WCAG 2.0 - Web Content Accessibility Guidelines
An Introductory Guide for Web Developers
Acknowledgements

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WCAG 2.0 - Web Content Accessibility Guidelines
An Introductory Guide for Web Developers
About this Guide

The aim of this guide is to encourage website developers, whether you work in-house or as an independent consultant, to acquire the sensitivity and skills needed to develop accessible websites and web content. As the legislated requirements for accessible websites come into effect in Ontario, the ability to create them will provide developers with opportunities to reach new clients, as well as better-serve their existing clients.

Section 1 of this guide provides a broad overview of the World Content Accessibility Guidelines (WCAG) and the legislative requirements for accessible websites that have been introduced by the Province of Ontario.

Section 2 of the guide provides an overview of each of the four principles of the Web Content Accessibility Guidelines; examples of how to apply the principles; and links to available resources. If you don’t have the time to read this entire Guide, at the very least you should read Section 2. This will provide you with a general understanding of the four basic WCAG principles, and the context needed to understand everything that follows.

Section 3 includes some specific technical considerations that developers may want to review prior to beginning their project.

Section 4 includes some tips and strategies that should be considered from an organizational perspective. These tips and strategies should be shared with senior management or clients and reviewed by developers to better understand what may be expected from them.

Section 5 presents some brief conclusions and Section 6 provides readers with additional resources related to the development of accessible websites and web content.

The guide does not describe the detailed programming techniques necessary to create web content that meets the success criteria. That information is covered by other resources, for which links are provided.
1.0 Introducing web accessibility

1.1 Introduction

1.2 Understanding web accessibility
   1.2.1 Approaches to web accessibility
   1.2.2 About WCAG 2.0
   1.2.3 The Levels of WCAG 2.0
   1.2.4 WCAG 2.0 and the Accessibility for Ontarians with Disabilities Act (AODA)
   1.2.5 Complying with WCAG 2.0 – some stumbling blocks
1.1 Introduction

The need to create accessible websites has been growing over the past couple of decades, however, many web developers still lack the knowledge and skills needed to make their website creations accessible to persons with disabilities. Commercial training in accessible website development has been available for some time, but only now are universities and colleges beginning to offer limited training in this area.

Accessible website features are a lot like many disabilities: they are often hidden. In many cases, an accessible website looks exactly like an inaccessible website . . . the things that make it truly accessible are invisible to the naked eye (or ear, or mouse!).

Given the competitive nature of the website development industry and the current reality that many website developers are self-taught, most developers are going to invest their time and effort in learning the technologies that are in most demand – and where their skills can be easily displayed in a portfolio of designs. Most likely, accessibility has not been on the top of their professional development list.

The introduction of legislation such as Ontario’s Integrated Accessibility Standards Regulation (IASR) may change this, particularly as large organizations in the public and private sector begin to seek out web developers with accessibility training to create or retrofit their websites.
1.2 Understanding web accessibility

1.2.1 Approaches to web accessibility

Information technology specialists and others typically approach the issues related to accessible websites and their content in one of two ways.

The first focuses on people. Specifically, it looks at the wide range of functional abilities or limitations that individuals possess. This approach also considers how these abilities or limitations permit people to use the web and its technologies. For example, a person with a low vision may not be able to use a website if the text size is too small or if the text and background colours do not have sufficient tonal contrast. To overcome these barriers, the web developer might provide options for users to choose a larger font or change the background colour.

The second approach looks at the web technologies themselves. It concentrates on the barriers such technologies might raise for people with disabilities and what can be done to reduce or remove those obstacles. For example, a smart phone may be designed for user input through a touch screen. However, someone with poor manual dexterity or with a vision limitation may not be able to use the touch screen. To overcome these barriers, the product designer might incorporate voice recognition to allow users to access the feature of the phone using speech, rather than touch.
In reality, developers need to consider both approaches to ensure that websites are accessible to people with disabilities.

There is an excellent set of resources that explore the human and technical aspects of accessibility on the website of the World Wide Web Consortium.

- “How People With Disabilities Use the Web” [http://www.w3.org/WAI/intro/people-use-Web/Overview.html]
- “Web Accessibility and Older People: Meeting the Needs of Ageing Web Users” [http://www.w3.org/WAI/older-users/Overview.php]
- “Web Content Accessibility and Mobile Web: Making a Web Site Accessible Both for People with Disabilities and for Mobile Devices” [http://www.w3.org/WAI/mobile/Overview.html]
1.2.2 About WCAG 2.0

The World Wide Web Consortium (W3C) has developed and maintains a widely accepted set of technical guidelines for accessible websites. The consortium is an international community whose full-time staff, member organizations, and the public work together to develop web standards.

The Web Content Accessibility Guidelines are typically referred to by their acronym WCAG (pronounced “wick-ag”). The technical requirements described and referenced in this guide are based on WCAG 2.0 – the most current version of the guidelines at the time of writing.

WCAG 2.0 is a comprehensive set of documents, specifications and techniques dealing with all aspects of accessibility for websites and web content. It is not the intent of this guide to identify and explain all of the technical requirements. That information is dealt with in the guidelines. However, this guide will help you understand the intent and organization of WCAG 2.0 as well as how to use the WCAG resources for your own web development projects.

WCAG 2.0 is structured around four major questions related to web content.

1. Is it perceivable?
2. Is it operable?
3. Is it understandable?
4. Is it robust?

These questions inform the four, overarching principles established in WCAG 2.0 — perceivable, operable, understandable and robust. Each principle is related to one or more guidelines which, if followed, will lead to more accessible websites and web content.
## General Organization of WCAG 2.0

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Information and user interface components must be presentable to users in ways they can perceive.</td>
<td>User interface components and navigation must be operable.</td>
<td>Information and the operation of user interface must be understandable.</td>
<td>Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.</td>
</tr>
<tr>
<td>Guideline 1.1 Text Alternatives: Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, Braille, speechy, symbols or simpler language.</td>
<td>Guideline 2.1 Keyboard Accessible: Make all functionality available from a keyboard.</td>
<td>Guideline 3.1 Readable: Make text content readable and understandable.</td>
<td>Guideline 4.1 Compatible: Maximize compatibility with current and future user agents, including assistive technologies.</td>
</tr>
<tr>
<td>Guideline 1.3 Adaptable: Create content that can be presented in different ways (for example simpler layout) without losing information or structure.</td>
<td>Guideline 2.3 Seizures: Do not design content in a way that is known to cause seizures.</td>
<td>Guideline 3.3 Input Assistance: Help users avoid and correct mistakes.</td>
<td></td>
</tr>
<tr>
<td>Guideline 1.4 Distinguishable: Make it easier for users to see and hear content including separating foreground from background.</td>
<td>Guideline 2.4 Navigable: Provide ways to help users navigate, find content, and determine where they are.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Every guideline has criteria for success that can be tested. Web developers and others use these criteria when testing for the requirements or conformity necessary to meet design specifications, purchasing regulations and contract agreements.

For example, the guidelines require developers to make websites and web content distinguishable. One testable success criterion for this guideline is that colour can’t be used as the sole method of conveying content or differentiation. In other words, you can’t say fill out the fields marked in red.

Finally, for each guideline and success criteria the WCAG links to “Sufficient and Advisory Techniques” which provide instructions on how to code for accessibility.

The WCAG 2.0 principles apply to more than the HTML that may form the template of a web page. The principles apply to any other format, application or technology you use to create a page or embed content in a page. This means that if you embed a multimedia player in a page then that player, its controls and output must be accessible to the same level of compliance you claim for your overall page.

For the full Web Content Accessibility Guidelines (WCAG) 2.0 please go to [http://www.w3.org/TR/WCAG20/]
1.2.3 The Levels of WCAG 2.0

An important concept adopted by WCAG 2.0 is its three “levels” of conformance called Level A, Level AA and Level AAA (or single A, double A, triple A, respectively). Typically, an organization will strive for its web content to achieve compliance with one of the levels; Level A being basic accessibility and Level AAA the highest. WCAG 2.0 categorizes the levels as follows:

Level A: If web content does not meet all the requirements for Level A, then some or all of it will be completely inaccessible to some segment of the population.

Level AA: If web content meets Level A, but not Level AA, then some or all of the content will be difficult for some people to use.

Level AAA: Meeting all the requirements for Level AAA would mean the content is as accessible as possible given the current state of web and end-user technology.

Each success criteria listed in the guidelines is associated with one of these three levels of accessibility. In order to claim compliance at any level, ALL of the relevant requirements for that, and any lower levels, must be satisfied. Refer also to Section 6.0 – Resources.
1.2.4 WCAG 2.0 and the Accessibility for Ontarians with Disabilities Act (AODA)

If you are developing web content for an organization that operates in Ontario, you should be aware of the regulatory requirements of the Accessibility for Ontarians with Disabilities Act, 2005. Accessibility standards are being created as part of the act. These standards are rules that require organizations in Ontario to identify, remove and prevent barriers so that people with disabilities will have more opportunities to participate in everyday life.

The Accessible Customer Service standard was the first regulation to be enacted. The next standards — Information and Communication, Employment, Transportation and the Design of Public Spaces — were combined in the Integrated Accessibility Standards Regulation or the IASR.

Section 14 of this regulation requires some types of obligated organizations to make their websites and web content accessible within given timelines. These organizations are the Government of Ontario, the Ontario Legislative Assembly, designated public sector organizations and large organizations. Designated public sector organizations include municipalities, hospitals, colleges, universities, school boards and other public bodies listed under Table 1, Column 1 of Ontario Regulation 146/10. A large organization is any organization in Ontario that provides goods, services or facilities to the public or other third party, and that has 50 or more employees.

As a first step, obligated organizations will need to conform to the WCAG 2.0 guidelines when they are developing new websites and content on those new sites, or when they are conducting a significant site refresh. Between 2016 and 2021 obligated organizations will need to make all websites and web content accessible. The following table shows when different types of organizations must meet the requirements for accessible websites and web content.
### Table 1 - Timelines for the Provision of Accessible Websites and Web Content under the AODA

<table>
<thead>
<tr>
<th>Type of Organization</th>
<th>Type of web content</th>
<th>Compliance with WCAG 2.0 Level A</th>
<th>Compliance with WCAG 2.0 Level AA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government of Ontario and Ontario Legislative Assembly</td>
<td>New* internet and intranet websites and web content</td>
<td>January 1, 2012</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All* internet websites and web content</td>
<td>January 1, 2016</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All internet and intranet websites and web content</td>
<td>January 1, 2020</td>
<td></td>
</tr>
<tr>
<td>Designated Public Service Organizations</td>
<td>New internet and web content**</td>
<td>January 1, 2014</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All* internet websites and web content**</td>
<td>January 1, 2021</td>
<td></td>
</tr>
<tr>
<td>Large Organizations (50 or more employees)</td>
<td>New internet websites and web content**</td>
<td>January 1, 2014</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All* internet websites and web content**</td>
<td>January 1, 2021</td>
<td></td>
</tr>
</tbody>
</table>

* Exceptions include captions on live videos and audio descriptions for ALL pre-recorded videos.

** Web content published after January 1, 2012
What is a new website?

New websites are those sites with a completely unique domain name (e.g. www.newbusiness.ca) or a website undergoing a significant refresh. There’s no standard definition for a significant refresh. As a best practice, you may want to ask yourself “Am I changing over 50% of the website?” Think in terms of content, design and the technology.

The requirements and the timelines for the provision of accessible websites and web content are not optional. Unless the website or web content is not under an organization’s control, or they can demonstrate that conforming with WCAG 2.0 is not practicable, the organizations listed above are obligated by law to comply with the accessible website requirements of the IASR. Organizations that choose not to comply run the risk of being fined. They will also miss the opportunity to reach new clients as well as to serve their existing clients better.

It is important to note that not all of the guidelines or all of the techniques will apply to all of the content on the websites you develop. The World Wide Consortium provides an on-line tool that will allow you to filter out elements that do not apply to your websites. This leaves you with a simplified list of guidelines and success criteria with direct links to the information needed to understand why and how to meet the appropriate level of accessibility for each item on the website. The W3C customizable checklist can be found in any of the resource boxes in Section 2.
1.2.5 Complying with WCAG 2.0 - some stumbling blocks

From a technical standpoint, there is little or nothing in WCAG 2.0 that you as a professional web developer will find difficult to put into practice.

Problems may occur if you do not fully understand the underlying intent of a guideline or the subtleties of using a particular technique to satisfy a success criterion. Training on accessible design and becoming aware of how people with disabilities use the web can reduce these problems. Commercial training for accessible web design is also available in the marketplace.

Problems may also crop up if there is a discrepancy between what is being requested and what you, the developer, know will be accessible. For example, when developing an accessible website you may be given a colour palette by the organization that does not meet the required contrast levels identified in the guidelines. You may not be comfortable substituting a suitable colour scheme. However, in this case you can remind the project manager of the legal requirement to provide an accessible website and suggest colours that will do the job.
2.0 WCAG 2.0: A closer look

2.1 Principle 1: Perceivable
   2.1.1 Introduction
   2.1.2 Meeting the guidelines for the first principle, perceivable
   2.1.3 Examples
   2.1.4 Considerations for the principle, perceivable

2.2 Principle 2: Operable
   2.2.1 Introduction
   2.2.2 Meeting the guidelines for the second principle, operable
   2.2.3 Examples

2.3 Principle 3: Understandable
   2.3.1 Introduction
   2.3.2 Meeting the guidelines for the third principle, understandable
   2.3.3 Examples

2.4 Principle 4: Robust
   2.4.1 Introduction
   2.4.2 Meeting the guidelines for the fourth principle, robust
2.0 WCAG 2.0: A closer look

This section of the Guide provides:

- an overview of each of the WCAG principles, using plain language where possible;
- examples of the application of the principles;
- and links to available resources.

Discussion starts at the principle level, followed by a detailed description of each of the guidelines associated with the principle. Each section concludes with a brief summary of the technical requirements necessary to meet the Level A and AA success criteria.

It is important to recognize what this Guide will not describe the detailed programming techniques necessary to create accessible web content to meet the success criteria...those are well covered by other resources, for which links are provided.

If you don’t have the time to read this entire Guide, at the very least you should read the first part of Sections 2.1 through 2.4. These provide a general understanding of the four basic WCAG principles and give context to everything that follows.
2.1 Principle 1 - Perceivable

Under the principle of perceivable, the guidelines state that information and user interface components must be presentable to users in ways they can perceive.¹

The W3C says:

- Provide text alternatives for non-text content.
- Provide captions and other alternatives for multimedia.
- Create content that can be presented in different ways, including by assistive technologies, without losing meaning.
- Make it easier for users to see and hear content.

From: WCAG 2 at a Glance
[http://www.w3.org/WAI/WCAG20/glance/]

¹ http://www.w3.org/TR/2008/REC-WCAG20-20081211/#perceivable
2.1.1 Introduction

Until recently most web developers received few requests to develop websites and web content for people who were blind, deaf, hard of hearing or had low vision. That is changing, in part because of the Accessibility for Ontarians with Disabilities Act, 2005, which aims to make Ontario accessible for people with disabilities by 2025, and in part because of the surge in popularity of web-enabled smart phones. These devices have increased the need for web content and websites that are accessible when hearing or vision is affected by a wide range of circumstances. For example, users might be in a noisy environment and cannot hear the sounds issuing from speakers or headphones or they may find the content on small portable devices too small to read.
2.1.2 Meeting the guidelines for the first principle, perceivable

The following are some of the points you will want to take into consideration when creating web content and websites that meet the Web Content Accessibility Guidelines 2.0 for the first principle, perceivable.

**Level A Accessibility requirements:**

- Important graphical content must be also described with text so that text-to-speech systems can provide this alternative content to people who cannot see the images. Refer also to Example 1 below.
- Content should be created so that it will not lose its basic structure or meaning when displayed on different web or assistive devices, such as Braille, speech recognition software and text telephones.
- Do not use colour, shape, location or sound as the sole method of providing instructions to the user. Directions such as ‘click on the red link’, ‘press the stop-sign button’, ‘the link on the bottom left of the page’, or ‘when you hear the tone, go to the next page’ are examples of inaccessible design.
- Content should not be difficult to distinguish from the background or foreground because of poor choices of colour or images. Refer also to Example 2 below.

**Level AA Accessibility requirements:**

- Websites and their content should generally be at a contrast ratio of 4.5:1. A free and easy tool to check your contrast is the Colour Contrast Analyser available for Windows or Mac.
- Use relative units (e.g. 0.5 em) and percentages rather than specific sizes (e.g. 12 pt) so pages are readable and functional when the text size is enlarged up to at least 200%.

Where content includes audio and video, there are other requirements. These are dealt with specifically in the following pages.
**Audio and Video - Time-Based Media (WCAG 2.0 Guideline 1.2)**

One of the more complex requirements is how to make *audio and video* content accessible.

WCAG 2.0 identifies four types of “time-based” media:
1. Audio-only, e.g. a recording of a speech;
2. Video-only, e.g. a silent movie or a silent animation;
3. Audio-video, e.g. a YouTube video with audible dialogue;
4. Audio and/or video combined with interaction, e.g. any of the above that - at some specific point - asks or allows the user to interact with the media-player or web page;

in two different circumstances:
1. Prerecorded, or
2. Live

We hope the following simplified descriptions will aid your understanding of the issues, but for more comprehensive help and to find techniques to achieve accessibility, please see the W3C’s documents:

- [Understanding WCAG 2.0 - Time-based Media](#)
- [Web Content Accessibility Guidelines 2.0 - Guideline 1.2 Time-based Media](#)
- [Techniques for WCAG 2.0](#)
**Level A**

Audio-only (spoken word with no video) must have a text-transcript. The text-transcript does not have to be synchronized with the audio unless - at some specific point - the audio asks the person listening to interact with the web page. This is so that people who are deaf, deafened or hard of hearing will have access to the content of the audio file. Please note that it is NOT necessary to provide a transcript of, or captioned alternative for an audio-description of video.

Video-only (with no spoken word) must be accompanied by either a text or audio description of the scenes, actions, characters and any on-screen text. This is so that people who are blind or with vision loss are fully informed.

For Audio-Video (where words are synchronized with images or action in the video) to be accessible for people who are deaf, deafened or hard of hearing, the audio portion must be accompanied by captions that accurately reproduce the words and describe important sound effects (like clapping, laughter, etc) and are well synchronized with the video. Captions can be “open” (always on-screen) or “closed” (only displayed on-screen if so desired by the user). Whichever type you choose - open or closed - you must determine if commonly available media players support that captioning format.

For Audio-Video to be fully accessible for people who are Blind or have low vision either audio description or a media alternative must be provided.

Automatically played audio content can prevent some people from reading the page so a means to stop the audio must be available.
A Confusion of Terms:

In Canada, according to the Canadian Radio-Television and Telecommunications Commission:

Audio description (AD) uses a program host or announcer to provide a basic voice-over, reading text and describing graphics that appear on the screen. AD is often used for newscasts, weather reports, sports scores or financial data, and is best suited to live, information-based programming.

Described video (DV) is also called video description or described narrative. DV is a narrated description of a program’s main visual elements, such as settings, costumes, or body language. The description is added during pauses in dialogue, and enables people to form a mental picture of the program. It works best for pre-recorded programs, such as dramas and documentaries. Described video uses a separate audio track.

The WCAG 2.0 term, “audio description”, more closely fits with the concept of “described video”.

Level AA

For real-time (live) audio-video events, real-time captioning (either open or closed) must be provided. Real-time captioning services are available in the marketplace.

Prerecorded synchronized audio description must be provided for prerecorded video.
Considerations for Captioning and Audio Description

While somewhat complicated at the present, software exists that allows you to do your own captioning and create audio description tracks for synchronization with audio-video content. Companies that provide captioning for live and prerecorded audio, as well as those capable of adding audio descriptions to your video can be found in the marketplace.

Understanding WCAG 2.0 - Captions recognizes the practical difficulties an author might encounter when dealing with “time-sensitive” content, as the following quote explains:

It is acknowledged that at the present time there may be difficulty in creating captions for time-sensitive material and this may result in the author being faced with the choice of delaying the information until captions are available, or publishing time-sensitive content that is inaccessible to the deaf, at least for the interval until captions are available. Over time, the tools for captioning as well as building the captioning into the delivery process can shorten or eliminate such delays.
2.1.3 Examples

**Extreme Example #1 - Alternative Text**

Alternative text must be supplied with every image in order for a web page to pass a code validation test. Images include, but are not limited to regular graphics, type graphics, symbols, image maps, tables and charts.

If a web page has an image of a snow sled then it must be described appropriately using alt-text. There are many ways to describe the image of a sled.

A sled:

<table>
<thead>
<tr>
<th>Example 1a</th>
<th>Example 1b</th>
<th>Example 1c</th>
<th>Example 1d</th>
<th>Example 1e</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAD alt-text=&quot;image&quot;</td>
<td>BAD alt-text=&quot;xyz2002.jpg&quot;</td>
<td>GOOD or BAD alt-text=&quot;The sled called Rosebud&quot;</td>
<td>GOOD or BAD alt-text=&quot;Winter Activities&quot;</td>
<td></td>
</tr>
</tbody>
</table>

Example 1a — One way is to call it “image”.

Example 1b — Another way is to call the image by its computer file name “xyz2002.jpg”.

This point is so important it bears repeating. An automated validation check will not identify whether or not the alternative text is appropriate. Only a person who understands the purpose and relationship of the image to the page can supply the appropriate text.
Both of these descriptions are inadequate and would fail a human-compliance check for accessibility, but using an online automated evaluator might pass them (because there is something between the quotes of the alt-attribute). It would pass any description at all. Only a person can identify whether the alternative text describes the image or the purpose of the image appropriately. What is appropriate depends on the purpose for the image — the reason it is used.

Example 1c — When the image is simply decorative you can use a blank description (put nothing between the quote marks of the alt-attribute). This will inform screen readers that the image isn’t important. For instance, if you are just sprinkling random winter-related images on a page about “Winter fun”.

Example 1d — If the content on the webpage refers to a particular image then it should be described. The description must focus on what is important about the image in the context of the web page. In this example, we’ll pretend the image illustrates a famous scene from the movie ‘Citizen Kane’ so the alt-text, “The sled called ‘Rosebud’”, is appropriate because the main character had named his sled ‘Rosebud’. That same alt-text would be meaningless or confusing if the page was about sleds in general.

Example 1e — Finally, if the image is used as a graphical link and replaces a text-link, then the purpose or destination of the link is the appropriate alternative text. In this example, the sled is used as a link button to a web page called Winter Activities so that would be the alternative text. But that same alt-text would be “bad” if you were referring to the sled “Rosebud” from the movie “Citizen Kane”.
Extreme Example #2 Colours and Backgrounds

The CEO of an organization has given you a colour scheme of a dark red and brown psychedelic background with white and light reds, yellows and oranges for the text of the new website. You know that it breaks the accessibility and usability guidelines that relate to colour contrast and perceivability, but ignoring high-level management suggestions can be foolhardy. However, if you can point to the requirement for websites in the Integrated Accessibility Standards Regulation and the principle of perceivable, then you may be able to resolve the issue in favour of accessibility.
2.1.4 Consideration for the principle perceivable

Consideration for synchronized text

If you have ever watched a television show in which the sound track was a second or two out of synch with the action, then you will have some idea of how annoying that can be with captions or descriptions of video. When the words or sounds and the accompanying visuals relate to each other in important ways any mismatch between the two can be annoying at best and misleading at worst. When you provide any supporting or accompanying information such as closed or open captions, or video description to make web content more perceivable, it must be accurately related to the action. The WCAG 2.0 guidelines refer to this as time-sensitive synchronized media.

Considerations for captioning

Digital cable receivers often have difficulties with their audio stream. The sound track switches on and off for lengths of time at random intervals. In many cases, the captioning service that is provided for much of the Canadian broadcast day, allows viewers to continue to enjoy the show. If the captioning is good, the audience can follow the dialog with the intermittent sound either on or off. If the captioning is bad with lots of spelling and interpretive errors, or if the captions aren’t properly synchronized with the action, the audience may get confused and switch off.

When viewers are deaf, deafened or hard of hearing, captioning is always needed, and accuracy and proper synchronization of the captions is essential. Today, the web is fast becoming the delivery channel of choice for all types of media. Whether it is live or recorded, streaming media or downloadable audio or video files, the need to be able to understand and enjoy the content with or without the ability to hear the audio portion is important.
Considerations for video descriptions

Video description is typically a separate audio track that, in suitable pauses or blank areas of the spoken sound track, inserts a brief description of the important action or surroundings. These brief descriptive insertions need to be closely associated with the visual actions and the related spoken dialog otherwise important context will be lost to the listener. If the video description track is done with text instead of recorded audio, then it might be read aloud by a screen-reading application.

Visit the following links to access more specific information on coding techniques related to the creation of perceivable Web content including alternative text, synchronized text, captioning and video description:

WCAG 2.0 – Table of Contents
http://www.w3.org/TR/WCAG20/

WCAG 2.0 – Guidelines for Principle 1 - Perceivable
http://www.w3.org/TR/WCAG20/#perceivable

Understanding and Implementing WCAG 2.0
http://www.w3.org/TR/UNDERSTANDING-WCAG20/

Techniques and Failures for Web Content Accessibility Guidelines
http://www.w3.org/TR/WCAG20/-TECHS/

Customizable Quick Reference to WCAG 2.0 Success Criteria
http://www.w3.org/WAI/WCAG20/quickref/

Refer also to Section 6.0 – Resources.
2.2 Principle 2 - Operable

Under the principle of operable, the guideline states that the user interface components and navigation must be operable.²

The W3C says:

- Make all functionality available from a keyboard.
- Give users enough time to read and use content.
- Do not use content that causes seizures.
- Help users navigate and find content.

From: WCAG 2 at a Glance
[http://www.w3.org/WAI/WCAG20/glance/]

“For me, when coding I think fast and I type just as fast, and every time I have to touch that stupid mouse I curse the idiot who failed to add or, worse, removed (which seems to happen as software “evolves”) the menus/shortcuts/tabbing-logic that would allow me never to lose my thread, or efficiency.”

— Matthew

² http://www.w3.org/TR/2008/REC-WCAG20-20081211/#operative
2.2.1 Introduction

Some people who are blind or have low vision use a keyboard instead of a mouse because the fixed layout of keys can be learned, allowing them to navigate the website without having to see the location of the mouse-pointer on screen. Others can use neither the keyboards nor the pointing devices and must interact with a website by voice alone.

Today, web developers need to create websites and web content for people who cannot use the ubiquitous mouse to point and click, or touch a screen to choose an application, or type on a keyboard to type in instructions. Users must be able to access and navigate websites with any available input or control method not only a keyboard and mouse.
2.2.2 Meeting the guidelines for the second principle, operable

The following are some of the points that you might want to keep in mind when creating web content and web sites that meet the Web Content Accessibility Guidelines 2.0 principle of operable.

The functionality and usability of web pages are critical elements of accessibility, such that the majority of Principle 2’s requirements are Level A success criteria.

**Level A Accessibility requirements:**

- Ensure that other means of input and controls are supported, especially through a keyboard. Not everyone with a desktop computer is able to use a mouse. Not everyone with a portable computer is able to use a track-pad. Not everyone with a tablet or smart phone is able to use the touch- or multi-touch screen.
- Ensure a keyboard accessible option is available to return the cursor to the starting point on the page. This is particularly important on advanced, mouse-driven Web-page designs to avoid the cursor becoming “trapped” after an event moves the cursor to a “pop-up” window or into another page frame.
- Consider the users who are unable to read quickly or who for other reasons require more time to respond. On occasion, there are legitimate reasons for limiting the amount of time a user has to react to a command or a request for a response. In general, web developers must provide enough time for users who need time to read, process and react to the information on the web page.
- Allow users to control — pause, stop or hide — moving information, especially critical information, on a web page. The information may be difficult for the user to read or too distracting to have on the screen. If users are unable to control moving information, then they might lose it.
- Avoid blinking and flashing content that could trigger seizures in some users.
• Provide some mechanism that allows people using text-to-speech systems to select and jump to the main content without having to hear all the other, ancillary content on a page, especially a home or portal page. Some pages are heavily burdened with information about an organization’s services, as well as with advertising, news feeds and menus with links to further content. Often these different content groupings are arranged in such a way that the main content of the page is difficult to identify or find. This is particularly true for people using text-to-speech systems. Refer also to Example 1 below.

• Pages should be titled unambiguously, and the title should clearly reflect the page’s topic or purpose. This is the title that appears on the title bar or page tab of your browser (as opposed to the HTML H1 or Heading 1 or Title style in your document). This is the text that gets saved when you bookmark the page or add it to the list of favourites in your browser. Try this experiment: Look at your personal bookmark list and think about which entries are still immediately clear to you and which ones cause you to say, “What the heck is that site?” Headings and labels on your page should also be appropriate to the content. Refer also to Examples 2 and 3 below.

• Make sure the tabbing order makes sense. This will not only help users with keyboards navigate the site, it allows organizations to present the content in a strategic way. For example, if the user experience keeps being interrupted by a random image, content or advertisement, they may get frustrated and leave the page. Set the tabbing order to reflect how you would like someone to read the content.
• Choose link text so that it clearly explains the purpose of the link. The ubiquitous “click here” link-text is almost always considered inaccessible. One reason, but not the only one, is that some text-to-speech systems can extract and read just the links on a page and hearing “click here” one or a dozen times is annoying and useless since the users will not know from the link-text where any particular link will take them.

• There may be instances where you need to short form a number of links to the same work to save real estate on a page. For example, you are listing houses and after each listing there is a common link to ‘amenities’. In this case, provide an alternative attribute or title so the user can find out more about the link. For example “Amenities for 168 Dalhousie St”.

**Level AA Accessibility requirements:**

• Provide two ways beyond typical navigation to get to other pages on the site. A search box and site map work well.

• Provide clear and descriptive headings so users can find the information they seek more easily, and they can understand the relationships between different parts of the content more easily. Provide descriptive labels to help users identify specific components within the content.

Make sure the user can identify where they are on the page by adding emphasis to the highlighted object.
2.2.3 Examples

**Example #1 - Using a link to bypass the menu system**

A link is provided at the start of the page, which will be read by a screen-reading user before the main and secondary menu bars are read. This allows user to skip over the menu system and go directly to the main content on the web page.
Example #2 - Using a `<title>` element to make web pages easier to find

In this simple HTML example, the webpage author has neglected to put a meaningful page title in the `<title>` element. If you “bookmark” or add this page to your “Favourites” list, it will only be identified as “Untitled” – as shown on Image 1. Not very helpful to remind you what this page was and why you thought it worth saving! Unlike some word processors that guess that the first line in a file is the “title”, most web browsers won’t . . . they often have to be told!

Image 2 shows that the author has used the same text in the `<title>` element as in the level 1 heading or content title. Now when a user bookmarks this page it will be more easily identifiable.
Another good reason for proper use of the `<title>` element is that screen-reader users are usually presented with this code-level title first when they enter a page... the user can quickly determine if the link they followed took them to the destination they were expecting IF the title is meaningful. Otherwise the user might have to listen to a lot of the page’s content before hearing any useful identifiers.

**Example #3 - Use of headings to make web content more meaningful**

- A document’s TITLE: “The World at a Glance” - becomes a HEADING 1 `<h1>`
  - Its SUBTITLE: “The Western Hemisphere” - becomes a HEADING 2 `<h2>`
  - A main SECTION or chapter: “North America” - becomes a HEADING 2 `<h2>`
    - A Sub-Section: “Canada” - becomes a HEADING 3 `<h3>`
      - A further subdivision: “Ontario” - becomes a HEADING 4 `<h4>`
    - Another Sub-Section: “USA” - becomes a HEADING 3 `<h3>`
    - Another main SECTION: “South America” - becomes a HEADING 2 `<h2>`
  Etc.

As long as an assistive device user can determine what “level” of header is associated with some text, it doesn’t matter how you make that text “look” on your page. Remember that just because you make some text **Larger** or **Bolder** than other text, that is NOT sufficient to identify it as a header for someone who is using a screen-reader to access web content.
Visit the following links to access more specific information on coding techniques related to the creation of **operable** Web content including the support of alternate input devices, clear navigation strategies and user control for moving or time-sensitive input information:

**WCAG 2.0 – Table of Contents**
http://www.w3.org/TR/WCAG20/

**WCAG 2.0 – Guidelines for Principle 2 - Operable**
http://www.w3.org/TR/WCAG20/#operable

Understanding and Implementing WCAG 2.0
http://www.w3.org/TR/UNDERSTANDING-WCAG20/

Techniques and Failures for Web Content Accessibility Guidelines
http://www.w3.org/TR/WCAG20/-TECHS/

Customizable Quick Reference to WCAG 2.0 Success Criteria
http://www.w3.org/WAI/WCAG20/quickref/

Refer also to Section 6.0 – Resources.
2.3 Principle 3 - Understandable

Under the principle of understandable, the guidelines state that information and the operation of user interface must be understandable.\(^3\)

The W3C says:

- Make text readable and understandable.
- Make content appear and operate in predictable ways.
- Help users avoid and correct mistakes.

From: WCAG 2 at a Glance [http://www.w3.org/WAI/WCAG20/glance/]

"To effectively communicate, we must realize that we are all different in the way we perceive the world and use this understanding as a guide to our communication with others."
— Tony Robbins

"Don’t make me think."
— Steve Krug, usability expert

\(^3\) http://www.w3.org/TR/2008/REC-WCAG20-20081211/#understandable
2.3.1 Introduction

Anyone can visit a website on the Internet, but no two users will share a particular level of literacy, education, economic status, technological experience or physical or cognitive ability. Any aspect of web design or content that confuses a user might also drive them away to another website.

The principle of understandable reflects the wider concept of website “usability’ as it applies to every user. There are many resources that deal with the concept of general usability for website, some of which are included in Section 6 – Resources.

“There’s an old story about the person who wished his computer were as easy to use as his telephone. That wish has come true, since I no longer know how to use my telephone.”

— Bjarne Stroustrup
2.3.2 Meeting the guidelines for the third principle, understandable

The following are some of the points that you might want to keep in mind when creating web content and web sites that meet the Web Content Accessibility Guidelines 2.0 principle of understandable.

**Level A Accessibility requirements:**

- Every web page has some method of indicating, programmatically, the language main used to write the text. In this case, language refers to the languages spoken by the users such as English, French, Spanish, Mandarin, etc. It is important for developers to provide that information so that the assistive devices and other systems can change their language automatically. Screen readers can load the correct pronunciation rules. Visual browsers can display characters and scripts correctly. Media players can show captions correctly. As a result, users with disabilities will be better able to understand the content.

- If users interact with the organization by filling out applications or by using input forms then please ensure the following is in place.
  - All input fields or controls are clearly labelled using plain language
  - All instructions are meaningful, to the point and in plain language.

- If the application has an error checking mechanism, then if possible include the following functions.
  - Ensure that the error checking mechanism notes and describes any errors in the text.
  - Ensure that the error checking mechanism indicates that there has been an error at the point at which the error has occurred so that the user can find it easily and make the necessary corrections. This would not preclude collecting all the errors on a page and listing the material the top of the page. Refer also to Example 1 below.
• Never cause an object receiving focus to cause a substantial change in context without warning
  o e.g., some “roll-over” events cause additional helper information to appear somewhere on the display – A keyboard user tabs through a web page with complex terms. When the user tabs over a complex term a dialogue box launches without ‘activation’ to explain the concept, moving the keyboard focus away from the control every time the user attempts to tab past the field.

• Provide warning to users if an action (event) triggered in one page location causes a change in another page location (which may not be detectable by the user or their assistive devices).
  o e.g., selecting different options from a questionnaire form causes a different set follow-up questions to appear.

Level AA Accessibility Requirements:

• Provide users with suggestions when errors are made. Refer also to Example 2 below.

• Every phrase or passage within the web page – with specific exceptions - has some method of indicating, programmatically, the human language (e.g. English, French, Spanish, etc.). For example, the web page may be in English, but if the author has used the French phrase ‘raison d’être’, you should indicate a change in the human language. Refer also to Example 3 below.

• Navigation mechanisms that are repeated on numerous pages - like the navigation bar often found on the left side of a web page – should always occur in the same relative order. You must also be consistent when using components that have the same functionality. For example, you wouldn’t want to title your search component on the website “search” on one page and “find” on another.

• If users are submitting information that causes a legal or financial commitment; changes their user-controllable stored data or test responses, then make it so the transaction can be reversed OR data is checked for input errors, OR the user can confirm before submitting.
2.3.3 Examples

Example #1 - Form Error Reporting

3 Errors in the form

1. You forgot to enter your name.
2. You must provide a city.
3. Your email address is not valid, or is missing.

An asterisk “*” before a field label means the information is required.

<table>
<thead>
<tr>
<th>Name</th>
<th>E1. You must enter your name.</th>
</tr>
</thead>
<tbody>
<tr>
<td>City</td>
<td>E2. You must enter a city.</td>
</tr>
<tr>
<td>E-Mail</td>
<td>E3. You must enter a valid email address.</td>
</tr>
</tbody>
</table>

| Abc@server.com |

Submit

This example shows a form page that has been checked for errors and returned to the user with both an error-collection box at the top of the page, and specific messages associated with fields that require attention. The errors reported in the collection box also link to the appropriate field labels.
**Example #2 - Form Error Reporting Clarification**

In Example 1, the error check can catch an illegal e-mail address, but would not specify what was wrong. A developer could program the error routine to report that: “Abc@server,com cannot contain a comma. A period is required in a valid e-mail address”

Also, the more data verification you can do with server-side scripting the better (for accessibility). It is important to note that advances in client-side scripting, and assistive-technology’s handling of it, is improving.

**Example #3 - Language and Language Change Example**

Here is a simplified HTML example...

```html
<html lang="en"> <!--the overall language of your content is English ("en")-->  
<body>  
  <p>This paragraph is English but the next is French</p>
  <p lang="fr">Ce paragraphe est en français</p> <!--note the lang attribute!-->
  <p>This paragraph is mostly English, except for the phrase <span lang="fr">C’est la vie</span></p>
</body>  
</html>
```
Visit the following links to access more specific information on coding techniques related to the creation of *understandable* Web content including the language declaration, context-appropriate information and unambiguous labelling:

**WCAG 2.0 – Table of Contents**
http://www.w3.org/TR/WCAG20/

**WCAG 2.0 – Guidelines for Principle 3 - Understandable**
http://www.w3.org/TR/WCAG20/#understandable

**Understanding and Implementing WCAG 2.0**
http://www.w3.org/TR/UNDERSTANDING-WCAG20/

**Techniques and Failures for Web Content Accessibility Guidelines**
http://www.w3.org/TR/WCAG20/-TECHS/

**Customizable Quick Reference to WCAG 2.0 Success Criteria**
http://www.w3.org/WAI/WCAG20/quickref/

Refer also to Section 6.0 – Resources.
2.4 Principle 4 - Robust

Under the principle of robust, the guidelines state that content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.  

The W3C says:

- Maximize compatibility with current and future user tools.

From: WCAG 2 at a Glance [http://www.w3.org/WAI/WCAG20/glance/]

2.4.1 Introduction

A robust website in this context means that people with disabilities who use assistive devices will be able to access it. When users discover that the browser or the assistive devices that they use to access a website are incompatible with it, they do not give up looking for the information. They go elsewhere.

4 http://www.w3.org/TR/2008/REC-WCAG20-20081211/#robust
2.4.2 Meeting the guidelines for the fourth principle, robust

The following are some of the points that you might want to keep in mind when creating web content and web sites that meet the Web Content Accessibility Guidelines 2.0 principle of robust.

Robustness is generally achieved by ensuring your web pages adhere to accepted standards, and by ensuring compatibility with browsers and other applications and technologies like assistive software and hardware. There is only one guideline with just two success criteria for this principle, and **both must be met to achieve Level A**.

- When you employ established web technologies to create accessible websites, make sure that you use them according to their published standards. For example, XHTML Strict has clear rules about matching an element’s start and end tags. If you indicate in your code that you are following the language of XHTML Strict and you do not do so then the web browsers and the assistive devices, which are expecting valid or correct code might not work or if they do, work inconsistently. Most have automated validation or debugging tools you will want to use to ensure that the pages are free of errors.

- When you use proprietary extensions of an established web technology make sure that it is compatible with the browsers that users employ.
  - The developers of browsers occasionally seek to distinguish their products from others on the market by supporting elements or attributes that are not part of the standard of the base mark-up language. These extensions do something when they encounter browsers that understand them. The extensions, however, might not work in other browsers. Consequently, any content or functionality specified by these extensions may be inaccessible to a large number of users.
• When you employ features of established web technologies that are deprecated, some assistive technologies might not work with them.
  o To be deprecated means the feature is being phased out over time in a technology's core set of features. For example, HTML elements such as `<center>`, `<font>`, `<u>` were deprecated when HTML4 was introduced. Many web pages still used these and other deprecated elements because most browsers still recognize them. But as the standards change, support for deprecated items might disappear from standard conforming technologies and especially from assistive technologies that assume wide implementation.

Visit the following links to access more specific information on coding techniques related to the creation of robust Web content including comparability with current and future tools:

WCAG 2.0 – Table of Contents
http://www.w3.org/TR/WCAG20/

WCAG 2.0 – Guidelines for Principle 4 - Robust
http://www.w3.org/TR/WCAG20/#robust

Understanding and Implementing WCAG 2.0
http://www.w3.org/TR/UNDERSTANDING-WCAG20/

Techniques and Failures for Web Content Accessibility Guidelines
http://www.w3.org/TR/WCAG20/-TECHS/

Customizable Quick Reference to WCAG 2.0 Success Criteria
http://www.w3.org/WAI/WCAG20/quickref/

Refer also to Section 6.0 – Resources.
3.0 Other Technical Considerations

3.1 How many web pages are involved?
3.2 How is web content delivered?
3.3 What data formats are used on your website?
3.4 The importance of testing
3.1 How many web pages are involved

A website might have tens, hundreds or thousands of pages depending on its age, history and who now or in years past was allowed to post documents on it.

If an organization does not have the financial or human resources to fix the entire website and the deadline for meeting the requirements is not looming, you might consider suggesting the following steps.

1. Shift old and obsolete pages into the archive. Removing old material will reduce the number of pages to be fixed.

2. Focus on the most important and frequently used pages first.
   - The home page must be welcoming to all visitors and all visitors must be able to use it.
   - The pages directly linked to the home page must be accessible. These second level pages are often as far as visitors go to find the service or information they need.
   - The most important pages to the organization, which might not be the same ones as the most frequently visited pages, must also be accessible.
   - The pages that users visit most frequently must be accessible. An organization that collects and analyzes the data from its website will have this information.

WCAG 2.0 - Web Content Accessibility Guidelines
An Introductory Guide for Web Developers
3.2 How is the web content delivered

How web content is delivered will affect the strategies and techniques you might need to use to make the content accessible. The pages within a site may be hard coded (static) web pages, or they may be data-base driven from a content management system.

Many organizations use content management systems, which allow different modules to be plugged in to them. In the event an organization is using a content management system, you should determine whether or not the system and the modules meet the standards for accessibility, and if they don’t, whether they can they be modified? If not, you may need to obtain an alternative.

Some organizations allow contributors to submit content to the content management system for their websites. In this case, you need to know if these contributors know the requirements of the regulation. They must also be able to provide the following information with their content:

- If they want to publish images, then they must supply text alternatives to describe the images.
- If they want to publish in audio or video formats, then they will have to supply the captioning, descriptions and transcripts.
- If they pepper their text with acronyms and abbreviations, then they need to supply the full and proper names.

The location and ownership of a website and its content should also be considered. If your organization out-sources the design, maintenance, hosting or domain account maintenance to a third party, it is very important to obtain a copy of all of the information necessary to transfer the management of your website and domain name(s) to another vendor.
3.3 What data formats are used on your site?

Not all of the content on a website is supplied in a native web format such as HTML, XHTML and XML. If the content is posted in formats such as word processing files, digital slide presentations, or other digital formats, then it will have to be made accessible.

One common myth about web accessibility is that HTML is the only accessible format. Ten years ago that was much truer than it is now. The first international web standard, Web Content Accessibility Guidelines (WCAG) 1.0 concentrated exclusively on how to make HTML content accessible, because at the time, it was, more or less, the only web format that could be made fully accessible. That situation has changed significantly over the past few years. Many modern authoring tools support almost full accessibility. Further, these new tools increasingly include built-in accessibility checking features that allow the documents’ creators to fix accessibility failures before publishing.

If the organization is using digital formats you will need to apply the same principles and success criteria identified in the WCAG guidelines to each document – where applicable. The Accessible Digital Office Documents (ADOD) project can provide you with the information and instructions needed to create accessible digital contents. Refer also to Section 6.0 – Resources.
3.4 The importance of testing

As you work on developing the website, or repairing accessibility barriers consider the importance of testing its accessibility. There are number of ways that you should be testing the website throughout the development process.

Run automatic assessments using online evaluators: These tools scan websites and their content and produce a documented report on a wide range of accessibility issues. These reports can help you understand the majority of the issues you will have to repair. There are a number of on-line automated web-page accessibility checking application that do a reasonable job of evaluating those aspects of accessible design that can be verified by software. However, you should be aware of the limitations of automated web-page accessibility checking application, including:

- Many of the free tools limit the number of pages that can be checked at one time. Evaluating a large site may be tedious with these tools.
- The results of automated evaluation scans typically require some expertise in accessibility issues to properly interpret the reports and implement the design or coding changes.
- Machine-based evaluations cannot identify usability and subjective accessibility concerns: human interaction is always necessary to ensure that a website is actually accessible and usable in practice.

Refer also to Section 6.0 – Resources.
Manually assess the website and content from a technical and design perspective: As you make changes to the site and repair issues you want to ensure you aren’t creating new ones. A manual assessment is also necessary to identify issues that an automatic assessment wouldn’t identify. For example, unlike an automatic assessment, only developers can determine whether the alternate text provided for images is meaningful. When running a manual assessment, you should employ assistive technology, such as screen readers, to better understand where users could experience accessibility barriers.

User testing: Involving people with disabilities to test the website is perhaps one of the best ways to ensure your website is accessible. Persons with disabilities are ‘experts’ in using accessible websites so be sure to include them in your user-testing activities. Possible sources of such users include:

- staff with disabilities
- focus groups of customers with disabilities
- local organizations that represent persons with disabilities
4.0 Organizational Considerations

4.1 In-house knowledge of accessibility issues
4.2 In-house information technology professionals?
4.3 Financial resources?
4.4 The business case for accessibility
4.5 Project management
4.6 Sustainability
4.0 Organizational Considerations

Some organizations may find the prospect of making their website accessible based on WCAG 2.0 daunting. One organization may have had little day-to-day experience with people who have disabilities as clients or customers. Another may have a website with hundreds of pages, many of which are inaccessible, or may be financially strapped and not able to do the whole website at once. If you have some knowledge of the challenges that organizations might face, then you will be better equipped to help them find solutions.

The following are some of the challenges that organizations might encounter and a few strategies and suggestions to help you work with them.
4.1 In-house knowledge of accessibility issues

General awareness of the issues relating to accessible websites and web content is increasing in Ontario, in part because of the legislation. Many organizations will have some experience with clients, customers and employees who have disabilities. You may want to encourage these organizations to engage their contacts who have disabilities in discussions about the types of barriers they encounter in websites and web content. Do not assume that people with disabilities will know the Web Content Accessibility Guidelines (WCAG). Do assume though that they will know what works on websites for them and what does not. They have had plenty of experience.

4.2 In-house information technology professionals

You may be asked to work with the IT department. Staff members in IT might not know how to make websites accessible but they will know how the website is used by the organization and its clients or customers. The staff will also be a fund of information about the website itself, its history, size and the problems the organization and the users have encountered in the past.
4.3 Financial resources?

The cost of making a website and the web content accessible depends on many factors.

- The size and complexity of the project — A big but simple website might cost less to make accessible than a small, complex one.
- The types of technology — Creating fixes for using accessible technologies will cost more than using accessible technologies from the outset.
- When accessibility was considered — If accessibility is added late in the development process, then the cost will likely be higher that it would be if accessibility was built into the plan from the start.

4.4 The business case for accessibility

Much research has been undertaken on the business case for accessibility, which offers some compelling reasons on why an accessible website is good for your business. Some of the noted benefits include:

- access to a wider possible pool of customers (persons with disabilities and a huge aging demographic);
- better placement in search-engine results;
- visible commitment to social business ethics;
- increased ease of use (usability) for ALL users; and
- freedom from bad publicity, particularly as more and more consumers are using social media to comment on organizations whose services don’t meet their accessibility needs.

Refer also to Section 6.0 – Resources.
4.5 Project management

The process of updating an organizations’ website to make it accessible to customers with disabilities requires careful planning and oversight. As a web developer, you may or may not be in charge of managing the web accessibility project. Whether you are managing the project plan, or someone else, the following steps should be considered in any web accessibility project:

- Ensure that your web developers and designers have awareness of the issues, including WHY the end results are important to any organization.
- Acquire appropriate training for the organization’s web development team to help them understand how technology and the web can create barriers for some people.
- Determine if the organization’s authoring tool or content management environment supports accessible design techniques.
  - If they do, promote the use of the accessibility features to web designers and developers. Note that authoring and content management tools often have a built-in accessibility checking software.
  - If not, project managers should consider acquiring better authoring tools that DO support accessibility. At the very least, acquire and use accessibility checking “plug-ins” that are freely available.
- Prepare a project plan, with key deliverables, scheduling milestones and communication protocols.
• Consider developing a working prototype of the organization’s accessible website and have it tested for accessibility and usability by actual users of assistive technology.

• Obtain appropriate descriptions from content experts

• Do not assume that web developers are familiar with the purpose of the content of web pages. For example: If a policy analyst wants to publish a chart, the analyst should provide a clear description of the meaning of that chart which the developer can use as the alternative text description.
4.6 Sustainability

Organizations need to ensure their website remains accessible to people of all abilities. As part of their project plan, project managers will need to ensure the appropriate staff have the knowledge needed to create and publish accessible web content. In some cases, this may be the in-house web developer. In others, it could be non-technical staff that have access to the content management system. Below are some approaches project managers may take to ensure their websites maintain accessibility.

- If the organization already has Quality Assurance procedures in place for general web publishing, add a requirement for accessibility checking to the process. Do not allow inaccessible content to be published.
- Provide guidance on accessibility to the people or teams that will create the actual content for the company's the web pages. The people who supply content must have a basic level of awareness of what they need to provide to ensure a website is accessible to all.

If outsourcing a web developer, consider building a maintenance agreement that includes testing and repairing accessibility issues in your contractual agreement.
5.0 Conclusion

The purpose of this guide was to provide website developers, whether you work in-house or as an independent consultant, with the sensitivity and skills needed to develop accessible websites and web content. As the legislative requirements for accessible websites come into effect in Ontario, the ability to create them will be an asset to web developers across the Province.

But web accessibility benefits everyone. As the population ages, technologies advance and commerce increases via the internet, incorporating accessibility into the design and functionality of websites will benefit businesses and customers of all abilities. As a result, organizations and web developers must always consider who is accessing their website and the technologies they are using to get there.
6.0 Resources

Understanding how people of all abilities use the web

- How People With Disabilities Use the Web [http://www.w3.org/WAI/intro/people-use-Web/Overview.html]
- Web Accessibility and Older People: Meeting the Needs of Ageing Web Users [http://www.w3.org/WAI/older-users/Overview.php]
- Web Content Accessibility and Mobile Web: Making a Web Site Accessible Both for People with Disabilities and for Mobile Devices [http://www.w3.org/WAI/mobile/Overview.html]

Developing a business case for accessibility

- Developing a Web Accessibility Business Case for Your Organization [http://www.w3.org/WAI/bcase/]

WCAG 2.0

- Customizable Quick Reference to WCAG 2.0 Success Criteria [http://www.w3.org/WAI/WCAG20/quickref/]
- Full Web Content Accessibility Guidelines (WCAG) 2.0 [http://www.w3.org/TR/WCAG20/]
- WCAG 2.0 – Table of Contents [http://www.w3.org/TR/WCAG20/]
- WCAG 2.0 – Guidelines for Principle 1 - Perceivable [http://www.w3.org/TR/WCAG20/#perceivable]
- WCAG 2.0 – Guidelines for Principle 2 - Operable [http://www.w3.org/TR/WCAG20/#operable]
• WCAG 2.0 – Guidelines for Principle 3 – Understandable [http://www.w3.org/TR/WCAG20/#understandable]
• WCAG 2.0 – Guidelines for Principle 4 - Robust [http://www.w3.org/TR/WCAG20/#robust]
• Understanding and Implementing WCAG 2.0 [http://www.w3.org/TR/UNDERSTANDING-WCAG20/]
• Techniques and Failures for Web Content Accessibility Guidelines [http://www.w3.org/TR/WCAG20/-TECHS/]

Creating Accessible Digital Formats

• Accessible Digital Office Document (ADOD) Project [http://adod.idrc.ocad.ca/]

Online Webpage Evaluation Tools

• AChecker Web Accessibility Checker [http://achecker.ca/checker/index.php]
• Wave Accessibility Evaluation Tool [http://wave.webaim.org]
• HiSoftware® Cynthia Says™ Portal [http://www.contentquality.com/]
Online Tools for Checking Colour Contrast and Luminosity Ratios

- The Paciello Group’s Web Accessibility Toolbar for Internet Explorer (also available for Opera) [http://www.paciellogroup.com/resources/wat/ie]
- The Paciello Group’s Color Contrast Analyser [http://www.paciellogroup.com/resources/contrast-analyser.html]

Vendors providing Accessible Information and Communication Supports Services