Accessible Images

February – July 2020

Editor's Note – This is a living document.

Summary

All image content on the web that serves as public accommodation **must be accessible** to comply with the ADA and other Federal and State laws in the US – as well as various laws in other countries and markets.

To conform to the voluntary technical standard of WCAG 2.1 Levels A & AA, there are **at least 6 success criteria** that apply. Collectively, the goal is to ensure that all informative images are visibly perceivable and provide an equivalent text description.

Who it Impacts

Everyone.
Images of text are or can be a challenge for: anyone who can see the image, but have a viewing context that differs from the aspect ratio, scale or density of the image; anyone with low vision who needs to adjust the scale of the image in order to read the text; anyone using screen magnification that results in only part of the image in view; anyone with low vision or any color vision

deficiency who cannot differentiate text from the rest of the image; anyone who cannot see the image for any reason in any context; anyone who has seen the text, remembered it and subsequently attempted searching the page or site or local context for it by text; etc.

Images with a missing alt attribute are a challenge for: anyone using a screen reader or any assistive technology which will read the full value of the src attribute (location and file name) as a description of the image.

Images with missing alternative text descriptions are or can be a challenge for:

Images with poor alternative text descriptions are or can be a challenge for:

Who is Responsible

Throughout the document, each section will be tagged with any combination of these key disciplines who have a primary or supporting role in the topic of the section.

UX	Creative	Content	Development	SEO

Current State

68% of the home pages of the top 1 million sites are **missing alternative text**. — [WebAIM Million Report](#); & [State of Accessibility Report](#).

33.6% of all images (12.3 per page on average) had missing alternative text. 18.5% of all images (6.7 per page on average) were linked images with missing or empty alternative text, resulting in both an alternative text issue and a link lacking any description. 16% of pages had images and no alt attributes at all.

> Editor's Note – The WebAIM Million Report is updated every 6 months, and each report shows accessibility declining.

Urgency

Missing alternative text is also one of two success criteria that are consistent in over 90% of all ADA Title III complaints and litigation cases.

Criteria

WCAG 2.1 A & AA

[1.1.1 Non-text Content](#) (A)
  Images are described. Alt text.
[1.4.3 Contrast (Minimum)](#) (AA)
  Text and images of text contrasts with its background.

[1.4.5 Images of Text](#) (AA)
> *Text is not part of an image.*

[1.4.11 Non-text Contrast](#) (AA)
> *Controls contrast with their background.*

[2.2.2 Pause, Stop, Hide](#) (AA)
> *Can stop anything that moves automatically.*

[2.3.1 Three Flashes or Below Threshold](#) (A)
> *Nothing flashes.*

[WCAG Quick Reference Guide, as filtered by: images; images-of-text; graphical-objects; animation; flashing and conformance level](#) — W3C WAI

HTML 5.3

[§ 4.7.5.1. Requirements for providing text to act as an alternative for images](#)
Text alternatives are a primary way of making visual information accessible, because they can be rendered through many sensory modalities (for example, visual, auditory or tactile) to match the needs of the user.

The **alt** attribute on images is a very important accessibility attribute. Authoring useful alt attribute content requires the author to carefully consider the context in which the image appears and the function that image may have in that context. Alt is also a valid and required attribute on an <input type="image"> element.
[§ 4.7.5.1.2. General guidelines](#)
[§ 5.10 img Element](#) — HTML Accessibility API Mapping

The **longdesc** attribute in HTML is deprecated and there are other recommended methods to replace its intended purpose of providing a URI to a longer text description. Warning! The **aria-describedby** attribute is not a viable alternative method, as it currently fails in most combinations of browsers and assistive technology.

[IMG with aria-describedby Screen reader compatibility](#) — Power Mapper

The **<figure>** and **<figcaption>** elements may be the appropriate solution for more complex images or images that require both a description and a citation or disclosure.

Important Considerations

Health — UX Creative

Flashing can disrupt the entire experience. An otherwise perfectly accessible site cannot conform if this criterion fails. No image may contain any flashing, strobing or triggering content. The duration of the flash or animation [can be measured](#) in animated GIF or PNG images by the number of frames times the frame rate times the number of repetitions. Both animated image media, and any motion design – such as CSS animation – should respect a user preference for reduced motion by using the [prefers-reduced-motion](#) media query. Without this feature, a method must be provided to pause, stop or hide the moving content.

Context — UX Creative

The context of use is critical in determining appropriate alternative text descriptions for images. An image may be decorative or informative. It may be simple, or complex like a map, chart or data visualization. It may be inert content used on its own or in support of surrounding text, or it may be functional and used within a link or other control. Each image type and its context of use must be carefully considered – for each instance.

See also: Determining Meaning

Alt text that informs: Meeting the needs of people who are blind or low vision — Microsoft

> *"Though it is well understood that image descriptions are important to convey the purpose of an image, this research showed us that people who are blind or have low vision **want image descriptions that are responsive to where they encounter the image**. In other words, people want **different content for the same image depending on where** they find it."* — Abigale Stangl

Experience — UX Creative

When an image element is missing an alt attribute, screen readers and assistive technology will read the value of the src attribute instead. Since many images are added via CMS tools or asset management workflows and CDN re-hosting solutions, the result is quite often very long arbitrary filenames. Combine that

with the full absolute URL path, and the aural experience can be an entire frustrating minute of gibberish.

Other Considerations

Third Parties — `Creative` `Development`
When image content is created and / or provided by a third party, accessibility requirements should be clearly documented in any contracts or statements of work.

When image content is provided and/or hosted by a third party, accessibility features and terms of service should be thoroughly reviewed and verified in the procurement process. Requirements should be clearly documented in any contracts or purchase agreements.

In either case of third party content, an indemnification statement should be considered to append any public-facing accessibility statement.

Responsive — `Creative` `Development`
Most informative bitmap images should be implemented using responsive images (utilizing the <picture> and <source> elements along with <img> and the srcset, sizes and media attributes). This is the web standard method of progressive enhancement that enables the appropriate display of images based on resolution, density, aspect ratio and network conditions. In all cases, regardless of the exact method and number of sources, there

must be an <img> element with src and alt attributes. There must be an alt value if the image is informative.

Images of Text — `Creative` `Development`
Images of or with text embedded in them may create any number of challenges. Unless a particular presentation of text is essential to the information being conveyed (like providing an image of a sign where the purpose is to convey how the text is displayed more than the text itself), then **images must not contain text**. When text is embedded in an image, then that text must be provided as alternative text. However, this may prohibit including additional context. Other challenges include but are not limited to: the text may lack sufficient contrast; the image may be displayed on and scaled to any screen size which may render the text too small to read when reduced or too large or aliased when enlarged; and the user may recall seeing the text and attempt to search or find on page which will fail since it is not actually text. "Text is much more flexible than images. It can be resized without losing clarity, and background and text colors can be modified to suit the reading preferences of users." [source]

Groups of images — `UX` `Creative` `Development`
"If multiple images convey a single piece of information, the text alternative for one image should convey the information for the entire group." [source]

Implementation — `UX` `Creative` `Development`
An image element can be the child of nearly any other element type. When appropriate, the image can be the child of a figure. A

figure has a companion element of figcaption. When using both alternative text (hidden) and a figure caption (displayed), this text should be carefully considered to provide sufficient descriptions without redundancy. [Example](#) (CodePen).

The alt attribute is invalid on an inline <svg> element. So if the SVG is informative, it should instead use a title or aria-label attribute or an aria-labeledby attribute of a sibling element with text. An SVG implemented as the source of an <img> image element should use the alt attribute.
[Contextually Marking up accessible images and SVGs](#) — Scott O'Hara

When an image is determined to be decorative, there are several implementation methods to consider that prevent assistive technology from recognizing the image as informative content. The simplest method is to provide no text value in the alt attribute. Warning! Ensure there is no space character in between the quotes (use alt="" and not alt=" "). It is slightly more complex when a decorative SVG is implemented as the source of an image element, it is important to include additional attributes to sufficiently hide the image – include alt="" role="img" aria-hidden="true". This resolves a known iOS + VoiceOver bug.

SEO — `Development` `SEO`
Image Search (title, snippet, metadata)

Alternative text is a high ranking signal specifically for image searches. When the same image is used multiple times throughout a site, each instance should have unique alternative

text. Importantly, this accounts for the context of use to be considered and reflected in the text. This also prevents a possible negative signal in search algorithms.

See also: [Context](#)

Page Search (on-page ranking / page content quality)

However, if an image occurs multiple times on a page, only the most contextually informative instance should include alternative text. Each other instance should be marked as decorative. This prevents excess noise from redundancy to users of assistive technology. And it may prevent negative signals in search algorithms that interpret it as keyword stuffing or spamming the page.

Signal Value (quality)

A good method for evaluating the quality of an image description that has signal value for SEO as well as the intended value for humans is examining the context within the image as well as the context in which the image is used. A great example is a headshot of a person. Describing the image with the name of the person would be completely insufficient. That only identifies the subject of the image, and the name is likely already visibly displayed adjacent to the image, and thus would be redundant. Instead, provide within the description characteristics of the person such as expression and attire, as well as contextual factors of when and where and the circumstances of the image, such as naming the location – especially an event.

Common Failing Scenarios

Image element is **missing** an alt **attribute**

Image element is **missing** an alt **value** – and is not decorative

Image element alt **value** is **filename** or is too **generic**

Image element alt value is **text** contained **in adjacent link**
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Image element alt value is **text** contained **in image**

While this would pass 1.1.1, it fails 1.4.5 and likely 1.4.3

Determining Meaning

Whether an image is decorative or informative is an evaluative judgment best made by the author, based on the reason(s) for creating, selecting and including the image on the page in its context with other content.

Informative — Creative
"Informative images convey a simple concept or information that can be expressed in a short phrase or sentence. The text

alternative should convey the meaning or content that is displayed visually, which typically isn't a literal description of the image.

In some situations a detailed literal description may be needed, but only when the content of the image is all or part of the conveyed information." — [source]

Sensory — Creative

Images of artistic works – particularly 2-dimensional like drawing and painting – are sometimes considered sensory. The distinction is that a description of the image may attempt to convey or evoke the artist's intent and not simply what can be observed within the image. Images of 3-dimensional work like sculptures and installations, should consider describing the location and setting in addition to the sensory information. Avoid sensory perceptive information like color and directional cues of areas of the image. — [source]

Decorative — UX Creative

"Decorative images don't add information to the content of a page. For example, the information provided by the image might already be given using adjacent text, or the image might be included to make the website more visually attractive." — [source]

Functional — UX Creative Development

If the image is informative and functional (a child of a user interface component that can be acted upon), provide a description that includes the purpose or target, or provide both a name and a description. Purely functional images are used to

initiate actions rather than to convey information. The text alternative should convey the action that will be initiated (the purpose or target), rather than a description of the image. — [source]

Complex — **UX** **Creative** **Development**
Maps, charts, graphs, tables and other forms of data visualization like infographics can be very complex to describe. As such, alternative text can contribute to the description, but another method may be required to provide a sufficient text description. — [source]

Principles

For Images of Text — **UX** **Creative**
- Never flatten text into an image
- Avoid positioning text over an image

For Alternative Text — **UX** **Creative** **Development** **SEO**
- Meaningful description
- Considers context of use and / or target
- Accurate, concise and uses plain language
- Within a 5 – 25 word ideal range and 125 character limit
- Uses sentence case and punctuation appropriately
- Describe characteristics of humans like expression and action, but avoid those like race and gender
- Include contextual cues within the image like location, time of day, season, event, occasion, era, year or date, etc.

Quality

Intent

The purpose of alternative text is to meaningfully describe informative image content within its context to people who cannot see or understand the media itself or its relation to an action. In order to be meaningful, the quality of the description matters. While quality is subjective, there are many principles, examples and rubrics to follow to evaluate it.

"An effective text alternative for non-text content is not merely a description of what an image contains but instead must consist of what meaning that the image contributes to the content. That meaning is heavily dependent on surrounding content and on the context in which it is used." — Karl Groves [Sole reliance on accessiBe will not be sufficient in ensuring full and equal access to a website]

Verbosity

One of the less subjective properties to evaluate is length. Alternative text should be limited to just enough to convey meaning. When the text is verbose, it can be both noisy, and adversely impact understanding. Historically, some assistive technology imposed character limits, for example at 125. However, this is no longer true.

"The general consensus is that if the text alternative is longer than 75-100 characters (1 to 2 sentences), it should not be considered a short text alternative and should not be presented using the alt attribute or the figcaption element." [need source] [quoted by]

Avoid

Alternative text should never include: "picture of…"; or "image of…" Screen readers automatically announce "image" – usually at the end of the text description.

Punctuation

Assistive technology is also very good at rhythm, pace, pauses and annunciation, which include applying punctuation. However, many characters introduce a risk in being appropriately parsed in HTML, like semicolons and especially quotation marks. Avoid using characters like '|' as well, which is read as "vertical line".

Preference

In addition to what the author determines is an ideal image description, people who regularly experience images through assistive technology have preferences that should be considered. *"People who are blind or have low vision want image descriptions that are responsive to where they encounter the image."* In this research, "where" includes sources like: news websites, social networking sites/platforms, e-commerce websites, employer/employment websites, online dating websites/platforms, productivity applications, and e-publications. [source].

Example (static, inert, non-functional)

|Poor

|Good

|Better
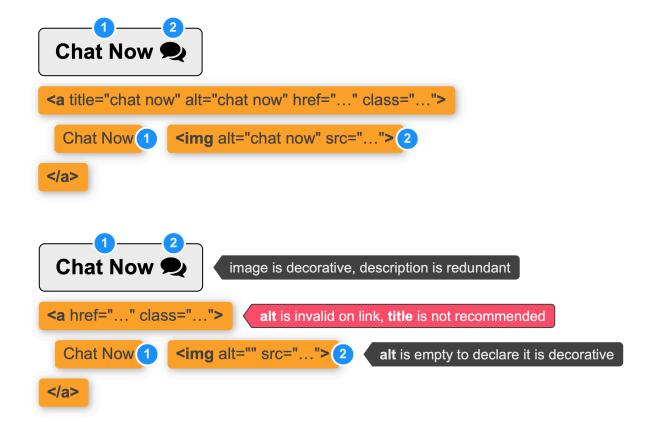

Other Examples

icon only button
icon + text button
brand logo

Image in Link

Decorative

Chat Now 💬 ① ②

<a title="chat now" alt="chat now" href="…" class="…"**>**

Chat Now ① **<img** alt="chat now" src="…"**>** ②

****

Chat Now 💬 ① ②   image is decorative, description is redundant

<a href="…" class="…"**>**   **alt** is invalid on link, **title** is not recommended

Chat Now ① **<img** alt="" src="…"**>** ②   **alt** is empty to declare it is decorative

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If the image was not in a link, describe the content.

Since the image is in a link, and that link is adjacent to additional text, describe the content and the target without being too redundant to either.

complex image
animated image
image of text

Technical Considerations

Calculation — `Development`

Platform APIs, also known as Accessibility APIs calculate the **name** and **description** of an image based on the attributes and values provided in the HTML. Example: the name may be derived from the value provided in an alt attribute (alt text). But there is a very specific order of operations that determines what name and description are announced by assistive technology.

The detail and nuance of that is a series of IF / THEN conditions, which can be found here:
https://www.w3.org/TR/html-aam-1.0/#img-element

For inert / inactive images, it is sufficient to only have an accessible name. However, for images that are part of a control or interaction, it is important that **either**: the name describes the image and the target; **or** both a name and description are provided.

Accessible Name

The accessible name is the name of a user interface element. Each platform accessibility API provides the accessible name property. The value of the accessible name may be derived from a visible (e.g., the visible text on a button) or invisible (e.g., the text alternative that describes an icon) property of the user interface element.

1. Uses the value of **aria-label** or **aria-labeledby** attributes

2. Otherwise value of **alt** attribute
3. Otherwise value of **title** attribute (not recommended)
4. Otherwise no accessible name
5. In the absence of alt attribute, will read entire value of **src** attribute

Accessible Description

An accessible description provides additional information, related to an interface element, that complements the accessible name. The accessible description might or might not be visually perceivable.

1. Uses the value of **aria-describedby** attribute
2. Otherwise value of **title** attribute (not recommended)
3. Otherwise no accessible description

3.2.9.1. The title attribute — HTML 5.3

Warning! Relying on the **title** attribute is currently discouraged as many user agents do not expose the attribute in an accessible manner as required by this specification (e.g., requiring a pointing device, such as a mouse, to cause a tooltip to appear excludes keyboard-only users and touch-only users, such as anyone with a modern phone or tablet).

The value of a title attribute is also inherited by all children of the element unless a child element also has a title attribute and value to override it.

Edge Cases

Sometimes, an icon may have been implemented as a webfont, which is not an actual image and does not use an image element. If such an icon is informative, then additional measures are required to ensure that it is not discoverable by assistive technology, but another element containing its accessible name is. See §Hiding Content From Assistive Technology, in [Inclusively Hidden](#) — Scott O'Hara.

Resources

Alternative Text

[Web Accessibility Tutorials » Image Concepts](#) — W3C WAI
[Tips for Getting Started Writing for Web Accessibility » Meaningful Alternative Text](#) — W3C WAI
[Accessible Images](#) — WebAIM
[Alternative Text](#) — WebAIM
[Accessibility Guide » Images](#) — 18F
[Quick tip: Using alt text properly](#) — The A11Y Project
[Web Accessibility Tutorials » An alt Decision Tree](#) — W3C WAI
[Web Accessibility Tutorials » Complex Images](#) — W3C WAI
[Images in HTML](#) — MDN (Mozilla Developer Network)
[Text Alternatives](#) — MDN (Mozilla Developer Network)
[Accessibility: Image Alt text best practices](#) — Gudrun Gustafsdottir, Siteimprove

[Alt text that informs: Meeting the needs of people who are blind or low vision](#) — Meredith Ringel Morris , Sr. Principal Researcher & Research Manager
[How to write an image description](#) — Alex Chen

SEO

[Google Image Best Practices](#) — Google Webmaster Guide

> *"Alt text (text that describes an image) improves accessibility for people who can't see images on web pages, including users who use screen readers or have low-bandwidth connections."*
> *"Google uses alt text along with computer vision algorithms and the contents of the page to understand the subject matter of the image."*

Revision History

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2/16/20	Initial Draft
2/19/20	Peer Reviewed by Tracy Gabrys & Amy Stoddard @MRM Detroit
3/04/20	Added Content

3/29/20	Added Visual Examples
4/06/20	Added results of Microsoft preference research
7/26/20	Added the same preference research in another section and manner. Added resources.
1/16/21	Added quote from Karl Groves in Quality » Intent. Added Signal Value to Other Considerations » SEO