EXHIBIT 12

Accessible Web design - a definition

by Chuck Letourneau, Starling Access Services © 1998, 2000, 2002, 2003

What does "Web accessibility" mean? To me it means that **anyone** using **any kind of Web browsing technology** must be able to visit **any site** and get a **full and complete understanding of the information contained there**, as well as have the **full and complete ability to interact with the site**.

And, yes, I know there are circumstances under which meeting these conditions would be difficult and **perhaps** even (seemingly) impossible. But difficulty shouldn't preclude effort and a barrier that seems impassable when viewed from one perspective might be reduced or eliminated when seen from another.

Some definitions

Anyone

By "anyone" I mean every person regardless of where they fall on the spectrum of ability - from people having the full range of sensory, motor, intellectual and educational skills to those who have one or more limitations in those areas. The page author should raise no barriers that prevent people from getting and understanding the information on their Web site.

Any Web browsing technology

By "any Web browsing technology" I refer to the complete range of current and legacy technology such as mainstream graphical browsers (like Microsoft Internet Explorer and Netscape Navigator), text-only browsers (like Lynx), and specialty browsers (like IBM Home Page Reader for people with blindness). The Web can also be browsed with emerging technologies like mobile computing systems (used hands-free and eyes-free), pocket-size display units (like cell-phone and pager displays), or other small, non-graphical input and output devices.

Any site

By "any site" I mean every site. Every site on the Web is presumably there to be seen by somebody. In very few cases does the page author know who will be looking at the page, with what technology, or with what abilities or limitations. To me it makes a great deal of sense to maximize the accessibility of any site to ensure that no potential customer, client, or visitor is excluded.

Full and complete understanding

Barriers to "full and complete understanding" are many but some are easier to overcome than others. Here are some of them, in no particular order:

- **The language barrier:**
  The vast majority of Web sites are available in only one language, usually the first language of the author. This tends to exclude a large number of potential visitors who cannot read or understand that language. Even with the use of automatic language translation programs the content of many Web pages will be confusing to some visitors because the translations are not perfect.

- **The jargon barrier:**
  Even assuming a visitor is viewing a page written in their native language there is no guarantee that full understanding will follow. What might the average person get from a site devoted to the scholarly discussion of quantum field theory? The words may be English, but the concepts are alien. If one is designing a site or writing a document for mass consumption then the onus is on the author to make that site and the information contained therein as understandable as possible. (Most government information managers should keep that thought firmly in mind!). [Someone recently complained that by using the word "onus", above, I was guilty of using jargon and thus breaking my own rules. I suspect that is a difference in scope: I might have to spend a few years in graduate school to understand a paper on quantum field theory, but thirty seconds with a dictionary would explain "onus".]

- **The design barrier:**
  Some people think that to be truly accessible a page must contain only plain text. This is simply not true. While it is true that text is the best alternative for many non-textual page-design elements it is also quite easy to make a text-only page that is highly inaccessible to many users because of the placement of the text in the display. For example, using a TABLE to lay out multiple columns of text to look like a newspaper or magazine page can cause no end of trouble for some visitors. This is especially true of people with visual impairments who use assistive technology called screen-readers with their graphical browsers to hear the contents of the page. Another example of an inaccessible text-only design would be a complex spreadsheet with text that wraps within cells, and rows and columns that are joined in clever ways to highlight related groupings of data. Many non-visual users, or people whose browsers can't display tables, may get little of value from that page.

  There is hope for reducing the problems related to page design. The W3C's HTML and XHTML specifications provide many techniques that can add useful information about the design of a page to help special software agents reformat them intelligently for users with different needs. Using the W3C's Cascading Style Sheet (CSS) specification greatly improves access to the information on a site because it lets the author completely separate the "look" or "layout" of a page from the content. Somebody who only wants

the content will be able to see it without the overhead of the page design. It also means that the content can be displayed in very different ways on a variety of different devices without losing the meaning or message. The same page could be displayed on a refreshable Braille device, on a large screen monitor, on a one-line pager display, or spoken to you through a voice synthesizer as you browse while driving to work in the morning.

- **The "Somebody else's problem" barrier:**
  Unfortunately many Web pages, especially those on very large sites, are often generated automatically by some document retrieval and conversion software (i.e. content management systems). Also many Web-page authors who find themselves under significant time pressure may use the document-to-HTML conversion tools found in common application software. Unfortunately in both cases the markup that is generated is not always accessible. Images will not be assigned alternative text, inappropriate elements may be used to render original document formatting, and so on. To ensure accessible markup an author or Web manager must still show some initiative and "clean up" the poor quality conversions. Fortunately, the World Wide Web Consortium's Web Accessibility Initiative has developed guidelines for manufacturers of Web authoring and conversion tools that, when adopted, will help reduce the size of this barrier

- **The "Latest is greatest!" barrier:**
  Try as we might, keeping up with changes in Web technology is a difficult task for people interested in Web accessibility. A site featuring the newest languages and applications requires the visitor to have the newest hardware or the newest version of a browser, and that causes the same old problems. But don't get me wrong: there is nothing wrong with "pushing the envelope" of Web site design. More often than not the advances in Web technology do make some things more accessible for a certain segment of the population. Yet at the same time these advancements can present huge barriers to many others. What you must ensure is that the information you are trying to convey to your audience is not lost to some of them just because you have access to technology they don't have. So, by all means, use the latest and greatest, but make sure you have included a fallback position for the rest of us. The Web Content Accessibility Guidelines developed by the World Wide Web Consortium's Web Accessibility Initiative will provide you with the information you need to accomplish this relatively simple task.

- **The "I didn't know that!" barrier:**
  Well, if you are reading this page... now you know. Thanks in great part to the Web Accessibility Initiative and the large and divers group of people involved in it, many more people around the world are learning about the need for, and the benefits of, accessible Web site design. There are moves afoot in both Canada and the United States to ensure that government Web sites will be far more accessible than in the past. Governments at every level have an obligation (and quite often the mandate) to ensure that all their constituents have equal access to important information and services. Their presence on the Web should be no exception.

Full and complete ability to interact with the site

By "full and complete ability to interact with the site", I refer to the hundreds of different ways that people have invented to work with computers. Believe it or not, not everyone uses a mouse, even if they are using a graphical user interface. Telling someone to "click on the picture of the house" is silly if they don't have a clicker. It is even sillier if they can't see the picture of the house because their browser doesn't display graphics. Most well designed computer software (especially applications for graphical operating systems) also allows for the use of the keyboard to complete any operation or command. A Web page should give you the same capability. And what about voice control? Voice recognition is becoming a force to be believed in the personal computer world. Can a voice user control your Web page?

So that is my vision of Web accessibility. There are quite a few Web sites (some are listed on the "Links of interest" page) and a growing number of people who can tell you how to make your Web pages accessible. However, I may be the only person who will tell you how you can make your site INACCESSIBLE. I do this as a public service:

3 How to make your Web page less useful to browsers that understand what HTML is supposed to be used for, and probably confusing and possibly inaccessible to some people who have visual impairments:

Use a lot of HTML "tricks" to enhance the visual display of your page (instead of using a style sheet)

- **misuse HTML elements like H1-6, UL, OL, BLOCKQUOTE, CITE, etc.**
- **misuse or don't use alt-text and title**
- **misuse colours and fonts**

2 How to make your Web page very difficult to understand for many users of older technology (and there are still many), probably confusing to those of us who did not grow up watching music-videos (a rapidly growing Web market), and quite likely inaccessible to many people with visual or cognitive impairments:

Lay out your information in a highly complex manner -

- **by not using special markup for displaying large complex data tables (spreadsheets),**
- **by using FRAMES without special markup to open a series of fixed or varying information windows,**
- **by including text in more than one language on a given page**

1 **How to make your Web page inaccessible to a very large audience indeed, including people with many functional limitations (such as a disability, but also more mundane but potentially troublesome limitations like owning older technology, low bandwidth connections, etc.):**

Provide information in a format that absolutely requires "something extra" from the user... something they might not have -

- **like sight, hearing, mobility**
- **like a particular browser, or an obscure plug-in or a high speed connection**
- **like prescience (forget to include basic page and site navigation tools)**

On the offchance that someone might mistake the last three points for actual "guidelines", I humbly request you look up "irony" in an English dictionary.

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Sites of Interest

- Conference listings
- Internet and HTML Accessibility
- Accessibility in Mainstream Technology
- Government of Canada
- Non-governmental Organizations
- Other sites

Conference listings

- Calendar of Events in Disability, Rehabilitation and Assistive Technology

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Internet and HTML Accessibility

- Accessible Web Page Design for HTML 3.2 and earlier.
  Note: This site is kept for historical reasons. For the latest information on accessible Web design please visit the following sites:
- W3C Web Accessibility Initiative
- W3C WAI Web Content Accessibility Guidelines 1.0
- National Center for Accessible Media, WGBH, Boston
- University of Toronto's Adaptive Technology Resource Centre.
- The Paciello Group A good source of Web accessibility information.
- Accessible Web Design articles

- A series of interesting articles and opinions from a design professional who is based in the United Kingdom

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Accessibility in Mainstream Technology

- Adobe Acrobat Access. Making PDF files accessible for screen reading.
- Microsoft's Accessibility Support.
- Macromedia's Accessibility Support.
- Lynx2.8 for DOS 386+ or Win32

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Government of Canada

- Assistive Technology Links - Industry Canada
- Accessible Procurement Toolkit - Industry Canada
- Workplace Accommodation Toolkit - Industry Canada
- Assistive Devices Industry Office - Industry Canada
- Common Look and Feel Standards - Treasury Board of Canada Secretariat

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Non-governmental organizations

- International Commission on Technology and Accessibility - North American Chapter (ICTA-NA).
- ICTA-Global - An international organization dealing with disability and accessibility: the parent organization of ICTA-NA.
- GLADNET - An international organization dealing with disability and employment issues.

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Other sites

- Our service provider is Internet Gateway Services (IGS) Ottawa.
- ShopinOttawa.com - Ottawa's Business Directory

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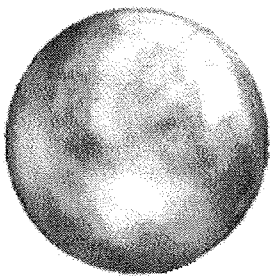

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ACCESS A WORLD OF POSSIBILITY

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Featured site:
Calendar of Events in Disability, Rehabilitation and Assistive Technology

Is your Web site accessible?

It's just good business...

The number of people using the World Wide Web is growing at an amazing rate, but many of these people:

- don't have the latest graphical browsers and plug-ins;
- can't see the marvelous graphics, hear the real-time audio, or navigate your interactive site;
- own slow modems, or live in rural or remote areas with limited access to the Internet;
- browse without graphics, use text-only browsers or subscribe to non-graphical services (like some freenets).

Starling Access Services can help you and your Web site reach the widest possible audience.

How can we help?

Accessible Web Page Design

Starling Access Services will design your Web site from the ground up to be both exciting and accessible. While using all the latest Web techniques, we draw on our expertise to provide you with accessible alternatives.

Is your Web site already on-line? **Starling Access Services** will work with you to increase its accessibility. Or, let us do a detailed analysis of your site and recommend actions to help you reach the widest audience.

Consulting Services

Let us advise you on a wide range of technology, access, and accommodation issues.

Learning Opportunities

Starling Access Services also offers seminars and workshops on a range of topics, including:

- Accessible HTML and Universal Page Design
- Adaptive Computer Technology
- Access Awareness and Job Accommodations

Please contact us for more information...

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Contact us

Please contact us to discuss your site, your project ideas, or to learn more about Starling Access Services. We will provide you with rates and references on request.

How to contact us?

Please use one of the following methods:

- Email: **info@starlingweb.com**
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The next page offers a primer on Web accessibility...

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