AbilityNet

Adapting Technology ▪ Changing Lives

An Introduction to Web Accessibility

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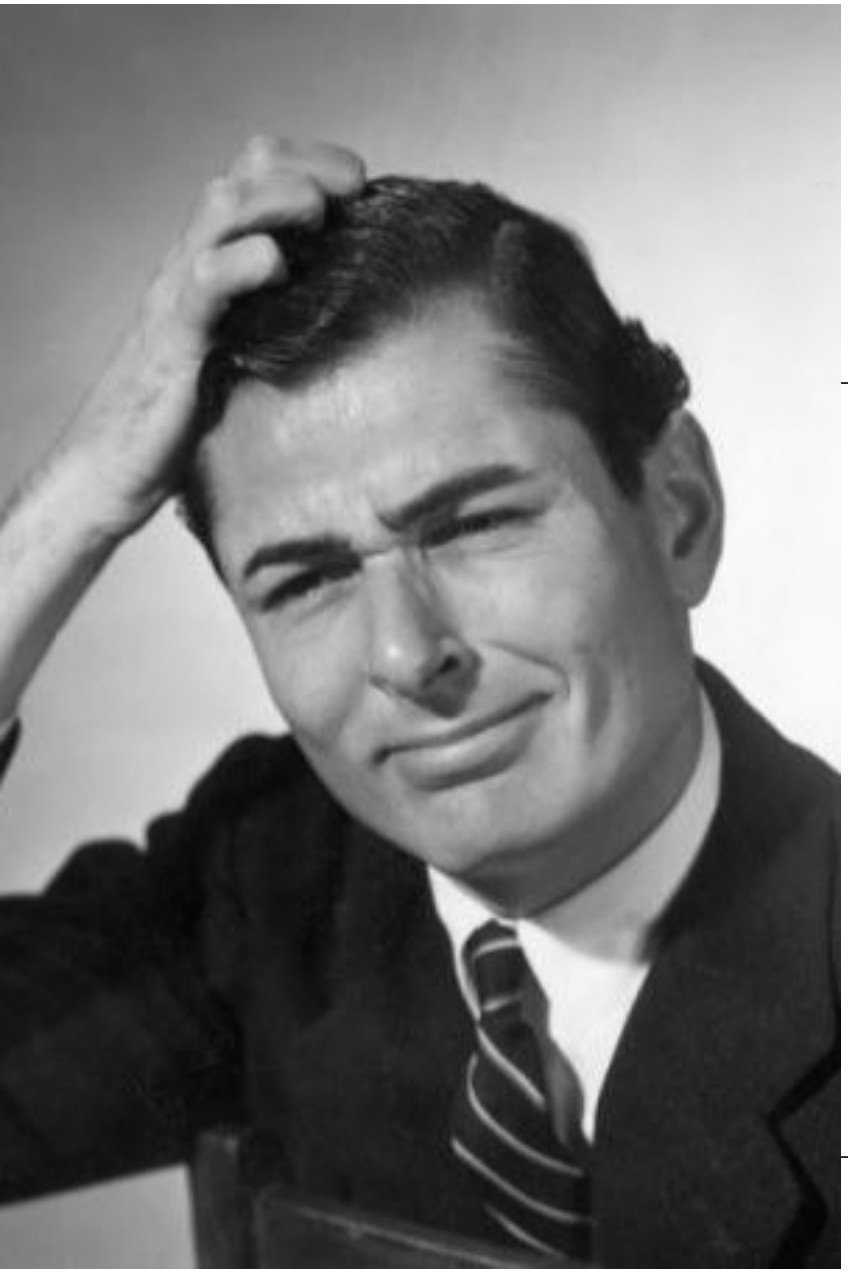
University of Oxford, 09/01/19

To get a sense of who you are: please say what you do in the chat box!



Accessibility

1. What is it?
2. Why is it important?
3. How do we get there?

What is accessibility?

Setting the scene

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Who is disabled here?

Being disabled ≠ having an impairment

Disability happens when
barriers exist between
people and their environment

Accessibility is about people

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Accessibility is not…

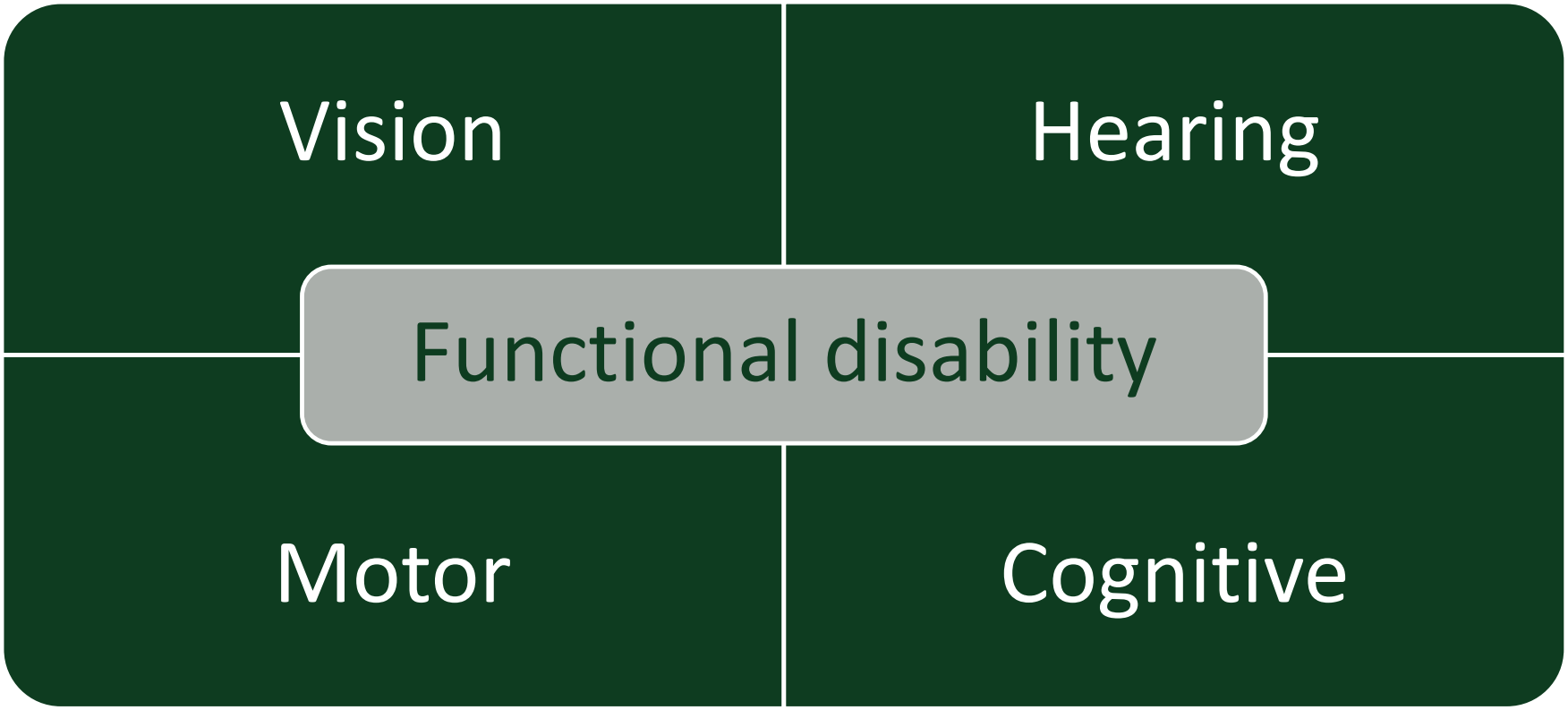
- Only for experts
- Expensive
- A barrier to creativity

So what are disabilities?

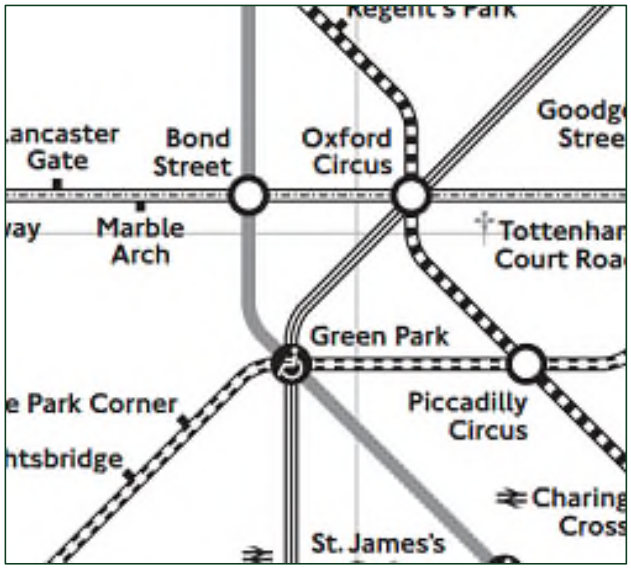
A disability is…

….a physical or mental impairment that has a ‘substantial’ and ‘long-term’ negative effect on your ability to do normal daily activities.

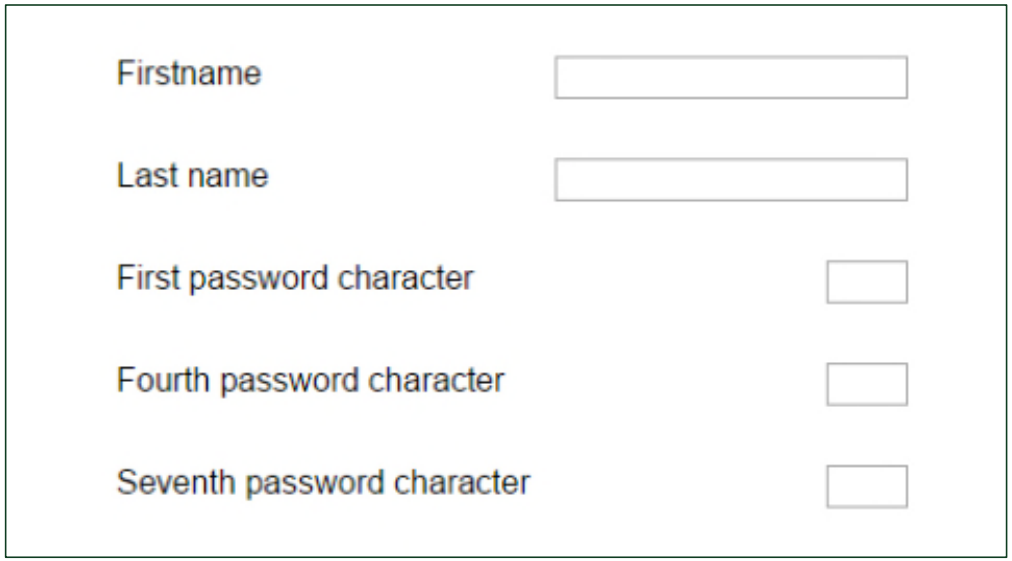
~Equality Act 2010

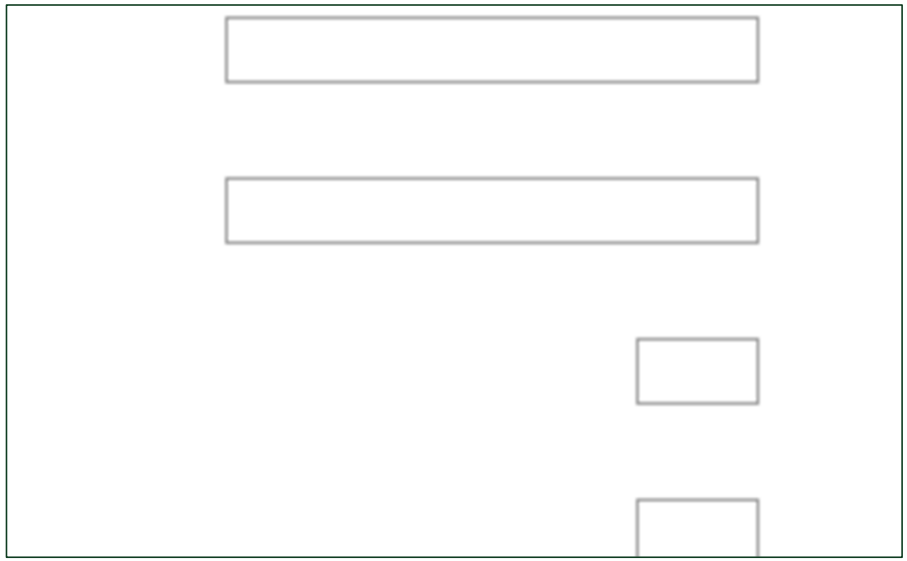

Vision
Hearing
Functional disability
Motor
Cognitive

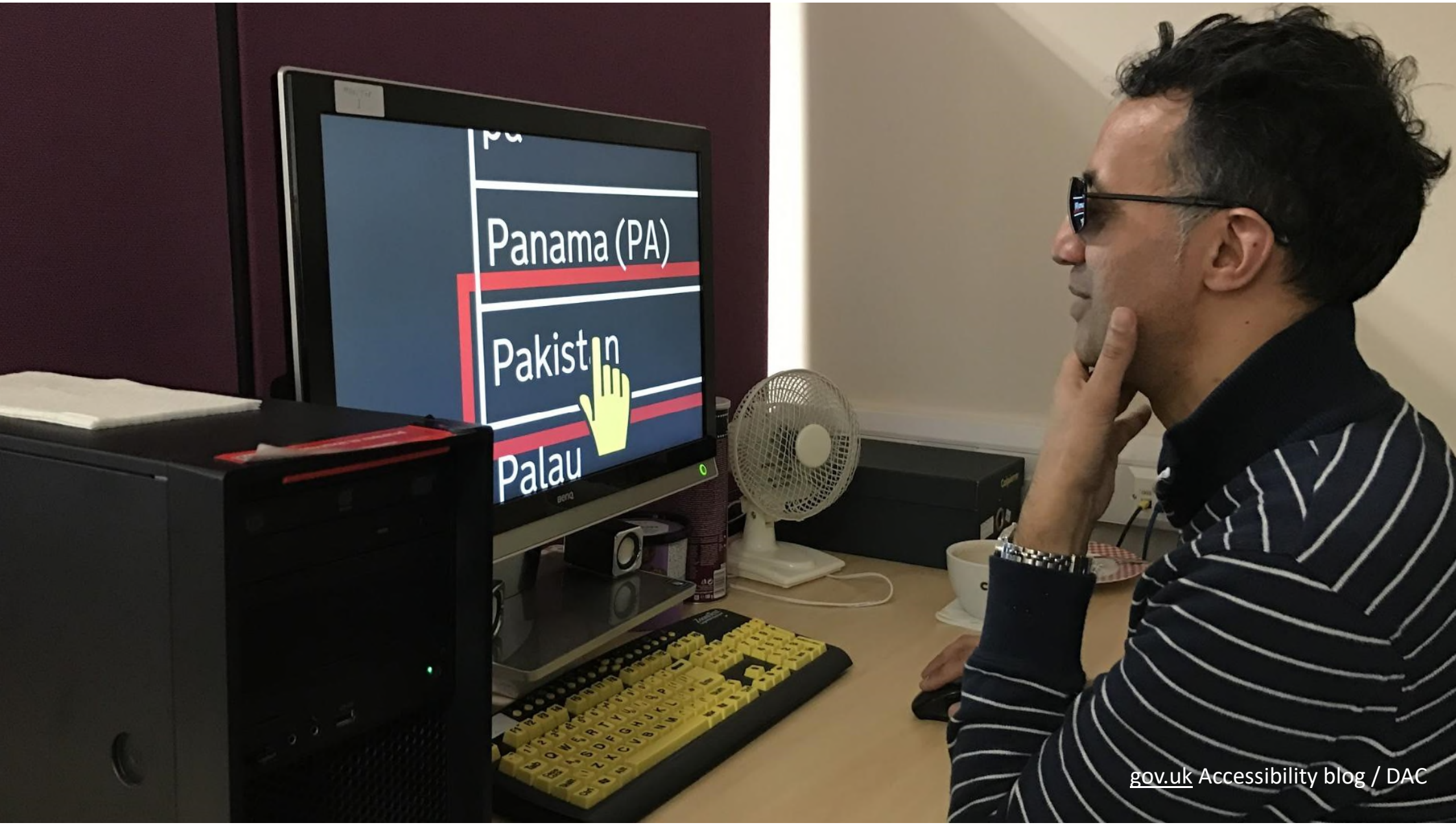
Use of colour



Low vision


Firstname
Last name
First password character
Fourth password character
Seventh password character




Panama (PA)
Pakistan
Palau
gov.uk Accessibility blog / DAC

Contrast

yes

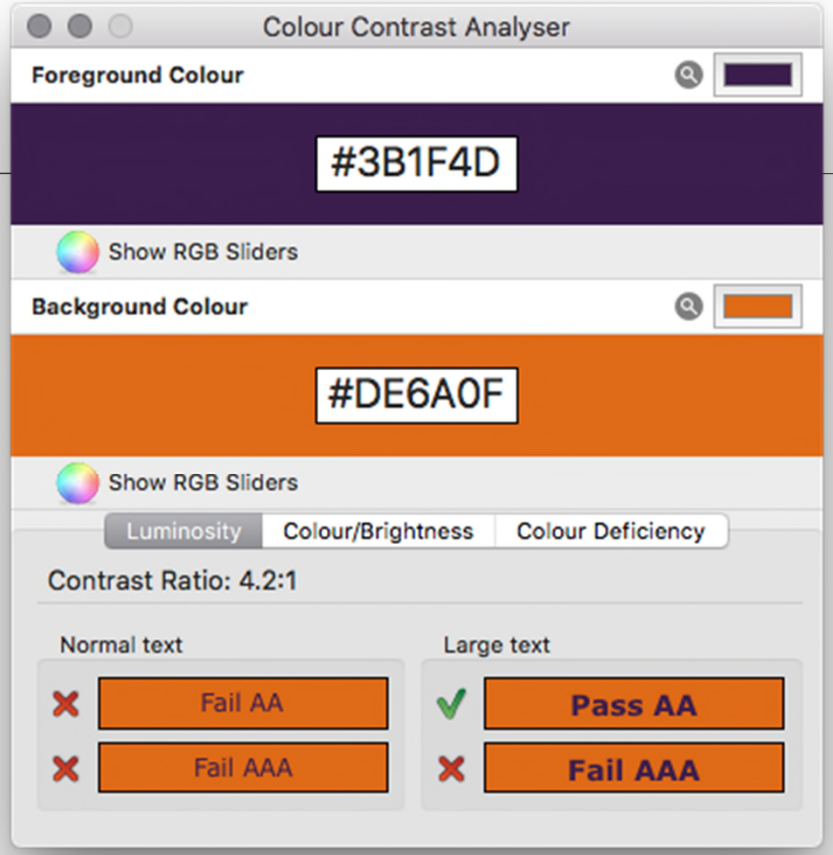
no

yes

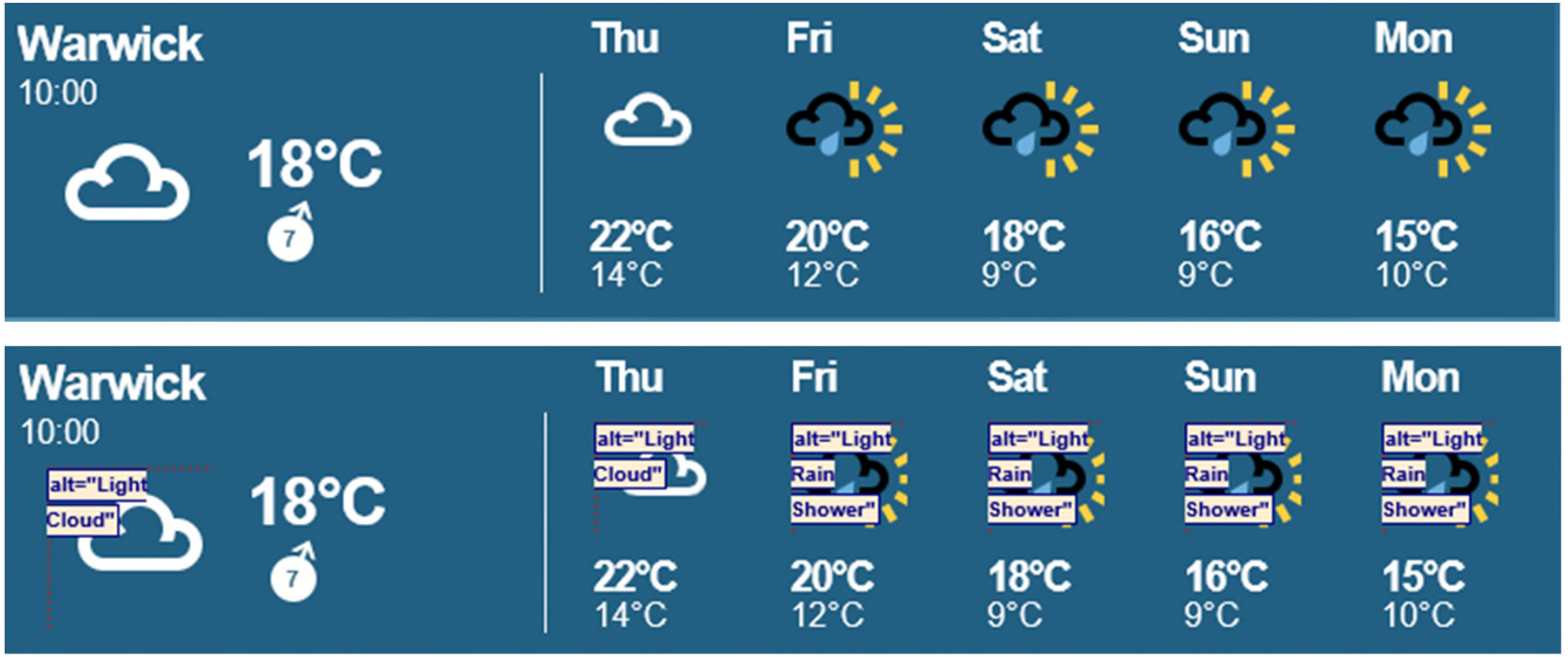
yes

no

no



Screen readers



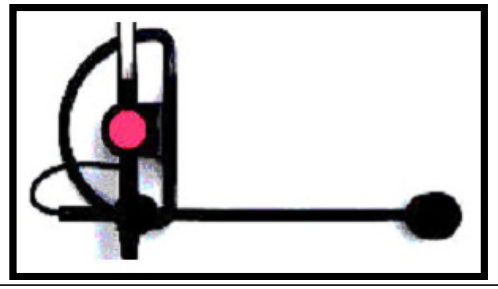
Video removed from slides – screen reader recording of the BBC page

Hearing

- Multimedia: videos typically cause difficulties – require captions
- BSL users may have English as a secondary language
- Ensure sufficient ‘contrast’ between foreground and background audio (dialog over background noises)
- Offer alternatives to telephone numbers to be contacted

Physical

- Potential difficulty using the mouse and clicking on small targets like checkboxes
- Likely to use keyboard to navigate, or alternatives that emulate keyboards
- Can have difficulties interacting with sensitive fly out menus
- May use voice recognition – say what they see

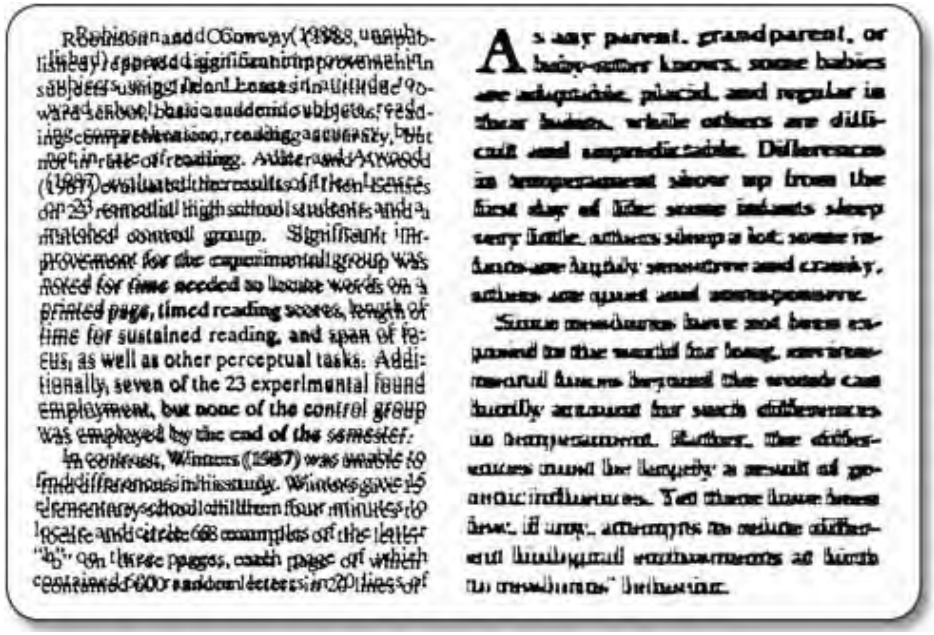


Cognitive

- People may have trouble remembering, learning new things, concentrating, or making decisions
- Covers many types of disabilities: mental health, reading, learning, intellectual…
- Harder to verify “objectively” if your site works

Cognitive

- Use headings to break up walls of text
- Use a simple structure, bullet points where you can, and make it easy to scan
- Ensure good contrast
- Avoid centred text / justification



Robinson and Conway (1988, unpublished) reported significant improvement in subjects using Reading Lessons in attitude toward school, basic academic objectives, reading comprehension, reading accuracy, but not in rate of reading. Alter and Atwood (1987) evaluated the results of Then I Learn on 23 remedial high school students and a matched control group. Significant improvement for the experimental group was noted for time needed to locate words on a printed page, timed reading scores, length of time for sustained reading, and span of focus, as well as other perceptual tasks. Additionally, seven of the 23 experimental found employment, but none of the control group was employed by the end of the semester.

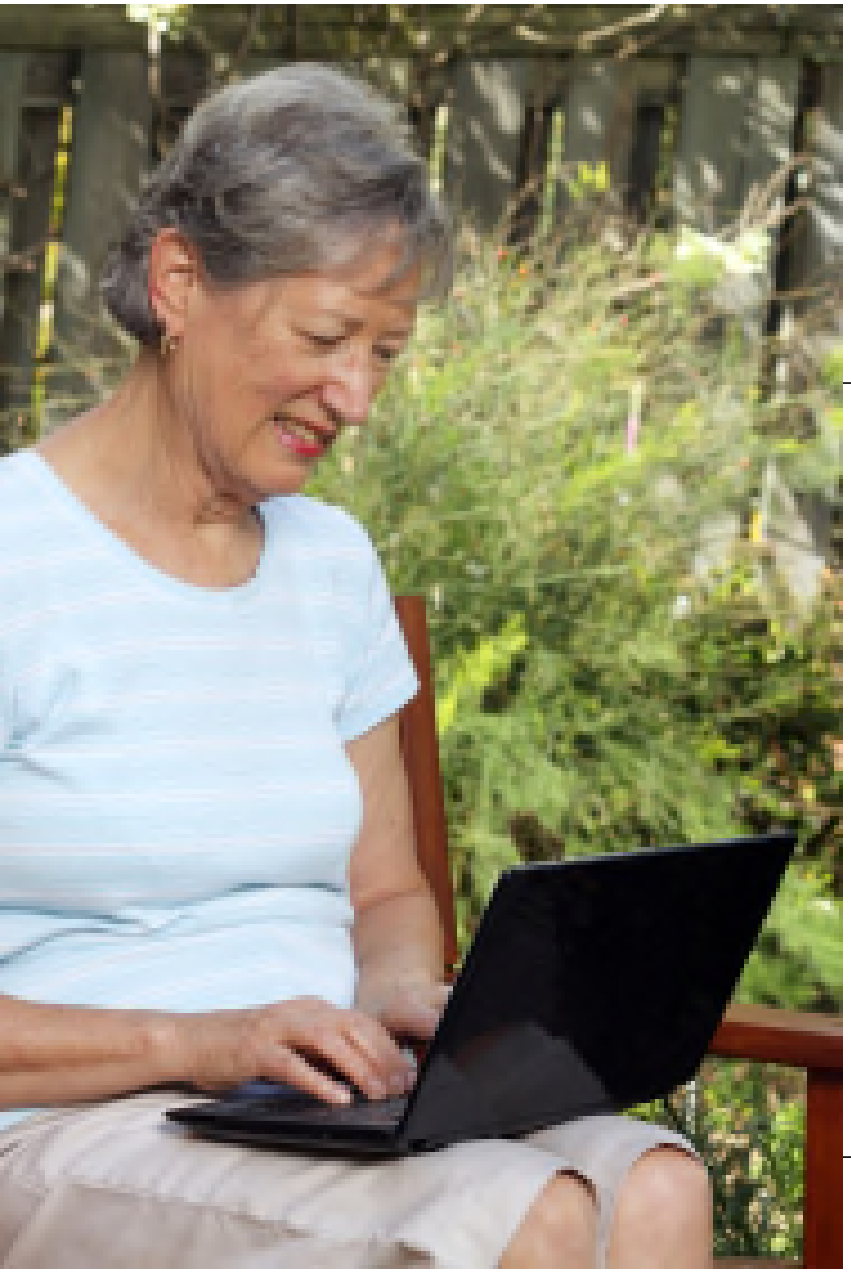
In contrast, Winters (1987) was unable to find differences in his study. Winters gave 15 elementary school children four minutes to locate and circle 68 examples of the letter "b" on three pages, each page of which contained 600 random letters in 20 lines of

As any parent, grandparent, or baby-sitter knows, some babies are adaptable, placid, and regular in their habits, while others are difficult and unpredictable. Differences in temperament show up from the first day of life: some infants sleep very little, others sleep a lot; some infants are highly sensitive and cranky, others are quiet and contemporate.

Since newborns have not been exposed to the world for long, environmental factors beyond the womb can hardly account for such differences in temperament. Rather, the differences must be largely a result of genetic influences. Yet there have been few, if any, attempts to relate different biological environments at birth to newborn behavior.

A Social Issue

A disability is…the outcome of the interaction between a person…and the environmental and attitudinal barriers they may face.



Gwen

- Blind since birth
- Expert JAWS user
- She comfortably uses headings and links to navigate.

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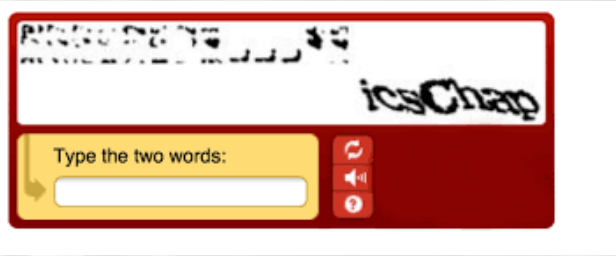
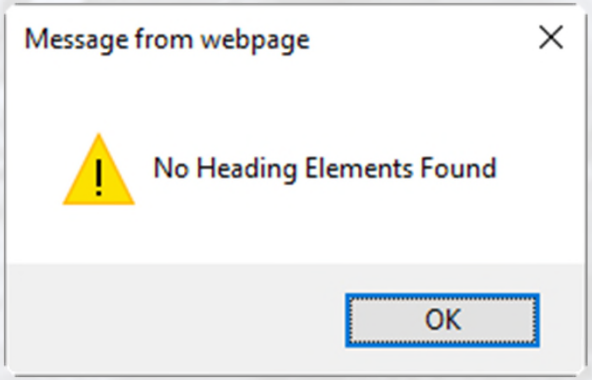
Gwen is disabled by…

- Forms that use CAPTCHA images
- When structured markup is not used, for example missing headings on a page
- Functionality that is not keyboard accessible





Andrew

- Deaf since his early 20’s
- Uses lip reading, and occasionally BSL with other deaf people

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Andrew is disabled by…

- Video content without captions
- Audio content without transcripts
- Video captions which are not correct against the video

Johnny

- Relies on keyboard for interaction. Sometimes hits wrong keys
- Benefits from ‘skip link’ for bypassing navigation lists, or lengthy content
- Also uses Dragon Naturally Speaking when not too tired

Johnny is disabled by…

- Websites that are not keyboard accessible
- Forms that don’t give useful error messages
- Graphical controls (images) where alt text doesn’t match image text

Temporary impairments

- Broken bone affecting mobility
- Migraine affecting concentration
- Lost glasses affecting vision

Environmental impact

- Using a mobile outside in bright sunshine
- Watching a news article in a noisy office
- Working on a laptop in a crowded train

Age related

- Reduced dexterity
- Loss of eyesight
- Affected hearing
- Memory difficulties

Why is it important?

Reasons for accessibility

It’s the right thing to do

- An accessible site promotes equal opportunities and access to information
- Demonstrates social responsibility

It makes for good business

£212 billion

(Combined income of households with a disabled person, 2014)

Good accessibility = Good SEO

Accessibility is also a legal requirement

Duty to make “reasonable adjustments” to enable disabled people can access services

~Equality Act 2010

Cases in the UK

- RNIB have previously launched two actions against inaccessible websites in the UK - Both settled out of court
- A case in 2012 against BMI Baby led to BMI Baby revising their website
- Costs and settlements affect business bottom line regardless of outcome

How do we get there?

A route to accessibility

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Web Content Accessibility Guidelines (WCAG)

- Created by the W3C
- Apply to all web content
- Generally the basis of localised guidelines

Four Principles of WCAG 2

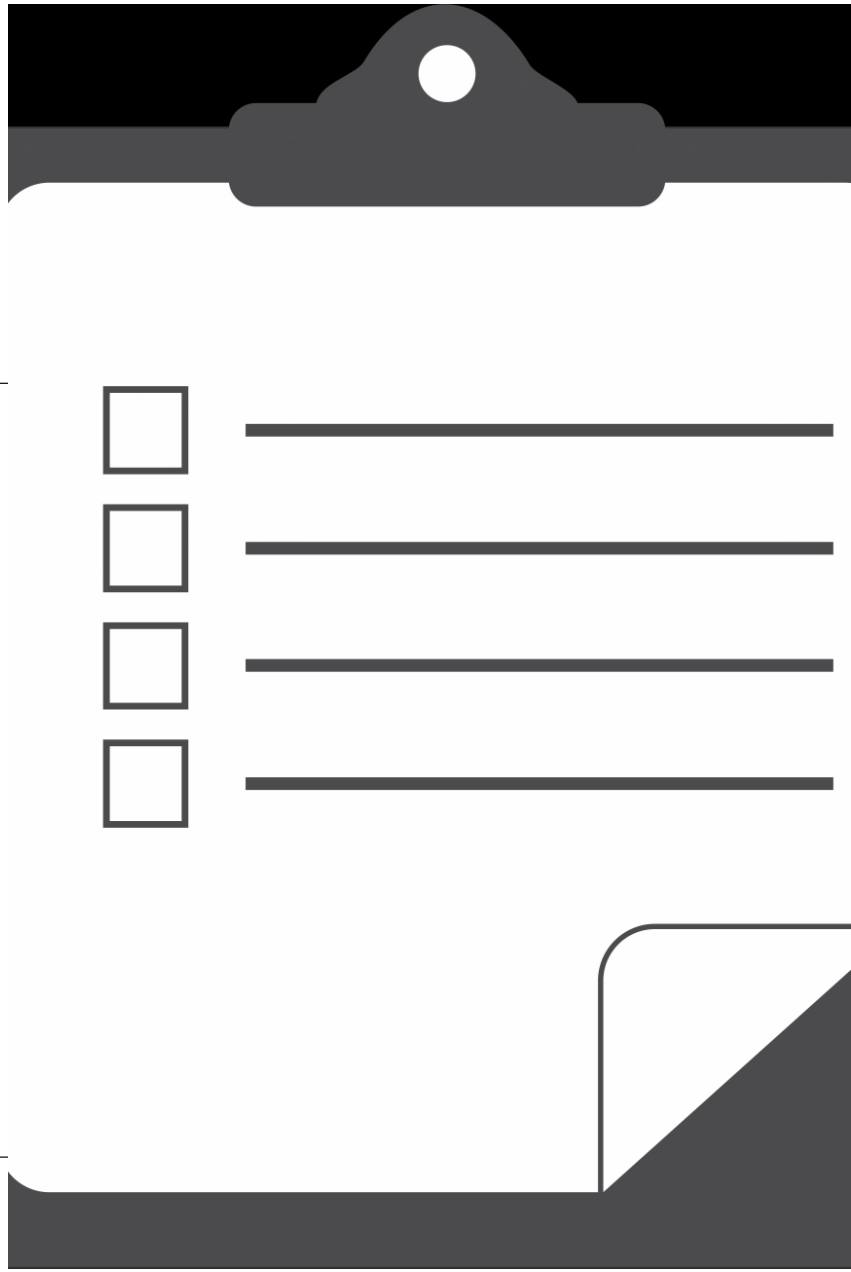
- P – Content should be **perceivable**
- O - Users should be able to **operate** webpages
- U – Web pages should be **understandable**
- R – **Robust** pages should be displayed similarly on different browsers

Preparation is key

- Nominate key member of staff to be the go-to person for accessibility of a project
- Consider training designers\developers in basic accessibility testing and requirements
- If commissioning third-party products, invest in BS8878

Integration

- Initial accessibility work can begin in design stage
- As designs progressed to functional pages, conduct accessibility reviews
- Expert AT testing can be done throughout project
- Final review once project is delivered, including disabled\user testing



User testing

- If you have employees with disabilities, involve them in testing prototypes for early feedback
- Incorporate disabled users into user acceptance testing
- Look to outsource user testing if necessary

Develop

- Using semantic, valid markup
- Be aware of, and use, the Web Content Accessibility Guidelines (WCAG)
- For rich and dynamic content, look into ARIA (Accessible Rich Internet Applications)
- Create a **pattern library** of accessible components to reuse

Use progressive enhancement

Design

- Colour palette – ensure sufficient contrast for text
- Consistency of appearance throughout site.
  A visual theme helps users with cognitive difficulties
- Clear layout and structure – use white space to delineate sections and group related elements together
- Make clickable/touchable targets large, and well-spaced

You can test for accessibility!

Keyboard testing

- Logical tab order
- Visible focus outline
- All content accessible
- Skip links

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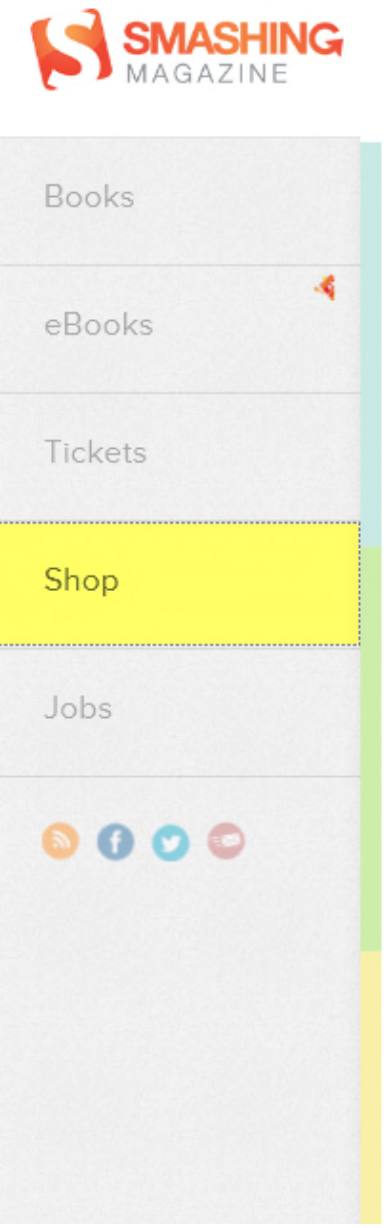
First… lose the mouse

- Hide it…
- Or better yet, unplug it
- Almost all functionality can be accessed with **Tab** or **Enter** or other keys

Logical tab order

- Use the **Tab** key to step through all controls on a page
- Order should flow logically from top left to bottom right
- Screenshot opposite shows expected focus order

Good example: www.bbc.co.uk



Visible focus outline

- Tab through the page
- Requirement is that you can **see where you are at all times**
- Here “Shop” is currently selected
- Both colour and default dotted outline used

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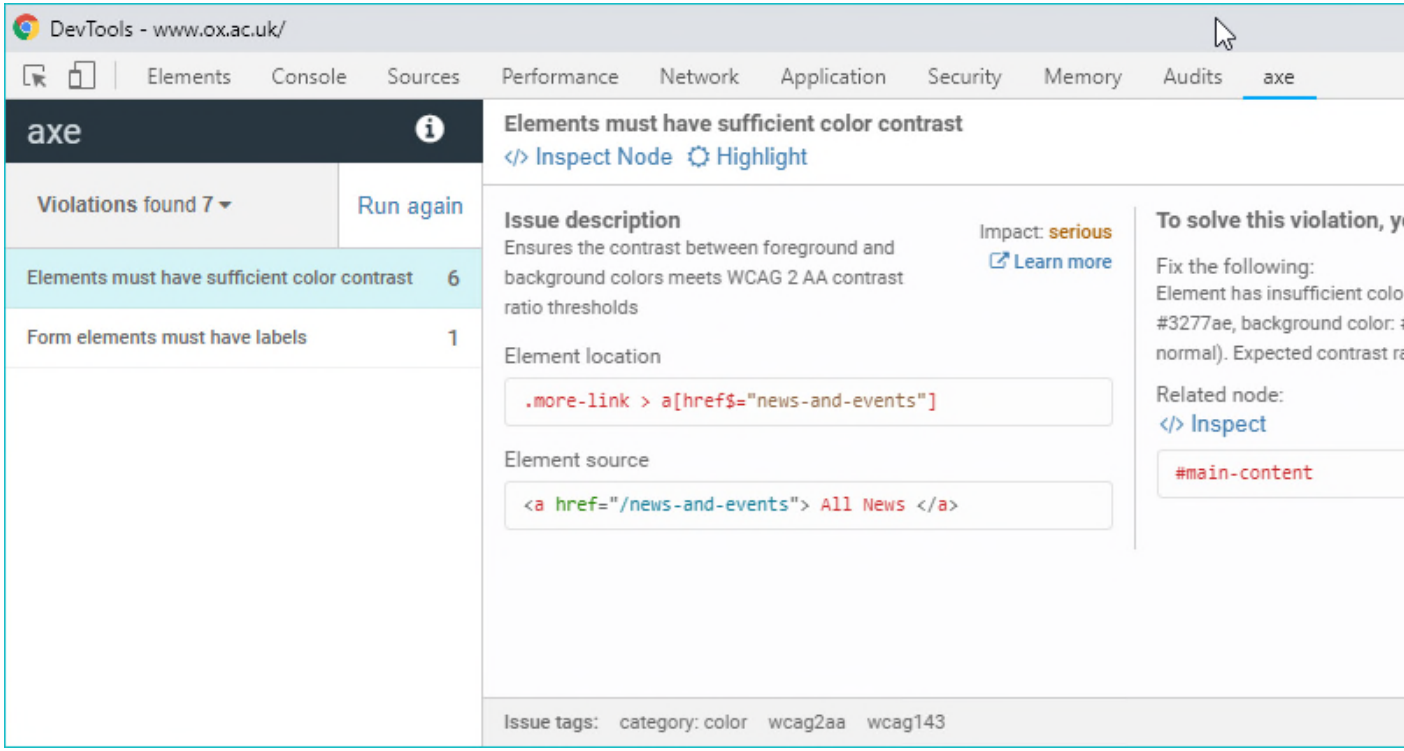
Bad example: www.coca-cola.co.uk

Web Accessibility Toolbar

- Highlights structural elements
- Exposes alt text for images
- View table structure
- Access metadata

aXe

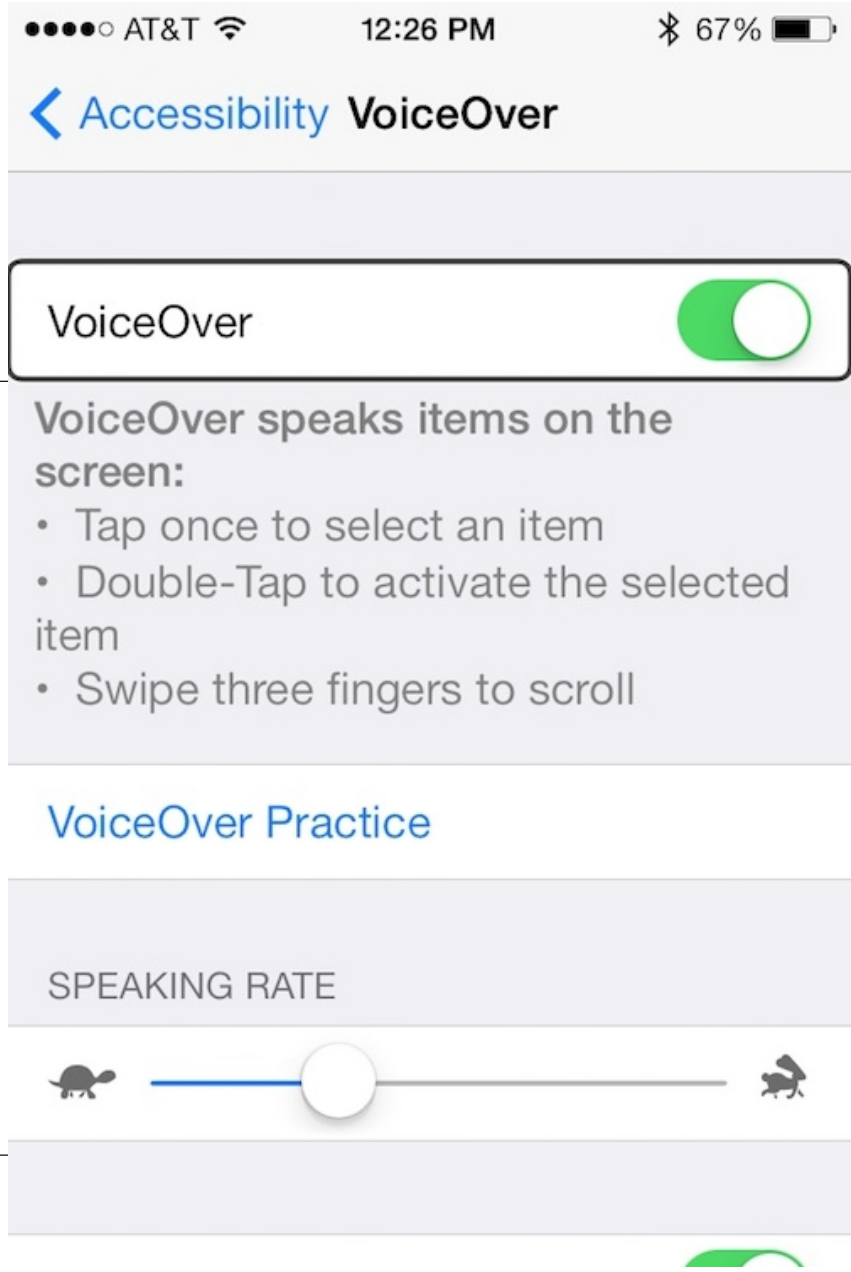
- Chrome & Firefox extension
- Automated detection of common issues
- Useful as a first check



Other checks you can do

VoiceOver

- Free – built into iOS devices
- Use Explore By Touch - trace your finger around the screen to hear content and components read out

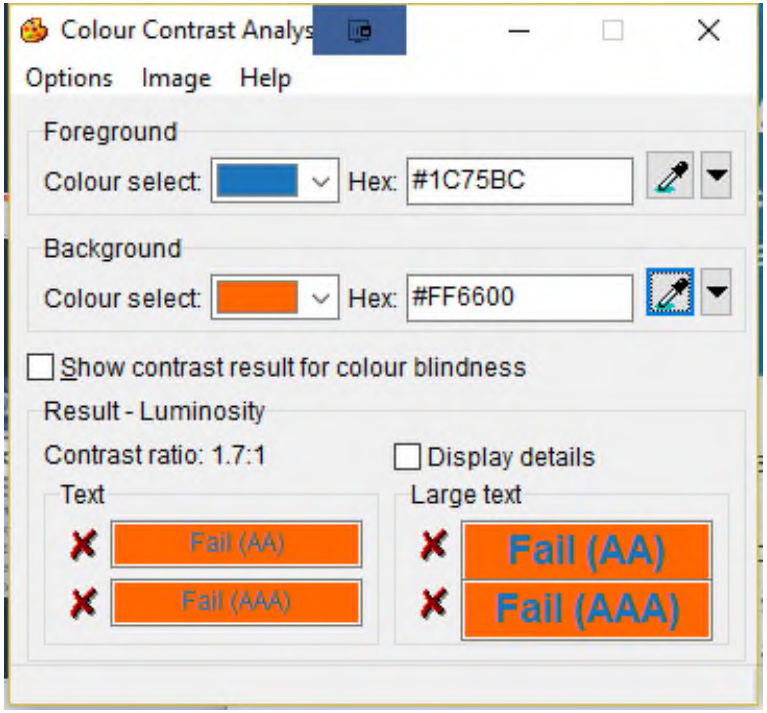


NVDA

- Free, open source, desktop screenreader
- Standards based
- Very powerful, but can test with minimal keystrokes

Colour Contrast Analyser

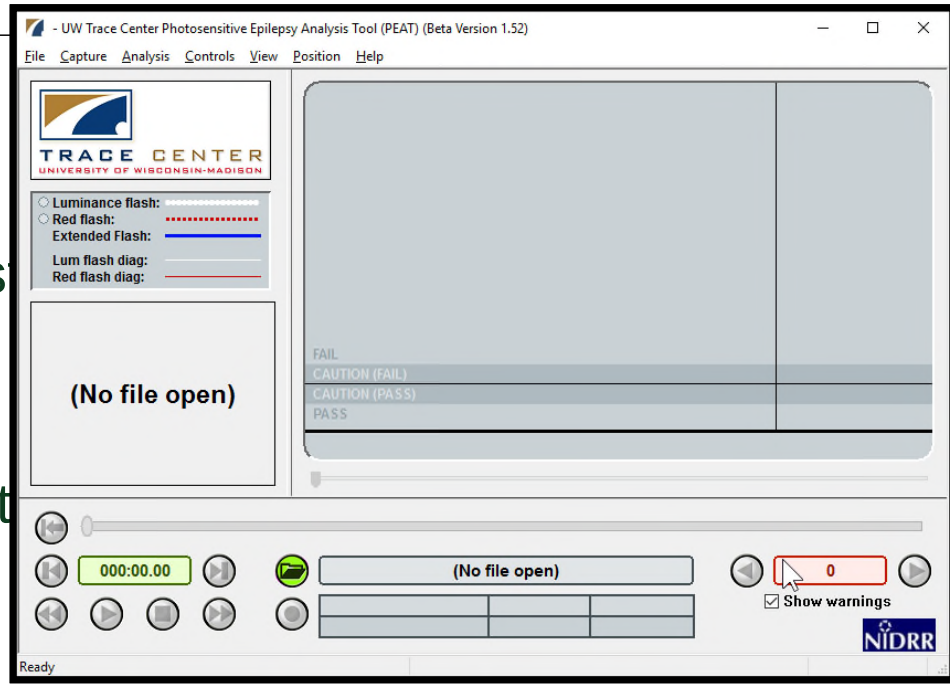
- Use a simple picker to select foreground and background colours
- Gives simple pass/fail result
- Can judge by eye, confirm with tool



Visual checks

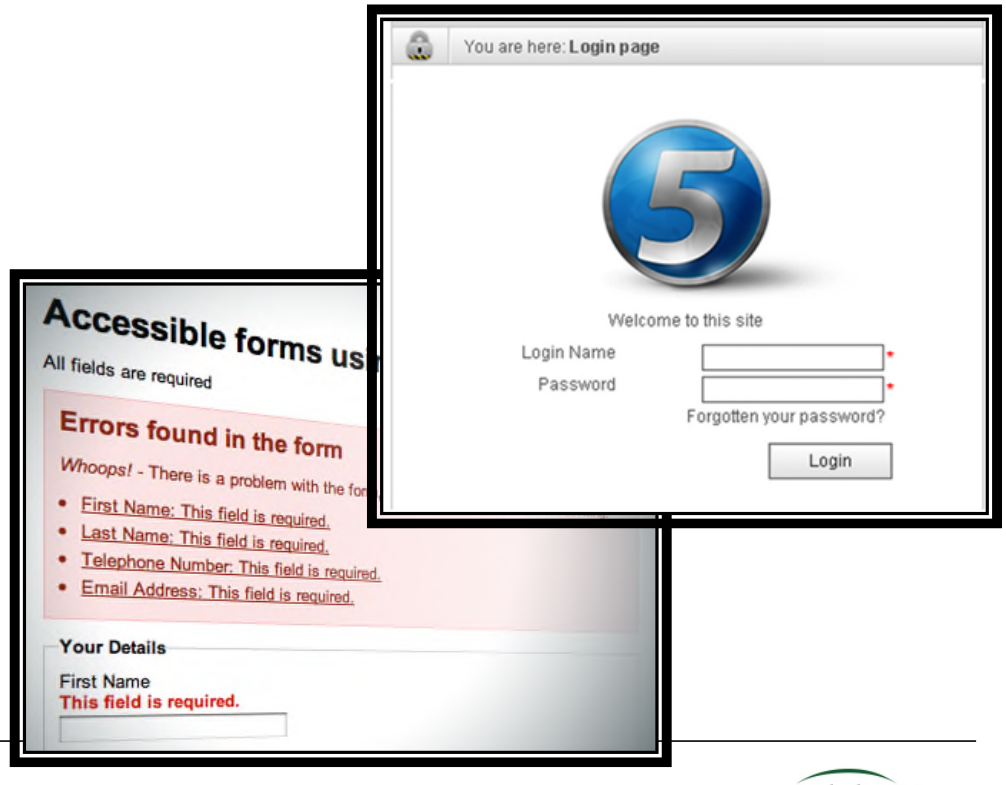
- Flashing content that cannot be paused – dis
  those with cognitive disability

- Very fast flashing content can affect those wit
  PEAT to evaluate



Forms

- Form interactions:
- Are errors described in plain English?
- Are errors easy to identify?
- Instructions should be clear



All done

Let’s summarise

What, Why, How of accessibility

- Ability to access, and benefit from systems, particularly for people with a disability
- Promotes social inclusion, makes good business sense, and is a legal requirement
- Standards provide a roadmap to accessibility, accessibility is an ethos and not a single step in a project plan

For people without disabilities, technology makes things easier.

For people with disabilities, technology makes things possible.

IBM training manual (1991)

Questions