CHAPTER- III

Criteria and Tools for Evaluating Web Resources

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3.1. Introduction

The success of the worldwide web is dependent on its quality and reliability. Websites pose a unique testing challenges, webmasters, web application developers, and website quality assurance managers need tools and methods that meet their specific needs. Making a web site does not end with putting all the media and software together. Actually, web site work never ends. When all the design is done, you have to test the site first before sending it to the World Wide Web for the world to see. Mechanized testing via special purpose website testing automated tools offers the potential to meet this challenges.\(^1\)

Websites impose some entirely new challenges in the world of software quality! Within minutes of going live, a Web application can have many thousands more users than a conventional, non-Web application. The immediacy of the Web creates immediate expectations of quality and rapid application delivery, but the technical complexities of a Website and variances in the browser make testing and quality control that much more difficult, and in some ways, more subtle, than "conventional" client/server or application testing. Automated testing of Websites is an opportunity and a challenge.

The websites need to be highly available, secure, and scalable. In addition, such these websites should continuously monitored and audited, as well maintain an ability to absorb changes without significantly affecting the services they provide.
3.2. Defining Website Quality, Reliability Guidelines and Law

i) Defining websites quality and reliability

There are many dimensions of quality; each measure will pertain to a particular Website in varying degrees. Here are some common measures.²

• Content: Does the content of critical pages match what is supposed to be there? Do key phrases exist continually in highly-changeable pages? Do critical pages maintain quality content from version to version?
  ➢ The scope and content of any website should be made apparent to visitors right away, so that they can judge immediately if the site is something they are interested in or not.
  ➢ Users expect clear, concise content that is clearly relevant to them, as well as clearly organized.
  ➢ Facts, statistics and testimonials are consistently well-received.

• Timeliness: Websites change often and rapidly. How much has a Website changed since the last upgrade? How do you highlight the parts that have changed?

• Structural Quality: How well do all of the parts of the Website hold together? Are all links inside and outside the Website working? Do all of the images work? Are there parts of the Website that are not connected?
• Accuracy and Consistency: Are today's copies of the pages downloaded the same as yesterday's? Close enough? Is the data presented to the user accurate enough? How do you know?

• Response Time and Latency: Does the Website server respond to a browser request within certain performance parameters? In an e-commerce context, how is the end-to-end response time after a SUBMIT? Are there parts of a site that are so slow the user discontinues working?

• Performance: Is the Browser $\rightarrow$ Web $\rightarrow$ website $\rightarrow$ Web $\rightarrow$ Browser connection quick enough? How does the performance vary by time of day, by load and usage? Is performance adequate for e-commerce.

ii) **Accessibility: Guidance the Law**

Web site accessibility is an essential part of the web site development. But there's a mass of guidance and legislation – some of it seemingly contradictory.

A) **Guidance - W3C Web Standards**

Publisher: The World Wide Web Consortium

Applicability: Everyone

The W3C (World Wide Web Consortium) is the international standard body for the World Wide Web. Almost all best practices for the web site development are based on W3C recommendations, Main recommendations are:
• Web site mark-up should validate to W3C Standard.

• Cascading Style Sheets (CSS) should validate to W3C CSS Standards.

• Web sites should comply with W3C Web Content Accessibility Guidelines (WCAG).

• Scripting should use the W3C Document Object model (DOM).

• Sites should provide a privacy policy.

**B) Guidance – Web content Accessibility Guidelines (WCAG)**

Publisher: The World Wide Web consortium (W3C)

WCAG 1.0, published in 1999 is the existing accessibility standard. WCAG1.0 sets out 65 checkpoints that aim to ensure a web site is perceivable, operable, understandable and robust. Reaching level compliance theoretically means that the site does not actively exclude any user, although it does not mean that the site is necessarily easy to site use for many user groups. Care must be taken when applying the guidelines to ensure that the spirit of the guideline is followed, rather than simply the letter.

WCAG2.0 is still, technically, a working draft, but represents current best practice in accessibility. It is an update to WCAG 1.0, and is more applicable to current technologies, future technologies, and non-W3C technologies. Most websites that conform to WCAG1.0 should not require significant changes to conform to WCAG2.0 key differences include ;
• Text must have a luminosity contrast ratio of 10:1 with its background.

• Access keys are no longer required.

• If an input error is detected, the error is identified and described to the user in text. A mechanism is available for identifying specific definitions of words or phrases used in an unusual or restricted way, including idioms and jargon.

• Non-W3C technologies are allowed where they are supported by assertive technologies for disabled users.

C) Guidance – UK Government Guidelines

Publisher: Originally published by the office of the e-Envoy it is now held by the cabinet office.

Applicability: All UK government Websites

The UK Government Guidelines provide a comprehensive blueprint of best practices for building and managing well designed usable and accessible websites. Particularly relevant sections are

Section 2.4 Building in universal accessibility

• Browser-specific HTML or scripting methods should not be used in the website

• HTML pages should validate against specified version of HTML

• A consistent text navigation bar should be used along with a 'skip navigation link'
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- All web pages must comply, as a minimum, to the World Wide Web Consortium’s Web accessibility initiative (WAI) WCAG 1.0 'A' Standard Section 4.6 Scripting and Programming

  ➢ Ensure that website is still usable in browsers that have scripting turned off

  ➢ Thorough browsers and operating systems.

D) Guidance - PAS 78 (Publicly Available Specifications)

Publisher: British Standard Institution (BSI)

Applicability: Everyone

PAS 78 is a guide to good practice in commissioning accessible websites. The document covers building an accessible website from commissioning and developing it, through to publishing and maintaining it; the importance of accessibility and how to define it; and the involvement of disabled people in requirements gathering, conceptual design and testing processes.

Developers should follow the lead of the W3C and the current Web Content Accessibility Guidelines: WCAG are the most important accessibility guidelines for web commissioners to be aware of, as they are considered to be the de facto standard for accessible web design (6.4.2.1).
All relevant W3C guidelines and specifications should be used (7.1.1) and Additional accessibility provisions are not essential and should never replace upholding W3C guidelines and specifications (4.6).

CSS is explicitly advised: Content should be separated from presentational attributes... Content should be coded using structural languages. Presentational attributes should be coded using style sheets (7.1.2–4).

Considerable emphasis is placed on involving disabled people at all stages of design and testing, using a user-centered design methodology,

Annex G is a checklist for those purchasing authoring tools.

Portable document Format (PDF) should be used to benefit the end users, not the content authors.

➢ PDF is good for e.g. government forms where layout integrity is vital for processing.

➢ PDF should not be used to preserve branding, corporate typefaces etc., for simple ease of publishing.

**E) Guidance - Other Governmental Guidelines**

Several EU countries now have guidelines or standards (similar to BSI British Standards) on web development, including Holland, Italy, Germany and Spain. The USA has section 508, a set of accessibility standards applying to all information technology products, equipment and web services sold to governmental purchasers.
Most country standards are heavily based on W3C WCAG 1.0 standards section 508 requirements for websites for example can be mapped closely to WCAG 1.0. http://www.jimthatcher.com/sidebyside.htm.

The recently issued Dutch guidelines are more specific, however, dealing with more general web design good practice. They require:

- Sites to be marked up in valid HTML 4.01 or XHTML 1.0.
- Sites to use CSS and semantic HTML and a full separation of structure and presentation.
- Sites to have a process in place for progressive enhancement.
- Site mark-up to use meaningful values of class and id.
- Meaningful alt attributes to be used on all images.
- Scripts that work on links should extend (not replace) the basic link functionality.
- If a link makes no sense without a script, it shouldn’t be in the HTML (But be generated by JavaScript).
- Use of forms or scripts as the only means of getting certain information is prohibited.
- Removing the focus rectangle on links is prohibited.
- Information offered in a closed format (e.g. Microsoft Word) should also be offered in open format (e.g. HTML).
F) The Law - Disability Discrimination Act (DDA) Part III

Applicability: All service providers e.g. businesses, education institutions, transport vehicle providers, public authorities, private clubs. For all service providers

- Since December 1996 it has been unlawful to treat disabled people less favorably than other people for a reason related to their disability;

- Since October 1999 service providers have had to make reasonable adjustments for disabled people, such as providing extra help or making changes to the way they provide their services;

- Since 2004 service providers may have to make reasonable adjustments to the physical features of their premises to overcome physical barriers to access.

G) The Law – Special Educational Needs and Disability Act (SENDA)

Applicability: Providers of education, training and other related services is an amendment to the DDA which makes discrimination against disabled students in the provision of education, training and other related services unlawful. It came into force in 2002.
SENDA covers

- Admissions processes and procedures
- The way in which courses are run and taught
- The physical facilities that are used
- The associated activities and facilities, such as catering and social clubs.

H) The Law - Disability Equality Duty (DED)

Applicability: Public authorities

The Disability Discrimination Act 1995 has been amended by the Disability Discrimination Act 2005 to place a duty on all public sector authorities to promote disability equality.

The Disability Equality Duty came into force on 4th December 2006. A fundamental part of the new duty is that for the first time ever public authorities have a statutory requirement to involve disabled people in achieving disability equality. This new legal duty requires all public sector authorities to actively look at ways of ensuring that disabled people are treated equally. All public sector authorities covered by the specific duties must also produce a Disability Equality Scheme.

3.3. What to Test?

i) Content Checking

The website has to be tested for accuracy, completeness, consistency, spelling and accessibility (Stout, 2001). These areas are the first things judged by
the user. Users must have the best possible experience with website. Even just a faulty image can create a bad impression on the user and may not visit site again. Testing for this is very simple and as straightforward as they are. Tests for content may not be the first thing in the designer’s mind but it is the most important of all the tests.

**ii) Browser Compatibility**

There are a number of different browsers and browser options. A website has to be designed to be compatible for a majority of the browsers. This still leaves room for creativity. Even with Microsoft’s Internet Explorer and Netscape’s Navigator this is an issue because of the different versions people are or still are using.

The graphics and other objects on a website have to be tested on multiple browsers. If more than one browser will be supported then the graphics have to be visually checked if there are differences in the physical appearance. Some of the things to check are centering of objects, table layouts, colors, monitor resolution, forms, and buttons.

The code that executes from the browser also has to be tested. There are different versions of HTML. They are similar in some ways but they have different tags which may produce different features. Some of the other codes to be tested are Java, JavaScript, ActiveX, VBscripts, Cgi-Bin Scripts and Database
access. Cgi-Bin Scripts have to be checked for end-to-end operations and is most essential for e-commerce sites. The same goes for database access. The website has to be tested in each supported browser and must also be checked for multiple browser's renderings and responses.

To check all of these components, test browsing needs to be done. The purpose of this test is to find flaws in the navigation of the web pages. This includes checking for broken links, faulty graphics, download speed of each page (over a variety of Internet connections). The load times of all objects must be within an acceptable time. The user must still be able to browse the site even if the .images-load option is turned off. Other components to check are the scripts and plug-ins. Will the site still work if JavaScript or Java is disabled or if a certain plug-in is not loaded? How fast and reliable is the interaction between the user and the page on the Web.

iii) Transaction Testing

This is very critical in an e-business application. The software a website is utilizing has to be forced to invoke its various components and whether the direct and indirect interfaces work correctly. The information entered by the user should make it to the database in the proper ways. When the user calls for information contained in the database, the proper data must be returned.
iv) **Configuration Testing**

This test involves the operating systems platforms used, the type of network connection, the type of Internet service provider, and the browser used. The development team must have these in mind so that there will be very little changes to be made if any. Also, the test environment must be properly configured for all these considerations.

v) **Usability**

Designers should always remember that the experience of the user in their website must be as pleasant as possible. How the user interacts with the website is very important. There may be cases when the user is someone very familiar with website browsing but not necessarily a testing expert. There are standards and guidelines for tests for usability. However, designers and/or project managers should not rely on them too much since complying with these standards doesn’t necessarily ensure that the site will meet the needs of the users, their tasks and their work environments. Design guidelines must be set and they must be measurable so that they can be easily incorporated into the tests.

vi) **Performance and Scalability**

This test validates that the system meets performance requirements. This involves the download time of a page or the number of transactions the system can handle. How fast the website host responds has an effect on whether a user stays
or leaves. Usually, there is a dedicated performance-testing server. This server must be an exact copy of the production server. Performance testing can be done from the browser or directly from the server. But testing from the browser has its limitations. The performance time that the browser takes may not be measured if tested from the server.

Scalability is defined as capacity of the web application to sustain the number of concurrent users and/or transactions, while sustaining sufficient response times to its users. Configuration of the test server is also critical in scalability testing as with Performance testing. To test scalability, web traffic loads must be determined in order to obtain the threshold requirement for scalability. Sometimes, existing traffic levels are used to simulate the load.

vii) Security

Security is critical for e-commerce websites. Tests for security are often broken into two categories: testing the security of the infrastructure hosting the Web application and testing for vulnerabilities of the web application. Some of the things that should be considered for infrastructure are firewalls and port scans. For vulnerabilities, there’s user authentication, cookies to name a few.

Data collected must be secured internally. Users should not be able to browse through the directories in the server. A cookie is a text file on a user’s system that identifies the user. Cookies must always be encrypted and must not be available to other users.
3.4. Website Testing Tools

i) Web Accessibility Checker

This is a service provided by the Adaptive Technology Resource Center (ATRC) at the University Of Toronto. It is a model system that demonstrates how web pages can be checked for accessibility problems.

The accessibility checker evaluates Web page and produces a report of all accessibility problems for selected guideline. The checker identifies 3 types of problems.

- Conditional Pass

A Conditional Pass is given to a web page when it passes all accessibility checks for known problems. The web page still contains potential accessibility problems that require a human to make decisions and resolve them.

- Known Problems

Known problems are things that the checker can detect with certainty. An example of this problem is when an image is missing alternate text (ALT text). When a known problem is encountered, the checker displays the item that is causing the problem and suggests a way of fixing the problem. One should modify web page to resolve known problems.

- Likely Problems

A likely problem is things that the checker thinks are a problem but is unsure of. One must view the problem and decide if it really is a problem. An
example of this problem occurs when the alt text for an image is the same as the filename for the image. Example: `<img src="rex.jpg" alt="rex.jpg"/>`, one must likely modify web page to resolve these problems.

- **Potential Problems**

  Potential problems are things that the checker can not detect for certainty. One must view the problem and decide if it really is a problem. Most potential problems can be resolved simply by having authors make decisions. For example, a user could decide that an image does not require a long text description and have the issue removed from file's list of potential problems. One may or may not have to modify page to resolve a potential problem.

ii) **Functional Accessibility Evaluator**

  The Functional Accessibility Evaluator (FAE) analyzes web resources for markup that is consistent with the use of CITES/DRES HTML Best Practices for development of functionally accessible web resources that also support interoperability.

  The “Run FAE” page provides a form for specifying the following analysis parameters:

  - **URL(s):** Specifies the page(s) to be evaluated. When URL is specified, that page will serve as the starting point of the analysis, along with additional pages, depending on the “Depth of Evaluation” and “Follow Links in” settings. When multiple URLs are specified, the “Depth of Evaluation” parameter is set to “Top-level page only” and “Follow Links in” does not apply.
• Report Title: The title to be displayed at the top of each report page. If no title is specified, then “Untitled Report” is displayed.

• Depth of Evaluation: When “Top-level page only” is selected, only the page specified by the URL will be analyzed. “Include all second-level pages” will cause all pages linked from the top-level page (with domain restrictions as explained below) to be included in the analysis. “Include all third-level pages” will cause all pages linked from the top- and second-level pages (with domain restrictions as explained below) to be included in the analysis.

• Follow Links in: In cases where “Depth of Evaluation” is set to either “Include all second-level pages” or “Include all third-level pages” the web crawler used by FAE can follow links in two different ways:

  When “Specified domain only” is selected, link following is restricted to the same domain as the specified URL. When “Next-level subdomains” is selected, links that are in sub domains of the next-level domain (relative to the domain specified by the URL) will also be followed. Note that when a URL is specified in the “URL(s)” field, the label text for the “Follow Links in” buttons changes to indicate specific domain names. For example, if “news.google.com” is entered, the text “Specified domain only” is changed to “news.google.com domain only” and “Next-level sub domains” is changed to “All google.com sub domains”.

  After successfully completing the analysis, FAE displays the Summary Report, which provides a high-level view of the evaluation results, and places a
link to this report in the Archived Reports list. This list includes additional report information such as the analysis date/time, the number of pages analyzed, and the report title or, in the case of no title, the URL.

Analysis Categories

FAE organizes the analysis of documents based on the following categories:

A) Navigation and Orientation

Navigation and Orientation is the most important for providing people with disabilities equal access to electronic web materials. The ability of people with disabilities to navigate and orient to information on a web resource is not dependent on the graphical complexity, but on the underlying markup used to create the structure of the website. Therefore a page made up of only text content can be less accessible than a highly graphical website, if the graphical website contains structural elements and the text site uses only paragraph elements. The following are the subsets of Navigation and orientation.

- Title

Good web design allows users to easily identify what website and sub-section of the website they are viewing. The identity or "branding," of a website is done through the combination of text, colors, graphical styling and logos that are used for the overall look and feel of the site. Many people with disabilities cannot see or use the graphics for various reasons and therefore need to have unique title text to identify the website and the context of the current web page.
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The title element in the head section needs to contain information about the website and sub-section, and the sub-section information needs to be contained in an h1.

- **Subheading**

  When a web resource is graphically rendered, the text and layout are styled to visually structure the information presented by the web resource, making it easier for sighted users to identify logical units of information, headings, and subheadings. Representation of such structure in HTML markup using sub-headings (h2-h6) is important in facilitating navigation of people who use assistive technologies such as refreshable Braille displays. Without headings, web resources appear as one long paragraph to screen reader users. Consequently, locating and understanding information is difficult.

- **Navigation Bar**

  It is important to use HTML markup for navigation bars and other groupings of links that allows users to identify the links as a navigation bar, easily move to these navigation bars and skip them when needed. Users can easily identify navigation bars when a list is used with the role attribute and a heading.

- **Forms Control**

  Form controls must be labeled and grouped to provide explicit references that can be used by assistive technologies to communicate the purpose of the form
controls. The tab index attribute can be used to include instructions and other information in the tab navigation ordering so that screen reader users can easily orient the information needed to complete the form.

Another important feature of forms is to provide information on errors or the validity of form fields. Many forms provide feedback to the user on whether form fields have been filled out correctly, and there are many ways to do so with fields that need to be updated before the form data will be accepted. These techniques must be carried out in an accessible way, or people with disabilities may not be aware of the problem and/or which form fields need to be updated for the form to be accepted.

- **Default Language**

Indicating the language of the content in markup is critical for screen readers and other speech renderings of web resources. These technologies need information about the language so that they can use the appropriate pronunciation standard to render the web resource. Many speech synthesizers support multiple languages. Marking up the language of the content is especially critical when more than one language is used within a web page; without proper specification, speech renderings could become confusing and unintelligible, similar to the visual confusion that occurs when a character set is not available and apparently random characters appear on the screen.
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- **Data Table**

  Tabular representations of data need to use proper HTML markup that communicates to screen reader users the purpose of the table and the structure of the data it contains. Good tables can be navigated and understood easily by screen reader users without confusion.

- **Access Key**

  Access key was included in HTML to provide a way for developers to provide keyboard shortcuts to frequently used links or form controls. One of the major envisioned uses of access key was to improve accessibility of web resources for people with disabilities. This potential has never been realized for various reasons, including:

  - Conflicts with assistive technologies like screen readers
  - Slow implementation by web browsers and differences in browser implementations
  - Poor internationalization
  - Lack of support by web browsers to notify availability of access keys to users.

- **Frames**

  Frames possess inherent problems for accessibility. Fundamentally, it is difficult to restyle content within frames since even simple restyling, such as
increasing text size, often results in clipping or the need for horizontal scrolling. Titling of frames by authors (when done at all) is usually so ambiguous that it remains difficult for speech users to know the potential contents of a frame. It is also difficult for speech users what the potential changes will occur to all frames when they select a link in one particular frame. In general, most web developers appear to be staying clear of frame-based content, a trend that supports accessibility.

The one notable exception to this trend is with web application developers who use "hidden" frames to setup server/browser communications. These communications can include information about user interactions and/or automatic notifications of new information that might be useful to the user. One of the major problems with the use of hidden frames for automation is that it is often confusing to screen reader users. If the screen reader interprets the automation activity as new information to the user, it can cause weird screen reader behaviors which lead to screen reader users being unable to access the content of a web resource.

B) Text Equivalents

It is most important that all non-text elements are accompanied by text equivalents. Non-text elements are not accessible to users relying on speech readers and braille displays. Some users may use text-based browsers that do not support non-text elements, and some may have turned off support for non-text
elements. Thus, text equivalents should be rendered in such a way as to effectively substitute non-text elements for variety of browsers and assistive technologies employed by people with different disabilities. Text equivalents can also help all users find pages more quickly.

- **Informative Image**

Text equivalents for informative images that contain additional information. It should be integrated into the visual rendering of the web resources so that the information is available to all users. Since everyone has a unique style of learning, making the more detailed text equivalent available to all users often yields better understanding of the content in general. The following are the types of informative images

- Pictures and other bitmapped graphics
- Charts
- Maps
- Scatter plots
- Diagrams
- Mathematical Equations
• **Decorative Image**

Decorative images, or img elements used for content positioning and graphical styling, should be removed from HTML coding and instead incorporated through CSS techniques, using CSS properties like background-image and border. If the decorative img element cannot be removed, the alt attribute should be set to null (alt=""). Examples of decorative images include one pixel spacers, separator lines and banner images. The use of CSS increases the interoperability of web resources, supporting a wider range of technologies for rendering web content, including cell phone and PDA browsers.

• **Image Maps**

Client-side and server-side image maps need redundant text links; no major graphical browser provides access to the alt attribute of the area element for client-side image maps, and server-side image maps have no ability to identify links from the browser. For client-side image maps, in addition to the redundant text links, the alt attribute should still be provided for each of area elements with the destination of the link as the content.

**C) Scripting**

The creation of the web was driven by interoperability and device independence, so that anyone could access the web regardless of the operating systems or devices he/she is using. The web is becoming more interactive as
application developers are using various tools to implement their desired interface and interactive functionalities. Problems arise with the automation mechanism used in static and dynamic pages as this makes interaction with the web extremely difficult and sometimes impossible. All of these automatic changes make interaction with the page very difficult and sometimes impossible for disabled users.

D) Styling

The best practices recommend that web developers use CSS technologies as the primary way to style content rather than using inline markup elements to style text, inline images for spacing or decoration, and tables for layout. By using structured markup and CSS to style the structure, web developers will create web sites that are easier to maintain and create. The use of inline styling markup, inline images and tables for layout requires extensive editing to make changes and verify consistency with similar content. Using structured markup with CSS makes it much easier to have consistent and complete styling as new pages is built and existing pages modified, as the author does not need to view or edit the inline markup. This also makes pages much smaller and therefore faster to load than pages weighed down with extensive inline styling markup.

- Text Styling

One of the most important aspects of accessible design is using structural markup elements of HTML to represent the sections of a web page to create
navigation and orientation landmarks. Structural markup is often ignored or misused by web authors who are unfamiliar with accessible design and find they can achieve the graphical rendering they want in their designs through inline styling elements. This makes it more difficult for people with disabilities to navigate the content of a web page and restyle content to meet their perceptual needs. It also becomes harder for the developer to maintain websites and create new web pages since inline styling needs to be carefully added and maintained when web sites are updated. The larger the web site, the greater the chance the web developer will mistype or forget to add inline styling.

- **Layout Table**

The layout of columns and sections in a web page should be done using CSS instead of table markup. The use of CSS layout techniques makes it more likely that the reading order of information will make sense to screen reader users. When developers use table markup to lay out web pages, it is easy for that related information to become disconnected in the reading order of the web page. CSS has the additional benefit of being a technology designed to help web developers more efficiently manage the look and feel of their website and make it easier for web pages to be rendered on a wider range of technologies, including cell phones, printers and Braille displays. If table markup is used to lay out a web page, it should be kept to a minimum and left as simple as possible (for example, use tables that have only one row or column). Avoid nesting tables, which make it
more difficult to maintain the reading order of the web page. Make sure related content is the same table cell; for example, the header element describing the relationship for a list containing links should be in the same table cell as the list of links.

**iii) WAVE 3.0 Accessibility Tool**

Wave 3.0 is an online web testing tool evaluates the website for its errors, accessibility features and structural & semantic elements. The Errors are highlighted using red coloured icons; Alerts are highlighted using yellow, accessibility features are highlighted in Green; and structural and semantic elements are highlighted using blue colour Wave icons.

The following tables show us the different wave icons, its explanations and also recommend the actions to resolve the problem.

**Image**

<table>
<thead>
<tr>
<th>Icon Description</th>
<th>This icon appears where...</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="ERROR: Missing alt text" /></td>
<td>alt text is not present in images, image map areas, or images used as form input elements.</td>
<td>Supply accurate, adequately descriptive, and succinct alt text for all images, image map areas, and images used as form input elements.</td>
</tr>
<tr>
<td><img src="image" alt="ERROR: Spacer image missing alt text" /></td>
<td>alt text is not present for images used as layout spacer elements.</td>
<td>Supply null alt text (alt=&quot;&quot;).</td>
</tr>
<tr>
<td><img src="image" alt="ALERT: Server-side image map" /></td>
<td>a server-side image map is present.</td>
<td>• Convert it into a client-side image map OR • Create redundant text links elsewhere in the document that duplicate the functionality of the server-side image map.</td>
</tr>
</tbody>
</table>
| ALERT: Suspicious alt text | the alt text:  
|---------------------------|---|
| - is a file name (e.g. alt="photo.gif")  
| - is a file size (e.g. alt="234 bytes")  
| - includes one of the following words by itself: "image", "graphic", "photo", "photograph", "drawing", "painting", "artwork", "here", "click here", "click", or "more"  
| - starts with "graphic of" or "image of" |  
| . Alter the alt text so that it is more descriptive and meaningful.  
| . Do not inform the user that the object is an image or graphic, because assistive technologies already inform the user of that fact.  
| ALERT: Redundant alt text | an image has the same alt text as an adjacent piece of text (e.g. an image with alt="products" followed by the text "products")  
| . Change either the alt text or the adjacent text so as to eliminate the redundancy.  
| . You may be able to change the alt text to null, for example (alt=""), OR  
| . Eliminate the adjacent text entirely so that only the alt text is present, OR  
| . Alter the structure in other ways that are appropriate for the context.  
| ALERT: A nearby image has the same alt text | two images in a row have the same alt text  
| . This may not be an error, depending on the context. If the images are right next to each other, you should probably change the alt text of one of the images so as to eliminate the redundancy.  
| . You may be able to change the alt text of one of the images to null, for example (alt=""), OR  
| . Eliminate the one of the graphics entirely, OR  
| . Alter the structure in other ways that are appropriate for the context.  

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<table>
<thead>
<tr>
<th>Icon Description</th>
<th>This Icon Appears Where...</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FORMATTING ELEMENT: Layout table</strong></td>
<td>A table is present, but does <strong>NOT</strong> have any table header cells (<strong>th</strong>)</td>
<td>Ensure that the table is indeed only a layout table, and that it does not contain tabular data. If it contains tabular data, mark up the header cells appropriately (using <strong>&lt;th&gt;</strong> tags), and associate the data cells with the proper header cells.</td>
</tr>
<tr>
<td><strong>STRUCTURAL ELEMENT: Data table</strong></td>
<td>A table is present and table header cells (<strong>th</strong>) <strong>ARE</strong> present</td>
<td>Ensure that the table is indeed a data table with tabular data, and that it is not used merely for layout. If it is only a layout table, eliminate all header cells (<strong>th</strong>).</td>
</tr>
</tbody>
</table>

---

**Table and Formatting**

<table>
<thead>
<tr>
<th>Icon Description</th>
<th>This Icon Appears Where...</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ALERT: Background images should NOT contain important content</strong></td>
<td>A background image is present</td>
<td>Ensure that no important content is included in the background image, because there is no way to make backgrounds accessible. If there is important content, consider creating an <strong>&lt;img&gt;</strong> tag with the appropriate alt text.</td>
</tr>
</tbody>
</table>
| **ALERT: alt text too long; consider using longdesc** | The alt text exceeds 150 characters | • Shorten the alt text  
• Provide a brief alt text PLUS a longdesc attribute, which links to a separate page containing the extended description |
| **ACCESSIBILITY FEATURE: Alt text** | The alt attribute is present in an image, image map or image used in a form element | Ensure the alt text is accurate, adequately descriptive, and succinct. |
| **ACCESSIBILITY FEATURE: Null alt text** | The alt attribute is null, or empty (e.g. alt="") | Ensure that this graphic does not convey any important information. If it does, give it appropriate alt text. |
| **ACCESSIBILITY FEATURE: Long description** | A longdesc attribute is present in an image [not yet implemented for other elements] | • Ensure that the long description is accurate, adequate, and succinct.  
• Ensure the link to the long description is functional |
| **Client-side image map** | A client-side image map is present | • Ensure that the image map AND the hot spots all have alt text  
• Ensure that the linearized reading order/tab order of the hot spots is correct. |
## Structure and Semantics

<table>
<thead>
<tr>
<th>Icon Description</th>
<th>This Icon Appears Where...</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="https://example.com" alt="H?" /> ALERT: Possible heading</td>
<td>A paragraph appears to be used as a heading, but is not marked up as such (e.g. the paragraph is all bold, underlined or italic)</td>
<td>If the bold, italic, or underline tag is being used to simulate the look of a heading, eliminate that tag and replace it with the appropriate heading tag. Otherwise, consider using a CSS style instead to achieve the same effect.</td>
</tr>
<tr>
<td><img src="https://example.com" alt="X" /> ALERT: Italic tag; use &lt;em&gt; or CSS instead</td>
<td>The deprecated italic tag (&lt;i&gt;) is used</td>
<td>If the italic tag is being used to emphasize text, replace it with the emphasis tag (&lt;em&gt;). Otherwise, consider using a CSS style instead to achieve the same effect.</td>
</tr>
<tr>
<td><img src="https://example.com" alt="X" /> ALERT: Bold tag; use &lt;strong&gt; tag or CSS instead</td>
<td>The deprecated bold tag (&lt;b&gt;) is used</td>
<td>If the bold tag is being used to strongly emphasize text, replace it with the strong emphasis tag (&lt;strong&gt;). Otherwise, consider using a CSS style instead to achieve the same effect.</td>
</tr>
<tr>
<td><img src="https://example.com" alt="H1" /> ALERT: Marquee</td>
<td>The &lt;marquee&gt; tag is present</td>
<td>Eliminate the &lt;marquee&gt; tag</td>
</tr>
<tr>
<td><img src="https://example.com" alt="H1" /> ALERT: Possible Blockquote</td>
<td>A paragraph has the appearance of being a quotation that should be marked up with &lt;blockquote&gt;</td>
<td>If the text in question is actually a quotation, use the &lt;blockquote&gt; tag to set it apart as such. Note: If the default rendering style (indented) is inappropriate for the context, apply a CSS style to customize the display.</td>
</tr>
<tr>
<td><img src="https://example.com" alt="H1" /> STRUCTURAL ELEMENT: Heading level 1</td>
<td>An &lt;h1&gt; tag is present</td>
<td>Ensure that the text in question is truly a heading and that it is at the top level of the outline hierarchy.</td>
</tr>
<tr>
<td><strong>H2</strong> STRUCTURAL ELEMENT: Heading level 2</td>
<td>an <code>&lt;h2&gt;</code> tag is present</td>
<td>Ensure that the text in question is truly a heading and that it is at the 2nd level of the outline hierarchy. Do not skip hierarchical levels. Note: If the default rendering style is inappropriate for the context, apply a CSS style to customize the display.</td>
</tr>
<tr>
<td><strong>H3</strong> STRUCTURAL ELEMENT: Heading level 3</td>
<td>an <code>&lt;h3&gt;</code> tag is present</td>
<td>Ensure that the text in question is truly a heading and that it is at the 3rd level of the outline hierarchy. Note: If the default rendering style is inappropriate for the context, apply a CSS style to customize the display.</td>
</tr>
<tr>
<td><strong>H4</strong> STRUCTURAL ELEMENT: Heading level 4</td>
<td>an <code>&lt;h4&gt;</code> tag is present</td>
<td>Ensure that the text in question is truly a heading and that it is at the 4th level of the outline hierarchy. Note: If the default rendering style is inappropriate for the context, apply a CSS style to customize the display.</td>
</tr>
<tr>
<td><strong>H5</strong> STRUCTURAL ELEMENT: Heading level 5</td>
<td>an <code>&lt;h5&gt;</code> tag is present</td>
<td>Ensure that the text in question is truly a heading and that it is at the 5th level of the outline hierarchy. Note: If the default rendering style is inappropriate for the context, apply a CSS style to customize the display.</td>
</tr>
<tr>
<td><strong>H6</strong> STRUCTURAL ELEMENT: Heading level 6</td>
<td>an <code>&lt;h6&gt;</code> tag is present</td>
<td>Ensure that the text in question is truly a heading and that it is at the 6th level of the outline hierarchy. Note: If the default rendering style is inappropriate for the context, apply a CSS style to customize the display.</td>
</tr>
<tr>
<td><strong>H</strong> SEMANTIC ELEMENT: Strongly emphasized text</td>
<td>a <code>&lt;strong&gt;</code> tag is present</td>
<td>Ensure that the text should be emphasized strongly. If not, remove the <code>&lt;strong&gt;</code> tag.</td>
</tr>
<tr>
<td><strong>I</strong> SEMANTIC ELEMENT: Emphasized text</td>
<td>an <code>&lt;em&gt;</code> tag is present</td>
<td>Ensure that the text should be emphasized. If not, remove the <code>&lt;em&gt;</code> tag.</td>
</tr>
<tr>
<td><strong>E</strong> STRUCTURAL ELEMENT: Ordered list</td>
<td>an ordered (numbered) list is present (the <code>&lt;ol&gt;</code> tag)</td>
<td>Ensure that an ordered (numbered) list is appropriate for the context.</td>
</tr>
</tbody>
</table>
### Chapter 3  
**Criteria and Tools for Evaluating Web Resources**

<table>
<thead>
<tr>
<th>Structural Element</th>
<th>Description</th>
<th><strong>Recommended Actions</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Unordered list</td>
<td>an unordered (bulleted) list is present (the <code>&lt;ul&gt;</code> tag)</td>
<td>Ensure that an unordered (bulleted) list is appropriate for the context.</td>
</tr>
<tr>
<td>Definition list</td>
<td>an definition list is present (the <code>&lt;dl&gt;</code> tag)</td>
<td>Ensure that a definition list is appropriate for the context.</td>
</tr>
<tr>
<td>Blockquote</td>
<td>a <code>&lt;blockquote&gt;</code> tag is present</td>
<td>Ensure that the text is truly a quotation. If not, remove the <code>&lt;blockquote&gt;</code> tag and apply a CSS style to achieve the same effect.</td>
</tr>
<tr>
<td>Quote</td>
<td>a quote <code>&lt;q&gt;</code> tag is present</td>
<td>Ensure that the text is truly an inline quotation. If not, remove the <code>&lt;q&gt;</code> tag.</td>
</tr>
<tr>
<td>Title</td>
<td>a title attribute is present</td>
<td>Ensure that the title is brief and informative. Titles can be added to any element, but are not required.</td>
</tr>
<tr>
<td>Client-side image map</td>
<td>a client-side image map is present</td>
<td>Ensure that alternative text is provided for both the image AND the hot spots</td>
</tr>
</tbody>
</table>

### Links and Navigation shortcuts

<table>
<thead>
<tr>
<th>Icon Description</th>
<th>This Icon Appears Where...</th>
<th>Recommended Actions</th>
</tr>
</thead>
</table>
| ![ERROR: Image not found](image) | a mouse-activated JavaScript event occurs in a link | If the mouse-over effect is only cosmetic (e.g., it causes an image to "glow" or to change color), no change is necessary.  
If the mouse-over effect exposes new content, this content will likely not be accessible to most assistive technologies. Provide a redundant, alternative way to access the same content or remove the mouse-over effect.  
If the mouse-over is not available when using only the keyboard, consider using "onFocus" or some other method of making it available from the keyboard. Note: It is usually acceptable to provide a redundant alternative as in the previous recommendation above. |
| ![ERROR: Image not found](image) | a link is set to open a new window | Inform the user that the link will open a new window OR Cause the link to open in the same window |

---

Page: 80
<table>
<thead>
<tr>
<th>Icon Description</th>
<th>This Icon Appears Where...</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ERROR:</strong> Label missing</td>
<td>an form <code>&lt;input&gt;</code> or <code>&lt;textarea&gt;</code> tag does not have a corresponding label (Note: error icon will not appear if the input is hidden, an image, or a submit button)</td>
<td>Supply an appropriate label, using the <code>&lt;label&gt;</code> tag.</td>
</tr>
<tr>
<td><strong>ERROR:</strong> Fieldset without a legend</td>
<td>a fieldset is present, but the corresponding <code>&lt;legend&gt;</code> is missing</td>
<td>Supply an appropriate legend (which is akin to the label for <code>&lt;input&gt;</code> and <code>&lt;textarea&gt;</code> tags), using the <code>&lt;legend&gt;</code> tag.</td>
</tr>
</tbody>
</table>
Chapter 3 Criteria and Tools for Evaluating Web Resources

<table>
<thead>
<tr>
<th>Icon Description</th>
<th>This Icon Appears Where...</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>✘ ERROR: Empty label</td>
<td>a form label is present, but it is empty</td>
<td>Supply an appropriate label within the &lt;label&gt; tag.</td>
</tr>
<tr>
<td>✗ ERROR: Problem with form label</td>
<td>a form label is present, but it is not associated with any form &lt;input&gt; or &lt;textarea&gt; element</td>
<td>Associate the label with its corresponding &lt;input&gt; or &lt;textarea&gt; tag.</td>
</tr>
<tr>
<td>🔴 ALERT: JavaScript jump menu</td>
<td>a JavaScript jump menu is present (e.g. a form input element that submits the form automatically when the user selects one of the options)</td>
<td>Eliminate the JavaScript jump menu because they are unfriendly to those who cannot use a mouse. Create a submit button to perform the same function.</td>
</tr>
<tr>
<td>⚖ ACCESSIBILITY FEATURE: form label</td>
<td>a form label is present and associated with an &lt;input&gt; or &lt;textarea&gt; element</td>
<td>Ensure that the label is accurate, adequately descriptive, and succinct, and that it is associated with the correct &lt;input&gt; or &lt;textarea&gt; tag.</td>
</tr>
<tr>
<td>⚖ ACCESSIBILITY FEATURE: fieldset/fieldset legend</td>
<td>a fieldset is present and has a corresponding &lt;legend&gt;</td>
<td>Ensure that the fieldset encloses the proper form elements and that the legend is accurate, adequately descriptive, and succinct.</td>
</tr>
</tbody>
</table>

Frames

<table>
<thead>
<tr>
<th>Icon Description</th>
<th>This Icon Appears Where...</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>✘ ERROR: Frame missing title</td>
<td>a frame does not have a &quot;title&quot; attribute</td>
<td>Provide a frame title with one that clearly explains the purpose of the frame.</td>
</tr>
<tr>
<td>🔴 ALERT: Frame with suspicious title</td>
<td>a frame has a title such as: file name (e.g. &quot;frame1.gif&quot;) (other suspicious names)</td>
<td>Replace the frame title with one that clearly explains the purpose of the frame.</td>
</tr>
<tr>
<td>⚖ ACCESSIBILITY FEATURE: Frame title</td>
<td>a frame title is present</td>
<td>Ensure that the title is accurate, adequately descriptive, and succinct.</td>
</tr>
</tbody>
</table>
## Non-HTML Media and Multimedia

<table>
<thead>
<tr>
<th>Icon Description</th>
<th>This Icon Appears Where...</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALERT: JavaScript element</td>
<td>a JavaScript element is present</td>
<td>Ensure that the JavaScript does not require the use of a mouse.</td>
</tr>
<tr>
<td>ALERT: Media element</td>
<td>an audio or video file is present</td>
<td>Ensure that captioning is provided for video content. Ensure that a transcript is provided for audio content.</td>
</tr>
<tr>
<td>ALERT: Applet</td>
<td>an &lt;applet&gt; tag is present</td>
<td>Provide an alternative, HTML-based means of accessing the same functionality AND/OR Use the Java accessibility API to create applets that are directly accessible</td>
</tr>
<tr>
<td>ALERT: Link to Word document</td>
<td>a link to a Word document is present</td>
<td>Provide an alternative, HTML-based means of accessing the same functionality</td>
</tr>
<tr>
<td>ALERT: Link to Excel document</td>
<td>a link to an Excel document is present</td>
<td>Provide an alternative, HTML-based means of accessing the same functionality</td>
</tr>
<tr>
<td>ALERT: Link to WordPerfect document</td>
<td>a link to a WordPerfect document is present</td>
<td>Provide an alternative, HTML-based means of accessing the same functionality</td>
</tr>
<tr>
<td>ALERT: Link to PowerPoint document</td>
<td>a link to a PowerPoint document is present</td>
<td>Provide an alternative, HTML-based means of accessing the same functionality</td>
</tr>
<tr>
<td>ALERT: Link to PDF Acrobat document</td>
<td>a link to a PDF document is present</td>
<td>Provide an alternative, HTML-based means of accessing the same functionality AND/OR Create a tagged PDF file that is directly accessible to assistive technologies</td>
</tr>
<tr>
<td>ACCESSIBILITY FEATURE: Noscript tag</td>
<td>a &lt;noscript&gt; tag is present</td>
<td>Ensure that the noscript content allows access to the same functionality as the scripted content</td>
</tr>
<tr>
<td>ALERT: Flash object</td>
<td>a Flash object is present</td>
<td>Provide an HTML alternative (this is the most accessible option) Create the Flash object using the accessibility features of Flash 6 or higher Provide captions for any embedded video-type content</td>
</tr>
<tr>
<td>Criteria</td>
<td>Action</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>A Flash 6 object is present</td>
<td>Consider placing a link before the Flash object, allowing users to either turn off the object, skip the object, or go to an alternative representation of the object. Ensure that the Flash object is keyboard-accessible.</td>
<td></td>
</tr>
<tr>
<td>A Shockwave object is present</td>
<td>Provide an HTML alternative.</td>
<td></td>
</tr>
<tr>
<td>An <code>&lt;object&gt;</code> is present which the WAVE could not identify</td>
<td>Provide an HTML alternative, if the object is not already in HTML format.</td>
<td></td>
</tr>
<tr>
<td>The <code>&lt;embed&gt;</code> tag is present, without a corresponding <code>&lt;object&gt;</code> tag, or the <code>&lt;object&gt;</code> tag is present without a corresponding <code>&lt;embed&gt;</code> tag</td>
<td>Although the <code>&lt;embed&gt;</code> tag is deprecated (outdated), media objects will not display in some older browsers without it (e.g., Netscape 4.x). The <code>&lt;object&gt;</code> tag is the current standard. You may consider using both tags if you have a sizeable audience that uses older browsers.</td>
<td></td>
</tr>
<tr>
<td>A Quicktime movie is present</td>
<td>Provide captions. Provide a text transcript. Provide audio descriptions, if necessary.</td>
<td></td>
</tr>
<tr>
<td>A Realplayer media object is present</td>
<td>Provide captions. Provide a text transcript. Provide audio descriptions, if necessary.</td>
<td></td>
</tr>
<tr>
<td>A Windows Media Player object is present</td>
<td>Provide captions. Provide a text transcript. Provide audio descriptions, if necessary.</td>
<td></td>
</tr>
</tbody>
</table>
iv) **Cynthia Says Portal**

The HiSoftware Cynthia Says portal is a joint Education and Outreach project of HiSoftware, ICDRI, and the Internet Society Disability and Special Needs. Portal evaluates the website behind website accessibility. The simple, well-designed interface puts accessibility compliant code within the reach of all users, even those with little or no knowledge of Web design. The Cynthia Says portal provides feedback to website designers a reporting format that is clear and easy to understand. Accessibility issues are detected within web sites from Web-based applications, dynamic pages, or static HTML pages. Web designers get an immediate "status" of their Web site accessibility. To find these, Cynthia Says™ utilizes HiSoftware's AccMonitor Server technology, through which USER Agents (crawlers/scanners) collect individual page or dynamic page accessibility data. This information is then sent to the central server where actual accessibility verification is performed. The output is returned immediately to the website designer's browser.¹¹

The Cynthia Agent tests web page against programmatic test groups for Section 508 or W3C WCAG 1.0 Accessibility Guidelines.

v) **HERA (Sidar)**

HERA is a tool to check the accessibility of Web pages according to the specification Web Content Accessibility Guidelines (WCAG 1.0).
performs a preliminary set of tests on the page and identifies any automatically detectable errors or checkpoints met, and which checkpoints need further manual verification.

To be able to do this testing it is normally necessary to know the Accessibility Guidelines, how users work with assistive technology, and have some practical understanding of web page design.

HERA assists in manual revision by highlighting the parts of the page that need checking, providing instructions on how to perform the tests, and offering two views of the page (normal page rendering and the HTML source code) with the most important elements for checking highlighted through colors and icons.

A form allows you to modify the results that were determined by automatic testing, add comments about each checkpoint, and give the name of the reviewer. It is also possible to generate a report for printing or to download in (XHTML, RDF / EARL and PDF) formats.

The revision results are kept in the Sidar database for seven days. During this time it is possible to continue the revision using the URL of the summary page, which contains an identifier for the particular revision.

vi) Site Valet

Site valet is a web tool for quality, accessibility, standard compliance. The site valet current version is 2.0 and includes the following developer tools.
- **Page Valet: (Version 4.2)**

  Page Valet is the best validation tool for performance improvements coupled with greater accuracy. Page valet provides the choices to result formats. The tool provides the markup errors in the websites. The web based tools supports HTML, XHTML, MATHML, SMIL, SVG, WAP/WML document types.

- **Access Valet**

  Accessibility Valet is a core Site Valet tool, designed to help ensure accessibility by analyzing markup for conformance to web accessibility guidelines: specifically the WCAG and Section 508. This tool is a commercial tool and it’s not considered in the study.

- **Link Valet**

  Link Valet is a WWW Link checker. When you enter the URL of an HTML page on the Web, it will fetch the page, and print a report on it. Link Valet will also spider the website. When a link references another HTML page at the same site and hierarchy as the URL, Link Valet will recursively follow the link and prepare a similar report on the page. This tool is a commercial tool and it’s not considered in the study.

  *vii)* **Web Archive**

  Web archive provides 85 billion web pages archived from 1996 to a few months ago. Type the URL on the web archive page it gives you the archive of the
website from 1996 to till date. This will help us to study the growth of website from 1996 to till date\(^{14}\).

\textit{viii) WDG (Website Design Group) HTML Validator}

The Web Design Group was founded to promote the creation of non-browser specific, non-resolution specific, creative and informative sites that are accessible to all users worldwide. To this end, the WDG offers material on a wide range of HTML related topics. With this site as a reference, one can be able to create Web sites that can be used by every person on the Internet, regardless of browser, platform, or settings\(^{15}\).

\textit{ix) Web Site Optimization: Maximum Website Performance}

Web site optimization (WSO) is the process of reducing web site size and complexity to maximize website performance. The web tool offers an expert website optimization services and Speed.

Due to slow web pages, lack of targeted traffic is one problem in accessing websites, and web designers don’t know how to fix it. The website Site Optimization devoted to increasing the web site performance, speed, and traffic. The following services are offered through web site optimization\(^{16}\).

- \textbf{Web Site Speed Optimization & Analysis}

According to a number of studies, slow web sites and difficult navigation are the most popular complaints of web users today. Ceaparu et al. (2004)\(^{17}\) found
that web browsing is the most frustrating experience people have with computers, with dropped connections and slow downloads topping the list. The time lost due to frustrating experiences ranged from 47% to 53% of the time spent on computers.

In 2001, $25 billion in potential sales was lost online due to web performance issues (Zona 2001). Abandoned shopping carts hover around 50% for ecommerce sites, yet web sites keep getting larger with flashier interfaces.

- **Professional Website Graphics Optimization**

  One third of computer users say they are frustrated by web browsing. Among the most frequent complaints are long downloading times Ceaparu et al (2004). In our experience, a large part of web performance problems are caused by the alarming growth of un-optimized web page graphics.

- **Search Engine Optimization (SEO)**

  Over 72% of us click on natural SEO-powered results at Google, yet search marketers spend the vast majority of their budget on PPC advertising. While search marketers spent $3.3 billion on PPC ads in 2004, they spent only $238.5 million on SEO. We're spending more money where fewer people click!

  Search Engine Optimization gives you top search engine placement to tap into a new source of qualified visitors who are actively searching for products and services like on the Internet.
• **Website Development & Site Redesigns**

According to a recent study by Stanford University, 46% of Web sales are lost on web sites that lack the critical elements that build value and trust with website visitors. The number one reason the people indicated why they wouldn't buy from a web site was because it had an unprofessional "look and feel" that lacked credibility and did not "feel" trustworthy.

• **Website Accessibility Analysis**

Web site accessibility is to make sure website is accessible to all users, regardless of ability or disability. An accessible web site is one that has been designed according to standards, set out in law and in guidelines, aimed at ensuring that the web site's content is understandable and navigable for users with disabilities, in use of assistive technologies, or low-end or emerging technologies.

• **Website Usability Evaluations**

Succeeding in today's competitive marketplace requires well-designed, easy-to-navigate web sites that meet the objectives of clients and users. Organization's Web presence, web applications, and other software products must be designed to enhance brand, rather than detract from it. Web Site Optimization, LLC (WSO) can help you meet these needs. We provide usability evaluations to ensure that web site is meeting the needs of intended users.
Chapter 3 Criteria and Tools for Evaluating Web Resources

- The Web Page Analyzer

It's a free website performance and webspeed analysis tool. This tool analyze websites for

- Object size (HTML, HTML images, Javascript, Multimedia, CSS) and its download time for different parameters.
- Number of external objects like HTML, CSS, Images, frames.
- Download time: provides details of website download time for different connection rates.

x) Compete

Provides free information for every site on the Internet including site traffic history and competitive analytics; a list of available promotional codes across thousands of online retailers; and site-specific trust scores based on up-to-the-minute data from Compete and third party security services.¹⁸

- Compete Toolbar

A new browser tool that makes it easier for users to bring the power of Compete SnapShot to their desktops. Designed for both IE and Firefox users, the Compete Toolbar provides users real-time access to the same information found in Compete SnapShot. It automatically creates alerts for every website you visit. I.e., Trust Scores help you experience a safer web by warning you of potentially malicious (spyware, phishing) web sites and Site Profiles: tell you how popular the web site is, its rank, and how fast it is growing.
3.5. Conclusion

Automated website testing is a very essential before getting it live. Website has to be tested, fixed, retested and fully documented. Any applications utilized in the website have to be tested for performance and scalability. The criteria for testing websites are: Timeliness, Structural Quality, Content, Accuracy and Consistency, Response Time and Latency, and Performance. Some of the tests that need to be done on a website are Content Checking, Browser Compatibility, Transaction Testing, Configuration Testing, Performance and Scalability, and Security. Web testing is still just evolving because software used in the web are relatively new to other software. Software testing has been around for a long time.

In today’s web environment success of the website is dependent on quality and accessibility of the website and there is a need and requirements to test the websites using automation tools to confirm the quality and reliability of a Websites. At the same time they present a real opportunity to amplify human tester/analyst capabilities.
References


9. Ibid.


