



**Family Center on
Technology
and Disability**

FCTD Conference Series: Web Accessibility

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Web Accessibility

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EXPERT'S CORNER

Introduction

"The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect."

-- Tim Berners-Lee, World Wide Web Consortium (W3C) Director and inventor of the World Wide Web

When people hear the term "accessibility" they most often think of modifications that are made to accommodate people with physical disabilities. A ramp for wheelchairs, doors that open automatically or closed captioning for people with hearing impairments. In recent years, with the explosion of electronic communication and information available via the World Wide Web, a new type of accessibility has emerged on the scene. Because of the increasingly significant role web content plays in informing the public, web accessibility has become an increasingly important issue.

Web accessibility relates to the development of technological tools that can be used by everyone. Accessible development includes web layout and graphic design as well as physical adaptations made to enable or enhance a person's ability to interface with the technology. Color contrast, ease of navigating through a site, design dimensions - all play a role in accessible development. The development of technological tools using code that can be effectively accessed by and translated to assistive technology (AT) devices like screen readers for users with low or no vision is another component of accessible development.

There is a common misconception that accessible websites and multimedia tools must be aesthetically bland and contain primarily text and very few graphics. This is a myth. A website can have graphics and be accessible. A good designer can create tools that have both visual appeal and utility for users with disabilities. WebAIM, one of the groups involved with this month's discussion, has written a fantastic article entitled "Do Accessible Websites Have to Be Boring? (Hint: It's up to you)" which can be found on their website at <http://www.webaim.org/techniques/articles/boring>. This article discusses different disabilities, different needs, as well as issues related to achieving universal design.

We are very fortunate to have both Mr. Earl Johnson, founder of web accessibility initiatives at Sun Microsystems and Dr. Cyndi Rowland and her staff at WebAIM, serve as subject matter experts for our online discussion.

The discussion is intended for both techies and non-techies alike and will cover subjects ranging from Section 508 compliance to tips on creating accessible websites to the best tools children with disabilities can use to surf the web to tips for non-technical people (i.e. project directors) on how to gain a working knowledge of web accessibility and a vocabulary for communicating effectively with your web development team.

We look forward to hearing from you!

Experts' Perspectives

Paths to Accessibility

Mr. Earl Johnson, Sun Microsystems

14 years ago I experienced a type of "denial of service" while developing a speech recognition demonstration for a project; the denial was a feature I depended on that went away after an OS* change. After doing some investigation, it turned out the reason the denial occurred was the OS upgrade caused an unsupported function the OS provided, and the speech product was using, to go away. This particular denial occurred in conjunction with a project to develop demonstrations of assistive technologies* being used to enable access to end user applications* by people with disabilities.

This experience set me on the path I now find myself on - working along with others to make it possible for developers to readily build products that are accessible to users with disabilities. The start of this journey happily coincided with a] a growing social awareness in product design being shown by the high tech industry coupled with b] a growing pressure from customers and legislation to make, among other things, electronic and information technology products accessible. As a result of these efforts, Sun Microsystems and every other vendor of computer desktop systems include the hooks and tools needed by developers to enable them to build products that work seamlessly with today's assistive technologies in every desktop system they ship.

Initially my thought was "build the technology and people with disabilities would stop experiencing these wretched "denial of services". Along the way, though, **I learned success wouldn't be achieved until developers of general end user software were also active partners in the accessibility effort.** But developers wouldn't be able to be successful partners until a] they had an understanding of what the user interaction needs of users with disabilities were and b] they knew how to take advantage of the programmatic hooks provided in OS and windowing systems.

Enabling the developer success mentioned above requires the availability of design information, training, and, within companies, processes to ensure the development of accessible products. It is in this area that my work has focused for the last few years, with a significant part of the effort being **to help web content developers see that accessibility and visually appealing content can go hand in hand.** It is the web accessibility portion of this experience that brings me to this conference. My hope is that the answers to the questions you raise over this next month will help you identify where to go for succinct guidance that then enables you to build accessible and appealing content yourself; or, to convey the accessibility requirements the content provider for your organization need to meet.

* Notes:

OS = operating system [e.g. Windows]

Assistive technologies = screen readers, screen magnifiers, keyboard navigation, StickyKeys, etc.

End user applications = word processors, mailtools, spreadsheets, etc.

Designing With Accessibility in Mind

Cyndi Rowland, Ph.D.

Director, WebAIM

Many of you will join in this month's discussion to engage in conversations around tips for making Web-based work accessible for those with disabilities. This is an area that Earl Johnson, my co-moderator, and the WebAIM staff, can comfortably provide. However, there may be some of you that are in the early stages of understanding the phenomenon of web *in*accessibility or are trying to make the argument to strive toward web accessibility to decision-makers within your organization. To help those of you who find yourself in this predicament, I would like to address a central question: *"Why should I design with accessibility in mind?"*

An Understanding of the Problem

As you begin to answer this question it is important that you understand the scope, and breadth, of the problem. The latest census figures indicate that approximately 54 million Americans have disabilities. Clearly all of those individuals do not use the Web nor are they all blocked from the Web because of their disability status. Reports do indicate that at least 4 million individuals with disabilities ages 16 and older report that they use the Web. However, it may be impossible to determine how many do not use the Web because they cannot gain consistent access, or how many use the Web inconsistently because of accessibility problems. No matter the exact number, it is likely that **there are millions of individuals in the U.S. alone that cannot freely use the Internet because of inaccessible designs.**

Empirical investigations on the accessibility of the Internet continue to uncover the depth of this problem. Current studies are complicated by the use of dependent measures that produce both false positives and false negatives. With this said, there exists a surprising constancy of summary data. As a general statement, less than a third of Internet pages are accessible to individuals with disabilities. This is a horrendous statement considering the fact that the Internet is, by design, interconnected. Few individuals go to their intended page on the first attempt. If you were to navigate the Internet and could not fully access 2 of every 3 pages, how successful do you think would you be?

When we discuss the individuals that are affected by inaccessible designs we are talking about quite a range of disability types. Most typically, those who encounter problems are those with challenges in vision and/or hearing, motor skills, cognitive skills, those with seizure disorders, as well as those with age-related processes. It is important to remember each of these distinct groups. It is typical for organizations and Web developers to be aware of, and address, the accessibility needs of only one or two groups. The group most typically discussed is the blind. It helps to understand the experiences of all groups of individuals with disabilities. To understand the distinct needs of each group, please review materials available on the WebAIM site.

For an introduction on the topic of Web accessibility: <http://www.Webaim.org/intro>

For specific disability types please follow these links:

Vision: <http://www.Webaim.org/techniques/visual>

Hearing: <http://www.Webaim.org/techniques/hearing>

Motor: <http://www.Webaim.org/techniques/motor>

Three Reasons to Create with Accessibility in Mind

There are, at least, three reasons to create Web-based materials with accessibility in mind. To begin with, it is the right thing to do. It is also the smart thing to do. Finally, it is the law in the United States. What follows are brief descriptions of each reason.

1. It's the right thing to do.

The first reason to insure accessibility of the Internet is the most compelling. Simply put, it is the right thing to do. Our society promotes equal participation from all its citizens. The issue of fairness comes to mind when one remembers that many individuals cannot participate in the same online functions that others enjoy—banking, submitting tax forms, checking on the status of violent offenders in the neighborhood, advancing one's education, gathering medical information, or securing an e-ticket for travel. Accessibility barriers also interfere with an individual's ability to perform necessary employment functions. Employers are understandably reluctant to hire someone today who could not garner the information that is available on the Internet.

It is likely that the moral argument compels most people to alter their practice and design Web pages accessibly. However, some persons require a different reason, one that is centered in pragmatics, rather than a moral argument. The second reason to design with accessibility in mind provides these individuals with that rationale.

2. It's the smart thing to do.

To begin with, it is smart from an economic perspective to create a Web presence that can be accessed by all individuals. If one is providing services for a fee (whether college courses or genealogy searches), making those services available to all will broaden the potential market and economic base. Using census data from 1995, Praeger (1998) estimated that, as a group, individuals with disabilities in the U.S. alone had an annual discretionary income of 175 billion. It is estimated that the purchasing power of these individuals will continue to grow. When they cannot use the services or purchase the products available on the Web, these individuals will spend their money elsewhere.

Moreover, making Web sites accessible is the smart thing to do because the process of making them accessible also makes them compatible with emerging technologies. As the world moves towards the use of the wireless Web (via cellular phones and portable handheld devices), those sites that can be accessed with the new technologies will be those that can be accessed by those with disabilities. As a final example, making sites accessible is the smart thing to do because those sites will also have cleaner code (valid HTML or valid XHTML). Clean code allows a page to load more reliably across different browsers, their different versions (e.g., 5.1, 6.0), and different platforms (e.g., Macintosh, Windows). If Web designers want their work to span the spectrum of today's browsers, they will need to do so with clean code. Creating a site that is accessible takes care of this problem.

3. It's the Law

The final reason to create accessible Web pages is that it is the law. Many people do not want to think that this is the driving force to change their practice. However, for many this will ultimately change what they do. Different laws pertain to services offered in various settings (education, private, state or federal government), but the statutes that are in place now make it clear that the U.S. Federal government supports equal access to the Internet for individuals with disabilities. The following is a brief review of the major U.S. Laws that pertain to the accessibility of the Web.

The **Americans with Disabilities Act (ADA) of 1990** is piece of civil rights legislation that prohibits discrimination due to the presence of a disability. A key piece of the ADA is assurances that individuals with disabilities will not be discriminated against in their employment (reasonable accommodations are required), or in places of public accommodation. These places include public gatherings and public displays, exhibitions and entertainment, sales establishments, education, and recreation (ADA, 42 U.S.C. § 12181 [7]). While it's difficult to imagine the Internet today without these typical public accommodations, the word "Internet" never appeared in the legislative language of the ADA. People have questioned whether the original intent of this law would have covered the expanse of the Internet as it is today. To help clarify this issue, Senator Tom Harkin wrote a letter to an Assistant Attorney General in the Civil Rights Division (Harkin, 1996). In the response, it is quite clear that this office would place the Internet within the scope of ADA regulations. Moreover, the ADA compels entities to insure "effective communication" so there is no discrimination singling out those with disabilities. Given the nature of the Internet (i.e., open 24 hours a day, 7 days a week), it is hard to create nondiscriminatory systems to provide equitable access to information and services found on the Internet today. Although cases regarding the accessibility of the Internet have been filed under ADA, many have been settled out of court (e.g., National Federation for the Blind vs. America Online; Barnes & Noble vs. Access Now). Ultimately, we will not know how the ADA will be interpreted with respect to the Internet until we have a body of case law. Within the past couple of years, some court decisions have been handed down with mixed results (see Southwest Airlines vs. Robert Gumson and Southwest Airlines vs. Access Now; Martiv vs. MARTA).

For more detailed information on the ADA's applicability to the Internet, please visit:
<http://www.Webaim.org/coordination/law/us/ADA>

The **Reauthorized Rehabilitation Act of 1998** contains two sections that are pertinent to Web accessibility.

In **Section 504**, it is clear that discrimination will not occur with respect to educational opportunities when federal monies are involved. The language reads, ". . . no otherwise qualified individual with a disability in the United States . . . Shall, solely by reason of his disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. . ." (29 U.S.C. Section 794). Students with disabilities who encounter problems with the accessibility of their course materials (or entire courses) are guaranteed reasonable accommodations so they may fully participate in their education. More and more educational entities are finding that making their sites accessible is preferable to being in a vulnerable position where students can lodge complaints and expose them to possible litigation.

Section 508 of the Act also pertains to Web accessibility. The section deals with the accessibility to all electronic information technology (EIT), including printers, fax machines, kiosks, and computer hardware and software to name a few. The Section includes the word Internet in its statutory language. When Section 508 went into effect on June 21, 2001, it prohibited the Federal government from procuring EIT goods or services unless they are accessible to individuals with disabilities. It makes sense that U.S. citizens with a disability would be able to avail themselves of the electronic information that is available to other citizens who visit federal sites. The Section 508 regulations provided the **first-ever definition of Web accessibility that would be enforced from a U.S. Federal perspective** (see <http://www.Webaim.org/standards/508/checklist>).

Furthermore, Section 508 may apply to state agencies, including education. Although many people await clarification from the federal government on the scope of Section 508, others have decided that immediate implementation is in their best interests. As one example of this, the Chancellor's Office of the California Community Colleges (letter dated June 11, 2001) indicated that those in the California Community College system should proceed as if Section 508 applies to each of them.

Moreover, many states are enacting laws that require state agencies to use the Section 508 standard to apply to their Web materials. This may be a wise and progressive move on the part of the states. If the U.S. Department of Education clarifies that 508 will apply to state agencies they are ready. If it does not, they will likely gain an economic advantage as well as public relations kudos because of their actions.

For more information on Sections 504 and 508 of the Rehabilitation act see:

<http://www.Webaim.org/coordination/law/us/rehab>

Other aspects of Federal Law also support equal access for individuals with disabilities. Section 255 of the **Telecommunications Act of 1996** governs accessibility to telecommunications equipment and services (including phone equipment and lines, televisions). Manufacturers of this type of equipment and providers of these types of services are required to insure that what they offer is accessible to those with disabilities as long as that goal is readily achievable. **The Individuals with Disabilities Education Act (IDEA)** mandates that each child enrolled in special education services in our nation be able to "access the general education curriculum". Given the increasing use of the Internet in the K-12 school curriculum, it is difficult to see how those students would be able to access the general curriculum in the absence of accessibility. In addition, there are numerous responses the **U.S. Department of Education, Office of Civil Rights** (see docket numbers 09-95-2206; 09-97-2002) that interpret existing statutes to cover the equal access of individuals with disabilities on the Web.

For more on these laws see: <http://www.Webaim.org/coordination/law/us/telecom> and <http://www.Webaim.org/coordination/law/us/IDEA>

I look forward to discussing reasons why you would make the choice to keep accessibility in mind as we proceed in our conversations over the coming month.

Experts' Bios

Mr. Earl Johnson

Earl is an Accessibility Architect within Sun Microsystems' Accessibility Program Office. His current role has him focusing on accessibility within web based applications; developing the processes and checkpoints that ensure product development activities throughout Sun integrate Section 508 related requirements into product design; and providing training and information on how to translate Section 508 requirements into product development requirements. Looking back, Earl founded Sun's accessibility effort 13 years ago when he joined SunLabs; here he managed the efforts that led to Mercator [the first Unix GUI screen reader] and AccessX [which includes the StickyKeys keyboard enhancements and has been included in all Sun desktop systems since 1994]. His next major role after moving from SunLabs was to help develop the accessibility support built directly into Java's primary user interface toolkit - an industry first. Looking outside, he was Sun's representative on EITAAC; this committee crafted the guidelines off which the Section 508 final rule was written. He provided review and input guidance into the W3C's web content accessibility guidelines and user agent accessibility guidelines respectively. He also helped develop the accessibility portion of the Java Look and Feel Design Guidelines; he co-authored the "Towards Accessible Human-Computer Interaction" chapter in Jakob Nielson's "Advances in Human-Computer Interaction"; and he was invited to the White House and Vice President's House during the Clinton Administration. Prior to joining Sun, Earl went through the Naval Nuclear Power Program and served in the submarine service on SSN 685; he graduated from San Jose State University with a B.S. in Mechanical Engineering; and he is also a C4-5 quadriplegic.

Dr. Cyndi Rowland

Dr. Rowland is the associate director at the CPD. She directs several grants that focus on the use of technology and the preparation of personnel. She is the Director of a federally-funded project to develop a technology tool that can be used for authentic simulations with distance personnel in training. Dr. Rowland is also the director of WebAIM (Keeping Web Accessibility In Mind). Two federally-funded WebAIM initiatives help K-12 and post secondary education entities create and maintain Web sites that are fully accessible to those with disabilities. Another WebAIM initiative is to create tools that others can use to enhance accessibility efforts. Amongst these are an accessibility validator, the WAVE (developed in conjunction with Temple University), and a captioning tool for use in realtime audio streaming. Dr. Rowland is extensively involved in the National Center for Disability and Access to Education. She chairs an initiative that will explore accessibility of a wide range of distance education technologies. Dr. Rowland chairs the Website Committee at the Center for Persons with Disabilities. Although she demonstrates a technology interest, Dr. Rowland's professional background is as a speech and language pathologist and early childhood special educator. Prior to coming to the Center for Persons with Disabilities she worked in school districts and special centers for 8 years focusing on the communication skills of persons with severe disabilities as well as the development of infants and young children. In 1989 she shifted her career toward personnel preparation and development. Her research interests include the effectiveness of (a) naturalistic teaching strategies, (b) augmentative and alternative communication, (c) technology-mediated learning and mentoring; and (d) Internet accessibility for all.

CONFERENCE

Transcript: Web Accessibility

- **Deputy Director's Welcome by Julie**

Thank you for helping us launch what we expect to be an interesting and informative discussion of issues surrounding web accessibility. Please take a minute to read the topic overview and the introductory remarks of our resident experts. Be sure also to check the resources section for an extensive list of resources related to web accessibility.

Whether you're a project director tasked with Section 508 compliance, a web developer seeking to make your site as accessible as possible, a parent interested in ensuring that your child has the same access to electronic information as his or her peers or simply interested in issues around web accessibility and universal design, your questions, comments, and experiences will be extremely valuable to people across the country. The discussion will continue until February 13th. We hope to hear from you often.

- **Cascading Style Sheets by Discussion Board Guest**

Hi, I am a web developer and I have heard a lot about how accessible sites use cascading style sheets, but I've never fully understood why. Can you elaborate on what they are, how they make things more accessible and any future trends you see happening with CSS? Thanks!!

- **Some brief info on CSS and a ? on CSS vs. Tables by Alexander Traugott**

I've been using CSS sheets on our site for the last couple of years to control text appearance. The huge advantage to this is that it separates content from

appearance. This allows you to change the structural mark-up tags (Heading 1, 2, etc) so they have the look and feel you want but also retain their value for users with disabilities, especially blind users with screen readers.

Recently I have started using CSS for formatting but within table cells. I've seen a few sites that use *only* CSS for formatting instead of nested tables and I would love to incorporate that change into our website.

But I'm worried about the accessibility of this design choice. We are federally funded so it's required. But more importantly our target audience includes users with disabilities and we try to go above and beyond making our site not just accessible but user-friendly for visitors with disabilities. Are there any accessible sites out there using CSS2 in this way? What about old browser support using this method of formatting? Accessibility is also for those users with not-so-recent software.

Thanks,
Alexander

- **Re:Some brief info on CSS and a ? on CSS vs. Tables by Julie**

I'm glad you brought the issue of dealing with old browsers. Any comments on that from the experts would be very useful!

- **Re:Some brief info on CSS and a ? on CSS vs. Tables by Josh Freeman (Webmaster)**

One problem that I run into a lot is that older browsers have very poor support for CSS, and you eventually get to a tradeoff: do you want to make it accessible to the vast majority of people that have browsers greater than I.E 5.0 or Netscape 6.0, or do you need to support those few users that are still on an older browser? That's going to turn into a site - by - site decision, and you will have to look over your web logs to see what browsers are accessing your site.

- **Re:Some brief info on CSS and a ? on CSS vs. Tables by Rafael Chargel**

First, let me add a little information on how CSS relates to Section 508 and the Web Accessibility Initiative. By using a stylesheet to control the look and feel of a web page, you allow users with visual impairments to replace your stylesheet with their own. For instance, you set the font size to be 12pt in your stylesheet, and the user sets the font size to 20pt for their user override stylesheet, the user will see the font at 20pt.

This does not mean that the use of CSS automatically makes your site accessible. The use of in-line stylesheets is not accessible, because of the way that the stylesheets cascade. These in-line styles will override most stylesheet changes.

Alex mentioned using CSS to control the entire layout. This is usually done with a combination of CSS and Javascript, and is often referred to as Dynamic HTML (DHTML). A web developer must be very careful when developing a website with DHTML. It is very easy to fall into the pitfalls of a completely non-accessible web site.

In terms of this final question about older browsers. One of the

advantages of using CSS, particularly that CSS which is supported by the W3C, is that CSS breaks down gracefully. This means, that careful use of CSS will allow users with more advanced browsers to get an enhanced look and feel, while those users with older browsers can still be provided a visually appealing web site.

- **Re:Some brief info on CSS and a ? on CSS vs. Tables by Discussion Board Guest**

Thanks for giving info on DHTML. But what I was referencing was something completely different, the new use of the CSS and CSS2 specifications so that you are creating all the layout in CSS, no javascript or tables needed. One site doing this extremely well, IMHO, is <http://www.zeldman.com/> This site just did another redesign this year. The layout and appearance are all achieved solely with CSS. It looks great cross-browser and as Rafael mentioned breaks down gracefully in older browsers into linearized but coherent text only content. Which on its face would seem to mean accessible for blind users, though not visually appealing to sighted users with old browsers.

Does anyone have any experience using only CSS to layout web pages? And/or know firsthand about accessibility problems with this approach? Thanks.

- **Re:Some brief info on CSS and a ? on CSS vs. Tables by Rafael Chargel**

Yes, you can do this. There is the ability to set the position of certain tags to absolute positions. I will not go into the specifics of this, but it isn't that difficult, and I have done so for some web sites. As far as the accessibility goes, as long as the HTML makes sense when "linearized", then there shouldn't be any accessibility issues with this approach. However this is easier said than done.

- **Re:Some brief info on CSS and a ? on CSS vs. Tables by Paul**

In my opinion, there are very few reasons not to use CSS. All of the sites that I design are done purely in CSS, with no tables used for layout.

Take a look at www.webaim.org or www.cpd.usu.edu. Both of these sites are CSS-based.

The advantages of using CSS for layout FAR outweigh the disadvantages. You can create content that is meant to be "seen" by people with screen readers, for example. On the WebAIM site, I added some hidden text that gives screen reader users basic information about the

organization of the page, which is information that visual users take for granted. For instance, there is some invisible text that says "begin main menu" and "end main menu". Visual users can see that there are tabs, and that these tabs represent the navigation menu. People who use screen readers can figure this out, but they have to guess, and sometimes designs are confusing to screen reader users. By adding this small bit of extra text, it allows them to orient themselves within the Web page just a little better.

(The technique that I used on the WebAIM site is to visually place the text above the top of the Web page itself. The text is still there, and it will be read in the correct location by screen readers, but visual users will not see it at all, since it is "off of the page", or out of the viewing area.) See the style sheet at www.webaim.org/styles/2004home.css for specifics.

Of course, this is just a small example of something that you can do with CSS. Another example is that you can manipulate the reading order of content. The visual layout of a page may not always be the most logical reading order for people who can't see the visual layout. CSS lets you manipulate the reading order without changing the visual layout. You could, for example, put the main content first in the reading order, and the navigation menu later. Visual users often skip past the navigation links at the top of web pages anyway, and by manipulating the reading order, you can allow blind users to do the same thing. This approach isn't always appropriate, but it is at least a possibility to consider, and is a technique made possible only by CSS.

At the same time, you can also really ruin the reading order of a Web page if you arbitrarily rearrange content using CSS. This is especially a concern when using Dreamweaver "layers" because Dreamweaver makes it very easy to rearrange these layers visually, but the program does not automatically rearrange the reading order in the code. So this is an area where you have to be careful with CSS.

It's true that older browsers don't support CSS, but that's not such a big deal. As long as you create the page so that it is still usable when style sheets are turned off, the content is still completely accessible. Browsers with partial CSS

support, such as Netscape 4.x and Internet Explorer 4, need to be taken into account, because if you're doing style sheets correctly, the page will actually look worse in these browsers. The best thing to do for these browsers is make sure that the CSS "fails" completely: partial support is worse than no support. There are techniques for doing this. See <http://www.ericmeyeroncss.com/bonus/trick-hide.html> and http://w3development.de/css/hide_css_from_browsers/.

In the end, learning CSS is one of the best decisions that a Web developer can make, because it simplifies many aspects of Web page design, and not just in terms of accessibility.

See <http://www.webaim.org/techniques/css/> for more info.

- **Re:Some brief info on CSS and a ? on CSS vs. Tables** by **Discussion Board Guest**
CSS layout is far more accessible than table layout. Printability is also greatly improved with a CSS layout. You can linearize your content via HTML while using absolute positioning to layout the website. For instance, if you have the Opera browser, take a look at www.taalliance.org. While there, click on the author button to turn off the style sheets. Notice the content is in place.

You can make a table layout accessible. I've done it on other websites. However using a table for layout is not always easy for someone using a screen reader.

- **Re:Some brief info on CSS and a ? on CSS vs. Tables** by **Jonathan Cruce**
I think it's important to note that what we're talking about here(I think) is using CSS instead of tables for *page layout*. Tabular information should still be marked up using tables, in order to display correctly for all users. Screen readers can parse a correctly marked-up table to make the information more accessible for blind users.

Some very good information about CSS and accessibility issues can be found at A List Apart (www.alistapart.com). Also, for some impressive examples of the power of style sheets, take a look at www.csszengarden.com

Note that the CSS Zen Garden is not designed to be accessible, but to show the power of

stylesheets. For that reason, many of the layouts shown there may not be accessible to those using alternative browsers.

Jonathan Cruce
Technology Access Center
Nashville, TN
615-248-6733

- o **Re:Cascading Style Sheets by Cyndi Rowland**

One of the great benefits to using CSS is that it separates the content of your page from the actual presentation of your page. This can be a tremendous asset when designing accessibly. Paul Bohman of WebAIM created a brief (3-page) tutorial on the benefits of using CSS for accessibility. I would like to refer to it rather than recreate its main points. Please go to <http://www.webaim.org/techniques/css/2>

- **Re:Cascading Style Sheets by Earl Johnson**

A point covered to some extent in this reference that is worth highlighting is the power of the "div" and "span" elements, in conjunction with the "id" and "class" attributes, to group and further refine the effect style sheets have on content. The following URL provides a nice synopsis here. The main negative of this refinement is it the user must have more knowledge of the application in order to ensure things like color and sizing are universally affected throughout the application [luckily, these tags generally used only in web applications]. <http://www.w3.org/TR/REC-html40/struct/global.html#h-7.5.4>

Another good reference to follow when designing style sheets can be found at:

<http://www.w3.org/TR/CSS-access>

Earl

- **Good sites - models? by Discussion Board Guest**

Greetings everyone! I was wondering if you could direct me to some websites that were particularly good (accessible). I do not make websites (but deal with them a lot) and would like to see what makes a good one and what makes a bad one.

- o **Re:Good sites - models? by Rafael Chargel**

One website which is particularly good in terms of both content and accessibility is the National Dissemination Center for Children and Youth with Disabilities (www.nichcy.org). Granted, I am somewhat biased as I used to work for them :).

- **Re:Good sites - models? by Julie**

LOL. I guess you are a smidge biased... But, the site *is* a good model of accessible design.

Another site that those involved took a lot of care to make accessible is that of the National Collaborative on Workforce and Disability for Youth (<http://www.ncwd-youth.info>).

Okay, yes, I am a bit biased on that one because I work on that project... :-D

- **Re:Good sites - models? by Britta Beeck**

Thanks for the postings! Both web sites are very attractive.

I also admire especially these two web sites:

<http://www.diveintoaccessibility.org>

and

<http://www.webaim.org>

I have also created an accessible web site: <http://mn.vsarts.org>

Here I included punctuation (setting colons after headers etc.), forcing the screen reader to pause. Maybe somebody would like to check it out and give me some feedback. Thanks.

Britta Beeck

britta@brittabeeck.info

- **Re:Good sites - models? by Discussion Board Guest**

I really like the VSA site that you've done. When you think of art you think of all graphics and you wouldn't readily assume that the site would be a good model for accessibility. Nice job!

I have WebAIM's validator on my tool bar and when I clicked on some of the pages on your site, I noticed the use of "b" tags instead of "strong" tags in some places. NOT a big deal but thought I'd let you know. Great work!

- **Re:Good sites - models? by Discussion Board Guest**

whoops that didn't post correctly. I was trying to write that you'd used deprecated "b" tags instead of "strong" for bolding on some pages.
cheers!

- **Changing requirements or educating users? by Perrine Dailey**

After reading the newsletter and the other excellent information related to web accessibility, it seems that much of the focus of making the web accessible is on the part of the developers and not the users. I think efforts to educate Internet users about the accessibility options available and how to access and use them is needed.

For example, the FCTD discussion board always seemed difficult for me to read because the text extended beyond the sides of my screen and to read it, I'd have to scroll back and forth over each line. Today I asked a computer-guru coworker why it looked that way, and whether it was the fault of the site or the fault of my computer. Turned out, it was my monitor's fault that the text extended beyond the screen. My old standard 15" was set in such a way to make everything look bigger to accommodate my poor eyesight. I had no idea that my monitor setting was affecting the way material was being presented on the Internet. Now my monitor setting is changed and the text is much smaller, and almost painfully difficult to read. Imagine my surprise when I started reading the posts on this discussion board - the text was huge - and easy to read! I figure there must be two fonts at work, or different styles...in any case, I found myself to be the perfect example of the problem at hand. I'm a computer-savvy person with a disability who had no clue as to how to change my monitor settings to make the text readable.

What efforts are underway to educate users, people with and without disabilities about how to use the access tools provided? Should the popular Internet browsers have a more key

role in getting the accessibility features into the hands of the user?

Perrine Dailey
Simon Technology Center (PACER)

- o **Self Advocacy - accessibility from the user side** by Julie

Perrine, your post is really on target! Accessibility is something over which both developers *and* users have control. While it is a definite accessibility no-no for developers to use fixed font size, if a developer had not fixed the font size to points but instead has created it to be larger or smaller in line with user preferences, the user has full control over how a font reads on the screen.

There are lots of ways to adjust size both within the browser and through your operating system. Also, the size of your screen (your screen resolution) and the text size are independent of one another. For example, I don't know what browser you use when searching the web but in IE 6.0 you would just go to "View" and then drop down to "text size" and choose a size that allows you to read the text. Play around with your screen resolution by going to setting for the screen display and see what size works best for you.

Also, the base font on our site is intentionally large for ease of use. Glad you are able to see the conference with ease!

- o **Re:Changing requirements or educating users?** by Cyndi Rowland

I couldn't agree with you more Perrine. In fact the developer is only one part of the puzzle, end-users are another, and there are many other complicating pieces. We dealt with this complexity in an early Web accessibility article "Meeting the Challenge" (<http://www.webaim.org/coordination/articles/meetchallenge#vii>). There are several sources of error and solution when you look into Web accessibility. This puzzle is comprised of (at least) 6 parts. In no particular order we have these sources of possible error:

1. Is the knowledge and skills of the Web designer sufficient to support Web accessibility (e.g., do they know to create alt text, captions, accessible tables and forms)?
2. Do the creators of markup language editors (i.e., as authoring tools) support accessibility. For example, how well does an HTML editor such as Dreamweaver or Front Page support access?
3. Do the creators of course software (i.e., as yet another form of an authoring tool) support accessibility. For example, how well do course management systems such as Blackboard or WebCT support access?
4. How well do browsers (IE, Netscape, AOL) and their different versions support accessibility? As an important user agent this is critical.
5. How well do creators of assistive technologies, as another important "user agent" do with respect to supporting accessibility? Examples here would be JAWS, ZoomText, Window Eyes.
6. Does the end user possess sufficient knowledge and skills to support access? They must know the features that are available to them and know how to make the necessary changes (e.g., into table reading mode in JAWS).

What makes it even more challenging is that each of these pieces is, in fact, interactive. Thus in certain configurations someone may, or may not be able to gain access.

I don't want anyone to feel overwhelmed though. If we all stick to guidelines and recommendations within the field it will be productive and yield accessible content. For example Web content developers have guidelines (WAI as an example produced Web Content Accessibility Guidelines) and standards (in the U.S. it is Section 508). Those that create authoring tools and user agents have similar guidelines (WAI and IMS as examples). If we each stick to our own body of knowledge it does work out. This should serve as a call, however, to those who don't update browsers in school computer labs, or for users who are running off of very old assistive technologies. With time comes change. To the extent that we can all stay reasonably abreast of these changes, accessibility will prevail.

Cyndi Rowland

- **Re:Changing requirements or educating users? by Earl Johnson**

This is more of a content design [developer] vs a user issue and may be somewhat orthogonal to this thread but its worth pointing out that an increasing number of web sites are being designed so they can only be displayed or presented correctly in newer browsers. One reason for this is developing content that displays correctly in older browsers requires special non-html content to accomplish [and is a nightmare to support]. Another reason developers do this is newer web technologies provide them with greater capabilities, including in accessibility, but at the expense of having content ignored or, worse, incorrectly displayed in an older browser. Its a good idea to add download buttons for the browsers the content was designed for somewhere in the web page's content whenever it is known the content has been designed to only run in newer browsers.

Earl

- **Encouraging use of more modern browsers by Julie**

This is a great point, Earl. If you want someone to use a browser that will optimize that person's experience on your website, allow them to access it easily. Encourage them to download a recent version. Put a button on your site that links to a current version and say, "this site is best viewed in IE 6.0, click here to access a free download" or something like that.

I have been very very surprised at the number of very smart people with whom I've interacted over the past several years who have no idea that there are different types browsers or that there are different versions of different browsers. Some people know IE and may have heard of Netscape but don't know how to get it or why to use it. And they certainly don't know about fantastic browsers such as Opera. Many people just use what sits in front of them on their desktop (usually IE) and never update because they don't know they can or they don't know why it's important.

- **Re:Encouraging use of more modern browsers by Rafael Chagel**

This is an interesting point. As a software developer, I would love to agree whole-heartedly with the idea that it is the user's responsibility to maintain the most current product, and let's

not fool ourselves, even if we give the user a link to the new product, it's still up to them to take the time to download and install. However, that is not a realistic expectation. The whole reason why we have Quality Assurance and Marketing Departments is because it is the responsibility of the developers to build for the audience, not the other way around.

The difficulty is in the structure of the internet. When a developer builds a new client application (ie: Word, JAWS, Outlook) the developer can specify the minimum requirements of that product, because the audience is limited to purchasers of that product. After all, you wouldn't buy an application you knew would not work on your machine.

The World Wide Web is an entirely different entity. Everyone with internet access is your audience, because the internet does not distinguish between Windows, Mac, Unix, IE, Netscape, Opera, etc. It is an open forum, and if you're going to publish something on the web it is your responsibility as the developer to respond to the needs of your audience.

Some companies can make the decision that the few users who are running Windows 3.1 (and they are still out there believe me) don't matter. But that is the decision the company must make. To get mad at the user for not upgrading is like a doctor becoming upset because you don't want hip replacement surgery every two years. Even if it was free, most of us wouldn't take it.

Besides, in some cases it's not so easy for the user to upgrade. Especially when you are talking internationally. What about a user in Uganda who is running on a satellite link, the equivalent of a 14.4 modem, if not slower. It might take that user 24 hours to download the newest version of Explorer. Even domestically it can be difficult, particularly for users with little computer experience. Installing new software can be an intimidating exercise.

To sum up, if you want to design your website for only one browser version, be my guest. If you want to say "best when viewed with ..." go ahead. You may even put a link on the site, but if your users haven't upgraded at this point, they probably never will.

- **Re:Encouraging use of more modern browsers by Julie**
Great points, Rafael!
- **Re:Encouraging use of more modern browsers by Jonathan Cruce**
Great points!

The nice thing about style sheets is that web pages *should* degrade gracefully in browsers that don't support them. The truth of the matter, though, is that

because of limited or buggy support by major browsers in the past, creating a site that *actually* degrades gracefully (that is, provides all the necessary content even if it doesn't look as it was intended to look) may require using several "hacks" within the style sheet and HTML itself.

This usually applies only to pages that use more advanced CSS techniques, like floating boxes and pixel-perfect alignment, but you should be aware that a page that looks fantastic in MSIE 5.5 may fail miserably in MSIE 6 or Netscape, or even Opera.

The good news is that many of the people who are using browsers that are much older and don't support style sheets know that sites may not look right, so it's more important to be sure all the content appears than to be sure that the page is correctly laid out. Web designers may still need to download old version of browsers to use when testing their sites, but may not need to take the extra time to be sure the design looks the same on all browsers.

- **Re:Encouraging use of more modern browsers by Josh Freeman (Webmaster)**

One thing I have done is linked directly to Microsoft's and Netscape's CD request page. Both companies will send you a CD with the latest browser for the cost of shipping. (less than \$10)

In my development I try to be very careful not to develop to a specific browser. Although 90% of our users are on Internet Explorer, I still don't use any IE-specific code in my designs since this makes the website less usable by other browsers, and generally with little benefit to the user.

- **Re:Changing requirements or educating users? by Discussion Board Guest**

I both agree and disagree with this reply.

If your website is for a specific group of 'defined' users, then encouraging them to upgrade their browsers would be acceptable. For example, we have a new ASP.NET application which uses tree-views, a MSIE-specific function. We have a defined group of users whom all have been informed to download the most recent version of MSIE.

However, if the website is intended for public use, I feel it is the responsibility of the developer to ensure that the website works on all newer browsers and make a best-effort to ensure that it works with older browsers also. This can be done using a CSS layout.

Take a look at one of our prototype websites being considered for future design (<http://www.pacer.org/znew/suggestion.htm>). If you

have Opera, click on the author button to ignore the style sheet. This is how this website would look in an older browser that doesn't support style sheets such as Netscape 4.x.

One rule of thumb that I like is that if your website can be viewed and navigated in LYNX then you've already come a long way. :-)

Many Internet users are still using dial-up service and do not have the time or resources to download an upgraded browser and some don't even know that their browser is out-dated. Many users are not even aware of alternative browsers such as Opera or Mozilla.

- **Web accessibility defined by Mike**

I recently went to a middle school and approached the principal about the topic of Web Accessibility in their school and district. The response was "yes, I believe our site is very easy to find and our students use it." It was apparent that the principle had no idea that I was referring to accessibility in terms of ensuring access for all including those with disabilities. The principal, after learning of the mistake, became quite excited to learn how to make their site more accessible for their students and began the process of informing the appropriate people at the school and district to begin the process of determining if their sites were accessible (which they weren't) and how to go about fixing them.

Also while teaching high school in California I served on the district technology committee and never once was Web Accessibility brought up or even mentioned as an issue.

I use these experiences to pose a question. Do people in the K-12 public education system know about Web accessibility? It seems to me that very few do and as more of the general curriculum is posted to the Web more students will be put at a disadvantage. How do we resolve this issue?

- **Re:Web accessibility defined by Discussion Board Guest**

LOL. Did the principal really say that about web accessibility? I had no idea there was such a gap in knowledge!

I do not work directly with k-12 educators but am curious also to know what sort of outreach there is to this community. It would be great if there was an easy to understand info pack (or a person!) that could be sent to groups comparable to the district technology committee you reference that (or who) could sensitize people (especially key decision makers) to web accessibility basics.

- **Re:Web accessibility defined by Rafael Chargel**

One simple way of making pushing your cause is to make accessibility an issue to the companies who provide those k-12 institutions with the software they are using to place their material on-line. Companies like Blackboard do make an attempt to be at least 508 compliant, but unless they receive lots of user feedback, they will not see these issues as being a competitive edge.

- **Re:Web accessibility defined by Cyndi Rowland**

For anyone who is interested, WebAIM is in the second year of a K-12 initiative. We are in the midst of conducting outreach for schools, districts, and state offices of education. We are developing models of accessibility reform and continue to look for anyone (i.e., entity) who would like to act as

a field test for this effort (grin). Also on the horizon is a curriculum to be used by postsecondary faculty who teach technology courses to those who will end up in K-12 ed (e.g., teachers, media personnel, administrators). The intent here is to provide those instructors with a flexible set of resources so that they can embed accessibility as they teach other technology principles (e.g., in a course on basic HTML help instructors teach the alt text convention while they teach images & graphics). We continue to also look for field-test partners with this curriculum as well (double-grin).

I do think the whole K-12 area is going to be a tough challenge. First there is great disagreement over who is supposed to give children with special needs the ubiquitous "access to the general education curriculum". It seems to me that both special and regular education assume that it is the others' responsibility to take care of access issues. Furthermore as electronic and information technologies explode in our K-12 system (e.g., use of Web, CD-ROM, DVD, Desktop videoconferencing) the knowledge to support basic access, let alone accessibility knowledge for procurement purposes, is not there. Along with others, WebAIM will continue to swim these uncertain waters.

I would like to ask if any of you are in K-12? If so I am interested in hearing your opinions around the awareness of accessibility of your colleagues. Thanks in advance for your thoughts on how to best get the word out!

- **Re:Web accessibility defined by Annette Cerreta**

Accessible Information Technology in Education (AccessIT) at the University of Washington is another large initiative that was established to increase the access of individuals with disabilities to IT in educational institutions at the K-12 and postsecondary levels. They have an excellent website with an extensive database of resources on supporting development and implementation of accessible IT in educational settings. The materials are designed to help school administrators, web developers, teachers, and others less familiar with the issues related to these issues. I highly recommend you check out their website at www.washington.edu/accessit

Also, the regional ADA and (now) IT Centers around the country have partnered with AccessIT to outreach to educational entities about the importance of IT and web accessibility in schools. They provide technical assistance and training to school districts, parent and disability advocates, and more. Here's a link to a page on the Great Lakes ADA & IT Center site that gives contact links and info to each regional center.

I think it is great that this discussion is providing a forum to network and learn about other important efforts taking place around the country. For instance, even though I work with the Great Lakes ADA & IT Center on the K-12 initiative, I was completely unaware of WebAims efforts in the same arena.

- **Re:Web accessibility defined by Jonathan Cruce**

It's been my experience that very few people in general know about web accessibility. We have just started a new service here in Nashville that provides website accessibility services (through audits as well as design consultation), and

have to explain accessibility, and the lack thereof, to every person we meet.

Even agencies that receive federal funding and are required by Section 508 to make websites accessible don't seem to know what it means. Does anyone know of an initiative to "get the word out" to the general public? I've found that about half of the web designers/programmers that I've spoken to have at least heard of the idea, and that's probably due to the W3C's Web Accessibility Initiative, but very few non-programmers visit that site...

Jonathan Cruce

- **Outside Evaluation by Discussion Board Guest**

I run a federally funded project and work with in-house and contract web designers. They tell me our project's site are compliant but are there any organizations that will verify this? Not the automated programs like Bobby, but an outfit that has real users with disabilities that visit the site utilizing assistive technology software like JAWS, ZoomText, etc.

It's not that I don't trust our designers but none of us has a disability or the time to sit down and try and navigate our sites with the AT. I also would like to get more in-depth feedback from real disabled users.

Thanks and great discussion! I'm telling all our designers to take a look.

- **Re:Outside Evaluation by Cyndi Rowland**

There are several groups that will do this (for a fee). WebAIM is starting to pull together lists of these individuals and groups. Please take a look at our WebAIM.org site and go to the main nav "getting help from others" and then to the consultants and training headers. If any of you know of additional individuals/groups that should be on this list, please contact me (off list?) and we will review them for inclusion onto our site. We do our best to only place people on this list who have demonstrated excellence in training, technical assistance, consultation, or evaluation. I don't want this to sound like a self-promotion, however, WebAIM has had several contracts to evaluate Web sites for those who would like this service. I think that although some validators will help, you must have actual people involved in the process. So many of the guidelines/standards are subjective enough that they need human evaluation (e.g., enough contrast? Alternative text logical for purpose?) I hope this information helps.

- **Re:Outside Evaluation by Earl Johnson**

Web A11Y Contractors are valuable for validating a web designers work but this doesn't then mean all the site's content becomes accessible as a result. It might be worth exploring the anatomy of many larger web site designs before going further [e.g. my son's school comprises steps #1 & #3; Sun's site utilizes all 3]:

1. There is the overall site template - this establishes the site's look and feel. It comprises the header [which generally contains the company logo site wide or global navigation]; the side bar [which typically contains links pertaining to the child site containing the content currently being viewed]; and the footer [which contains links like "contact use, copyright info, and the like].

The templates are typically developed by the web designer.

2. Commercial companies [and maybe schools] also provide html "components". These are things like tables, text areas, and other html elements that already have

their colors, styles, and other attributes set on them. These make it easy for content providers to develop content that matches the look and feel of the site.

The components are typically developed by the web designer.

3. The content itself - this is poured into the "white" area surrounded by the template; this is under the sole control of the content provider [e.g. the teacher putting the class schedule online].

Web A11Y Contractors are best utilized for validating the a11y of #1 & #3. But they're going to be budget busters if they are also used validate #2 as well because they would need to be called in every time someone pushes new content onto the web site. The unfortunate fact is web content a11y won't be achieved unless the content providers, in-school experts, and/or the schools webmaster are involved in the effort also.

So, while they aren't perfect, Bobby and other web a11y checkers are far better than doing nothing; their greatest value is catch alot of the the typical oversights content providers make [their greatest weakness is the false positives]. There are also web content editor that have checkers built into them or enable them to be plugged in [WebWorks and FrontPage are 2 examples] that are useful.

- **Earl Johnson's expert perspective has been posted by Julie**

Just wanted to let participants know that, in addition to Cyndi's perspective "Designing with Accessibility in Mind", Earl Johnson's expert perspective "Paths to Accessibility" is now available online.

- **Browsers and accessibility by Julie**

It would be useful in this discussion to talk about about different types of browsers that are available that may enhance the experience of a person with a disability when using the web.

There is a significantly sized community of people out there who think that IE is the only browser available or who may not even know what a browser is - they know that to surf the web you click on the "e" icon on your start list or on your desktop. In reality there are browsers like **Opera** - <http://www.opera.com> that are designed to, among other things, interact effectively with AT devices.

Any thoughts from our experts or from anyone in the audience on awareness of, use of, capabilities of such browsers I think would be interesting.

- **Re:Browsers and accessibility by Jonathan Cruce**

The browser you linked to in your post, Opera, has many useful features for interacting with web sites and changing font sizes, choosing style sheets, etc., and is also one of the best browsers available for fully supporting CSS and other Web standards.

I know that JAWS has done extensive testing with Microsoft Internet Explorer (MSIE), and uses Microsoft's own programming tools to let the program know what's happening on-screen. I'm not sure if they've done the same with Opera, Netscape / Mozilla, or other browsers... Does anyone know?

I also *think* that GW-Micro (maker of Window-Eyes, another screen reader) has also tested most extensively with MSIE, but I'm not sure on that one.

Jonathan Cruce

- o **Re:Browsers and accessibility by Jerry Julie,**

It makes it even more difficult for users to understand what a browser is when MSIE is integrated into the Windows OS. While browsing the contents of my hard drive I can click on favorites and jump directly to a website. The user doesn't know that they are using a browser and in turn, doesn't get the opportunity to learn about other browsers. To them, the Internet is something they have access to by simply opening up a directory on their computer.

Then there's the issue of change. Users get so used to their current process of browsing the Internet that when they do try a new browser, many are turned away because it's different. It's not what they are used to. Maybe the buttons are in a different position or accessing their email is more difficult.

I've always suggested to other developers to use Opera and LYNX while developing their web pages. Opera can turn off images and style sheets and LYNX displays as text-only. Two great (and free) tools to check for basic accessibility.

- **What about client applications by Rafael Chargel**

Everybody is talking about web sites, but people with disabilities use more than just the internet. What do you think about accessibility for client-side applications like Office, Lotus Notes, and even video games? I am a J2EE Programmer, and I do know that Sun Microsystems has created packages (for non-programmers - tools to write software) for the purpose of accessible graphical user interfaces, not to mention published tons of white papers and tutorials on the subject.

- o **Re:What about client applications by Earl Johnson**

My guess is both these products work well with today's assistive technology's given the significant amount of attention IBM and Microsoft pay to accessibility. IBM also provides guidelines for developers on how to build accessible Lotus Notes at the following URL:

<http://www-3.ibm.com/able/guidelines/notes/accessr5.html>

Generalizing a bit though, the accessibility challenges between web content and freestanding applications is very similar - accessibility by users with disabilities to freestanding applications is difficult to impossible if the developer doesn't a) build their product based on technology that supports accessibility and b) optimize the usage of the accessibility support the technology used provides.

Since we're talking about the accessibility of freestanding applications in this thread, I'll take the opportunity to mention Star Office 7.0. Star Office is an office suite package that includes a word processor, spreadsheet, presentation; can open [and save] files in various Word, Excel, and PowerPoint formats; it is built to take advantage of Java's accessibility support; and assistive technologies are tested on them. Star Office is also free charge for education [it's MSRP is \$79.95]. See the

following for more information about StarOffice and its features:

<http://www.sun.com/software/star/staroffice/>

- **accessibility and client applications by Perrine Dailey**

Thank you Earl for mentioning this need for accessibility in client applications. I've long wondered why the heck Word still doesn't have a text to speech option! Granted, there are SOME accessible features built into products by the big name computer folks, but more often than not, the children and adults I work with will still choose accessible software programs such as Kurzweil, WYNN, Read & Write, etc. instead of using MS Word.

I was especially intrigued to find that StarOffice exists - and that it claims to be better for certain populations of people with disabilities, including the deaf! I'm profoundly deaf and I've never heard (pun there) about this program and from being in the AT field I see a lot of technology. Does it run on a Windows system? If it does, and if it is of equal quality to the MS Office suite, we (AT folks, teachers, parents) should try to get the word out (pun again) to folks who can really benefit from an affordable suite of office programs.

Perrine Dailey
AT Specialist

- **Re:accessibility and client applications by Rafael Chargel**

Yes, StarOffice (produced by Sun Microsystems and arch rival of Microsoft) does exist for the Windows, Linux, and Solaris operating systems (I've not heard of a MacIntosh version). It is also significantly cheaper and less buggy than MS Office, which is a horrible application written by psychopaths who revel in the infinite frustration of office workers everywhere. I have StarOffice 6.0 and it works great. There is a version 7.0 now, though I haven't taken a look at it.

- **Re:accessibility and client applications by Julie**

Even less expensive (free) than StarOffice is Open Office which I use at home. Open office offers the same applications as MS Office and StarOffice - text, spreadsheet and presentation tools, and it costs nothing. It is based on the same code as resides underneath StarOffice. This is due to Sun's impressive relationship with the open source community wherein Sun shares what code they develop with the development community at large and vice versa (see earlier discussion on the free screen reader developed by Sun and the open source GNOME community) resulting in excellent (less buggy and often more secure) and affordable tools. In addition these tools because they have fewer bugs, often interface better with AT devices.

Although this conference focuses on web accessibility as it relates to inclusive or universal design, another aspect of accessibility is price. A product is certainly more accessible to more people if it is affordable!

StarOffice -

<http://www.staroffice.com>

<http://www.sun.com/software/star/staroffice/index.html> (StarOffice 7)

- **Handy guide by Discussion Board Guest**

I am looking for the handy guide such as the "must haves" for an accessible website and a "how to" piece to this as well. I understand the need just not how to make it happen.

- **Re:Handy guide by Rafael Chargel**

Other than the WAI website (**Checklist for accessible web content**), you should also go to **Section 508 Web Standards**. Obviously for non web site standards, there are other pages to go to.

- **Re:Handy guide by Cyndi Rowland**

I noticed that Rafael mentioned using the Section 508 standards as a good resource for "must haves" with respect to Web accessibility. As an FYI, WebAIM interpreted the 16 Section 508 standards into a pass/fail checklist. It is technical in nature but the feedback that we are given in the field indicates that it is a useful document. Please remember that this is only the WebAIM interpretation of the standards and not the Federal interpretation. We list the actual legislative language pulled directly from the Act on the lefthand column and our interpretation in the other 2 columns. You can check it out by going to:
<http://www.webaim.org/standards/508/checklist>

- **Re:Handy guide by Earl Johnson**

On the Section 508 side of things, I point our folks to the AccessBoard's guidance on meeting Section 508's web accessibility requirements [the Access Board wrote the final Section 508 rule]. The main reasons I do this are each requirement has a good [and] brief discussion associated with it and many of the 1194.22 requirements include one or two code snippets on how to fulfill the requirement. The URL to the AccessBoard's guide to the 1194.22 [Web content] standards is at
<http://www.access-board.gov/sec508/guide/1194.22.htm>

- **Section 508 discussion by Judy Brewer, director of the W3C's Web Accessibility Initiative (WAI) by Julie**

In the Family Center's **January 2004 newsletter**

(<http://www.fctd.info/resources/newsletters/displayNewsletter.cfm?newsletterID=482>) Judy Brewer states:

"The 508 regs, she cautions, 'are actually derived from the WAI's lowest priority level; they're a subset of our most essential level, and not even the full set.' In fact, she notes, 'There's been some concern in the disability community, and even from people in industry, that the 508 regs, when we follow them, do not even provide enough access for some individuals to get onto the W3C website.'"

What standards do you (conference participants) use in developing sites? Do you look to those set forth in Section 508 or do you use the WCAG 1.0 (or 2.0 draft)?

- **Re:Section 508 discussion by Judy Brewer, director of the W3C's Web Accessibility Initiative (WAI) by Jerry**

I use the most recent version of the Bobby software (now by Watchfire) to test my pages for accessibility. I make every attempt to keep my pages level 3 compliant. If I can't, I usually make a text-only page as an alternative. This ensures that the information we are trying to convey is read by all users.

- o **Re:Section 508 discussion by Judy Brewer, director of the W3C's Web Accessibility Initiative (WAI) by Rafael Chargel**

That one greatly depends upon my audience. When I was with the **National Information Center for Children and Youth with Disabilities** I made it a point to be WAI Triple-A accessible, using the **Bobby Software**. When I went to the **Global Learning Portal** there was much less of an emphasis on accessibility in terms of disabilities, and much more of an emphasis on bandwidth issues. However, we did at least outwardly attempt to be 508 compliant, as we were federally funded. Now that I am with **Blackboard**, I can see that while they are putting a lot of emphasis on their core set of functions being Single-A (a little better than 508) compliant, some of the more sophisticated tools are not. As an example, we offer two different chat rooms, one is called the "Virtual Classroom" (VC) and the other is called the "Lightweight" (LC) chat room. The VC solution is very fancy, with a virtual whiteboard, but is not accessible. The lightweight chat room is a simpler Java Applet, but it does exceed the Section 508 standards and does implement the accessibility packages from Sun Microsystems.

- **Re:Section 508 discussion by Judy Brewer, director of the W3C's Web Accessibility Initiative (WAI) by Jonathan Cruce**

Rafael -

You said that Blackboard VC is not accessible. Does that mean that it doesn't meet Section 508 standards? If so, doesn't that mean that US companies that receive federal funding to help pay for software can not purchase that program?

I ask because I'm curious as to how software developers understand and apply Section 508 standards. It's my understanding that the purchasing departments of federal agencies and agencies contracted by the federal government **must** use 508-compliant software (and hardware) if it's available. Of course, that does leave Blackboard VC as an option for users if there's nothing else out there...

Jonathan Cruce

- **Re:Section 508 discussion by Judy Brewer, director of the W3C's Web Accessibility Initiative (WAI) by Rafael Chargel**

That's a great question Mr. Cruce,

First, both the Virtual Classroom (which is not 508 accessible) and the Lightweight Chat Room (which is 508 accessible) ship together. Actually, they are both tools which Blackboard (Bb) calls Collaboration Tools which ship with the Bb Portal. For each course that an instructor creates, he/she can go to the "Communication" page of their course, and click on the collaboration tool. There the professor has a choice of which chat room to use. In the "Instructors Manual" it explains that the Virtual Classroom is not accessible, and that the Lightweight product is accessible.

Basically, any tool that Bb provides will either be Section 508

accessible, or they will provide a Section 508 alternative. In this case it is up to the professor which one to use. It should also be noted that in the later releases of Bb Learning System Suite 6.0 and in Bb Learning System ML there is also an accessible version of the Virtual Classroom. I have not personally seen that one work, so I don't if there are differences in functionality.

This does not mean that everything on Blackboard is accessible. There is a lot of third-party software out there that runs on Blackboard, and there is no way that we can control what they do.

I hope that helps, but keep in mind that I am not in product development, and there may be new accessibility initiatives I am not aware of.

Rafael

- **WebAIM and Blackboard partnership by Julie**

Interestingly, it looks like BlackBoard is one of WebAIM's partners (<http://www.webaim.org/about/>). I don't know anything about the partnership (just a big fan of WebAim's tools and publications :-)), but I bet there is quite a bit going on with accessibility at Bb.

- **Re:WebAIM and Blackboard partnership by Cyndi Rowland**

Yes,

Blackboard has been one of the WebAIM partners for some time. We helped with their initial accessibility audit several years ago and also provided training for their staff and consultation through the last several years. Although Blackboard products (i.e., the highly interactive Whiteboard) are not yet accessible they have a real commitment to access and development in this arena. They have dedicated staff at Blackboard that are in the development loop so that access is constantly considered. I know that 2 versions ago the main template met Section 508 stipulations (not communication or other interaction tools). Although many would agree that 508 is the bear minimum, they attained it and are working beyond this for the sake of their constituents. I know this year they developed an accessible JAVA chat program and have many other ideas in the works. Moreover, their commitment to access by institutionalizing it throughout the development process is impressive. Certainly because it is now well beyond the period of funding to do so.

- **508 and appeal to teens with disabilities by Charles McNelly**

We currently have a site for teens with disabilities which unfortunately is not very accessible. However, given the nature of our program requirements felt it necessary to go online with something and when funds are available to improve the accessibility. For those interested it is .

We now are in the position to have approx. \$50,000 to build a prototype site for our state based on the functionality and content of the above site. However, it will have to be 508 compliant since it is directly funded by a federal grant. Aside for the typical issues of high school students using older operating, dialup systems and browsers, we see a tension between a site which will be of interest to teens familiar with gaming and the excitement of movement and splash and a more easily compliant site that may not hold interests of teens. Also, there is tension between the needs of some teens with disabilities such as those with visual impairment (approx. 5% of our participants) and those with learning disabilities (which is approx. 80% of our participants.) Students with learning disabilities of which a large percent are neurologically impaired perform best with color highlights, bolding, irregular spacing which enables attention to be captured, and so on.

We need advice of strategies for 508 design and appeal to teens with disabilities, especially neurologically impaired and African American males.

- o **Re:508 and appeal to teens with disabilities by Julie**

Charles, I'm glad to read your post. We've been talking a lot thus far about specific guidelines, how to use styles sheets (CSS), etc. You have brought up in your message one of the most significant delinmas faced by developers: how to strive for superior accessibility while, at the same time, not sacrifice strong aesthetic and experiential appeal? (see WebAIM's article: Do Accessible Websites have to be boring at <http://www.webaim.org/techniques/articles/boring>)

And how do you make your site appealing while at the same time dealing, not only with potential low/no vision users (in your case 1 in 20), but those with other disabilities such as cognitive impairments (in your case 4 out of 5)? There is a great article on WebAIM focused on designing different types of disabilities: http://www.webaim.org/techniques/articles/vis_vs_cog

I made a CD-Rom of Assistive Technology resources recently for the Family Center on Technology and Disability. I ended up designing it in pure and simple xhtml. While I love how products developed in Macromedia's Flash look, I was wary to use Flash because it is harder to make information accessible (if it can be done at all) with flash than with html (if anyone would be interested in a copy of this CD, you can order one from the front page of www.fctd.info). WebAIM produced an excellent article on the subject on Flash usage as well! <http://www.webaim.org/techniques/flash/>.

This doesn't address specific issues related to the age/demographic on which you focus, but that sort of info you can get from focus groups of teens who will be using your site. I personally, I've worked a lot with younger teens in an inner city program here in DC and noticed that sites dealing with sports, music (with www.lyrics.com especially) and games were, as you might expect with teens, very popular! Lots of sites that were popular didn't have a lot of splash/flash (and were likely fairly accessible or easy to make accessible), just good (relative!) information and ways to easily access the info.

Good luck to you on your project.

- **Re:508 and appeal to teens with disabilities by Charles McNelly**

Thanks for the information. I will follow up on it. Sorry that I allowed the site address to dissolve. Here it is <http://www.high-school-high-tech.com>

In fact, the current site, to be used as a prototype for the State of Maryland

site, serves a local (for you) project -- this being in Prince George's and Montgomery Counties which as you know borders Washington DC. To date many of the teens find the site less than exciting, but tolerate using it since they have program requirements to develop resumes online, etc. and use the online resources. We have recently added some Flash for interest (the two highlighted items at the bottom of the home page), but this has not been made accessible. It is our next effort to do this.

Thanks much!

- **Re:508 and appeal to teens with disabilities by Julie**

Hi Charles,

Ironically, I work with the high school high tech program (parent site)through my work with the National Collaborative on Workforce and Disability for Youth (<http://www.ncwd-youth.info>). Our Collaborative has the new task of hosting the main hs/ht website. I really don't know much about hs/ht's local programs, though. If you wanted to chat one on one at any point about issues you are dealing with in terms of accessibility, etc. maybe we could learn something from one another. I'm not the webmaster of that site but I've worked closely with him on accessibility issues.

My email is jinlow@aed.org and my work # is 202-884-8306.

Take care, Julie

- **K-12 by Julie**

Our expert, Dr. Cyndi Rowland, posted in a recent thread information about activities in which her organization, WebAIM, is involved on the K-12 front (see: Re: Web accessibility defined).

She asked if anyone could speak to scenarios they've experienced in K-12 related to web accessibility. Is this an issue that you ever hear addressed in discussions with students, teachers or school administrators? Do people have (little, some, varied) knowledge of web accessibility? Do you feel that people may not understand why it is important? Do you, yourself, feel like you don't fully grasp why web accessibility is so important?

Also, are there websites that you know of or that you use that are especially important to youth with disabilities, to their families or to the organizations that support the former? Are there sites that you use regularly that focus on specific types of disabilities?

- **Finding Accessibility-savvy Web page designers by Perrine Dailey**

How would an individual who wanted hire a designer to create a web site find a reputable Web designer who has the know-how to design an accessible site? Aside from viewing the designers other sites with an eye towards accessibility, are there questions to ask or qualifications I should look for?

Thanks for any input,
Perrine

- o **Re:Finding Accessibility-savvy Web page designers** by Julie
Hi Perrine,

This is a such a good topic to discuss. I remember when I was interviewing web designers for a colleague's project (we both work in the disabilities studies and services center @ AED) asking different designers and design firms questions about accessibility. Some I'd "pre-screened" in advance by using WebAIM's wave tool and Cynthia Says tool and when they talked about how much they knew about accessibility, I pointed out the results of my scan.

I see a lot of designers say "oh yeah, I understand accessibility" just to hook in a client who might, for example, have to comply with Section 508 because of federal funding or whatever. The client probably doesn't know a lot about the web and can't really do anything but trust what the designer says.

I wish more people knew about the tools out there that are free and easy to use to check to see if sites are compliant. The free tools don't allow you to scan all of the pages of the site at once (just a page at a time), but they allow you to see on different pages what is working and what isn't in terms of all of the different accessibility standards. Like on cynthiasays.com you can type in your url, click to see if the site complies with Section 508 and/or the Web Content Accessibility Guidelines (WCAG 1.0), priorities 1, 2, and 3.

The wave tool is nice because if something is not accessible it shows up in red(=bad), yellow(=take another look at) or green(=accessible). And like with cynthiasays you can set this under any conditions you want. For example, if I wanted to test if a site complied with section 508, I would click "check for section 508 compliance". But if I wanted to ensure that my site was truly accessible and complied with section 508 AND priorities 1,2 & 3 of WCAG, then I would click setting. I have talked about it quite a bit about the WAVE 3.0 tool, but I just think it is an excellent - you don't have to be a techie to know that red is bad and green is good!

So other than being able to "self advocate" a bit through use of these tools, in terms of finding a good designer I would think that groups like WebAIM or even the W3C's Web Accessibility Initiative, would have some ideas. I know a few personally as well :-)

Thanks for your post!
Julie

- **Re:Finding Accessibility-savvy Web page designers** by Rafael Chargel
These are all good points, however you've forgotten one thing. Unless you are creating a brochure web page, it is unlikely that a designer is going to be creating the entire web site. It is important to keep in mind that a "designer" is just that, they are not programmers. You can have the best UI designer in the world create an accessible design for you, that is ruined by the programmer, who outputs outdated HTML.

This is a problem I've noticed with a lot of dynamic websites, because programmers tend to over specialize. For instance, I have a friend (and fellow programmer) who is an expert at Cold Fusion. Unfortunately, he knows just enough HTML to output to a web page. That is not nearly enough to output

accessible code.

Another problem I've noticed is that hiring managers become so focused on the buzz words ("SQL", "ASP", "Java") that they forget that the underlying structure of a website is HTML. One hiring manager asked me "if this guy knows Java Servlet development for WebLogic (buzz word galore), he MUST know HTML." Don't kid yourselves. Just because you know how to make a steak, it doesn't mean you can raise cattle.

HTML is often seen as an unnecessary skill. "After all, I can generate HTML with Frontpage." First, website editors provide little if any support for accessibility. Second, HTML and XHTML standards change faster than you can upgrade your software. If your programmer is outputting bad HTML, there is little that your designer, who probably doesn't know Java or ASP or any other of those buzz word languages, can do about it.

The moral of the story is, don't forget it takes more than one person to build an attractive, useable, and accessible website. Finally, don't let yourself be caught up in the buzz words, including "Section 508" which is more common sense programming and a government issued marketing gimmick, rather than an usefull guideline for accessibility.

Rafael (a software engineer with a healthy respect for HTML)

- **"Just because you know how to make a steak, it doesn't mean you can raise cattle" by Julie**

Perfect way to sum up the world of web development and design! I think Rafael makes some excellent points especially in regard to the reality that it takes more than one person to create an "attractive, useable, and accessible website."

I've noticed, especially on federal contracts, that a position of "web specialist" will be written into a contract. Then I see two things happen as the project evolves: 1) The website becomes the centerpiece or a vital component of the project and 2) the person developing that site will then be tasked with graphic design, building web pages, creating a backend database, writing and editing content, creating integrated marketing campaigns (promoting and bringing traffic to the site) and much more. The approach is often "we need a website" when it should be "we need to determine a technology strategy."

A person who is skilled in graphic design has a very different skill set than someone who knows Oracle (database development). A person who knows how to use dreamweaver (editing tool) to develop websites might not know the first thing about (x)html lays under the graphics produced via the editing tool and *why* that (x)html is important. And a person who knows about web accessibility may know nothing about creating content.

Offline (in the non - web world) writers and editors are not expected to be good marketers and accountants are not expected to be good engineers. I think people are slowly beginning to realize that the same applies to the web world. A strong and successful web presence has significant and distinct components *and* has the appropriate people engaged in working on those distinct components.

In terms of how this overlays onto the world of web accessibility, I agree with Rafael (and I imagine most participants of this conference would also agree) in that Section 508, while it deals with some web accessibility issues, leaves a lot to be desired. I would encourage participants to read the interview with Judy Brewer (director of the World Wide Web Consortium's Web Accessibility Initiative) in the January issue of the FCTD newsletter. Judy addresses some of the concerns people have with using Section 508 as the standard for accessible design. You can find that issue at <http://www.fctd.info/resources/newsletters/index.cfm> .

- **Website correction by Julie**

I was referring people to this article :

<http://www.fctd.info/resources/newsletters/index.cfm>
by Judy Brewer but the web address didn't show up.

- **Re:Finding Accessibility-savvy Web page designers by Earl Johnson**
I'd consider adopting the Missouri state motto in this quest - "Show me". At a minimum, I'd require the potential candidate to run one of the many commercial web content accessibility checkers [e.g. Bobby and its free online single page checker] over their work in your presence; the choice of checker tool used would ideally be yours but letting them pick the checker would be ok. Ideally; you'd have them demonstrate access using a screen reader or Home Page Reader; ideally they would be the ones providing the tools - it would show they are serious checkers vs newbes to checking.

Earl

- **Re:Finding Accessibility-savvy Web page designers by Discussion Board Guest**
There are a number of ways to pre-screen for designers/developers with accessibility knowledge and experience.

Most designers/developers who are experienced in Accessibility will have Usability Skills listed on their resume, and will give some background information on this.

A good interview question is to ask the designer to define Usability as they understand it. If their definition doesn't include accessibility then they aren't the designer for you.

Another thing to look for on resumes is any usability teaching experiences whether in seminars, adult education or corporate training. Most of us who are really into Usability are so enthusiastic about it that we teach it!

Asking the candidate to list some of the accessibility sites they frequent is also a good idea, so is asking them about the Web Standards Project or to describe any Section 508 experience they have (if they don't know what section 508 is, then they're not the designer for you).

Finally - if one of them tells you that the problem with some of these accessibility sites in the past has been that they don't pass their own tools (Bobby has taken a lot of flack for this) then you know you have a winner!

Hope some of this helps an involved web developer

- **Screen Readers by Rhonda**

I have a friend who is blind who uses a screen reader called JAWS and who complains about how expensive it is to keep buying the most current versions of screen readers.

I've only ever heard of the screen reader that he uses but I can not imagine that this is the only one out there. Are there other screen readers?

- **Re:Screen Readers by Jonathan Cruce**

There are several different versions of screen readers on the market now, but JAWS and GW Micro's Window-Eyes are, in my experience, the most widely used programs. I even work with some people who use both, preferring the Window-Eyes interface for Windows and the JAWS interface for Web browsing. Of course, that's an expensive option.

There are several "light" screen readers, like Microsoft's Home Page Reader, designed specifically for browsing the web but not incorporating much in the way of operating system access. Microsoft also built-in a program called Navigator that was designed to give users a taste of what audio navigation is like, but is not really useful to people with severe vision impairments.

I haven't kept up with what's currently available for the Mac, so maybe someone else can fill us in on that...

- **Re:Screen Readers by Earl Johnson**

The GNOME 2.6 desktop has built-in assistive technologies [AT]. GNOME is open source and runs on Linux and can be freely downloaded. The assistive technologies it provides include a screen reader, screen magnifier, on-screen keyboard, and StickyKeys.

Warning: the AT is still somewhat fragile and no support is provided for the free download; you should be a semi-technically savvy user before trying this out.

Not trying to sound like an ad; Sun offers the Java Desktop System [JDS] which includes the open source GNOME and runs on Solaris operating system. The update of JDS in the second half of 2005 will include the version of GNOME mentioned above. The cost of JDS for schools is \$50, for all others it is \$100; this fee includes support for one year.

By comparison; general use Windows screen readers typically run \$800-\$1200. The Home Page Reader, which only provides access to web based content, costs ~\$150.

See the following URL for details on GNOME and JDS:

<http://www.sun.com/software/javadesktopsystem/>

<http://www.sun.com/software/star/gnome/index.html>

- **Re:Screen Readers by Julie**

Since I don't work for Sun I can say that this tool is amazing!!

A FREE screenreader - incredible.

If it were between paying \$800-1200 for JAWS and needing to become "semi-technically savvy" I would choose the later! :-)

- **Feedback from a newly trained web designer by Discussion Board Guest**

I think it is great that they teach Web Developers to use various things to make web pages more accessible to all.

For example, they highly recommend using ALT tags on all pictures and links.

As the mother of a special needs child, I realize how important this is for society to do.

If anyone has further recommendations, then make them known. As an up and coming web developer, I would like to know!

Lauri Javes
Dunwoody College of Technology
Minneapolis, MN
javlaul@dunwoody.edu

- **Re:Feedback from a newly trained web designer by Discussion Board Guest**
Alt tags are an important part of accessibility. And there are lots of other things as well. I would definitely validate the sites you design in webaim's wave 3.0 tool and another good place would be to check out the tips on the web accessibility initiative's web site <http://www.w3.org/WAI/References/QuickTips/>.

Also, look at the resources listed on the front page of this conference. Some of the books they reference are very good at teaching you about all that goes into accessible design. The books are quite thick which tells you there is a lot to think about!

- **Re:Feedback from a newly trained web designer by Discussion Board Guest**
I particularly recommend the one by Mike Paciello: Web Accessibility for People with Disabilities
(http://www.amazon.com/exec/obidos/ASIN/1929629087/ref=pd_sxp_elt_l1/104-2696258-9959100)
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- **How about an Accessibility Certification for Developers? by Perrine Dailey**

When looking at a list of computer classes I often see the word "certification" used in the class title. I assume that means that the certificate shows the user has learned about and completed specified projects. How about adding an Accessibility Certification to all web developer's training? Could one of the organizations (such as WebAIM) come up with a set curriculum that web developers would have to integrate into their curriculum?

Perrine

- o **Re:How about an Accessibility Certification for Developers? by Mike**
WebAIM is currently pursuing grants to fund an accessibility certification for Web designers and developers. We have tossed the idea around for some time and feel it is time that there is a valid and reliable measurement of the Web accessibility know-how of the people that are creating and developing Web content. We are looking at a problem-based, hands-on certification process that will include a curriculum/training as a precursor for the certification. For the certification to be of any value I believe some collaboration and partnerships would need to be developed with organizations within the Web community.

As another note, WebAIM is looking at offering a course in the Fall of 2004 at Utah State University that looks at the issues of accessibility and universal access. This is still in the preliminary stages of development but I feel that if it is a success locally then an online distance ed. course could and should be developed to have a set curriculum that not only looks at the programming and coding side of the Web but also addresses the aspects of the laws, policies, and techniques associated with universal access.

- **Re:How about an Accessibility Certification for Developers? by sr**
Having taught usability (which includes accessibility) and information architecture in a web certification program for continuing education (at Sacramento State and Online) one thing to note is that enrollment for web certification programs is currently quite low due to students views on the job opportunities.

It seems to me that it's the professionals who need to be reached even more than students. The ones actually designing/creating the web pages out there now.

I would think that having an accessibility "cram" session at the conference level might work better since conferences still attract designers and these are the people that need to be up to date on accessibility.

- **Re:How about an Accessibility Certification for Developers? by Julie**

Personally I love the idea of a distance learning course from WebAIM in web accessibility and especially love the idea of the formal certificate being offered by WebAIM.

I also hear the point about low enrollment because of the current state of the market. The idea of an add-on certification for current web developers is a good one as is the idea of a cram session at a conference (like at CSUN in March

<http://www.csun.edu/cod/conf/index.htm> ...)

Maybe my perspective is biased because I live in Washington, but because so many programs and projects are federal or are tied to the federal government, if someone was applying for a job here and had an official "Accessibility Certification" certificate on his/her resume he/she could command a fair salary.

Feds agencies and fed funded contracts, as you know, by law have to comply with Section 508. However many feds, project directors, etc.,

like we've discussed before in this conversation, don't know how to tell if someone *really* knows about accessibility or is just saying they know. The certificate would help out both sides.

AND I know if WebAIM was establishing (or leading the establishment of) the criteria for this cert I'm sure it would be excellent. :-)

This is sort of related to certification or "proof of accessibility" but one of my pet peeves is seeing the "Bobby" cop on websites that, when scanned, are not even compliant with 508... Perhaps on some of these when the site launched it was complaint, but then, as it was added to, it fell out of compliance. I wish there was a way to make the smiling Bobby leave when the site was no longer compliant!

- **Re:How about an Accessibility Certification for Developers? by Rafael Chargel**

At the risk of immodesty, I am a very good Java programmer. I do not have any certifications, nor do I have a degree which would relate to my specific skill set. In fact, I have no formal education in the field of computer science whatsoever. I do have 9 years of experience.

I know very bad programmers with certifications. I know a Windows System Administrator with his MIS degree and his MCSE, who can't get past reboot. I have also met a brilliant engineer who has been specializing in Artificial Intelligence since the late 1970s, who never graduated from High School. Certifications are all based upon the premise that your skills and experience can be determined by a multiple choice question exam. Exams can be studied for, life cannot. These certifications were created for the benefit (and eventual dismay) of hiring managers. If you want to know if someone your hiring can really do something, ask for a portfolio of work, not a framed piece of paper.

- **Re:How about an Accessibility Certification for Developers? by Cyndi Rowland**

You are correct that certifications only show what someone "could do" at one point in time. This is, unfortunately different from what people "do do" in the present. Moreover, it is clear that many individuals without certifications or specific degrees have excelled in very intense areas (such as your personal experience with Java). With this said, I do think there is a role for certification. If I were an employer who wished to hire a Web designer and wanted accessibility to be part of what they would do (because of my ethics or because I don't want to end up in court), I would probably be at a disadvantage in selecting people who could design accessibly. In this instance, knowing that they had passed some national (or international) accessibility test would give me a certain confidence in their skills. Now, if they choose not to design accessibly once I have hired them I am in trouble, but I think I would toss any

accessibility problems (or liability?) back on their shoulders if they knew how and elected not to do it. But this is the ramblings of a WebAIM member. Perhaps others do not agree?

- **"GAWDS": The Guild of Accessible Web Designers** by Discussion Board Guest
<http://www.gawds.org/>

I don't know anything about this group, but they seem extremely committed to accessible development. On this website you can also search for designers/developers

- **Accessibility and .NET** by Jason

Excellent discussion so far. I've learned a lot about the need for making web sites as accessible as possible.

I'm currently in the planning process for developing a web site using .NET which must comply with Section 508. I have concerns with the management of content and the use of Web Controls and was hoping someone might be able to point me in the right direction for resources dealing with Section 508 compliance that specifically pertain to .NET and Content Management Systems. Any help would be greatly appreciated.

- **Re:Accessibility and .NET** by Jonathan Cruce

At the risk of furthering Microsoft's hold on the market...

Microsoft has some information about Microsoft Active Accessibility, which goes with the .NET framework. From their website (<http://msdn.microsoft.com/library/default.asp?url=/nhp/Default.asp?contentid=28000544>)

"Microsoft Active Accessibility 2.0 is a COM-based technology that improves the way accessibility aids work with applications running on Microsoft Windows operating systems. It provides dynamic-link libraries that are incorporated into the operating system as well as a COM interface and application programming elements that provide reliable methods for exposing information about user interface elements."

I'm not a programmer, and I'm not sure how the MSAA elements apply to web interface programming / content management systems, but it may give you a starting point.

If for some reason the above link doesn't work, you can go to Microsoft.com, click on MSDN, then do a search for "Accessibility."

Jonathan Cruce

- **Re:Accessibility and .NET** by Earl Johnson

I'm not a .net programmer but a quick look at Microsoft's site tells me its purpose is oriented towards providing the controls, connectivity, and underlying infrastructure that allows developers to build web services that can be accessed and used by many clients [e.g. desktop systems, cell phones, wireless laptops, PDAs, etc.]. Looking at it from my world, it appears to provide similar functionality as J2EE* and Jato or

Struts.

Luckily for web UI designers, it looks like they don't need to worry about .net because .net works behind the scene and doesn't care what web UI technology is used. That is, it's more transport and control oriented and likely cares little about whether you use HTML 3.2 or 4.0 or Javascript to build your web UIs. The only caveat here is it probably doesn't support or interact with Java technologies such as Java Server Pages which do play a direct role in rendering web content. So the net of all this is you as a web UI designer need worry only about designing content to meet the W3C's web content accessibility guidelines, 508's web content accessibility requirements, or whatever web content accessibility requirements your organization needs to meet as opposed to worrying about .net because all your work will set on top of .net - .net is pretty much transparent to the UI designer.

Earl

J2EE = Java 2 Enterprise Edition.

- **scotopic sensitivity by Discussion Board Guest**

SSS IS A VISUAL-PERCEPTUAL DYSFUNCTION AFFECTING READING AND PERFORMANCE. THIS SYNDROME IS IMPACTED BY LUMINANCE, LIGHTING, GLARE, HIGH CONTRAST, PATTERNS, AND COLORS.

- **Re:scotopic sensitivity by Perrine Dailey**

Hi,

I hope the guest that posted this comes back to offer more information about what accessibility features they think those who have SSS might need in order to use the Internet successfully. I am familiar with this diagnosis and some tricks for dealing with it. Certain people who are affected by SSS benefit from wearing glasses with special color filters that allow them to look at the world with less discomfort. Another trick is to use colored overlay film that can be placed over paper or even taped to a computer monitor. I have seen some web sites which allow the users to choose the background and text color to suit them. In my reading about this syndrome, I've learned that the color white, so often used for paper and web site backgrounds, is really a difficult color for those with SSS to view. While this syndrome is not well known, and very rarely do I get requests from individuals and families for accommodations for this specific syndrome, some of the tricks used to deal with the syndrome may make it easier for some people with reading difficulties to read more effectively. For more information about SSS, visit www.irlen.com or search using any search engine. I just did and found a few new things I didn't know...

Perrine Dailey

- **Tips for explaining web accessibility to uninitiated by Jonathan Cruce**

I would like to hear from those involved in this discussion about the strategies and verbage you use or recommend for communicating with school administrators, business owners, or other non-web-design-savvy people when introducing accessibility as a design consideration.

As the leader of our new Website Accessibility Services branch, I am very interested in finding ways to convince people that website accessibility is not only a moral issue or even a

legal issue (for the Section 508-covered entities), but that it simply makes good sense businesswise.

We have discussed accessibility with several administrative areas in Tennessee. We find that there is a strong myth floating around out there that not only does accessible design need to be boring (see the WebAIM article linked from the Experts' Perspectives for more information), but that it is expensive and requires updating multiple pages whenever information changes. There is still a firmly-held belief among administration and even some designers that a text-only version of a site is the only / best way to implement accessibility. What are some strategies you use to convince people otherwise?

One strategy I use when talking to businesses that offer products and services online is that people with disabilities are more likely to purchase products and services online, as it is more convenient than getting out of the house many times (although I try to convince my clients with disabilities that they should get out of the house more...). Thus, a site with inaccessible content is less likely to capture the "eyeballs" of the disability community than an accessible one. So it's not just about having more "eyeballs" viewing the site, but having a higher success rate with that population. So implementing accessibility in a web site is a good investment, especially during the initial design phase or a major redesign.

- **Re: Tips for explaining web accessibility to uninitiated** by **Rafael Chargel**
Sure, I simply point out that roughly 22% of the United States population over the age of 16 (when they have shopping funds) have some disability. That's about 50,000,000 potential customers they would be losing if they don't make their site accessible. It's really not a hard sell after that.
- **Two pages can look exactly the same, but...** by **Julie**
...be dramatically different when it comes to accessibility. This is how I try to explain web accessibility to people:

The homepage of www.purplecow.com *inaccessible* might look just like www.purplecow.com *accessible*. Same purple cow logo, same navigation, same article about purple cows jumping over the moon, same purple ice cream for sale...

BUT if you run the inaccessible page through a tool like **WAVE 3.0** you see all kinds of red and yellow flags pop up indicating missing alt text, missing labels to indicate a search field or check box, etc. Whereas if you run the accessible page, an identical looking page, through an accessibility validator, you see green flags pop up. The green flags indicate the accessibility features that reside in the code that allow people who are for example, blind, to use (learn, buy, communicate, interact with) the website. I try to explain that it's what is underneath that matters...

While this isn't the sell to the business world (in that arena I think that what you said about "eyeballs" and better yet "purchasers" in discussing #s of people with disabilities who surf and buy online is fantastic), it helps some people grasp the concept of web accessibility better.

Many, many people, including major decisionmakers, do not grasp that it is code - that makes a site *look* like it does. Although this will elicit a "duh" from techies, it is reality. But, for example, to get the word "look" to appear italicized, I typed in the html code "<""em"">" before the word and "<""/""em"">" after the word (without the quotation marks). This is a very simple example, but it speaks to the fact that if more people, especially those in positions of power, were aware that high quality code is as essential as high quality writing, we would have websites that looked just as good, but were a lot more accessible. It is sad to look at CNN's website, for

example and see that they are using deprecated html ie. "b" tags instead of "strong" tags for bolding and could have so easily made aspects of the site accessible by just typing in a few alternate words or developing a bit more thoughtfully. Same with Washingtonpost.com or nytimes.com.

They spend so much effort on quality writing (good grammar, adhering to Strunk & White or APA, etc.), have millions of hits a day, but the code - the writing, underneath is sloppy and not in accordance with the guidelines set forth by web writing standard setting bodies like W3C's WAI. It's the same concept. Quality should be mandatory above and below the surface of a web page. Good writing is good writing.

- **Re:Two pages can look exactly the same, but...** by Jonathan Cruce
Exactly. A good example of this is on "A List Apart"
<http://www.alistapart.com/articles/slashdot/>

This example shows a step-by-step retooling of the Slashdot website to create the same page appearance but with accessible code underneath. Slashdot is a fairly complex site as far as layout is concerned, but it can be duplicated using only accessible CSS and XHTML.

I guess what's important is getting to the decisionmakers *before* a major site redesign or before the original design, similar to the idea that it's a much less expensive option to build-in universal design in a new house than to retrofit an older house.

Thanks,
Jonathan Cruce

- **Re:Two pages can look exactly the same, but...** by Jonathan Cruce
I've noticed other people able to provide working links on this list. I thought maybe the parsing software added links automatically, but apparently not... Let's try this again...

<http://www.alistapart.com/articles/slashdot/>

Apologies if it doesn't work and this ends up just being spam...

Jonathan Cruce

- **Re:Tips for explaining web accessibility to uninitiated** by sr
I always start with the simplest example. If you have a brick and mortar store that the only entrance is an escalator you immediately lose your chance to sell to anyone in a wheelchair, with a baby stroller, using a cane, who's afraid of escalators, who take offense that you're not making your store accessible to the handicapped, etc. Something any business person understands immediately.

If you put in an elevator you make your store not only accessible to those who can't/won't use an escalator but you also don't offend others who will tell their friends not to deal with you.

- o **Re: Tips for explaining web accessibility to uninitiated** by **Earl Johnson**
I'm not in the education field however one approach that seems to get folks over the "accessible=boring" hurdle is to do a before and after demo using an assistive technology on a recognizable page. The impact is even greater if the demos are run by a screen reader user live or on an [captioned] video.

Talking about and, possibly, demoing tools that aid web content provider's accessibility efforts may also help folks get over the access=expensive hurdles. Tools to consider showing are web content accessibility checkers like Bobby and web page editors like WebWorks. It also can help pointing out that combining accessibly designed templates that define a sites look and feel with web page editors can do much of the heavy lifting for accessible content creation. This strategy can be a double edged sword tho - they are potentially eye opening demos [tho showing the tools could mean no time is available to cover all the topics you wanted to discuss because the folks you're talking to force you to spend a lot of time explaining each test and how it relates to a W3C guideline or 508 requirement].

Earl

- **Thank you for participating!** by **Julie**

Thank you for helping make this discussion on web accessibility so successful. A special thanks to Earl Johnson of Sun Microsystems and Dr. Cyndi Rowland and her staff at WebAIM for taking the time to participate in and moderate this excellent conversation.

You can access this discussion, along with all of the Family Center's discussions, under the link to "Archived Discussions" on the online discussion section of our website. These discussions will also be available later this spring on an assistive technology CD-Rom.

Again, thank you for your participation. We look forward to hearing from you again in the next AT discussion which will begin in mid-April.

Recommended Resources

Websites

WebAIM (Web Accessibility in Mind)

WebAIM has fantastic resources related to web accessibility like useful articles & tools and they do a lot of online training related to building accessible websites. WebAIM's site also has a comprehensive list of accessibility resources. **View these resources at <http://www.webaim.org>**

World Wide Web Consortium's Web Accessibility Initiative (W3C's WAI)

The World Wide Web Consortium (W3C) runs this site and, as you probably know, it is *the* place for information on web standards and guidelines. The W3C's Web Accessibility Initiative (aka W3C's WAI) is comprised of some of the top thinkers in the world of web accessibility. There is extensive, cutting edge discussion on a number of issues. Check out their resource page for guidelines, checklists, "quick tips", etc. You'll find a web content and authoring tool and user agent guidelines. While WCAG 1.0 is W3C's official standard for web content, there is a working group designing and formalizing WCAG 2.0. WCAG has a more "pan disability" approach than WCAG 1.0 which focused primarily on low vision/blindness. **Learn more about the WAI at <http://www.w3.org/WAI/>.**

C-SUN conference proceedings

This is a link to the conference proceedings from CSUN 2003, an enormous conference that is held every year in LA focused on Technology and Disability. There are presentations on every facet of web accessibility and you will find a lot of information at this site. The key figures who advise on accessibility standards attend and lecture at this conference and their papers are listed here. **Find out more about CSUN by visiting** <http://www.csun.edu/cod/conf/2003/proceedings/csun03.htm>.

Macintosh Accessibility

A web log (blog) focused on accessibility issues for mac users; put together by Kynn Bartlett (kynn@idylmtn.com) a guy who, among other things, helped evolve the idea of CSS (cascading style sheets) – a key feature of accessible sites. **Learn more about Mac accessibility at** <http://maccessibility.com>.

Designing More Usable Websites

A subset of the Trace Center's Designing a More Usable World site, this resource provides links to a range of reference materials that focus on Web accessibility design. <http://trace.wisc.edu/world/web/>

Web Accessibility and Universal Design

This resource provides links to websites that emphasize Web accessibility design. **Visit** <http://template.bsd.uchicago.edu/accessibility.html> **for more information.**

Rich Media Home

The Rich Media Accessibility Web Site is a collection of resources for website developers and users seeking ways to make rich media accessible to people with disabilities. **Visit the Rich Media website at** <http://ncam.wgbh.org/richmedia/index.php>.

Validation (Accessibility Verification) Tools

A-Prompt

A-Prompt (Accessibility Prompt) is a free software tool designed to help Web authors improve the usability of Web pages created in HTML format. The tool is available for Windows. A-Prompt was created jointly by the University of Toronto's Adaptive Technology Resource Centre (ATRC) and the Trace Center at the University of Wisconsin. **For more information on A-Prompt visit:** <http://aprompt.snow.utoronto.ca/index.html>.

WebAIM's WAVE 3.0

The WAVE 3.0 tool from WebAIM will help you determine whether or not your site or multimedia products are accessible (and to what extent) and it is free. You will have to load a page at a time. Also, there is a feature allowing you to add the tool your web browser, so you can assess any page you visit. **Use the WAVE 3.0 tool at** <http://www.wave.webaim.org/index.jsp>.

Cynthia Says

A useful and free tool that allows you to thoroughly check your site's level of accessibility. Scroll down the page to the section called "test your site" and enter your domain. You can view your site and its components through the eyes of scores of browsers (and all of the versions of those browsers). As well you can check for the base Section 508 compliance or you can see if your site goes beyond that and complies with the more stringent regulations set forth in WCAG. **Try the tool at** <http://www.cynthiasays.com>.

Bobby

This popular software formerly owned by CAST (Center for Applied Special Technology) and now owned by Watchfire allows you to scan a page of your website at a time. There is also a desktop version for purchase which allows you to scan your entire site at once to determine your level of accessibility compliance both 508 and WCAG. **Access the tool at <http://bobby.watchfire.com/bobby/html/en/index.jsp>.**

Section508 OK

This tool from Deque Systems allows you to assess and correct accessibility errors. It goes into detail such as helping you determine and correct the specific percentage of color contrast that needs to exist to comply with various accessibility guidelines and regulations. It costs money, but you can **download a trial version at <http://www.section508ok.com>.**

Books

Building Accessible Websites by Jim Clark

http://www.amazon.com/exec/obidos/tg/detail/-/073571150X/ref=pd_bxgy_img_2/104-2696258-9959100?v=glance&s=books

Constructing Accessible Websites by Jim Thatcher

http://www.amazon.com/exec/obidos/tg/detail/-/1590591488/qid=1073408584/sr=1-1/ref=sr_1_1/104-2696258-9959100?v=glance&s=books

Maximum Accessibility by John M. Slatin and Sharron Rush

http://www.amazon.com/exec/obidos/tg/detail/-/0201774224/ref=pd_sim_books_3/104-2696258-9959100?v=glance&s=books

Web Accessibility for People with Disabilities by Michael Paciello

http://www.amazon.com/exec/obidos/ASIN/1929629087/ref=pd_sxp_elt_11/104-2696258-9959100

Articles

Introduction to Web Accessibility

By Paul Bohman, Web Accessibility in Mind (WebAIM) 2003

Mr. Bohman has written a primer focused on basic issues surrounding Web accessibility for people with disabilities. He writes: "The Web offers so many new opportunities to people with disabilities that are unavailable through any other medium." The Internet, he continues, "offers independence and freedom. But this independence and freedom is only partially a reality." Too many websites, he concludes, "are not created with Web accessibility in mind." Whether purposefully or not, "they exclude the segment of the population that in many ways stands to gain the most from the Internet." **To view this primer on web accessibility visit: <http://www.webaim.org/intro/>.**

How People with Disabilities Use the Web

Edited by Judy Brewer, World Wide Web Consortium (W3C) 2001

This document, a working draft, is a general introduction to the way that individuals with various disabilities navigate the Web. It provides a background to assist in understanding how those with disabilities benefit from provisions described in several W3C documents, including Web Content Accessibility Guidelines 1.0, Authoring Tool Accessibility Guidelines 1.0, and User Agent

Accessibility Guidelines 1.0. Specifically, this working draft describes: 1.) Scenarios of people with disabilities using accessibility features of websites and Web-based applications; 2.) General requirements for Web access by individuals with physical, visual, hearing and cognitive disabilities; and 3.) Various types of assistive technologies and adaptive strategies used by individuals with disabilities when accessing the Web. **You can find this article at** <http://www.w3.org/WAI/EO/Drafts/PWD-Use-Web/Overview.html>

Accessible Web Design: A Definition

By Chuck Letourneau, Startling Access Services 1998, 2000, 2002, 2003

According to the author, web accessibility means "that anyone using any kind of Web browsing technology must be able to visit any site and get a full and complete understanding of the information contained there, as well as have the full and complete ability to interact with the site." He concedes that "there are circumstances under which meeting these conditions would be difficult and perhaps even seemingly impossible. But difficulty shouldn't preclude effort and a barrier that seems impassable when viewed from one perspective might be reduced or eliminated when seen from another." **Read *Accessible Web Design: A Definition* at** <http://www.starlingweb.com/webac.htm>.

Visual vs. Cognitive Disabilities: Graphics for the Blind?

By Paul Bohman, Web Accessibility in Mind (WebAIM) October 2003

Individuals who are blind access Web content by using software that converts text into synthesized speech. The software, known as a "screen reader," reads the text in the Web content out loud but cannot automatically interpret graphics. At most, writes the author, "[the screen reader] can read the text description of the graphic (alternative text, or 'alt' text) provided by the person who created the Web content. With this in mind, some people advocate creating a text-only version of websites. These people often assume that 'text-only' and 'accessible' is the same thing. In the case of blind users, this may be true, but the problem with this assumption is that it ignores other types of disabilities." **Read about these issues at** http://www.webaim.org/techniques/articles/vis_vs_cog

Making Your Website Accessible to the Blind

By Curtis Chong National Federation for the Blind 2003

Written by the National Federation of the Blind's (NFB) Director of Technology, this article supplies guidance to website designers who want to ensure Web page accessibility and usability by the blind. The author focuses strictly on aspects of non-visual access. A highlight of the article is the author's description of the processes blind computer users go through as they negotiate their way around the Web. **Learn more about making your site accessible to the blind at** <http://www.nfb.org/tech/webacc.htm>.

Fact Sheets

Designing and Understanding World Wide Web Pages

This resource provides links for those who design and construct Web pages. **Learn more accessible design at** <http://www.ataccess.org/rresources/webaccess.html>

The Rehabilitation Act Amendments (Sec. 508)

On August 7, 1998, President Clinton signed into law the Rehabilitation Act amendments of 1998. These amendments cover access to federally funded programs and services. They formed the bedrock for many Web accessibility initiatives and guidelines that have emerged in the ensuing years. **Learn more about Section 508 legislation at** <http://www.access-board.gov/sec508/guide/act.htm>.

WAI Quick Tips reference Card

The Web Accessibility Initiative has produced a thumbnail guide to the concepts of accessible Web design. The editors caution that these tips "are not complete guidelines but only a memory prompt" for concepts from the W3C Recommendation Web Content Accessibility Guidelines 1.0 that include information vital to understanding and implementing the Quick Tips. This resource features an easy-to-use checklist, a detailed document describing techniques for implementing the guidelines and a curriculum that explains how to use the guidelines. **Find the Web Accessibility Initiative's quick tips at <http://www.w3.org/WAI/References/QuickTips/>.**

Web Accessibility Issues

This fact sheet stresses the Web usage characteristics of blind and deaf computer users and enumerates their difficulties in achieving Web accessibility. It provides basic guidelines for designers to follow in order to meet the needs of users who are blind and deaf. **View this web accessibility fact sheet at <http://www2.ucsc.edu/ada/accessibleweb.html>.**

Videos

Keeping Web Accessibility in Mind

This 11 ½-minute video from WebAIM provides a user perspective on Web accessibility. **The video is an overview of the difficulties faced by users with disabilities and can be found at <http://www.webaim.org/info/asdvideo/>.**

Introduction to the Screen Reader

Featuring instrumentation specialist Neal Ewers of the Trace Center, this video is a six-minute short demonstrating how screen readers can assist the blind in navigating the Web and in accessing electronic documents. **You can find *Introduction to the Screen Reader* online at <http://www.doit.wisc.edu/accessibility/video/intro.asp>.**

Screen Magnification and the Web

Also featuring the Trace Center's Neal Ewers along with John Klatt, a University of Wisconsin grad student, this video illustrates how screen magnification software works and discusses ways that Web designers can increase Web access for a variety of users. **Learn more about Screen Magnification for the Web at http://www.doit.wisc.edu/accessibility/video/screen_magnification.asp.**

Learning Modules

Web Accessibility Learning Modules

California State University/ Fresno's Center for Distributed Learning has produced a series of teaching modules geared to provide training for university faculty and staff Web authors in the creation of accessible Web pages. Topics covered include the following: "What is Web Accessibility?" "Legislative and Legal Issues," "Assistive Technologies," "Tips and Techniques," and "Checkers and Validators." **View this web accessibility learning module at <http://www.csufresno.edu/webaccess/learningmodules/>**