

# Design for Accessibility

Alastair Campbell

# Hello!

Alastair Campbell

- Director of Accessibility @Nomensa
- HCI / Usability background
- Front-end code

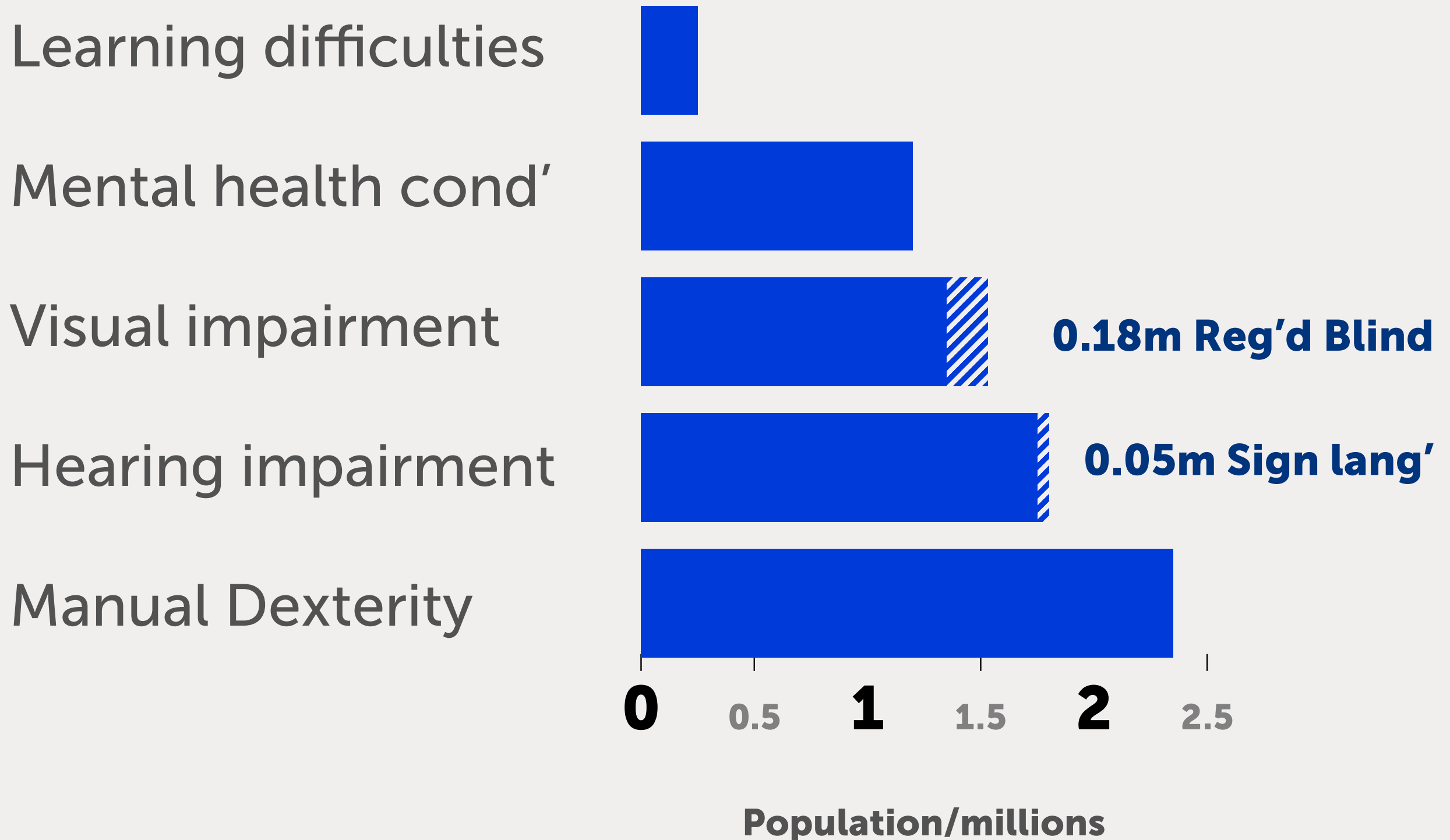
# Objective

To help you incorporate accessibility into the design process.

We will:

1. Have a *brief* overview of accessibility
2. Understand the interactions involved
3. Work out when to integrate this in your process

# UK stats







A Venn diagram with three overlapping circles on a dark blue background. The top-left circle is labeled 'Usability', the top-right circle is labeled 'Web Standards', and the bottom circle is labeled 'Accessibility technologies'. The central area where all three circles overlap is labeled 'Web Accessibility'.

**Usability**

**Web  
Standards**

**Web  
Accessibility**

**Accessibility technologies**

# Not going to start with



## Web Content Accessibility Guidelines (WCAG)

W3C Recommendation December 2008

**This version:**

<http://www.w3.org/TR/2008/REC-WCAG20-20081211/>

**Latest version:**

<http://www.w3.org/TR/WCAG20/>

**Previous version:**

<http://www.w3.org/TR/2006/PR-WCAG20-20061206/>

**Editors:**

Ben Caldwell, Center, University of Wisconsin-Madison  
Michael Cooper, Indiana University  
Loretta Guarino, Indiana University  
Gregg Vanderheide, University of Wisconsin-Madison

**Previous Editors:**

Wendy Chisholm, W3C  
John Slatin (until July 2006), Accessibility Institute, University of Tennessee  
Jason White (until July 2006), University of Melbourne

Please refer to the [errata](#) for this document.

See also [translations](#).

This document is also available in non-normative formats: [Alternate Versions of Web Content Accessibility Guidelines 2.0](#).

# Exercise 1: When to incorporate accessibility?

Open exercise 1 and mark when you think each check could first be defined. Is it:

- Requirements
- Sketches
- Wireframes
- Visual design
- Code

# Real world requirements

- Venue details - are there accessibility (or family) considerations that should be on the website?
- Multimedia - are there transcripts available from the production process?
- Technology choices - are you putting the foundations in place to lock people out?

# Skip links - after thought?



**Web** | Sky | Video

Search Web

Search



Trends > [Ray Donovan](#) > [Falling Skies](#) > [Weather](#) > [Tablet Offer](#) > [Transfer Rumours](#)

Home

Find & Watch TV

Sky Products

Shop

My Sky

Help & Support

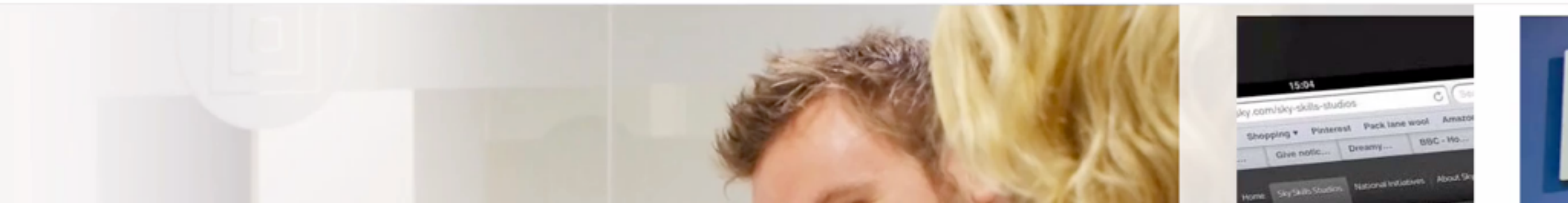
Sign In

Sign Up

Email



# Skip links - designed in



# Form controls



**There seems to be a problem with your form. Please check the following fields:**

---

**1. Describe the nature of your request**

↓ Please describe your question in more detail

**1**

**What can we help you with?**

---

**Please enter your question (required)**

Example Name



**Please describe your question in more detail (required)**

# Interaction methods

## **Vision**

Keyboard / switch

Mouse / eye tracking

## **Hearing**

Speech recognition

Magnification

## **Motor**

Colour/contrast adjustments

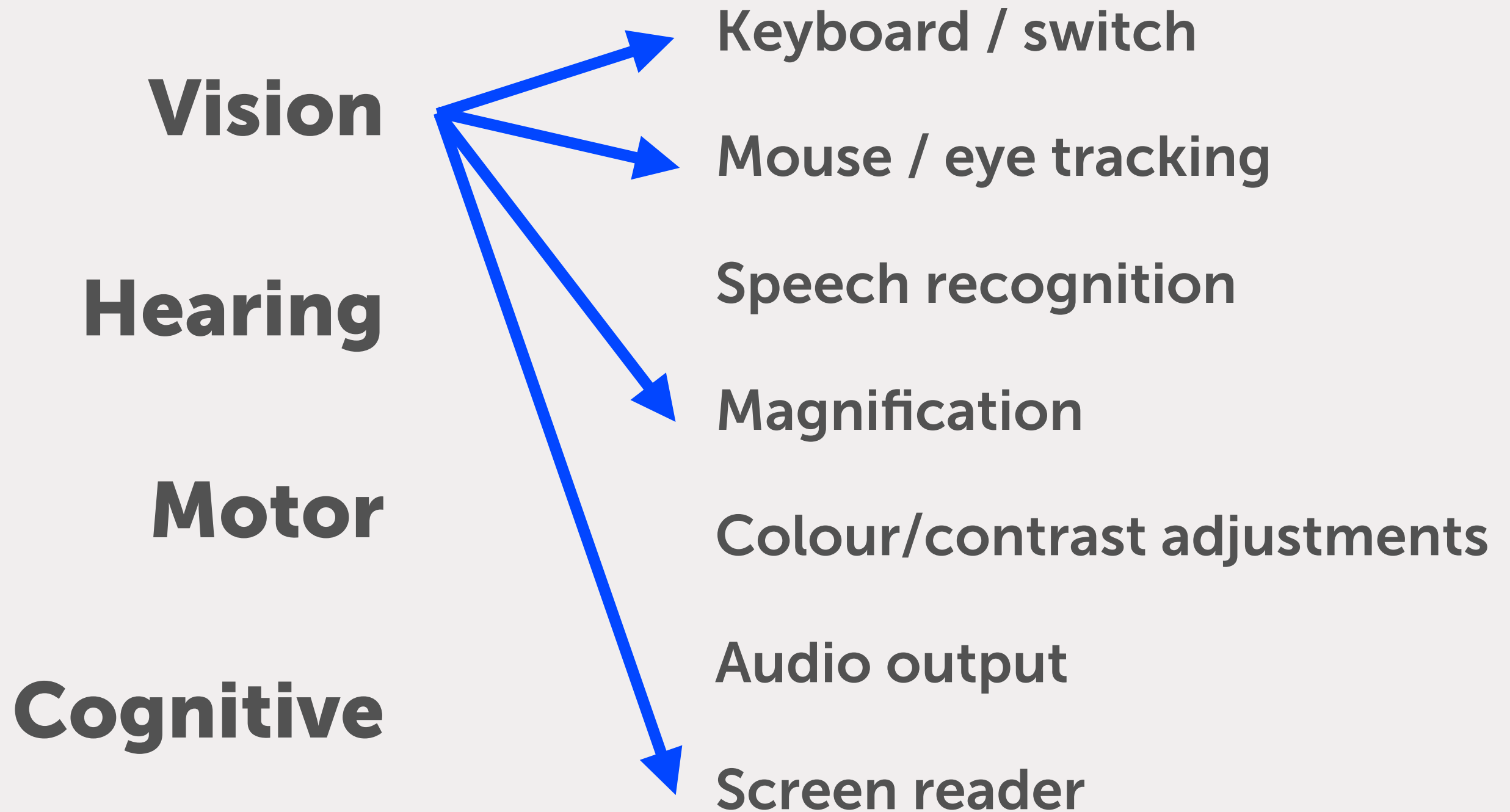
## **Cognitive**

Audio output

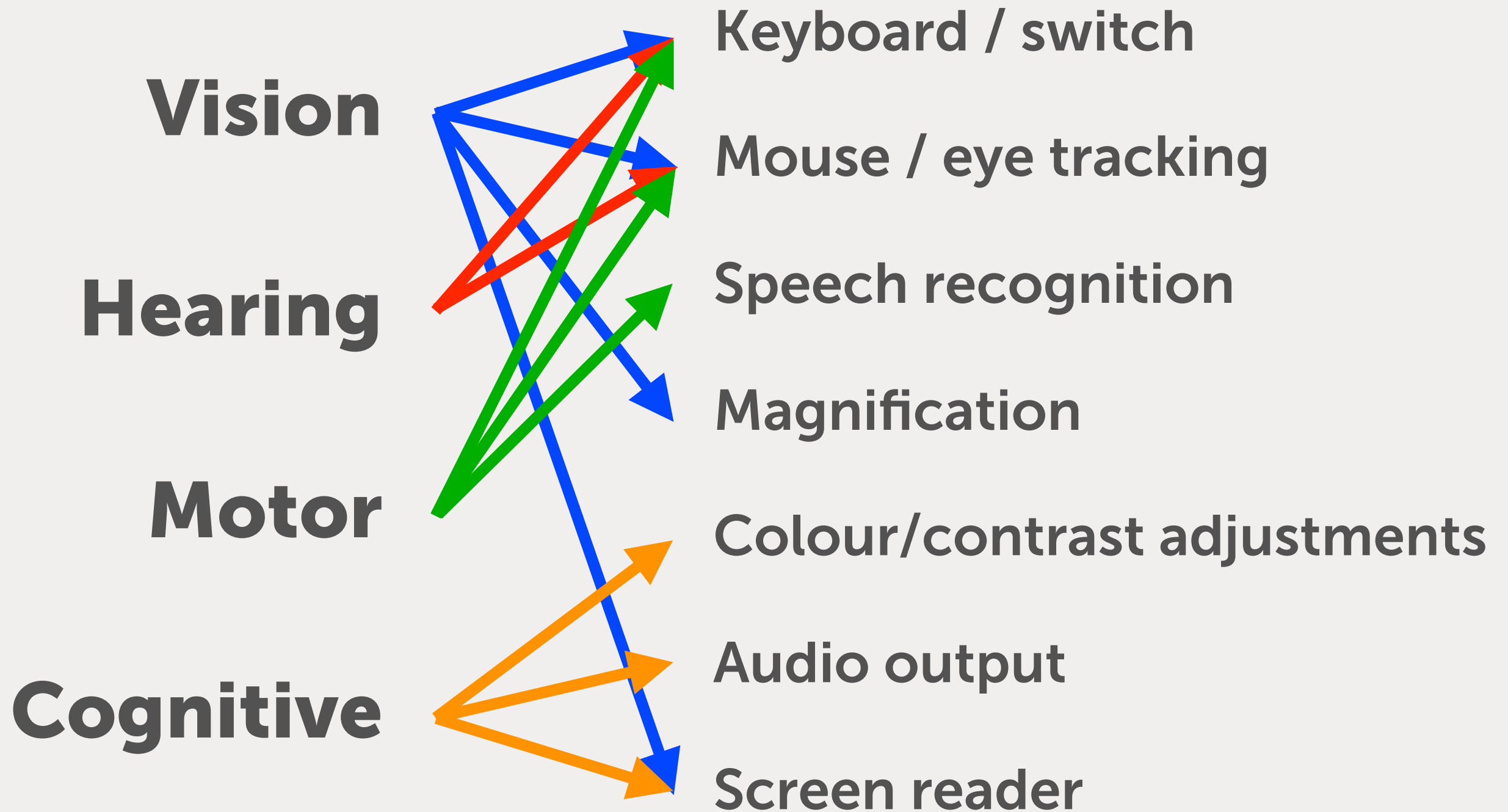
Screen reader



# Interaction methods



# Interaction methods



# Interaction methods

- Keyboard only
- Screen magnification
- Deafness or Cognitive issues
- Screen reader

Keyboard only

Video from:

<http://www.assistiveware.com/a-pivotal-role-in-the-household>



iPod  
iPad  
iPhone

Simplyworks  
for iPad



Video of tabbing through the BBC homepage.

**BBC** Sign in News Sport Weather iPlayer TV Radio More Search

**LONDON**  
WEDNESDAY, 17 JULY

Wed 30°C 18°C Thu 28°C 16°C Fri 26°C 15°C  
Change your location | 5 day forecast

**Met Office upgrades UK heatwave warning**

**Heathrow offers third runway options**

**Man Utd dismiss Chelsea Rooney bid**

**BBC NEWS**

- Formula 1 boss Ecclestone indicted
- Minimum alcohol price plan shelved
- FA Cup returns to BBC from 2014-15
- GCHQ use of Prism was legal - report

**BBC SPORT**

- Sportsday - football transfer news
- Cisse pulls out of Newcastle tour
- Froome set to sign new deal with Sky
- What makes an Open champion?

**LOCAL NEWS | LONDON**

- Police falling over race complaints
- Pair found dead in quarry lakes
- 'No evidence' yet of Lawrence smears

**FOOTBALL**

- Mourinho praises Abramovich 'vision'
- Rooney 'angry & confused' at Man Utd
- Cliftonville v Celtic

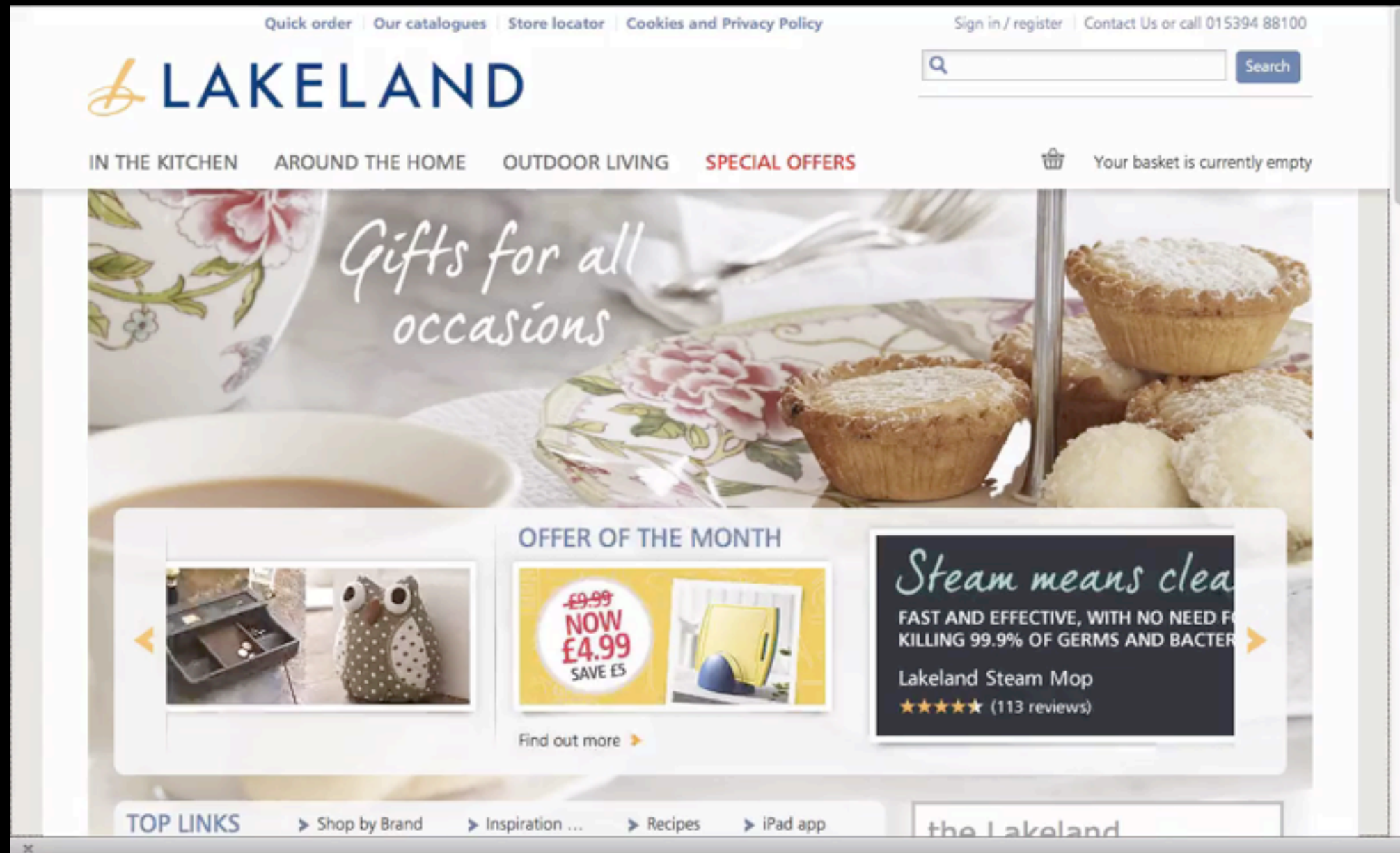
**BBC TWO | FACTUAL**  
The Route Masters: Runnin...  
4. Gateway to London

**BBC RADIO 1 | MUSIC**  
The Radio 1 Breakfast Sho...  
With Daniel Radcliffe

**BBC now** Entertainment News Lifestyle Knowledge Sport



Video of tabbing through the Lakeland homepage.





# Interaction effects

- Linear interaction
- Lots of key-presses
- Can use cntl-f (or cmd-f) to find links

What should we make sure the interface does?

# Interface guidance

- Must be able to use everything (equivalence)
- Must have a visible keyboard-focus
- Include skip links for repeated navigation
- Can tell how to interact with menus/controls
- Sequence should make sense and be consistent
- Navigating past a control doesn't send you to a new page

# Exercise 2:

## Checks at wireframe stage

Logo

[Login to online services](#)

Search...



Who we are

.Uk Domains

Become  
a registrar

Resolving disputes  
& complaints

How to  
Participate

News &  
reports

Latest news

Blogs

Events

Reports & statistics

Service  
announcements

## News & Reports



Twitter



Insight blog

Looking for  
Registrar News ?



• [Login to Registrar resources](#)

Reports &  
statistics



• [Annual reports](#)  
• [DNIR](#)

Lorem Ipsum

Curabitur blandit tempus porttitor. Aenean lacinia bibendum nulla sed consectetur. Nulla vitae elit libero, a pharetra augue.

Media



Events



Charlie



**E-mail**

Microsoft Offic...



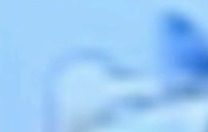
**Internet  
Explorer**



**My  
Docur**



**My Pic**



**My M**

Screen magnification

# Zoom zoom

Two main types:

- Browser-based zoom (120-200%)
- Magnification software (200% - 1600%)



YAHOO!

Search

Sign In Mail

- Mail
- News
- Sports
- Finance
- Weather
- Games
- Groups
- Answers
- Flickr
- Jobs
- Autos
- Shopping
- Travel
- Dating
- More Y! Sites >



## Things rich people do — and don't do — every day

Almost 80% of low-income people say they engage in this common activity, but just 6% of wealthy individuals do. [▶ Their morning routine »](#)

1 - 5 of 95 ▶



All Stories News Entertainment Sports Business More ▾

## Plastic iPhone shell compared to iPhone 5 in new leaked photos

We have seen photos of what are claimed to be plastic housings from Apple's upcoming entry-level iPhone leak a number of times, and now new photos show the case next to an iPhone 5. IOS  
BGR News

## Why Are Walmart Stores Such A Mess?

(Image credit: AFP/Getty Images via @daylife) Over the years I have visited many Walmart stores and have seen some very disorderly stores. But I found a store in total disarray during my visit last  
Forbes

## Trending Now

[▶ Watch the show »](#)

- |                       |                       |
|-----------------------|-----------------------|
| 1 Ric Flair           | 6 Desiree Hartsock    |
| 2 Randy Travis        | 7 T-Model Ford        |
| 3 Regis Philbin       | 8 Trayvon hoodie      |
| 4 Ralph Macchio       | 9 Agnieszka Radwanska |
| 5 Royal baby due date | 10 Chauncey Billups   |

**FIND THE RIGHT BROKER RIGHT NOW.**

Introducing the Broker Center.

[Find the right broker](#)

YAHOO! FINANCE

[Ad Feedback](#)

[AdChoices](#)

Make YAHOO! your homepage

England   
82°F Partly Cloudy



Video comparing zooming with Safari (not so good) and other browsers (good).

Get the new BostonGlobe iPhone app today - enjoy a 1 month FREE trial and stay informed on the go!


BOSTON.COM CARS | JOBS | REAL ESTATE WEDNESDAY, JULY 17, 2013 SUBSCRIBE: DIGITAL | HOME DELIVERY | LOG IN

75° Clear WEATHER | TRAFFIC

# The Boston Globe

Search

NEWS METRO ARTS BUSINESS SPORTS OPINION LIFESTYLE MAGAZINE INSIDERS TODAY'S PAPER MY SAVED



BILL GREENE/GLOBE STAFF/FILE 2011


## For Obamas, Vineyard has enduring attraction

President Obama's nearly annual sojourns on Martha's Vineyard have coincided with his growth as a politician.

## Immigration judges pushing for independence

The bid for independence from the Department of Justice could eventually open immigration court records to the public for the first time in US history.

Ready to Look or Ready to Buy... Visit Us at [NewEnglandMoves.com](http://NewEnglandMoves.com)



Click Here to Learn More. RESIDENTIAL BROKERAGE

# Safari - Zoom

Contract bidder... Edward J. Markey's call to UMass

Latest from the new room

The Boston Globe BostonGlobe.com

Get full access to BostonGlobe.com, just 99¢ for 4 weeks

Expand





#### MOBILISM 2013

PROGRAMME  
WORKSHOPS  
VENUE  
TICKETS  
ATTENDEES  
SPONSORSHIPS  
ABOUT US  
CONTACT



MOBILISM CONFERENCE, 16TH & 17TH OF MAY

*With Martin Kool and Thomas Fuchs*

[Check our programme](#)

#### News

- Finalising our programme, 04-04-2013
- Three speakers and two workshops
- Four days
- 22-01-2013

#### Links

- What can

The third edition of Mobilism will take place on 16th and 17th of May, 2013, in Amsterdam. Just like for the previous two, we'll invite **top speakers** from the web and mobile worlds to educate and entertain you about the mobile web.

We are working on a **nice line-up** featuring well-known and new luminaries of the mobile web. **Ticket sales** have started. The venue will be **the same as in 2012**. We're going to

# Contrast issues





#### MOBILISM 2013

PROGRAMME  
WORKSHOPS  
VENUE  
TICKETS  
ATTENDEES  
SPONSORSHIPS  
ABOUT US  
CONTACT

### News

- [Finalising our programme](#), 04-04-2013
- [Three speakers and two workshops](#), 13-03-2013
- [Four days left for our early-bird](#), 22-01-2013

### Links

- [What can we expect from IE11?](#)



MOBILISM CONFERENCE, 16TH & 17TH OF MAY

*With Martin Kool and Thomas Fuchs*

[Check our programme](#)

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We are working on a [nice line-up](#) featuring well-known and new luminaries of the mobile web. [Ticket sales](#) have started. The venue will be [the same as in 2012](#). We're going to arrange workshops on the day before the conference, Wednesday 15th of May.

[Mobilism 2012](#) was a blast. (So was [2011](#), by the way.) If you don't believe us, take a [look at the videos](#) yourself. We expect to be able to maintain the high standard we set. A [compilation video](#) from last year:



## MOBILISM 2013



## News

- Finalising our programme, 04-04-2013
- Three speakers and two workshops, 13-03-2013
- Four days left for our early-bird, 22-01-2013

## Links

- What can we expect from IE11?



MOBI  
Wi

Colour Contrast Analyser

Options Image Help

Foreground  
Colour select:  Hex: #FCFFF6

Background  
Colour select:  Hex: #F18E00

Algorithm  
☐ Colour brightness/difference ☒ Luminosity

☐ Show contrast result for colour blindness

Result - Luminosity  
Contrast ratio: 2.4:1

Text  
X Fail (AA)  
X Fail (AAA)

Large text  
X Fail (AA)  
X Fail (AAA)

omas Fuchs

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The  
Amst  
mobil

We a  
web.  
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17th of May, 2013, in  
speakers from the web and  
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# Interaction effects

- In a non-responsive design, you get scrolling.  
Lots of scrolling
- Mainly about layout issues/bugs
- Good contrast on text helps

# Mobile vs Desktop zoom

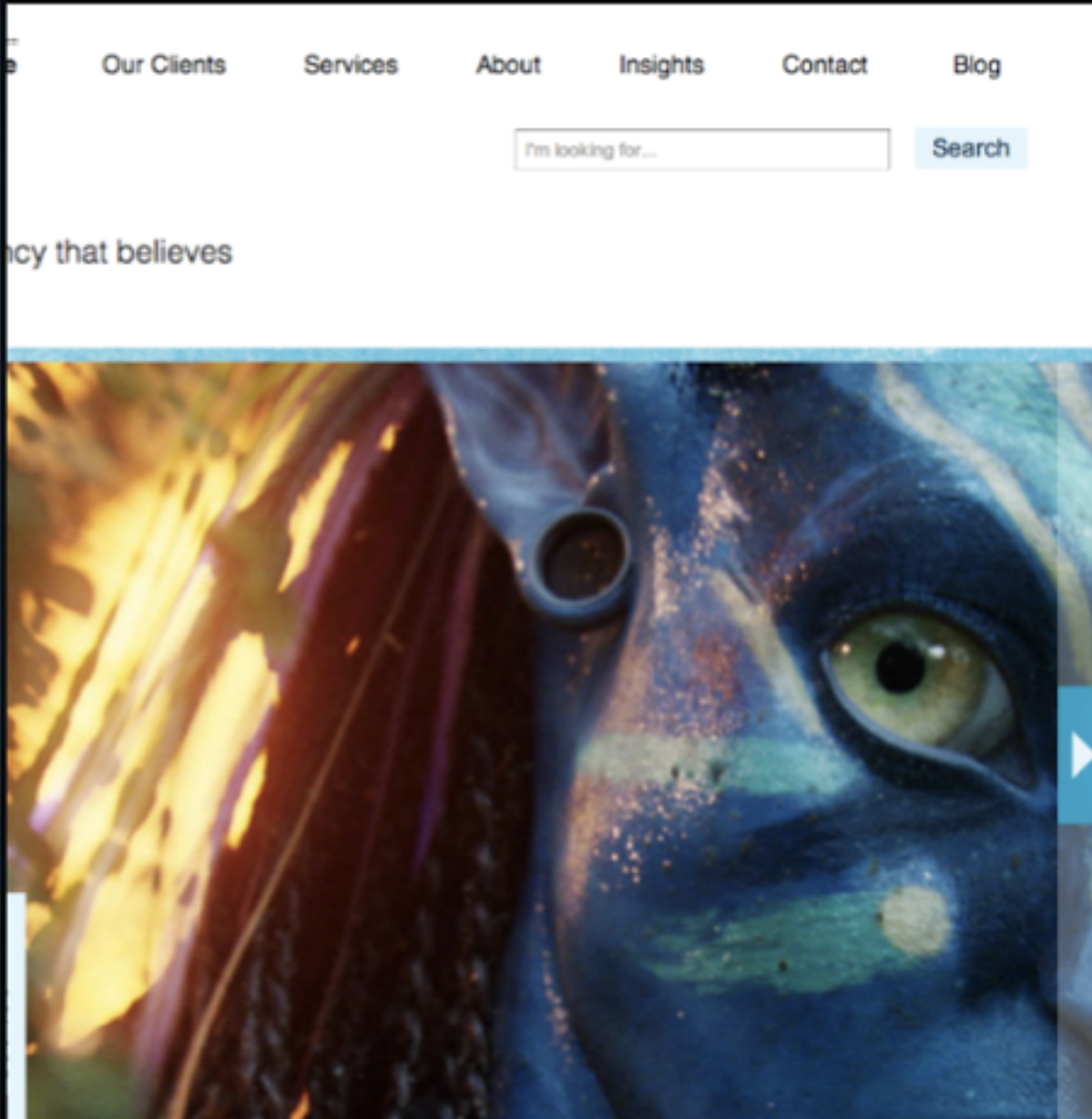
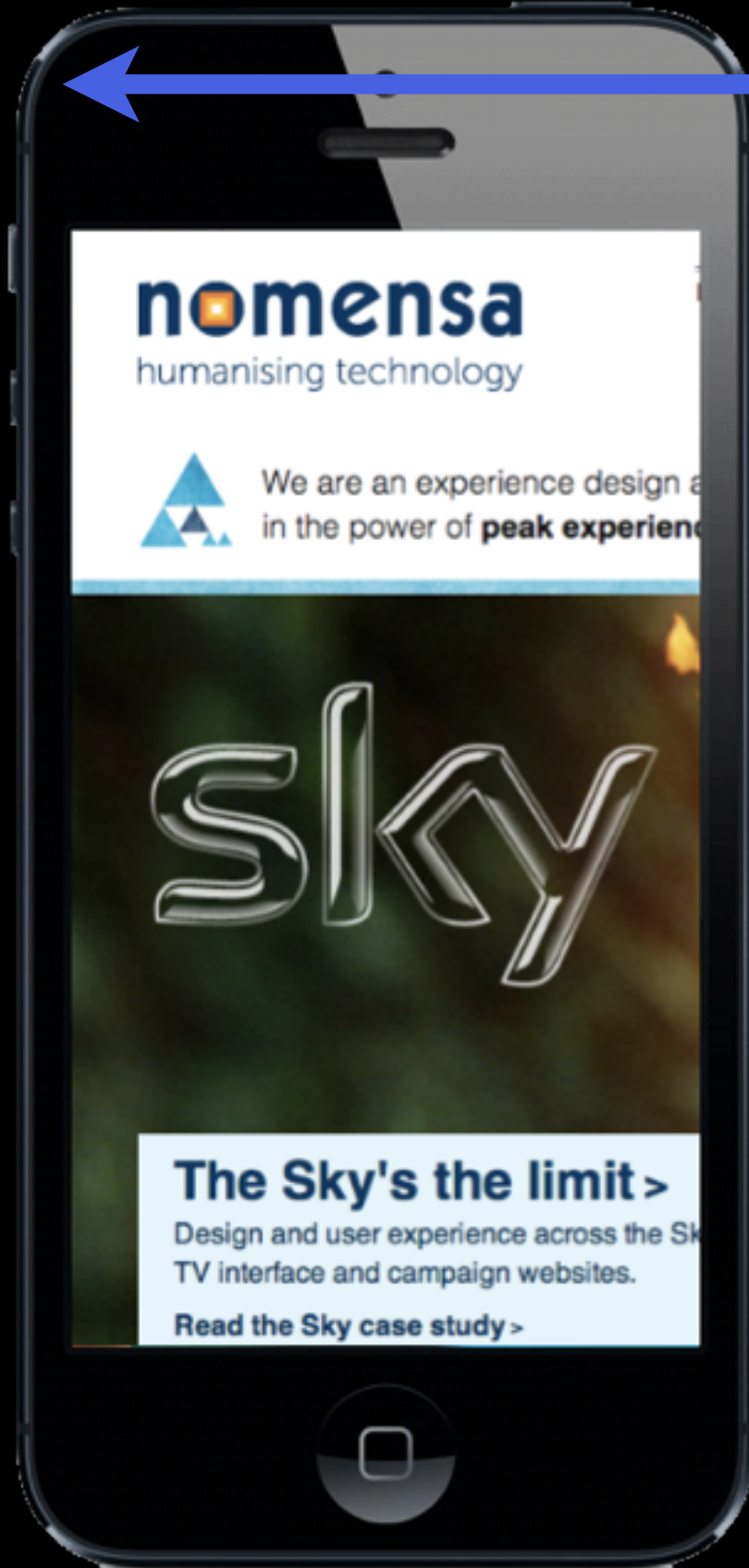
**Desktop zoom:** Expands the content (pixels)

**Mobile zoom:** Expands the view



# Visual viewport

# Document viewport

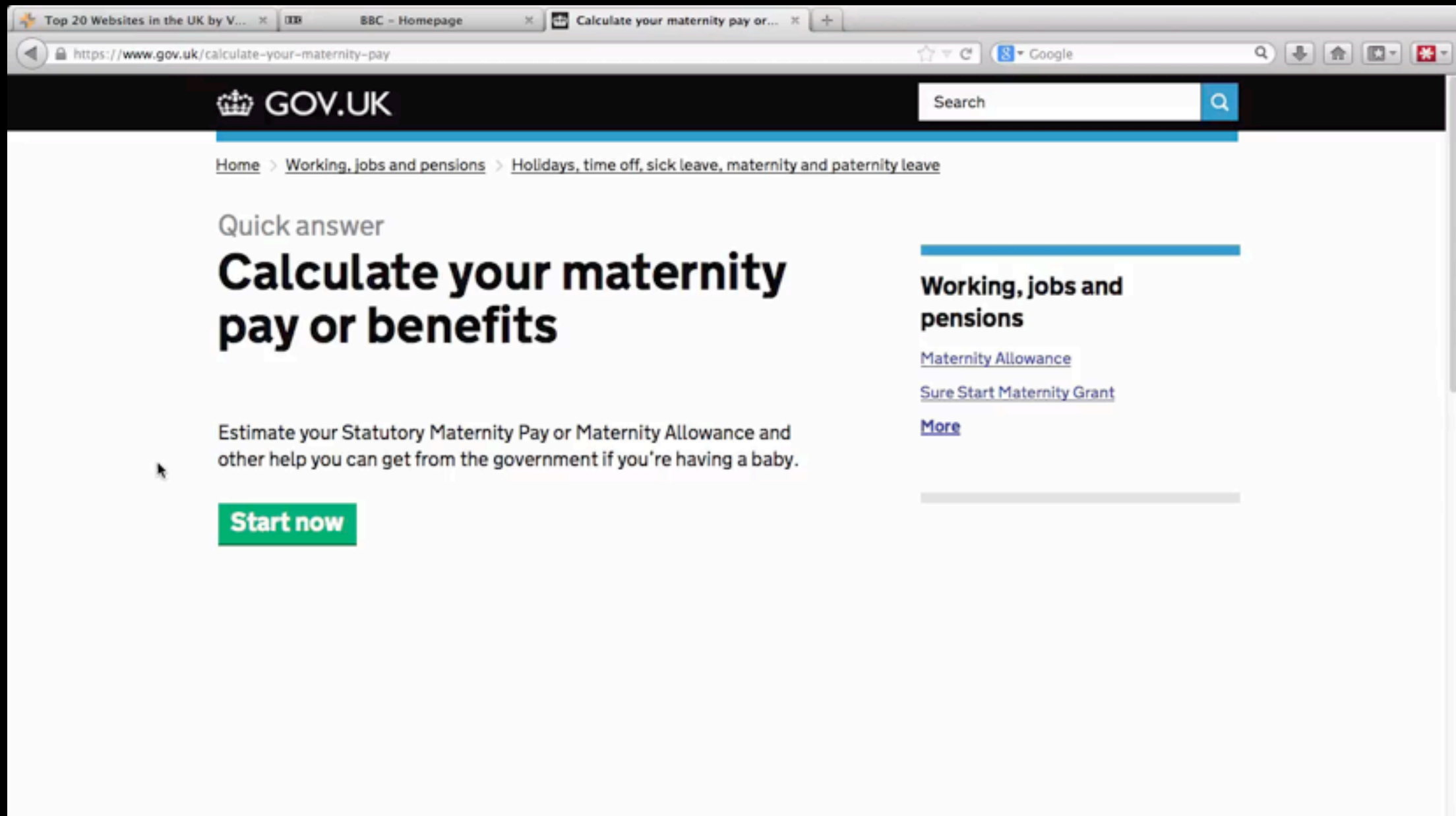


# Try a magnifier (another time)

- This is something you can try, on a desktop or iOS/Windows mobile
- Desktop magnifiers work like mobile zoom

NB: See [design4access.nomensa.com](https://design4access.nomensa.com) for instructions on Windows, OSX and iOS.

Video of using a magnifier on a gov.uk form.



# Interaction effects

- Very 'mouse' driven
- Field of attention small
- Zoom out at the start, zoom in to read



# Interface guidance

- Keep changes close to the user's action
- Test layouts for browser zoom at 200%
- Watch for large areas of white space
- Use text rather than images of text
- Check for contrast & background images

# Deafness & Cognitive

# Intro

- Wide range of cognitive issues
- Second language issues
- Education for deaf children was not good for current mature population

## State of Care accessible homepage

### Introduction



### Putting people at the centre



### Joined-up care



### What we have found



## The Care Quality Commission

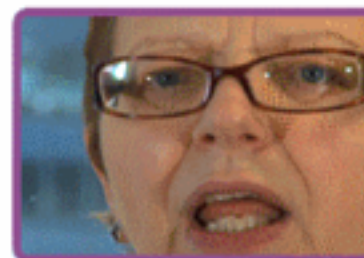


The Care Quality Commission (CQC) makes sure there are good health care and social care services for adults in England.

We check up on services run by the NHS, local councils, private companies and voluntary organisations.

And we speak up for the rights of people kept in care by a law called the Mental Health Act.


When we say social care on these web pages, we mean adult social care.





A welcome message from Cynthia Bower: Chief Executive of the Care Quality Commission



Text Size: **a a a**  
Colours: **a a a a a**

BSL of the summary 

Easy read summary (pdf)   
Large print summary (Word) 

Αναζήτηση

Χρησιμοποιώντας το Yahoo!, συμφωνείτε ότι εμείς και μας **εταίροι** ενδέχεται να ορίσει **τα cookies** για σκοπούς όπως η προσαρμογή περιεχομένου και διαφήμισης. X

ΣΠΙΤΙ  
17 Ιουλίου 2013

YAHOO!  
Yahoo.com

ΕΙΣΟΔΟΣ  
Νέα εδώ; Εγγραφείτε

TACHYDROMEIO  
Ελέγξτε το ηλεκτρονικό ταχυδρο...

## YAHOO! SITES Επεξεργασία

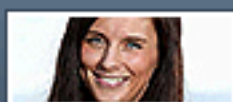
- Ταχυδρομείο
- Ειδήσεις
- Αθλητισμός
- Χρονολόγηση
- Τρόπος ζωής
- Οικονομικών (ΔΕΙΚΤΗΣ FTSE 100 ↑)
- OMG!
- Αυτοκίνητα
- Ταινίες
- Ψώνια
- Παιχνίδια
- Βίντεο
- Αγγελιοφόρος



## Νεότερος νικητής της κλήρωσης βραβείο όλα πέρασε

Κέρδισε όταν ήταν 16 και τώρα έχει μείνει σχεδόν τίποτα - αλλά Carrie Rogers λέει ότι είναι ευτυχισμένος και πάλι. Πού πήγε >>

- Παίξτε παιχνίδια κλήρωσης σε απευθείας σύνδεση
- Ο πιο τυχερός αριθμός;
- 10 μυστικά της λαχειοφόρου αγοράς



Νεότερος τα κέρδη του λότο που πέρασε



Φρικτός βρείτε από Βρετανός



Μοναχικό Nicole μιλάει singledom



Jackman αποκαλύπτει κόλπο τρομάζει

1 από 44

## Τάσεις τώρα

- |   |                                  |
|---|----------------------------------|
| 1. Τρίτη r Heathrow...                        | 6. Κάρτες SIM                    |
| 2. Ινδία σχολείο mea...                       | 7. Wayne Rooney ρούμι...         |
| 3. Cory Monteith au...                        | 8. Οι μαθητές σε να είμαι rap... |
| 4. Ευρυζωνικότητα                             | 9. Βασιλική μωρό                 |
| 5. Ποσοστό πληθωρισμού του Ηνωμένου Βασιλείου | 10. Οδοντιατρική σχέδια          |

Video highlighting that you should check the captions that Youtube automatically applies.





# Interaction effects

- Choosing links that might be right, not knowing
- Getting stuck on literal interpretations
- Looking for help and alternative options

# Interface guidance

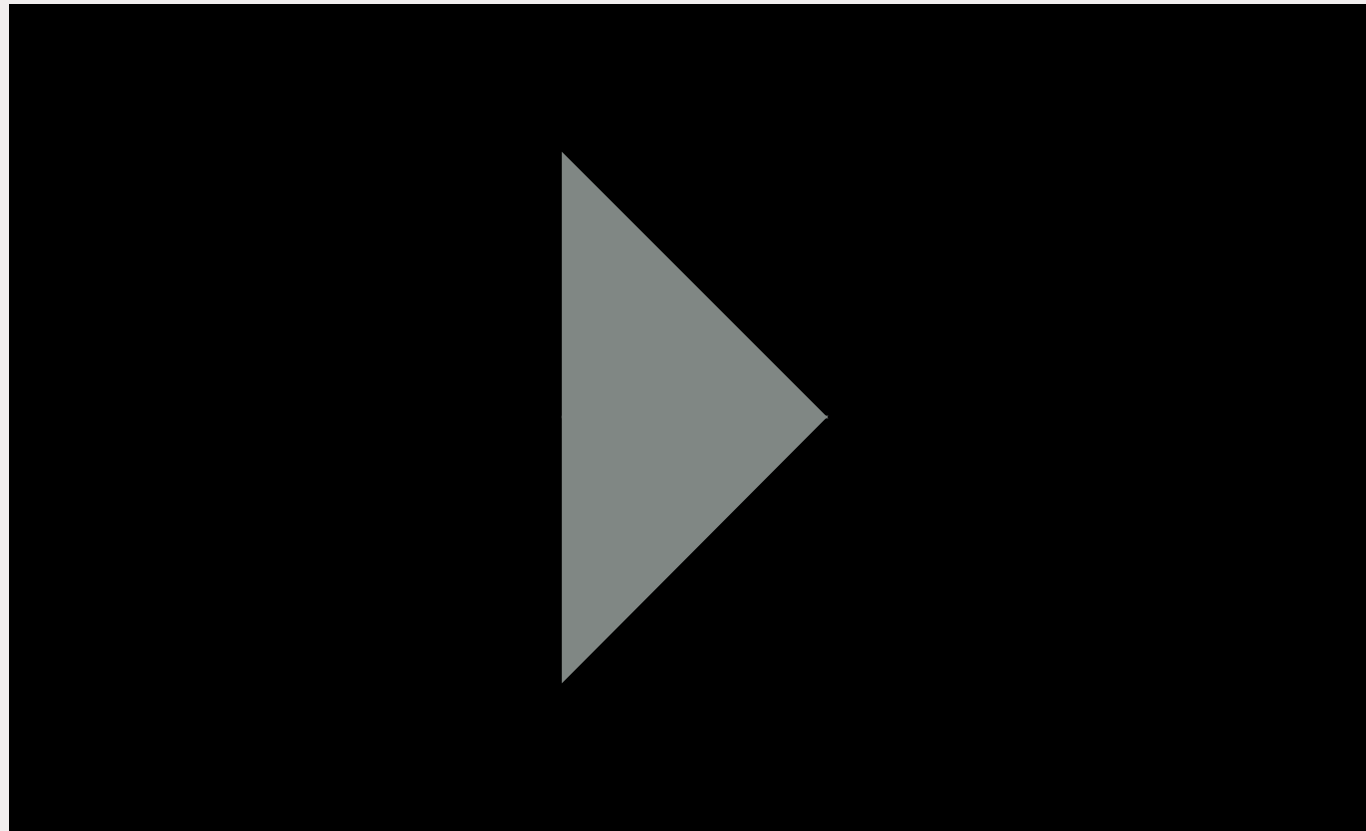
- Plain english (for everyone)
- Simplicity & focus are critical
- Adding relevant images & video useful (visual labelling)
- Clear boundaries, clear hierarchy
- Don't enforce timing
- Flashing/moving objects an issue



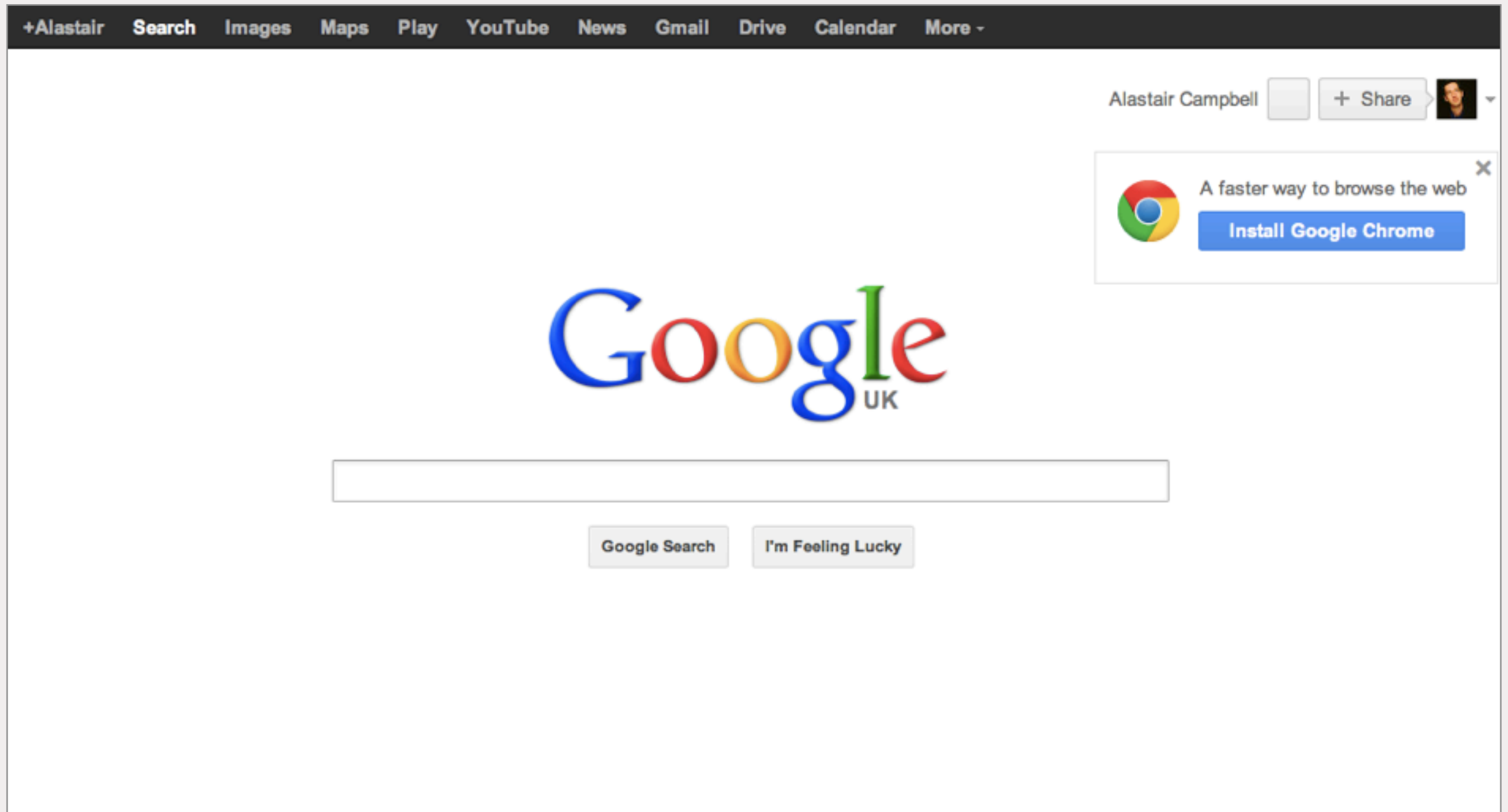


# Screen readers

# What site is this?



# Answer:



# Screen readers (browsers)

Jaws (IE)

VoiceOver / OSX  
(Safari)

NVDA (FF)

Windows eyes

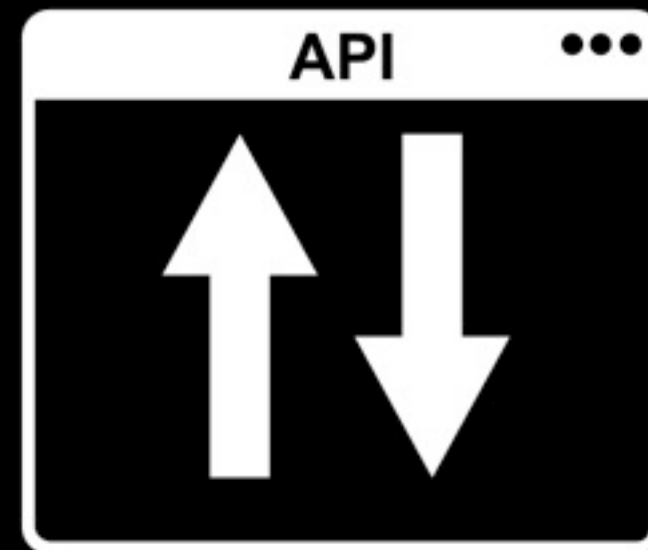
VoiceOver / iOS  
(Safari)

SA to Go

ZoomText

Talkback (Android)

# Accessibility stack







# Sky Accessibility

Change Page Colours:



Search Sky Accessibility...

Search

[Home](#)[What's on TV](#)[Sky TV help](#)[Online help](#)[News & events](#)[FAQs](#)

## Welcome to Sky Accessibility

Helping Sky customers with disabilities to get the most out of our services.



## Sky TV Help

[Subtitles](#)[Audio description](#)[Remote control](#)

Make this website talk:

get [textHELP](#) [BrowseAloud](#)

## Important Updates



There are no updates today....

## TV Pick



VoiceOver on Safari Welcome to Sky Accessibility window Welcome to Sky Accessibility HTML content has keyboard focus

The Sky+ easy grip remote control

# Hidden structure

- The structure of the page (the HTML) is used by screen readers.
  - Headings (levels 1-6), Lists, Tables
  - Landmarks ("ARIA roles")
  - Some HTML5



role="banner"



# Sky Accessibility

Change Page Colours:



Search Sky Accessibility...

Search

role="navigation"

<ul>

[Home](#)

[What's on TV](#)

[Sky TV help](#)

[Online help](#)

[News & events](#)

[FAQs](#)

role="main"

## Welcome to Sky Accessibility

Helping Sky customers with disabilities to get the most out of our services.



## Sky TV Help



Mark Webber won the Monaco GP for the second time in three years

FORUMULA 1 SKY SPORTS TO SHOW ALL 20 LIVE RACES



### Subtitles

Subtitles are the written representation of the dialogue and sound effects, making it possible for deaf and hard of hearing people to enjoy programmes on

### Audio description

Audio description is an additional commentary that describes the action taking place, making it possible for blind and partially sighted people to enjoy

### Remote control

The Sky+ easy grip remote control has all the features of the regular Sky remote control, but it's designed specifically for people with reduced dexterity, and for

Make this website talk:

get [textHELP](#) [BrowseAloud](#)

## Important Updates

There are no updates today....

## TV Pick





# Exercise 3:

## Try a screen reader

- See the hand-out for how to turn VoiceOver on in iOS
- Go to [bbc.co.uk](http://bbc.co.uk) in Safari and *then* turn it on

# Interaction effects

- Linear interaction, line at a time in source order
- Headings, landmarks, find-text to skim
- Can use hidden support text
- Changes in the page can be hidden
- Depends on *learned* keyboard commands

# Interface guidance

- Must have alternatives for non-text items
- Design should be represented in structure & metadata
- Headings, titles & link text should make sense out of context
- Use 'standard' form controls whenever possible
- Audio shouldn't play automatically

# Exercise 4:

## 'Markup' a design

- Mark where each of the following should be applied:
  - Header/banner
  - Nav/navigation
  - Main/main
  - Footer/ContentInfo
  - Search
  - Headings (levels 1-6)
  - Lists (un-ordered)

Logo

Banner

Search  
Login to online services

Search...



Nav



Who we are

.Uk Domains

Become  
a registrar

Resolving disputes  
& complaints

How to  
Participate

News &  
reports

Latest news

Blogs

Events

Reports & statistics

Service  
announcements

# News & Reports

UL



## Lorem Ipsum

Curabitur blandit tempus porttitor. Aenean lacinia bibendum nulla sed consectetur. Nulla vitae elit libero, a pharetra augue. Nulla vitae elit libero, a pharetra augue. Nullam id dolor id nibh ultricies vehicula ut id elit.

UL

Twitter



Insight blog

Looking for  
Registrar News ?



• Login to Registrar resources

Reports &  
statistics



• Annual reports  
• DNIR

Media



Events



## Latest News

H2

**Ullamcorper Pellentesque** | 16/07/2012

Donec sed odio dui. Integer posuere erat a ante venenatis dapibus posuere velit aliquet.

**Ultricies Ligula** | 12/07/2012

Curabitur blandit tempus porttitor. Lorem ipsum dolor sit amet.

UL

## Twitter

H2

**Ullamcorper Pellentesque** | 16/07/2012

Donec sed odio dui. Integer posuere erat a ante venenatis dapibus posuere velit aliquet.

**Ultricies Ligula** | 12/07/2012

Curabitur blandit tempus porttitor. Lorem ipsum dolor sit amet.

UL

# Checking without a screen reader

- Install the web-developer toolbar and:
  - **CSS:** Disable all styles
  - **Images:** Display alt attributes
  - **Outline:** Headings (tick the “Show element names when outlining” option)
  - **Outline:** Custom elements (ul, ol, li, blockquote)
  - **Information:** Display ARIA Roles
  - **Information:** View document outline





# Sky Accessibility

Change Page Colours:



Search Sky Accessibility...

Search

Home

What's on TV

Sky TV help

Online help

News &amp; events

FAQs

## Welcome to Sky Accessibility

Helping Sky customers with disabilities to get the most out of our services.

## Sky TV Help



### Subtitles

Subtitles are the written representation of the dialogue and sound effects, making it possible for deaf and hard of hearing people to enjoy programmes on Sky TV.

[Subtitles](#)

### Audio description

Audio description is an audio commentary that describes action taking place, making it possible for blind and partially sighted people to enjoy programmes on Sky TV.

[Audio description](#)

There are also overviews of accessibility features such as [Sky Talk](#)

[skip to content](#)

&lt;ul&gt;

- [Sky.com Home](#)
- [Find & Watch TV](#)
- [Sky Products](#)
- [Shop](#)
- [My Sky](#)
- [Help & Support](#)

role="banner"

Sky Accessibility

Change Page Colours:

**Currently using Sky brand colours**[Low contrast colours \(Blue text on navy\)](#)[Inverted colours \(white text on black\)](#)[High contrast colours \(Black text on yellow\)](#)[Show Menu](#)

Search: Search Sky Accessibility...

Search

role="navigation"

&lt;ul&gt;

- Home**
- [What's on TV](#)
- [Sky TV help](#)
- [Online help](#)
- [News & events](#)
- [FAQs](#)

role="main"

## Welcome to Sky Accessibility

Helping Sky customers with disabilities to get the most out of our services.

Make this website talk: alt="Download and Install BrowseAloud"

[get textHELP](#) BrowseAloud





And finally

# Final thoughts

- Think about accessibility early, it's a *design* issue
- Think through the 4 interaction styles at each stage (it is not a persona!)
- Include people with disabilities in usability testing, but...
- Balance the results with web standards

# Further resources

[design4access.nomensa.com](http://design4access.nomensa.com)

Questions?