Web Accessibility Fundamentals

The what, the why and the how

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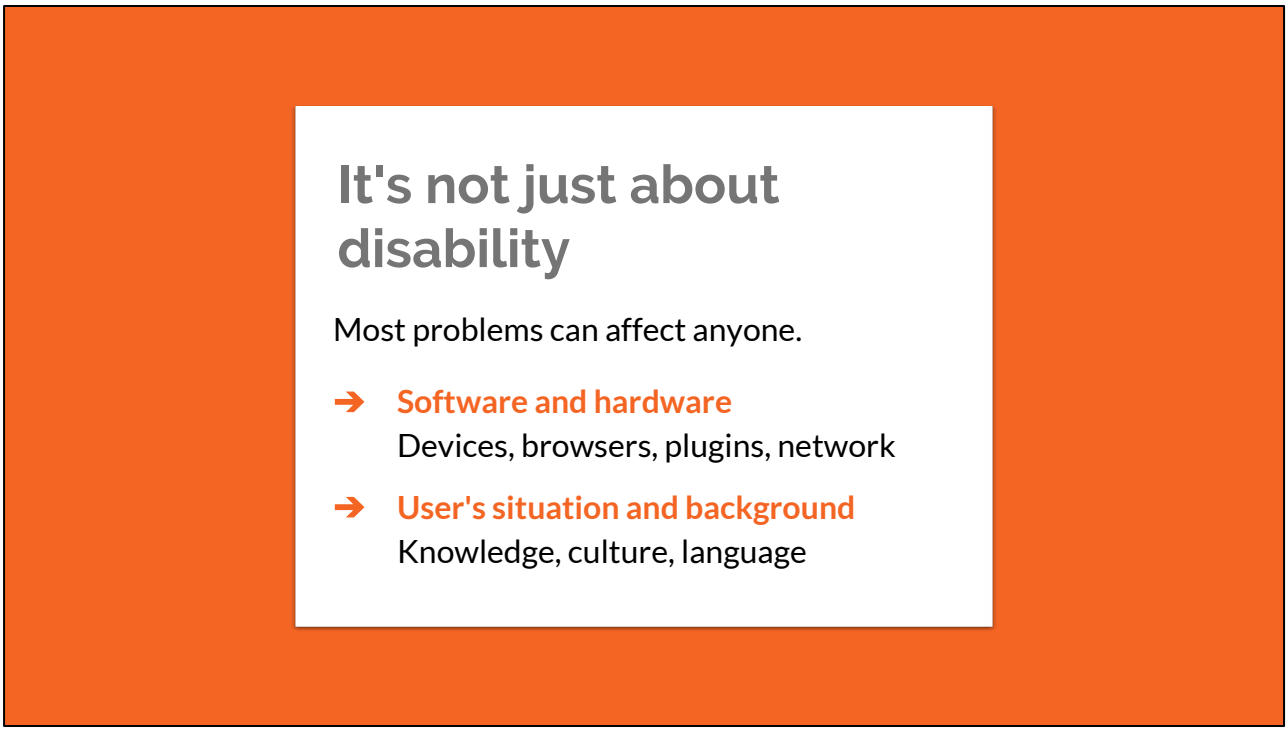
Why should we make our site accessible?

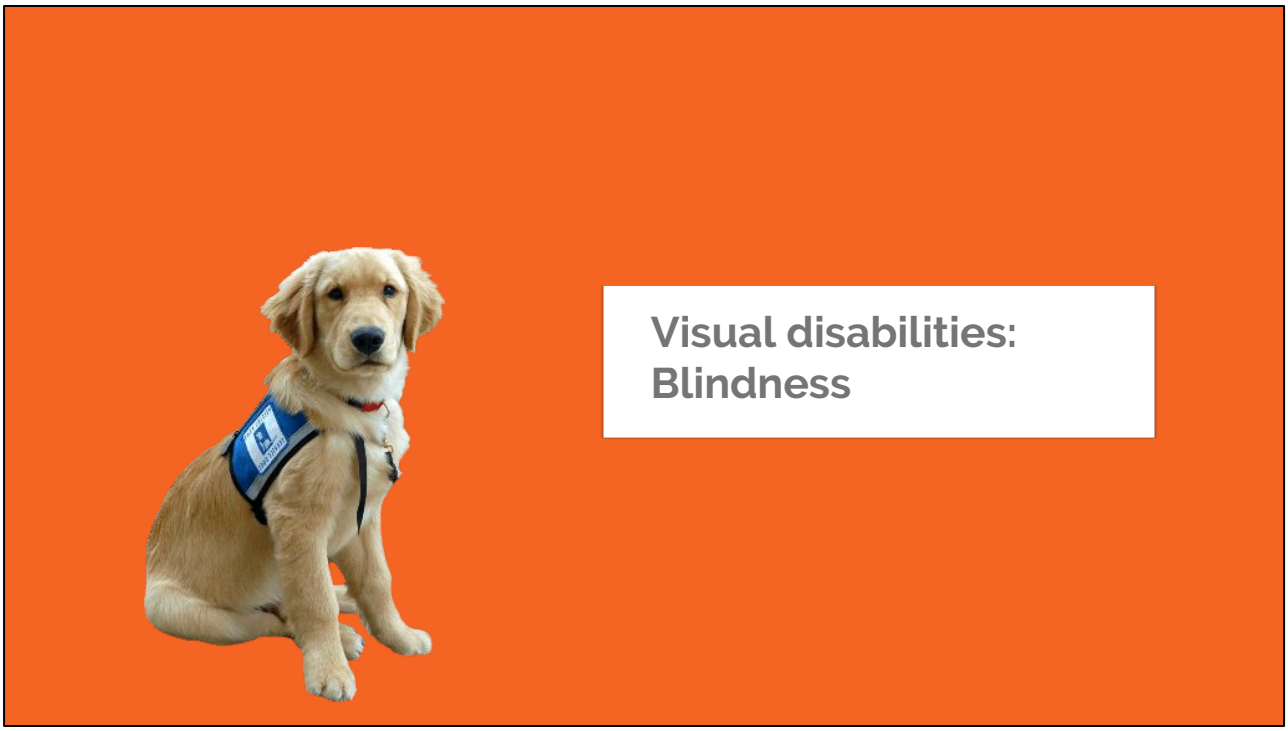
- ➔ It's the law
- ➔ Better user experience
- ➔ Ageing customer base
- ➔ Less pressure on call centres
- ➔ Great for SEO!



- Software/hardware: different devices, different browsers, not requiring special plugins, slow internet
- Culture and language: if the site needs to be used by a wide variety of people, is it easy to understand? Not too many culturally-specific things (e.g. asking for mother's maiden name when in some cultures women don't change name?)

Categories of disability

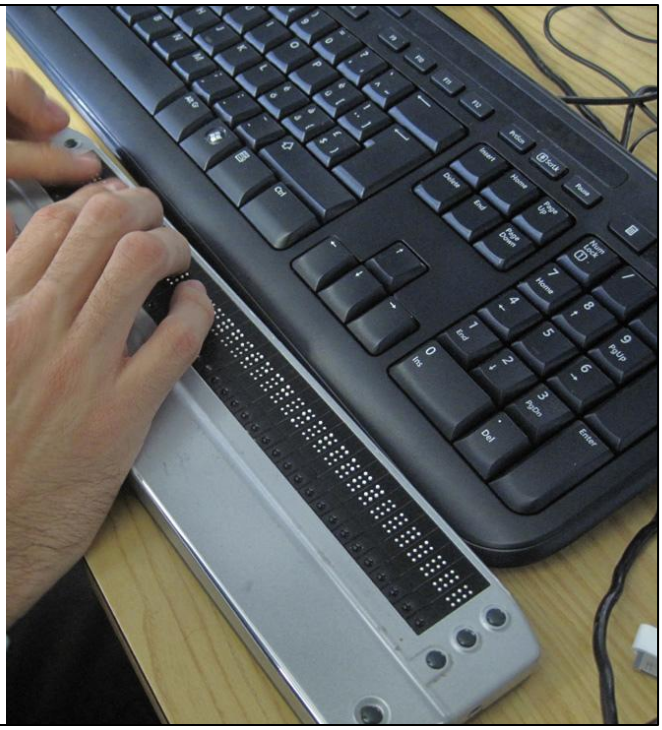
- Web usually treated as a graphic medium and assistive technology is slow to keep up with web standards
- Motor and mental disabilities are often overlooked
- Auditory impairments are less affected



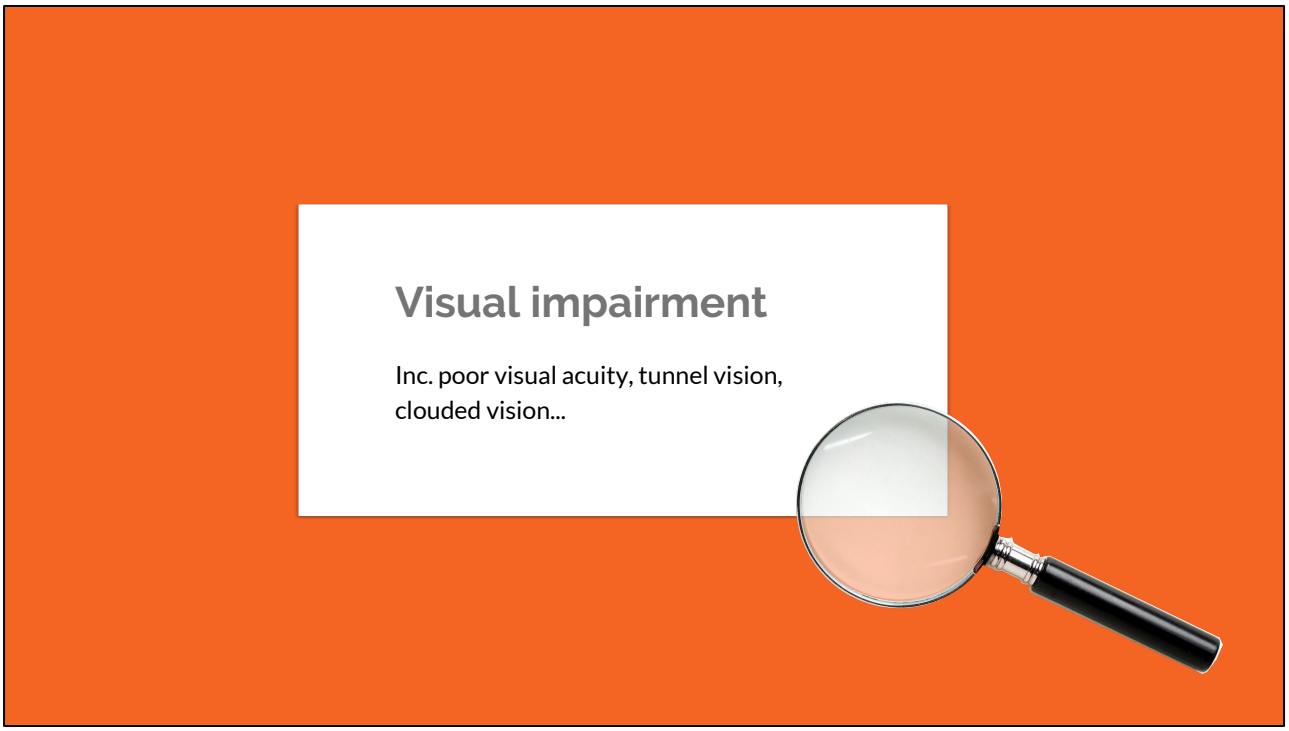
Obstacles:
Images and videos with no alternative
Tables that make no sense when read L-R
Forms without proper labelling
Forms without a logical tabbing sequence
Illogical tabbing sequence on a web page
Text as images

Assistive technology

for blind people

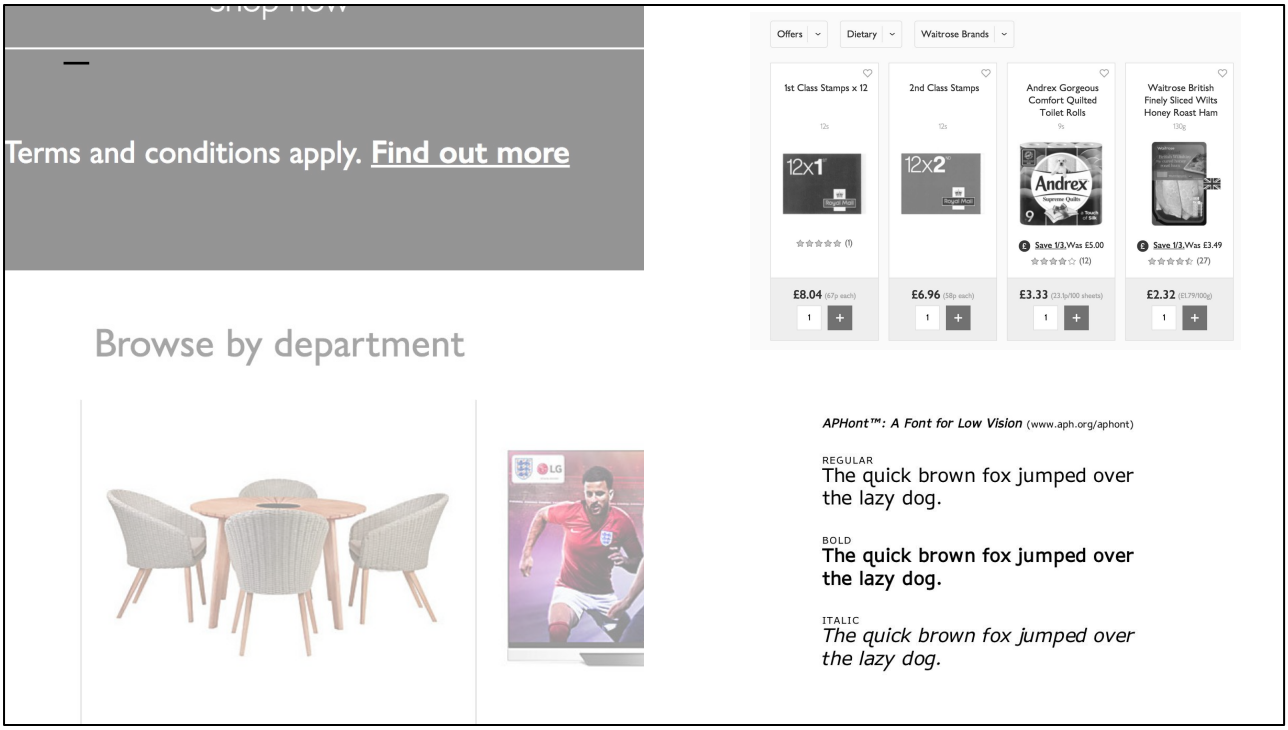


Screen readers (JAWS, NVDA, VoiceOver, Orca…)
Braille interfaces
Rapid navigation strategies (tabbing)
Keyboard for input



Obstacles

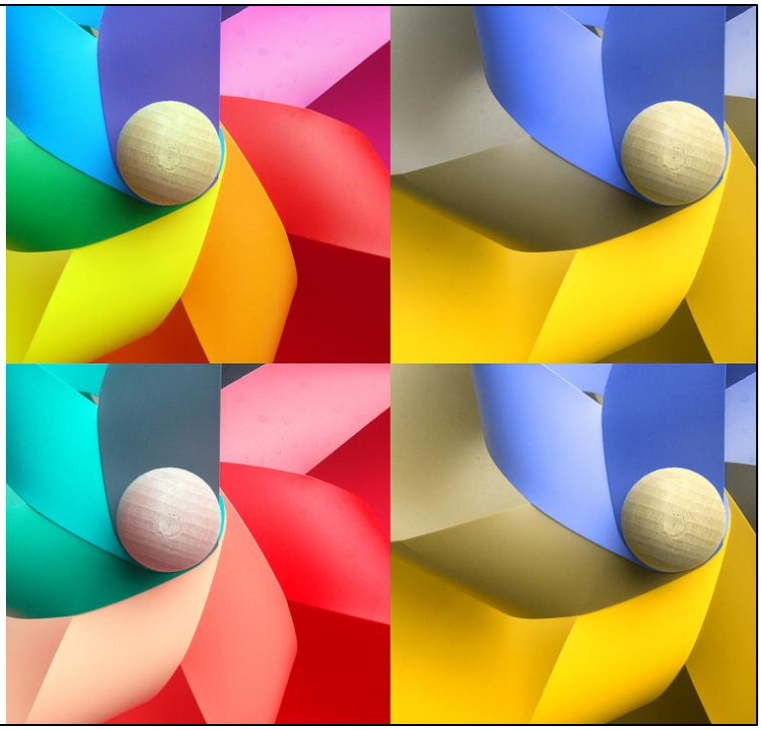
- ➔ Absolute font sizes
- ➔ Layouts that don't scale when enlarged
- ➔ Poor contrast
- ➔ Text as images



May use:

- ➔ Extra large monitors/font size
- ➔ Screen magnifiers/enhancers
- ➔ Specific text colours or monochrome
- ➔ Special typefaces

Colour Blindness



- ➔ Lack of sensitivity to certain colours
  - ◆ Red/green
  - ◆ Yellow/blue
  - ◆ No colour at all
- ➔ Colour should not be a unique marker
- ➔ Need sufficient contrast (not always necessary to use 'safe' colours)

Auditory disabilities: Deafness

To sign language speakers, speech and writing may be a 'second language'
Obstacles

- ➔ Lack of captions or transcripts for audio or video
- ➔ Lack of content-related images on long pages

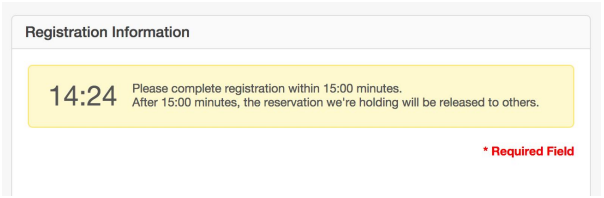
Hard-of-hearing people

Lack of toggleable captions

- ➔ Lack of controls on streaming media
- ➔ Audio that doesn't go loud enough
  - Need ability to repeat videos, subtitles/transcripts, above-average amplification

Motor disabilities

- ➔ Temporary or permanent
- ➔ Weakness
- ➔ Limitations of muscular control
- ➔ Limitations of sensation
- ➔ Joint problems
- ➔ Missing limbs
- ➔ Pain that impedes movement
- ➔ Can be permanent or temporary



Obstacles

- ➔ Lack of keyboard alternatives to mousing
- ➔ Forms and pages without logical tabbing sequences
- ➔ Time-limited response requirements

Learning and intellectual disabilities

May be slow learners, struggle with abstract concepts

- ➔ Developmental disorders
- ➔ Dyslexia: difficulty processing written language
- ➔ Dyscalculia: difficulty processing numbers
- ➔ Attention Deficit Disorder - difficulty focusing on information
- ➔ Memory impairments
- ➔ Seizure disorders

Obstacles

- ➔ Unnecessarily complex language
- ➔ Lack of supporting graphics
- ➔ Unclear or inconsistent page organisation

Benefit from:

- ➔ More time to complete site tasks
- ➔ Graphics accompanying bodies of text to enhance understanding
- ➔ Lower reading/listening age requirements
  - ◆ NB. The UK population has an average reading age of 10 years old
- ➔ Consistent, logical organisation of site and content
- ➔ Do items behave as you'd expect them to (based on other websites)?

Millions of people suffer from some form of disability

- Many people suffer from multiple disabilities.
- Large customer base of older people with declining mental and physical capabilities
- Don't just concentrate on severe disabilities- for people with multiple mild disabilities websites can be hard to use

Assistive technology (AT)

Sites that don't support AT are inaccessible.

Simple code is AT-friendly code!
(and AT-friendly code is SEO-friendly code)

- Problem is there's many different types
- A lot of AT is poorly maintained, poorly adapted
- Keep it simple:
  - Fewer special features - easier to maintain

Screen readers

- Voice output
- Represents visual display aurally
- Screen text and user keystrokes are spoken by synthesized voices
- Use keystrokes to navigate
- JAWS, NDVA, VoiceOver (mac and iOS), Orca (Linux)....
- Important to test web pages on screen readers to see what the experience is like

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View product description View delivery options
Quantity
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Product price

-L-169.95

(inc. additional services)

1 in stock

Add to basket

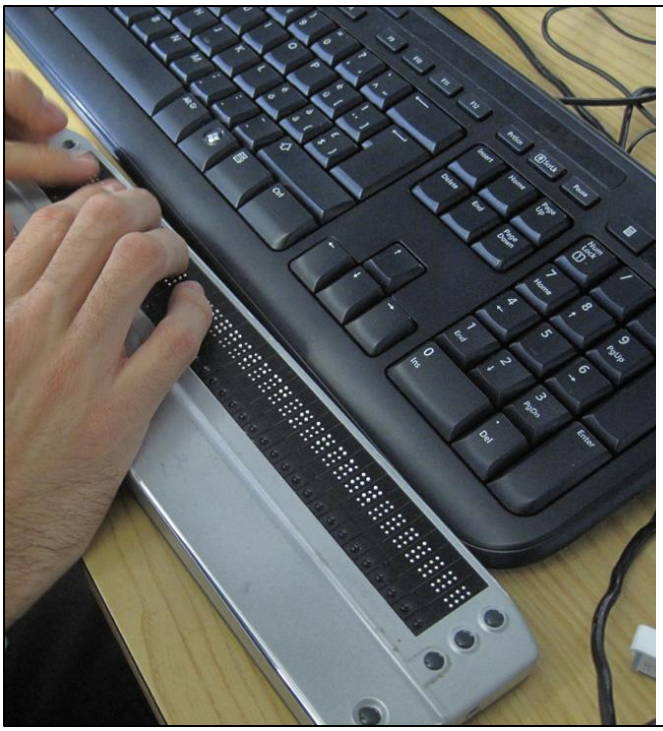
Product description

Product code: 73007604

This magnificent hurricane lamp is cradled by a beautifully detailed nickel plated octopus, creating an eccentric statement piece.

As the warm glow radiates above the octopus tentacles, the hurricane really does come into its own.

Use one candle per lantern and do not exceed 13 x 7cm size candle.

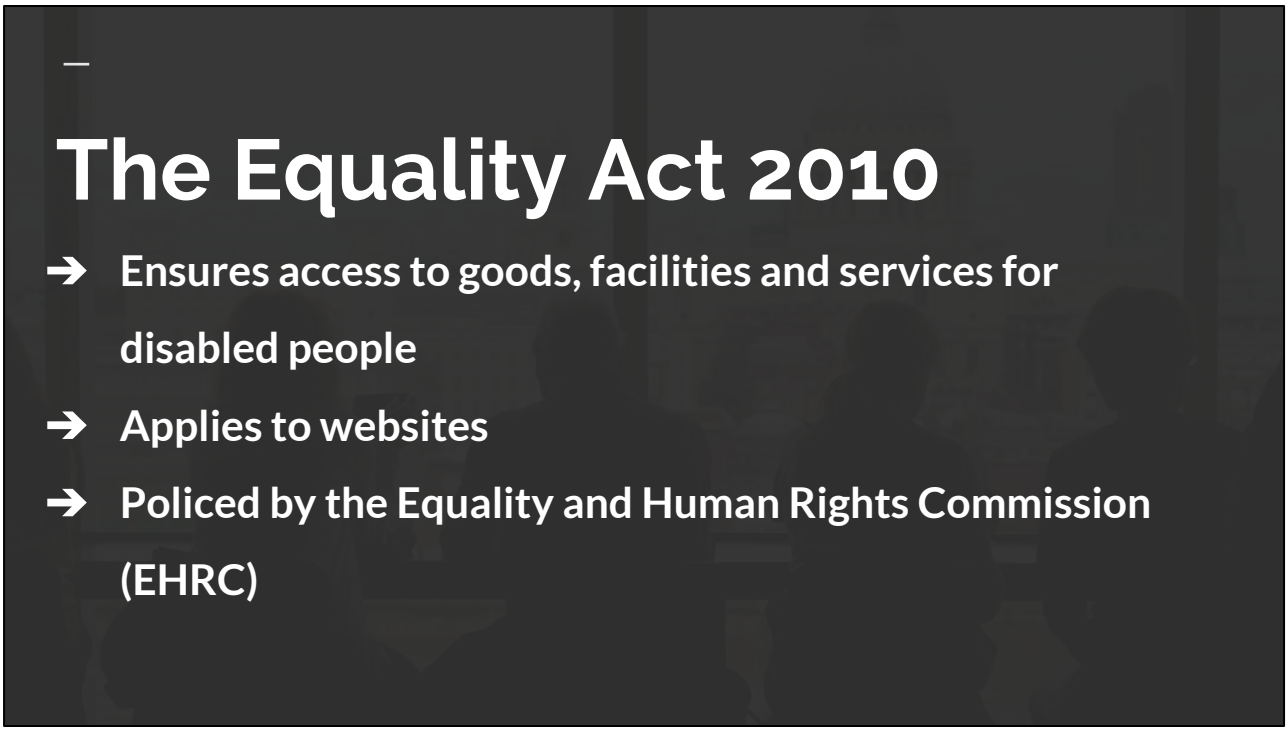


Braille displays and interfaces

- Raised dots represent letters and numbers
- Refreshable displays manually lift pins
- Sites are relatively easy to read if structurally simple
- Tables and forms can be a nightmare
- Does the page make sense read as a single column of text?
- Important to use UTF-8 encoding as Braille displays can't display special characters - but they can be translated if UTF-8.
    - Good idea to use this anyway
- Continuous stream of text

Switch input devices

- For people with severe motor disabilities
- Commands issued as simple yes/no responses
- Used with software interfaces
- Laborious to use
- Many different types
- Other types of AT:
    - Eye tracking, eyebrow raise, finger-flex
    - Sip and puff - pneumatic control
    - Touch sensors
    - Head pointers
    - IR sensors, sound, magnetic sensors
    - Adaptive keyboards and mice
        - Can the site be used with single button mice?



The EHRC may:

- ➔ Conduct formal investigations
- ➔ Serve non-discrimination notices
- ➔ Act over persistent discrimination (County Court)
- ➔ Issue Codes of Practice
- ➔ Help someone prosecute a company

NB. Requires company to be sued by disabled person - currently no UK case law

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"... The [organization] is responsible for ensuring that reasonable adjustments have been made where needed, for example by changing the size of the font, to ensure that disabled users are able to get the information, without being placed at a substantial disadvantage (even if the [organization] employs an external organisation to build and maintain its website)."

Web Content Accessibility Guidelines (WCAG)

RNIB suggests companies should be WCAG AA compliant.

Common violations:

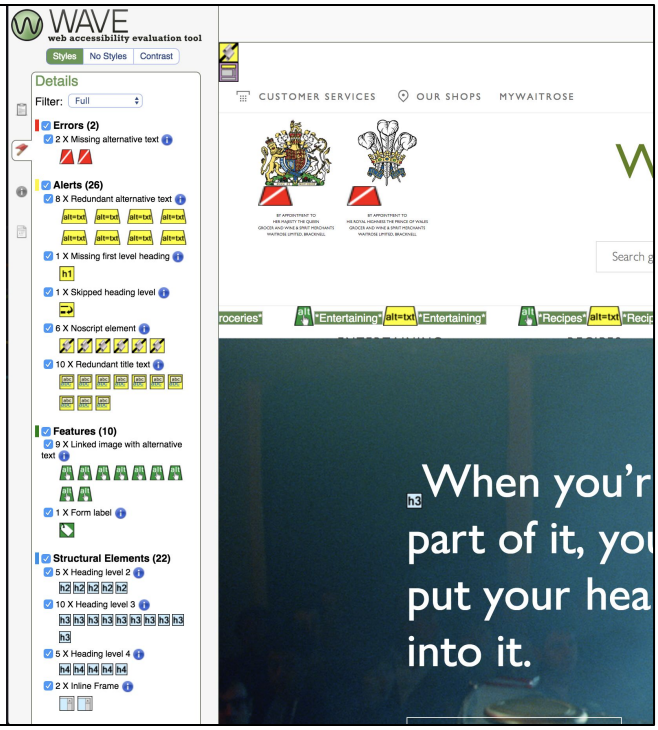
- ➔ Images with no text equivalent
- ➔ Poor contrast
- ➔ Pages not usable without scripts
- ➔ Moving content
- ➔ Popups or changes to window that don't inform the user
- ➔ Large info blocks
- ➔ Link targets not identified clearly
- ➔ Overly complex language

WCAG Principles

Websites must be:

- ➔ Perceivable
  - ◆ Users can 'see' it somehow
- ➔ Operable
- ➔ Understandable
- ➔ Robust
  - ◆ Remain accessible

Testing accessibility - WAVE



- ➔ Free browser extension to check how accessible a site is
- ➔ Highlights ARIA metadata
- ➔ Can also check contrast and see what the site looks like in monochrome

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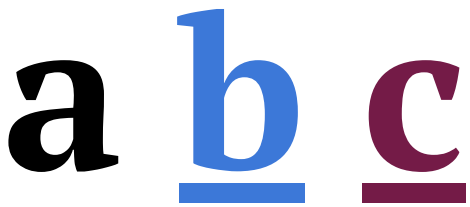
Testing accessibility - Funkify

- ➔ Chrome extension that simulates disabilities
- ➔ Blurred vision, dyslexia, tremors and more
- ➔ How does what you are building work with these disabilities?

Making text accessible

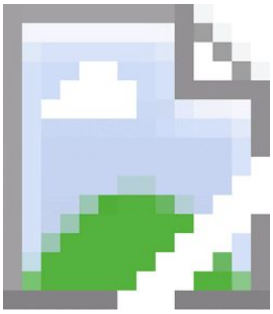


- Logical heading orders
  - h1,h2,h3… h6 - marked up properly
- Phrasal markup
  - Emphasis, blockquotes, citations, abbreviations…
  - NB. Screen readers raise the volume on and !
- Identify language and encoding
  - When using foreign loan words (e.g. raison d'etre), mark this up - enables screen readers to switch voice
- Font sizes proportional, not absolute
- Everything should be read out in a sensible order
  - Use CSS to reorder things for the design if necessary

Text colour

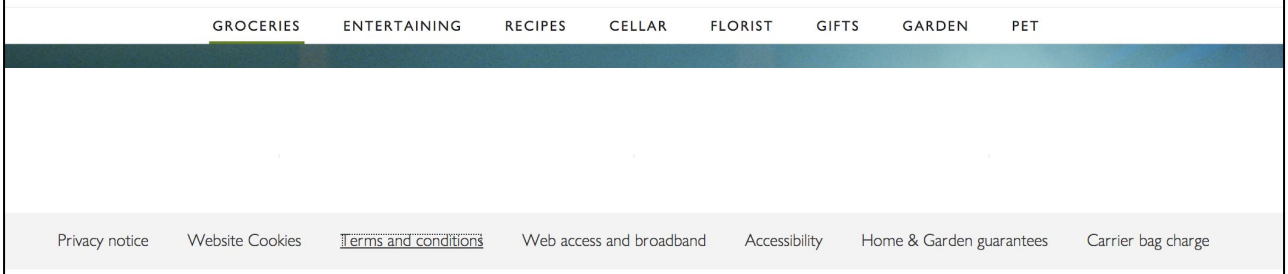
- Far less trouble for web designers than is widely believed!
- Ensure good contrast
- Avoid 'meaningful' colour distinction
  - e.g. two identical buttons distinguished by colour only
- If it works in monochrome, it's fine
- Set visited, active link states
  - Hovered and focused are optional

Accessible images



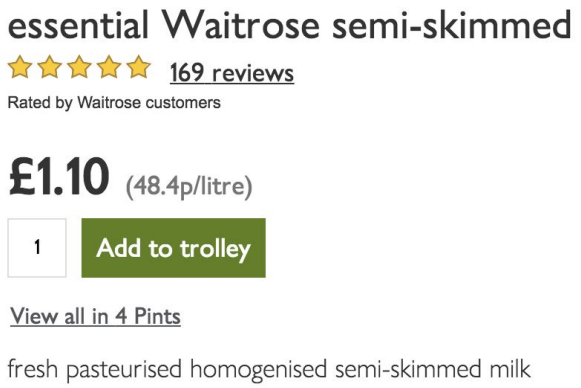
- Text alternatives for key information
- Hide purely decorative images from screen readers
- Excessive images can be distracting
- Image attributes:
  - alt - alternative text. Describes image function to those who can't see it
  - title - brief description of image content (tooltip)
- Avoid text in images
- HTML5 has <figure> and <figcaption> tags

Navigation



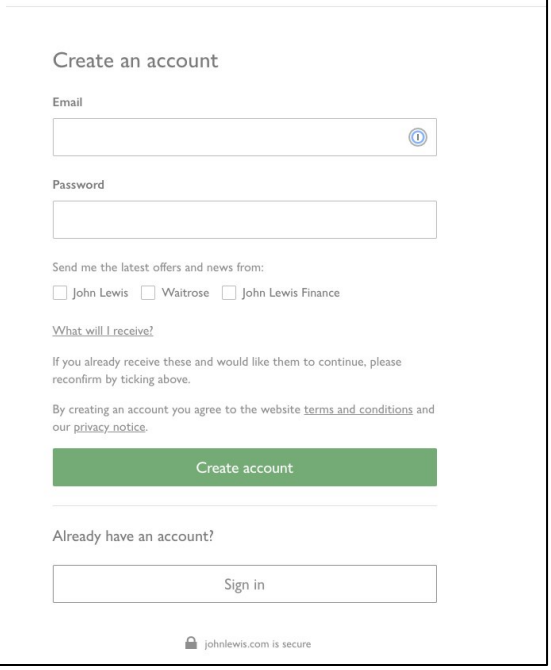
- ➔ Interactive page components should have focus if selected and active, or if the next action applies to them
- ➔ Impossible to use a site if you don't know where focus is
- ➔ Avoid popups that shift or detach focus/navigation context without user's knowledge
- ➔ Skip navigation if it's very long and laborious
- ➔ Links to top of page
- ➔ 'Skip to content' links

Links



- Identify destination and context
- Should be clearly identifiable
- Users should know what to expect
  - Not just 'Click here' or similar
- Recovery from unexpected/accidental navigation can be difficult
- title attributes should state:
  - name of destination
  - relationship to current content
  - warnings about any potential problems e.g. paywall or Flash content

Forms - key considerations



- Form length and complexity
- Size of focusable areas
- Position and readability of labels
- Ease of completion
- Grouping and labelling of controls
- Logical order of components
- Highlight focussed area with high contrast
- Avoid very long option boxes - use datalists or group options
- input can have title attributes

ARIA

- ➔ Accessible Rich Internet Applications
- ➔ Extra markup extending HTML in order to make web apps accessible
- ➔ Aria roles indicate what different components/elements are used for
  - ◆ e.g. using aria-role="menu" on a <ul> containing a list of links
  - ◆ aria-role="alert" for incorrect password notification
  - ◆ Full list: https://developer.mozilla.org/en-US/docs/Web/Accessibility/ARIA/ARIA_Techniques
- ➔ Invisible to sighted users

`aria-live`

- ➔ Used to indicate content that dynamically updates
- ➔ Especially relevant for React applications
- ➔ Values:
  - ◆ `off` - default
  - ◆ `polite` - alert when user is idle
  - ◆ `assertive` - alert user immediately

Key takeaways

- ➔ **Simple sites are accessible sites** (and vice versa)
- ➔ **Accessibility is more than just screen reader compatibility**
- ➔ **Make your code logical, and use CSS for the fancy stuff**
- ➔ **Good accessibility = good SEO!**

Additional resources

WCAG: https://www.w3.org/WAI/standards-guidelines/wcag/

Mozilla guide to ARIA:
https://developer.mozilla.org/en-US/docs/Web/Accessibility/ARIA

WAVE: https://wave.webaim.org/

Funkify:
https://chrome.google.com/webstore/detail/funkify-disability-simula/ojcijjdchelkddboickefhnbdpeajdjg?hl=en

Good blog posts on building for accessibility:
https://css-tricks.com/tag/accessibility/