

508 Application Test and Reporting Process

[Begin Testing Now](#)

Main

[508 Standards](#)

[Assistive Technology](#)

[Testing Tools](#)

[Testing Processes](#)

This Section 508 Compliance document is designed to be a guide to conducting the requisite testing to verify that your online learning package is compliant with Federal standards. This guide provides the context for the testing (compliance environment), the tools needed to test, and guidance on how to test/use the tools.

All this information is presented via five sections:

The **508 STANDARDS** tab provides an overview of the Section 508 standards and the WCAG (Worldwide Consortium Accessibility Guidelines) priorities. You can further click on the individual code designations to learn about each individual standard and how it applies to e-learning. You will be provided with simple demonstrations of how to test for each requisite standard.

The **ASSISTIVE TECHNOLOGY** tab will direct you to various resources that will help you better understand what assistive technology is and how it works with Web-based resources.

The **TESTING TOOLS** section provides resources and links to the tools you will be required to use to complete compliance testing of your online learning package.

The **TESTING PROCESSES** tab provides the testing methods that you are required to use when testing modules for compliance.

We hope this guide provides you with the information and tools you need to validate that your online courseware adheres to Federal standards and is accessible to **ALL** learners.

Note: Though this course is setup so it should be read in page order, navigation in this course may also be accomplished using the tabs and buttons on the pages, the bookmarks menu, or via the Index found on the last page of the course.



What is 508?

[Begin Testing Now](#)

[Main](#)

[508 Standards](#)

[Assistive Technology](#)

[Testing Tools](#)

[Testing Processes](#)

[What is 508?](#)

[508 Defined](#)

[1194.21](#)

[1194.22](#)

What is 508?

The purpose of Section 508 is to provide equal access and use of electronic information for people with disabilities and to eliminate barriers to employment.

Web and software application testing is necessary to determine if Section 508 Standards have been met.



Learn more about Section 508:

[508](#)

508 Defined

[Begin Testing Now](#)

[Main](#)

[508 Standards](#)

[Assistive Technology](#)

[Testing Tools](#)

[Testing Processes](#)

[What is 508?](#)

[508 Defined](#)

[1194.21](#)

[1194.22](#)

“Section 508 was enacted to eliminate barriers in information technology, to make available new opportunities for people with disabilities, and to encourage development of technologies that will help achieve these goals.”

Subpart b) of Section 508 is composed of 6 standards: 1194.21-1194.26. The only standard applicable to PDF documents is Standard 1194.22 (Web-based intranet and internet information and applications.)

Each checkpoint has a priority level assigned by the WCAG Working Group based on the checkpoint's impact on accessibility.

Priority 1

A Web content developer must satisfy this checkpoint. Otherwise, one or more groups will find it impossible to access information in the document. Satisfying this checkpoint is a basic requirement for some groups to be able to use Web documents. An example would be alternative text.

Priority 2

A Web content developer should satisfy this checkpoint. Otherwise, one or more groups will find it difficult to access information in the document. Satisfying this checkpoint will remove significant barriers to accessing Web documents. An example would be a heading.

Priority 3

A Web content developer may address this checkpoint. Otherwise, one or more groups will find it somewhat difficult to access information in the document. Satisfying this checkpoint will improve access to Web documents. An example would be a table summary.

For more information regarding 508 compliance standards, visit: <http://www.section508.gov>

There are two main codes:

[1194.21](#)

[1194.22](#)

Keystrokes, 1194.21a

When software is designed to run on a system that has a keyboard, product functions shall be executable from a keyboard where the function itself or the result of performing a function can be discerned textually. All interactive interface elements and functions that can be accessed by mouse must be keyboard accessible for non-mouse users.

Section 1194.21 contains more standards than listed below. Because most of them are not relevant to online learning, only those that are applicable to developing e-learning modules have been included.

Focus & Tabbing Order, 1194.21c

A well-defined on-screen indication of the current focus shall be provided that moves among interactive interface elements as the input focus changes. The focus shall be programmatically exposed so that assistive technology can track focus and focus changes. This can be accomplished through setting reading or tabbing order.

Making web and Flash content available to a screen reader and other keyboard-only users is not, by itself, enough to make your application accessible to those users. You must also take steps to ensure that your content is exposed to assistive technology (AT) in a meaningful sequence. You do this by controlling the reading order. Failing to set the reading order appropriately is one of the most common Section 508 violations.

[Main](#)[508 Standards](#)[Assistive Technology](#)[Testing Tools](#)[Testing Processes](#)[What is 508?](#)[508 Defined](#)[1194.21](#)[1194.22](#)

Listed on the following pages are the checkpoints required to make your online learning modules compliant. Read the following pages or click on the tabs below to learn more about the 1194.22 standards.

[a. Alt-Text](#)[b. Multimedia](#)[c. Color](#)[d. Readability](#)[e/f. Image Maps](#)[g/h. Tables](#)[i. Frames](#)[j. Flashing Elements](#)[l. Scripts](#)[m. Applets & Plug-Ins](#)[n. Forms](#)[o. Navigation Links](#)[p. Time Delays](#)

1194.22a: Alt-Text

[Begin Testing Now](#)

[Main](#)

[508 Standards](#)

[Assistive Technology](#)

[Testing Tools](#)

[Testing Processes](#)

[What is 508?](#)

[508 Defined](#)

[1194.21](#)

[1194.22](#)

Listed below are the checkpoints required to make your online learning modules compliant. Click on the tabs below to learn more about that standard.

[a. Alt-Text](#)

[b. Multimedia](#)

[c. Color](#)

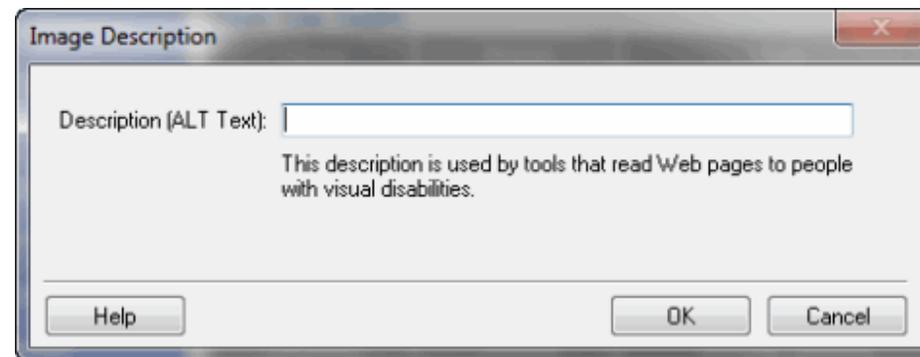
[d. Readability](#)

[e/f. Image Maps](#)

[g/h. Tables](#)

[i. Frames](#)

Alt-text is used to convey the true meaning of the non-textual element in relevance to what is intended to be taught in the lesson. If there are character limitations in the alt-text field in html, use the descriptive text field for more detailed information.



[j. Flashing Elements](#)

[l. Scripts](#)

[m. Applets & Plug-Ins](#)

[n. Forms](#)

[o. Navigation Links](#)

[p. Time Delays](#)

1194.22b: Multimedia

[Begin Testing Now](#)

[Main](#)

[508 Standards](#)

[Assistive Technology](#)

[Testing Tools](#)

[Testing Processes](#)

[What is 508?](#)

[508 Defined](#)

[1194.21](#)

[1194.22](#)

Listed below are the checkpoints required to make your online learning modules compliant. Click on the tabs below to learn more about that standard.

[a. Alt-Text](#)

[b. Multimedia](#)

[c. Color](#)

[d. Readability](#)

[e/f. Image Maps](#)

[g/h. Tables](#)

[i. Frames](#)



With multimedia elements, ensure that captioning is used. It should be of sufficient style and size to be easily read. If using scrolling text, make sure that the text moves at a reasonable speed that allows users time to read the information. However, balance this with the need for the text to keep pace with the information in the video.

There are also animated sign language characters that can be programmed to supplement existing captions.

[j. Flashing Elements](#)

[l. Scripts](#)

[m. Applets & Plug-Ins](#)

[n. Forms](#)

[o. Navigation Links](#)

[p. Time Delays](#)

1194.22c: Color

[Begin Testing Now](#)

[Main](#)

[508 Standards](#)

[Assistive Technology](#)

[Testing Tools](#)

[Testing Processes](#)

[What is 508?](#)

[508 Defined](#)

[1194.21](#)

[1194.22](#)

Listed below are the checkpoints required to make your online learning modules compliant. Click on the tabs below to learn more about that standard.

[a. Alt-Text](#)

[b. Multimedia](#)

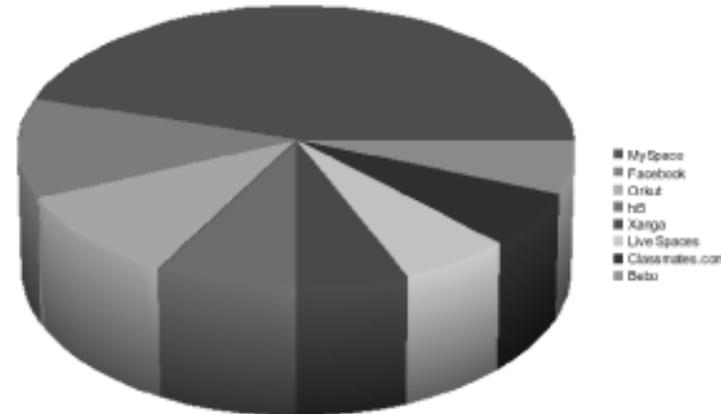
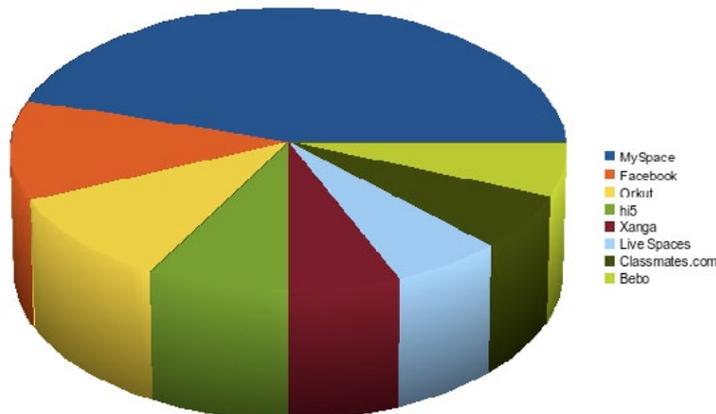
[c. Color](#)

[d. Readability](#)

[e/f. Image Maps](#)

[g/h. Tables](#)

[i. Frames](#)



Any information that is conveyed in color should not lose meaning when color is removed. Use sufficient contrast to enable information to be easily distinguished by those unable to differentiate colors.

[j. Flashing Elements](#)

[l. Scripts](#)

[m. Applets & Plug-Ins](#)

[n. Forms](#)

[o. Navigation Links](#)

[p. Time Delays](#)

1194.22d: Readability

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

What is 508?

508 Defined

1194.21

1194.22

Listed below are the checkpoints required to make your online learning modules compliant. Click on the tabs below to learn more about that standard.

a. Alt-Text

b. Multimedia

c. Color

d. Readability

e/f. Image Maps

g/h. Tables

i. Frames



WebSmartz WebSite Builder software comes with Website templates, Flash intros, HTML templates, and Flash templates. The web templates and Flash intro library are bundled in a very easy-to-use web site builder, which makes it very easy to build your own custom small business website. You can use WebSmartz web page builder for creating your own Flash website, even if you do not have any technical knowledge of HTML or Flash. WebSmartz WebSite Builder Features: * WebSmartz 2.1 features different website template libraries that come with their own bundled Flash intros.* The Website Builder provides you with options to change background color, dimensions, angle, music, images, buttons, and animation effects of your Flash intros and web pages. * You can change almost any feature of the Flash intro in the FLA files.* WebSmartz 2.1 libraries featuring new Flash intros are available for download regularly from the new intro section at <http://www.websmartz.net/>. * Your customized WebSmartz 2.1 Flash intro/website can be used as a professional small business website, product demo, or presentation.* On saving your created intro/website template as a project, you can edit and reuse it any number of times.* Published intros/website templates are saved in user-friendly HTML format. The payment gateway on Websmartz is hosted on a Https (secure) server and is fully secure. Websmartz takes special care to ensure that your credit card & billing information is not compromised and is 100% secure. The Websmartz privacy policy also ensures that any personal detail as provided by you is kept secure and is not used in any way other than as laid down in the policy. WebSmartz offers US daytime telephone support and 24 hour email support.

If all formatting and structure from a document or module is removed, does the information still flow in a “readable” manner and make sense? Tables are a good example: if all formatting was taken out of the table (no column or row headers and no data cells) – does the information still flow logically and make sense?

j. Flashing Elements

l. Scripts

m. Applets & Plug-Ins

n. Forms

o. Navigation Links

p. Time Delays

1194.22e/f: Image Maps

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

What is 508?

508 Defined

1194.21

1194.22

Listed below are the checkpoints required to make your online learning modules compliant. Click on the tabs below to learn more about that standard.

a. Alt-Text

b. Multimedia

c. Color

d. Readability

e/f. Image Maps

g/h. Tables

i. Frames



[Alabama Website Map](#)
[Alaska Website Map](#)
[Arizona Website Map](#)
[Arkansas Website Map](#)
[California Website Map](#)
[Colorado Website Map](#)
[Connecticut Website Map](#)
[Delaware Website Map](#)
[Florida Website Map](#)
[Georgia Website Map](#)
[Hawaii Website Map](#)
[Idaho Website Map](#)
[Illinois Website Map](#)
[Indiana Website Map](#)
[Iowa Website Map](#)
[Kansas Website Map](#)
[Kentucky Website Map](#)

[Louisiana Website Map](#)
[Maine Website Map](#)
[Maryland Website Map](#)
[Massachusetts Website Map](#)
[Michigan Website Map](#)
[Minnesota Website Map](#)
[Mississippi Website Map](#)
[Missouri Website Map](#)
[Montana Website Map](#)
[Nebraska Website Map](#)
[Nevada Website Map](#)
[New Hampshire Website Map](#)
[New Jersey Website Map](#)
[New Mexico Website Map](#)
[New York Website Map](#)
[North Carolina Website Map](#)
[North Dakota Website Map](#)

[Ohio Website Map](#)
[Oklahoma Website Map](#)
[Oregon Website Map](#)
[Pennsylvania Website Map](#)
[Rhode Island Website Map](#)
[South Carolina Website Map](#)
[South Dakota Website Map](#)
[Tennessee Website Map](#)
[Texas Website Map](#)
[Utah Website Map](#)
[Vermont Website Map](#)
[Virginia Website Map](#)
[Washington Website Map](#)
[West Virginia Website Map](#)
[Wisconsin Website Map](#)
[Wyoming Website Map](#)
[United States Map](#)

If you choose to use graphics with hotspots to provide information to the user, make sure you additionally provide text links to the same information.

j. Flashing Elements

l. Scripts

m. Applets & Plug-Ins

n. Forms

o. Navigation Links

p. Time Delays

1194.22g/h: Tables

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

What is 508?

508 Defined

1194.21

1194.22

Listed below are the checkpoints required to make your online learning modules compliant. Click on the tabs below to learn more about that standard.

a. Alt-Text

b. Multimedia

c. Color

d. Readability

e/f. Image Maps

g/h. Tables

i. Frames

Tables need to be formatted with the appropriate labels such as column, row headers, and data cells so a screenreader will associate the appropriate header with the correct data cell. Try to use html tables where possible, as opposed to graphics of tables with text descriptions. This can be challenging to do with “off-the-shelf” e-learning authoring tools.

Top 10 Domestic Routes by Revenue

| From | To | Revenue | | Margin | | Per Passenger | |
|------------------------------|---------------|---------------------|-----------------|---------------------|----------------|-----------------------|----------------------|
| | | Revenue Dollars | Revenue Percent | Margin Dollars | Margin Percent | Revenue per Passenger | Margin per Passenger |
| Atlanta | New York | \$3,602,000 | 8.09% | \$955,000 | 9% | 245 | 65 |
| Chicago | New York | \$4,674,000 | 10.50% | \$336,000 | 3% | 222 | 16 |
| Columbus (Ohio) | New York | \$2,483,000 | 5.58% | \$1,536,000 | 14% | 202 | 125 |
| New York | Detroit | \$12,180,000 | 27.35% | \$2,408,000 | 23% | 177 | 35 |
| New York | Washington | \$6,355,000 | 14.27% | \$1,230,000 | 12% | 186 | 36 |
| New York | Philadelphia | \$3,582,000 | 8.04% | -\$716,000 | -7% | 125 | -25 |
| New York | San Francisco | \$3,221,000 | 7.23% | \$1,856,000 | 18% | 590 | 340 |
| New York | Phoenix | \$2,846,000 | 6.39% | \$1,436,000 | 14% | 555 | 280 |
| New York | Toronto | \$2,799,000 | 6.29% | \$1,088,000 | 10% | 450 | 175 |
| New York | Seattle | \$2,792,000 | 6.27% | \$467,000 | 4% | 448 | 75 |
| Total Domestic routes | | \$44,534,000 | | \$10,596,000 | | 272 | 53 |

j. Flashing Elements

l. Scripts

m. Applets & Plug-Ins

n. Forms

o. Navigation Links

p. Time Delays

1194.22i: Frames

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

What is 508?

508 Defined

1194.21

1194.22

Listed below are the checkpoints required to make your online learning modules compliant. Click on the tabs below to learn more about that standard.

a. Alt-Text

b. Multimedia

c. Color

d. Readability

e/f. Image Maps

g/h. Tables

i. Frames



If frames are used in your learning module, (typically menus are housed in frames in elearning) make sure the learner can easily and quickly navigate from one frame to another by using keystrokes. Also, if using popup windows, ensure that the focus transfers back and forth to the appropriate window when one opens or closes.

j. Flashing Elements

l. Scripts

m. Applets & Plug-Ins

n. Forms

o. Navigation Links

p. Time Delays

1194.22j: Flashing Elements

[Begin Testing Now](#)

[Main](#)

[508 Standards](#)

[Assistive Technology](#)

[Testing Tools](#)

[Testing Processes](#)

[What is 508?](#)

[508 Defined](#)

[1194.21](#)

[1194.22](#)

Listed below are the checkpoints required to make your online learning modules compliant. Click on the tabs below to learn more about that standard.

[a. Alt-Text](#)

[b. Multimedia](#)

[c. Color](#)

[d. Readability](#)

[e/f. Image Maps](#)

[g/h. Tables](#)

[i. Frames](#)



If flashing elements are being used, test to verify that they flash between 2 and 55 hz.

[j. Flashing Elements](#)

[l. Scripts](#)

[m. Applets & Plug-Ins](#)

[n. Forms](#)

[o. Navigation Links](#)

[p. Time Delays](#)

1194.221: Scripts

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

What is 508?

508 Defined

1194.21

1194.22

Listed below are the checkpoints required to make your online learning modules compliant. Click on the tabs below to learn more about that standard.

a. Alt-Text

b. Multimedia

c. Color

d. Readability

e/f. Image Maps

g/h. Tables

i. Frames

When using scripts or macros in your training (even those built into off-the-shelf authoring tools), verify that the information used in script is available to all users. If this is done with a form, and the script validates that the learner has either incorrectly or correctly entered information, a verbal signal (bell or buzzer) can be added to provide auditory feedback.

It may also be necessary to add feedback text to the screen for validation on behalf of those who have hearing impairments. Scripts are used for a variety of functions in learning programs such as the user typing in their name and then the program references them through the training by name, etc.

The image shows a screenshot of a W-9 form titled "Request for Taxpayer Identification Number and Certification". The form is from the Department of the Treasury, Internal Revenue Service, and is dated October 2004. It includes fields for Name, Business name, Address, City, state, and ZIP code, and List account number(s). There are also checkboxes for "Individual/Sole proprietor", "Corporation", "Partnership", "Other", and "Exempt from backup withholding". The form is displayed in a window with a title bar that says "Please fill out the following form. If you are a form author, choose Distribute Form in the Forms menu to send it to your recipients." and a "Highlight Fields" button.

j. Flashing Elements

l. Scripts

m. Applets & Plug-Ins

n. Forms

o. Navigation Links

p. Time Delays

1194.22m: Applets & Plug-Ins

[Begin Testing Now](#)

[Main](#)

[508 Standards](#)

[Assistive Technology](#)

[Testing Tools](#)

[Testing Processes](#)

[What is 508?](#)

[508 Defined](#)

[1194.21](#)

1194.22

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[a. Alt-Text](#)

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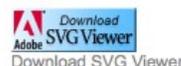
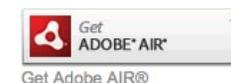
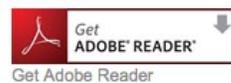
[c. Color](#)

[d. Readability](#)

[e/f. Image Maps](#)

[g/h. Tables](#)

[i. Frames](#)



If your users need to download a plug in or applet, make sure there is an easily accessible link for your users to download the application.

[j. Flashing Elements](#)

[l. Scripts](#)

[m. Applets & Plug-Ins](#)

[n. Forms](#)

[o. Navigation Links](#)

[p. Time Delays](#)

1194.22n: Forms

[Begin Testing Now](#)

[Main](#)

[508 Standards](#)

[Assistive Technology](#)

[Testing Tools](#)

[Testing Processes](#)

[What is 508?](#)

[508 Defined](#)

[1194.21](#)

[1194.22](#)

Listed below are the checkpoints required to make your online learning modules compliant. Click on the tabs below to learn more about that standard.

[a. Alt-Text](#)

[b. Multimedia](#)

[c. Color](#)

[d. Readability](#)

[e/f. Image Maps](#)

[g/h. Tables](#)

[i. Frames](#)

The same rules that one would use for tables apply to forms. If they are designed and structured properly, the assistive technology will detect and read the information appropriately for the user.

The image shows a screenshot of a W-9 form. The form is titled "W-9 Request for Taxpayer Identification Number and Certification". It includes a header with "Form W-9 (Rev. October 2004) Department of the Treasury Internal Revenue Service" and a note: "Give form to the requester. Do not send to the IRS." The form fields include: "Name (as reported on your income tax return)", "Business name, if different from above", "Check appropriate box: Individual/Sole proprietor, Corporation, Partnership, Other, and Exempt from backup withholding", "Address (number, street, and apt. or suite no.)", "City, state, and ZIP code", and "List account number(s) here (optional)". On the left side of the form, there is a vertical label: "Print or type See Specific Instructions on page 2."

[j. Flashing Elements](#)

[l. Scripts](#)

[m. Applets & Plug-Ins](#)

[n. Forms](#)

[o. Navigation Links](#)

[p. Time Delays](#)

1194.22o: Navigation Links

[Begin Testing Now](#)

[Main](#)

[508 Standards](#)

[Assistive Technology](#)

[Testing Tools](#)

[Testing Processes](#)

[What is 508?](#)

[508 Defined](#)

[1194.21](#)

[1194.22](#)

Listed below are the checkpoints required to make your online learning modules compliant. Click on the tabs below to learn more about that standard.

[a. Alt-Text](#)

[b. Multimedia](#)

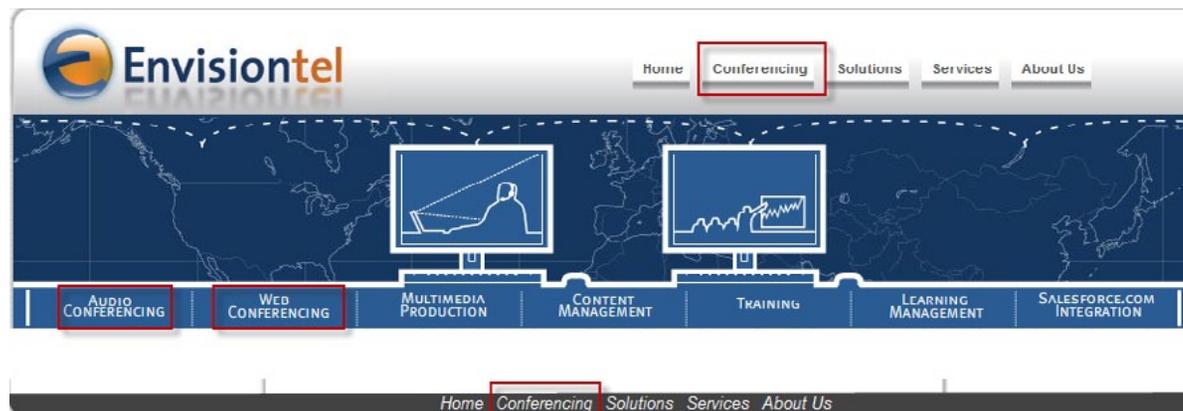
[c. Color](#)

[d. Readability](#)

[e/f. Image Maps](#)

[g/h. Tables](#)

[i. Frames](#)



If there are duplicate links to the same location, allow the user to disable repetitive links and limit the amount of information they are required to review.

[j. Flashing Elements](#)

[l. Scripts](#)

[m. Applets & Plug-Ins](#)

[n. Forms](#)

[o. Navigation Links](#)

[p. Time Delays](#)

1194.22p: Time Delays

[Begin Testing Now](#)

[Main](#)

[508 Standards](#)

[Assistive Technology](#)

[Testing Tools](#)

[Testing Processes](#)

[What is 508?](#)

[508 Defined](#)

[1194.21](#)

[1194.22](#)

Listed below are the checkpoints required to make your online learning modules compliant. Click on the tabs below to learn more about that standard.

[a. Alt-Text](#)

[b. Multimedia](#)

[c. Color](#)

[d. Readability](#)

[e/f. Image Maps](#)

[g/h. Tables](#)

[i. Frames](#)

If there is a need for the user to complete a test or activity in a certain period of time, the option of extending or eliminating that time limit should be given. Assistive technologies are not always as efficient as ordinary access to electronic information, thus the user needs to be given more time to complete the required knowledge review or activity.



[j. Flashing Elements](#)

[l. Scripts](#)

[m. Applets & Plug-Ins](#)

[n. Forms](#)

[o. Navigation Links](#)

[p. Time Delays](#)

What is Assistive Technology?

Assistive technology refers to any of the devices, software or techniques used in assisting disabled individuals. Assistive technology enables those with disabilities to perform tasks that could be difficult or impossible otherwise.

[See it in Action!](#)

Screen Magnification

Screen magnification software connects with the graphical output of a computer to enlarge the content of the screen. This is especially helpful for those who are visually impaired.

[See it in Action!](#)

Voice Recognition

Voice recognition software allows a user to speak commands to the computer rather than input through a keyboard or mouse. This program can convert spoken words into text as well.

[See it in Action!](#)

Screen Reader

A screen reader is an assistive software that interprets what is displayed on a computer screen by speaking aloud. This technology is designed with the vision impaired user in mind.

[See it in Action!](#)[Try It!](#)

Click the buttons below to link to the location where you can download these tools.

Testing

[Web Accessibility Toolbar](#)[Object Inspector](#)[Color Checker](#)

Click the buttons below to link to tutorials that provide guidance on using the compliance feature of some common authoring tools.

Tutorials

[Captive Tutorial](#)[Lectora Tutorial](#)[Flash Tutorial](#)

Testing Processes

[Begin Testing Now](#)

[Main](#)

[508 Standards](#)

[Assistive Technology](#)

[Testing Tools](#)

[Testing Processes](#)

Testing Processes

[Which Testing Tool?](#)

[Testing](#)

[Top Ten Issues](#)

Click the buttons below or navigate through the following pages to learn more about each testing process that you will use in validating compliance.

Testing

Web Accessibility Toolbar

The WAT enables easy web page compliance testing.

Object Inspector

The OI tool assesses highlighted objects within a software application (i.e. Adobe Flash) for compatibility.

Impact Report

The Impact Report is used to document the results of WAT and OI tests.

Which Testing Tool?

[Begin Testing Now](#)

[Main](#)

[508 Standards](#)

[Assistive Technology](#)

[Testing Tools](#)

[Testing Processes](#)

[Testing Processes](#)

[Which Testing Tool?](#)

[Testing](#)

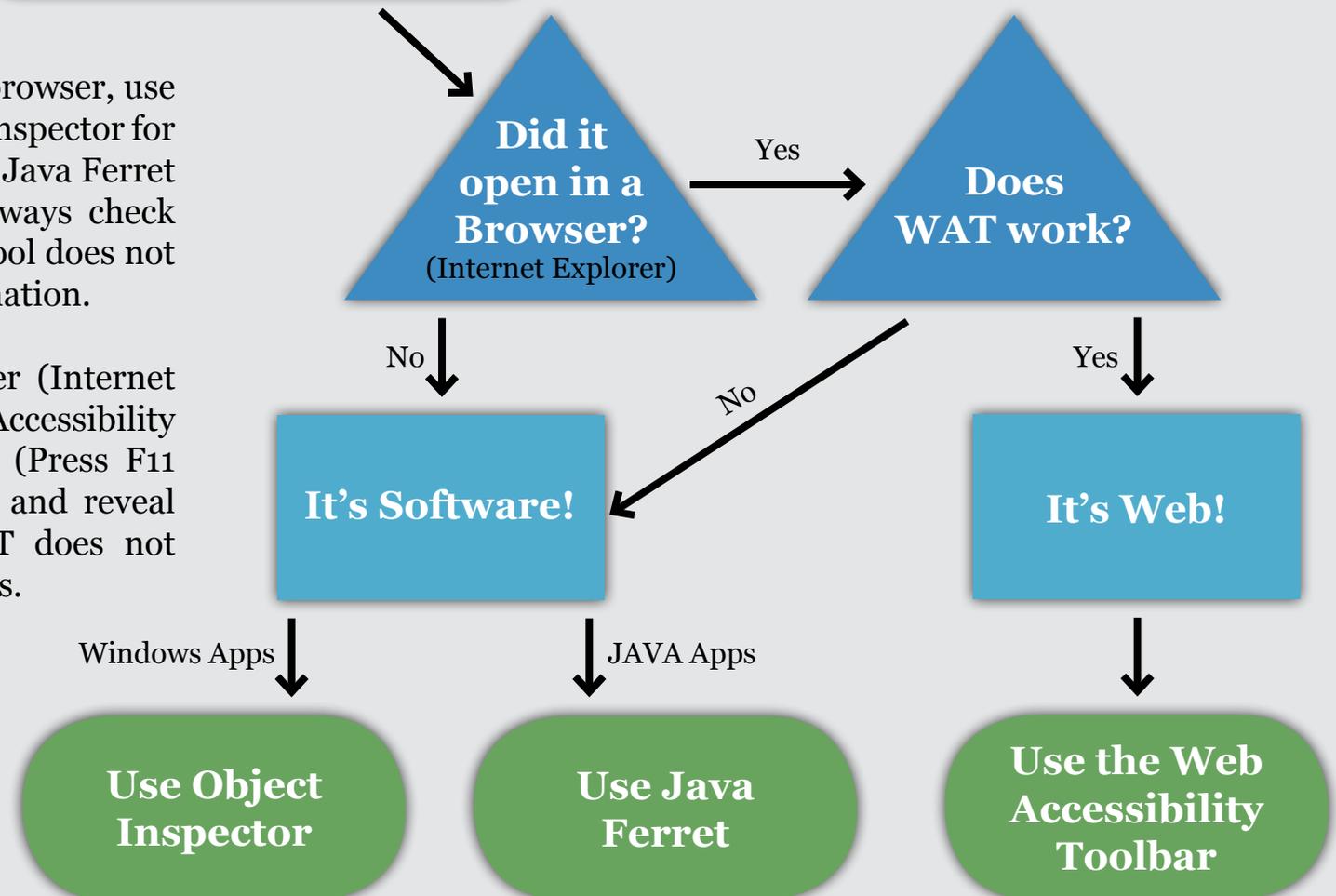
[Top Ten Issues](#)

Open the Application

1. Open the application

2. If it does not open in a browser, use the software tools: Object Inspector for Windows applications and Java Ferret for JAVA applications. Always check the other tools when one tool does not display accessibility information.

3. If it opens in a browser (Internet Explorer) and the Web Accessibility Toolbar works, use WAT. (Press F11 to exit fullscreen browser and reveal WAT, if needed.) If WAT does not work, use the software tools.



Web Accessibility Toolbar

[Begin Testing Now](#)

[Main](#)

[508 Standards](#)

[Assistive Technology](#)

[Testing Tools](#)

[Testing Processes](#)

[Testing Processes](#)

[Which Testing Tool?](#)

[Testing](#)

[Top Ten Issues](#)

[WAT](#)

[Object Inspector](#)

[Impact Report](#)

[Show Images](#)

[Greyscale](#)

[Disable CSS](#)

[Data Tables](#)

Click on the tabs on this screen or read the following pages to learn about the various WAT test parameters to look for.

[Frame Name/Title](#)

[Fieldset/Labels](#)

[Other](#)

[Testing Complete](#)

WAT: Show Images

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

Testing Processes

Which Testing Tool?

Testing

Top Ten Issues

WAT

Object Inspector

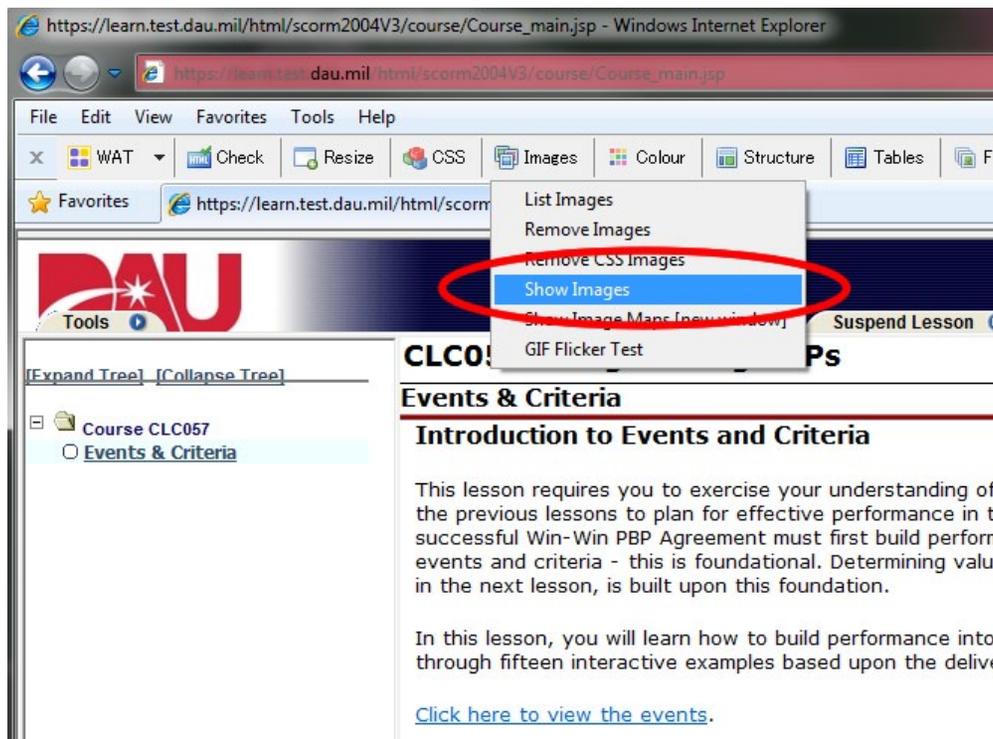
Impact Report

Show Images

Greyscale

Disable CSS

Data Tables



Show Images:

Section a. of the checklist is tested using the “Show Images” function under the Images button of the toolbar. When this is activated for a webpage, each image on the page is highlighted and the alt text for the image is displayed above it. This is Compliant if all images in the course have a proper alt description with them (exceptions are decorative images that convey no information, such as small corner logos, etc.)

Frame Name/Title

Fieldset/Labels

Other

Testing Complete

WAT: Greyscale

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

Testing Processes

Which Testing Tool?

Testing

Top Ten Issues

WAT

Object Inspector

Impact Report

Show Images

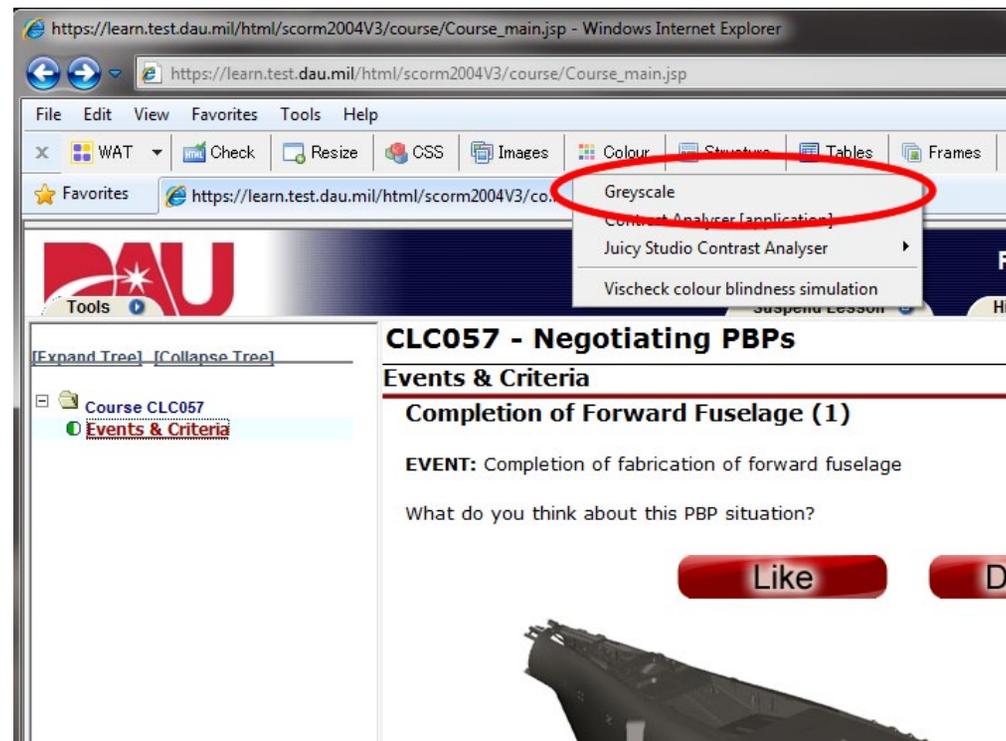
Greyscale

Disable CSS

Data Tables

Greyscale:

Section c. of the checklist is tested using the “Greyscale” function found under the Colour button of the toolbar. This should turn the webpage to greyscale, removing all color. This is Compliant as long as all the information on the page still makes sense with the color removed. Often when pie-charts are used this can be an issue.



Frame Name/Title

Fieldset/Labels

Other

Testing Complete

WAT: Disable CSS

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

Testing Processes

Which Testing Tool?

Testing

Top Ten Issues

WAT

Object Inspector

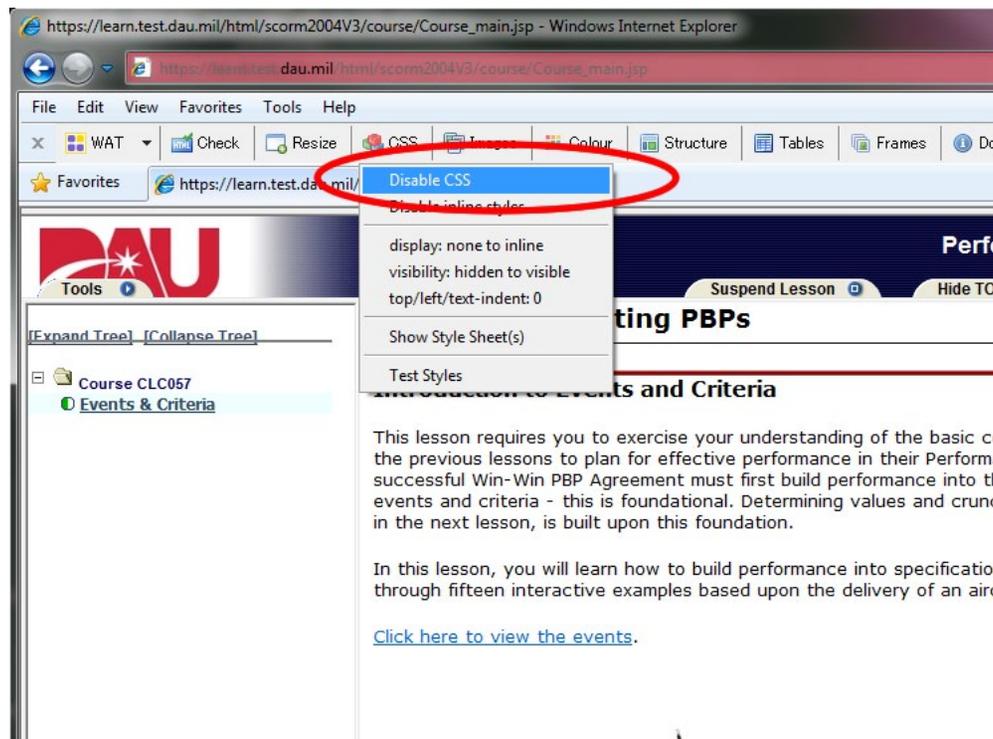
Impact Report

Show Images

Greyscale

Disable CSS

Data Tables



Disable CSS:

Section d. of the checklist is tested using the “Disable CSS” button found under the CSS button of the toolbar. This will turn off all CSS functions in the page and redisplay the page in its coded order, plain text and graphics. This is Compliant if the information is still presented in the same order and is logical to read (all paragraphs in correct order still, etc). If any data is removed or added when the CSS is turned off, the page may be non-compliant.

Frame Name/Title

Fieldset/Labels

Other

Testing Complete

WAT: Data Tables

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

Testing Processes

Which Testing Tool?

Testing

Top Ten Issues

WAT

Object Inspector

Impact Report

Show Images

Greyscale

Disable CSS

Data Tables

Data Tables:

Sections g./h. of the checklist are tested using the “Data Tables” and “Show Table Headers” buttons found under the Tables button of the toolbar. When these buttons are activated, table tags will display wherever a table is present on the page, as well as the associated header information. If a table is used to format a page (not recommended) that table should not have any information in the header tags. If a table is used to display data, the column and row header attributes should be populated with the column and row titles. A data table is Compliant if the headers are filled in properly.

Contracting Officer's Representative Training Authorities

The Uniform Contract Format

Your first task is to read the contract for which you've been assigned and continue to read it often throughout your assignment as a COR. The Uniform Contract Format specifies the parts of a contract and the sequence in which they must be arranged.

| | |
|-----------|---|
| [table] | |
| [td] | |
| [td] | |
| [table] | |
| [td] | |
| Section A | Solicitation/Contract Form |
| Section B | Supplies or Services And Price/Costs |
| Section C | Description/Specification/Statement Of Work |
| Section D | Packaging And Marking |
| Section E | Inspection And Acceptance |
| Section F | Deliveries And Performance |
| Section G | Contract Administration Data |
| Section H | Special Contract Requirements |

Page 29 of 40

Frame Name/Title

Fieldset/Labels

Other

Testing Complete

WAT: Frame Name/Title

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

Testing Processes

Which Testing Tool?

Testing

Top Ten Issues

WAT

Object Inspector

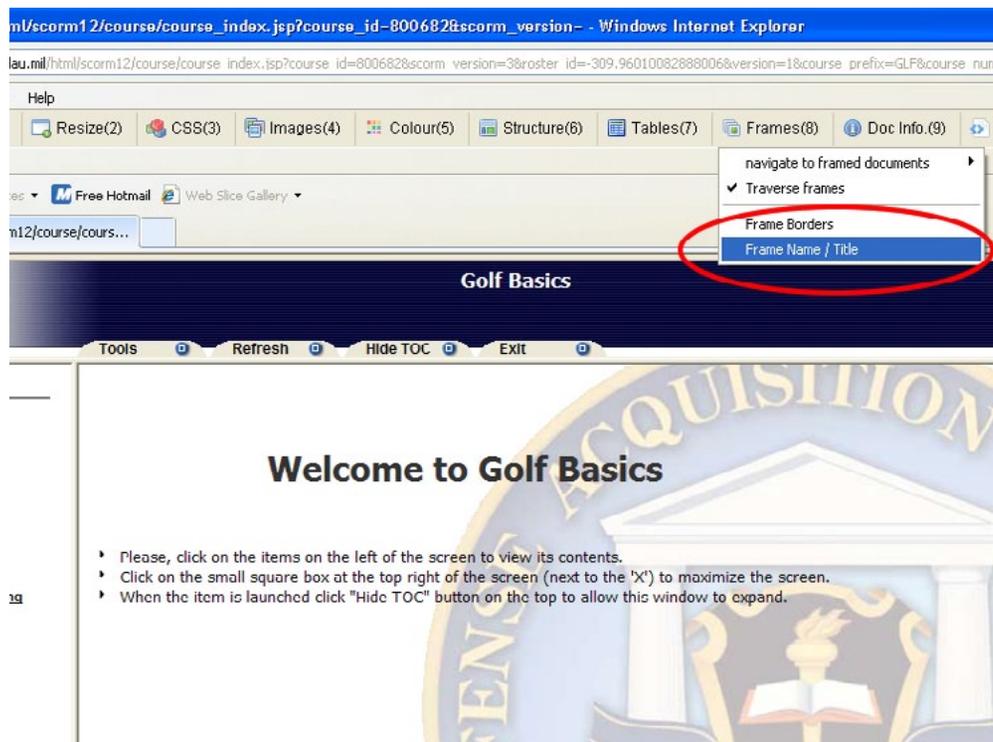
Impact Report

Show Images

Greyscale

Disable CSS

Data Tables



Frame Name/Title:

Section i. of the checklist is tested using the “Frame Name/Title” function under the “Frames” button of the toolbar. When activated, all the frames in the webpage will be highlighted and their associated name/title attributes will display. This is compliant as long as each frame is named properly (i.e. – describes the content like “Content Frame” or “Navigation Frame”).

Frame Name/Title

Fieldset/Labels

Other

Testing Complete

WAT: Fieldset/Labels

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

Testing Processes

Which Testing Tool?

Testing

Top Ten Issues

WAT

Object Inspector

Impact Report

Show Images

Greyscale

Disable CSS

Data Tables

Fieldset/Labels:

Sections l./n. of the checklist are tested using the “Fieldset/Labels” function under the “Structure” button of the toolbar. When activated, any form field, radio button, checkbox, push button, dropdown box, etc on the page will be highlighted and the label/name for the object will display. One of these objects is Compliant as long as the label field describes the object properly. For example, a radio button’s label should be the text that is associated with choosing that radio button (usually the text to the right of the button).

The screenshot shows a web page from Defense Acquisition University (DAU) titled "Managing Government Property in the Possession of Contractors" with "Lesson 1: Introduction". The page contains a "Knowledge Check" section. A red circle highlights the label "A label No for:" next to a radio button. Below this are four radio buttons with labels: "Contractor", "Determination of location", "Determination of need", and "Disposition plan". There is also a "Submit" button and another "label No for:" label at the bottom. The footer of the page reads "DUUSD(AT&L) Acquisition Resources & Analysis (ARA) Property and Equipment Policy" and "Page 12 of 14".

Frame Name/Title

Fieldset/Labels

Other

Testing Complete

[Main](#)[508 Standards](#)[Assistive Technology](#)[Testing Tools](#)[Testing Processes](#)[Testing Processes](#)[Which Testing Tool?](#)[Testing](#)[Top Ten Issues](#)[WAT](#)[Object Inspector](#)[Impact Report](#)[Show Images](#)[Greyscale](#)[Disable CSS](#)[Data Tables](#)

CLL058 - LORA - Theory and Principles

[Print](#) [Help](#)

LORA Sequence

[Back](#) Page 2 of 3 [Next](#)

Summary

This concludes the topic on the LORA Process.

Steps taken to conduct a LORA include:

- Establishing analysis objectives and deliverables, which depend on system type (new/legacy), acquisition phase, desire to avoid specific problem of similar systems, etc.
- Selecting an LOR process and model
- Collecting the inputs
- Evaluating the LORA factors by running the process and model
- Analyzing the outputs
- Documenting Conclusions, Recommendations and Issues; and stating if/when the LORA should be re-executed

Step 1: Establish objectives and deliverables.

Step 2: Select a LORA process.

Step 3: Collect the input data.

Step 4: Run the LORA model.

Step 5: Analyze the outputs.

[D](#)

Other:

All other sections of the checklist are not specifically checked with the WAT toolbar, but can be checked manually during the same time as the WAT testing takes place. Also, take note of things like the proper use of bulleted lists, headings, paragraphs, etc. in the courses – these are all best practices and can be checked under the Structure button of the toolbar.

[Frame Name/Title](#)[Fieldset/Labels](#)[Other](#)[Testing Complete](#)

WAT: Testing Complete

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

Testing Processes

Which Testing Tool?

Testing

Top Ten Issues

WAT

Object Inspector

Impact Report

Show Images

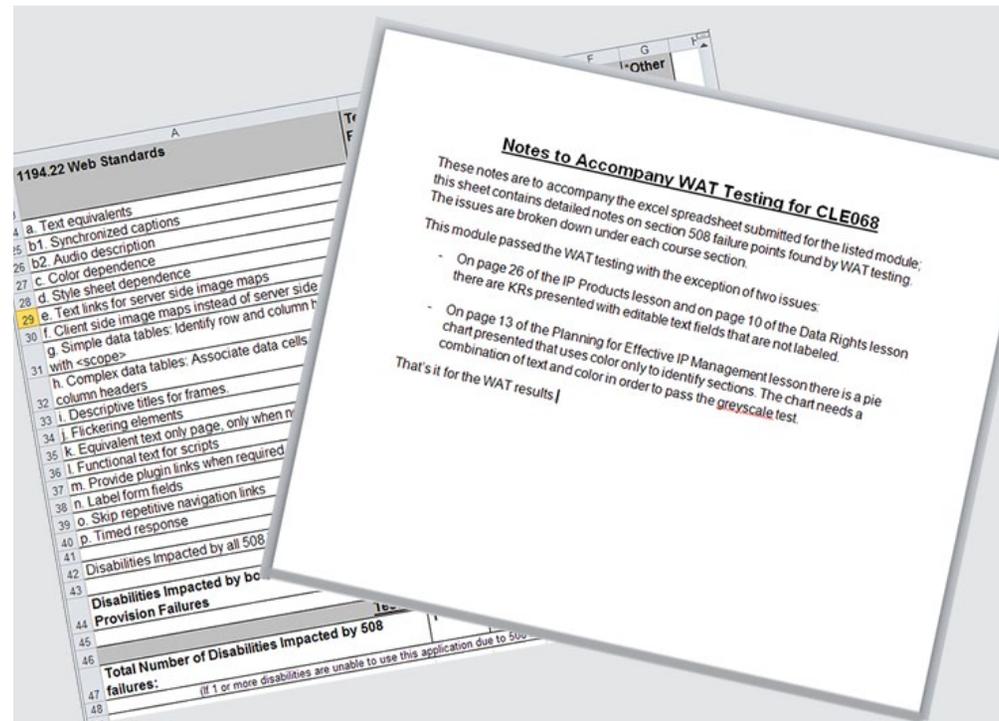
Greyscale

Disable CSS

Data Tables

Testing Complete:

Once testing is done, fill out the checklist appropriately as well as an additional document filled with any notes that apply to those results and submit. The additional notes will help developers in troubleshooting and fixing issues found in the checklist results.



Frame Name/Title

Fieldset/Labels

Other

Testing Complete

Object Inspector

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

Testing Processes

Which Testing Tool?

Testing

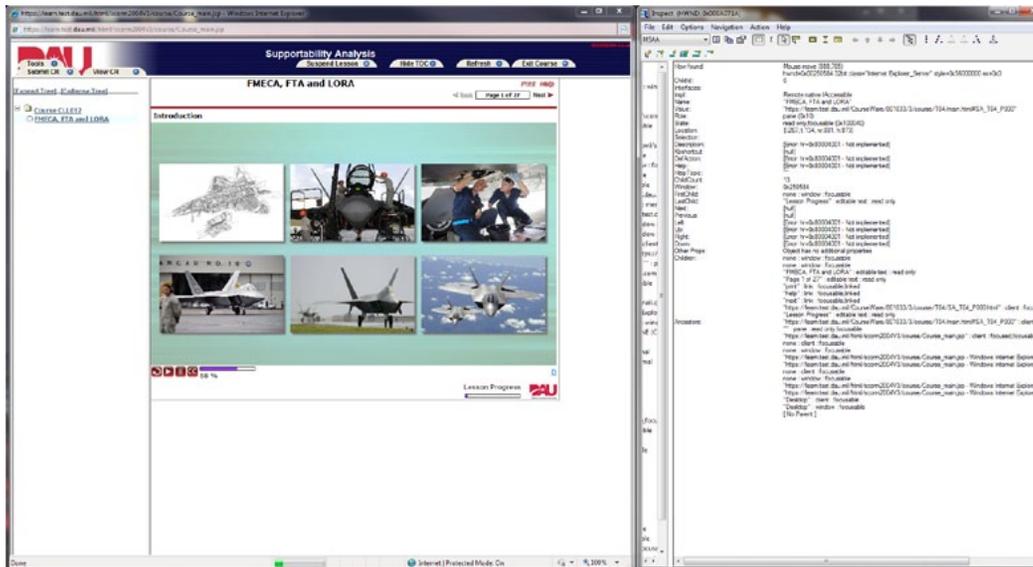
Top Ten Issues

WAT **Object Inspector** Impact Report

Download

Flash

Javascript



The Object Inspector (OI) tool is a component of the Microsoft Software Development Kit (SDK). This SDK can be installed and run on Windows XP, Vista, and 7.

For the ATLAS courses, OI is used primarily to test Flash (SWF) and Javascript (JS) objects. In the following pages are the quick scripts for each scenario.

Object Inspector: Download

[Begin Testing Now](#)

[Main](#)

[508 Standards](#)

[Assistive Technology](#)

[Testing Tools](#)

[Testing Processes](#)

[Testing Processes](#)

[Which Testing Tool?](#)

[Testing](#)

[Top Ten Issues](#)

[WAT](#)

[Object Inspector](#)

[Impact Report](#)

[Download](#)

[Flash](#)

[Javascript](#)

The only prerequisite for the SDK is Microsoft's .net 4.0 components.

Once the SDK is installed you can find the "Inspect Objects" program under the "Microsoft Windows SDK" folder. Once the inspector is open, switch its mode to MSAA using the dropdown box found in the upper left. Object Inspector is now ready to use.

To test any object on a webpage simply mouseover that object. You can also keyboard tab to objects to highlight them. The Object Inspector window will display information for whatever object, or portion of an object, that the mouse is over. For 508 compliance we are looking at the Name, Value, Role, and State attributes displayed in the OI window. Also, if the Description attribute contains text data that should be noted.

In order for an Object to pass an OI test the Name field must be filled in properly with the text describing the object (akin to an alt tag) or with the text displayed visually within the object. The Value field is usually filled with NULL, unless the object being tested requires a value. The Role should match the role of the object, whether that is a push button, radio button, graphic, etc. The state field should be focused or focusable – this means that it can get focus from the cursor.

Click here for the link to this set of tools:

[Windows SDK](#)

Object Inspector: Flash

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

Testing Processes

Which Testing Tool?

Testing

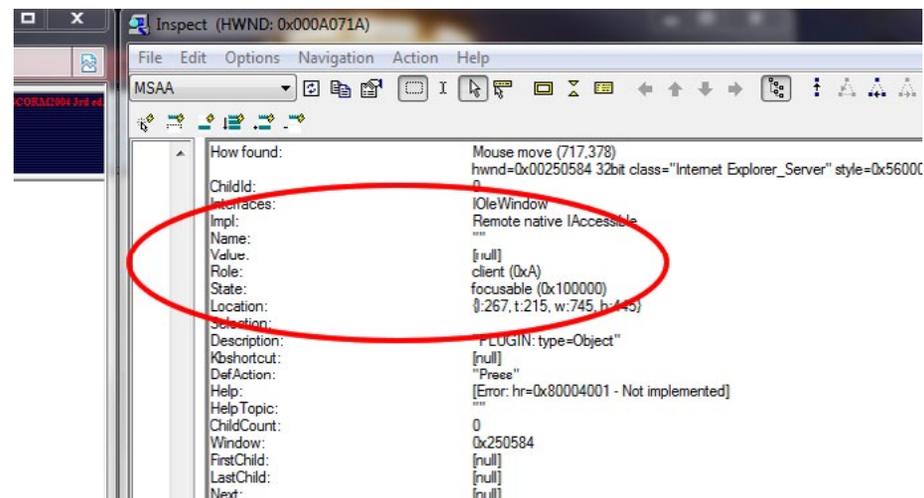
Top Ten Issues

WAT **Object Inspector** Impact Report

Download

Flash

Javascript



1. Mouseover the flash file's main area. Note the four attributes listed above and decide if it passes or fails.
2. If the flash file contains user interaction such as buttons, clickable areas, etc. Mouseover these sections within the object. The OI panel should now display information about the selected button or object. Verify that the role and name fields are correct.
3. If the flash file contains images, the alt information should be presented either in the main Name attribute or by mousing over the image. The same process is used for text pieces within the file.
4. Verify that everything presented visually is also presented with text within OI's Name attribute. Sometimes the Description field is used in place of the Name field.

Object Inspector: Javascript

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

Testing Processes

Which Testing Tool?

Testing

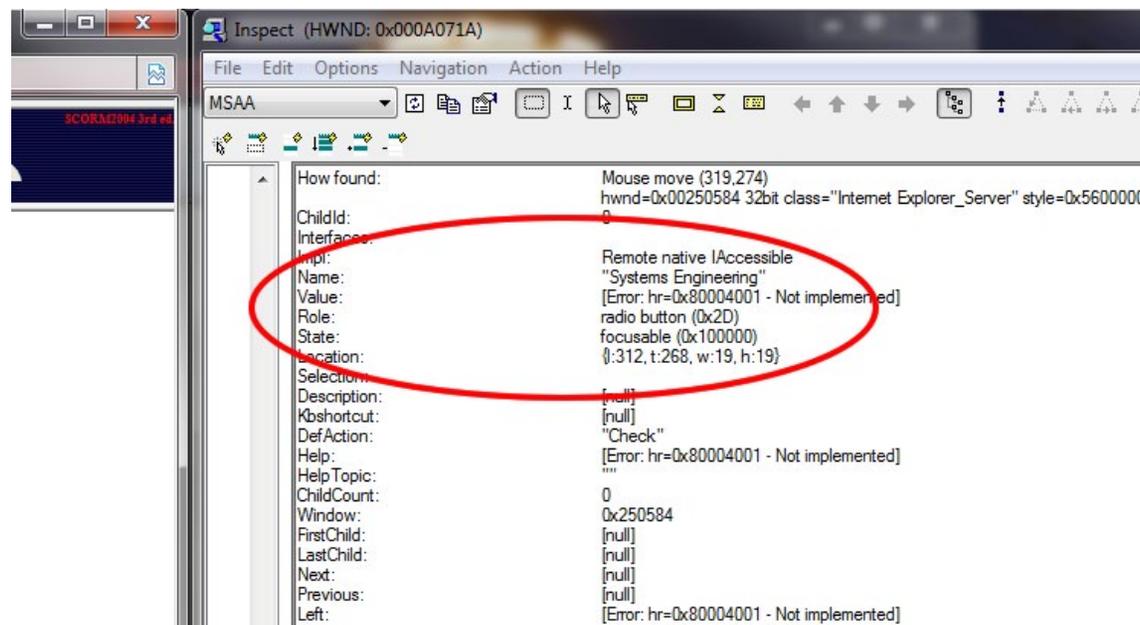
Top Ten Issues

WAT **Object Inspector** Impact Report

Download

Flash

Javascript



Mouseover the form, button, or checkbox. Verify that the Name field is populated with the text associated with the object. For example, a radio button's Name attribute should contain the text that is associated to that button (usually the text to the right of it). The Role field should be populated with the proper role of the object, i.e. – push button, radio button, check box, text box, drop down, etc.

Impact Report

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

Testing Processes

Which Testing Tool?

Testing

Top Ten Issues

WAT Object Inspector **Impact Report**

The Impact Report is the document that will provide a snapshot report that indicates the accessibility issues and which groups of individuals are impacted.

Download the Report

The screenshot shows an Excel spreadsheet titled "508 Impact Guide & Score Sheet". The main content is a table with the following structure:

| 1194.21 Software Standards | Test Results | Blind | Low Vision | Deaf/Hard of Hearing | Mobility | *Other |
|---|--------------|-------|------------|----------------------|----------|--------|
| a. Keyboard access | NA | X | | | X | |
| b1. Accessibility feature Narrator test | NA | X | | | | |
| b2. Accessibility feature High contrast test | NA | | X | | | |
| b3. Accessibility feature Sound Sentry test | NA | | | X | | |
| b4. Accessibility feature Sticky Keys test | NA | | | | X | |
| c. On screen focus | NA | X | X | | X | |
| d. Sufficient information for user interface elements | NA | X | | | X | |
| e. Bit map image consistency | NA | | | | | X |
| f. Textual information through operating system functions | NA | X | | | | |
| g. User color and contrast settings | NA | | X | | | |
| h. Animation alternative | NA | X | X | | | |
| i. Color dependency | NA | X | X | | | X |
| j. Color selection variety | NA | | X | | | X |
| k. Flickering elements | NA | | | | | X |
| l. Label form fields | NA | X | | | | |
| Disabilities Impacted by all 508 Software Failures | | | | | | |
| 1194.22 Web Standards | Test Results | Blind | Low Vision | Deaf/Hard of Hearing | Mobility | *Other |
| a. Text equivalents | C | X | | | | |

Top Ten Issues

[Begin Testing Now](#)

[Main](#)

[508 Standards](#)

[Assistive Technology](#)

[Testing Tools](#)

[Testing Processes](#)

[Testing Processes](#)

[Which Testing Tool?](#)

[Testing](#)

[Top Ten Issues](#)

[1](#)

[2](#)

[3](#)

[4](#)

[5](#)

[6](#)

[7](#)

[8](#)

[9](#)

[10](#)

When hosting content on the Defense Acquisition University's (DAU's) Atlas learning management system, several issues have been identified. To avoid encountering these issues when you host your module, please consider these top ten issues and develop your module accordingly. The following ten pages describe these issues in detail.

1. Knowledge Reviews

Knowledge Reviews (KRs) are a key component to ATLAS courses. KRs allow students the opportunity to review what they have learned. It is crucial that the KRs in each course be accessible to all users. The use of matching questions, drag-and-drop, and other mouse intensive or visual type questions should be avoided. The most accessible forms of KR questions are multiple choice and true-or-false quizzes. These types of questions can be easily navigated using just a keyboard.

Making a KR accessible is quite simple in HTML. Use the built-in HTML form field options such as radio buttons, checkboxes, and push buttons for Knowledge Reviews. Use the <label> attributes for the buttons to assign the

proper values to the buttons. For example, if there is a radio button option for the answer “Chicago”, the label field for that button should be set to “Chicago”. Screen readers and keyboard users can navigate these types of form fields properly and simply.

It is also a best practice to use a new browser window popup to display feedback after the question has been answered. The use of a hidden div popup does not often take reader focus and the student ends up not receiving any feedback.

When Knowledge Reviews are created in Flash, the same rules need to be observed.

[Main](#)[508 Standards](#)[Assistive Technology](#)[Testing Tools](#)[Testing Processes](#)[Testing Processes](#)[Which Testing Tool?](#)[Testing](#)[Top Ten Issues](#)[1](#)[2](#)[3](#)[4](#)[5](#)[6](#)[7](#)[8](#)[9](#)[10](#)

2. Flash Items

The use of interactive, usually Adobe Flash based, content adds to the visual appeal of a website. In most cases, a Flash file is not accessible without serious planning in the creation of the file. Any flash file that is time-based or that has content that moves on and off the screen without user control is inherently non-compliant with Section 508 standards. In cases where the content is time based an alternative text-only version of the content should be made available (often referred to as a D-Link). This text file gives screen reader users access to the data that is presented in the file.

There are other ways to make animated content accessible, such as pausing the content and describing each section as it moves forward when a screen reader is detected. However the object is programmed, it must be made to adhere to Section 508 standards and be completely accessible to screen readers with just a keyboard.

It is preferred that, whenever possible, that the Flash file itself be made accessible instead of having a separate D-Link to maintain. For files that can be made accessible, Adobe has placed a number of accessibility functions into its newer versions of Flash. By using the Name, State, and Role values of the objects within your Flash project, you can open those objects up to being seen by a screen reader. Use the name attribute to describe what the object is if it's a visual item, or fill the attribute with the displayed text if it is a text based item. The role should match what the object is, i.e: graphic, button, etc. These values can be modified within the accessibility options in Adobe Flash. Tab order (read-order) must also be determined in Flash so that the objects are read in the same order they are displayed visually.

[Main](#)[508 Standards](#)[Assistive Technology](#)[Testing Tools](#)[Testing Processes](#)[Testing Processes](#)[Which Testing Tool?](#)[Testing](#)[Top Ten Issues](#)[1](#)[2](#)[3](#)[4](#)[5](#)[6](#)[7](#)[8](#)[9](#)[10](#)

3. Skip Navigation Links

Skip Navigation links, often called “SkipNav” or “Skip to Content”, allow a screen reader user to skip all the header and navigation information present in a course. For example, most courses have a navigation section with links to Print, Help, Back, Next, etc. all placed before the actual page content. These items are the same for each page in the course. A sighted user simply ignores those links and visually focuses on the content section, while a screen reader user would need to manually navigate

through all the links on each page until the content is reached. This can become quite detrimental to the learning process.

To alleviate this issue, a simple HTML based anchor link placed at the top of the page can be used to send screen reader focus to the content area. These SkipNav links can be coded in CSS to be invisible to sighted users, hidden from the visual view.

[Main](#)[508 Standards](#)[Assistive Technology](#)[Testing Tools](#)[Testing Processes](#)[Testing Processes](#)[Which Testing Tool?](#)[Testing](#)[Top Ten Issues](#)[1](#)[2](#)[3](#)[4](#)[5](#)[6](#)[7](#)[8](#)[9](#)[10](#)

4. Read Order/CSS

Screen reader programs are designed to use the underlying HTML code of a page to present the content. They read in a top-down, left-to-right, fashion through the base code, ignoring any CSS layout design. This is important to note when a page is created.

To ensure that your courses are read in the proper order, simply place the objects in the same order in the HTML base-code as they are to appear visually on screen. This way you do not end up with a page that is read improperly by a screen reader.

For example, on a page where a navigation bar is visually at the bottom, it would be possible to code this bar at the top of the HTML base-code and still have it appear at the bottom of the screen visually via CSS coding. If that were the case, a screen reader would present this bar as the first item of the page, even though it is visually at the bottom. By simply coding things in the same order they appear visually this issue can be avoided.

5. Image Alt-Text

Perhaps the simplest item to make accessible in an ATLAS course is a basic HTML image. HTML has the built-in alt attribute for images that allows for a text description of the image or graphic. Simply use brief text to describe the image contents. If the image is complex, a “longdesc” attribute may need to be used in place of “alt” to allow for more description, or even a D-Link popup may be used when needed.

There are some best practices to consider when coding for images:

- Avoid using the term “Image of..” or “Picture of..”
- Screen readers already announce the item as a graphic when they are read.

- If an image is purely used for decoration, repeats on every page, or does not present any data or content to the user, it is best to leave the alt value blank so it is not read at all. For example if a site had the DAU logo in the bottom corner of each page, hearing the term “DAU Logo Graphic” read on every page in a course would get rather annoying to a student using a screen reader. Having a decorative item like that read just on the first page would be enough.

- Use short, concise wording to describe images, too much detail in the description will slow down the learning process and adds no value. The same can be said for too little description.

[Main](#)[508 Standards](#)[Assistive Technology](#)[Testing Tools](#)[Testing Processes](#)[Testing Processes](#)[Which Testing Tool?](#)[Testing](#)[Top Ten Issues](#)[1](#)[2](#)[3](#)[4](#)[5](#)[6](#)[7](#)[8](#)[9](#)[10](#)

6. Basic HTML Navigation Tags

Screen reader users are accustomed to using certain quick-keys to navigate through pages. These keys rely on the use of basic HTML tags on a page to jump through. The most popular quick navigation tags used by screen readers are “heading” tags. The proper use of `<h1>`, `<h2>`, `<h3>`, etc. tags in breaking up the content on a page is important to a screen reader user. Using their heading command in a screen reader program allows users to jump around a page, reading the section headings, to give them an overview of the content quickly.

For example, the title of a course or section might be: “10 ATLAS Compliance Issues”. It should be coded as a heading level 1 (`h1`). The title of a specific page in the course might be: “6: Basic HTML Navigation Tags”. This should be coded as a heading level 2 (`h2`).

Other tags that are useful in laying out a page are paragraph `<p>`, and ordered `` and unordered `` lists.

[Main](#)[508 Standards](#)[Assistive Technology](#)[Testing Tools](#)[Testing Processes](#)[Testing Processes](#)[Which Testing Tool?](#)[Testing](#)[Top Ten Issues](#)[1](#)[2](#)[3](#)[4](#)[5](#)[6](#)[7](#)[8](#)[9](#)[10](#)

7. Closed Captioning/Transcripts

For users that are deaf, or have limited hearing, any audio content that is presented in a course presents a challenge if the site designers did not plan for the use of text transcripts and closed captioning (CC) properly.

If a page has an audio narration or other audio-only component, a link or button that provides a text transcript of the audio should be presented on the page. This allows a student the opportunity to gain the same level of data from the site as other users.

For presentations that have time-based audio, such as a video with speech, a closed captioning button or option should be presented. For full compliance, the closed captioning text needs to be presented in parallel with the content. This means if a person is speaking on a video, the closed captioning text should be timed to match the rate and speed of the speaker.

8. Tables and Screen Readers

Data tables, whether they are simple or complex, need to have some extra code taken into consideration for a screen reader user. If a table is just coded as a regular table (with no header or scope attributes coded), a screen reader simply reads it as “table with x columns and x rows” then it will read from left to right across the cells, without associating the column and row titles. This can lead to some confusion, especially in larger tables where the user can’t simply reference what row or column they are actually in without navigating all the way back through the table to the first rows again.

Screen readers are designed to read tables properly as long as the tables are coded using the table row and column header attributes, as well as the cell scope attributes in the more complex tables. Using these attributes associates the cells with their proper column/row. With a properly coded table, the screen reader will announce the relevant location data for the cell as the data is read.

9. Links

Links are very simple to make accessible in HTML. As long as the link is coded using basic HTML standards, a screen reader will be able to read and activate the link properly. There are some best practices that are often not used that should be utilized in your courses:

- Avoid the use of the terms “Click here” or “this link” for the actual link. A screen reader user would have to read through the text before and after the link to understand where the link goes, then return to the link afterwards to activate it. It is best to code the link to the actual text that describes where the link goes.

- Link names should make sense outside of the context of the surrounding text. In other words, if they were the only content on the page their purpose and proposed destination should still make sense. Screen reader users often use a function in their software that pulls up all the links on a page into a single list to select from. Each link needs to be unique and named so that the user understands the link’s destination just from reading the link name.

[Main](#)[508 Standards](#)[Assistive Technology](#)[Testing Tools](#)[Testing Processes](#)[Testing Processes](#)[Which Testing Tool?](#)[Testing](#)[Top Ten Issues](#)[1](#)[2](#)[3](#)[4](#)[5](#)[6](#)[7](#)[8](#)[9](#)[10](#)

10. Pop-Up Windows

Perhaps one of the more common non-compliant objects found in ATLAS courses are the popup windows used to display feedback, more information about a term, etc. A popup window needs to be coded so that when it is activated, the screen reader jumps right to it, and when it is closed, the screen reader should return to the same place it was at on the page before the popup was opened.

While there are numerous ways to make a popup compliant, the simplest manner is to code your popups so they open as new browser windows. Screen readers know how to deal with new browser-based popup

windows properly. Reader focus goes to the window when opened and returns to the right location after the window is closed. You can use CSS and javascript to control the activation, content, and layout of the popup window so that it is positioned properly and still retains visual appeal.

Also, whenever a popup window is presented, there should be a link or button at the bottom of the popup to close it. This lets the student know that the data presented in the popup has all been presented and they can close it.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

Once you are ready to test your online learning content, simply read the following pages, or click each tab above and validate each standard as described. To learn more about each standard, you can click the “Learn More” link to view a short tutorial that defines the standard in more detail.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.21a

1194.21c

1194.21i/1194.22c

1194.21k/1194.22j

1194.21l/1194.22n

1194.21g

The following six pages will discuss testing procedures in relation to 1194.21 standards. Go to the next page or click the buttons to continue.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.21a

1194.21c

1194.21i/1194.22c

1194.21k/1194.22j

1194.21l/1194.22n

1194.21g

Keyboard Use

1194.21a

Test the module/document for its compatibility with keyboard input. The entire content must be navigable from a keyboard alone, with no mouse input needed. When content is fully functional via keyboard strokes, accessible technology can also access the content properly.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.21a

1194.21c

1194.21i/1194.22c

1194.21k/1194.22j

1194.21l/1194.22n

1194.21g

Focus and Tab Order

1194.21c

The module/document should be programmed so that the focus location is indicated both visually and in the code. This is tested by visually looking at the page as you tab and move through to various elements, you should see an indicator (often a dashed rectangle around the content). Also, if using a screen reader, this is tested by simply navigating the page and verifying that all content is focusable and read in the proper order. You should also verify that the content is accessed in the right order via keyboard, often called the tab order. Elements should be tabbed to in logical read order using the keyboard. If any links, buttons, popups, or other major/interactive content is not in the tab order, the module would fail.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.21a

1194.21c

1194.21i/1194.22c

1194.21k/1194.22j

1194.21l/1194.22n

1194.21g

Displaying Information with Color

1194.21i/1194.22c (WCAG 1.0 Checkpoint 2.1)

Check that any information that is presented using color also has an alternative means of presentation for that information. For example, a pie chart that is displayed with colored sections should also have text titles in those sections.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.21a

1194.21c

1194.21i/1194.22c

1194.21k/1194.22j

1194.21l/1194.22n

1194.21g

Flashing or Blinking Content

1194.21k /1194.22j (WCAG 1.0 Checkpoint 7.1)

If any content in the page/module blinks or flashes, that content must be checked to verify that it does not have a frequency greater than 2Hz and less than 55 Hz.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.21a

1194.21c

1194.21i/1194.22c

1194.21k/1194.22j

1194.21l/1194.22n

1194.21g

Electronic Forms

1194.21l / 1194.22n

If forms, form fields, radio buttons, etc. are used in the page, such as in a Knowledge Review or Feedback form, these fields must be tested to be compatible with assistive technology. The user should be able to fill in and mark all parts of the form, as well as submit the form using assistive technology. Instructions must also be accessible.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.21a

1194.21c

1194.21i/1194.22c

1194.21k/1194.22j

1194.21l/1194.22n

1194.21g

Contrast

1194.21g

The content on the page/module must provide good contrast, and if the user has specific contrast settings in use on their system, the content should not interfere with those settings.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.22a

1194.22b

1194.22d

1194.22e/1194.22f

1194.22g/1194.22h

1194.22i

1194.22k

1194.22l

1194.22m

1194.22o

1194.22p

The following eleven pages will discuss testing procedures in relation to 1194.22 standards. Go to the next page or click the buttons to continue.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.22a

1194.22b

1194.22d

1194.22e/1194.22f

1194.22g/1194.22h

1194.22i

1194.22k

1194.22l

1194.22m

1194.22o

1194.22p

Text Alternative

1194.22a (WCAG 1.0 Checkpoint 1.1)

You need to make sure that all graphics in the module/document have appropriate text descriptions. Also, verify that decorative images or backgrounds do NOT have text descriptions.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.22a

1194.22b

1194.22d

1194.22e/1194.22f

1194.22g/1194.22h

1194.22i

1194.22k

1194.22l

1194.22m

1194.22o

1194.22p

Multimedia Alternative

1194.22b (WCAG 1.0 Checkpoint 1.4)

Any video or animated presentation needs to have closed captioning available, as well as a text script (either in a D-Link or Transcript link). The animation content should be described so that the same level of understanding is obtained.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.22a

1194.22b

1194.22d

1194.22e/1194.22f

1194.22g/1194.22h

1194.22i

1194.22k

1194.22l

1194.22m

1194.22o

1194.22p

Style Sheets

1194.22d (WCAG 1.0 Checkpoint 6.1)

Documents should be coded so that they are read in the proper order with or without the use of style sheets. Documents should be read from top-down and left-to-right.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.22a

1194.22b

1194.22d

1194.22e/1194.22f

1194.22g/1194.22h

1194.22i

1194.22k

1194.22l

1194.22m

1194.22o

1194.22p

Redundant Text Links for Image Maps

1194.22e/1194.22f (WCAG 1.0 Checkpoint 1.2 and 9.1)

Image maps should be navigable using just a keyboard and each region should have a text description. Server-side image maps should also have a set of text-based links in proximity to the image map that can be used instead of the image map for navigation.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.22a

1194.22b

1194.22d

1194.22e/1194.22f

1194.22g/1194.22h

1194.22i

1194.22k

1194.22l

1194.22m

1194.22o

1194.22p

Data Tables

1194.22g/1194.22h (WCAG 1.0 Checkpoint 5.1 and 5.2)

When a data table is presented, row and column headers should be populated to identify the relationships between data cells in the table. This allows users the ability to navigate each cell and keep track of its correlation to the table data. More complex tables should also use code to associate each cell with its related headers.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.22a

1194.22b

1194.22d

1194.22e/1194.22f

1194.22g/1194.22h

1194.22i

1194.22k

1194.22l

1194.22m

1194.22o

1194.22p

Frame Titles

1194.22i (WCAG 1.0 Checkpoint 12.1)

If the module or site uses frames to divide content, each frame should be titled appropriately to identify the type of content in the frame (i.e. - navigation frame, content frame, etc.).

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.22a

1194.22b

1194.22d

1194.22e/1194.22f

1194.22g/1194.22h

1194.22i

1194.22k

1194.22l

1194.22m

1194.22o

1194.22p

Text-Only Page

1194.22k (WCAG 1.0 Checkpoint 11.4)

Some pages may require the use of a separate text-only version in order to achieve compliance. Test that the page presents the same information as the regular page, and also check that the text-only page is truly necessary, as quite often there are ways to make a page accessible without using a text-only version.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.22a

1194.22b

1194.22d

1194.22e/1194.22f

1194.22g/1194.22h

1194.22i

1194.22k

1194.22l

1194.22m

1194.22o

1194.22p

Scripting Languages

1194.22l

If a page is using a scripting language, such as javascript, identifiers must be used in the scripting language that identifies page components to assistive technology. This is tested by using assistive technology to test the page/module and verifying that all elements are “visible”.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.22a

1194.22b

1194.22d

1194.22e/1194.22f

1194.22g/1194.22h

1194.22i

1194.22k

1194.22l

1194.22m

1194.22o

1194.22p

Applets and Plug-Ins

1194.22m

If the page or module requires the use of an external application, plug-in, or applet – verify that there is a link within the module content to the appropriate software. This link must also be accessible.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.22a

1194.22b

1194.22d

1194.22e/1194.22f

1194.22g/1194.22h

1194.22i

1194.22k

1194.22l

1194.22m

1194.22o

1194.22p

Skip Navigation

1194.220

There must be a link or method available on each page that allows the user to skip reader focus to the content of the page, bypassing repetitive navigation links. This is tested by verifying the existence of the link at the beginning of each page and verifying that the link does place reader focus at the top of the content portion of the page.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

1194.22a

1194.22b

1194.22d

1194.22e/1194.22f

1194.22g/1194.22h

1194.22i

1194.22k

1194.22l

1194.22m

1194.22o

1194.22p

Timed Response

1194.22p

If a page has a timed requirement for a response, such as a timed quiz, the software must present information to the user that alerts them of the time limit and allows them to request more time if desired. This is tested by verifying that the assistive technology user is alerted to the time limit details and that a functioning method of adding more time does work properly.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

Object Inspector Testing

The Object Inspector (OI) tool is a component of the Microsoft Software Development Kit (SDK). This SDK can be installed and run on Windows XP, Vista, and 7. The link to this set of tools is (as of 9/6/2011) found at:

[Windows SDK Tools Link](#)

The only prerequisite for the SDK is Microsoft's .net 4.0 components. Once the SDK is installed you can find the "Inspect Objects" program under the "Microsoft Windows SDK" folder. Once the inspector is open, switch its mode to MSAA using the dropdown box found in the upper left. Object Inspector is now ready to use.

To test any object on a webpage simply mouseover that object. You can also keyboard tab to objects to highlight them. The Object Inspector window will display information for whatever object, or portion of an object, that the mouse is over. For 508 compliance we are looking at the Name, Value, Role, and State attributes displayed in the OI window. Also, if the Description attribute contains text data that should be noted.

In order for an Object to pass an OI test the Name field must be filled in properly with the text describing the object (akin to an alt tag) or with the text displayed visually within the object. The Value field is usually filled with NULL, unless the object being tested requires a value. The Role should match the role of the object, whether that is a push button, radio button, graphic, etc. The state field should be focused or focusable – this means that it can get focus from the cursor. For the ATLAS courses, OI is used primarily to test Flash (SWF) and Javascript (JS) objects. Below are the quick scripts for each scenario.

Flash Files

Javascript

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

Object Inspector Testing

The Object Inspector (OI) tool is a component of the Microsoft Software Development Kit (SDK). This SDK can be installed and run on Windows XP, Vista, and 7. The link to this set of tools is (as of 3/31/2011) is found at: [Windows SDK Tools Link](#)

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Flash Files

Javascript

Flash Files:

1. Mouseover the flash file's main area. Note the four attributes listed above and decide if it passes or fails.
2. If the flash file contains user interaction such as buttons, clickable areas, etc. Mouseover these sections within the object. The OI panel should now display information about the selected button or object. Verify that the role and name fields are correct.
3. If the flash file contains images, the alt information should be presented wither in the main Name attribute or by mousing over the image. The same process is used for text pieces within the file.
4. Verify that everything presented visually is also presented with text within OI's Name attribute. Sometimes the Description field is used in place of the Name field.

The above data should be noted and documented for each object found in a course and submitted with other test documents and the Impact Report. The data will be helpful to programmers when it comes time to modify or fix accessibility concerns in a course.

Begin Testing Now

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

1194.21

1194.22

Object Inspector

Object Inspector Testing

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In order for an Object to pass an OI test the Name field must be filled in properly with the text describing the object (akin to an alt tag) or with the text displayed visually within the object. The Value field is usually filled with NULL, unless the object being tested requires a value. The Role should match the role of the object, whether that is a push button, radio button, graphic, etc. The state field should be focused or focusable – this means that it can get focus from the cursor. For the ATLAS courses, OI is used primarily to test Flash (SWF) and Javascript (JS) objects. Below are the quick scripts for each scenario.

Flash Files

Javascript

Javascript forms, buttons, etc:

1. Mouseover the form, button, or checkbox. Verify that the Name field is populated with the text associated with the object. For example, a radio button's Name attribute should contain the text that is associated to that button (usually the text to the right of it). The Role field should be populated with the proper role of the object, i.e. – push button, radio button, check box, text box, drop down, etc.

The above data should be noted and documented for each object found in a course and submitted with other test documents and the Impact Report. The data will be helpful to programmers when it comes time to modify or fix accessibility concerns in a course.

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

For more information, please refer to: www.section508.gov

Index

Main

508 Standards

Assistive Technology

Testing Tools

Testing Processes

| | | | | | |
|-----------------------------------|-----------|---------------------------------|-----------|---------------------------------|-----------|
| Main | 1 | Testing Processes | 21 | Begin Testing Now | 48 |
| 508 Standards | 2 | Testing Processes..... | 21 | 1194.21..... | 49 |
| What is 508?..... | 2 | Which Testing Tool?..... | 22 | 1194.21a..... | 50 |
| 508 Defined..... | 3 | Testing..... | 23 | 1194.21c..... | 51 |
| 1194.21..... | 4 | WAT..... | 23 | 1194.21i/1194.22c..... | 52 |
| 1194.22..... | 5 | Show Images..... | 24 | 1194.21k/1194.22j..... | 53 |
| a. Alt-Text..... | 6 | Greyscale..... | 25 | 1194.21l/1194.22n..... | 54 |
| b. Multimedia..... | 7 | Disable CSS..... | 26 | 1194.21g..... | 55 |
| c. Color..... | 8 | Data Tables..... | 27 | 1194.22..... | 56 |
| d. Readability..... | 9 | Frame Name/Title..... | 28 | 1194.22a..... | 57 |
| e/f. Image Maps..... | 10 | Fieldset/Labels..... | 29 | 1194.22b..... | 58 |
| g/h. Tables..... | 11 | Other..... | 30 | 1194.22d..... | 59 |
| i. Frames..... | 12 | Testing Complete..... | 31 | 1194.22e/ 1194.22f..... | 60 |
| j. Flashing Elements..... | 13 | Object Inspector..... | 32 | 1194.22g/1194.22h..... | 61 |
| l. Scripts..... | 14 | Download..... | 33 | 1194.22i..... | 62 |
| m. Applets & Plug-Ins..... | 15 | Flash..... | 34 | 1194.22k..... | 63 |
| n. Forms..... | 16 | Javascript..... | 35 | 1194.22l..... | 64 |
| o. Navigation Links..... | 17 | Impact Report..... | 36 | 1194.22m..... | 65 |
| p. Time Delays..... | 18 | Top Ten Issues..... | 37 | 1194.22o..... | 66 |
| Assistive Technology | 19 | 1. Knowledge Reviews..... | 38 | 1194.22p..... | 67 |
| Testing Tools | 20 | 2. Flash Items..... | 39 | Objector Inspector..... | 68 |
| | | 3. Skip Navigation Links..... | 40 | Flash Files..... | 69 |
| | | 4. Read Order/CSS..... | 41 | Javascript..... | 70 |
| | | 5. Image Alt-Text..... | 42 | www.section508.gov | 71 |
| | | 6. HTML Navigation Tags..... | 43 | | |
| | | 7. Closed Captioning..... | 44 | | |
| | | 8. Tables & Screen Readers..... | 45 | | |
| | | 9. Links..... | 46 | | |
| | | 10. Pop-Up Windows..... | 47 | | |