



Accessibility Checklist

This document is aimed at developers looking for an easy-to-read checklist to comply with the WCAG 2.2 accessibility guidelines, grouped into the three compliance levels (A, AA and AAA).

As this is only a simplified version of those guidelines, I recommend reading them in full for more information. You can find the guidelines via this link:

<https://www.w3.org/TR/WCAG22>

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Level A

This is the most basic compliance level, which should be achieved by all websites.

Non-text content [1.1.1]

- All images, image buttons, and image map hot spots have an `alt` attribute that clearly describes the visual element

```

```

- All decorative images, such as icons, have an empty `alt` attribute set
- Complex images are accompanied by a text explanation either in context (e.g. by using `aria-describedby`), or via a link immediately after the image

```

<p id="p1">Long description of the complex image</p>
```

- All input elements and controls have a text label associated with them

```
<label for="name">Name:</label>
<input type="text" id="name" name="name">
```

- Objects, such as iframes, regions with no text, or key landmarks (like navigation), have a descriptive label or title

```
<div role="region" aria-label="weather portlet"></div>
<iframe src="page.html"
        title="Description of the iframe"></iframe>
```

Audio-only and video-only (prerecorded) [1.2.1]

- For non-live, audio-only content, such as MP3 recordings, a descriptive transcript is included next to the audio element

- For non-live, video-only content, such as an animation, either:
 - a text description is available next to the video; or
 - audio description is available to explain key parts of the video

```

<a href="../video/marslanding.mp4">
  
</a>
<p><a href="mars-landing-audio.mp3">
  Audio description of "Mars Landing"
</a></p>

```

Captions (prerecorded) [1.2.2]

- For non-live video, captions are provided that sync up with what is being spoken

```

<video controls>
  <source src="video.mp4" type="video/mp4">
  <track kind="captions" src="captions.vtt"
    srclang="en" label="English">
</video>

```

Audio description or media alternative (prerecorded) [1.2.3]

- For non-live video that contains visual elements not described in the audio, at least one of the following is available:
 - a detailed transcript that describes the visual elements in the video
 - a dedicated audio description track
 - a text alternative, such as a descriptive paragraph under the video

Info and relationships [1.3.1]

- Semantic markup is used where appropriate, for example:
 - `h1` - `h6` elements are used for headings
 - `ul`, `ol`, and `li` elements are used in lists
 - `optgroup` is used to group `option` elements in a `select`
 - `table`, `tr`, `th`, and `td` elements are used to present tabular data
 - semantic elements that describe regions are used

```
<!-- Semantic regions -->
<header>Header</header>
<nav>Navigation</nav>
<main>Main content</main>
<footer>Footer</footer>
```

- Related form controls are grouped together, such as radiobuttons

```
<div role="radiogroup" aria-labelledby="p1">
  <div>
    <span role="radio" aria-labelledby="r1"
      name="r1radio"></span>
    <span id="r1">Option 1</span>
  </div>
  <!-- ... -->
</div>
```

- When font styling is used to convey a particular meaning, (like a highlighted word that is spelt incorrectly), this is also stated in text
- Form elements are labelled correctly, and related controls are grouped together using the `fieldset` and `legend` elements

```
<fieldset>
  <legend>Your personal details</legend>
  <!-- ... -->
</fieldset>
```

Meaningful sequence [1.3.2]

- The content on the page is in a meaningful order
- The DOM order (the order in which elements appear in code) matches the visual order (the order in which they appear to the user)

Sensory characteristics [1.3.3]

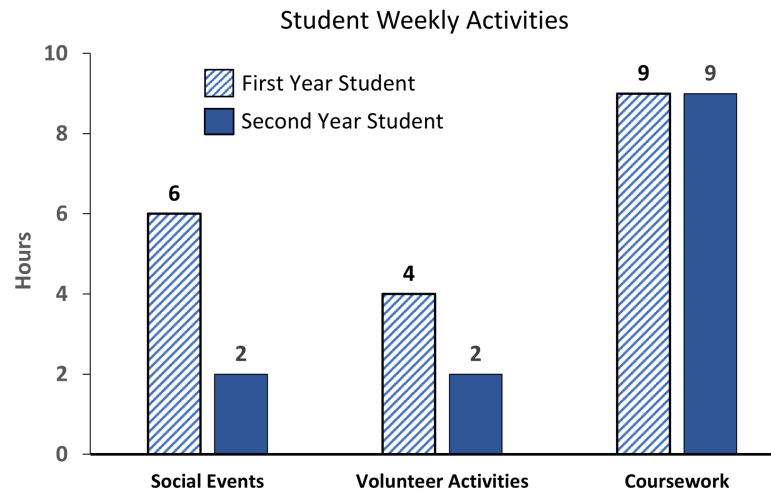
- Instructions do not rely on:
 - shape or size, e.g. don't say "click the round button"
 - colour, e.g. don't say "click the green button"
 - visual location or orientation, e.g. don't say "see the section in the right-hand column"
 - sound, e.g. don't say "you can continue on the sound of the beep"

Use of colour [1.4.1]

- Colour isn't the only way users can distinguish visual elements and content. For example, don't just mark form fields in red if they are required - include some additional text or label
- Colour isn't the only way users can determine when inline text is a link, unless:
 - the contrast ratio between the link and the surrounding text is at least 3:1; and
 - an additional distinction (e.g. it becomes underlined) is provided when the link is hovered over and receives keyboard focus

Try using [WebAIM's contrast checker](#) to find out the contrast between two colours.

- For images, like a bar chart where there is a legend that identifies each bar by colour, try to include another way to identify each element, e.g. by pattern



Why is this important?

Using bar charts as an example, colourblind individuals may not be able to match the colour in the legend to the bar.

Audio control [1.4.2]

- If audio content plays automatically for more than 3 seconds, there is functionality in place that either:
 - allows the user to pause or stop the audio; or
 - allows the user to control the volume, independent of the overall system volume

Keyboard [2.1.1]

- All page functionality is accessible using the keyboard, unless this is not possible, e.g. drawing brush strokes on a canvas
- Mouse events have a corresponding keyboard event, as per these examples:

Mouse	Keyboard
<code>mousedown</code>	<code>keydown</code>
<code>mouseup</code>	<code>keyup</code>
<code>click</code>	<code>keypress</code>

Mouse	Keyboard
<code>mouseover</code>	<code>focus</code>
<code>mouseout</code>	<code>blur</code>

No keyboard trap [2.1.2]

- When the user tabs through the page and interacts with controls, they do not become trapped within a component. Ways to combat this might include:
 - interacting with controls to exit the component, e.g. a 'close' button in a modal
 - providing a help guide that clearly tells the user how to exit the component

Character key shortcuts [2.1.4]

- If a keyboard shortcut is available that only uses one letter or symbol, then at least one of the following is true:
 - the user is able to turn off this shortcut
 - a feature is available to remap the shortcut to include modifier keys, e.g. Ctrl
 - the shortcut is only active on a component that has focus

Why is this important?

We don't want users to accidentally trigger a shortcut.

Timing adjustable [2.2.1]

- If a time limit is imposed on the user, then at least one of the following is true:
 - the user can turn off the time limit before encountering it

- the user can adjust the time limit to at least 10 times more than the default limit
- the user is warned before the time ends, and is allowed at least 20 seconds to perform a simple action to extend the limit, for at least 10 times
- the time limit is essential or is part of a real-time event
- the time limit is longer than 20 hours

Pause, stop, hide [2.2.2]

- Unless essential, there is functionality in place to pause, stop or hide moving, blinking or scrolling information that:
 - starts automatically
 - lasts more than 5 seconds
 - is presented with other content
- Unless essential, there is functionality in place to pause, stop or hide auto-updating information that starts automatically and is presented alongside other content

Why is this important?

Users can get distracted by content that updates or moves.

Three flashes or below threshold [2.3.1]

- No content flashes for more than 3 times per second, unless the flashing content is below the flash thresholds

Take a look at the W3C's [guidelines on flash thresholds](#) for more information.

Bypass blocks [2.4.1]

- A link is provided to skip elements that repeat across pages, like navigation menus. This could be a button that only appears when the user tabs into it

```
#skip-to-content-btn {  
  position: absolute;  
  transform: translateY(-100%);  
  margin: 10px;  
}  
#skip-to-content-btn:focus {  
  transform: translateY(0%);  
}
```

- Links are also provided for other repeated content, such as a section containing several links, e.g. table of contents

Page titled [2.4.2]

- Each webpage has a descriptive title, using the `<title>` element

Focus order [2.4.3]

- Each webpage can be navigated using the tab key in a logical order
- The `tabindex` attribute is not set to anything greater than 0 on any element

```
NO: <a href="#" tabindex="1">Homepage</a>  
YES: <a href="#" tabindex="0">Link</a>
```

Link purpose (in context) [2.4.4]

- Each link's purpose is either determined from:
 - the link text itself
 - an accompanied label or title, e.g. using the `aria-label` attribute
 - its surrounding context, such as previous headings

- It is possible to distinguish two links that have the same text but go to different locations

Pointer gestures [2.5.1]

- Multipoint or path-based gestures that are not essential can also be performed with a single point gesture, like clicking a button
 - Multipoint gestures could include pinching with two fingers or a two-finger swipe
 - Path-based gestures could include drawing a specific shape where not just the endpoints matter

Why is this important?

Not everyone can perform complex and multi-touch gestures.

Pointer cancellation [2.5.2]

- Unless essential, avoid triggering functionality on down events, e.g. `onmousedown`, and instead trigger the functionality on the up event
- For drag and drop sequences, the ability to undo or reverse the dragging action is provided

Why is this important?

This will make it easier for users to recover from something they didn't mean to do.

Label in name [2.5.3]

- For links and buttons that include text, the accessible name for the component, (provided by an `aria-label`, for example), includes the visible text

```
<a href="#"  
  aria-label="Search for a value">Search</a>
```

Why is this important?

People who operate with voice interaction use the visible labels in their commands.

Motion actuation [2.5.4]

- Unless essential, functionality triggered by moving the device (e.g. shaking) or user movement (e.g. waving to a camera) can be:
 - disabled to prevent accidental activation; and
 - accessed via equivalent functionality using standard controls, like buttons

Language of page [3.1.1]

- The language of the page is identified using the `lang` attribute

```
<html lang="fr">  
  <!-- Content in French -->  
</html>
```

On focus [3.2.1]

- When an element receives focus, it does not result in a change of context, such as:
 - a substantial change to the page
 - the opening of a popup window
 - change of keyboard focus
 - any other distracting or confusing change

On input [3.2.2]

- When a user inputs information or interacts with a form control, this does not result in a change of context, such as:
 - a substantial change to the page
 - the opening of a popup window
 - change of keyboard focus
 - any other distracting or confusing change
- If it essential to make such changes of context, the user is informed that interacting with a control will trigger certain functionality

Consistent help [3.2.6]

- The following information is presented consistently across multiple pages:
 - human contact details, such as email address or phone number
 - human contact mechanisms such as a contact form or messaging system
 - self-help options such as frequently asked questions
 - fully automated contact mechanisms such as chatbots

Why is this important?

People who need help can find it more easily if it's in the same place.

Error identification [3.3.1]

- Inputs with validation requirements (such as required fields or fields that require a specific format) provide this validation information in the element's label
- Form validation errors are simple, efficient and accessible, so that the user can quickly access the form element in question (e.g. using `aria-invalid`) and easily fix the error

```
<div>
  <label for="email">Email</label>
  <input type="text" name="email" id="email"
        aria-invalid="true" aria-describedby="err1">
</div>
<span id="err1">
  Error: Invalid email
</span>
```

Labels or instructions [3.3.2]

- Sufficient labels and instructions are provided for required interactive elements, e.g. using `aria-describedby`, and input labels are properly positioned

Redundant entry [3.3.7]

- Information that was previously provided by the user that is required to be entered again is either auto-populated or available for the user to select, unless:
 - re-entering the information is essential
 - the information is required again for security reasons
 - the previous information is no longer valid

Why is this important?

Some people with cognitive disabilities have difficulty remembering what they entered before.

Name, role, value [4.1.2]

- HTML markup and ARIA attributes are used in such a way that facilitates accessibility, using such techniques as:
 - `aria-label` to provide an invisible label where a visible label cannot be used
 - `aria-labelledby` to provide a reference to a label in the DOM
 - `name` and `title` attributes to describe form controls and other content, such as iframes
 - ARIA roles to define the role of a custom element, such as `role="toolbar"` and `role="tree"`

Level AA

This is the compliance level that most websites should aim to achieve. Note that this also includes all items in level A.

Captions (live) [1.2.4]

- Captions are available for live audio and video content

Audio description (prerecorded) [1.2.5]

- Audio description is provided for all non-live video in which visual content is not presented in audio form

Orientation [1.3.4]

- Webpages can be viewed in both portrait and landscape orientations, unless a specific orientation is essential

Why is this important?

Some users, such as wheelchair users, may have devices mounted in a fixed orientation.

Identify input purpose [1.3.5]

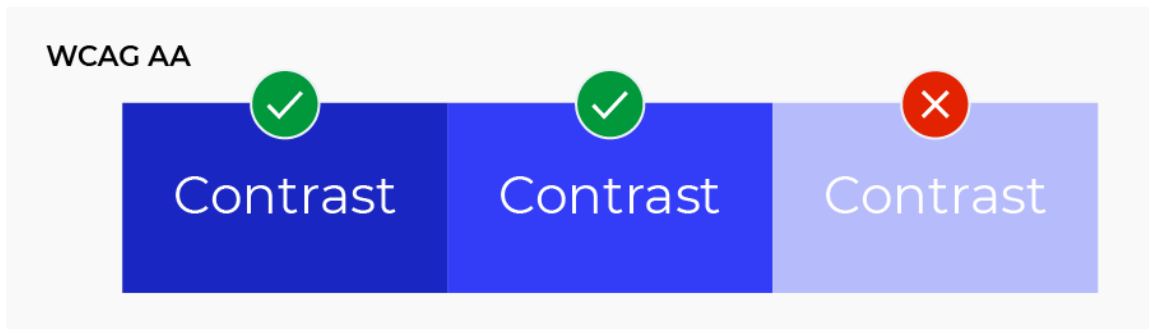
- Input fields that collect certain user information have an `autocomplete` attribute defined

```
<label for="fname">First Name</label>
<input id="fname" type="text"
      autocomplete="given-name">
```

Find out which input fields are affected, and consult the autocomplete attribute documentation for a list of possible values.

Contrast (minimum) [1.4.3]

- Text and images of text (not including logos) have a contrast ratio of at least 4.5:1
- Large text (which is 18pt/24px or 14pt/18.66px and bold) has a contrast ratio of at least 3:1



Try using [WebAIM's contrast checker](#) to find out the contrast between two colours.

Resize text [1.4.4]

- Webpages are readable and functional when the page is zoomed to 200%
 - Consider using relative units (e.g. em/rem) for font sizes, or provide controls for changing the font size

Images of text [1.4.5]

- Images are not used to present text that could be displayed using CSS, unless it is essential, such as for logos
 - Instead of using a bitmap image for a stylised heading, consider using CSS to achieve the same result

Reflow [1.4.10]

- Webpages are readable and functional without needing to scroll in two dimensions for:
 - content that scrolls vertically at a minimum width of 320px
 - content that scrolls horizontally at a minimum height of 256px
- Long sets of characters without a space, such as URLs, can be broken up at appropriate places using CSS

```
a {  
  overflow-wrap: break-word;  
  word-wrap: break-word;  
  hyphens: auto;  
}
```

- Images, tables, video and other similar content are exempt

Non-text contrast [1.4.11]

- Parts of graphics and visual information used to identify UI components and their states (e.g. hover, focus, etc.), have a contrast ratio of at least 3:1 against their adjacent colours
 - In the example directly below, the stars on the left fail the requirement as the contrast between the white and the yellow is too low. The stars on the right, however, either have a thicker border in addition to the yellow, or are filled in black instead



Fail



Pass

- In the second example directly below, the focus state indicated by the yellow border does not contrast well with the white background, and would fail the requirement



Check out [more examples](#) like these.

Text spacing [1.4.12]

- No loss of content or functionality (including overlapping text) occurs when the user changes:
 - the line height to at least 1.5 times the font size
 - spacing following paragraphs to at least 2 times the font size
 - letter spacing to at least 0.12 times the font size
 - word spacing to at least 0.16 times the font size

Note that it is not required to use these text spacing values; simply ensure that content is still usable if the user were to change the text spacing options.

- Human languages and scripts that do not make use of one or more of these text style properties can conform using only the properties that exist for that combination of language and script

Content on hover or focus [1.4.13]

- When additional content is presented on hover or keyboard focus, such as a tooltip:
 - The new content can be dismissed (e.g. using the Escape key), unless the content does not obscure or interfere with other page content
 - The pointer can hover over the new content without it disappearing
 - The new content remains visible until the pointer or keyboard focus is moved away from the triggering control, the new content is dismissed, or the new content is no longer relevant

Multiple ways [2.4.5]

- It is possible to locate webpages using multiple ways, except where those pages form part of a step in a process
- The user can locate pages using two or more of the following:
 - a site map, table of contents or index
 - a site search functionality
 - a list of links to all pages provided on the homepage
 - a list of links related to a particular webpage

Headings and labels [2.4.6]

- Page headings and labels for controls are descriptive and informative

Focus visible [2.4.7]

- There is a visible indicator for page elements when they receive keyboard focus. This indicator could be:
 - a default focus indicator provided by the platform
 - an appropriate background or border change
 - a two-colour indicator to ensure contrast will all components, demonstrated in the code snippet below

```
*:focus {
  /* inner indicator */
  outline: 2px #F9F9F9 solid;
  outline-offset: 0;
  /* outer indicator */
  box-shadow: 0 0 0 4px #193146;
}
```

Focus not obscured (minimum) [2.4.11]

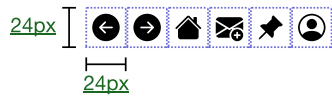
- When elements have keyboard focus, they are not entirely covered or hidden by page content

Dragging movements [2.5.7]

- Unless essential, all functionality that involves a dragging movement can be achieved using a single-pointer action without dragging
 - When implementing a draggable map, for example, consider adding buttons to move the view as well

Target size (minimum) [2.5.8]

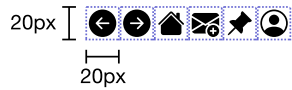
- The size of the target for pointer inputs is at least 24 × 24px, unless:
 - for targets less than 24 × 24px, if a 24 × 24px circle was centred on the target, this would not intersect with any other target
 - the functionality can be achieved through a different control that meets this requirement
 - the target is in a sentence or list
 - the target size can't be modified or its presentation is essential



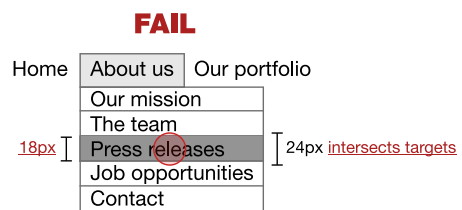
PASS



PASS



FAIL



Why is this important?

Some people with physical impairments cannot click small buttons that are close together.

Language of parts [3.1.2]

- Page content that is in a different language is identified using the `lang` attribute

```
<ul>
  <li lang="de">Deutsch</li>
  <li lang="it">Italiano</li>
  <li lang="fr">Français</li>
</ul>
```

Consistent navigation [3.2.3]

- Navigation links that are repeated across webpages do not change order when navigating through the site, unless the user has initiated a change

Consistent identification [3.2.4]

- Elements that have the same functionality across multiple webpages are consistently identified
 - If your site has a search bar on multiple pages, for example, this should be labelled the same on every page

Error suggestion [3.3.3]

- Unless exempt for security reasons, the user is given suggestions for fixing invalid input fields in a timely and accessible manner
 - For example, a form field requires the user to input a length of time that could range from days to years. The user enters the number "6" which is invalid. Text next to the form field says: "Error detected. Did you mean: 6 days?"

Error prevention (legal, financial, data) [3.3.4]

- In situations where legal commitments or financial transactions can occur, which modify or delete user data, at least one of the following is true:
 - the submission is reversible
 - data entered by the user is checked for errors and the user is given the opportunity to correct them
 - a mechanism for reviewing, confirming and correcting the information before submission is available

Accessible authentication (minimum) [3.3.8]

- A cognitive function test (such as remembering a password or solving a puzzle) is not required in any authentication process unless at least one of the following is true:
 - another authentication method that does not rely on a cognitive function test is available
 - a mechanism is available to assist the user in completing the cognitive function test
 - the cognitive function test involves recognising objects
 - the cognitive function test is to identify non-text content the user provided
- Where passwords are entered, the user is able to use password managers to reduce memory need, and/or copy and paste to avoid the burden of re-typing
 - Consider implementing email link authentication where the user can log in via a link sent to their email
- If a CAPTCHA is used as part of an authentication process, there must be a method that does not include a cognitive function test, unless it meets the exception. Here are some technologies that can be employed to prevent scripted abuse of the authentication process:
 - rate-limited access
 - client geo-location
 - private client authentication

Read more about [alternatives to CAPTCHA](#).

Status messages [4.1.3]

- If an important status message is presented and focus is not set to that message, the message must be announced to screen reader users, e.g. by using ARIA:
 - You can use `role="status"` if a status message advises on the success or results of an action
 - You can use `role="alert"` if a status message conveys a suggestion, or a warning on the existence of an error
 - You can use `role="log"` if a status message conveys information on the progress of a process

```
<div role="status">
  5 results returned.
</div>
<div role="alert">
  Error detected.
</div>
<div role="log">
  <h4>Recent activity</h4>
  <!-- ... -->
</div>
```

Why is this important?

People who do not see messages need to be informed about them.

Level AAA

This is the highest and strictest compliance level. Note that this also includes all items in levels A and AA.

Sign language (prerecorded) [1.2.6]

- All non-live video that contains audio has a sign language interpretation provided

Extended audio description (prerecorded) [1.2.7]

- When it is not possible to fit audio description into pauses in the video, an alternative video is provided where the video is paused to allow for audio description

Media alternative (prerecorded) [1.2.8]

- A descriptive transcript is provided for non-live media that has a video track

Audio-only (live) [1.2.9]

- A descriptive transcript is provided for live content that has audio

Identify purpose [1.3.6]

- Regions/landmarks are used to identify page regions, such as:
 - `banner` to indicate the main heading or internal title of a page
 - `navigation` to indicate a region that contains navigation links
 - `main` for the page's main content.
 - `region` for a section of the page containing content that is sufficiently important for users to be able to navigate to the section
 - `form` to indicate a collection of form-associated elements
 - `search` for a search functionality

- `complementary` to indicate any section of the document that supports the main content, which is nonetheless separate and meaningful on its own
- `contentinfo` for regions that contain information about the parent document such as copyrights and links to privacy statements
- The purpose of UI components and icons can also be programmatically determined, e.g. by using ARIA

Contrast (enhanced) [1.4.6]

- Text and images of text (not including logos) have a contrast ratio of at least 7:1
- Large text (which is 18pt/24px or 14pt/18.66px and bold) has a contrast ratio of at least 4.5:1



Try using [WebAIM's contrast checker](#) to find out the contrast between two colours.

Low or no background audio [1.4.7]

- For any audio with speech, at least one of the following is true:
 - the audio contains no background sounds
 - the background sounds in the audio can be turned off
 - the background sounds are at least 20 dB lower than the foreground speech content, apart from occasional sounds that last one or two seconds

Visual presentation [1.4.8]

- For blocks of text longer than one sentence, a mechanism is in place to achieve the following:
 - Foreground and background colours can be changed by the user
 - The width is no more than 80 characters (or 40 if Chinese, Japanese or Korean)
 - Text is not justified (i.e. aligned to both left and right margins)
 - Line spacing is at least 1.5 times the font size within paragraphs, and paragraph spacing is at least 1.5 times larger than the line spacing
 - Text can be resized without assistive technology up to 200 percent in a way that does not require the user to scroll horizontally to read a line of text

Note that it is not required to use these values; simply ensure that there is a mechanism in place to allow the user to achieve them.

Images of text (no exception) [1.4.9]

- Text is used within an image only for decoration, for the purposes of a logo, or when the information cannot be presented with text alone

Keyboard (no exception) [2.1.3]

- All page functionality is accessible using the keyboard

No timing [2.2.3]

- Timing is not an essential part of the content or functionality, except for video and live events

Interruptions [2.2.4]

- Interruptions can be postponed or suppressed by the user, except interruptions involving an emergency

Re-authenticating [2.2.5]

- When an authenticated session expires, the user can continue the activity without loss of data after re-authenticating
 - For example, if a user takes a long time to write a reply in a forum and the session times out, the user is able to continue where they left off after signing back in

Timeouts [2.2.6]

- Users are warned of any timeout that could result in data loss, unless the data is preserved for longer than 20 hours of user inactivity

Three flashes [2.3.2]

- No page content flashes more than 3 times per second

Animation from interactions [2.3.3]

- Users can disable non-essential animation and movement that is triggered by user interaction

Why is this important?

People can get sick from motion effects.

Location [2.4.8]

- If a web page is part of a sequence of pages or within a complex site structure, an indication of the current page location is provided. For example, this could be:
 - a breadcrumb trail, e.g. "Home / Galleries / Antarctica"
 - a step counter, e.g. "Step 3 of 4 - Delivery address"
 - a site map
 - the `link` element, demonstrated below

```
<link rel="prev" href="1.html" title="Chapter 1">
<link rel="next" href="3.html" title="Chapter 3">
```

Link purpose (link only) [2.4.9]

- The user can activate a mechanism so that the purpose of each link can be identified from the link text alone, except where the purpose of the link would be ambiguous to users in general

Section headings [2.4.10]

- Section headings are used to organise content on the page, where appropriate

Focus not obscured (enhanced) [2.4.12]

- When a UI component receives keyboard focus, no part of the component is hidden

Why is this important?

People who can't use a mouse need to see what has keyboard focus.

Focus appearance [2.4.13]

- If a custom focus indicator or background colour is in place, the focus indicator must be:
 - at least as large as the area of a 2px thick perimeter of the unfocused component or subcomponent; and
 - have a contrast ratio of at least 3:1 between the same pixels in the focused and unfocused states



Target size (enhanced) [2.5.5]

- The size of the target for pointer inputs is at least 44 × 44px, unless:
 - the functionality can be achieved through a different control that meets this requirement
 - the target is in a sentence or list
 - the target size can't be modified or its presentation is essential

Concurrent input mechanisms [2.5.6]

- Content does not require a specific input type, such as touch-only or keyboard-only, unless:
 - the restriction is essential
 - it is required to ensure the security of the content
 - it is required to respect user settings

Unusual words [3.1.3]

- Words that may be ambiguous, unfamiliar, or used in a very specific way are defined through:
 - adjacent text

```
<p><dfn>Non-text content</dfn> is content that...</p>
```

- a definition list

```
<dl title="Nautical terms">
  <dt>Knot</dt>
  <dd>
    A <i>knot</i> is a unit of speed...
  </dd>
  <!-- ... -->
</dl>
```

- a glossary, or other suitable method

Abbreviations [3.1.4]

- The meaning of an unfamiliar abbreviation is provided by:
 - expanding it the first time it is used
 - using the `<abbr>` element

```
<p>
  Sugar is commonly sold in 5
  <abbr title="pound">lb.</abbr> bags.
</p>
```

- linking to a glossary, or other suitable method

Reading level [3.1.5]

- A more understandable alternative is provided for content that is more advanced than can be reasonably read by a person with roughly 9 years of primary education

Find out more by consulting the [International Standard Classification of Education](#).

Pronunciation [3.1.6]

- If the pronunciation of a word is vital to understanding that word, its pronunciation is provided immediately following the word or via a link or glossary

Change on request [3.2.5]

- The following must be initiated by the user:
 - a substantial change to the page
 - the opening of a popup window
 - change of keyboard focus
 - any other distracting or confusing change
- Consider the following scenarios:
 - When content updates automatically, provide the option to turn off automatic updates and only update on request from the user
 - Handle redirects on the server rather than the client
 - Only open popups on the user's request and include text such as "(opens in a new tab)" to links where this occurs

Help [3.3.5]

- Instructions are provided in context to help with form completion and submission

Error prevention (all) [3.3.6]

- For webpages that require the user to submit information, at least one of the following is true:
 - the submission is reversible
 - data entered by the user is checked for errors and the user is given the opportunity to correct them
 - a mechanism for reviewing, confirming and correcting the information before submission is available

Accessible authentication (enhanced) [3.3.9]

- A cognitive function test (such as remembering a password or solving a puzzle) is not required in any authentication process unless at least one of the following is true:
 - another authentication method that does not rely on a cognitive function test is available
 - a mechanism is available to assist the user in completing the cognitive function test

References

- W3C: WCAG 2.2 Techniques: <https://www.w3.org/WAI/WCAG22/Techniques/>
- W3C: Understanding WCAG 2.2: <https://www.w3.org/WAI/WCAG22/Understanding/>
- Harvard: Accessible Charts: <https://accessibility.huit.harvard.edu/data-viz-charts-graphs>
- WebAIM: Contrast Checker: <https://webaim.org/resources/contrastchecker/>
- Thinkbean: Accessible Design: <https://www.thinkbean.com/drupal-development-blog/website-accessibility-design-vs-aa-vs-aaa>