

The Blind Leading the Blind

Theorizing a Web for the Visually Impaired

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How the Project Started

- **AARP has a higher percentage of older users than most web sites**
- **Visual impairment increases with age**
- **The national rate of vision impairment in adults over 40 is 2.85%, according to the NIH¹; 30.7% of those adults are blind**

¹ "Vision Problems in the U.S.: Prevalence of Adult Vision Impairment and Age-Related Eye Disease in America," copyright 2002, Prevent Blindness America; <http://www.nei.nih.gov/eyedata/>

What We've Done To Date

- **Beginning late 2000, AARP decided to try to adhere to Section 508 standards**
 - **We are more strict with consumer-education content, but less so with content of entertainment value**
 - **We're far from perfect: it's also been important to us to support a broad base of web browsing platforms, so we have made compromises**
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Supporting Initiatives

- **Older Wiser Wired community**
Formed 2003 by Beth Mazur and Amy Lee
 - **A community of those who use the web to provide information and services to older adults, those who write about this subject, or those who develop web content for clients with older adult audiences.”**
 - **The key purpose of this initiative is to encourage better understanding and awareness of the needs of older adults.**
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And then, we redesigned...

- **Beginning in May 2002, we implemented a CMS, a new design, and a new strategy**
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...and created a style guide.

- **When the dust settled, we took our lessons-learned and created a style guide for future projects**
 - **The style guide mandated some changes to our code and our CMS templates**
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The style guide offered more than visual consistency.

- **Having a consistent structure also made it possible to standardize our templates so that they could inherit structure and style based on their place in the IA**
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And Accessibility... Why Not?

- **Since we needed to revisit all of our code and our templates, we decided to make the pages 508 compliant and truly accessible at the same time**
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The Big Question: “How?”

- **We quickly realized there were no examples for how to do accessible design**
 - **Section 508 provides “Do’s and Don’ts”**
 - **W3C’s Web Content Accessibility Guidelines provide more “Do’s and Don’ts” elaborated with some specific techniques**
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(pulling out our hair)

- **The ISO's technical specifications, "Ergonomics of human-system interaction — Guidance on accessibility for human-computer interfaces" again re-present "Do's and Don'ts"**
 - **Available literature discussed isolated best practices**
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(by now we're balding)

- **An examination of government websites (those required to adhere to Section 508) revealed no common practices or themes**
 - **People seem to agree on the standards, and all of this is useful if you're already on the right track, but how do you start? What are the proper steps?**
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Reading Behaviors for the Sighted: Traditional Elements

- **Use of traditional design elements to guide the eye: visual design helps drive people where you want them to look.**
 - **White Space**
 - **Color**
 - **Contrast**
 - **Leading lines**
 - **Fonts and text treatments**
 - **Graphics**
 - **Appearance of mass texture**
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Browsing Behaviors for the Sighted: Reading on the Web

- **Varies by age and culture**
 - **Users can be “trained” by good and evil forces: by your site and others. Consistency within your site is important, and consistency with major trends in other highly-used sites is important**
 - **NOTE: Some sighted users cannot see the whole page at once (either through technological problems, or through low vision — a separate design issue from blindness)**
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Browsing Behaviors for the Sighted: Web Elements

- **People love to skim.**
 - **Special web design elements that help people skim, and so draw attention quickly:**
 - **Headers**
 - **Bullets and Lists**
 - **Links**
 - **Forms and buttons**
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Browsing Patterns for the Blind: What's Similar

- **Ability to skim through web elements offered by the major screen reader programs**
 - **Link lists**
 - **Header lists**
 - **Page summary, including form fields**
 - **Skip to lists**
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Browsing Patterns for the Blind: Enhancing Skimming

- **We can enhance the ability to skim through web development**
 - “Skip to main article” and such links
 - Semantically correct HTML
 - Appropriate use of <ALT>, <TITLE>, <LABEL>... (see section 508)
 - **Also, through good copy and design practices**
 - Use elements that help people skim
 - Use meaningful links
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Browsing Patterns for the Blind: What's Different

- **Environmental Obstacles**
 - **Mouse use is not a realistic option for navigation**
 - **Users are unable to respond to visual design cues which apply structure to the page**
 - **Users cannot get an overview of the page without the help of the screen reader**
 - **Screen readers allow someone to skim common elements like lists, links, headers, and form fields — BUT they strip context, which a sighted reader can intuit (not fun for sighted users, either. Ask Krug.)**
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Designers and Developers Add to the Problem

- **The issues outlined in Section 508 account for many of the major functional problems**
- **More subtle issues are being discovered with recent usability testing that observes blind users with screen readers²**

² See Redish and Theofanos, "Guidelines for Accessible and Usable Web Site: Observing Users Who Work With Screen Readers," ACM, 2003. <http://doi.acm.org/10.1145/947226.947227>

Quick Summary: Assistive Technologies for the Blind

- **The Big Players in Screen Readers:**
 - JAWS
 - WindowEyes
 - **Many, many more screen readers and browsers designed for the blind are on the market:**
 - <http://www.w3.org/WAI/References/Browsing>
 - http://www.afb.org/info_document_view.asp?DocumentID=1284
 - **Additional Tools:**
 - Refreshable Braille Devices
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The Strategy: What You Need to Get Started

- **In order to develop a single page which serves both sighted and blind users, we needed the following tools:**
 - **A broad and thorough view of the site (what content you have, what content you may have in the future)**
 - **Information design underpinnings: an understanding of page types and content types**
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(more of what you need)

- **Visual design decisions: page structure and content presentation**
 - **Know what browsers you are building for: choose a support level for your user base**
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Plan of Attack...

- **Step 1: Information Design**
 - **Determine what needs to be on the page**
 - **Organize that into blocks of content**
 - **Identify the value of each block**
 - **Determine the appropriate order for the blocks to be read (not necessarily the order that they appear on the page)**
 - **Document that order as an outline for reference during coding and visual design**
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...Plan of Attack

- **Step 2: Visual Design**
 - Work with developer to avoid known complications and maintain the integrity of the outline
 - **Step 3: Develop and Implement Code**
 - Apply Section 508, W3C specs, and interim measures
 - Apply the outline to make the page read linearly
 - **Throughout: Implement user-centered design and testing as time budget allows during the project**
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Step 1: Information Design

- **Determine what needs to be on the page**
 - That is, identify your metadata
 - This will vary based on
 - The type of site
 - The audience
 - The level of the page (topic, index, article...)
 - Planned or possible development for the site
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You can take your metadata...

- **Organize that into blocks of content**
 - The blocks should be consistent.
 - The kinds of blocks may also vary based on the level and utility of the page
 - **Identify the value of each block**
 - Decide what the purpose is for each block of content, and what value they offer to site visitors
 - Keep in mind the various situations through your site visitors will encounter a page
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Determine the Structure

- **Determine the appropriate order for the blocks to be read**
 - **This is not always the order in which they appear**
 - **Blocks of content should read logically if you read the whole page, ordered by context and not by the visual layout. For example:**
 - **cross-promotional content shouldn't interrupt a story, even if it appears in the body of the page**
 - **“print this page” and other article-associated tools should be associated with the article and not with supporting content**
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Rules, Rules, Rules

- **Whatever rules you come up with for structure must always be true, no matter the page level**
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Write It Down!

- **Document that order as an outline**
 - **Whatever order you choose, write it down for reference as you design and develop pages**
 - **Include your rationale and note what you want to test**
 - **It will be very tempting to make exceptions or to evolve the rules, if you don't write them down**
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What order is logical?

- **It may depend on the purpose of your site and your audience**
 - **The following arguments are based on our experience managing a large, content-rich site for a broad audience**
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Some Common, High-Level Blocks of Content

- **Header**
 - **Context**
 - **Main Navigation**
 - **Body**
 - **Sub-navigation**
 - **Cross-promotion**
 - **Footer**
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The Header

- **Including: logo, home link, search, site map, language/country options, and other similar information that's valuable site-wide**
 - **Where to put it: Always first**
 - **At first blush, it's tempting to think this would be repetitive, BUT users can come into your site at any point.**
 - **This information is valuable, and should be presented to blind users as it is to the sighted: at the header of the page.**
 - **Tag the header properly, and offer clear tools so that people can skip this if they wish.**
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Context

- **Including: page title, topic, “you are in”, “see similar” and other such functions**
 - **Where to put it: After the header (or possibly after the main navigation, depending on the site structure).**
 - **If this is the first page someone sees on your site, context provides them with an understanding of where they are and where they might go from here. This helps folks decide whether this page or this site will serve their needs.**
 - **If the user has been navigating through the site to this point, the context provides additional value as confirmation that they’ve arrived where they intended to by their last click.**
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Main Navigation

- **Including:** navigation across the site or – on dense sites – within a large topic and back to the main site
 - **Where to put it:** After the header or after the context
 - If the navigation is long or largely irrelevant, consider including it before the context and allowing users to skip it.
 - If the navigation is shorter and more topical, then either position might work well.
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The Body

- **Including:** article title, byline, date, the main story, supporting assets, pull quotes, footnotes, etc.
 - **Where to put it:** After the main navigation and the context.
 - Repeat the title of the page here, if it is not explicitly a part of the body (i.e., if it appeared separately in the Context part of the page, and the main navigation was listed after the context.)
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Sub-Navigation

- **Including: narrow navigation within the current area of the site**
 - **Where to put it:**
 - **After the context and the main navigation**
 - **Either before, after, as a part of the body, depending on how it relates to the body of the page**
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Cross-Promotion

- **Including: links to related information, advertising**
 - **Where to put it: After the body, or as a part of the body**
 - **On our site, cross-promotion is most often loosely related to the body of the article, and so listed separately after the body**
 - **Some cross-promotion may have a particularly close relationship with the content, and should be paired with the body**
 - **Commerce sites might mandate that cross-promotion occur in the body**
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The Footer

- **Including: links to home, jobs, media, contact, site map, copyright, privacy, and so forth**
 - **Where to put it: Last.**
 - **This information is conventionally included (or repeated) last on the page, and is expected to appear here.**
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Building Blocks

- **The major blocks of content will all be made up of smaller blocks**
 - **The smaller building blocks should be defined in the same way**
 - **If you explain the purpose of the block and why the information is grouped together:**
 - **copy writers and editors will know how to write for the structure**
 - **developers can choose the right code to express the structure**
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Sample Structure Outlines

- **Let's look at some sample structure outlines, diagrammed visually over existing pages...**
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Step 2: Visual Design

- **When you're applying visual design elements, document the purpose for the element so that it can be interpreted properly by your developers.**
 - **The structure may be obvious to you, but not to them.**
 - **Design to show proper use of links, styles, and copy to work for both sighted and blind who skim**
 - **Advise content editors when copy is not accessible for blind users with readers**
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Designers Beware...

- **Be aware of design paradigms that are difficult to translate into outline form**
 - Possible ways to handle eclipsed options and tabbed boxes
 - **Be aware of visual and design effects that can't be accomplished by current style specs**
 - Challenging visual design effects
 - Prioritizing visual design, cross-browser and cross-platform issues, and accessibility
 - Moving towards style-friendly visual design
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Step 3 : Development

- **Code the page in the order of the outline**
 - **Each major section of the outline should be tagged and labeled properly to translate the structure of the outline to HTML**
 - **Within each section, use Section 508 guidelines for accessibility**
 - **The page should be readable and acceptable without applying a style sheet**
 - **Again, warn content editors of inaccessible copy**
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Comparisons

- **Illustrations of the change...**

Separation of Content and Design

- Now, if we want to update the visual design, all we do is change the style sheet: the code stays intact.
 - Also, if we find that our arguments for the order of block level elements needs to updated, we simply update the order of the code through the CMS. (The style sheet may need minor updates in terms of relative and absolute positioning, but the design is still in tact.)
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Coding Style Sheets...

- **Build style sheets from the bottom up**
 - **Carefully dissect the outline into block-level elements**
 - **Use W3C standards for coding structural elements, like paragraphs, headings, subheadings, and lists**
 - **Keep the structure transparent**
 - **There shouldn't be anything you see visually that you're not coding structurally.**
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...Coding Style Sheets

- **Code it!**
 - **Elements and entities can be styled with multiple classes.**
 - **Effective use of multiple style sheets.**
 - **Positioning hints for wider browser support**
 - **See supporting resources for developers**
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Where you can see it now...

- **Currently applied to Older Wiser Wired:**
<http://www.aarp.org/olderwiserwired/>
 - **Will be rolled out across the rest of the site over the next couple of months**
 - **We plan on doing usability testing for this site in the upcoming months. The results will be made available for those interested: email us (see last slide).**
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Additional Benefits

- **Our page size was cut by 80%, from 100k+ to 20k.**
 - **3/4 of our new page size is the style sheet, which is cached--users only download about 5k per page view of code**
 - **Better search engine relevance rankings**
 - **CMS uses only *one* template**
 - **ANYONE can code these things (less specialized staff, less training with new staff)**
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DISCUSSION or EXERCISE?

Your choice: we can talk for a bit and answer questions, or do some group exercises.

GROUP EXERCISE

- **On the printed web pages I hand out:**
 - **Identify the large, high-level structures**
(starters: header, context, main navigation, body, sub-navigation, cross-promotion, advertising, footer)
 - **Agree on an order**
 - **Identify the smaller blocks that make up the larger structures, and their parts, formats, and purpose**
 - **Sketch it as an outline, and make sure the outline works with other pages on the site. Identify challenges.**
 - **Share your results with another group, and brainstorm.**
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Resources

- Joseph Matthews: jmatthews@aarp.org
 - Jessica Moore: jmoore@aarp.org
 - This presentation and additional resources are available online at:
<http://www.aarp.org/olderwiserwired/oww-events/>
(available by Wednesday, March 3)
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