Accessibility Features of Flash MX and Dreamweaver MX

Introduction

In 1998, Congress amended the Rehabilitation Act of 1973 to include a regulation that requires that employees with disabilities have equal access to computer and electronic information systems and barrier-free access to government information. This regulation is commonly referred to as, "Section 508" and any agency receiving Federal funding must comply with 508 standards for multimedia and web design. Section 508 also requires that Federally-funded agencies not do business with any company that does not comply with the 508 accessibility standards. In an effort to comply with this Federal regulation, Macromedia teamed up with the National Center for Accessible Media to include accessibility tools in their multimedia and web authoring applications. One result of this partnership was the release of Flash MX and Dreamweaver MX in the spring of 2002. This paper will provide a basic overview of the accessibility features offered in these two applications.

Significance

The Internet provides a mass of information to which people with disabilities are frequently denied access. In an age where one's ability to acquire and manipulate information can significantly impact access to education and employment opportunities, it is becoming increasingly important for society to ensure barrier-free access to information technology. Unfortunately, one of the business challenges of the Information Age is the race to be "first to market" with Internet-based information and commerce. This race competes with the time required of multimedia and web designers to learn the skills necessary to make multimedia and web applications accessible to people with disabilities. When faced with an impending deadline to post information on the web or complete a multimedia application for market, designers

frequently choose form over function and often sacrifice both usability and accessibility in the process.

In the book, Accessible Web Sites, co-author S. L. Henry states that "there is a synergy between accessibility and usability." He articulates that while the "… primary focus of accessibility is access by people with disabilities, … the larger scope of accessibility includes benefits to people without disabilities" (page 7). For example, accessible design not only benefits people with disabilities, but it also allows users of Personal Digital Assistants (PDA's) and other wireless hand-held devices to access web content.

S. L. Henry contends that "accessibility is a subset of a more general pursuit: usability … [and] in the context of usability, accessibility means designing a user interface to be effective, efficient, and satisfying **for more people in more situations**" (pages 7-8). He lists the following important elements to web site usability:

- "**Learnability**: Can visitors use the web site effectively the first time they visit it without becoming frustrated?
- **Memorability**: Will visitors remember how to use the web site the next time?
- **Effectiveness**: Can visitors easily navigate through the web site, determine what to do next, and understand the content? Is the design consistent and predictable?
- **Efficiency**: Can visitors find what they need and accomplish their goal in a reasonable amount of time?
- **Satisfaction**: Do visitors have a good feeling about using the web site? Will they use it again? Is the content presented effectively?"

As the use of Internet and multimedia applications increases, the challenges of designing for usability and accessibility will also continue to increase. For this reason, it is imperative that authoring applications offer solutions for automating accessibility, thereby decreasing the learning curve and research currently required in order to make applications and web sites accessible.

Discussion

Flash MX and Dreamweaver MX attempt to address the need for automated assistance with accessible design. These tools do not yet offer a perfect solution to this automation process, but they do demonstrate a significant improvement over previous versions of these applications, where accessibility features often had to be hand-coded in HTML. Also, even though the initial partnership between Macromedia and the National Center for Accessible Media indicated the desire to make the authoring tools themselves usable by people with disabilities, there are still accessibility improvements that need to be made before these tools can be widely used by people with visual impairments. According to Dr. John Slatin at the University of Texas at Austin, currently, some of the dialogue boxes and prompts that appear within Macromedia's MX tools are not accessible by existing screen readers that are used by people who cannot see text and/or images on a computer screen.

According to Bob Regan, Macromedia's Senior Product Manager for Accessibility, "Flash Player 6 is the first rich media player to make web content available to screen readers, using Microsoft Active Accessibility® (MSAA) to serve as a bridge between Flash Player 6 and assistive technologies such as Window Eyes" (Thatcher, et al., Accessibility and Macromedia Flash, p.267, 2002). Microsoft's MSDN Library defines "Microsoft Active Accessibility® (MSAA)" as, "a COM-based technology that provides a standard, consistent mechanism for

applications and Active Accessibility clients to exchange information." Even though this definition implies that there is a standard way for assistive technologies to interact with MSAA data, not all assistive technologies handle MSAA data in the same way. This may cause conflicts with the way certain types of assistive technologies interact with Flash content.

For developers, Flash MX attempts to address the automation of accessible design through the use of an "Accessibility Panel," as seen in the screen shot below:

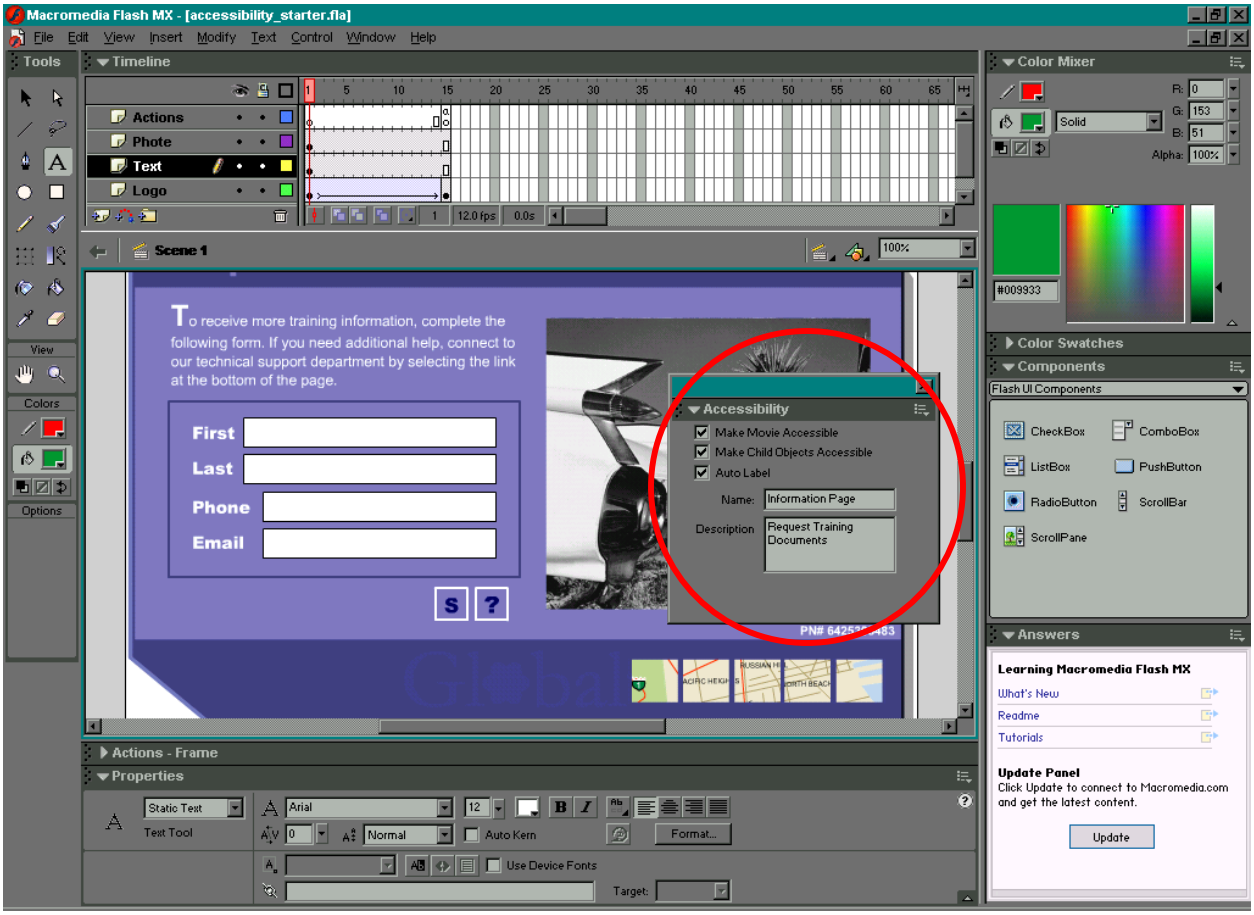


Figure 1

This panel allows the developer to hide graphic elements of a Flash movie from certain assistive technologies. This is actually a violation of the Web Content Accessibility Guideline 1.1, which states, "Provide a text equivalent for every non-text element (e.g., via "alt," "longdesc," or in element content). [Priority 1]" (Slatin, Rush, User Experience: Born to Shop,

p.18, 2002). In the online movie tutorial about Flash's new accessibility features, found at: http://www.macromedia.com/software/flash/productinfo/tutorials/gettingstarted/, the instructor hides the map graphic located in the bottom, right-hand corner of the Flash movie shown in Figure 1. His justification for doing so is that the random letters located in the graphic would be read aloud by screen readers. Since these letters do not have any meaning for the movie, having them read aloud might cause confusion for a person with a visual impairment, accessing the site through auditory means. While this may in fact be true, a better solution would be to remove the letters from the graphic and give a brief description of the graphic, using the "name" and "description" fields provided in the Accessibility panel.

The closer view of the Accessibility panel is provided in the screen shot below:

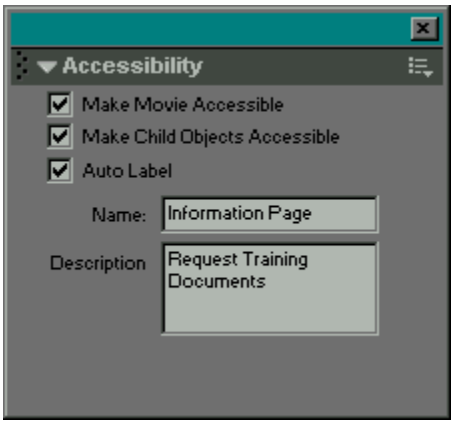


Figure 2

Through this panel, the developer can select the entire movie and choose to "Make Movie Accessible." By doing this, people using screen readers to access the Flash movie will hear the text in the "Name" and "Description" fields. Choosing "Make Child Objects Accessible" allows information inside a movie clip to be read by a screen reader (e.g. the text from the map image shown in **Figure 1**). When the "Auto Label" option is selected, any text fields or buttons within

the Flash movie, will use the actual text from the field or the button as the label that will be read by screen reading technologies.

On page 268 of Accessible Web Sites, Bob Regan states that when designing accessible Flash content, "… there are four key issues for designers and developers …

- Text Equivalents
- Animated Elements
- Buttons and Forms
- Tab Order"

Many of these issues can be addressed via the Accessibility panel, but certain features, such as tab order, are addressed through ActionScript elements. Tab order is important for people who may be accessing a web site without the use of a mouse. Often, these people use the Tab key to navigate through links and other web elements. With Flash MX, the developer can use the Property Inspector to assign a name to an instance of a symbol within a Flash movie. Once a name has been assigned to an instance, the developer can then use the "tabIndex" element of ActionScript to assign an ordered number to the instance.

Macromedia has also been working with an organization called, "Usablenet" to provide accessibility to features to Dreamweaver. Prior to the release of Dreamweaver MX, Usablenet created a tool called, "LIFT" that helped automate accessible design. LIFT is a third-party application that works in conjunction with Dreamweaver. It currently sells for $299, retail. As seen in the following screen shot, when loaded, LIFT provides an additional menu item to Dreamweaver. In addition to the menu item, LIFT also provides accessibility panels that assist with correcting accessibility errors.

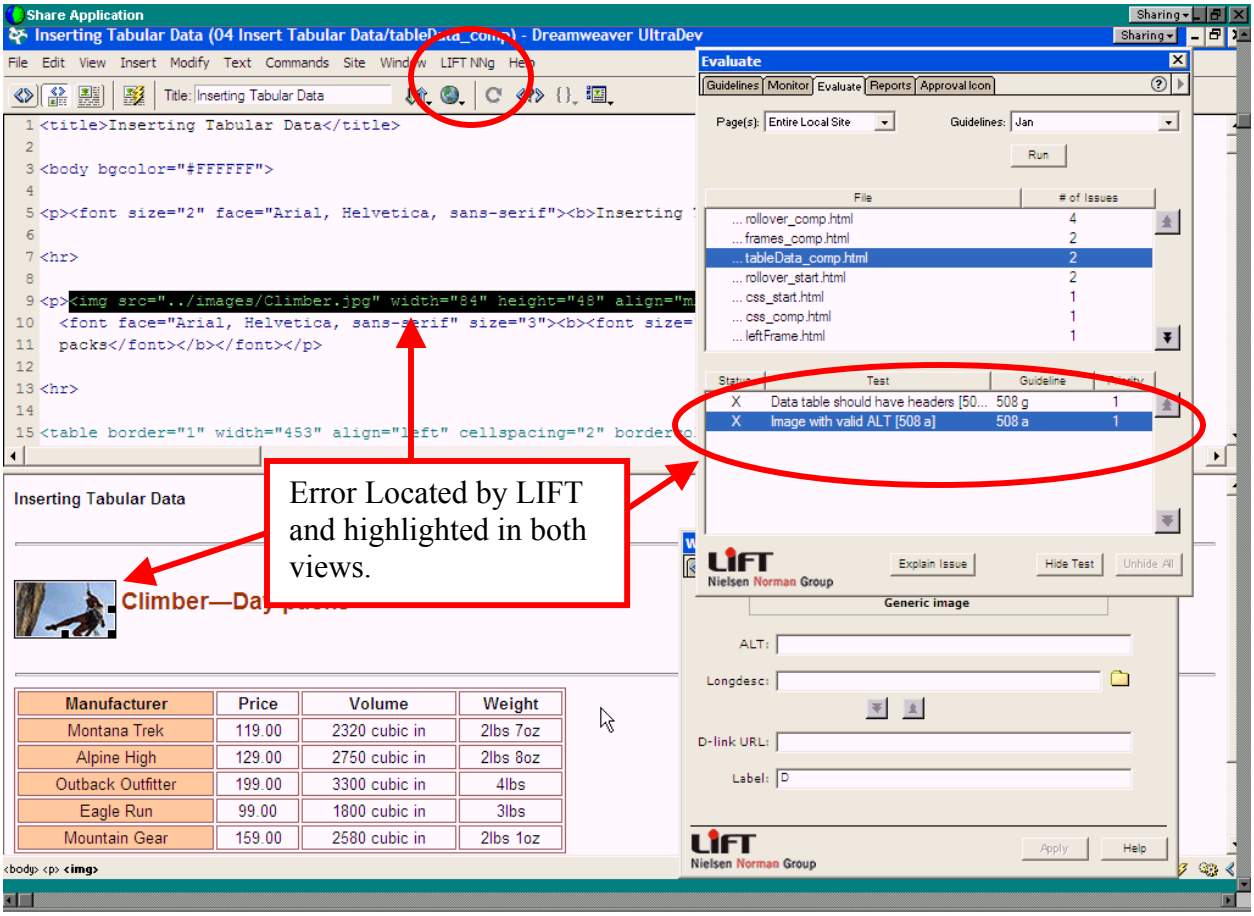


Figure 3

In Figure 3, you will notice that the Dreamweaver window is presented in split view. The LIFT diagnostic tool locates errors within the site and then highlights the error in both code view and design view. LIFT also provides explanations about how to fix the identified errors.

Dreamweaver MX has many of these same features embedded in the application, but the tools are not as complete as those found in LIFT. Useablenet's Lift for Macromedia Dreamweaver includes "fix wizards for complex tables, forms, and images; a global ALT editor; customizable reporting; and a new active monitoring mode that ensures content is accessible as pages are being built" (Dreamweaver MX Help File, Federal Rehabilitation Act). Lift also allows the developer to select which accessibility standards to use when testing a site. Depending on the country for which a site is being designed, there are various accessibility

standards. The United States designs to meet Section 508 standards, but for more thorough accessibility testing, a developer can choose to test a site based on the "Web Content Accessibility Standards" (WCAG).

Dreamweaver does not offer this level of user control, but it does have a feature available under the File Menu that scans a page for accessibility errors and provides a detailed list of errors within the "Results" panel. This feature is shown in the following screenshot:

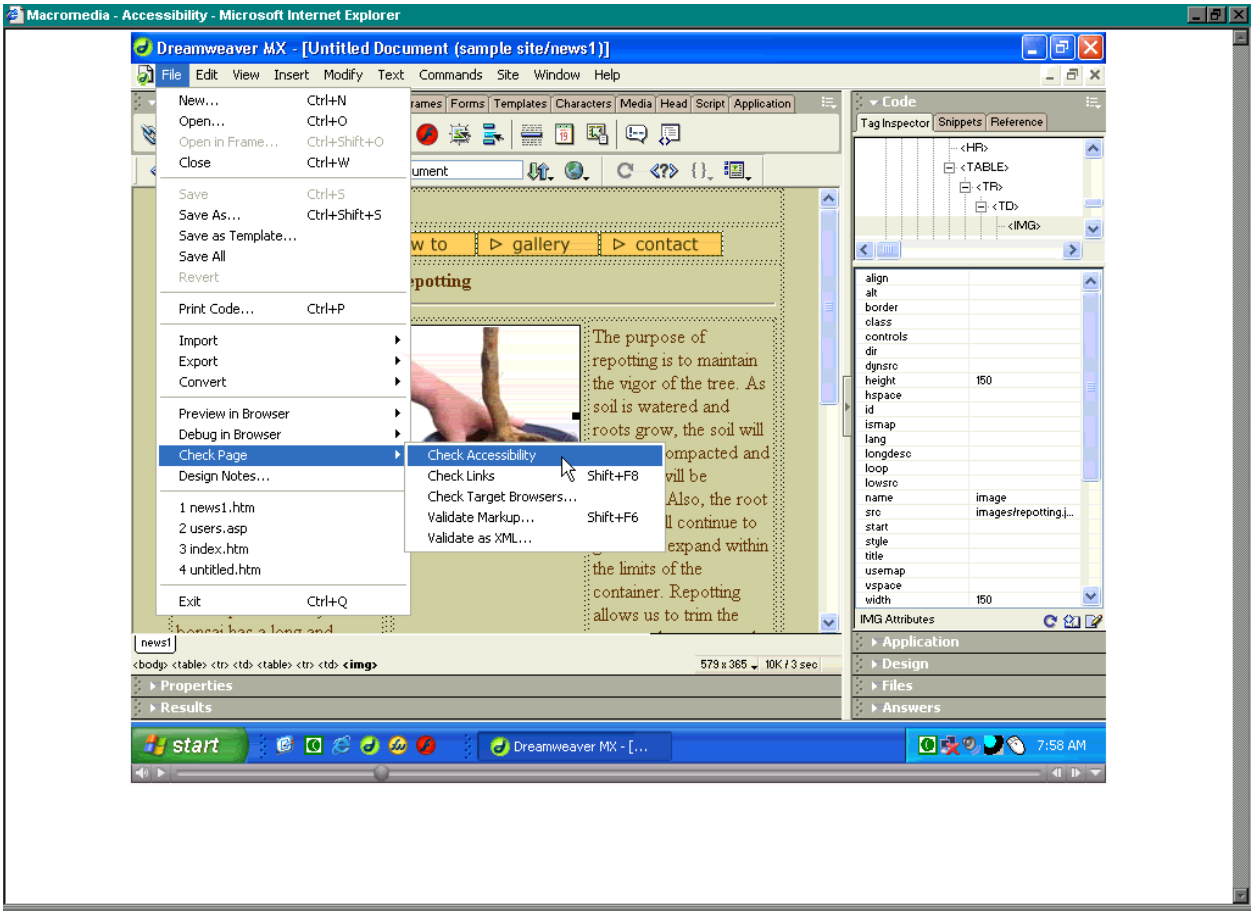


Figure 4

As mentioned above, results of the accessibility check are listed in the Results panel. This panel is shown in **Figure 5** below:

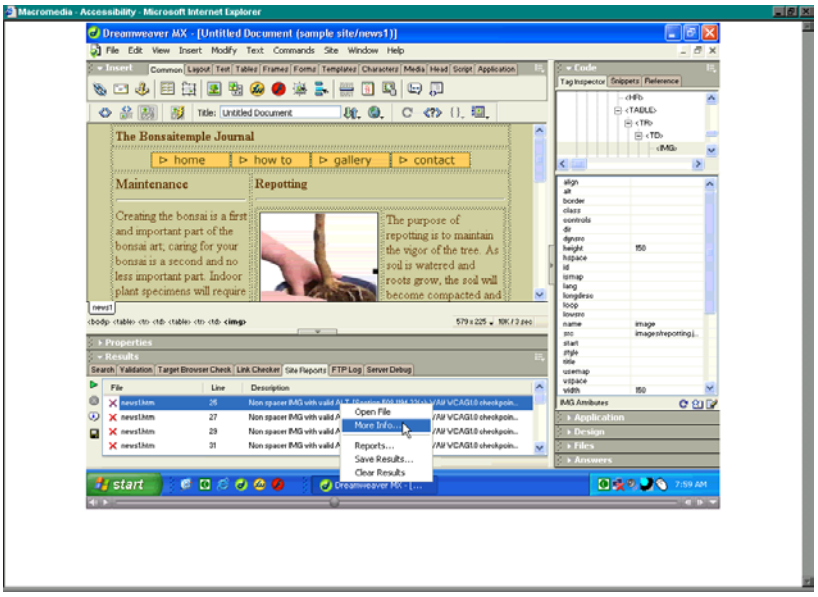


Figure 5

To correct an accessibility error, Right-Click (PC) the error and select "More Information." You can access this menu on the Macintosh by Ctrl-Clicking the error. As seen below, once "More Information" is selected, information is displayed on the right side of the Dreamweaver Window that explains what the error is and how to fix it:

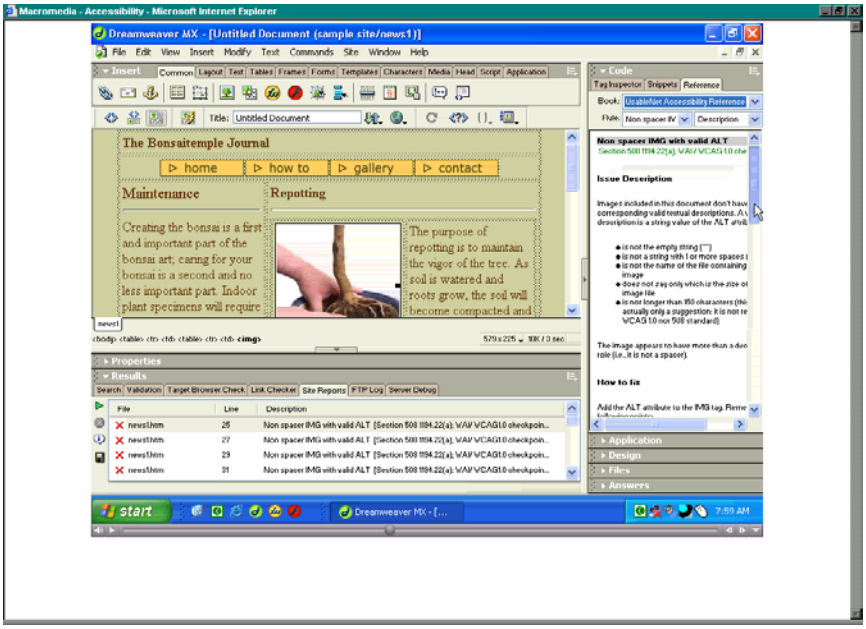


Figure 6

Double-clicking on the error in the Results panel will place an edit cursor where the correction needs to be made within the code view, while also selecting the element in the design view. The following screenshot, shows an accessibility error where a null alt tag had been placed in the HTML code for the "home" button. The accessibility checker realized that this was a graphic that needed a description and was not simply being used as a spacer gif. To assist the developer with writing appropriate alt text, the home button is selected in the design view.

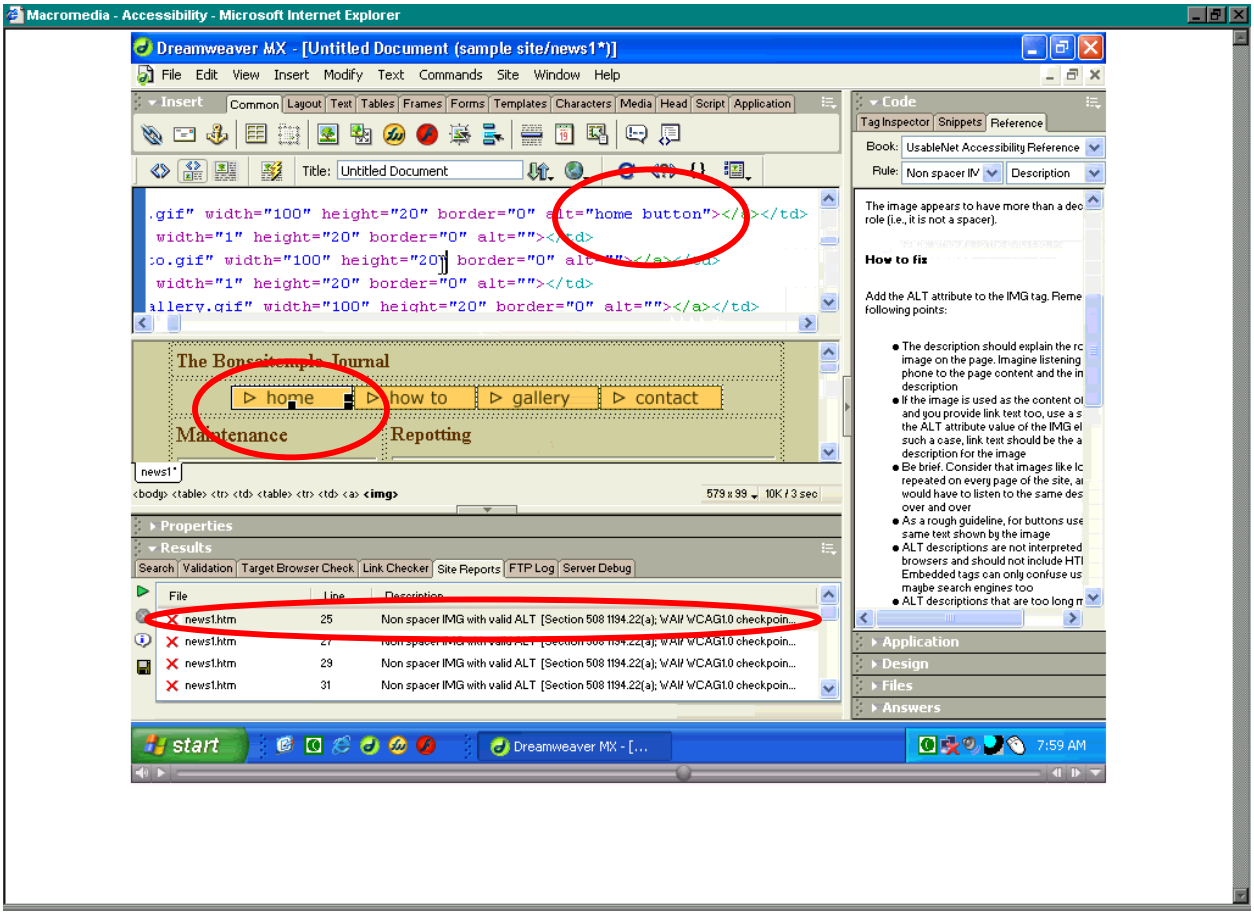


Figure 7

Another important feature of Dreamweaver MX is the ability to activate accessibility features so that prompts for automating accessibility are provided as a page is designed. This is done by setting Preferences under the Edit menu, as shown in the following screen shot:

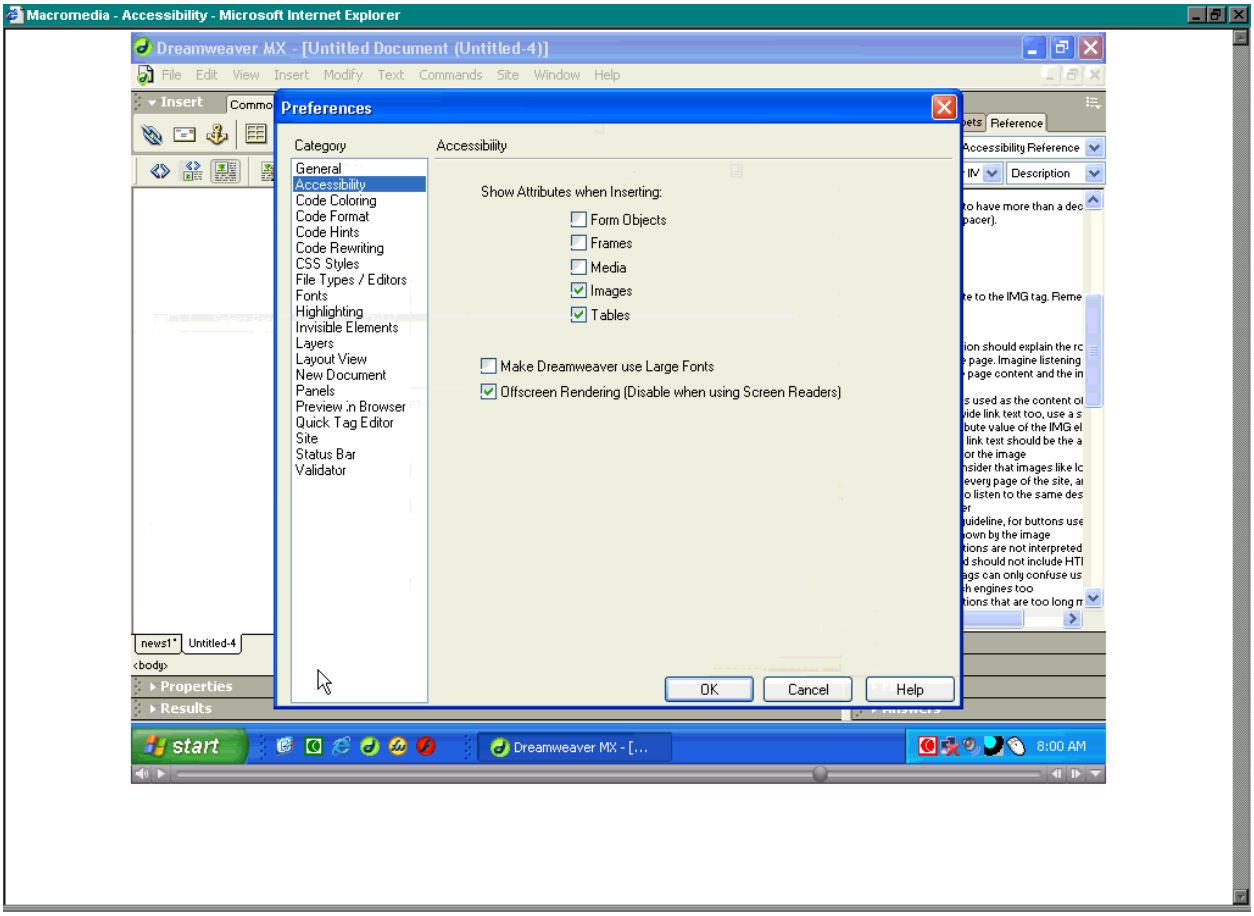


Figure 8

Once these preferences are selected, dialogue boxes will appear as functions are performed during the course of designing a page. For example, when the user inserts an image, the following dialogue box appears, prompting the designer to enter both an alt tag and a URL where a long description can be found:

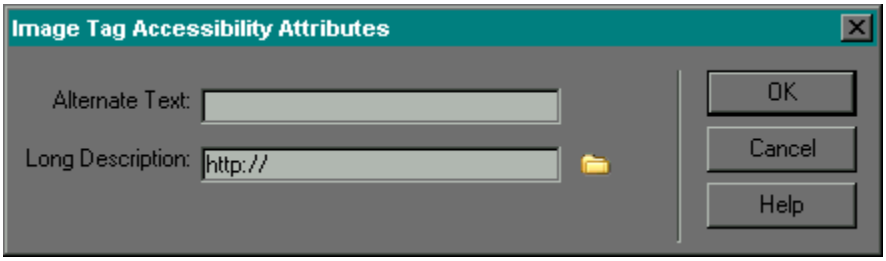
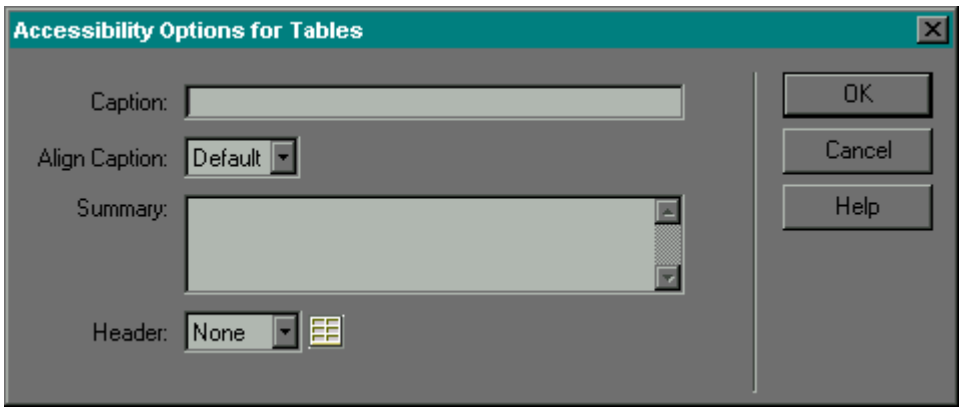


Figure 9

The dialogue box for making tables accessible is shown below:



Unlike the UsableNet's LIFT tool, this dialogue box prompts for minimum table accessibility elements. The "Caption" appears on the screen and briefly identifies the contents of the table. The "Summary" attribute is not seen on the screen and is only read by screen reading assistive technologies. The Summary attribute is sometimes referred to as alt text for a table. "Headers" allow screen readers to verbalize the relationship between a column or row header and a data cell. This ensures that the auditory information provided by the screen reader shows the same relationship between cells that is visually obvious to sighted users.

In addition to these elements, there are many other HTML codes that must be added to tables to make them readable by screen readers. LIFT has a feature that automates the coding of even complex data tables.

Summary

While Flash MX and Dreamweaver MX are not perfect solutions for the challenges faced by designers trying to build web content for people with disabilities, Macromedia has made tremendous progress toward automating this process and making accessibility tools and resources more readily available to designers. There are many components affecting accessible design. These include:

- The technical expertise of the designer and his or her familiarity with HTML, tables, Cascading Style Sheets, and assistive technologies.
- A designer's level of commitment to accessible design.
- The differences in the way various browsers render pages.
- The differences in existing assistive technologies and how they handle various elements and attributes of HTML.
- The end user's experience with accessing web content and his or her familiarity with the assistive technology being used.
- The level of automation available for accessible design within existing authoring tools.

While authoring tools cannot be expected to solve all of the problems with designing accessible web pages, automating the accessible design process will significantly impact the acceptance of this practice among software and web developers.

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Thatcher, J., Bohman, P., Burks, M., Henry, S. L., Regan, B, Swierenga, S., Urban, M. D., & Waddell, C. D. (2002). Understanding Web Accessibility. Accessible Web Sites, 7-31, glasshaus Ltd.

Related Links

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