Accessibility

Content Management

Topic overview

- What is Accessibility
- Why Accessibility is important
- Who is impacted by Accessibility

- National guidelines and recommendations
- W3C guidelines and testing
- Assistive technologies
- Good practice: Coding
- WAI-ARIA
- Good practice: Visual design and Video
- Navigation techniques
  - Skipnav
  - Keyboard navigation
- Accessibility statements and support

What is Accessibility?

> Web accessibility means that websites, tools, and technologies are designed and developed so that people with disabilities can use them.
>
> — *W3C - World Wide Web Consortium*

Why Accessibility is important?

> ***The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect.***
>
> — Tim Berners-Lee, W3C Director and inventor of the World Wide Web *W3C* - *World Wide Web Consortium*

Who is impacted by the lack of Accessibility?

EVERYONE

Who is Accessibility for?

- Accessibility is for all, not just for those with obvious disabilities.
- The principle of website accessibility is that content should be available/understandable to all, irrespective of circumstances.

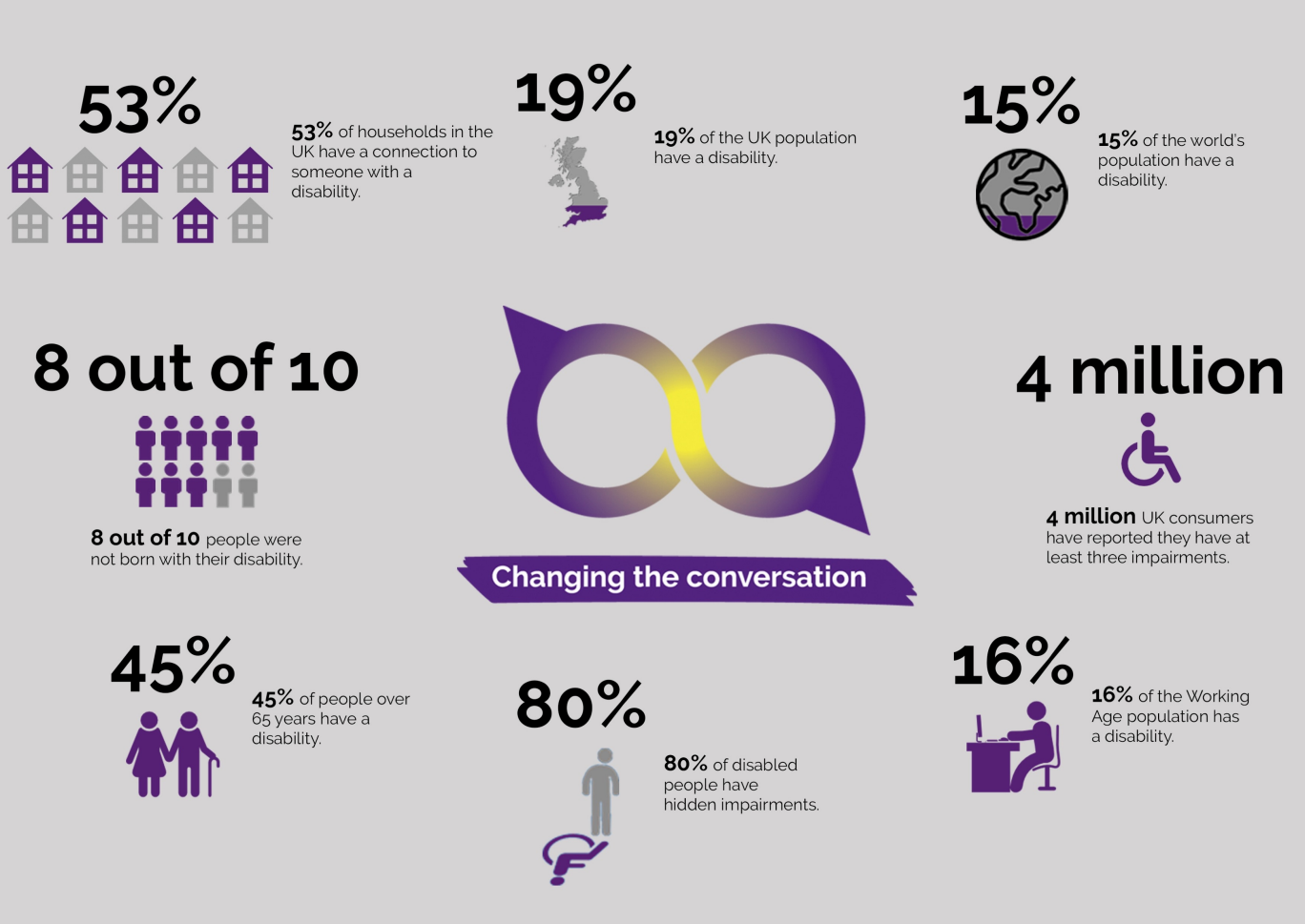
Disabilities

16 % of the world's population have a disability.

An estimated **1.3 billion** people experience significant disability.
This represents **16%** of the world's population or **1 in 6 of us**.

Disability – World Health Organization (WHO)

Overview of Disabilities



We are Purple – [Overview of Disabilities]

Type of Disabilities

Visual

- Blindness
- Low vision
- Colour blindness

Auditory

- Profound or Partial deafness
- Neural hearing loss
- Deaf-blindness

Cognitive

- Learning disabilities (Dyslexia)
- Attention disorders (ADHD)
- Math and Computation (Dyscalculia)

Physical

- Slow, shaky or no motor functions
- Reduced Dexterity
- Ambulation
- Muscle Fatigue

Speech

- Articulation
- Aphasia
- No Speech

Contextual

- Browsers and devices
- Connectivity
- Language
- Space and context

What can web designers do?

- Sometimes, alternative versions of content must be provided like the alt attribute for image descriptions or video captioning.
- Our sites must be **coded** in such a way as to allow assistive technologies to convey content to users easily. That's why code validation is so important.
- **Visual designs** (typeface, contrast, colour combinations) should be carefully chosen.
- **Content** should be written in a way that makes it easily understandable.

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ASSISTIVE TECHNOLOGIES

Assistive technologies

- Assistive Technologies is a general term to describe those technologies/devices/software that allow people with disabilities to operate a computer.
- Probably the most common aid for web surfing is the screen reader. This is a software application that reads website text and vocalises it. This enables blind and partially-sighted users to navigate a website and read its content.
- The most common screen reader (currently 54% of the market) is JAWS with NVDA second with 31%. VoiceOver and others make up the minority applications.
- Although screen readers like JAWS are very good at deciphering web pages, they can only work effectively if the designer has used correct, semantic markup and has implemented some additional accessibility tools such as “skip-nav” links and/or WAI-ARIA roles.

JAWS alternatives

- JAWS is quite expensive (over $1,000) and there are some free alternatives.

Windows

- Narrator (installed in all windows machine)
- NVDA Screen Reader is an open source project and is entirely free to install and use. It also comes in a “portable” version and can be stored on a USB drive.

Apple

VoiceOver (installed in all Apple devices)

Screen reader - Wikipedia

Screen reader in action

The key point here is that screen readers can only work effectively if web documents are correctly marked up.

Screen Reader Demo for Digital Accessibility

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GOOD PRACTICE: CODING

Semantic coding

- Semantic coding is important for accessibility because it gives structure and meaning to content that might only be obvious visually.
- For example:

```
<p class="big">Title</p>
```
may look the same as...
```
<h1>Title</h1>
```

...but it has an entirely different meaning if the user cannot see the rendered result.

See HTML: A good basis for accessibility by MDN Web Docs

Content order

- Screen readers begin reading from the top of the HTML document and therefore, the order of the content in the document should reflect the order on the rendered page.
- This is sometimes difficult to achieve but a logical use of floating s or grid areas can usually be employed successfully.

Alt text for images

All images must have a text alternative, except for purely decorative images where a null alt attribute may be acceptable. However, decorative images are better done with CSS.

An image with a **descriptive** text alternative:

```
<img src="bird.jpg" alt="A green parrot in flight" />
```

An image with a **null** alt attribute:

```
<img src="pattern.jpg" alt="" />
```

The alt attribute should have a clear and concise description of the image – it is intended to be a text *alternative* for those who cannot see the image.

An Alt Decision Tree – W3C

Write Good Alt Text

- Add alt text to all non-decorative images.
- Keep it short and descriptive, like a tweet.
- Don’t include “image of” or “photo of”.
- Leave alt text blank if the image is purely decorative
- It's not necessary to add text in the Title field.

An Alt Decision Tree – W3C

Digital Accessibility — Harvard

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ACCESSIBLE RICH INTERNET APPLICATIONS (ARIA)

WAI – ARIA

- The Web Accessibility Initiative's *Accessible Rich Internet Applications* was created to address the semantic shortfall in markup (standard in 2014).
- WAI-ARIA is an extension to HTML that allows developers to explicitly specify page elements by adding *attributes* and *roles* to enhance the user experience to people with disabilities.

ARIA - MDN Web Docs

WAI-ARIA

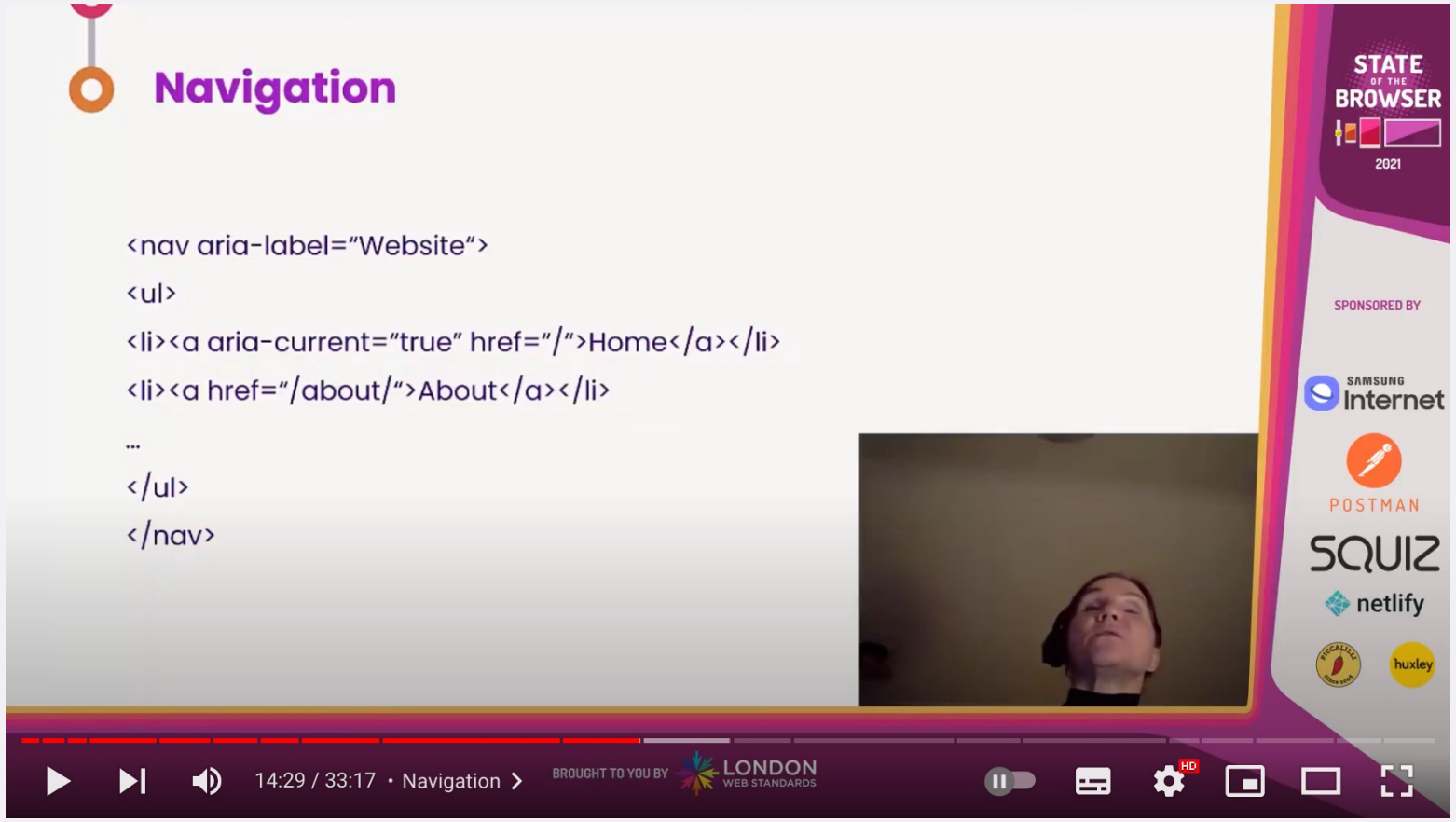
ARIA attributes enable modifying an element's states and properties how assistive technology presents the content to your users.

Note that ARIA doesn't change anything about an element's function or behaviour.


```
<nav aria-label  "primary">
  <ul>
    <li><a href  "#">Liquorice</a></li>
```

Styling Navigation Website – explainers.dev

Semantic and ARIA



Léonie Watson talk "bag of spanner" - State of the Browser

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GOOD PRACTICE: VISUAL DESIGN

Colour, contrast & font size

- Make sure that websites are still readable by those with colour blindness.
- There are a number of useful checking tools, such as the WebAIM Contrast Checker and Colour Contrast Analyser
- Contrast between foreground and background should be at least 70% (as a general rule).
- Text should be large enough to be easily readable by those with less-than-perfect eyesight.

Font face and readability

- Those with dyslexia may find sans serif fonts easier to read because the letter forms are simpler.
- High contrast (black on white) is not ideal, off-black on off-white is better.
- Avoid long sentences and keep paragraphs relatively short (chunking information).

Introducing Accessibility in typography - Google Fonts

Closed captioning

Good general advice on captioning

Captions/Subtitles - WAI W3C

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NAVIGATION TECHNIQUES

Keyboard navigation

Testing with a keyboard is an essential part of any accessibility evaluation. Site navigation by keyboard (rather than clicking on links) is possible by using the TAB key to move forward and SHIFT + TAB to move backwards.

ENTER activates links,

while activating a button is possible by pressing ENTER or SPACEBAR.

WebAIM has an excellent article on keyboard navigation and an extensive table listing the most common online interactions and the standard keystrokes for the interaction.

Use the web for a day with just a keyboard - Smashing Magazine

Skipnav

Skipnav is the technique of allowing users using screen readers to skip the navigation and go straight to the page content.

Markup:

```
<a class="skip-to-content-link" href="#main"> Skip to content </a>
```

CSS:

```
.skip-to-content-link {
background: #e77e23;
height: 30px;
left: 50%;
padding: 8px;
position: absolute;
transform: translateY(-100%);
transition: transform 0.3s; }

.skip-to-content-link:focus {
transform: translateY(0%); }
```

How to Create a “Skip to Content” Link – CSS-Tricks

Skip Navigation Links — WebAIM

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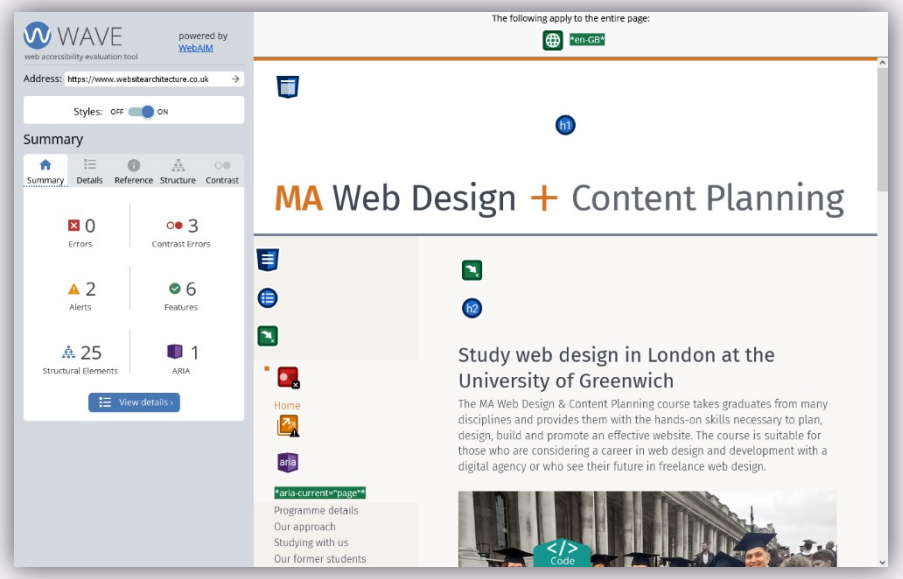
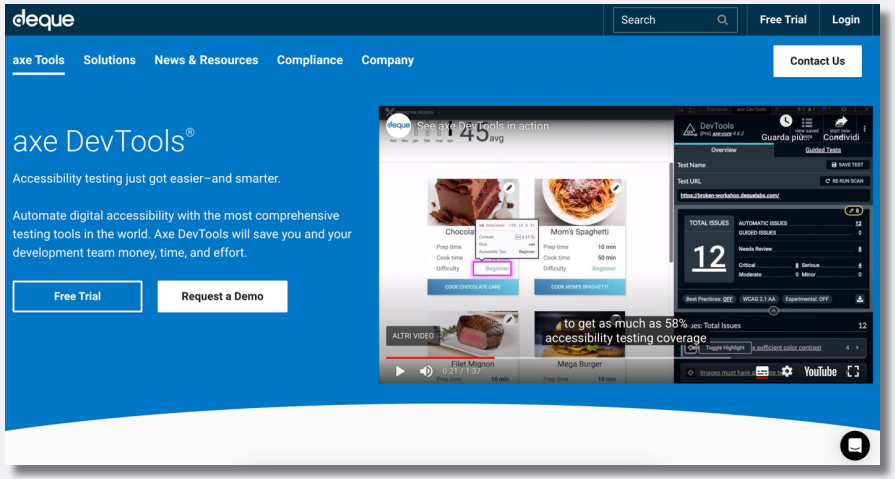
TESTING FOR ACCESSIBILITY

Testing for accessibility

- Testing for accessibility is not as easy as testing for code validation because there are no strict rules, only guidelines.
- There are some useful online tools that can help. Wave is particularly good and gives a visual map of your page with suggested improvements.
- axe DevTools is also excellent and gives a great level of feedback on your coding related to WCAG level.
- Lighthouse we can use it to audit both performance and accessibility of your website





Main Manual Testing

- Keyboard navigation
- Zoom 200%
- Responsiveness
- Heading structure
- Colour Contrast
- Content order / Screen Reader

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NATIONAL GUIDELINES

National guidelines & recommendations

- Most countries now have or are developing guidelines. E.g. Section 508 in the USA, as part of the Rehabilitation Act of 1973.
- The EU has created the Web Accessibility Directive (2016). This is a directive with rules for social inclusion using W3C WCAG 2.1 recommendations.
- In the UK, the Equality Act (2010) applies and website content must therefore be accessible to all.

Equality Act Guidance – GOV.UK

Recommendations in the UK

- The Government Cabinet Office have initiated a number of guidance projects.
- For the public sector: general guidance Accessibility and assisted digital recommends AA support for WCAG 2.1.
- For the private sector: Web accessibility: Code of practice by BSi. This is a publicly available (at a cost) specification (BS 8878:2010).
- Unfortunately, the guidance is short on detail and focuses on outcome rather than practice.
- However, more recently, GOV.UK have published Understanding WCAG 2.1, which includes actionable checklists.

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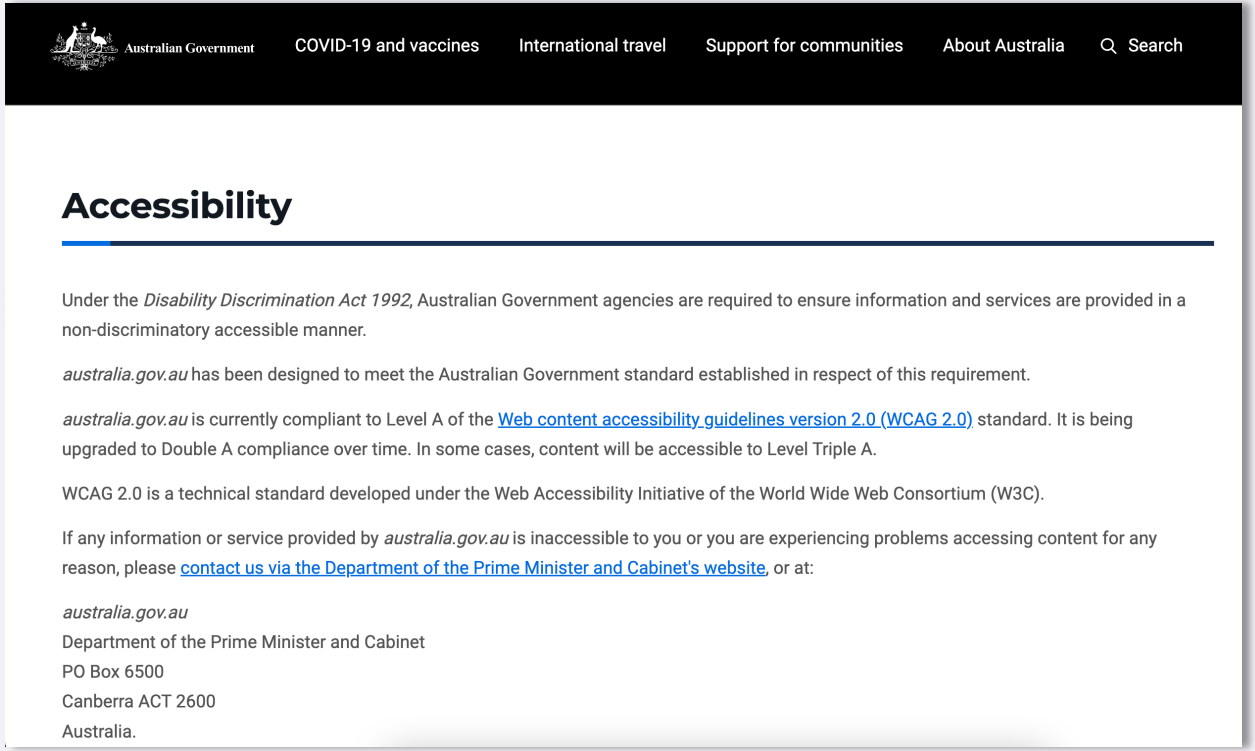
W3C GUIDELINES

Accessibility for web designers

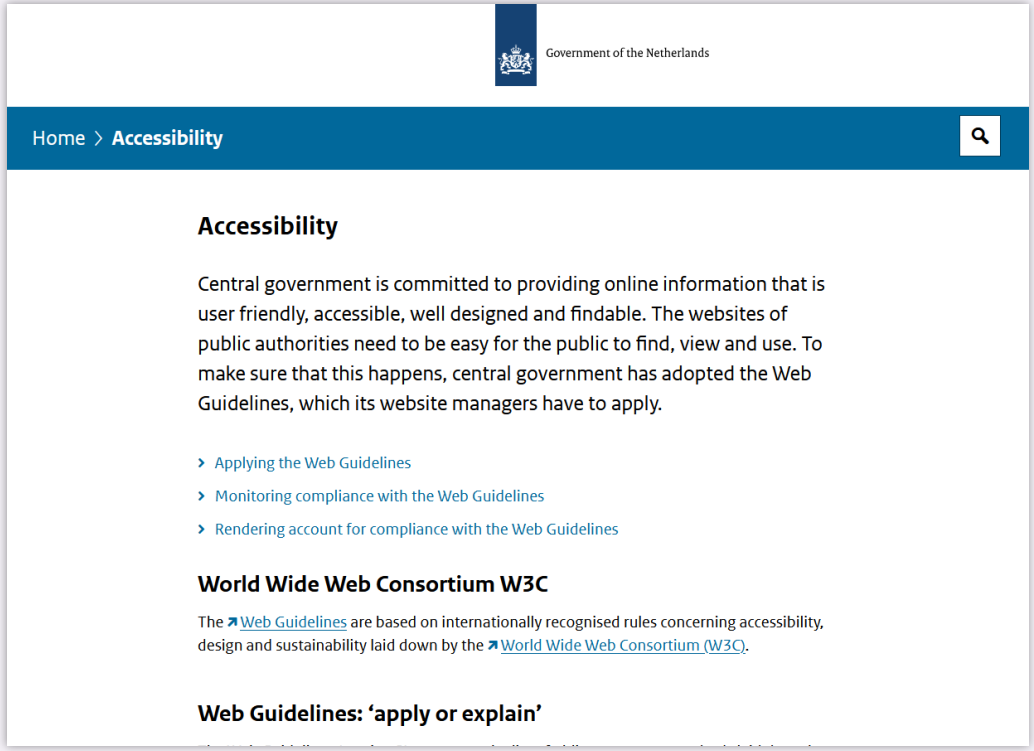
- The W3C Web Accessibility Initiative (WAI).
- Web Content Accessibility Guidelines version 2 (WCAG 2.0) was finalised on 11th December 2008. Version **2.2** is the "recommended" status starting 5th October 2023.
- These are the guidelines we should use when building websites.
- W3C has provided the very useful "How to Meet WCAG 2.1 (Quick Reference)".
- There are 3 success criteria levels: A, AA and AAA.
- Most websites should achieve at least A and aim for AA.
- Many organisations and jurisdictions have widely adopted the WCAG guidelines.

Web Content Accessibility Guidelines (WCAG) Overview – W3C

WCAG in action



Accessibility – Australian Government



Accessibility – Dutch Government

Accessibility in action

Accessibility – India Government

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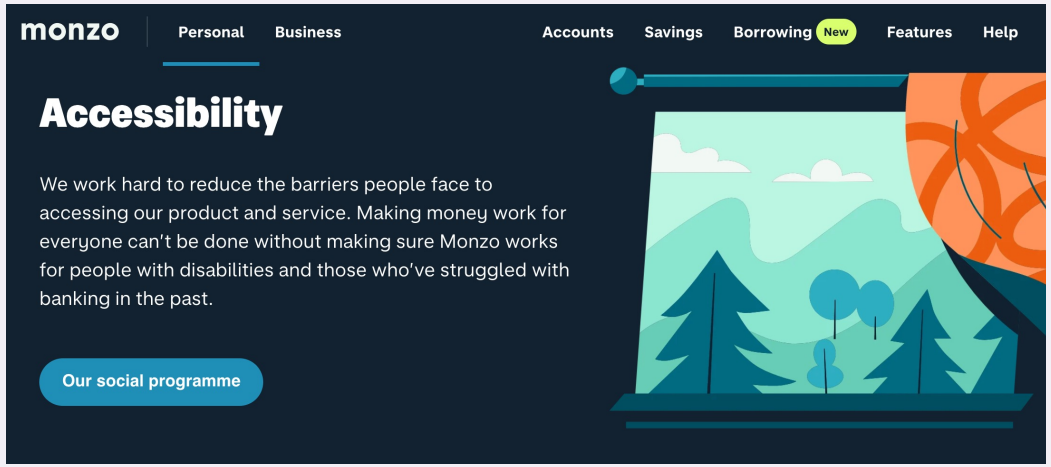
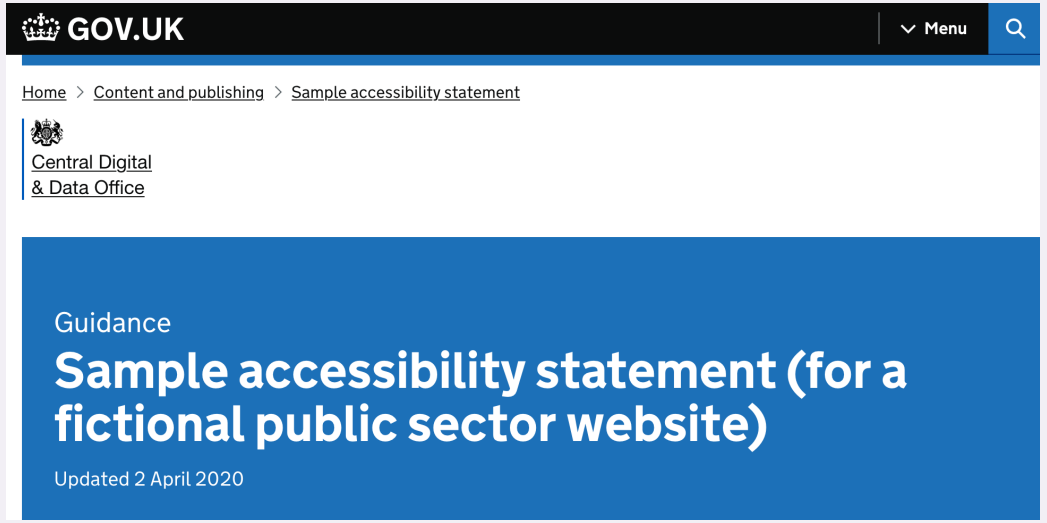
STATEMENTS AND SUPPORT

Accessibility statements

- Where a site provides accessibility features, an accessibility statement should be used in order to describe what is available and how it can be used.
- This can also be a statement of compliance.





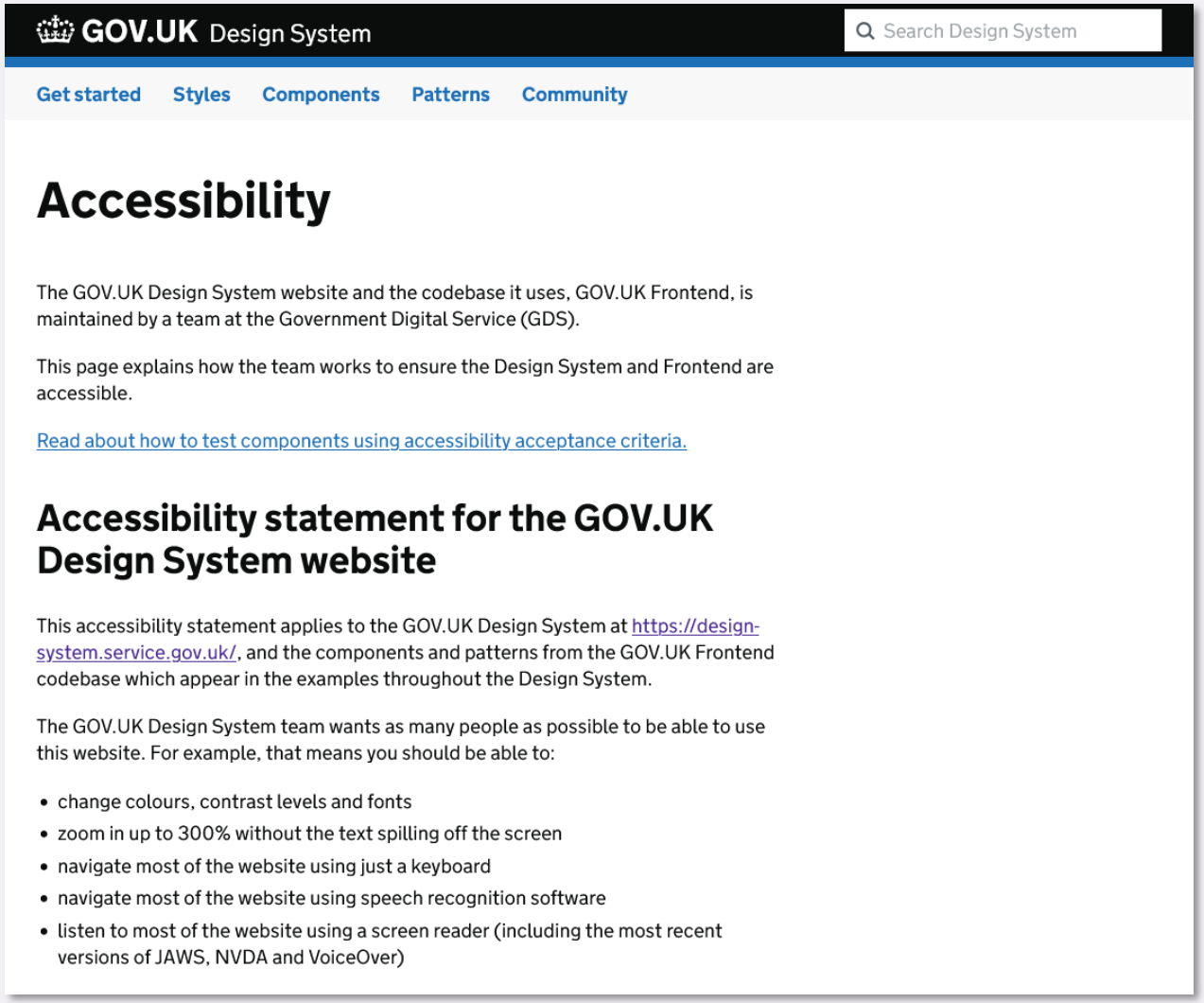
Accessibility Statement – Monzo
Sample Accessibility Statement - GOV.UK

Accessibility support

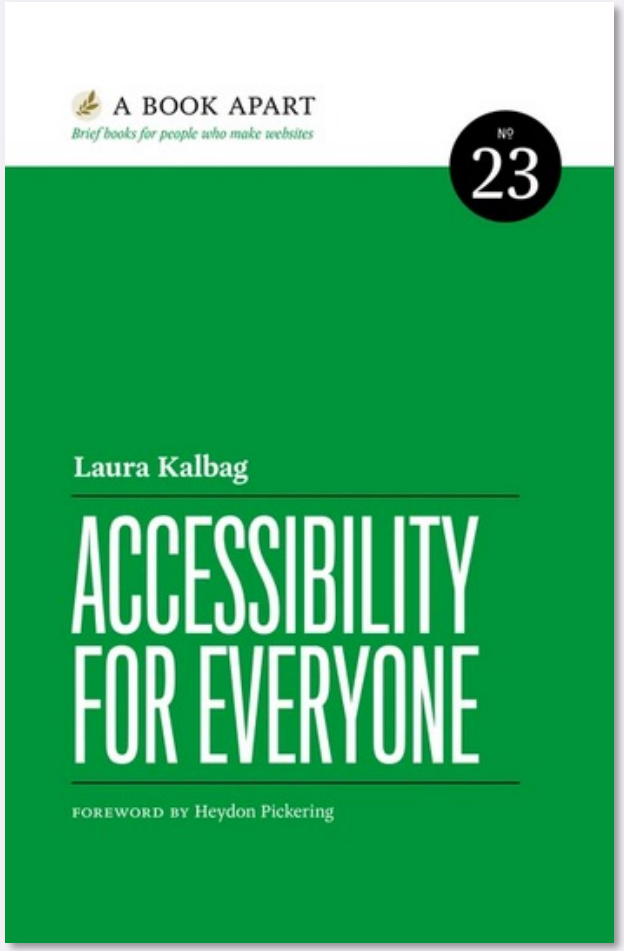
Best Practice

As with many things, the GOV.UK team is leading the way in support for those with web access difficulties. Their site has plenty of useful resources for users and for designers/developers.

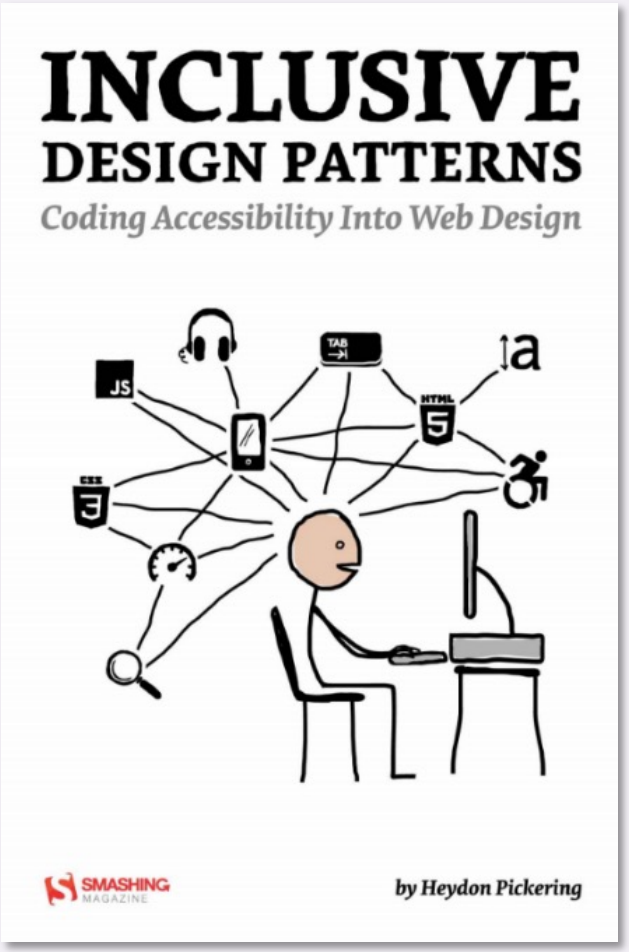
design-system.service.gov.uk/accessibility/



Reading

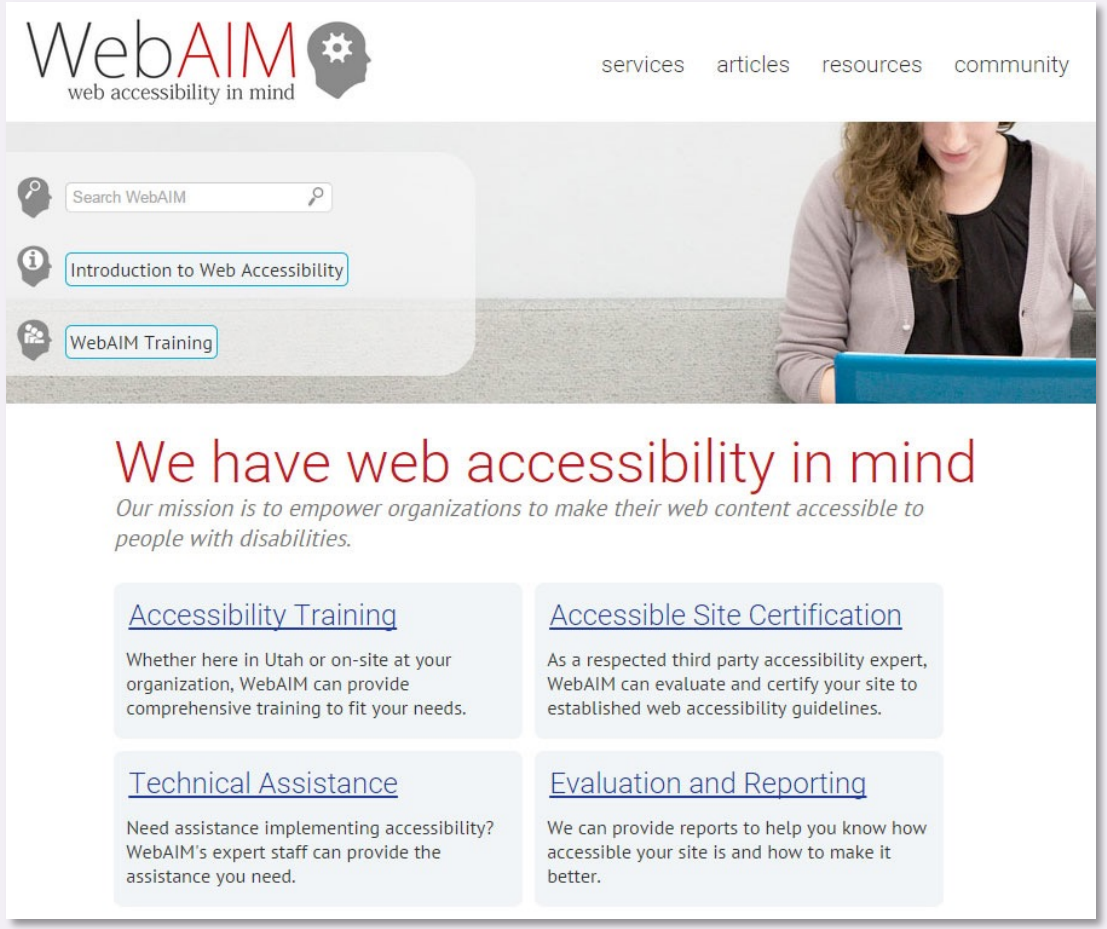


Published in 2017



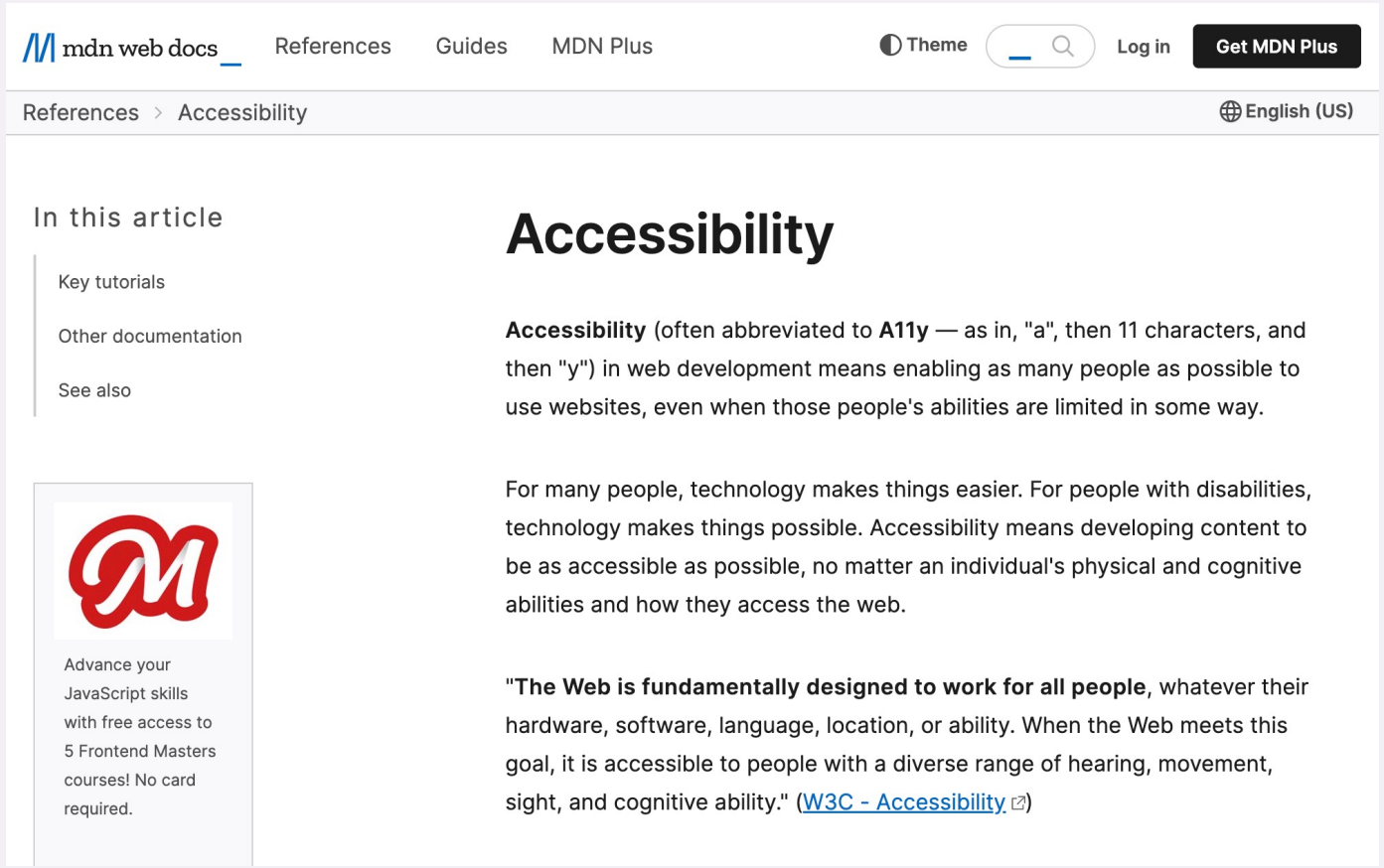
Published in 2016

Online resources



WebAIM – Excellent articles and resources

Online resources



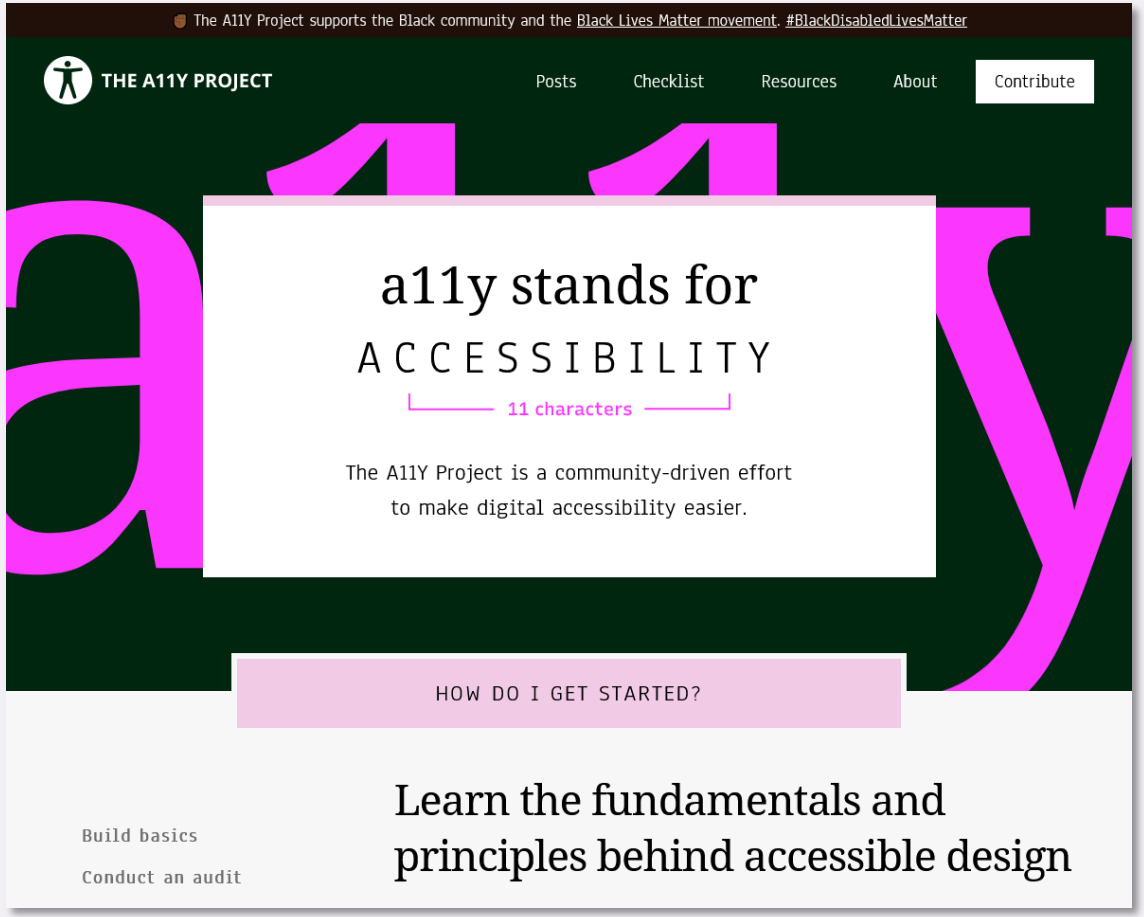
MDN web docs – Accessibility and ARIA documentation

The A11Y Project

A11Y is an open source, community project that aims to provide all the up-to-date information web designers need in order to create accessible websites.

It provides tutorials and accessible web design patterns (JavaScript widgets) such as accordions that are as accessible as possible.

It's probably the single most useful resource.



[The A11Y Project]

Introduction to Web Accessibility

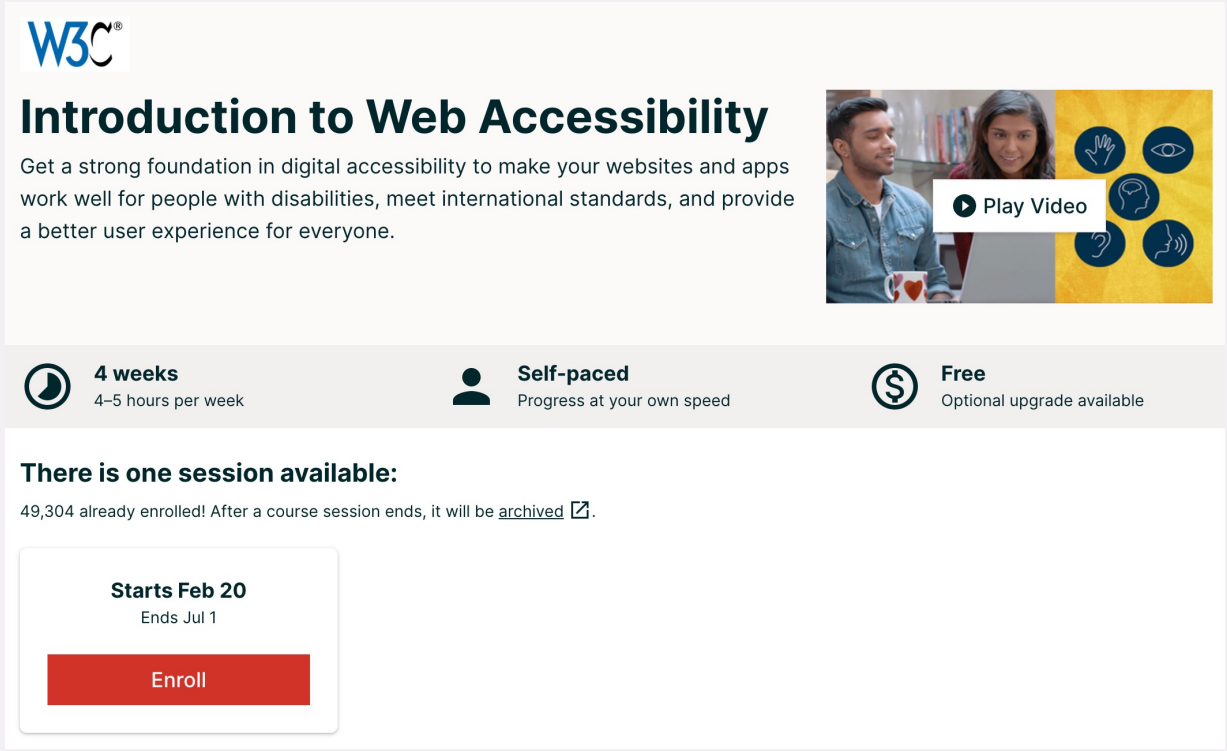
Introduction to Web Accessibility is a well-rounded course run by W3C and available on the edX platform.

It provides a solid foundation in web accessibility to developers, designers, and content authors.

It’s your next step if you want to deepen your knowledge about Accessibility.

What set aside this course from others are the videos showing how people with disabilities use different assistive technologies and adaptive strategies to navigate the web.

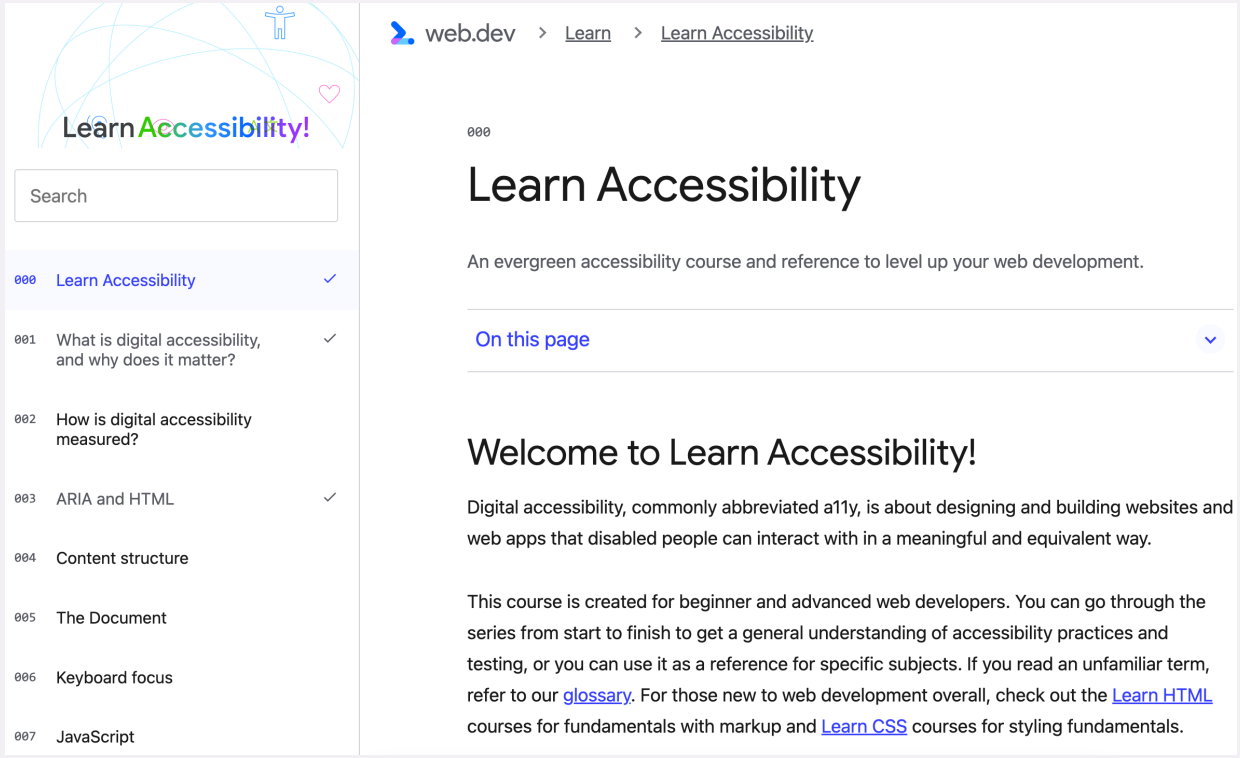
[Introduction to Web Accessibility - W3C]



Learn Accessibility

Learn Accessibility is an excellent course launched in 2022. Carie Fisher wrote it, and it was specifically designed for web developers. It will take you through the essentials for building accessible websites and web apps.

Carie Fisher is a prominent name in the Web Accessibility space. Rachel Andrew also collaborated by reviewing the programme.



Learn Accessibility — web.dev

Skip to End

```
<img src="image.jpg" alt="">
```

Informative Image

Decorative Image

Image of text

Functional Image

Print