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DIGITAL.GOV GUIDE

Accessibility for teams

A 'quick-start' guide for embedding accessibility and inclusive design practices into your team's workflow

Overview

Reading time: 1 minute

Everyone who works on government websites has a role to play in making federal resources accessible and inclusive.

This guide provides:

- An overview of how each team member can contribute to a product's accessibility.
- A framework for thinking about accessibility and inclusive design in your role.
- An understanding of the human need behind accessibility practices.

We focus on the issues most likely to impact government sites. These guidelines do not provide a comprehensive list of all possible issues. Your team will need additional resources and work to conduct manual audits to conform to the standards of Section 508, a law that ensures all web content is accessible to anybody with a disability. It aligns with the World Wide Web Consortium (W3C) Web Accessibility Initiative (WAI) Web Content Accessibility Guidelines (WCAG) 2.0, Level AA.

Choose the guide that best fits your role:

1. Product management
2. Content design
3. User Experience (UX) design
4. Visual design
5. Front-end development

These roles are based on the roles we have at the Technology Transformation Services at GSA.

Product management →

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DIGITAL.GOV GUIDE

Accessibility for teams

A 'quick-start' guide for embedding accessibility and inclusive design practices into your team's workflow

Accessibility for product managers

Reading time: 4 minutes

On this page

- Getting started
- Accessibility basics
- Diverse users
- Project workflow
- Final review

Getting started

Product managers play a vital role in communicating accessibility requirements early in the project lifecycle, ensuring each team member knows their responsibility, and keeping the team accountable for building accessible products. Following these steps, you'll make sure you're not only following legal requirements, but making your product more usable for everyone.

Why you should care

Any product released by the government must conform to the standards of Section 508 (which aligns with the W3C Web Content Accessibility Guidelines (WCAG) 2.0, Level AA), a law that ensures all web content is accessible to anybody with a disability. Not following these requirements poses significant legal risks for any government entity.

If you have project-specific questions, ask your agency's accessibility team.

Accessibility basics

Learn the basics of accessibility and what your team does to make content accessible.

Steps to take

1. Familiarize yourself with the high-level accessibility roles for each member of your team:
   - Front-end development: Ensure front-end code is written accessibly and conducts manual and automated testing.
   - Visual design: Ensure that designs are accessible, pages are laid out in a logical order, and content meets color contrast requirements.
   - UX design: Ensure that overall experience is built and designed in an accessible fashion, conduct usability testing with people who need accessibility features.
2. Ensure your team members know where to find the accessibility guidelines for their role and follow them from the start of a project. The guides are located here: front-end, content design, ux design, and visual design.
3. Take an introductory-level class to get a baseline knowledge of accessibility.
4. Learn how to navigate a webpage using only your keyboard and learn how to use VoiceOver so you can spot check new features when necessary.

Resources

- An introduction to accessibility
- Section508.gov accessibility training, tools, and events

Diverse users

Consider how everyone will use the product.

Steps to take

1. **Don't assume that your users don't have accessibility needs.** Even if your product serves a small subset of users, any one individual may experience disabilities that are situational (working in a loud environment) or temporary (having an arm in a cast), or develop a permanent one.
2. **Consider inclusion in your research and usability testing with a range of people** across ages, races, locations, devices, interests, abilities, languages, English proficiency, gender identities, sexual orientations, and access to reliable internet.
3. **Consider testing your product with people in their own context**, such as people who use alternative reading devices, have color blindness impairments, or motor impairments.
4. **Set a regular cadence** for testing accessibility scenarios.

Resources

- Personas for Accessible UX

Project workflow

Build accessibility into your project workflow rather than retrofitting it at the end.

Steps to take

1. Encourage the team to account for accessibility when creating and estimating stories.
2. Add accessibility as an acceptance criteria or definition of *done* for each story or new feature.
3. Add accessibility testing into each development sprint or quality assurance (QA) check.
4. Work with your front end developers to choose an automated testing plan.
   - Including automated accessibility testing throughout the development process can help quickly catch many accessibility errors, but can't guarantee that your site is accessible. Always combine automated testing with ongoing manual testing.
5. When a new accessibility issue arises that you may have missed, prioritize those issues appropriately against other development concerns:
   - Consider whether the error is critical, less critical, or minor.
     - Critical issues will cause serious problems and/or stop most users of assistive technology from using the site.
     - Less critical issues may cause problems or increased frustration for certain users.
     - Minor issues will cause problems or frustration for a small number of users.
   - Consider prioritizing the issue if it appears on high-touch pages, critical user paths, or site-wide templates.

Final review

Request a final review from an accessibility expert.

Steps to take

1. In most cases, you may request a manual accessibility review from the accessibility team at your agency at least two weeks before a public launch. This ensures there's enough time to conduct the review and make necessary changes. Since you've been manually testing throughout the project, this should be quick.
2. Depending on your project's requirements, you may also choose to hire an outside firm to conduct testing as part of your QA.

Resources

- Find your agency's 508 Program Manager

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← Overview

Content design →

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DIGITAL.GOV GUIDE

Accessibility for teams

A 'quick-start' guide for embedding accessibility and inclusive design practices into your team's workflow

Accessibility for content designers

Reading time: 9 minutes

On this page

- Getting started
- Plain language
- Reference materials
- Easy-to-parse graphic elements
- Scannable content
- Images
- Links
- Information architecture
- Video and multimedia

Getting started

How to use this guide:

- We recommend conducting accessibility testing throughout the design and development processes.
- If you have project-specific questions, ask your agency's accessibility team.

Plain language

Can you quickly understand the main points of the content?

Why it's important

- Karis is not a native English speaker and she sometimes has trouble decoding legal or bureaucratic language.
- John has a developmental disability and has difficulty interpreting content written above a sixth grade reading level.
- Kai has low tech literacy and often doesn't understand highly technical languages.

Steps to take

1. Refer to the plain language section of 18F's Content Guide for general guidance, lists of words to avoid, and links to plain language resources.
2. As you're writing, consider the tech literacy level of your target audience. Define technical terms that may be unfamiliar, and use a product or service's full name instead of a nickname or abbreviation. Consider including or adding a glossary ↗ if your content contains many potentially unfamiliar terms. Include in-line definitions for scientific, legal, or technical terms that are unique.
3. Avoid using idiomatic language.
4. Test the readability of your content using Hemingway App ↗, Readable.io ↗, or a similar tool.

Resources

- PlainLanguage.gov Federal plain language guidelines

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 3.1 Readable (Guideline) ↗
- 3.1.3 Unusual Words ↗
- 3.1.4 Abbreviations ↗
- 3.1.5 Reading Level ↗

Reference materials

Can you easily access supplementary information clarifying the content?

Why it's important

- Gilbert reads at a sixth grade level but isn't familiar with the nuances of a site's subject matter; to fully understand the site content, he needs easy-to-access contextual information.

Steps to take

1. Consider defining technical or other potentially unfamiliar terms in-line; this creates a much more continuous reading experience for the user.
2. If you find that you need to define a large number of terms within your content, consider adding a separate glossary page.
3. Use hyperlinks or a tooltip rather than footnotes to direct users to definitions. Footnotes can create a jarring reading experience, and they may not render correctly on mobile devices.

Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 3.1.3 Unusual Words ↗

Easy-to-parse graphic elements

Can you easily interpret content associated with graphic elements?

Why it's important

- Marisa primarily uses her mobile device to browse websites and has trouble interpreting visualizations with small text.

Steps to take

1. Include visual elements in line with text rather than separated from it; a graphic's proximity to associated content helps reinforce the relationship between the visual and its written description.
2. Make sure all graphics have descriptive captions (if necessary). Also make sure that captions share a common form and voice.
3. Include meaningful information describing each graphic element in the alt text.
4. Use null (empty) alt text when text describing the graphic element is already on the page (`alt=""`).
5. If the graphic element is decorative and you don't want the screen reader to announce it at all, use null (empty) alt text (`alt=""`).
6. Consider presenting dense technical language in a format other than as part of a block of text; complicated tables (or, in other words, a harder-to-read format), graphs and charts with technical language can be tough to interpret.

Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.1 Text Alternatives (Guideline) ↗
- 1.1.1 Non-text Content ↗
- 1.4.5 Images of Text ↗

Scannable content

Can you scan the page without having to pause for long passages? Can you quickly grasp the meaning of a section based on its heading?

Why it's important

- Jerrold has a cognitive disability that makes it difficult for him to read long, uninterrupted passages of text.
- Sharon reads most online content using her mobile device and finds it difficult to navigate long paragraphs.

Steps to take

1. Use short sentences, whenever possible. Varying sentence length can add interest to a piece, but whenever possible, avoid unnecessarily long sentences — these can present obstacles to people who have difficulty reading. They can also be harder to skim on mobile devices.
2. Likewise, keep your paragraphs short and focused. Short paragraphs, like short sentences, are easier to scan on mobile devices.
3. Use precise and descriptive headings to help readers grasp the main points of a piece without reading it in its entirety.
4. Check the continuity between sections. Paragraphs that don't have clear thematic links from one to the next can cause difficulties for some readers.

Resources

- 18F Content Guide: Headings and titles

Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 2.4.6 Headings and Labels ↗
- 3.1.5 Reading Level ↗

Images

Do your images have descriptive alternative ("alt") text?

Why it's important

- Carmen's page didn't load all the way and didn't get to download the images.
- Amanda is blind and uses a braille reader to understand the contents of images.
- John is looking for information with a search engine and needs help being directed to the right content (description of alt tags will improve search).

Steps to take

1. Include meaningful information describing each image in the alt text.
2. Use null (empty) alt text when text describing the image is already on the page (`alt=""`).
3. Don't start the alt text with Image of or Photo of - the screen reader already announces that images are images.
4. If the image is decorative and you don't want the screen reader to announce it at all, use null (empty) alt text (`alt=""`).

Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.1 Text Alternatives (Guideline) ↗
- 1.1.1 Non-text Content ↗
- 1.4.5 Images of Text ↗

Video tutorial:

- Text alternatives

Digital.gov | Plain Language
Text alternatives

<h1 class="logo">
<img src="logo.gif"
alt="???">
</h1>

The
Image
Image
Image

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DIGITAL.GOV GUIDE

Accessibility for teams

A 'quick-start' guide for embedding accessibility and inclusive design practices into your team's workflow

Accessibility for user experience designers

Reading time: 9 minutes

On this page:

- Getting started
- Inclusive design
- Assistive technology
- Humanize accessibility
- Tab order
- Focus
- Navigation shortcuts
- Forms
- Images
- Touch targets

Getting started

Accessibility is usability for people who interact with products differently. Your role is to help the team approach accessibility as a facet of user experience rather than checklist of requirements.

How to use this guide:

- If you have project-specific questions, ask your agency's accessibility team.

Inclusive design

Adopt an inclusive design mentality:

1. Celebrate accessibility requirements as a set of design constraints that help you create a better product for all users.
2. Gain a basic understanding of the main categories of disabilities, limitations, or constraints that affect how people use digital services:
   - Vision disabilities—such as blindness, low vision, or color blindness
   - Hearing disabilities—such as deafness, low hearing, or tinnitus
   - Motor problems—such as hand tremors, physical deformities, or amputations
   - Cognitive disorders—such as dyslexia, dementia, or being sleep-deprived
3. Understand that almost everyone experiences some type of disability either permanently, temporarily, or situationally. For example: having only one arm is a permanent condition, having an arm in a cast is temporary, and holding a baby in one arm is situational—but in each case you're restricted to completing tasks with one arm.
4. Look for ways that making your product easier to use for folks with disabilities also improves the experience for everyone.
5. Design for progressive enhancement by making sure every person is able to use your product using the most basic technologies, while layering on better experiences for those who can use them.
6. When conducting user research, make sure the diversity of your participants reflects the diverse abilities, circumstances, and backgrounds of your actual users.

Resources

- Microsoft's Inclusive Design Manual
- Microsoft's Inclusive Design Toolkit (PDF, 22 MB, 32 pages)
- Personas for Accessible UX

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.3 Adaptable (Guideline)
- 1.3.3 Sensory Characteristics

Assistive technology

Get familiar with the basic ways people use assistive technology (AT).

- Some assistive technologies are likely only going to be used by people with specific, long-term disabilities. These include screen readers, switch devices, screen magnifiers, and others. Other kinds of assistive technologies may be more familiar to you and include voice control on your cell phone, ergonomic keyboards, or a browser's native zoom function. People have different skill levels in how they use these technologies.
- To get a baseline knowledge of accessibility, take an "Accessibility 101" class, such as Udacity's Web Accessibility class.
- Learn how to navigate a webpage using only your keyboard and learn how to use a screen reader, such as VoiceOver on your Mac so you can spot-check new features and designs. Don't rely on these techniques as a technology mart, but keep in mind that folks who use it every day will often have their own strategies for using these tools.
- Observe people using assistive technology (AT) on your product or others. In some cases you may be able to find videos demonstrating how people use different strategies to interact with digital products.

Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.3 Adaptable (Guideline)
- 1.3.1 Info and Relationships

Humanize accessibility

Humanize accessibility for your team:

- Cover accessibility and inclusive design issues when conducting user research. Consider the native language, literacy, digital literacy, and digital access of your users as well as potential visual, hearing, motor, and cognitive disabilities.
- Incorporate accessibility considerations in your personas, user archetypes, or user stories. This could take the form of swapping out accessibility issues in your personas or creating standalone user stories focused on accessibility.
- Help your team learn about the experience of using your product with assistive technology. Keep in mind that the way a person with a disability uses assistive technology may be very different from your experience of the tools. This could include:
  - Ask each person on your team to turn off their mouse and trackpad and navigate the product using only their keyboard.
  - Under your computer's settings, look for the accessibility settings to change the display (Mac) or color filters (Windows) and switch to grayscale to explore your site without color to simulate color blindness.
  - Find an appropriate empathy prompt and walk your team through it.
- When possible, include users with disabilities in user research. During usability testing, make sure to allow them to use their own equipment (which has their own settings already in place).

Resources

- Personas for Accessible UX

Tab order

Do your wireframes or design mockups indicate a logical tab order for people using a keyboard, or other assistive technology, to navigate?

Why it's important

- Maria has tendinitis and is unable to use a mouse; instead, she uses the keyboard to navigate the web. When focus jumps randomly around the page she gets confused.

Here are some other best practices for tab order:

- A user should be able to use the tab key to navigate to every interactive element on a page.
- For links, users should be able to activate them with the enter key.
- For buttons, users should be able to activate them with either the spacebar or the enter key.
- Users should be able to tab through interactive items in a logical order, usually from left to right and top to bottom. Sometimes a logical order will be obvious to your front end team based on a simple layout, but in more complicated layouts you may need to identify the tab order in your wireframes or mockups.
- Each interactive element should have a visible focus state, work with your visual designer to make sure you're accounted for there.

Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.3.2 Meaningful Sequence
- 2.4.3 Focus Order
- 2.4.7 Focus Visible

Focus

Have you designed for logical focus behavior on interactive elements?

Why it's important

- Jang is blind and uses a screen reader to navigate the web. When a modal pops up and doesn't receive focus, he may not even know it's there.

Steps to take

Work with your front-end designer to identify any interactions on the page that require JavaScript or that can't be created using default HTML elements. You should intentionally design how focus flows through these interactions.

Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 2.4.3 Focus Order
- 2.4.7 Focus Visible
- 3.2.1 On Focus

Navigation shortcuts

Have you included navigation shortcuts for screen-reader and keyboard users?

Why it's important

- Rasheed is blind and uses a screen reader to navigate the web; he uses landmark elements to quickly navigate through sections of a webpage.
- Li's vision is fine but has trouble using a mouse, so he navigates the web using only his keyboard—he hates having to tab through all the links in the header navigation to get to the main content of a page.

Steps to take

1. Work with your front end designer to identify the basic landmark elements in your wireframes, particularly for complex layouts. Landmark elements are identified either through HTML5 semantic markers or through ARIA roles when HTML can't identify something. You don't need to be an expert on HTML or ARIA, as long as you know the basics.
   - header
   - nav
   - main
   - footer
   - search
   - form
2. Include a "Skip to main content" link before the header for keyboard users. Keyboard users can't take advantage of landmark navigation as a skip link helps them navigate more quickly. This link can be visually hidden but should become visible when it has focus.

Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.3.1 Info and Relationships
- 2.4.1 Bypass Blocks

Forms

Can all users understand and fill out forms?

Why it's important

- Esther is beginning to show signs of dementia and has trouble with short term memory loss, she needs context clues and instructions to stay visible on the screen or she loses her place.
- Jerome uses a screen magnifier and when validation messages are shown off to the side he can easily miss them.

Steps to take

1. Make sure all inputs have descriptive labels that remain visible even after a field has been filled in.
2. Try to use HTML form elements as much as possible, and test any custom interactions for use with screen readers and keyboard only.
3. Use a straw or make a narrow window with your fist and view the page through that, scanning vertically but not horizontally. This can help you discover if content is hidden from users using screen magnifiers.
4. Minimize the number of responses overall and that are displayed on a single page, but provide context clues throughout for people who might easily lose their place.

Resources

- USWDS: Form component
- USWDS: Form templates
- UK.gov Government Digital Service (GDS) guidance on form structure

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.1 Non-text Content
- 1.3.1 Info and Relationships
- 3.2.1 On Focus
- 3.3.2 Labels or Instructions
- 4.1.2 Name, Role, Value

Images

Have you identified which images are meaningful and which images are decorative in mockups?

Why it's important

- Carmen's page didn't load all the way and didn't get to download the images.
- Amanda is blind and uses a braille reader to understand the content of images.
- John is looking for information with a search engine and needs help being directed to the right content (descriptive alt tags will improve search).

Steps to take

1. Images that are purely decorative shouldn't be announced by the screenreader, work with your front-end developer to make sure they're coded correctly.
2. Images that have meaning should include alt text and possibly a longer description, work with the content designer on your team to create these.
3. Making sure any text in images of text is at least 14 points and has good contrast.

Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.1 Text Alternatives (Guideline)
- 1.1 Non-text Content
- 1.4.5 Images of Text

Touch targets

Are your touch targets large enough and easy to reach?

Why it's important

- Harold has gigantism due to a tumor on his pituitary gland during childhood. He has very large hands which makes small links, or links that are too close together difficult to tap on his phone.
- Rosa checks the latest news on her phone during her morning commute on a jostling bus, often while sipping from the coffee cup in her other hand.

Steps to take

1. Make sure you can reach primary actions easily with either right or left thumbs, even on larger phones. Items on the bottom of the screen tend to be easier to reach.
2. Make touch targets at least 44 px (pixels) or 10 mm (millimeters). This will allow the target to be tapped by the average adult finger pad, which measures 10 mm. The icons may be smaller and you can work with your developer to extend padding past the icon. Pay particular attention to how line-height affects touch target size.

Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 2.5.5 Touch Target (WCAG 2.1)

Mobile Accessibility: How WCAG 2.0 and Other World Wide Web Consortium (W3C) Web Accessibility Initiative (WAI) Guidelines Apply to Mobile

- 3.2 Touch Target Size and Spacing
- 3.3 Placing buttons where they are easy to access

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← Content design

Visual design →

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DIGITAL.GOV GUIDE

Accessibility for teams

A "quick start" guide for embedding accessibility and inclusive design practices into your team's workflow

Accessibility for visual designers

Reading time 11 minutes

On this page

- Getting started
- Color and Contrast
- Layout and Hierarchy
- Typography
- Graphics and Images
- Data visualizations
- Forms
- Mobile
- Keyboard access
- Screen reader

Getting started

Everyone benefits from designs that are easier to use. People with different visual abilities can have very different needs, but there are many accessibility practices that can be applied to ensure your designs are perceivable. A clear and clear visual presentation helps everyone make sense of a website's information and functionality.

Five ways we like guides

- Are practical
- We recommend planning for accessibility in your design process and regularly conducting accessibility testing throughout the design and development processes.
- If you have project-specific questions, ask your agency's accessibility team.

Color and Contrast

Is there enough contrast between text and its background color?

Why it's important

- Certain low low vision and needs content to have enough contrast to read it.

Steps to take

1. Provide good contrast. Make sure the contrast between the text and background meets the minimum ratio of 4.5:1 for normal text and 3:1 for large text.
   - Test your color palette for accessible combinations with Accessible Color Palette Builder or Contrast Grid.
   - Check individual text and background colors with tools like WebAIM's Color Contrast Checker or a Month Legal.
2. Exceptions:
   - Decorative text has requirements apply to text and graphics that are essential for understanding the content or functionality. You don't need to meet color contrast requirements for logos or incidental graphic elements.
   - Large text (18 pt or 14 pt bold) has a lower or disabled contrast ratio of 3:1 to meet the minimum contrast ratio.
   - Text that is part of a logo has no minimum contrast requirement.
3. Slightly tempter the contrast between your text and background color. For example, don't use pure black text on a pure white background. Both contrast ratios are still met, but it's easier on the eyes for extended reading.
4. To use text over images, add a solid background behind the text or a dark overlay to the image.

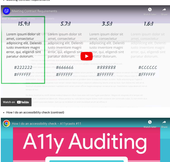
Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- Guideline 1.4.3: Contrast (Minimum) ↗

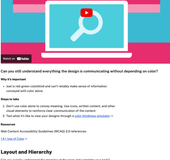
Video tutorials

- Meeting contrast requirements



Watch on YouTube

- Check UX on accessibility check (contrast)



Can you still understand everything the design is communicating without depending on color?

Why it's important

- Just is not green colorblind and can't reliably make sense of information conveyed with color alone.

Steps to take

1. Don't use color alone to convey meaning. Use icons, written content, and other visual elements to reinforce clear communication of the content.
2. Test what it's like to view your designs through a color blindness simulator ↗.

Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.4 Use of Color ↗

Layout and Hierarchy

Can you quickly understand the meaning of the page and complete your task?

Why it's important

- Layout and hierarchy need to fit not an important web form.
- Bonus functionalities don't disorder and hurt tradies moving forward on busy pages.
- Juanita doesn't feel confident about using technology because she previously wasn't able to find what she was looking for.

Steps to take

1. Make sure key information is discernable at a glance. Design minimally and prioritize the most critical tasks and data. Avoid clutter and distractions.
2. Create a clear hierarchy of importance by placing items on the screen according to their relative level of importance. For example, place important actions at the top of the screen and secondary actions at the bottom.
3. Plan heading structure early. Ensure all content and design fits into a logical heading structure.
4. Consider reading order. The reading order should be the same as the visual order.
5. Group related items in proximity to one another to help those who have low vision or trouble focusing on the screen.

Resources

- Accessibility - Material Design ↗
- Webaim Web Accessibility for Designers ↗

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.3 Adaptable ↗ Sequence ↗
- 2.4.6 Headings and Labels ↗

Typography

Can you easily read and comprehend textual information on the page?

Why it's important

- Dislike has low vision and has trouble reading small text.
- Yoshi's eyes are strained after a long day of working on a computer.

Steps to take

1. **Use a large enough font size for body text so that people can comfortably read it.** Use a font size of 16pxs for text. This size will vary depending on the usage of the text.
2. **Maintain a line height that promotes comfortable reading.** Don't make lines too long or too short. Line lengths should be between 45 characters and 75 characters. Line indentions can be a contributor. Shorter passes of text have more capacity, marginal text, and forms.
3. **Consider the following typeface compliance clarity and legibility.**
   - Sections to consider:
     - X-portions well when it's small or large.
     - Free-spaces ↗
     - Line-heights ↗ height ↗ the point ↗
     - The metrics (such as x-height) are consistent between letterforms.
     - Individual letterforms are distinct in shape and can't they be confused with others. For example, l, 1, and I are distinct. O and 0 are distinct. Lowercase l's separate all of the characters and font styles that are included.
   - Some designers recommend sans serif faces for dis and serif faces for dis. Serif faces are easier to read in long-form text.
   - For an easy place to get started, the U.S. Web Design Standards (USWDS) Typography page includes a set of open source typeface recommendations and pairings.
4. **Use headings to communicate hierarchy.** Ensure heading styles differ from paragraph text by some combination of size, weight, face, or color. This decreases the cognitive load on users who are accustomed to word-of-mouth rather than consistency which helps with scanning.
5. **Use your type size and line width to determine a line height that people can comfortably read.** Line height should be at least 1.5 times the font size. Line height should be 75% overlapping text. Don't usually around 120 % headings of around 1.5, and captions or short lines or around 1.5. Lines that are loaded with text, or have a lot of information, should be making it harder for the eye to move where to return to when the line breaks.

Resources

- U.S. Web Design System (USWDS) research report: Inclusive design patterns
- Material Design - Typography ↗
- Text legibility - Material Design ↗

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.4.8 Visual Presentation ↗

Graphics and Images

Can you easily understand content associated with graphics, icons, and images?

Why it's important

- Marisa primarily uses her mobile device to browse websites and has trouble interpreting visualizations with small text.

Steps to take

1. Make sure all graphics have descriptive captions written in plain language.
2. Avoid using graphics alone written content could communicate the same thing.
3. Use extra-as helpful visual cues to connect to concepts. Only use icons when they are clear. Icons should be used to reinforce meaning and accountability associating with common actions. Use a brain cue to represent a brain function.
4. To use text over images, add a solid background behind the text or a dark overlay to the image.

Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.1 Text Alternatives (Guidelines) ↗
- 1.1 Non-text Content ↗
- 1.4.5 Images of Text ↗

Why it's important

- Kwame has trouble reading graphs with small text.

Steps to take

1. Follow data visualization best practices after the data and your communication goals for the visualization to divide the format and visual cues, colors of the text aesthetic hand.
2. Make sure the chart has a brief description of the overall trend that's generated by the chart in plain sentence.
3. Ensure the data and variables are clearly labeled.
4. Make sure the data visualization is accessible and easy to people with color blindness and disrupted the colors.
5. Consider complementing the graph with a table of information so that it can be read non-tactily by screen reader users and when compared to media.

Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.1 Text Alternatives (Guidelines) ↗
- 1.1 Non-text Content ↗
- 1.3.1 Info and Relationships ↗
- 1.4.1 Use of Color ↗

Forms

Are forms as simple as possible and only ask what's needed to complete the task? Can you successfully complete the form?

Why it's important

- Melissa is in a hurry to fill out a medical insurance form for his sick daughter.
- Jane has dexterity and needs to validate her identification to request a new social security card.

Steps to take

1. **Make forms as a single column layout.** This keeps visual momentum moving down the page so users don't have to search themselves with multiple columns. (Exceptions to this rule are short, logical fields that may be presented on the same line, such as City, State, Zip.)
2. **Ensure form fields are visibly labeled.**
3. **Make sure form fields have clearly defined boundaries** ↗ so users do not confuse with cognitive disabilities know the visual and clear of the click target.
4. **Do not use placeholder text in form fields.** Placeholder text causes usability issues because it disappears when users start typing. Instead, use labels, hints and instructions should be prominent and also provide a clear hint.
5. **Provide highly visible and specific error states.** Use multiple cues like color, icons, and text to ensure users can quickly and helpful can to make sure users don't overlook critical information.

Resources

- USWDS: Form component
- USWDS: Form templates
- Nielsen Norman Group: Website Forms Usability: Top 10 Recommendations ↗

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.3 Non-text Content ↗
- 1.3.1 Info and Relationships ↗
- 3.3.1 Error Identification ↗
- 3.3.2 Labels or Instructions ↗
- 4.1.2 Name, Role, Value ↗

Mobile

Can you understand key information and perform critical tasks on a mobile device?

Why it's important

- Miranda uses her low-bit pixel-saved her home internet to stretch her budget. She uses her mobile phone to browse the internet.
- Rosa is recovering from a stroke and slowly relearning how to use her arm. Her goal is to phone to help him find information on the web.

Steps to take

1. Make sure you can reach primary actions easily with either right or left thumbs.
2. Make sure content fits on the screen. Allow the page to be horizontally scrollable if needed and zoom-in. Don't allow the page to be horizontally and you can work with your developer to extend padding over the icon.
3. In most cases, touch targets are separated by few of space or more to ensure users don't select the wrong action.

Resources

Mobile Accessibility: How WCAG 2.0 and Other World Wide Web Consortium (W3C) Web Accessibility Initiative (WAI) Guidelines Apply to Mobile

- 2.5 Touch Target Size and Spacing ↗
- 2.5 Pointing Gestures allow this one key to access ↗

Keyboard access

Can you reach anything that's interactive using the tab key?

Why it's important

- Maria has tendonitis and is unable to use a mouse. Instead, she uses the keyboard to navigate the web.

Steps to take

1. Using only your keyboard, navigate through the page using the ↑ key. ↓ key.
2. Make sure you can reach all interactive elements and trigger them with the keyboard. Use the ↑ key to navigate through the page and the keyboard. Use minimum states for these states focus, focus, active, and visited.
3. Check to see that focus is always visible and that interactive items on the page are reachable in a logical order. Make sure focus is correctly goes focused efficiency or hidden from view.
4. Check to see that the page includes a skip navigation link (if navigation is repeated on multiple pages). This will allow users to skip past navigation to reach the page's main content.

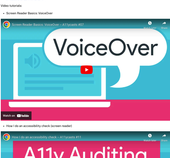
Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 2.1 Keyboard ↗
- 2.4.1 Bypass Blocks ↗
- 2.4.3 Focus Order (WCAG 2.0 ↗
- 2.4.7 Focus Visible ↗

Video tutorial

- View UX on accessibility check



Screen reader

Can you use a screen reader to access the page content?

Why it's important

- Aisha is blind and uses a screen reader to navigate the web.

Steps to take

1. Use a screen reader to make sure you can land on controls and that they're strong enough. Make sure the screen reader and contact is clear, labels before form entry, and hints in the page.
2. If forms are present, make sure the screen reader reads labels and instructions.
3. Make sure that all links are properly descriptive. For example, the link text "Read More" provides no context about where the user will go if they click it, while "Read more about Bluewater" describes what's on the other side of the link.

Use VoiceOver screen reader on Mac

- **Turn on VoiceOver** command + F5
- **Turn off VoiceOver** command + F5
- **Navigate next** control + alt + right arrow ⇧
- **Navigate right** control + alt + right arrow ⇧
- **Navigate to heading** control + alt + command (⌘) + H
- **Click** control + alt + spacebar

Use VoiceOver to browse pages. The screen reader announces elements like headings, links, and images, and lets you navigate directly to the element of your choosing.

- **Navigate next** alt + right ⇧
- **Navigate back** alt + left ⇧

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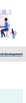
DIGITAL GUIDE

Accessibility for teams

A "quick start" guide for embedding accessibility and inclusive design practices into your team's workflow



Accessibility for front-end developers

Reading time 7 minutes

On this page

- Getting started
- Keyboard access
- Screen reader
- Headings
- Alternatives
- Images
- Color and contrast
- Automated testing

Getting started

Accessible front-end development ensures people with different abilities can access, understand, and navigate web content, regardless of how they're accessing it. Front-end developers collaborate with other members of a cross-functional team to implement a robust user experience.

How to use this guide:

- We recommend conducting accessibility testing throughout the design and development process.
- A good place to start testing is high-traffic pages, critical user paths, and site-wide templates.
- If you have project-specific questions, ask your agency's accessibility team.

Keyboard access

Can you reach everything that's interactive using the tab key?

Why it's important

- Many has-textbooks and is unable to use a mouse, instead, she uses the keyboard to navigate the web.

Steps to take

1. Use the keyboard to navigate through the page using the `tab` key.
2. Make sure you can reach all interactive elements and trigger them with the `enter`, `enter` key, or arrow keys.
3. Use semantic HTML elements that are accessible by default (if for example `<button>` elements, ensure they are focusable and that the keyboard focus they are focusable and labeled appropriately.
4. Check to see that focus is always visible and appears in logical order.
5. Make sure that no content gets focused offscreen or is hidden from view.
6. Check to see that the page includes a skip navigation link (if navigation is extensive). Skip navigation links let users who prefer not to use the keyboard to navigate to the page's main content.

Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 2.1 Keyboard Accessible (Guideline)
- 2.1.1 Keyboard
- 2.1.2 No Keyboard Trap
- 2.4.3 Focus Order
- 2.4.7 Focus Visible

Video tutorial:

- How I do an accessibility check

Screen reader

Can you use a screen reader to access the page content?

Why it's important

- Devonte is blind and uses a screen reader to navigate the web.

Steps to take

1. Use a screen reader to make sure you can land on controls and that they're announcing things as they should.
2. Determine whether the HTML document has a language attribute so that screen readers can read it with the correct accent and pronunciation. For example: `<html lang="en">`
3. If forms are present, make sure the screen reader reads labels and instructions.
4. Make sure that links are descriptive enough to make sense when read out of context. Many screen readers let users jump to links on the page and read only links, so links "Read more about dinosaurs" does/does what's on the other side of the link.

Use VoiceOver screen reader on Mac:

- **Turn VoiceOver on:** command (⌘) + F5
- **Go into web area:** control + alt + shift + down arrow
- **Navigate right:** control + alt + right arrow
- **Navigate by heading:** control + alt + command (⌘) + H
- **Click:** control + alt + spacebar

Use the keyboard to navigate to the controls common elements like headings, links, and images, and also use navigation shortcuts to the element of your choosing.

- **Turn on/over** control + alt + U
- **Navigate/next:** left and right, up and down arrows

Resources

- Download NVDA screen reader (NV Access)

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.3.1 Info and Relationships

Video tutorials:

- Screen Reader Basics Voiceover

- Video tutorial: How I do an accessibility check (screen reader)

Headings

Are you using accurate headings on your page?

Why it's important

- Lydia is blind and uses a screen reader to navigate the web. She hears an outline of the page's main ideas, then backtracks to read the parts she's most interested in.

Steps to take

1. Headings locally describe the section it introduces. Headings represent an outline of the content.
2. Use `h1` to define your section headings, where `h1` is the highest section heading and `h6` is the lowest.
3. Avoid skipping heading levels. Always start with `h1`, use `h2` next, and so on.
4. Use only one `h1` per page for the page title.

> **Note:**
> Use HTML elements to create headings to ... on new section elements, some screen reader users will have difficulty discovering the structure of pages with multiple h1. For this reason, it's best to include only one h1 per page.

Resources

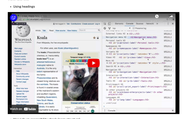
Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.3.1 Headings and Labels

Video tutorials:

- Using Headings

- How I do an accessibility check (page structure)



Page structure

Are you using semantic elements and roles?

Why it's important

- Carlos is low-sighted and navigates pages by jumping to the page section he wants to get to.

Steps to take

1. Use semantic elements to create a broad outline of your page content; examples of these elements include `header`, `nav`, `main`, and `footer`. Use `section` and `article` elements to group related content, and to organize the document content into logical chunks.
2. Add `role="banner"` to your masthead and `role="contentinfo"` to your page footer once per page to define structural elements.

Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.3.1 Info and Relationships
- 2.4.1 Bypass Blocks

Video tutorial:

- Landmarks

Images

Do images have good alt text?

Why it's important

- Carmen's page didn't load all the way and didn't get to download the images. Carmen is blind and has to read the alt text to understand the contents of the images.
- John is looking for information with a search engine and needs help being directed to the right content (descriptive alt text improve search).

Steps to take

1. Include meaningful information describing each image in the alt text.
2. Use null (empty) alt text when text describing the image is already in the page text or caption.
3. Don't use the alt text with images of or filled in the screen reader already announces that images are images.
4. Use null (empty) alt text when a screen reader's text screen reader to announce it at `alt="">` null (empty) alt text `alt=""` CSS background images.

Resources

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.1 Text Alternatives (Guideline)
- 1.1 Non-text Content
- 1.4.5 Images of Text

Color and contrast

Why it's important

- Kiera enough contrast between text and its background color?
- Romi has low vision and needs contrast to have enough contrast to read it.
- Jamie is color-blind and needs color to not be the sole source of information bound with color alone.

Steps to take

1. Use a color contrast tool and test that the contrast between the text and background is greater than or equal to 4.5:1.
2. Use an automated tool to quickly scan for color contrast problems.
3. Don't use color alone to convey meaning. Use icons, text, and other visual elements to reinforce the meaning of the content.

Resources

- WebAIM Color Contrast Checker
- Accessible Colors

Web Content Accessibility Guidelines (WCAG) 2.0 references:

- 1.4.3 Contrast (Minimum)

Video tutorials:

- Meeting contrast requirements

- How I do an accessibility check (contrast)

Automated testing

Did your accessibility testing tools provide accurate results?

Why it's important

Including automated accessibility testing throughout the development process can help quickly catch some accessibility errors, but can't guarantee that you're accessible.

Always combine automated testing with ongoing manual testing. Manual testing is the most reliable method to assess accessibility.

Steps to take

1. **Quick check:** Use a tool to quickly check for common errors in your browser. This can add HTML CodeSniffer, axe, Lighthouse Accessibility Audit, or Accessibility Insights to your browser.
2. **Multipurpose:** Integrate a tool like pa11y, axe-core, Lighthouse Audits, or Accessibility Insights into your project to programmatically add accessibility tests to your unit tests, integration tests, or both.
3. **Continuous integration:** Use a tool like Accessibility Insights for Azure DevOps to add requests.
4. **Browser requirements:** Use tools to simulate color blindness, low vision, zoom, low contrast, high contrast, and more.

Resources

- GOV.UK: What we found when we tested tools on the world's least accessible webpage

Video tutorial:

- How I do an accessibility check (tools and extensions)

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