



# Web Content Accessibility Guidelines 2.0

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**Editors:**

Wendy Chisholm, W3C

Jason White, University of Melbourne

Gregg Vanderheiden, Trace R&D Center

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## Abstract

W3C published the [Web Content Accessibility Guidelines 1.0](#) (WCAG 1.0) as a Recommendation in May 1999. This Working Draft for version 2.0 builds on WCAG 1.0. It has the same aim: explain how to make Web content accessible to people with disabilities. Incorporating feedback on WCAG 1.0, this Working Draft of version 2.0 focuses on checkpoints. It attempts to apply checkpoints to a wider range of technologies and to use wording that may be understood by a more varied audience.

## Status of this document

This document is prepared by the [Web Content Accessibility Guidelines Working](#)

[Group](#) (WCAG WG) to show how more generalized (less HTML-specific) WCAG checkpoints **might** read. This draft is not based on consensus of the WCAG Working Group nor has it gone through W3C process. This Working Draft in no way supersedes [WCAG 1.0](#).

Please refer to "[Issue Tracking for WCAG 2.0](#)" for a list of open issues related to this Working Draft. The "[History of Changes to WCAG 2.0 Working Drafts](#)" is also available.

This is a draft document and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use W3C Working Drafts as reference material or to cite them as other than "work in progress". A list of [current W3C Recommendations and other technical documents](#) is available.

Please send comments on this document to [w3c-wai-gl@w3.org](mailto:w3c-wai-gl@w3.org). The [archives for this list](#) are publicly available.

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# Introduction

## Purpose

This document outlines design principles for creating accessible Web sites. When these principles are ignored, individuals with disabilities may not be able to access the content at all, or they may be able to do so only with great difficulty. When these principles are employed, they also make Web content accessible to a variety of Web-enabled devices, such as phones, handheld devices, kiosks, network appliances, etc. By making content accessible to a variety of devices, the content is now accessible to people in a variety of situations.

Not all devices are the same. Not all systems are the same. Not all people are the same. When following the guidelines, attempt to reach the maximum number of people in the maximum number of scenarios. This can be achieved through a single accessible rendering or multiple accessible renderings of the same content optimized for different situations.

The design principles in this document represent broad concepts that apply to all Web-based content. They are not specific to HTML, XML, or any other technology. This approach was taken so that the design principles could be applied to a variety of situations and technologies, including those that do not yet exist.

## How to read this document

It takes a variety of people to make a Web site; it will take a variety of people to make it accessible. All of the information and guidance we offer to make Web sites accessible is gathered in a suite of documents. At the top layer are the most general concepts, and at the bottom layer are the most specific.

### **Top layer - Overview of Design Principles, Guidelines, Checkpoints**

The top layer, where you are now, is divided into an Overview of Design Principles and four Guidelines:

- Guideline 1. Presentation: Design content that allows presentation according to the user's needs and preferences
- Guideline 2. Interaction: Design content that allows interaction according to the user's needs and preferences
- Guideline 3. Comprehension: Make it as easy as possible to use and

- understand
- Guideline 4. Technology considerations: Design for compatibility and interoperability

Each Guideline has several Checkpoints associated with it. There are a total of 21 checkpoints.

Each checkpoint is divided into normative and non-normative (informative) information. The normative text is what you must conform to. The informative text only helps to make the normative text easier to understand. A checkpoint consists of:

- the checkpoint text (normative),
- success criteria (normative),
- definitions (informative),
- benefits (informative),
- examples (informative).

### **Bottom layer - Technology-specific information**

In separate Techniques Documents are code examples, screen shots, and other information specific to a technology.

*These will become active links as the corresponding working drafts are published.*

- HTML/XHTML Techniques
- CSS Techniques
- PDF Techniques
- Server-side scripting Techniques
- Client-side scripting Techniques
- SVG Techniques
- SMIL Techniques
- XML Techniques

### **Audience**

We expect that policy makers will use the Guideline and Checkpoint level, while developers will dive into Techniques and managers might only need to read the Overview of Design Principles.

## Scope

*Note to reviewers: it has been proposed to include a discussion of accessibility vs usability and how we define our scope.*

## Priorities and Techniques

This WCAG 2.0 Working Draft does not assign priorities to checkpoints, nor does it include links to technology-specific examples and techniques. Later versions of this document will assign priorities and will link to techniques. This Working Draft presents an initial reorganization and begins to incorporate other feedback received since the publication of WCAG 1.0 in May 1999.

In some cases, WCAG 1.0 checkpoints of various priorities are combined into a single checkpoint in the WCAG 2.0 Working Draft. In these instances, a priority cannot be assigned to the new checkpoint until the WCAG Working Group has extensively discussed the priority for that checkpoint. Priorities will be included in a future Working Draft.

The WCAG Working Group is proceeding carefully to minimize substantial differences between the WCAG 1.0 Recommendation and the WCAG 2.0 Working Draft. Refer to the [Checkpoint Mapping Between WCAG 1.0 and WCAG 2.0 Working Draft](#) for more detail on current correspondences.

WCAG 1.0 is accompanied by supporting techniques documents (non-normative) which include examples of how to implement WCAG 1.0 in HTML and CSS. The WCAG Working Group will continue to develop the HTML and CSS technique documents as well as create new documents for other languages such as SMIL and SVG. Links to these documents will be added in future versions of the WCAG 2.0 Working Draft.

## Overview of Design Principles

The four design principles in this document are:

1. **Presentation.** Design content that allows presentation according to the user's needs and preferences
2. **Interaction.** Design content that allows interaction according to the user's needs and preferences
3. **Comprehension.** Make it as easy as possible to use and understand

#### 4. **Technology considerations.** Design for compatibility and interoperability

All Web content has been created because some person or group of people wanted to accomplish *something* - whether to provide the weather report for a community or to create a family photo album or to sell cars. The purpose and design of a site will vary as much as the people who create it. Content that is usable, attractive and meets the needs of its audience is *designed* that way. In the same manner, *accessible* Web content design is a conscious effort.

Accessible Web content benefits a variety of people, not just people with disabilities. In the physical world, ramps are used by bicycles, people pushing strollers, and people in wheelchairs. Similarly, accessible Web content is usable by a variety of people with and without disabilities. For example, people who are temporarily operating under constrained conditions.

Accessible Web content is often accessible because it can be repurposed by a machine. For example, a browser can display text instead of an image if the text has been associated with the image. Likewise, a search engine can find a famous quote in a movie if the transcript is provided on the Web site.

Note: These principles apply only to Web content presented to a human reader. A structured database or metadata collection where the data is intended for use by another machine and thus requires no interface lies outside the scope of these guidelines.

#### **User needs**

Here are a few scenarios, by no means an exhaustive list of the variations and types of disabilities and needs:

- Someone who cannot hear will want see the information.
- Someone who cannot see will want to hear or touch the information.
- Someone who does not have the strength to move quickly or easily will want to use as little movement as possible to see or hear or feel the information.
- Someone who does not read well may want to hear the information and see words highlighted as they are read.

If Web content employs the design principles described in this document, then users should be able to access the content using adaptive strategies and assistive technologies. A screen reader is an example of an assistive technology that reads the page aloud. There are many other tools people with disabilities employ to make

use of Web content. For more in-depth scenarios of people with disabilities using accessible and inaccessible Web content, please read "[How People with Disabilities Use the Web](#)".

## **A process for building content**

Think about the process used to build a new office building. The structure of the building - its skeleton - is built before the decorations are added.

Similarly, the place to begin in your design is with the structure. How many chapters does your document have? Which navigation links are the most important and where should they go? What is the best way to express this idea - do you need an animated simulation to help people understand?

Once the structure is finished, the walls are painted and pictures are hung. On your web site, this is like deciding the color of chapter titles and how text will flow around images.

## **Steps and ladders**

The architect designed the building with both elevators and stairs. Some people prefer to take stairs, while some people find the stairs too challenging or impossible. On your Web site, some people will prefer images, animations, multimedia, fast-paced interactive games, while others will find them too challenging or impossible to use. As with elevators and stairs, provide a variety of ways for people to access and to navigate through your Web content.

## **Guideline 1 - Presentation.**

### **Design content that allows presentation according to the user's needs and preferences**

We adjust objects in our environment to meet our needs and use tools to help us do things we cannot do on our own. Both in real life and on the Web, some people rely on these adjustments to work, to contribute to society, and to enjoy life. One person uses a stepladder to reach an object on a high shelf. Another uses a magnifying glass to read small print. A third uses captions to understand what a television news announcer is saying.

Here are some examples from the World Wide Web:

- A person away from home might use a cell phone to check sports scores.
- A person who cannot see text might use a screen reader to read the text aloud.
- A person without a mouse might use a keyboard to navigate a web page.

User needs and preferences are influenced by:

- **User capabilities.** Sight, hearing, movement, and comprehension affect the ability of a user to access information visually, auditorily, tactilely, or through some combination.
- **Device and user-agent capabilities.** Screen size and interaction modalities such as keyboard instead of mouse, or voice, or using an assistive technology are among device and user-agent capabilities that affect user access.

For more information about user capabilities, device capabilities, assistive technologies, and usage scenarios refer to the Working Draft "[How People with Disabilities Use the Web.](#)"

## Checkpoint 1.1 Provide a text equivalent for all non-text content.

### Success criteria

You will have successfully provided a text equivalent for all non-text content if:

1. all non-text content is explicitly associated with a text equivalent (images have alt-text, movies have collated text transcripts, animations have descriptions, interactive scripts have a functional equivalent such as a form, audio files have a text transcript),
2. the text equivalent fulfills the same function and conveys the same information as the non-text content.  
Note: Depending on the purpose and content of the non-text content, a short label may be appropriate, or a more thorough explanation may be required,
3. where it is not possible to describe the non-text content in words or for text to provide the same function as the non-text content, a label identifying the content is provided.

### Definitions (informative)

*A text equivalent*

- communicates the same information as the non-text content.
- serves the same function as the non-text content.
- may contain structured content or metadata.
- can be easily converted to braille or speech, or displayed in a larger font or different colors.

*Non-text content* includes images, text in raster images, image map regions, animations (e.g., animated GIFs), applets and programmatic objects, ascii art, scripts, images used as list bullets, spacers, graphical buttons, sounds (played with or without user interaction), stand-alone audio files, audio tracks of video, and video. *Note to reviewers: This definition is under discussion. Suggestions are welcome.*

### Benefits (informative)

Text equivalents provide access to non-text information for someone who cannot see at all, who cannot see well, or who needs to supplement visual information with auditory information.

### Examples (informative)

- Example 1: a short label.  A right arrow icon is used to link to the next slide in a slideshow. The text equivalent is "Next."
- Example 2: a short label and a longer explanation of a data chart. A bar chart compares how many widgets were sold in June, July, and August. The short label says, "Graph of the numbers of widgets sold in June, July, and August." The longer explanation provides the data presented in the chart.
- Example 3: a short label and a longer explanation of animation. An animation shows how to tie a knot. The short label says, "An animation showing how to tie a square knot." The longer explanation describes the hand movements needed to tie the knot.
- Example 4: a label for content that cannot be described in words. An audio file is embedded in a Web page. The short label says, "Beethoven's 5th Symphony performed by the Chicago Symphony Orchestra."

## Checkpoint 1.2 Provide synchronized *media equivalents* for time-dependent presentations.

## Success criteria

You will have successfully provided synchronized media equivalents with time-dependent presentations if:

1. all significant visual cues in scenes, actions and events are described. If there are not sufficient breaks in dialogue to provide an audio description for all visual cues and you are unable to freeze the action frequently to insert description, describe as much as possible or give abbreviated descriptions or descriptions later or earlier when there is time,
2. all significant dialogue and sounds are captioned.
3. descriptions and captions are synchronized with the events they represent to within a tolerance of X. [*Note: We need to research the tolerance. Any information on this is appreciated.*]
4. if the Web content is a real-time broadcast, it is possible to provide real-time commentary (as with a sporting event) and real-time captioning. If this creates an undue burden, the presentation is available after-the-fact with captions and audio descriptions.

## Definitions (informative)

Multimedia presentations include both audio and video tracks.

*Media equivalents* present essential audio information visually (*captions*) and essential video information auditorily (*audio descriptions*).

- *Captions* are text equivalents of auditory information from speech, sound effects, and ambient sounds that are synchronized with the multimedia presentation.
- *Audio descriptions* are equivalents of visual information from actions, body language, graphics, and scene changes that are voiced (either by a human or a speech synthesizer) and synchronized with the multimedia presentation.

## Benefits (informative)

Captions provide auditory information for people who are deaf or who have hearing loss. Audio descriptions provide visual information for people who are blind or who have low vision. Captions also provide auditory information for people who have lowered the sound volume or are in a noisy environment. Audio descriptions also provide visual information for people who are temporarily not looking at the video presentation. For example, while following an instructional video they must look

down at their hands and away from the screen.

### Examples (informative)

- Example 1: a movie clip with audio description and captions.  
A clip from a movie is published on a Web site. In the clip, a child is trying to lure an alien to the child's bedroom by laying a trail of candy. The child mumbles inaudibly to himself as he lays the trail. When not watching the video, it is not obvious that he is laying a trail of candy since all you hear is the mumbling. The audio description that is interspersed with the child's mumbling says "Charlie lays a piece of candy on each stair leading to his room." The caption that appears as he mumbles is, "[inaudible mumbling]."
- Example 2: a video clip of a news story.  
A video clip accompanies a news story about the recent flooding in a major city. The reporter describes what is seen, for everyone. No audio description is necessary. The captions display what the reporter is saying.
- Example 3: a silent animation.  
An animation shows a clown slipping on a banana and falling down. There is no audio track for this animation. No captions or audio description are required. Instead, provide a text equivalent as described in checkpoint 1.1.

## Checkpoint 1.3 Use markup or a data model to provide the logical structure of content.

### Success criteria

You will have successfully used markup or a data model to provide the logical structure of content if:

1. the hierarchical structure of the content is unambiguously represented in the markup or data model,
2. important non-hierarchical relationships, such as cross-references, or the correspondence between header and data cells in a table, are represented unambiguously in the markup or data model.

### Definitions (informative)

The *logical structure* of content represents changes in context. For example,

1. A book is divided into chapters, paragraphs, lists, etc. Chapter titles help the

reader anticipate the meaning of the following paragraphs. Lists clearly indicate separate, yet related ideas. An italicized phrase emphasizes an important idea. All of these divisions help the reader anticipate changes in context.

2. A bicycle is divided into wheels and a frame. Further, a wheel is divided into a tire and a rim. In an image of the bicycle, one group of circles and lines becomes "wheel" while another group becomes "frame."

*Note to reviewers: The definition for data model is under discussion. Suggestions are welcome.*

## **Benefits (informative)**

When the logical structure is provided in markup or a data model,

- a reader can use software to jump between changes in context. For example, a reader could jump from chapter title to chapter title in a book, between scenes in a play, or between parts of a bicycle,
- a reader can change how chapter titles are displayed or how text is emphasized, based on their personal preferences,
- the content can be presented on a variety of devices because the device software can choose only those elements of the content that it is able to display and display them in the most effective way for that device.

## **Examples (informative)**

- Example 1: a physics dissertation.  
A dissertation contains well-defined sections such as "Abstract," "Table of Contents," "Chapter 1," etc. The pieces in each section (paragraphs, subheadings, quotes) are denoted with structural markup.
- Example 2: a scalable image of a bike.  
Lines and a circle (spokes and rim) are grouped into a "wheel." Lines in a triangle that attach to each wheel are grouped into a "frame."
- Example 3: user interface.  
User interface controls are divided into organized groups.

## **Checkpoint 1.4 Identify the primary natural language of text and text equivalents and all changes in natural language.**

*Note to reviewers: Use of the word "natural" is under discussion. Suggestions are*

*welcome.*

## Success criteria

You will have successfully identified the primary natural language of text and text equivalents and all changes in natural language if:

1. changes in language are identified at the level the changes occur.  
Note: If there is never a change throughout a whole site, then identification can occur at the highest level (usually at a page or document level). If changes occur at the word or phrase level, then changes should be identified at the word or phrase level using the markup appropriate to the markup language in use.

## Definitions (informative)

*Natural languages* are those used by humans to communicate, including spoken, written, and signed languages.

## Benefits (informative)

Oftentimes, phrases from various languages are interspersed in writing. When these phrases are identified, a speech synthesizer can voice text with the appropriate accent and pronunciation. When they are not identified, the speech synthesizer will use the default accent and pronunciation dictionary which can make the phrase intelligible. Identifying changes in language will also allow a tool to ask for automatic translations of that content. When editing documents, authoring tools can switch between appropriate spelling dictionaries.

## Examples (informative)

- Example 1: a French phrase in an English sentence.  
In the following sentence, "And with a certain *je ne sais quoi*, she entered both the room, and his life, forever." the French phrase "*je ne sais quoi*" is marked as French. Depending on the markup language, English may either be marked as the language for the entire document except where specified, or marked at the paragraph level.

## Checkpoint 1.5 Separate content and structure from presentation.

## Success criteria

You will have successfully separated content and structure from presentation if:

1. sufficient markup or a sufficient data model is provided to ensure that a logical, linear reading order can be derived from the content,
2. the markup or data model representing the structure of the content is logically separated from the presentation that is either by using separate data structures or a style sheet to control presentation.

## Definitions (informative)

*Note to reviewers: A definition for Content is under discussion. Suggestions are welcome.*

*Note to reviewers: A definition for Presentation is under discussion. Suggestions are welcome.*

## Benefits (informative)

Content and presentation can be separated because the rules that control how content is displayed can be separated from the markup that denotes the structure of the content.

Typically, style rules are stored separately from the content to which they apply, in resources known as style sheets. To facilitate the presentation of Web content by a range of devices (high and low-resolution displays, printers, speech devices, etc.), it is advisable to associate a variety of style sheets with your Web content.

## Examples (informative)

- Example 1: a multi-column document.  
A document is marked up with headings, paragraphs and other structural features. It is presented visually in three columns. The markup that creates the columns is separate from the markup that specifies the logical structure of the document.
- Example 2: a scrolling list of stock prices.  
Current stock quotes are scrolled horizontally across the screen. The data is separate from the methods used to scroll the text across the page.

## **Guideline 2 - Interaction.**

### **Design content that allows interaction according to the user's needs and preferences**

We interact with objects and events in our environment in different ways based on our abilities and often determined by the situation in which we find ourselves.

#### **Checkpoint 2.1 Provide multiple site navigation mechanisms.**

*Note to reviewers: We are currently discussing the scope of this checkpoint and what is required. Does providing multiple site navigation mechanisms increase accessibility or are we trying to get at something else? Refer to the benefits for the issue we are trying to tackle. Suggestions are encouraged. How do we set limits for when to apply this checkpoint? If a site consists of only 5 pages, a site map might look exactly like the home page.*

#### **Success criteria**

You will have successfully provided multiple site navigation mechanisms if:

1. one or more navigation mechanisms are provided that cover all or selected portions of the content comprising a Web site,
2. the site navigation mechanisms are clearly distinguished from the main content to make them easy to locate.

*Note to reviewers: These success criteria are not easily testable. We have also discussed complex sites and content versus small sites. For example, WCAG 1.0 is one "page" but it needs several navigation mechanisms. Suggestions and feedback are encouraged.*

#### **Benefits (informative)**

Someone may give us directions to a new place, but based on our knowledge or landmarks along the way, we might take a different route. As people interact with your Web site, they might find different associations between content and take a different path than you anticipate. Some people will miss the associations you have made and not find the content on the paths you have created. Providing people with multiple navigation mechanisms provides a variety of paths to access content.

## **Checkpoint 2.2 Provide consistent and predictable responses to user actions.**

### **Success criteria**

You will have successfully provided consistent and predictable responses to user actions if:

1. similar layout for user interface components is used throughout your site,
2. similar user interface components are labelled with similar terminology,
3. controls that look the same are designed to act the same,
4. operating system, language, or application conventions likely to be familiar to the user have been followed,
5. unusual user interface features or behaviors that are likely to confuse the first-time user are documented.

### **Benefits (informative)**

Providing responses to user actions is important feedback for the user. This lets them know that your site is working properly and encourages them to keep interacting. When the user receives an unexpected response, they might think something is wrong or broken. Some people might get so confused they will not be able to use your site. Common responses to user actions:

- rollover effects,
- popup menus,
- form submission after the user activates the submit button,

These actions should be predictable and sensible to the end user. Make interactions consistent, both throughout the site and with commonly used interaction metaphors used throughout the Web.

### **Examples (informative)**

- Example 1: navigation bars.
- Example 2: frames.
- Example 3: forms.

## **Checkpoint 2.3 Either give users control of mechanisms that cause extreme changes in context or warn them of pending**

## changes.

### Success criteria

You will have successfully either given users control of mechanisms that cause extreme changes in context or warn them of pending changes if:

1. a method is provided for the user to deactivate processes or features that cause extreme changes in context. The method:
  - is easily identified on the primary page of a multi-document site,
  - once selected, applies to further interactions on the site.
2. or extreme changes in context are identified before they occur so the user can determine if they wish to proceed or so they can be prepared for the change.

### Definitions (informative)

*Mechanisms that cause extreme changes in context* include:

- opening a new browser window,
- frames that do not track history making the "back" button of most browsers useless.

### Benefits (informative)

If the user is unable to track visual cues that make extreme changes obvious, then they will not realize the context has changed. People who are blind, some people with low vision, some people with dyslexia and other people who have difficulty interpreting visual cues need guidance during extreme changes in context.

### Examples (informative)

- Example 1: a form to deactivate pop-up windows.  
Provide a checkbox on a page of links to let the user select whether they want the resultant pages to appear in new windows or not.
- Example 2: a warning given before a pop-up window.  
At the end of a news story, several links are provided for more information. At the beginning of each link is an icon of an arrow with the text equivalent, "Link will open in new window."

## **Checkpoint 2.4 Either give users control over how long they can interact with content that requires a timed response or give them as much time as possible.**

### **Success criteria**

You will have successfully either given users control over how long they can interact with content that requires a timed response or given them as much time as possible if:

1. the user is allowed to deactivate automatic updating or
2. the user is warned before time expires and allowed to extend the time available to them or
3. the user is allowed to set how often the content is updated (in seconds) or
4. the user is given as much time as possible.

### **Definitions (informative)**

Examples of *content that requires a timed response*:

- automatic refresh,
- redirection,
- blinking or scrolling text

### **Benefits (informative)**

People with reading disabilities, cognitive disabilities, and learning disabilities often need longer than most people to read and comprehend written text. People with physical disabilities might not be able to move quickly or accurately enough to interact with moving objects. Content that is updated often might not be processed and read in time or in the proper order by an assistive technology or voice browser.

### **Examples (informative)**

- Example 1: blinking text:  
Client-side scripting is used to create blinking text. The user can deactivate the use of scripting in his or her browser or override the use of scripts with a user style sheet.
- Example 2: a news site that is updated regularly.  
A news site causes its front page to be updated every 1/2 hour. The front page

contains minimal text and primarily consists of links to content. A user who does not wish the page to update selects a checkbox. The checkbox is in the "user preferences" portion of the site which is one of the first links on each page.

## Checkpoint 2.5 Use device-independent event handlers.

### Success criteria

You will have successfully used device-independent event handlers if:

1. generic event handlers are used instead of event handlers that require a specific input device,
2. more than one device-specific event handler is used if generic event handlers are not available.

*Note to reviewers: In criterion 2, one of the device-specific event handlers must be encoding (e.g., keyboard) although it has been noted that encoding device handlers do not appear to be usable in lieu of direct manipulation (e.g., mouse) in those cases where the action or the result can not be expressed in words. Our challenge is to express this simply. Feedback is encouraged.*

### Benefits (informative)

Device-independent access allows the user to interact with the content through a preferred device. For example, a mouse, a keyboard, a microphone, or a head wand. There are a variety of input devices that exist today and who knows what might be possible in the future. In general, if keyboard interaction is supported, speech input or a command line interface will also be supported.

### Examples (informative)

- Example 1: a submit button.  
A submit button may be activated by clicking on it with the mouse, tabbing to it with the keyboard then pressing the Enter key, selecting it through voice input, or pressing it with a stylus.

## Checkpoint 2.6 Avoid causing the screen to flicker.

### Success criteria

You will have successfully avoided causing the screen to flicker if:

1. content does not flicker between 4 and 49 Hz.

### **Benefits (informative)**

People with photosensitive epilepsy can have seizures triggered by flickering or flashing in the 4 to 49 flashes per second (Hertz) range with a peak sensitivity at 20 flashes per second as well as quick changes from dark to light (like strobe lights). Such users configure their user agents and system devices to avoid screen flicker at rates that individually affect them.

## **Checkpoint 2.7 Handle input errors, such as misspellings.**

*Note to reviewers: This is a new checkpoint that is being explored. It does not have full support of the working group. We know that spelling mistakes are a serious issue for people with writing disabilities and dyslexia. We have generalized this checkpoint to include all input errors but highlight spelling mistakes. Are there other input errors we should highlight? Are there other success criteria we can define? If not, then we will not use the general case and make this specific to spelling errors.*

### **Success criteria**

You will have successfully handled input errors, such as misspellings if:

1. checks for misspelled words are applied and correct spellings are suggested when text entry is required,
2. where possible, the user is allowed to select from a list of options rather than generate text.

### **Benefits (informative)**

People with writing disabilities and people with dyslexia often have difficulty writing text in forms or other places that need text input. People with speech disabilities might not be recognized properly in voice input applications.

### **Examples (informative)**

- Example 1: a search engine.

A search engine is provided with a variety of search options for different skill levels and preferences. It includes a spell checker and offers "best guess" alternatives, query-by-example searches, and similarity searches.

## **Guideline 3 - Comprehension.**

### **Make it as easy as possible to use and understand**

We each gain knowledge in different ways. Some people read something and understand, others have to experience it, while others need only to see something. To help people understand the information you are presenting, consider the various ways that people learn. Keep in mind the variety of backgrounds and experiences people will bring to your site. Use language, illustrations, and concepts that they are likely to know. Highlight the differences and similarities between concepts. A delicate balance is needed in design to make this work well.

#### **Checkpoint 3.1 Use consistent presentation.**

##### **Success criteria**

You will have successfully used consistent presentation if:

1. items with similar function have a similar presentation.

##### **Definitions (informative)**

*Presentation* includes, but is not limited to:

- position,
- font, font size,
- color

##### **Benefits (informative)**

Consistency helps users predict where to find information on each page of your site. It also helps users determine the relationships between items in the content. This understanding of the structure helps users navigate, orient themselves, and thus understand.

Note that differences in presentation also help users determine that they have

succeeded in loading a new page. Differences also help users distinguish between content. Highlighting these differences is covered in the next checkpoint 3.2.

This checkpoint asks the author to make items with similar functions have a similar appearance or sound, while checkpoint 3.2 asks the author to highlight the differences through presentation.

## **Checkpoint 3.2 Emphasize structure through presentation, positioning, and labels.**

### **Success criteria**

You will have successfully emphasized structure through presentation, positioning, and labels if:

1. a unique style is created for each structural element  
Note: styles include differences in size, appearance, position and may be subtly distinct.
2. where appropriate, differences in structure are labeled,
3. where possible, these differences are highlighted in styles for a variety of output media including large screen, small screen, speech, braille, tty, etc.

### **Benefits (informative)**

Presentation that emphasizes structure enables users to be

- oriented within the document,
- focused on important content,
- aware of highlighted ideas.

If the default presentation of the structured content does not meet the needs of your audience, use graphics, colors, sounds, and other aspects of presentation to emphasize the structure. However, ensure that the structural and semantic distinctions are provided in the markup. Refer to checkpoint 1.3.

### **Examples (informative)**

- Example 1: documentation for a product.  
Identifying chapters in the title of a chapter is appropriate and accepted use of labeling the structure. Within the chapters, headings identify (label) changes

in context and highlight ideas contained in the following text. Subtle differences between the appearance of the chapter title and the section headings helps the user understand the hierarchy and relationship between the title and headings. The only difference might be font size and margin indentation when presented visually, and spoken in a difference voice or preceded by a sound when presented auditorily.

- Example 2: data table.  
Groups of rows or columns are labeled with headers.

### **Checkpoint 3.3 Write as clearly and simply as is appropriate for the content.**

#### **Success criteria**

You will have successfully written as clearly and simply as is possible and appropriate for the site's content if:

1. the audience is anticipated to have a wider range of educational levels and background knowledge than expected,
2. language is used that your intended audience ought to be familiar with,
3. when introducing new concepts or terms, they are defined or annotated in language that the audience should be familiar with or definitions or explanations are linked to that might be easier to understand.

#### **Benefits (informative)**

Authors should strive for clear and simple writing to aid all users, especially those with cognitive, learning, and/or reading disabilities. This should not discourage you from expressing complex or technical ideas. Using clear and simple language also benefits people whose first language differs from your own, including those people who communicate primarily in sign language.

### **Checkpoint 3.4 Supplement text with non-text content.**

#### **Success criteria**

*Note to reviewers: This item is under discussion and does not have consensus. We do not have something acceptable for the draft at this time. Comments and suggestions are welcome. Refer to the issues list for more information.*

## Definitions (informative)

*Non-text content* includes images, text in raster images, image map regions, animations (e.g., animated GIFs), applets and programmatic objects, ascii art, scripts, images used as list bullets, spacers, graphical buttons, sounds (played with or without user interaction), stand-alone audio files, audio tracks of video, and video. *Note to reviewers: this definition is under discussion. Suggestions are welcome.*

## Benefits (informative)

Sounds, graphics, videos and animations can help make concepts presented in a Web site easier to understand, especially for people with cognitive, reading, or learning disabilities or those who are unfamiliar with the language of the text of the site.

Note: "Designers need to be cautious in deciding when to use illustrations. Reading a picture is probably a learned activity that is easier for some than others. Some users skip the pictures; others read *only* the pictures. Designers must also recognize that visual conventions are not universal and that individuals develop their own mental schema and expectations in interpreting visual information. For a detailed discussion of guidelines pertaining to illustrations, consult Tufte (1983) and MacDonald-Ross (1977)." Robert W. Bailey, Ph.D., Human Performance Engineering, 3rd edition.] pg 431.

## Examples (informative)

- Example 1: a description of a process.  
A page describes how to learn to snowboard. Each step in learning how to turn on the snowboard is illustrated with a photograph of a person doing what is described in the text.
- Example 2: a concrete concept.  
The primary concept on a page is concrete. It is discussing Mt. St. Helens. It includes both a description of the 1981 eruption as well as photos of the eruption and the aftermath. It links to another site that contains video and another site that contains a 3D simulation of what happened underneath the crust and within the volcano during the eruption.
- Example 3: child's report of school trip.  
A child went with her school on a trip to a soda pop bottling plant. She wrote a report for her family and friends to post to the Web. In the report, she includes the company logo as well as a picture of a soda pop bottle, which has a

unique shape. She links to the company Web site for more information. She includes photos she took of the plant.

- Example 4: stock trading data.

A news site is comparing the performance of the economy from 3rd quarter of this year with 3rd quarter from the last 3 years. They compare prices of the most popular stocks. They present the data in a bar graph with a link to the raw data they used to create the bar graph.

- Example 5: history of Jazz.

A grandfather's hobby is listening and playing to Jazz. He creates a Web site discussing the major players from the 1940's and the styles they were creating. When describing key pieces of work, he links to a short sound clip from each song.

## Checkpoint 3.5 Annotate complex, abbreviated, or unfamiliar information with summaries and definitions.

### Success criteria

You will have successfully annotated complex, abbreviated, or unfamiliar information with summaries and definitions if:

1. a definition or link to a definition is provided for phrases, words, acronyms, and abbreviations specific to a particular community.
2. a summary is provided for
  - relationships among cells for tables with nested headings,
  - relationships among cells that span multiple columns or rows,
  - or other relationships that may not be obvious from analyzing the structure of the table but that may be apparent in a visual rendering of the table.

A summary may also describe how the table fits into the context of the current document.

*Note to reviewers: These success criteria are incomplete and need work. Comments are solicited.*

### Definitions (informative)

Content is considered *complex* if the relationships between pieces of information are not easy to figure out. If the presentation of the information is intended to highlight

trends or relationships between concepts, these should be explicitly stated in the summary.

Examples of complex information:

- data tables,
- concepts that are esoteric or difficult to understand,
- content that involves several layers.

Content might be *unfamiliar* if you are using terms specific to a particular community. For example, many of the terms used in this document are specific to the disability community.

### **Benefits (informative)**

Summarizing information that is difficult to understand helps people who do not read well. Providing a summary of the visual cues that show relationships between complex information helps people who do not use visual cues or who have difficulty using visual cues. For example, people who are blind do not use any visual cues, while people with dyslexia or people with low vision might have difficulty interpreting visual cues.

Defining key terms and specialized language will help people who are not familiar with the topic. Providing the expansion of abbreviations and acronyms not only helps people who are not familiar with the abbreviation or acronym but can clarify which meaning of an abbreviation or acronym is appropriate to use. For example, the acronym "ADA" stands for both the American with Disabilities Act as well as the American Dental Association.

## **Guideline 4 - Technology considerations. Design for compatibility and interoperability**

The other three guidelines stress the needs of the user and how those needs might change as the situation changes. This guideline focuses on the technical considerations that are needed to support the changing needs of a particular user and the differing needs of users.

The user's needs and preferences are tied to the device that he or she chooses, as discussed in Guideline 1. These four checkpoints highlight the use of technology that will support the design of content that changes according to user's needs and

preferences in presentation, interaction, and comprehension.

## **Checkpoint 4.1 Choose technologies that support the use of these guidelines.**

### **Success criteria**

You will have successfully chosen a technology that supports the use of these guidelines if the technology:

1. permits equivalents to be associated with or synchronized with auditory, graphical, and multimedia content,
2. allows the logical structure of the content to be defined independently of presentation,
3. supports device-independence,
4. is documented in published specifications and can be implemented by user agent and assistive technology developers,
5. is supported by user agents and assistive technologies.

*Note to reviewers: These success criteria are incomplete and need work. Comments are solicited.*

### **Benefits (informative)**

Markup languages, multimedia formats, software interface standards, etc., vary in their support of accessibility. When choosing which technologies to use, consider how easy it is to apply these guidelines.

## **Checkpoint 4.2 Use technologies according to specification.**

### **Success criteria**

You will have successfully used technologies according to specification if:

1. for markup: the markup has passed validity tests of the language (whether it be conforming to a schema, DTD, or other tests described in the specification), structural elements and attributes are used as defined in the specification, accessibility features are used, and deprecated features are avoided.
2. for api's: programming standards for the language are followed and

accessibility api's are used when available.

*Note to reviewers: Please help us identify accessibility issues with transport protocols so that we can properly address them in this checkpoint. Our current thinking is that these issues might be server-side issues rather than issues with the content.*

### **Benefits (informative)**

When languages, API's, and protocols are used according to specification, tools that use the results will be able to do so as intended and expected.

### **Examples (informative)**

- Example 1: structural elements.  
Do not use structural elements for purposes of presentation. Likewise, do not use presentation elements for purposes of structure.
- Example 2: accessible api's.  
Use the Accessibility API when programming in Java. Refer to the [IBM Guidelines for Writing Accessible Applications Using 100% Pure Java](#).

## **Checkpoint 4.3 Design user interfaces compatible with assistive technology.**

### **Success criteria**

You will have successfully designed user interfaces compatible with assistive technology if:

1. accessibility conventions of the markup or programming language (API's or specific markup) are used,
2. any applications with custom interfaces conform to at least Level A of UAAG 1.0. If the application cannot be made accessible, an alternative accessible solution is provided,
3. device-independent access to functionality is provided,
4. the interface has been tested using a variety of assistive technologies and preferably real people with disabilities who use assistive technologies to determine that assistive technologies can access all information on the page or hidden within the page.

*Note to reviewers: there is active discussion on the requirement of user*

*testing as success criterion.*

## **Benefits (informative)**

Asking someone to access your Web site without their assistive technology is like asking someone to access a building without their wheelchair. Assistive technologies are an essential part of the lives of many people with disabilities.

## **Checkpoint 4.4 Ensure that content remains usable when technologies that modify default user agent processing or behavior are turned off or not supported.**

*Note to reviewers: The use of the word "default" is under discussion. Suggestions are welcome.*

## **Success criteria**

You will have successfully ensured that content remains usable when technologies that modify default user agent processing or behavior are turned off or not supported if:

- for technologies that associate presentation with structure, the content is still usable and readable by the user even if stylistic or scripting technologies are not supported or turned off.

## **Examples (informative)**

- Example 1: Metadata.  
A scalable image of the layout of a network uses metadata to label each piece of the network and how they connect to each other. The metadata can be used to create a text description of the network.
- Example 2: A transformation filter.  
A Web site provides a transformation filter that allows users to design how they will interact with the layout of the content on the site - with or without images, with or without tables, etc.
- Example 3: Human resources intranet site.  
The human resources department for a large company provides multiple versions of the same content to ensure backwards compatibility with older browsers. The IT department is not large enough to update everyone's browsers and assistive technologies so many people make do with older

technologies.

## Benefits (informative)

In determining the extent to which older technologies should be supported, keep in mind that

- assistive hardware and software are often slow to adapt to technical advances.
  - for significant groups of users, it may not be possible to obtain the latest software or the hardware required to operate it.
- 

## Appendix A: Glossary

*Note to reviewers: A cross-group glossary is being developed. We will incorporate definitions from that work in the future.*

### Audio description

An *audio description* is either a prerecorded human voice or a synthesized voice that has either been prerecorded or is generated as the presentation plays. The audio description is synchronized with the audio track of the presentation, usually during natural pauses in the audio track. Audio descriptions include information about actions, body language, graphics, and scene changes.

### Data model

Not yet defined.

### Equivalent

Not yet defined.

### Markup

Not yet defined.

### Multimedia

Not yet defined. The definition must include the idea of timelines and slide shows (per [30 November 2000 telecon](#))

### Normative/Non-normative

Throughout this document we refer to several "non-normative" examples. These are included to help readers understand concepts. Normative items are prescriptions for what must/should/may be done to create accessible content.

### Presentation

Not yet defined.

### **Semantics**

Not yet defined.

### **Transform gracefully**

Not yet defined.

## **Appendix B: Contributors**

Regular [participants of the WCAG Working Group](#):

Kynn Bartlett, Paul Bohman, Jonathan Chetwynd, Wendy Chisholm, Katie Haritos-Shea, Charles McCathieNevile, Matt May, Jo Miller, Sean B. Palmer, Anne Pemberton, Adam Victor Reed, Loretta Guarino Reid, Emmanuelle Gutiérrez y Restrepo, Gregory J. Rosmaita, Joel Sanda, Lisa Seeman, Cynthia Shelly, Andi Snow-Weaver, Gregg Vanderheiden, Jason White

Other contributors:

Dan Aunspach, Bruce Bailey, Harvey Bingham, Judy Brewer, Dan Brickley, Dick Brown, David Clark, Joe Clark, Michael Cooper, Nir Dagan, Daniel Dardailier, Alan J. Flavell, Geoff Freed, Greg Gay, Al Gilman, Jon Gunderson, Shawn Lawton Henry, Donovan Hipke, Chuck Hitchcock, Ian Jacobs, Marshall Jansen, Phill Jenkins, Leonard Kasday, Thanasis Kinias, Chris Kreussling, Chuck Letourneau, Steven Livingstone, William Loughborough, Greg Lowney, Scott Luebking, Lisa Kestenbaum, Marja-Riitta Koivunen, Marti McCuller, Tom Martin, Masafumi NAKANE, Robert Neff, Tim Noonan, Anuska Perkins, David Poehlman, Chris Ridpath, Greg Rosenberg, Heather Swayne, David Tanner, Jim Thatcher, Claus Thøgersen, Peter Verhoeven, Cynthia Waddell, Mike Williams

## **Appendix C: The differences between WCAG 1.0 and WCAG 2.0**

Since the release of WCAG 1.0 in May 1999, the WCAG Working Group has received feedback on priorities of checkpoints, the usability of the set of documents, and requests for clarifications on the meaning of specific checkpoints and what is needed to satisfy them. Thus, it is intended that WCAG 2.0:

- will be more efficiently organized,
- may adjust the priority of some checkpoints,

- may modify, remove, or add requirements due to changes in Web technologies since the publication of WCAG 1.0,
- will incorporate the Errata from WCAG 1.0,
- will reflect the experience gained in implementing WCAG 1.0.

For a checkpoint by checkpoint comparison, refer to the [Checkpoint Mapping Between WCAG 1.0 and WCAG 2.0 Working Draft](#).

## Improvements in WCAG 2.0

We hope that WCAG 2.0 will have several improvements over WCAG 1.0.

### **More easily used with a wide range of languages**

When WCAG 1.0 was written, most of the Web used HTML. The guidelines were designed with that in mind, and applying the guidelines to other languages has identified some areas that can be improved. The new version should be easier to apply to a wider range of languages and content types.

### **More easily used by authoring tool developers**

The Authoring Tool Accessibility Guidelines rely heavily on WCAG to define how to make Web content accessible. Simplifying the guidelines will improve their usability for this important group.

### **Easier to determine conformance**

In WCAG 1.0 there were a number of checkpoints that began "until user agents...". In the new version there are no such checkpoints. This reduces the confusion as to when a checkpoint has been met as well as the resource commitment required to keep the information produced up to date.

## Appendix D: References

*Note to reviewers: Links within the document will be turned into references and the links to those documents will be listed here as references. They are inline for the time being.*

