W3C®

Web Content Accessibility Guidelines 2.0

W3C Working Draft 11 March 2004

Ben Caldwell, Trace R&D Center
Wendy Chisholm, W3C
Gregg Vanderheiden, Trace R&D Center
Jason White, University of Melbourne

Abstract

The World Wide Web Consortium (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: to explain how to make Web content accessible to people with disabilities and to define target levels of accessibility. Incorporating feedback on WCAG 1.0, this Working Draft of version 2.0 focuses on guidelines. It attempts to apply guidelines to a wider range of technologies and to use wording that may be understood by a more varied audience.

Status of this Document

This section describes the status of this document at the time of its publication. Other documents may supersede this document. A list of current W3C publications and the latest revision of this technical report can be found in the W3C technical reports index at http://www.w3.org/TR/.
This document is prepared by the Web Content Accessibility Guidelines Working Group (WCAG WG) to show how more generalized (less HTML-specific) WCAG guielines **might** read. This draft is not yet 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 Working Draft" for a list of open issues related to this Working Draft. The "History of Changes to WCAG 2.0 Working Drafts" is also available.

Publication as a Working Draft does not imply endorsement by the W3C Membership. This is a draft document and may be updated, replaced or obsoleted by other documents at any time. It is inappropriate to cite this document as other than work in progress. A list of current W3C Recommendations and other technical documents is available.

The Working Group welcomes comments on this document at public-comments-wcag20@w3.org. The archives for this list are publicly available. Archives of the WCAG WG mailing list discussions are also publicly available.

Patent disclosures relevant to this specification may be found on the WCAG Working Group's patent disclosure page in conformance with W3C policy.

This document has been produced as part of the W3C Web Accessibility Initiative (WAI). The goals of the WCAG WG are discussed in the Working Group charter. The WCAG WG is part of the WAI Technical Activity.

Table of Contents

Appendices

Introduction

Purpose

This document outlines design principles for creating accessible Web content. 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. By making content accessible to a variety of devices, that content will also be accessible to people in a variety of 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

In order to facilitate understanding of the guidelines and to help people focus in on just the parts they need, the guidelines are presented as a set of interrelated documents. There are 3 layers to the guidelines information.

1 - Top layer - Overview of Design Principles, Guidelines, Success Criteria

The top layer is titled **"Web Content Accessibility Guidelines 2.0"**. It is the document you are currently reading. This document provides:

1. An introduction
2. The 4 major principles for accessibility (Perceivable, Operable, Understandable and Robust).
3. The (non-technology-specific) guidelines (14 in total).
4. Success criteria (*normative*), and definitions, benefits and examples (all non-normative) for each guideline
5. An appendix containing definitions, references and other support information.

2 - Technology-specific Checklists

In addition to the general guidelines, there will be a series of technology-specific checklist documents. These documents will provide information on what is required when using different technologies in order to meet the WCAG 2.0 Working Draft.

Editorial Note: These checklists do not yet exist. At the present time, it is not clear if the checklists will be *normative* or non-normative. If checklists are non-normative, it is easier to update them. If checklists are normative, changes made to them alter the definition of conformance. However, it may be necessary to make checklists normative in order for the guidelines to be testable.

3 - Bottom layer - Technology-specific application information

The Techniques Documents will include code examples, screen shots, and other information specific to a technology. These documents will be non-normative. They will contain different strategies for meeting the requirements as well as the current preferred approaches where they exist. Examples include:

- Hypertext Markup Language (HTML) and Extensible Hypertext Markup Language (XHTML) Techniques
- Cascading Style Sheets (CSS) Techniques
- Server-side scripting Techniques
- Client-side scripting Techniques
- Scalable Vector Graphics (SVG) Techniques
- Synchronized Multimedia Integration Language (SMIL) Techniques
- Extensible Markup Language (XML) Techniques

(These will become active links as the corresponding Working Drafts are published)

Audience

These guidelines have been written to meet the needs of many different audiences from policy makers, to managers, to those who create Web content, to those who write the code. Every attempt has been made to make the document as readable and usable as possible while still retaining the accuracy and clarity needed in a technical specification. For first time users, the work of the Education and Outreach Working Group of the Web Accessibility Initiative is highly recommended.

Scope

These guidelines cover a wide range of issues and recommendations for making Web content more accessible. They include recommendations to make content accessible and usable by people with a full range of disabilities. In general, the guidelines do not include standard usability recommendations except where they have specific ramifications for accessibility beyond standard usability impacts.

Priorities and Techniques

This Working Draft of WCAG 2.0 builds upon WCAG 1.0 and reflects feedback received since the publication of WCAG 1.0 in May 1999. Although the same approaches to accessibility are followed in 1.0 and 2.0, the organization and structure have changed. Where WCAG 1.0 uses guidelines to group checkpoints, this Working Draft of WCAG 2.0 uses guidelines to group success criteria. Where WCAG 1.0 assigns a priority to a *checkpoint*, this Working Draft of WCAG 2.0 categorizes a *success criterion* into one of three levels.
In addition, the general design principles have been reworded to apply across a wide range of existing and emerging technologies. The WCAG 2.0 Working Draft does not include technology-specific implementation requirements or techniques, but it will link to technology-specific requirements as well as technology-specific examples and techniques (as soon as those documents are more stable).

The Web Content Accessibility Guidelines Working Group is working to ensure that organizations and individuals who are currently using WCAG 1.0 (which remains stable and referenceable at this time) will be able to smoothly transition to WCAG 2.0. For more information about the similarities and differences between WCAG 1.0 Checkpoints and WCAG 2.0 Guidelines and success criteria, please refer to the (draft) Mapping Between WCAG 1.0 and the WCAG 2.0 Working Draft.

Conformance

Editorial Note: There are several open issues with the proposed conformance scheme. This section outlines the conformance scheme used throughout this document. Feedback, comments, and proposals are encouraged.

Guidelines are divided into three categories of success criteria:

- **Level 1 success criteria:**
    1. do not specify how information is presented
    2. are reasonably applicable to all Web sites
    3. some are machine-testable. Others require human judgment. Success criteria that require human testing yield consistent results among multiple testers.

- **Level 2 success criteria:**
    1. may require an author to present content in particular ways
    2. are reasonably applicable to all Web sites
    3. some are machine-testable. Others require human judgment. Success criteria that require human testing yield consistent results among multiple testers.

- **Level 3 success criteria:**
    1. are additional criteria that go beyond Level 1 and 2 that may be applied to make sites accessible to more people with all or particular types of disability

Editorial Note: To facilitate discussion related to the levels assigned to each criteria, a square bracket notation is included at the end of each criteria. "[V]" (visible) indicates that a criterion does not specify how information is presented and "[I]" (invisible) indicates that addressing the criterion may require an author to present content in particular ways.

Note:
Some guidelines do not contain level 1 success criteria.

Conformance Claims

1. In order to make a valid conformance claim for a Web resource, the resource must satisfy *all* level 1 success criteria for *all* guidelines.

2. A conformance claim of "WCAG 2.0 Level A" can be made if *all* level 1 success criteria for all guidelines have been met.

3. A conformance claim of "WCAG 2.0 A+" can be made if *all* level 1 success criteria for *all* guidelines and *some* level 2 success criteria have been met.

4. A conformance claim of "WCAG 2.0 AA" can be made if *all* level 1 success criteria and *all* level 2 success criteria for all guidelines have been met.

5. A conformance claim of "WCAG 2.0 AAA" can be made if *all* level 1, level 2, and *all* level 3 success criteria for all guidelines have been met.

Editorial Note: Feedback from WCAG 1.0 indicates that developers often do not attempt to meet any Priority 2 Checkpoints because there is no way to indicate in the conformance claim that they have "done more than Level A but not enough to claim Level AA." "A+" is a proposal that allows developers to say, "I do more than A but not all of AA." However, some members of the WCAG WG have issues with the idea of having any "+" conformance claims such as A+ or AA+.

- How should conformance claims state which guidelines are met? in metadata? in a site accessibility statement? some other method?
- How should conformance claims state how many Level 2 criterion are met? In metadata? With A+n (n=number of AA criterion met)? In a site accessibility statement? Some other method?
- If A+ is claimed, should we require a statement about which criteria are met?
- Is there a separate logo for each level: A, A+, and AA? If so, what does the logo point to?
- Comparisons of A+ conformance claims can not be made unless detailed information is provided about the criteria that are met.
- Should detailed conformance information be provided in metadata? There is doubt that it will be kept up to date, especially if the site becomes less accessible over time. Also, we may be unable to require metadata since some companies have indicated that the legal and ISO 9000 ramifications would prevent them from posting metadata describing the exact conformance.
- If it were possible to claim "A+n" where "n" denotes the number of criteria that are met, some developers report that they would be encouraged to meet more criteria and increase the number they can report. However, people are likely to compare the number and these comparisons could be misleading. For example, a site that claims "A+2" could be more accessible than a site that claims "A+3" depending on which criteria are met.
- There is a proposal that to meet AAA only a percentage of Level 3 success criteria must be met.

All conformance claims must include (at minimum):

1. The version of the guidelines to which a conformance claim is made and the dated URI of the guidelines document.
2. The scope of the conformance claim. The scope describes which parts of a site or application are included in the claim.

   Editorial Note: Should exclusions be allowed for certain types of content, such as third-party or copyrighted material that is being reprinted? How does one define scope? Is it an end-to-end process that the user should be able to complete? Is it a path through accessible content?

3. The set of criteria being claimed.
4. The date the conformance claim was made.

Sites that conform to WCAG 1.0

Sites that currently conform to WCAG 1.0 that want to shift towards WCAG 2.0 will want to capitalize on past accessibility efforts. A qualified conformance statement could allow them this flexibility. For example, a conformance claim might include the following statement, "Materials created or modified before 24 April 2003 conform to WCAG 1.0. Materials created or modified on or after 24 April 2003 conform to WCAG 2.0."

Editorial Note: In some instances, the WCAG 2.0 Working Draft may be easier to conform to than the WCAG 1.0 Recommendation while other criteria might be harder to meet in WCAG 2.0 than in WCAG 1.0. The WCAG WG will consider the differences between WCAG 1.0 and WCAG 2.0 conformance and offer advice to developers who currently conform to WCAG 1.0. This advice might take the form of a WCAG 1.0 conformance profile to WCAG 2.0 and information about migrating from WCAG 1.0 to WCAG 2.0. This advice is not yet available.

Overview of Design Principles

The overall goal is to create Web content that is perceivable, operable and understandable by the broadest possible range of users and compatible with their wide range of assistive technologies, now and in the future. The basic principles include:

1. Content must be **perceivable**.
2. Interface elements in the content must be **operable**.
3. Content and controls must be **understandable**.
4. Content must be **robust** enough to work with current and future technologies.

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 beneficial to a variety of people with and without disabilities. For example, people who are temporarily operating under constrained conditions like operating in a noisy environment where they can not hear well or at all, or driving their car

where their eyes are busy would benefit from an accessible site. Likewise, a search engine can find a famous quote in a movie if the movie is captioned.

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 that 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 a visual representation of information presented via sound.
- Someone who cannot see will want to hear or feel (via braille or tactile graphics) an equivalent of the visual information.
- Someone who does not have the strength to move quickly or easily will want to use as little movement as possible and have as much time as they need when operating Web interfaces.
- Someone who does not read well may want to hear the information read aloud.

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. There are many tools that 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".

Designing Accessible Web Content

These guidelines provide the basic requirements for designing accessible Web content. This document is not designed to provide the background needed to learn about accessible Web design in a thorough or effective manner for those interested in learning. Readers are therefore referred to the Education and Outreach Working Group of the Web Accessibility Initiative.

Principle 1: Content must be perceivable.

Guideline 1.1 For non-text content, provide text equivalents that serve the same purpose or convey the same information as the non-text content, except when the sole purpose of the

non-text content is to create a specific sensory experience (for example, music and visual art) in which case a text label or description is sufficient.

Level 1 Success Criteria for Guideline 1.1

1. *Text-equivalents* are *explicitly associated* with *non-text content*, except when the non-text content is intended to create a specific sensory experience (for example, music without words and visual art). [I]

   o   The text equivalent fulfills the same function as the author intended for the non-text content (that is, it conveys all of the intended information and achieves the same function as the non-text content).

   Exception:
   If the purpose is to let users provide the text-equivalent (for example, a spelling test) then the text-equivalent is not required.

2. *Non-text content* that is designed to create a specific sensory experience (such as music without words or visual art) has a *text label* or a *text description* explicitly associated with it. [I]

Level 2 Success Criteria for Guideline 1.1

1. No level 2 success criteria for this guideline.

Level 3 Success Criteria for Guideline 1.1

1. A text document (for example, a movie script) is provided that includes all important visual information, dialogue, and other important sounds. [I]

Who Benefits from Guideline 1.1 (Informative)

- People who are **blind**, have **low vision**, have **cognitive disabilities** or have trouble reading text for any reason can have the text read aloud to them by assistive technology.
- People who are **deaf**, are **hard of hearing,** or who are having trouble understanding audio information for any reason can read the text presentation or have it translated and presented as sign language by assistive technology.
- People who are **deaf-blind** can read the text in braille.

Examples of Guideline 1.1 (Informative)

- **Example 1: an image used as a button. (short equivalent for function)**

  A right arrow icon is used to link to the next slide in a slide show. The text equivalent is "Next Slide," so that a screen reader would read the phrase "Next Slide" and automatically identify it as a link by adding the word *link* or changing the synthesizer's voice.

- **Example 2: a data chart. (short label + longer description)**

  A bar chart compares how many widgets were sold in June, July, and August. The short label says, "Figure one - Sales in June, July and August." The longer description identifies the type of chart or graph, provides a high-level summary of the data comparable to that available from the chart or graph, and provides the data in a table or other accessible format.

- **Example 3: an animation. (short label + longer description)**

  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: an audio file of a speech. (short label + transcript)**

  An audio file is embedded in a Web page. The short label says, "Chairman's speech to the assembly." A link to a text transcript is provided immediately after the audio clip.

- **Example 5: an audio file of a symphony. (short label)**

  An audio file is embedded in a Web page. The short label says, "Beethoven's 5th Symphony performed by the Vienna Philharmonic Orchestra."

Guideline 1.2 Provide synchronized media equivalents for time-dependent presentations.

Editorial Note: To meet our publication deadline, resolution of issues for this guideline are deferred to our next Working Draft. The primary question is, "How do these success criteria apply to every Webcam, newscast, and home broadcast?" Options we are considering include moving existing success criteria from Level 1 to Level 2 or allowing conformance claims to exclude portions of a site, such as, "All pages and applications on this site meet the Level 1 guidelines of WCAG 2.0 *except* the Web cam at http://example.org/webcam/."

Level 1 Success Criteria for Guideline 1.2

1. An *audio description* of visual events is provided for audio-visual media. [I]
2. *Captions* are provided for all significant dialogue and sounds in *time-dependent* material. [I]
3. Descriptions and captions are synchronized with the events they represent. [I]

Exception:

A text transcript or other non-audio equivalent does not need to be synchronized with the multimedia presentation if *all four* of the following statements are true:

  a. the content is real-time and
  b. the content is audio-only and
  c. the content is not time-sensitive and
  d. the content is not interactive

Note:

This exception applies to both success criteria 2 and 3 above.

4. If the Web content is *real-time* video with audio, real-time captions are provided. [I]

Exception:

If the content is a music program that is primarily non-vocal, then captions are not required.

5. If the Web content is real-time, non-interactive video (for example, a Webcam view of surrounding conditions such as weather information), then one of the following is provided: [I]

   o a substitute that conforms to guideline 1.1 (for example, an ongoing text report of weather conditions)
   o a link to a substitute that conforms to guideline 1.1 (for example, a link to a weather Web site that conforms to Guideline 1.1)

6. If a presentation that contains only audio or only video requires users to respond interactively at specific times during the presentation, then a synchronized equivalent presentation (audio, visual or text) is provided. [I]

Exception:
If content that is rebroadcast from another medium or resource meets accessibility requirements for that medium, then the rebroadcast satisfies this checkpoint if it complies with other applicable sections of WCAG 2.0

Level 2 Success Criteria for Guideline 1.2

1. Synchronized captions are provided for all real-time broadcasts. [I]

Editorial Note: There are questions about what is possible and what should be required for real-time audio description since there is no way to know when there will be gaps in audio (when descriptions could be read) and other issues with describing real-time events.

Level 3 Success Criteria for Guideline 1.2

1. No level 3 criteria for this guideline.

Who Benefits from Guideline 1.2 (Informative)

- People who are **deaf** or have a **hearing loss** can access the auditory information through captions.
- People who are **blind** or have **low vision** as well as those with **cognitive disabilities** who have difficulty interpreting visually what is happening benefit from audio descriptions of visual information.

People without disabilities also benefit from *media equivalents*:

- People in noisy environments or with muted sound often rely on captions.
- Captions help many people to develop language and reading skills.
- Audio descriptions provide visual information for people who are temporarily looking away from the video presentation, for example, when following an instructional video and looking at their hands.
- Captions and text descriptions make it possible to index and search media files.

Note:

Time-dependent presentations that require people to use a single sense to follow two or more things at the same time may present significant barriers to some users. Depending on the nature of the presentation, it may be possible to avoid scenarios where, for example, a user who is deaf would be required to watch an action on the screen and read the captions at the same time. However, this may not be available for live broadcasts (for example, a football game). Where possible (especially for education and training materials), provide content so that it does not require tracking multiple simultaneous events with the same sense, or, give the user the ability to freeze the video so that captions can be read without missing the video.

Examples of Guideline 1.2 (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 attract a puppy to the child's bedroom by laying a trail of crumbs. Since the soundtrack includes only the child's mumbling, the audio description that is heard when the child stops mumbling says "Charlie puts a crumb on each stair leading to his room." The caption that appears as he mumbles reads, "[inaudible mumbling]."

- **Example 2: a video clip of a news story.**

  A video clip accompanies a news story about flooding in a major city. The reporter gives a verbal description of the scene. No audio description is necessary. The captions display what the reporter is saying.

- **Example 3: a silent animation.**

  An animation shows a pantomime with a white face and black costume climbing an invisible ladder. There is no audio track for this

14

animation. No captions or audio description are required. Instead, a text label and description are provided as required by guideline 1.1.

Guideline 1.3 Ensure that information, functionality, and structure are separable from presentation.

Level 1 Success Criteria for Guideline 1.3

1. The following can be derived programmatically (for example, through a markup or data model) from the content without requiring user interpretation of presentation. [I]

   a. Hierarchical elements and relationships, such as:

   - paragraphs
   - lists
   - headings
   - associations between table cells and their headers

   b. Non-hierarchical relationships between elements such as:

   - cross-references and other associations,
   - associations between labels and controls,

   c. Emphasis or other formatting of specific words, phrases, and quotes.

   Editorial Note: Other constructs may be added to this list in future drafts.

2. Any information presented through color is also available without color (for example, through context or markup or coding that does not depend on color). [I]

Level 2 Success Criteria for Guideline 1.3

1. Information presented using color is also available without color and without having to interpret markup (for example through context or text coding). [V]

Level 3 Success Criteria for Guideline 1.3

1. No level 3 success criteria for this guideline.

Who Benefits from Guideline 1.3 (Informative)

- Separating content and structure from presentation allows Web content to be presented differently to meet the needs and constraints of different users without losing any of the information or structure. For example, information can be presented via speech or braille (text) that was originally intended to be presented visually.
- It can also facilitate automatic emphasis of structure or more efficient navigation.
- All of these can benefit people with **cognitive**, **physical**, **hearing**, and **visual disabilities**.

Examples of Guideline 1.3 (Informative)

Editorial Note: These examples are improvements on previous drafts, but are HTML-specific. These will be generalized in future drafts.

- **Example 1: A form that mentions in text which required fields are missing.**

  When a user submits a form without filling in all the required fields, a message appears that informs the user which fields are missing. The missing fields are also indicated in color to help people with cognitive limitations recognize what fields need attention. Because the message is also available in text, people who cannot see color will still know which fields they have to correct.

- **Example 2: A bus schedule where the headers have been associated with the cells.**

  A bus schedule consists of a table with the bus stops listed vertically and the different trips listed horizontally. Each cell contains the time when that bus will be at that bus stop. Structural markup has been used to associate that cell with both the corresponding bus stop and the corresponding trip.

- **Example 3: A form where the labels for the checkboxes have been associated with the checkboxes.**

    In a form where users can select different options using checkboxes, the labels for the checkboxes have been associated with the checkboxes. This benefits different types of users. It allows users who are blind to determine what the checkbox is for. People with limited motor functions can check the checkbox more easily because they can click anywhere on the label instead of just on the checkbox.

Guideline 1.4 In visual presentations, make it easy to distinguish foreground words and images from the background.

Level 1 Success Criteria for Guideline 1.4

1. Any text that is presented over a background is electronically available so that it could be re-presented in a form that allows the text to be distinguished from the background. [I]

    Note:
    Text that meets guideline 1.1 should satisfy this criterion.

Level 2 Success Criteria for Guideline 1.4

1. Text that is presented over a background has a contrast greater than _____ between the text and the background as measured by ___ or the resource provides a mechanism to allow the text to meet this criterion. [V]

Editorial Note: The working group is seeking an algorithm that measures contrast in a way that is accurate and testable enough that we could include it in the guidelines. One algorithm, which comes from the Techniques For Accessibility Evaluation And Repair Tools document, is currently under consideration for inclusion in the techniques, but the group has not yet found something that is specific enough to be included at the guidelines level.

Level 3 Success Criteria for Guideline 1.4

1. This item should read identically to level 2 item #1, except that it should say "in default presentation mode." [V]
2. Text is not presented over a background image or pattern, or if a background image or pattern is present, the text is easily readable when the content is viewed in grayscale to determine if the background makes it difficult to identify individual characters. [V]

Who Benefits from Guideline 1.4 (Informative)

- Individuals with **low vision** can easily read characters in the content even if they don't have the wide field of view or full range of color perception used by fully sighted persons to separate text from background images.

Examples of Guideline 1.4 (Informative)

- **Example 1: a background image on a page.**

  A background image and text are arranged so that there is no image behind the text or the image is so faint that the difference between the darkest part of the image and the text (which is dark) meets the standard foreground/background contrast requirements. The image behind the text also does not contain lines that are about the same width as the characters so they do not interfere with character recognition.

Guideline 1.5 In auditory presentations, make it easy to distinguish foreground speech and sounds from background sounds. [level 2 guideline]

Level 1 Success Criteria for Guideline 1.5

1. No level 1 success criteria for this guideline.

Level 2 Success Criteria for Guideline 1.5

1. No level 2 success criteria for this guideline.

Level 3 Success Criteria for Guideline 1.5

1. Audio content does not contain background sounds OR the background sounds are at least 20 decibels lower than the foreground audio content with the exception of occasional short sounds. [V]

Note:
A 20 decibel difference in sound level is roughly 4 times quieter (or louder). Background sound that meets this requirement will be approximately four times (4x) quieter than the foreground audio content.

Who Benefits from Guideline 1.5 (Informative)

- Individuals with **hearing impairments** that limit their ability to hear all of the frequencies of speech can make out the words from the sounds they can hear because they are not mixed with residual sounds from the music.

Examples of Guideline 1.5 (Informative)

- **Example 1: speech over background sounds.**

   Because speech is often naturally mixed with background sounds (movies, live news etc) and cannot be easily removed or separated, captions are provided (under guideline 1.2) to make dialog understandable. However not all people can see or read the captions. Where speech is mixed or recorded so that it is at least 20 db above any background sounds, most people do not need to rely on captions to understand the dialog.

Principle 2: Interface elements in the content must be operable.

Guideline 2.1 Make all functionality operable via a keyboard or a keyboard interface.

Level 1 Success Criteria for Guideline 2.1

1. All of the *functionality* of the content, where the functionality or its outcome can be described in a sentence, is operable through a keyboard or *keyboard interface*. [I]

> **Note:**
> This includes author-provided accessibility features.
> **Note:**
> Other interfaces (such as a mouse) can be provided in addition to keyboard operation.
> **Note:**
> Refer to guideline 4.2 for information regarding user agent support.

Level 2 Success Criteria for Guideline 2.1

1. Wherever a choice between input device *event handlers* is available and supported, the more abstract event is used. [I]

Level 3 Success Criteria for Guideline 2.1

1. All of the *functionality* of the content is operable via a keyboard or *keyboard interface*.

Who Benefits from Guideline 2.1 (Informative)

- Individuals who are **blind** (and cannot use pointing devices) can have access to the functionality of the Web content or site.
- Individuals with **severe physical disabilities** can use speech input (which simulates keystrokes) to both enter data and operate the interface elements on the page.

Examples of Guideline 2.1 (Informative)

- **Example 1: operation with multiple input devices.**

The content relies only on focus-in, focus-out, and activation events; these are defined in the API of the environment for which the content is written, and are intended to be operable by a variety of input devices, including pointing devices, keyboards and speech input systems.

- **Example 2: examples of Web content that would and would not be operable from a keyboard or keyboard interface**

    o If it's written to be operable from a computer keyboard, it conforms. (because it is operable from the keyboard.)

    o If it's written to be used on a device that doesn't usually have a keyboard such as a cell phone, but it can be controlled by an optional keyboard for that device, it conforms. (A person who needs a keyboard - or alternate keyboard - can use it to control the application.)

    o If it's written to be used with a device that doesn't have a keyboard, but it could also be used by similar devices that do and it would work with their keyboard, it conforms. (A person who needs a keyboard would not buy the device without the keyboard. That device may itself not be considered accessible. But the content can be controlled from a device with a keyboard and therefore conforms to this guideline.)

    o If it's written to work with devices that do not have keyboards and it can not be used by any other devices that do have keyboards, then it does not conform. (It cannot be accessed via keyboard.)

Guideline 2.2 Allow users to control time limits on their reading or interaction unless specific real-time events or rules of competition make such control impossible.

Level 1 Success Criteria for Guideline 2.2

1. Content is designed so that time limits are not an essential part of interaction, or at least one of the following is true for each time limit: [I]

    o the user is allowed to deactivate the time limit or;

    o the user is allowed to adjust the time limit over a wide range which is at least ten times the length of the default setting or;

- o the user is warned before time expires, allowed to extend the time limit with a simple action (for example, "hit any key") and given at least 10 seconds to respond or;
- o the time limit is an important part of a real-time event (for example, an auction), and no alternative to the time limit is possible or;
- o the time limit is part of an *activity where timing is essential* (for example, competitive gaming or time-based testing) and time limits can not be extended further without invalidating the activity.

Level 2 Success Criteria for Guideline 2.2

1. The user is allowed to turn off *content that blinks* for more than 3 seconds. [I]
2. The user is allowed to pause and/or permanently stop moving or time-based content. [I]

Level 3 Success Criteria for Guideline 2.2

1. The content has been designed in a way that any time limits in the content would pass level 1, success criteria 1 for this guideline without exceptions. [V]

Editorial Note: Real time events would not be allowed with this wording. Do we want to accept them?

2. Any non-emergency interruptions, such as the availability of updated content, can be postponed and/or suppressed by the user. [V]

Who Benefits from Guideline 2.2 (Informative)

- People with **reading disabilities**, **cognitive disabilities**, and **learning disabilities** often need more time than most people to read and comprehend written text.
- People with **physical disabilities** can access content that is updated often in cases where content might not be processed and read before being refreshed or when read out of order an assistive technology or voice browser.

Examples of Guideline 2.2 (Informative)

- Examples of content that must meet the success criteria of this checkpoint:

  - automatic refresh,
  - redirection,
  - blinking or scrolling text,
  - dialog that disappears ater a short period,
  - shutdown or deactivation of resource if activity is not received in a set amount of time.

- **Example 1: blinking text.**

  Client-side scripting is used to create blinking text. The content provides an option that allows the user to turn off the blinking.

- **Example 2: a news site that is updated regularly.**

  A news site causes its front page to be updated every half 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.

Guideline 2.3 Allow users to avoid content that could cause photosensitive epileptic seizures.

Level 1 Success Criteria for Guideline 2.3

1. Content that violates General Flash Threshold or Red Flash Threshold is *marked in way that the user can access prior to its appearance*. [V]

Level 2 Success Criteria for Guideline 2.3

1. Content does not violate the General Flash Threshold or Red Flash Threshold. [V]

Level 3 Success Criteria for Guideline 2.3

From www.w3.org/TR/2004/WD-WCAG20-20040311/   13 March 2004

1. Content does not violate any of the Spatial Pattern Thresholds. [V]

General Flash Threshold

- A sequence of flashes or rapidly changing image sequences is not permitted when both the following occur:

    1. the combined area of flashes occurring concurrently (but not necessarily contiguously) occupies more than one quarter of any 355 x 268 pixel rectangle anywhere on the displayed screen area when the content is viewed at 1024 by 768 pixels and
    2. there are more than three flashes within any one-second period.

    Note:

    For the general flash threshold, a flash is defined as a pair of opposing changes in luminance (i.e., an increase in luminance followed by a decrease, or a decrease followed by an increase) of 20 candelas per rectangle meter ($cd.m^{-2}$) or more and where the screen luminance of the darker image is below 160 $cd.m^{-2}$.

Red Flash Threshold

- A transition to or from a saturated red at any luminance level is not permitted when both of the following occur:

    1. the combined area of flashes occurring concurrently occupies more than one quarter of any 355 x 268 pixel rectangle anywhere on the displayed screen area when the content is viewed at 1024 by 768 pixels and
    2. there are more than three flashes within any one-second period.

    Note:

    For the red flash threshold, a flash is defined as any pair of opposing transitions to or from a saturated red at any luminance level . (See notes 1 and 2 below)

Spatial Pattern Thresholds

- Clearly discernible stripes consisting of more than five light-dark pairs in any orientation are not permitted when the stripes are stationary when the pattern occupies more than 40% of any 355 x 268 pixel rectangle

anywhere on the displayed screen area when the content is viewed at 1024 by 768 pixels.

- Clearly discernible stripes consisting of more than five light-dark pairs in any orientation that change direction, oscillate, flash, or reverse in contrast are not permitted when the pattern occupies more than 25% of any 355 x 268 pixel rectangle anywhere on the displayed screen area when the content is viewed at 1024 by 768 pixels.

1. **Clearly discernable stripes** are stripes where the screen luminance of the darker bars in the pattern is below 160 cd.m^{-2} and differs from the lighter bars by 20 cd.m^{-2} or more (see notes 1 and 2 below).

Notes:

1. Video waveform luminance is not a direct measure of display screen brightness. Not all display devices have the same gamma characteristic, but a display with a gamma of 2.2 may be assumed for the purpose of determining electrical measurements made to check compliance with these guidelines.

2. For the purpose of measurements made to check compliance with these guidelines, pictures are assumed to be displayed in accordance with the 'home viewing environment' described in Recommendation ITU-R BT.500 in which peak white corresponds to a screen illumination of 200 cd.m^{-2}.

3. Thresholds are based on ITC Guidance Note for Licensees on Flashing Images and Regular Patterns in Television (Revised and re-issued July 2001) as modified by the *Wisconsin Computer Equivalence Algorithm*.

Editorial Note: A free tool will be available from the University of Wisconsin's Trace Center that will carry out the above analysis on Web content. The tool will be available by the second quarter of 2004.

Who Benefits from Guideline 2.3 (Informative)

- Individuals with **photosensitive epilepsy** can avoid having seizures triggered by flashing or by spatial patterns.

Guideline 2.4 Facilitate the ability of users to orient themselves and move within the content. [level 2 guideline]

Level 1 Success Criteria for Guideline 2.4

1. No level 1 success criteria for this guideline.

Level 2 Success Criteria for Guideline 2.4

1. Different _structural_ elements look or sound different from each other and from body text. [V]
2. In documents greater than 50,000 words or sites larger than 50 perceived pages, at least one of the following is provided. [V]

Editorial Note: What's a perceived page? What if it's a voice XML application? How does it apply to Web applications? Why 50 and 50,000?

   a. hierarchical _structure,_
   b. table of contents (for pages) or site map (for sites),
   c. alternate display order (for pages) or alternate _site navigation mechanisms_ (for sites).

3. Large blocks of material that are repeated on multiple pages, such as navigation menus with more than 8 or more links, can be bypassed by people who use screen readers or who navigate via keyboard or keyboard interface. [V]

Level 3 Success Criteria for Guideline 2.4

1. Information is provided that would indicate at least one logical sequence in which to read a document. [I]
2. Diagrams are constructed so that they have _structure_ that users can access. [I]
3. Logical tab order has been created. [I]

Editorial Note: "logical tab order" may not be testable.

4. There is a statement associated with the content asserting that items from the following list were considered: [V]

   a. Breaking up text into logical paragraphs,
   b. Dividing documents, especially very long ones, into hierarchical sections and subsections with clear and informative titles,

c. Supplying an informative title for each page or resource that can be accessed independently (for example, from a search results page),

Editorial Note: If the requirement for informative titles is testable (in Guideline 3.1) and remains a Level 2 success criteria, then consider dropping this criteria.

d. Supplying a unique title for each page or resource that can be accessed independently (for example, from a search results page),

e. Revealing important non-hierarchical relationships, such as cross-references so that the relationships are represented unambiguously in the markup or data model.

Editorial Note: Are there any others?

5. Structural emphasis is evident on at least the following displays:

a. black and white monitor,
b. low resolution screens (160 x 160 pixels),
c. "mono" audio playback devices.

[V]

Who Benefits from Guideline 2.4 (Informative)

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

  o Users with **physical disabilities** can use structure to more easily jump between paragraphs, chapters, sections etc.

  o Users with **cognitive disabilities** can use structure (chapter titles, headers, etc.) to provide more context for the text that follows them. They also provide warning of a change in context and reorient the user to the new focus.

  o Users with **blindness** or **low vision** can jump from header to header to get an overview or to more quickly "skim" to the section they are interested in.

  o Readers with **low vision** can sometimes (depending on display technology) change how chapter titles and headers are displayed to make them more visible and easier to use when skimming the document.

- 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.

- Providing different navigation mechanisms can provide a better match between different people's skills, background knowledge, visual vs. text orientation, and the type of information they are seeking at the moment.
- Individuals with **cognitive disabilities** may find it easier to ask for what they want than to deduce its location from categorical choices.
- Individuals with **low vision** or **blindness** may find search techniques that fetch everything that relates to a topic of interest to be easier than techniques that require them to scan lists or content for the items.
- Presentation that emphasizes structure:

    - enables users with **cognitive and visual disabilities** to orient themselves within the content,
    - enables all users to move quickly through the content and notice major content divisions
    - enables all users, but particularly users with **visual or cognitive disabilities** to focus on important content,
    - enables all users, but particularly users with **visual or cognitive disabilities** to distinguish the different types of content.

Examples of Guideline 2.4 (Informative)

- **Example 1: documentation for a product.**

    Identifying chapters in the structure of a book 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 difference might be font size and margin indentation when presented visually, and spoken in a different voice or preceded by a sound when presented auditorily.

- **Example 2: a scalable image of a bicycle.**

    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.

- **Example 4: a data table.**

  Groups of rows or columns are labeled with headers.

- **Example 5: an audio presentation.**

  An audio rendering of a document, generated according to a style sheet, uses a different, more formal voice to read titles and headers so the listener can easily identify the words as a title and not part of the running text.

Guideline 2.5 Help users avoid mistakes and make it easy to correct them. [level 2 guideline]

Level 1 Success Criteria for Guideline 2.5

1. No level 1 success criteria for this guideline.

Level 2 Success Criteria for Guideline 2.5

1. If a user error is detected, the error is identified and provided to the user in text
2. If a user error is detected, and suggestions for correction are known and can be provided without jeopardizing security or purpose (for example, test validity), they are provided (in an accessible form that meets Level 1 success criteria).
3. Where consequences are significant and time-response is not important, one of the following is true:

   a. Actions are reversible.
   b. Where not reversible, actions are checked for errors before going on to the next step in the process.
   c. Where not reversible, and not checkable, the user is able to review and confirm or correct information before submitting it.

Level 3 Success Criteria for Guideline 2.5

1. Where the input options are known, there are less than 75 of them, and they can be provided without jeopardizing security, test validity, etc, users are allowed to select from a list of options as well as to enter text directly.

2. Checks for misspelled words are applied and correct spellings are suggested when text entry is required.

Who Benefits from Guideline 2.5 (Informative)

- Identifying typing errors helps individuals with **writing disabilities** and people with **dyslexia** who often have difficulty writing text in forms or other places that need text input.

- Allowing users to select an option from a list instead of having to enter text directly helps individuals with **speech disabilities** because they might not be recognized properly in voice input applications.

Examples of Guideline 2.5 (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.

Principle 3: Content and controls must be understandable.

Guideline 3.1 Ensure that the meaning of content can be determined.

Level 1 Success Criteria for Guideline 3.1

1. The natural language of the document as a whole can be identified by automated tools. [I]

2. The meaning of abbreviations and acronyms can be *programmatically located*. [I]

Level 2 Success Criteria for Guideline 3.1

1. Page titles are informative. [V]
2. The meanings and pronunciations of all words in the content can be *programmatically located*. [I]
3. The meaning of all idioms in the content can be *programmatically determined*. [I]
4. For each foreign language passage or phrase in the body of the content, the language is identified through markup or other means. Foreign passages or phrases are passages or phrases that are in a language other than the primary language of the document. [I]

Note:

This does not include use of foreign words in text where such usage is a standard extension of the language.

Level 3 Success Criteria for Guideline 3.1

1. The meaning of contracted words can be *programmatically determined*. [I]
2. Where a word has multiple meanings and the intended meaning is not the first in the associated dictionary(s), then additional markup or another mechanism is provided for determining the correct meaning. [I]
3. Section headings and link text are understandable when read by themselves as a group (for example, in a screen reader's list of links or a table of contents). [V]
4. There is a statement associated with the content asserting that the Strategies for Reducing the Complexity of Content (the following list) were considered. [V]

Editorial Note: We are still examining methods to make some or all of these testable (which might make them success criteria on their own).

o **In general**

- Organizing material so it is easy to read and use.
- Using a style manual, dictionary, and other reference materials.

- Testing documents to learn if potential users understand the material, and including people with cognitive, learning, or reading disabilities in the test group.
- Developing a single topic or subtopic per paragraph.

Vocabulary

- Using vocabulary that is likely to be familiar to intended readers.

  - If the resource is intended for people who work in a particular technical field, consider using a Controlled Language. For example, a resource designed for aircraft engineers could use a controlled language like the one used by Boeing Aircraft Company.
  - If a technical resource is intended for translation into other languages, consider using a Controlled Language.
  - Avoiding professional jargon, slang, and other terms with a specialized meaning that may not be clear to people outside a specific group when resources are intended for a general audience or for translation into other languages,. It may also be helpful to review the document for plain language, using a checklist like the ones produced by US and Canadian government agencies.

  Editorial Note: Need to add examples from other countries and other languages.

- Using length and complexity of sentences that are consistent with recommended best practices for the intended audience, such as those found in current textbooks about writing in the audience's field or discipline.

Sentences

- Making sentence-length consistent with common practice in the language of the document or the primary audience for whom the document is intended. Textbooks about writing in that field or related disciplines may be useful when such textbooks are available.

Syntax

- Using the simplest sentence forms consistent with the purpose of the content

  - For example, the simplest sentence-form for English consists of Subject-Verb-Object, as in *John hit the ball* or *The Web site conforms to WCAG 2.0*.

- Using bulleted or numbered lists instead of paragraphs that contain long series of words or phrases separated by commas.

- **Nouns, noun-phrases, and pronouns**

  - Using single nouns or short noun-phrases.
  - Making clear pronoun references and references to earlier points in the document

    example of potential ambiguity: The sentence below contains several pronouns whose references are not clear:
    Web developers can't understand those guidelines because they don't speak their language.

    a. It is not clear which guidelines are referred to as "those guidelines" (the guidelines you are reading now would be these guidelines)

    b. It isn't clear whether the pronoun "they" refers to the Web developers or to the guidelines (the rules of English syntax indicate that the reference is to the guidelines, but common usage doesn't always obey those rules)

    c. It isn't clear whether the pronoun "their" refers to the language used by the Web developers or the language in which the guidelines are written.

    The sentence can be rewritten to resolve the ambiguities:
    Web developers can't understand these guidelines because the guidelines are not written in the developers' language.

- **Verbs**
- **Voice**

  - Using the active voice for documents written in English and some other Western languages, unless there is a specific reason for using passive constructions. Sentences in the

active voice are often shorter and easier to understand than those in the passive voice.

- **Active:** Many people believe that readers understand sentences in the active voice more easily than sentences in the passive voice.
- **Passive:** It is believed by many that sentences in the active voice are more easily understood by readers than sentences in the passive voice.

o **Tenses**

- Using verb tenses consistently.

  For example, do not switch randomly between past and present tense. In the sentences, *John left the room. He takes the elevator down to the lobby*, the shift from past tense (in the first sentence *left the room*) to present tense in the second sentence (*takes the elevator*) might create ambiguity about John's use of the elevator: did he use it in the past or is he using it now?

o **Logic and relationships**

- Indicating logical relationships between phrases, sentences, paragraphs, or sections of the text.

  - In some cases, simple words such as *and, however, furthermore*, and *therefore* may be enough to make the logical relationship clear between one sentence and the next. Other cases may require longer phrases or even additional sentences.

o **Instructions and operable content**

- Thoroughly explaining instructions or required actions.
- Using names and labels consistently.
- Being clear where the document:

  - explains choices and options,
  - labels options to get more information,

- instructs users how to modify selections in critical functions (such as how to delete an item from a shopping cart).

  - Using a goal-action structure for menu prompts.
  - Using default settings (and the ease in re-establishing them)
  - Using two-step, "select and confirm" processes to reduce accidental selections for critical functions
  - Providing calculation assistance to reduce the need to calculate (for example, use a script to calculate the total price for an online purchase)

o **Alternative representations: summaries, paraphrases, examples, illustrations, and symbolic languages**

  - Providing summaries to aid understanding.
  - Adding non-text content to the site for key pages or sections specifically to make the site more understandable by users who cannot understand the text only version of the site.

  Editorial Note: WCAG 1.0 and Section 508 both allow text-only variants only in cases when the "original"can't be made accessible any other way, and then require that the text-only variant be updated whenever the "original"changes. That seems to have dropped out of WCAG 2.0, but we think we need to reinstate it.

  - Using page design, graphics, color, fonts, animations, video, or audio to clarify complex text.
  - Including non-text content to supplement text for key pages or sections of the site.

Who Benefits from Guideline 3.1 (Informative)

- Phrases from various languages are often 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 of the language on the rest of the content, which can make the phrase unintelligible. Identifying changes in language will also allow a tool to ask for automatic translations of that content.

When editing content, authoring tools can switch between appropriate spelling dictionaries.

- 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.

- Defining key terms and specialized language will help people who are not familiar with the topic.

- Facilitating unambiguous decoding of characters and words in content is also helpful for individuals who are learning to read or learning a second language.

- All users, especially those with **cognitive**, **learning**, and/or **reading disabilities** benefit from the use of clear and simple writing. 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.

- 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.

- 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 completely **blind** do not use any visual cues, while people with **dyslexia** or with **low vision** might have difficulty interpreting visual cues.

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.

Examples of Guideline 3.1 (Informative)

- **Example 1: an acronym in a page title.**

  In the following heading, "People of the W3C." the acronym "W3C" is marked as an acronym. Because it has been marked appropriately, the user agent would be able to speak the letters of the acronym one at a time rather than attempting to pronounce it as though it were a word.

- **Example 2: 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.

- **Example 3: a description of a process.**

  A page describes how to learn to play soccer. Each step in learning the fundamentals of the game is illustrated with a photograph of a player doing what is described in the text.

- **Example 4: a concrete concept.**

  The primary concept on a page is concrete. It is discussing Mt. Pinatubo. It includes both a description of the 1991 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 5: child's report of school trip.**

  A child went with her school on a trip to a bicycle manufacturing 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 bicycle on the assembly line. She links to the company Web site for more information. She includes photos she took of the plant.

- **Example 6: 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 7: history of music.**

A grandfather's hobby is listening to and playing music. He creates a Web site that includes examples of many different types of music and musical instruments. When describing specific types of music, he links to a short sound clip.

Guideline 3.2 Organize content consistently from "page to page" and make interactive components behave in predictable ways.

Editorial Note: We are looking for a word to replace "page" that applies across technologies. For visual applications, "screen" would apply, but would not apply for speech-based technologies such as VoiceXML.

Level 1 Success Criteria for Guideline 3.2

1. Any *extreme change of context* is implemented in a manner that can be programmatically identified. [I]

Level 2 Success Criteria for Guideline 3.2

1. Components that are repeated on multiple "pages" within a resource or a section of a resource occur in the same sequence each time they are repeated, for at least one presentation format. [V]
2. All user interface components should be able to receive focus without causing activation. [I]
3. Changing the setting of any input field should not automatically cause an *extreme change in context* such as leaving the "page." [V]
4. Interactive elements that appear on multiple "pages," including graphical elements, are associated with the same functionality wherever they appear. [I]
5. Explicit notice is given in advance of any *extreme change of context*. [V]

Editorial Note: This criterion is HTML-specific.

Level 3 Success Criteria for Guideline 3.2

1. The target of each link is clearly identified. [V]

2. Graphical components that appear on multiple pages, including graphical links, are associated with the same text equivalents wherever they appear. [V]
3. Components that appear visually on multiple pages, such as navigation bars, search forms, and sections within the main content, are displayed in the same location relative to other content on every page or screen where they appear. [V]
4. When components such as navigation menus and search forms appear on multiple pages, users can choose to have those elements presented in a different visual position or reading-order. [V]
5. There are no *extreme changes of context*. [V]

Editorial Note: There is concern that many of these success criteria are very HTML-specific.

Who Benefits from Guideline 3.2 (Informative)

- Providing consistent and predictable responses to user actions is important feedback for users. This lets them know that your site is working properly and encourages them to continue interacting with the content. When users receive an unexpected response, they might conclude that something is wrong or broken. Some people might become so confused they will not be able to use your site.

- Individuals who are unable to detect extreme changes in context or may not realize that the context has changed are less likely to become disoriented while navigating a site. This applies to people in the following ways:

  - Individuals who are **blind** or have **low vision** may have difficulty knowing when a visual context change, such as a new window popping up, has occurred. In this case, warning users of context changes in advance minimizes confusion when the user discovers that the back button no longer behaves as expected.
  - Using captions to note changes in speaker is beneficial for individuals who are **deaf or hard of hearing** and who may be unable to discern changes in speaker for audio-only presentations.

- Some individuals with **low vision**, with **dyslexia** and who have difficulty interpreting visual cues may benefit from additional cues in order to detect extreme changes in context.

Examples of Guideline 3.2 (Informative)

- **Example 1: a form to deactivate pop-up windows.**

  A checkbox is provided 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."

- **Example 3: frames that do not track history making the back button behave unexpectedly.**
- **Example 4: forms.**

Editorial Note: These examples need to be completed or replaced with better examples.

Principle 4: Content must be robust enough to work with current and future technologies.

Guideline 4.1 Use technologies according to specification.

Level 1 Success Criteria for Guideline 4.1

1. Except where the site has documented that a specification was violated for backward compatibility or compatibility with assistive technology, the technology has: [I]

   a. passed validity tests for the version of the technology in use (whether it be conforming to a schema, Document Type Definition (DTD), or other tests described in the specification),
   b. structural elements and attributes are used as defined in the specification.

Level 2 Success Criteria for Guideline 4.1

1. No level 2 success criteria for this guideline.

Level 3 Success Criteria for Guideline 4.1

1. Technologies are used according to specification without exception. [V]

Who Benefits from Guideline 4.1 (Informative)

- This guideline further emphasizes that following specifications increases the likelihood of accessible content. While other guidelines refer to individual pieces of content, this guideline takes a step back to look at the broad picture. It also exists to help cover future technologies or issues that we did not anticipate at the time of writing this guideline. Thus, the benefits of following specifications are primarily that assistive technologies and user agents can render the content according to specification.
- Following specifications for markup and other file formats makes it possible to more easily reformat, repurpose and reuse content, which is important to users who can only make full use of content when presented in a particular format.

Examples of Guideline 4.1 (Informative)

- **Example 1: structural elements.**

  Throughout a historical Web site, structural elements are used appropriately to indicate the presence of quotations, definitions and bibliographic references. Because these elements have (only) been used according to specification, user agents can be configured so that these elements are differentiated from the rest of the content, allowing an end user to optimize her use of the site for research purposes.

- **Example 2: presentation elements.**

  A Web author wishes to focus attention on a series of words on a page for purely artistic reasons. He uses elements designed for applying stylistic and presentation characteristics, rather than elements that are designed to convey information about the structure or organization of a page, to enhance the visual presentation and

avoids implying unintended meaning about page organization for non-visual or text-only users.

- **Example 3: accessible APIs.**

A Java applet uses the accessibility API defined by the language. Refer to the [IBM Guidelines for Writing Accessible Applications Using 100% Pure Java](#).

Guideline 4.2 Ensure that user interfaces are accessible or provide an accessible alternative(s)

Level 1 Success Criteria for Guideline 4.2

1. At least one plug-in required to access the content conforms to at least the default set of conformance requirements of the [User Agent Accessibility Guidelines (UAAG) 1.0](#) at Level A plus the sets of requirements (a) through (j) (below) that apply. If required plug-ins are not accessible, an alternative solution is provided that conforms to WCAG 2.0. If inaccessible plug-ins are available, then a method for obtaining an accessible plug-in is provided from the content. [V]
2. Any *programmatic user interface components* of the content conform to at least the default set of conformance requirements of the UAAG 1.0 at Level A plus the sets of requirements (a) through (j) (below) that apply. If the custom user interfaces cannot be made accessible, an alternative solution is provided that meets WCAG 2.0 (including this provision) to the level claimed. [V]

Requirements (a) through (j)

a. If the application renders visual text, it should conform to the [VisualText checkpoints](#).
b. If the application renders images, it should conform to the [Image checkpoints](#).
c. If the application renders animations, it should conform to the [Animation checkpoints](#).
d. If the application renders video, it should conform to the [Video checkpoints](#).
e. If the application renders audio, it should conform to the [Audio checkpoints](#).

f. If the application performs its own event handling, it should conform to the Events checkpoints.

g. If the application implements a selection mechanism, it should conform to the Selection checkpoints.

h. The application should support keyboard access per UAAG 1.0 checkpoints 1.1 and 6.7.

i. If the application implements voice or pointer input, it should conform to the Input Modality checkpoints.

Level 2 Success Criteria for Guideline 4.2

1. Accessibility conventions of the markup or programming language (API's or specific markup) are used. [I]

Level 3 Success Criteria for Guideline 4.2

1. The Web resource includes a list of the technologies user agents must support in order for its content to work as intended. The list is documented in metadata if such metadata is supported by the format, otherwise it is documented in a policy statement associated with the content. [V]
2. Users who do not have one or more of these technologies can still access and use the resource, though the experience may be degraded. [V]

Note:

When selecting required technologies, consider that assistive hardware and software is often slow to adapt to technological advances, and the availability of assistive technology varies across *natural languages*. Verify that assistive technology compatible with the technologies you choose is available in the natural language(s) of your content.

3. Technologies and features on the required list are open standards or have a public specification. [V]

Who Benefits from Guideline 4.2 (Informative)

- Authors who ensure the accessibility of user interfaces within their content will:

- o encounter fewer challenges when implementing these guidelines,
- o avoid the need to create custom solutions and workarounds to address accessibility concerns,
- o avoid the need to provide accessible alternate versions for content rendered in a technology that does not fully address these guidelines.

Benefits of determining and documenting technology requirements:

- o Individuals can identify (either through site documentation or automatically through metadata) whether or not they are likely to be able to use a site. In conjunction with a search engine or a proxy server, this could be used to automatically filter out sites a user can not access or to automatically filter to the top sites that would be most usable.
- o Documenting technology requirements will cause authors to evaluate assumptions about user agents and will minimize the number of sites that are inadvertently inaccessible because they are unaware of backward compatibility issues.

Benefits of ensuring user interface accessibility and providing accessible alternatives:

- o Individuals who must use alternative browsing technologies and devices will be able to access the content.
- o Individuals who can not afford or otherwise do not have access to newer technologies also benefit from backward compatibility in that they will not need to purchase upgrades or equipment as often.

Examples of Guideline 4.2 (Informative)

- **Example 1: an online store that lists required technologies.**

  By documenting minimum user agent requirements, the store makes it possible for people using particular technologies to determine whether they are going to have trouble using the store or its checkout mechanism before they begin shopping. This prevents users from finding that, after they have selected their products and initiated a checkout process, finding out that they are unable to complete their transaction. They can, therefore, choose alternatives where they can be assured greater success.

- **Example 2: an intranet site that transforms gracefully.**

> A large company was concerned about the ability to address individuals at many diverse office locations that have different technology bases. To address the problem, the created two versions of their content and documented the requirements for each, making it easy for individual locations to determine which version would work best for their technologies.

- **Example 3: an informational site ensuring backward compatibility.**

> An information site covers a wide variety of subjects and wants to enable their visitors to quickly find the topics they're looking for. To do this, they have implemented an interactive menu system that is only supported in the most recent version of two popular user agents. To ensure that their visitors who do not use these specific user agents are still able to effectively use the site, a navigation mechanism that does not depend on the interactive menu system they are using is presented to user agents that do not support the newer technology.

Appendix A Glossary

Editorial Note: The WCAG WG has not tackled the definitions of the terms that we are using and acknowledges that we sometimes use terms inconsistently. We need to coordinate our terms and definitions with the WAI Glossary and are working on proposals for a variety of definitions. We have been looking at the UAAG 1.0 glossary and other glossaries within the W3C.

activity where timing is essential

An **activity where timing is essential** is an activity where timing is part of the design of the activity. Removal of the time element would change the performance of the participants. Versions of the activity (e.g. test) that have no time basis or time limits might be preferred and may be required for some venues but this would require a complete redesign of the activity (e.g. test) and may change the character and validation methodology and would therefore not fall under these guidelines.

ASCII art

Graphic representations that are created by a spatial arrangement of text characters. Although it can be rendered on a text display, it is not text.

audio description

An **audio description** is a verbal description of all significant visual information in scenes, actions, and events that cannot be perceived from the sound track alone to the extent possible given the constraints posed by the existing audio track and limitations on freezing the audio visual program to insert additional auditory description.

Note:

When adding audio description to existing materials, the amount of information conveyed through audio description is constrained by the

amount of space available in the existing audio track unless the audio/video program is periodically frozen to insert audio description. However, it is often impossible or inappropriate to freeze the audio/visual program to insert additional audio description.

captions

Captions are text equivalents of auditory information from speech, sound effects, and ambient sounds that are synchronized with the multimedia presentation.

complex content

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

Content

Editorial Note: We need to include a definition for content here.

content that blinks

Content that blinks is content that turns on and off between .5 and 4 times per second.

controlled languages

Controlled languages use a restricted vocabulary taken from natural language. The purpose is to make texts easier to understand and translate. Standards generally limit words to a single meaning and prescribed part of speech. Complex syntax is avoided. Information about controlled language applications is available on the World Wide Web.

event handler

A section of code that responds to an action taken by the user (or user agent). On Web pages, events are usually user actions such as moving the mouse, typing, etc. An event handler determines the response to that action. A technology specific event handler only responds to an action by one kind of input device. An abstract event handler is one which can be activated by a variety of input devices.

explicitly associated

Editorial Note: We need to include a definition of explicit association here.

extreme changes in context

extreme changes in context include:

- opening a new browser window unexpectedly and without any nonvisual cue (back button suddenly appears nonfunctional)
- in an auditory presentation, the speaker changes with no visual cue and no notation in captions

- captions that do not identify a change in speaker

Common user actions include:

- mouse movements
- key activation
- link selection
- use of browser navigation buttons (e.g. back and forward)
- opening new browser windows

Common responses to user actions include:

- loading a new page
- exposing/concealing content based on mouse position or keyboard focus
- displaying the contents of a menu (auditorily or visually)
- displaying pop-up menus or windows
- submitting a form

It is important that responses to user actions be predictable and sensible to the end user and that interactions are consistent, both throughout the site and with commonly used interaction metaphors used throughout the Web.

feature

A **feature** is a specific component of a technology, for example an element in a markup language or a function call in an Application Programming Interface. Typically, a given feature may only be available in specific versions of the technology, and thus may need to be noted explicitly in the required list.

functionality

Functionality is the purpose or intended effect of the content. This may include presentation of information , data collection, securing a response from the user, providing user experience, linking to other content, testing, confirmation, purchasing, etc.

keyboard interface

On devices that do not have a built-in or attached keyboard, there is often an alternate method for connecting a keyboard to the device for the purpose of generating text or an internal method for generating text. Allowing control via the "keyboard interface" means that the content could be controlled through commands issued from the keyboard or by alternate methods that are capable of generating text as if a keyboard had been used.

marked in way that the user can access prior to its appearance

The content is marked in a fashion that would allow the user to determine that provocative material is coming so that the user may avoid it. Some methods that might be used for this include:

- metadata on page
- information in title (so search engine shows it)

47

- notification on page before provocative information is encountered.

media equivalents

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

natural languages

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

non-text content

non-text content includes but is not limited to images, text in raster images, image map regions, animations (e.g., animated GIFs), *ASCII art*, 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. It also includes any *text* that can not be translated into Unicode.

Note:

Scripts, applets, and programmatic objects are not covered in this definition and are addressed in guideline 4.2.

normative

Required for conformance.

presentation

Presentation is the rendering of the content and structure in a form that can be sensed by the user.

programmatic user interface component

An interface component created by the author that is in addition to those provided by the user agent. For example, an HTML checkbox would not be a **programmatic user interface component** because the author is using an interface component supported by the user agent. A checkbox function implemented in script, however, would be a programmatic user interface component because it provides functionality that is not known or supported by user agents and can not be made accessible by user agents even if the user agent complied with UAAG.

programmatically determined

Programmatically determined means that the specific meaning can be determined.

programmatically located

Programmatically located means that the meaning can be found, though there may be multiple meanings for a word.

real-time events

Real-time events are those that are based on the occurrence of events in real-time where the events are not under the control of the author.

site navigation mechanism

A **site navigation mechanism** is a mechanism for easily orienting and moving about within the site. Site navigation mechanisms include but are not limited to:

- A home page with hyperlinks on it and subsequent pages that link to the other pages at the site
- site map(s)
- search engine(s)
- expanding outline(s)
- dynamic fisheye views showing all linked pages or topics related to any page.
- 3-D virtual representations of site content

structure

Structure includes both hierarchical structure of the content and non-hierarchical relationships such as cross-references, or the correspondence between header and data cells in a table.The heirarchical **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. 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."

technology

A **technology** is a

- markup or programming language
- application Programming Interface (API)
- or communication protocol

text

Editorial Note: We are currently working with Internationalization (I18N) on including references and improved wording related to the WCAG 2.0 definitions for "text" and "character encoding".

text description

Editorial Note: We need to include a definition of text description here.

text label

Editorial Note: We need to include a definition of text label here.

text-equivalent

A *text* equivalent

- serves the same function as the non-text content was intended to serve.

- communicates the same information as the non-text content was intended to convey.

- may contain structured content or metadata.

Note:

Text-equivalents should be easily convertible to braille or speech, displayed in a larger font or different colors, fed to language translators or abstracting software, etc.

time-dependent presentation

A **time-dependent presentation** is a presentation that

- is composed of synchronized audio and visual tracks (e.g., a movie), OR

- requires the user to respond interactively at specific times in the presentation.

unfamiliar content

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.

Wisconsin Computer Equivalence Algorithm

The Wisconsin Computer Equivalence Algorithm is a method for applying the United Kingdom's ITC "ITC Guidance Note for Licensees on Flashing Images and Regular Patterns in Television (Revised and re-issued July 2001)" to content displayed on a computer screen, such as web pages and other computer content. The ITC Guidance Document is based on the assumption that the television screen occupies the central ten degrees of vision. This is not accurate for a screen which is located in front of a person. The Wisconsin Algorithm basically carries out the same analysis as the ITC Guidelines except that is does it on every possible ten degree window for a prototypical computer display.

Editorial Note: Links to references will be provided when they become available.

Appendix B Contributors

Participants in the WCAG Working Group

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, when it eventually becomes a W3C Recommendation:

- 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 detailed comparison, refer to the Mapping Between WCAG 1.0 and the WCAG 2.0 Working Draft.

Improvements in WCAG 2.0

We hope that WCAG 2.0 will have several improvements over WCAG 1.0. While the primary goal of WCAG 2.0 is the same as WCAG 1.0 (to promote accessibility of Web content) additional goals for WCAG 2.0 include improvements that will:

1. Ensure that requirements may be applied across technologies
2. Ensure that the conformance requirements are clear
3. Ensure that the deliverables are easy to use
4. Write to a more diverse audience
5. Clearly identify who benefits from accessible content
6. Ensure that the revision is "backward compatible" with WCAG 1.0

For more information about the intended improvements in WCAG 2.0 Working Draft, please refer to Requirements for WCAG 2.0.

Appendix D References

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