  - Is consistency with print version **really** necessary?
  - Does it give a good feeling? Is it just a bad habit?
  - [http://www.alistapart.com/articles/pdf\\_accessibility](http://www.alistapart.com/articles/pdf_accessibility)
- Cheap (or free) and easy output (print to PDF) usually results in inaccessible PDF files
  - At least for non-trivial source material
- Use resources from champion for format:
  - <http://www.adobe.com/accessibility/>



# PDF: What to do

- Test output with Adobe Reader
  - Listen to every page
    - View -> Read Out Loud
  - Compare to visual presentation
- Use Acrobat Professional
  - Acrobat Standard is not enough
  - Walk tag tree, make sure it matches
- May need third party product
  - NetCentric CommonLook
- May need to hire a service



# MS Office: Word

- Generally very accessible
- Free readers conform to 1194.21
- Text boxes, water marks, text art generally not accessible
  - Can use “Normal” View to get sense of what a screen reader user will miss.
- Doesn't *really* support data tables
- Use resources from champion for format:
  - <http://www.microsoft.com/enable/>



# Word: What to Do

- Use styles for headers and repeated formatting
- In-line Clip Art and images okay
  - Select (or right click) -> Format -> Picture -> Web (tab) -> Alternative Text
- Keep data tables simple
  - headers only in topmost row or leftmost column only
- When in doubt, save as plain text



# MS Office: Excel

- Generally very accessible
  - But remember spreadsheets are intimidating for **most** people!
- Free reader is **not** accessible!
  - Risky to assume public audience has MS Office
- Most derived charts and graphs not directly accessible
  - The data driving the figures is available, but is that enough?
- Avoid temptation to convey information with formatting
  - E.g., Do not **only** use color



# Excel: What to Do

- Make it easy to find header rows and columns
- Make it easy to find any comments
  - Use left most column or separate sheet or document
- Use white space very sparingly
  - Do not use empty columns for spacing
    - Adjust column padding instead
  - Avoid multiple empty rows
    - Adjust row height instead
- When in doubt, save as text (tab delimited)



# MS Office: PowerPoint

- **Not** very accessible
  - Possible but cumbersome to use with screen reading software
- Free reader is **not** accessible!
  - Risky to assume public audience has MS Office
- Most images (especially charts and graphs) are **not** accessible
- Objects in slide view particularly vexing
- Save as Web Page feature is disappointing



# PowerPoint: What to Do

- Ensure outline view stands alone
  - Is there other ***information*** in slide?
- One option: Repeat ***all*** content in Speaker Notes area
  - This includes text from main slide, any alternative text, and any long text descriptions as needed.
- May need third party product
  - Accessible Web Publishing Wizard
- When in doubt, save as Outline/RTF



# Examples using WCAG 2.0 on non-HTML content



# Why use WCAG now?

- Why not use current provisions?
  - Too tricky to apply to non-HTML
- Why not use draft provisions?
  - We know we will be making changes.
    - We don't know what the final language will be.
- Why use WCAG 2.0 language?
  - We know we will be harmonizing...
    - We do not know the details of how!
  - WCAG 2.0 is stable (December, 2008)



# WCAG 2.0 Virtues

- Publically vetted, lots of input
  - 9+ years active work!
- Attention paid to plain language
  - But there is still a learning curve
- WCAG 2.0 Success Criteria
  - Written to be technology neutral
  - Written so they can be evaluated as true/false statements



# 1.1.1 Non-text Content

- All non-text content that is presented to the user has a text alternative that serves the equivalent purpose
  - 502.2.1 Equivalent Purpose (draft p. 54)
  - Word 7
    - Context → Size → Alt Text



# 1.1.1 Non-text Content Exceptions

- Sometimes “descriptive identification” is or other specific text alternative is required:
  - Controls, Input
  - Time-Based Media
  - Test
  - Sensory
  - CAPTCHA
  - Decoration, Formatting, Invisible
    - ALT=""
- Usually, the above exceptions are concerns for web and software developers, not document authors.



## 1.3.1 Info and Relationships

- Information, structure, and relationships conveyed through presentation can be programmatically determined or are available in text.
  - 503.2 Information, Structure, and Relationships (draft p. 57)
  - Word 7
    - tabbing vs. tables
    - formatting vs. styles



## 1.3.2 Meaningful Sequence

- When the sequence in which content is presented affects its meaning, a correct reading sequence can be programmatically determined.
  - 503.3 Logically Correct Reading Sequence (draft p. 57)
  - Word 7
    - Text Boxes vs. Paragraph Borders



# More Examples

- **1.3.3 Sensory Characteristics:** Instructions provided for understanding and operating content do not rely solely on sensory characteristics of components such as shape, size, visual location, orientation, or sound.
- **1.4.3 Contrast (Minimum):** The visual presentation of text and images of text has a contrast ratio of at least 4.5:1
- **1.4.4 Resize text:** Except for captions and images of text, text can be resized without assistive technology up to 200 percent without loss of content or functionality.



# Wrap Up



# Accessible Software Developer Resources

- Look to platform champions
  - Microsoft Active Accessibility (MSAA) and “UI Automation”
    - MSDN Library > Win32 and COM Development > User Interface > Accessibility
    - <http://msdn.microsoft.com/en-us/library/ms753388.aspx>
  - Apple
    - <http://developer.apple.com/ue/accessibility>
  - IBM
    - <http://www.ibm.com/able/>
  - IAccessible2 (cross platform API)
    - <http://linuxfoundation.org/en/Accessibility/IAccessible2>
  - Oracle for Java SE Desktop Accessibility
    - <http://java.sun.com/javase/technologies/accessibility/>



# Are we dated yet?

- Web Content Accessibility Guidelines 1.0
  - W3C Recommendation, May 5, 1999
- Electronic and Information Technology Accessibility Standards; Final Rule
  - Federal Register, December 21, 2000 (36 CFR Part 1194)



# What to do now?

- Become familiar with language used in WCAG 2.0
  - <http://w3.org/tr/wcag20>
- Get up to speed with 508 guidance
  - <http://www.access-board.gov/sec508/guide/>
- Pick one or the other!



# Equivalent Facilitation

- What if a developer prefers WCAG 2.0?
  - How can an Access Board staffer recommend something outside of 508?
- The *current* 508 Standards *already* allow for “**equivalent facilitation**” (1194.5).
  - Nothing in this part is intended to prevent the use of designs or technologies as alternatives to those prescribed in this part provided they result in substantially equivalent or greater access to and use of a product for people with disabilities.



# Software Standards

- ISO/FDIS 9241-171
  - Ergonomics of human-system interaction
    - Part 171: Guidance on software accessibility
- W3C WAI User Agent Accessibility Guidelines 2.0
  - <http://www.w3.org/TR/UAAG20/>
    - First Public Working Draft 12 March 2008
- HFES 200 Human Factors Engineering of Software User Interfaces
  - canvass draft 2006 (2008 version expected soon)
- JTC 1 Special Working Group on Accessibility
  - <http://www.jtc1access.org/>
    - Recent June 2008 meeting (site not yet updated)



# Testing

- Usability Testing
  - When performing usability testing, include people with disabilities.
    - Mike Paciello, The Paciello Group
    - <http://www.paciellogroup.com>
- Accessibility Testing
  - When performing accessibility testing, involve the developer!
    - Joe Tozzi, ED OCIO AT Team
    - <http://www.ed.gov/policy/gen/guid/assiste sting.html>



# The Sooner the Better

- Incorporating accessibility after the project is completed is very expensive: 50 – 100%
- Including accessibility from beginning has modest impact on costs: 1 – 2%
  - Trace Research & Development Center  
<http://trace.wisc.edu>



# Selfish Reasons for Accessibility

- Search Engine Optimization
  - High correlation between accessibility and machine readability
- Avoiding Expensive or Embarrassing Lawsuits
- Rich Folks With Expensive Toys
- The Buying Power of People with Disabilities
- Would You Like Fries With That Inaccessible Web Page?
- What Will The Web Be Like When I'm 65?
- Nobody Plans to be Disabled
- Lower TCO
  - Maintenance, Upgrading, Future Proofing

Kynn Bartlett, "AWARE Center" circa 1999



# Library of Congress Resources

- National Library Service
  - <http://www.loc.gov/nls/>
  - Local experts
    - See “Where libraries are located”



# FAQs - Web

- **Do we have to remediate our legacy web pages?**
- **Can I just say “contact me for alternative formats” instead of making a website accessible?**
- **Is it acceptable to summarily decide to create a text-only website to mirror our graphical site?**
- **Can I exempt a password protected site?**
- **Are documents created a long time ago exempted, even though I just posted them?**



# More FAQs

- **If a website works with some AT, but not all brands/versions, is that a 508 violation?**
- **Is an alt tag the only way to provide a text equivalent for a graphic image?**
- **WCAG vs. 508: What's the difference?**
- **We don't have employees with disabilities, so can we take a pass on 508?**
- **What barriers exist in on-line learning?**
- **What is accessible on-line conferencing?**



# FAQs — Multimedia Videos

- What does “multimedia” mean?
- What is audio description?
- What is the significance of “synchronized”?
- When is a transcript ok to provide?  
[1194.22(a)]
- What is “content essential for comprehension”?
- What is a “training and informational video that supports an agency’s mission”?
- Significance of phrase: “regardless of format”
- What is required for live webcasts?



# Contact us

- Want more information?
  - 800-872-2253 (voice)
  - 800-993-2822 (TTY)
  - 508@access-board.gov
  - <http://www.access-board.gov>



[www.access-board.gov](http://www.access-board.gov)