

# Empathy in Accessibility

@abbott567



**Craig Abbott**  
**@abbott567**



Head of Accessibility at **@DWPDigital**.  
Cat botherer. Code writer.

Newcastle upon Tyne

**335** Following    **6,388** Followers

I don't have a disability... **yet**

The prevalence of disability **rises with age**

**6%** of children

**16%** of working age adults

**45%** of adults over State Pension age

People living with a disability are far  
**more common** than you might have  
realised

*Roughly*

**11.9 million adults in the UK  
are living with a disability**

**1 in 5** people or **20%**

In 2017, **only 22%** of adults  
living with a disability said they  
had **never used the internet**

About **2.6 million** people

**9.3 million people in the UK alone**  
are living **with a disability** and  
**browsing the internet**

When we think of a **disability**, we often think **'wheelchair'**. But there are so many that are less obvious. And this can make us **ignorant**.



**DISABLED  
PARKING**







Disabilities and impairments are  
**not** the same

# Impairment:

An impairment is medical. It's the condition or symptoms that person experiences.

eg: low vision or blindness

# Disability

When a person finds it difficult to perform everyday tasks to a level that is considered normal for most people.

An impairment doesn't always  
mean a person considers  
themselves disabled.

***!important***

*Example 1*

Imagine you are a wheelchair user, and you want to get a book from the library...



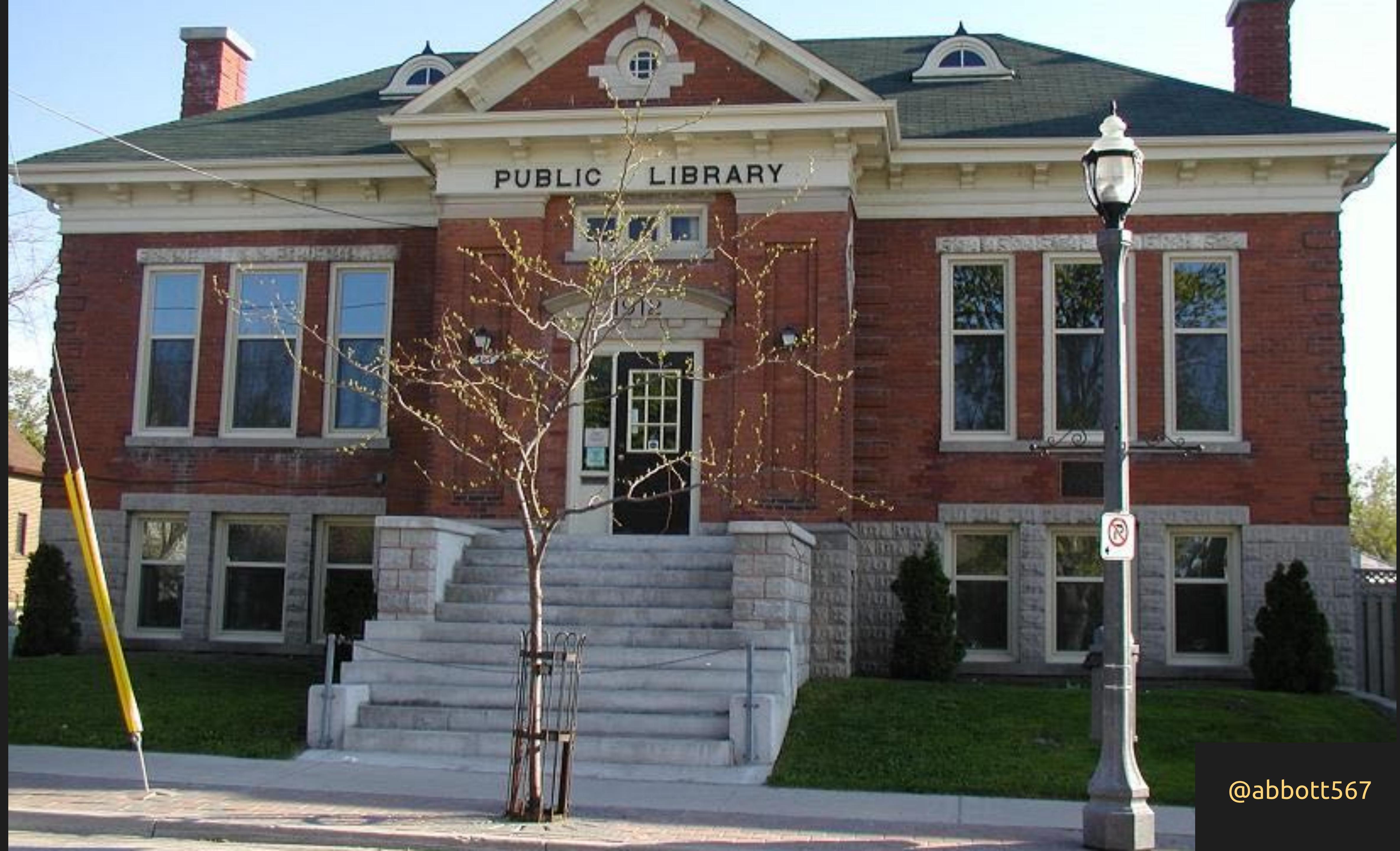
@abbott567



@abbott567



@abbott567



@abbott567



@abbott567

People are **not** always disabled by  
their impairments, they are disabled  
by **poorly designed** environments

An environment might not always  
be a physical space. It can be digital.

## *Example 2*

Imagine you're colour blind and you want to check how well a team is playing before placing a bet...

# Premier League Table

— Win — Draw — Loss

Pos	Team	P	W	D	L	F	A	GD	Pts	Last 5 games
1	— Manchester City	38	32	4	2	106	27	79	100	— — — — —
2	— Manchester United	38	25	6	7	68	28	40	81	— — — — —
3	— Tottenham Hotspur	38	23	8	7	74	36	38	77	— — — — —
4	— Liverpool	38	21	12	5	84	38	46	75	— — — — —
5	— Chelsea	38	21	7	10	62	38	24	70	— — — — —
6	— Arsenal	38	19	6	13	74	51	23	63	— — — — —
7	— Burnley	38	14	12	12	36	39	-3	54	— — — — —
8	— Everton	38	13	10	15	44	58	-14	49	— — — — —
9	— Leicester City	38	12	11	15	56	60	-4	47	— — — — —
10	— Newcastle United	38	12	8	18	39	47	-8	44	— — — — —
11	— Crystal Palace	38	11	11	16	45	55	-10	44	— — — — —
12	— AFC Bournemouth	38	11	11	16	45	61	-16	44	— — — — —
13	— West Ham United	38	10	12	16	48	68	-20	42	— — — — —
14	— Watford	38	11	8	19	44	64	-20	41	— — — — —
15	— Brighton & Hove Albion	38	9	13	16	34	54	-20	40	— — — — —
16	— Huddersfield Town	38	9	10	19	28	58	-30	37	— — — — —

@abbott567

— Win — Draw — Loss

GD	Pts	Last 5 games	Pos	Team
79	<b>100</b>	— — — — —	1	— Manchester City
40	<b>81</b>	— — — — —	2	— Manchester United
38	<b>77</b>	— — — — —	3	— Tottenham Hotspur
46	<b>75</b>	— — — — —	4	— Liverpool
24	<b>70</b>	— — — — —	5	— Chelsea

— Win — Draw — Loss

A	GD	Pts	Last 5 games	Pos	Team
27	79	<b>100</b>	— — — — —	1	<b>Manchester City</b>
28	40	<b>81</b>	— — — — —	2	<b>Manchester United</b>
36	38	<b>77</b>	— — — — —	3	<b>Tottenham Hotspur</b>
38	46	<b>75</b>	— — — — —	4	<b>Liverpool</b>
38	24	<b>70</b>	— — — — —	5	<b>Chelsea</b>
51	23	<b>63</b>	— — — — —	6	<b>Arsenal</b>



# SPORT

[Home](#) [Football](#) [Formula 1](#) | [Cricket](#) | [Rugby U](#) | [Rugby L](#) | [Tennis](#) | [Golf](#) | [Athletics](#) | [FIFA World Cup](#) | [My Sport](#)[≡ All Sport](#)[Premier League](#) > [Scores & Fixtures](#) | [Table](#) | [Top Scorers](#) | [Predictor](#) | [Super Movers](#)

## Premier League Table



		Team	Played	Won	Drawn	Lost	For	Against	GD	Points	Form
1	—	Manchester City	38	32	4	2	106	27	79	100	W W D W W
2	—	Manchester United	38	25	6	7	68	28	40	81	W W L D W
3	—	Tottenham Hotspur	38	23	8	7	74	36	38	77	D W L W W
4	—	Liverpool	38	21	12	5	84	38	46	75	W D D L W
5	—	Chelsea	38	21	7	10	62	38	24	70	W W W D L
6	—	Arsenal	38	19	6	13	74	51	23	63	W L W L W
7	—	Burnley	38	14	12	12	36	39	-3	54	L D D L L
8	—	Everton	38	13	10	15	44	58	-14	49	D W W D
9	—	Leicester City	38	12	11	15	56	60	-4	47	D L L W

@abbott567

Google

Secure https://www.google.com

Protanopia

Gmail Images

Other Bookmarks

Google

Google Search I'm Feeling Lucky

New! Try the reimaged Google News

Google x

Secure https://www.google.com

Apps NJ R B GOV

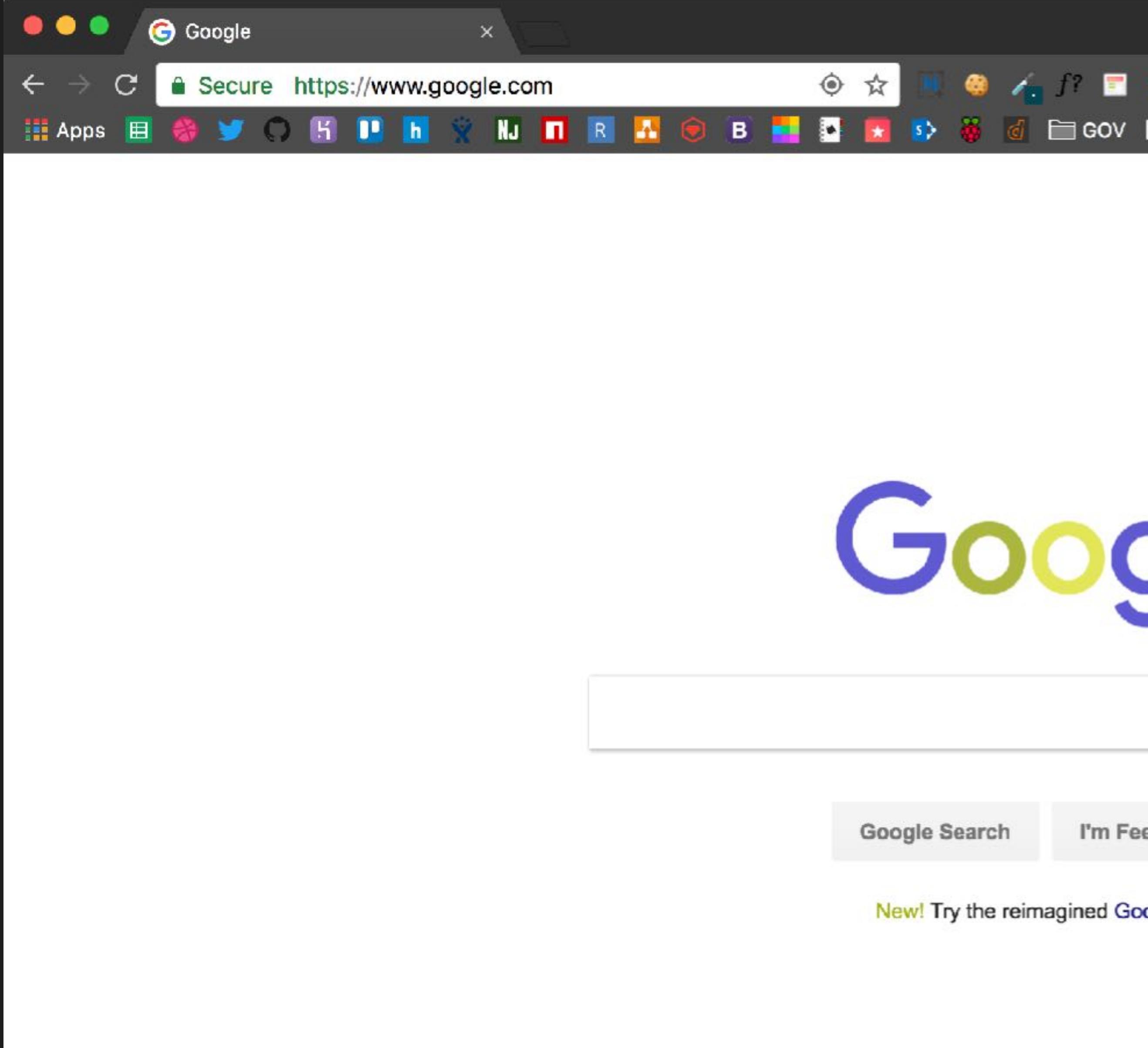
Tunnel Toby  
Simulate partial vision loss on your screen. Start

Peripheral Pierre  
Experience loss of central vision. Start

Color Carl  
Manipulate colors with different filters. Stop

About 8% men and about 0.5% women have a color vision deficiency.

- Greyscale (1 in 30 000)
- Green weak (1 in 20 men, 1 in 1000 women)
- Red/green (1 in 100 men, 1 in 300 women)
- Blue/yellow (1 in 1 000)



Custom...

- Working CMYK
- Working Cyan Plate
- Working Magenta Plate
- Working Yellow Plate
- Working Black Plate
- Working CMY Plates

- Legacy Macintosh RGB (Gamma 1.8)
- Internet Standard RGB (sRGB)
- Monitor RGB

✓ Color Blindness - Protanopia-type  
Color Blindness - Deuteranopia-type

Proof Setup

- Proof Colors
- Gamut Warning
- Pixel Aspect Ratio
- Pixel Aspect Ratio Correction
- 32-bit Preview Options...

- Zoom In
- Zoom Out
- Fit on Screen
- 100%
- 200%
- Print Size

Screen Mode

- Extras
- Show

- Rulers

- Snap
- Snap To

- Lock Guides
- Clear Guides
- New Guide...

- Lock Slices
- Clear Slices
- Enter Full Screen

Essentials

Color Swatches

Adjustments Styles

Add an adjustment

Layers Channels Paths

Normal Opacity: 100%

Lock: Fill: 100%

When using colour,  
**contrast** is important

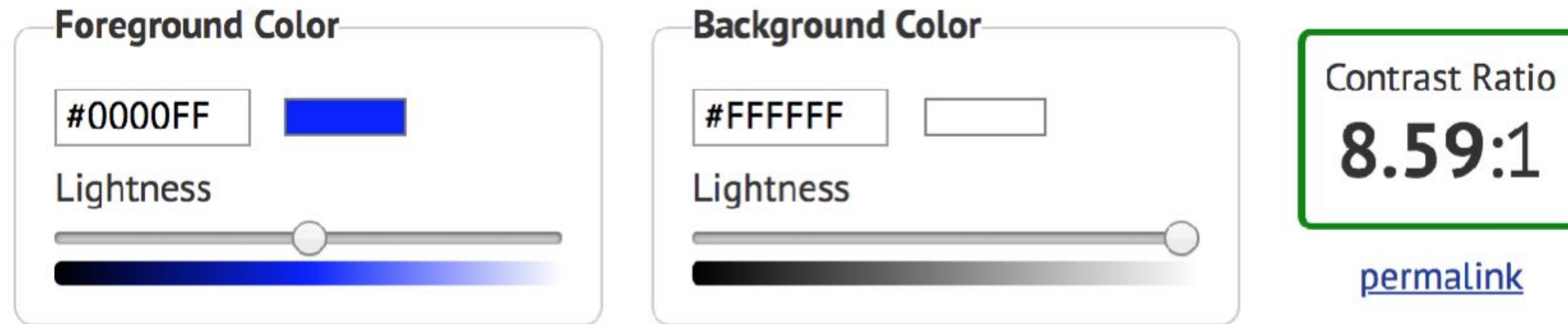


**People with dyslexia often  
prefer soft contrasts**



# Color Contrast Checker

[Home](#) > [Resources](#) > Color Contrast Checker



## Normal Text

WCAG AA: **Pass**  
WCAG AAA: **Pass**

The five boxing wizards jump quickly.

## Large Text

WCAG AA: **Pass**  
WCAG AAA: **Pass**

The five boxing wizards jump quickly.



<https://itunes.apple.com/gb/app/contrast-color-accessibility/id1254981365?mt=12>

@abbott567

Accessibility should be designed  
**from the start**, not an afterthought.



WHEELCHAIR RAMP  
AVAILABLE

PLEASE ASK AT COUNTER



@abbott567



@abbott567

Even if we are thinking about  
accessibility, implementing it  
without talking to any users  
will be **disastrous**.



@abbott567



@abbott567

Designers don't usually make things  
inaccessible **on purpose**. It's just a lack  
of awareness or foresight.



Photo credit: Katy Arnold, Home Office Digital

@abbott567

Sometimes we try to make things  
better and we **make things worse**

## **What is your date of birth?**

For example, 31 3 1980

Day      Month    Year

## **What is your date of birth?**

For example, 31 3 1980

Day      Month    Year

**What is your date of birth?**

For example, 31 3 1980

**Enter a valid month**

Day      Month      Year

```
if (month === 'september') {  
    month = 9;  
}
```



# DRAGON

NATURALLY SPEAKING

@abbott567



@abbott567



```
<input type="text" />  
<input type="number" />
```

@abbott567

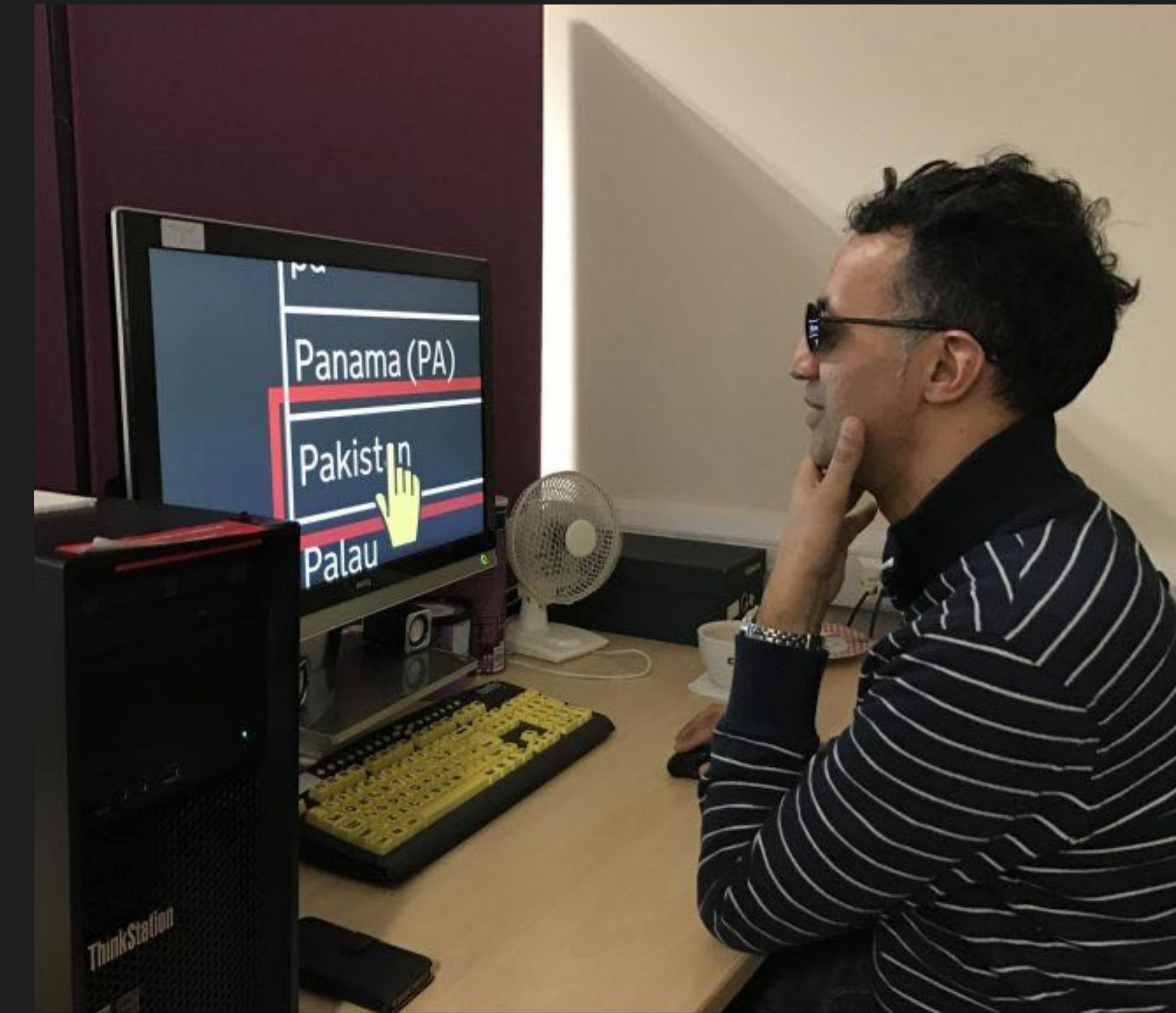
## **What is your date of birth?**

For example, 31 3 1980

Day      Month    Year



It's **important**  
to test your  
product with  
people who use  
assistive  
technology.



Learn how to use your device's  
own assistive technology

@abbott567



## VoiceOver key commands

Action	Command
Read from cursor point to the bottom of the page	VO + a
Move to next focusable element	Tab
Move to next landmark	N/A
Move to next heading	VO + Command + h
Move to next list	VO + Command + x
Move to next graphic	VO + Command + g
Move to next form field	VO + Command + j
Move to next table	VO + Command + t
Navigate table content	VO + up/down/left/right arrow keys
Show all headings, links, landmarks (and other elements) on the <a href="#">rotor</a>	VO + u (then left/right/up/down cursor keys)
Stop VoiceOver talking	Control



## NVDA key commands

Action	Command
Read from cursor point to the bottom of the page	NVDA key + Numpad 2
Move to next focusable element	Tab
Move to next landmark	d
Move to next heading	h
Move to next list	l
Move to next graphic	g
Move to next form field	f
Move to next table	t
Navigate table content	Control + Alt + up/down/left/right arrow keys
Show list of all headings, landmarks or links	NVDA key + f7
Stop NVDA talking	Control
Toggle <a href="#">browse mode</a> on/off	NVDA key + Space
Refresh virtual buffer	NVDA key + f5



## Accessibility

Search



### Captions

Hearing



### Audio

Interacting



### Dictation



### Keyboard



### Mouse & Trackpad



### Switch Control



### Dwell Control

Show Accessibility status in menu bar

Dictation Commands allow you to edit text and interact with your computer by speaking to it.

[Dictation Commands...](#)

Use dictation commands even when you're not dictating text by saying the keyword phrase before the command name.

Enable the dictation keyword phrase:

Computer

Play sound when command is recognized

Mute audio output while dictating



[Control Panel Home](#)[Advanced speech options](#)[Text to Speech](#)

## Configure your Speech Recognition experience

[Start Speech Recognition](#)

Start using your voice to control your computer.

[Set up microphone](#)

Set up your computer to work properly with Speech Recognition.

[Take Speech Tutorial](#)

Learn to use your computer with speech. Learn basic commands and dictation.

[Train your computer to better understand you](#)

Read text to your computer to improve your computer's ability to understand your voice. Doing this isn't necessary, but can help improve dictation accuracy.

[Open the Speech Reference Card](#)

View and print a list of common commands to keep with you so you always know what to say.

### See also

[Ease of Access](#)[Audio Devices](#)



*write less, do more.*



@abbott567

Chrome File Edit View History Bookmarks People Window Help

Unfinished claim for David Jon x BPDTS LIMITED - Overview x Access To Work - Staff Access x Task list x Craig

localhost:3000/claim-capture-list/version-5/task-list/1

Start a new claim Find a claim

DWP BSP Manager

David Jones

**AA123456X**

UNFINISHED

1 week since date of claim

30 January 2018

visited, link, Find a claim

Claim history

- Date of claim entered by John Doe 6 January 2018
- Partner details entered by John Doe 6 January 2018
- Claimant details entered by John Doe 6 January 2018
- Claim started by John Doe 6 January 2018

localhost:3000/claim-capture-list/version-5/ma...-claim

Screen Shot

Chrome File Edit View History Bookmarks People Window Help

Unfinished claim for David Jon x BPDTS LIMITED - Overview x Access To Work - Staff Access x Task list x Craig

localhost:3000/claim-capture-list/version-9/task-list/1

Start a new claim Find a claim

DWP BSP Manager

David Jones  
**AA123456X**  
UNFINISHED

**Claim history**

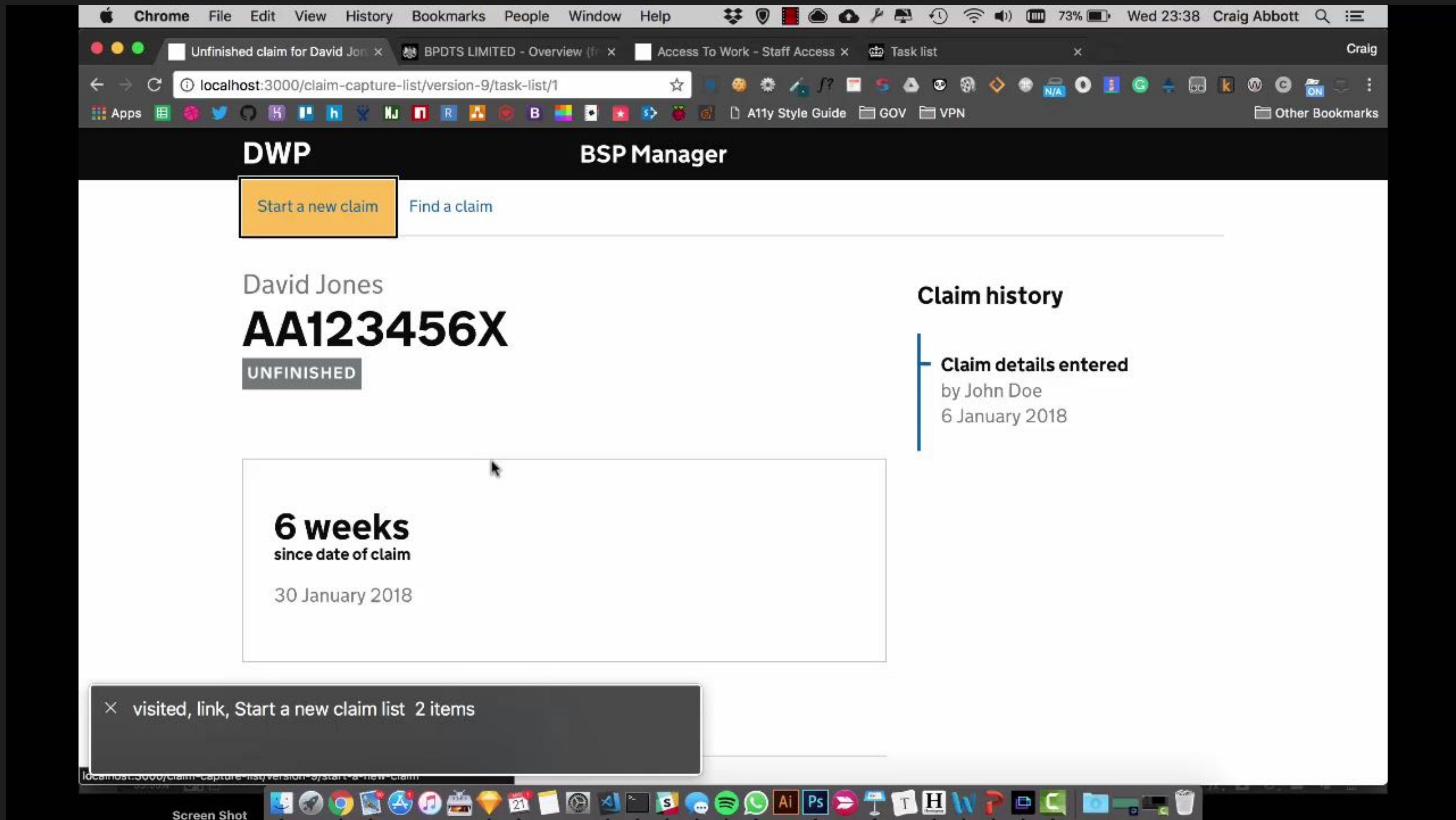
**Claim details entered**  
by John Doe  
6 January 2018

**6 weeks**  
since date of claim  
30 January 2018

visited, link, Start a new claim list 2 items

localhost:3000/claim-capture-list/version-9/start-a-new-claim

Screen Shot



Not everyone who uses a screen reader is blind. So it's **important** to test with a range of people.

Research regularly with users on their  
**own** devices in their **own** environment.

Getting people onboard is hard

@abbott567

Try empathy building exercises  
with your team.

	Permanent	Temporary	Situational		Permanent	Temporary	Situational
Touch				Hear			
See				Speak			
One arm				Deaf			
Arm injury				Ear infection			Bartender
New parent				Non-verbal			
Blind				Laryngitis			Heavy accent
Cataract				Non-verbal			
Distracted driver							

Lip reading is **hard**

@abbott567

I CAN'T HEAR  
YOU COVER  
MOUTH



I CAN'T  
HEAR YOU  
IF YOU DON'T...  
FACE ME.

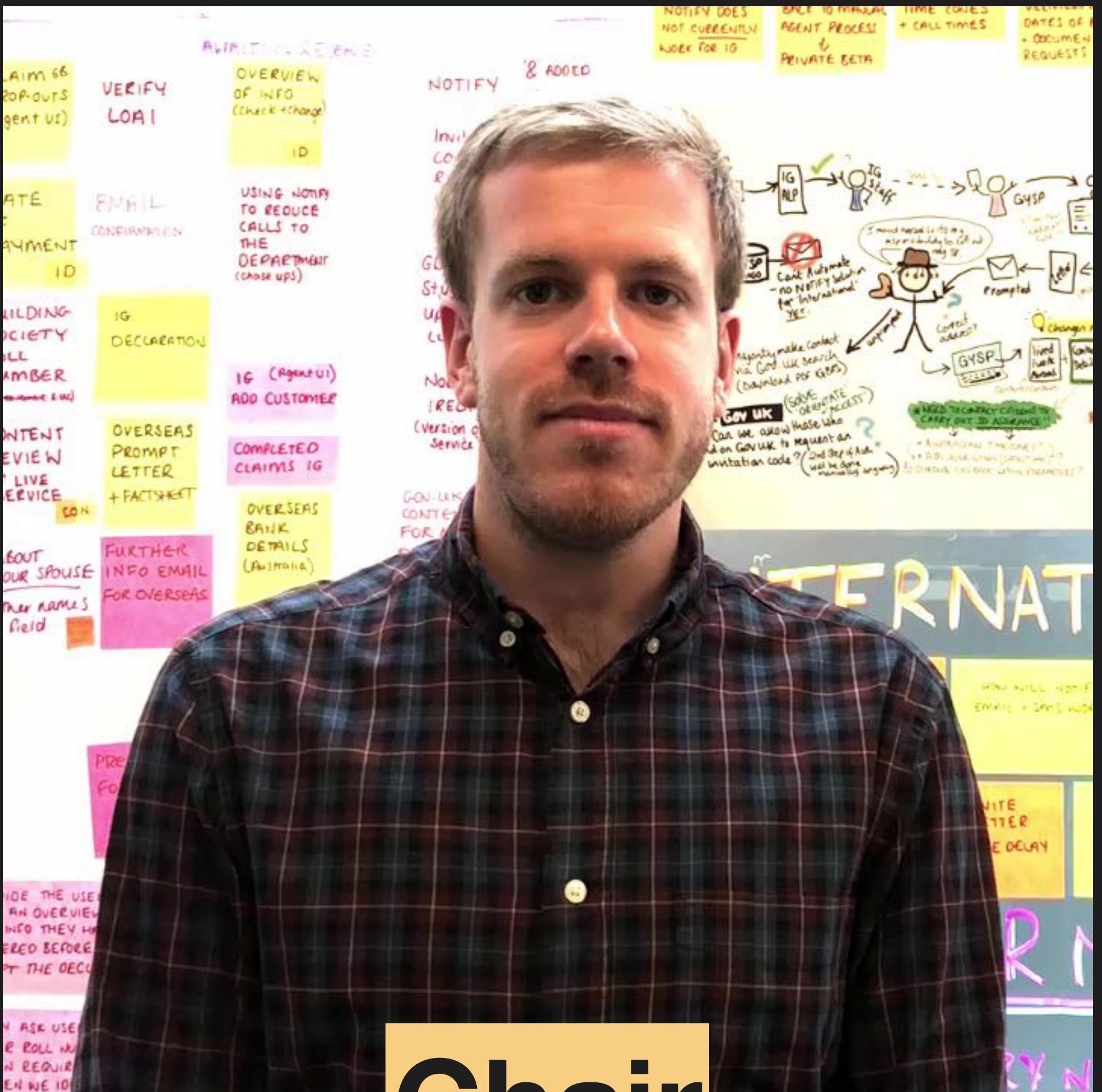


I CAN'T HEAR YOU  
IF YOU MIMBLE

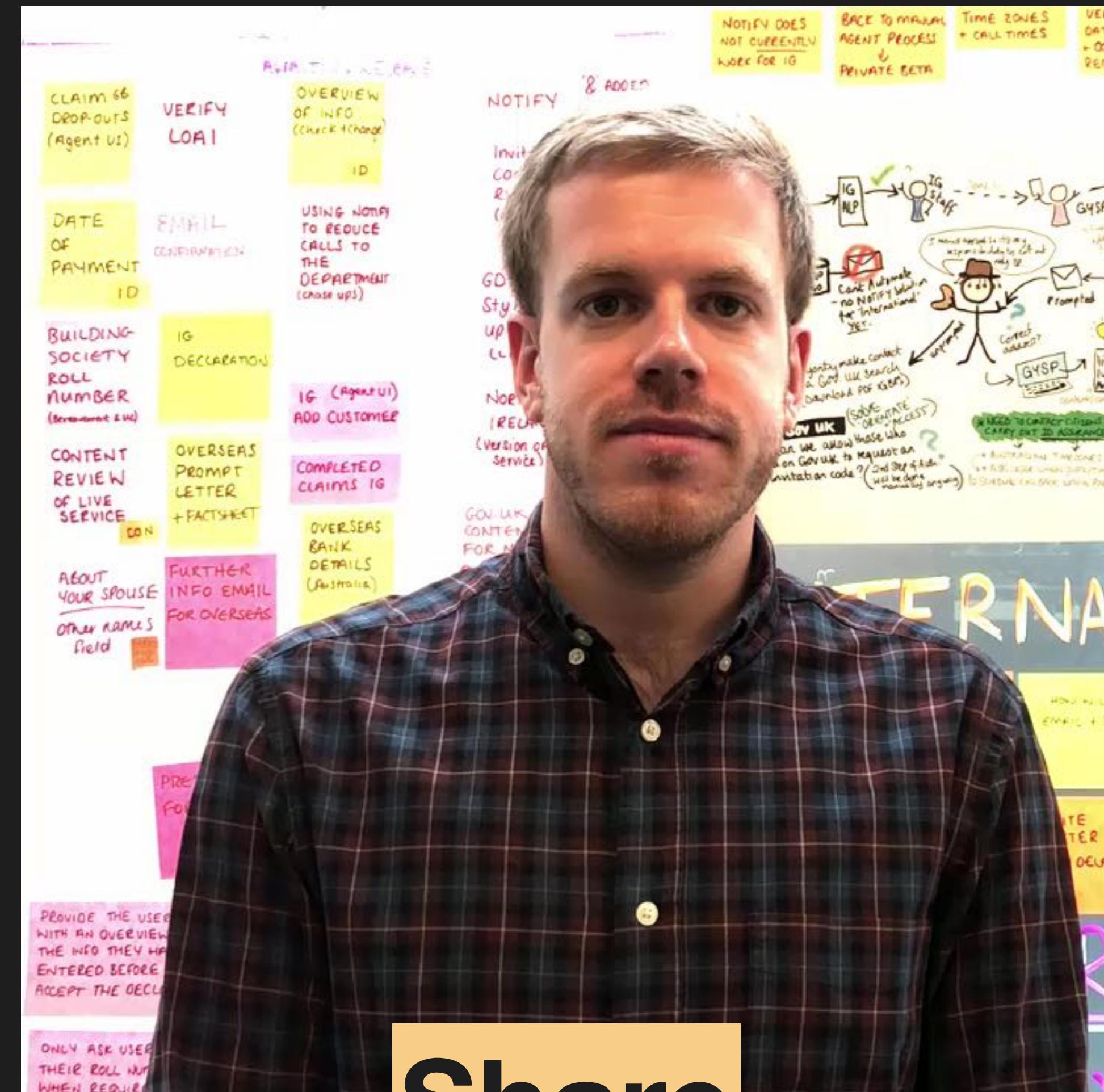


SPEAK  
ONE AT A TIME  
SPEAK  
ONE AT A TIME  
ACTIVATE  
AT A TIME  
ACTIVATE  
AT A TIME





# Chair



# Share

@malcolmcavanin

@abbott567



# Talent



# Salad

@beesarahlee

@abbott567



Colourful



I love you

@jamesgordon1

@abbott567



<https://vinesimspecs.com/>

@abbott567

I carry you  
in my heart)

where you go

I carry you  
in my heart)

where you go

me(i carry it in  
no where)

done)

is your doing  
i fear

no fate(for you or  
no fate(for bea  
the world,my true)  
always meant  
sing is you

here is the root of secret nobody  
(here is the root of secret nobody  
and the sky of the sky of secret nobody  
higher than the soul of secret nobody  
is the wonder that keeping the secret nobody)

## Retinitis pigmentosa (tunnel vision)

## Macular Degeneration



@abbott567

**Unplug** the mouse and have  
people try and do an everyday  
online task.

Play a video with the  
**screen turned off**



@abbott567

\* untitled

The screenshot shows the Aegisub subtitle editor interface. At the top is a toolbar with various icons for file operations (New, Open, Save, Import, Export, Find, Replace, etc.) and project management. Below the toolbar is a preview window showing a video frame of a woman in a suit speaking. A black subtitle box is overlaid on the video, containing the text "then, is the solution? Well, putting greenery on the outside of buildings is". To the right of the preview is the main editing area. At the top of this area is a row of buttons: Comment (unchecked), Default (selected), Edit, Actor, Effect, and a frame counter (61). Below these are two rows of timecode inputs: 0, 0:00:05.00, 0:00:07.00, 0:00:02.00, 0, 0, 0. Underneath these are several text style buttons: Bold (B), Italic (I), Underline (U), Strikethrough (S), Italic + Strikethrough (fn), AB (red), AB (red), AB (red), AB (red), and a checkmark icon. Below these buttons are three radio buttons: Time (selected), Frame, and Show Orig. The main text area contains the subtitle text. At the bottom left is a timeline with a playhead at 0:00:05.000. Below the timeline are controls for playback (Play/Pause, Stop, Auto) and a zoom dropdown set to 50%. At the very bottom is a table showing the subtitle entries:

#	Start	End	CPS	Style	Text
1	0:00:00.00	0:00:05.00	7	Default	So, the problem is clear, too much pollution. What,
2	0:00:05.00	0:00:07.00	30	Default	then, is the solution? Well, putting greenery on the outside of buildings is



\*

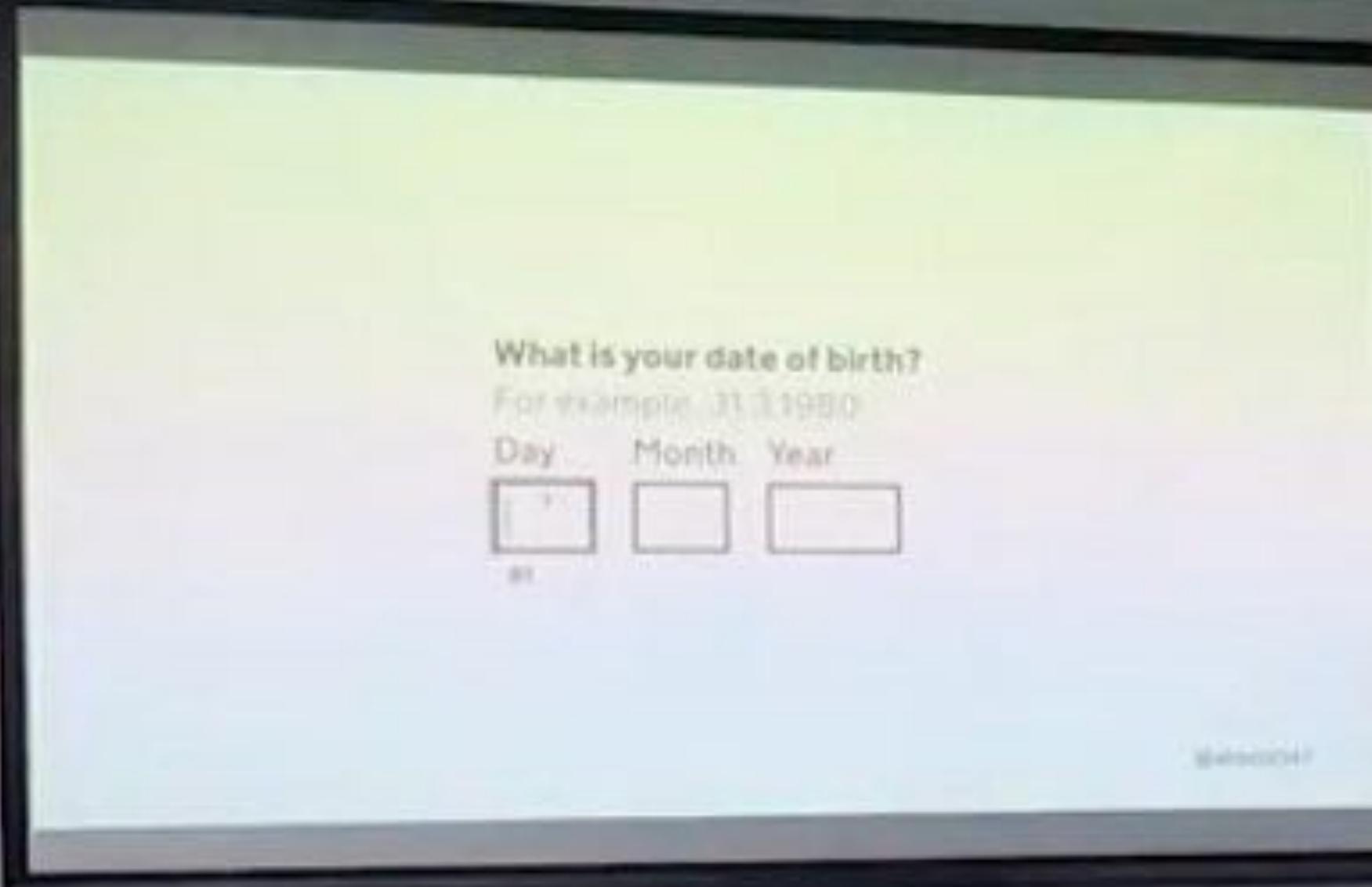


\* Kind of...

@abbott567



@abbott567



Look D at Baia three breasts her name

@abbott567

At the **very least**, include a  
**transcript** of the video. This can  
just be a text file or a HTML page  
that somebody can read.

# Designing for users of screen readers

## Do...

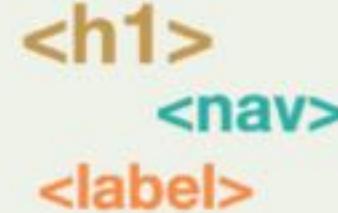
describe images and provide transcripts for video



follow a linear logical layout



structure content using HTML5



build for keyboard use only



write descriptive links and headings

Contact us

## Don't...

only show information in an image or video



spread content all over a page



rely on text size and placement for structure

36pt, bold Header

force mouse or screen use



write uninformative links and headings

Click here

# Designing for users with low vision

## Do...

use good colour contrasts and a readable font size



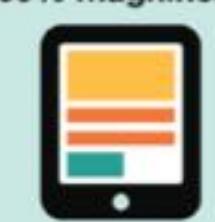
publish all information on web pages



use a combination of colour, shapes and text

Start

200% magnification



follow a linear, logical layout

## Don't...

use low colour contrasts and small font size



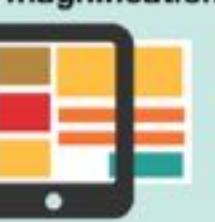
bury information in downloads



only use colour to convey meaning



200% magnification



spread content all over a page

put buttons and notifications in context



separate actions from their context



Submit

# Designing for users with dyslexia

## Do...

use images and diagrams to support text



align text to the left and keep a consistent layout



consider producing materials in other formats (for example audio or video)



keep content short, clear and simple



let users change the contrast between background and text



## Don't...

use large blocks of heavy text



underline words, use italics or write in capitals

DON'T DO THIS



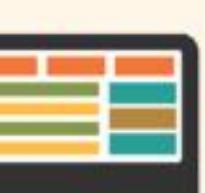
force users to remember things from previous pages - give reminders and prompts



rely on accurate spelling - use autocorrect or provide suggestions



put too much information in one place



# Designing for users on the autistic spectrum

---



**Do...**

write in  
plain language

**Do this**

**Don't...**

use figures of  
speech and idioms



RECIPIENT NAME

CHANGE

Please enter a recipient name

YOUR MOBILE (in case we need to contact you)

Oops, you forgot to pop in your number! Don't be shy.

RECIPIENT ADDRESS

Start typing your UK delivery postcode

D'oh! We need this to know where Enter manually  
we're going!

Please enter a recipient name

YOUR MOBILE (in case we need to contact you)

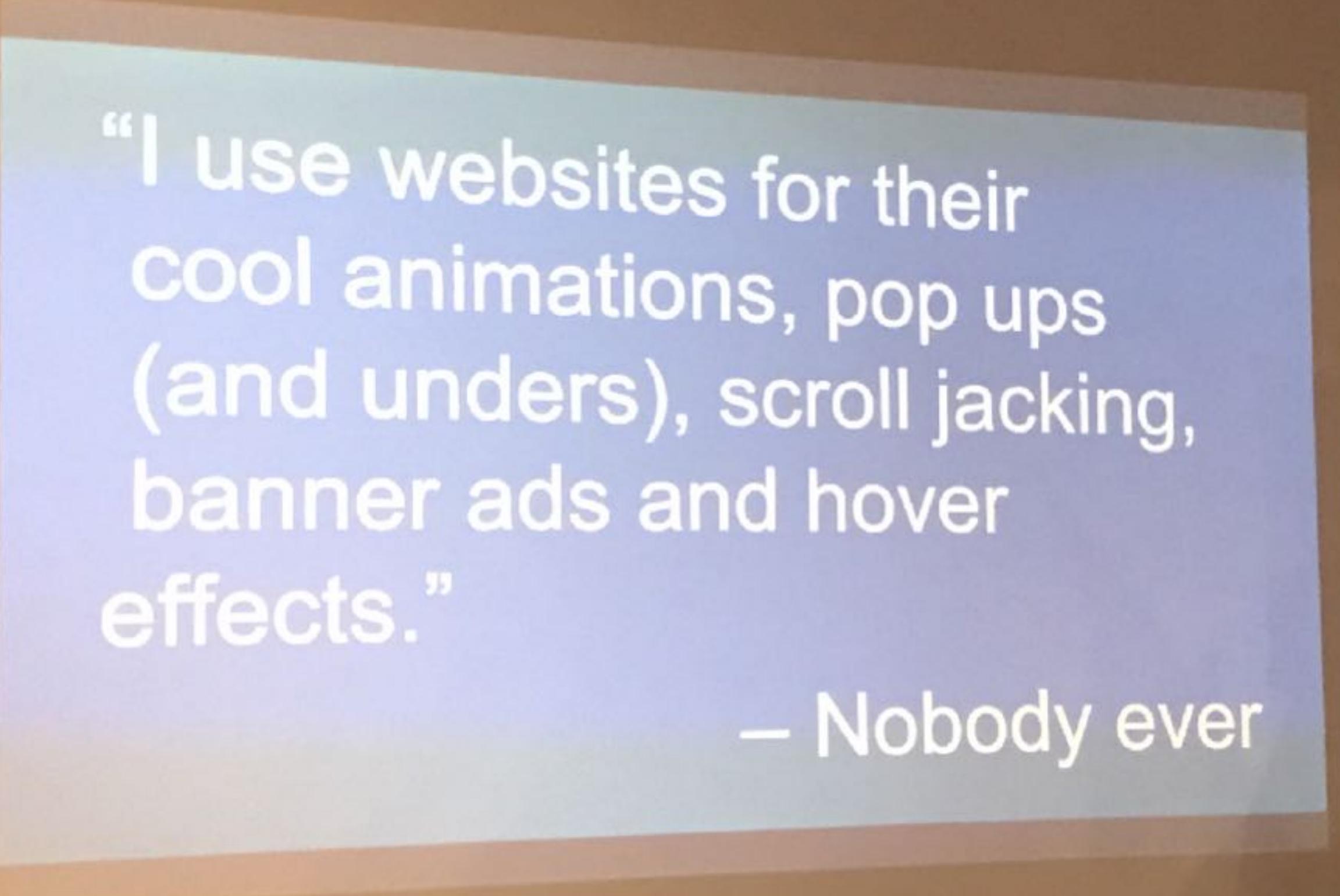
Oops, you forgot to pop in your number! Don't be shy.

RECIPIENT ADDRESS

Start typing your UK delivery postcode

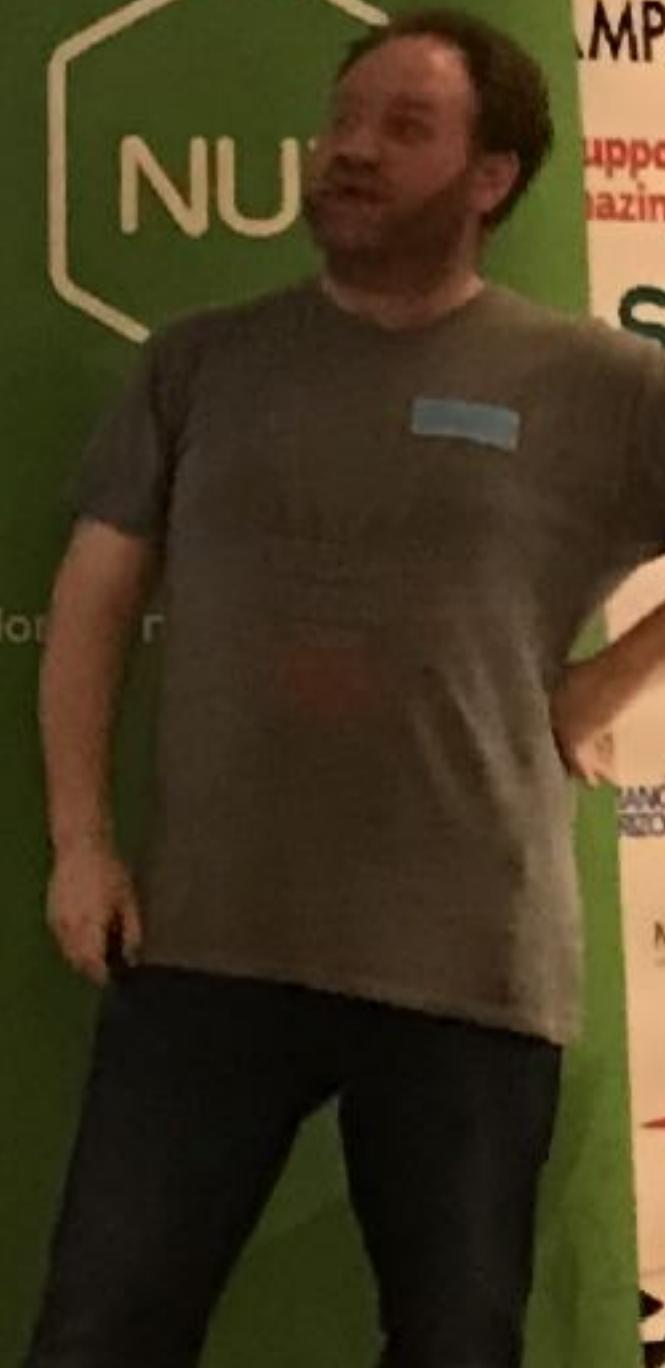
D'oh! We need this to know where we're going!

Enter manually



“I use websites for their  
cool animations, pop ups  
(and unders), scroll jacking,  
banner ads and hover  
effects.”

– Nobody ever



craigabbott.co.uk - Home Craig

www.craigabbott.co.uk

Apps Other Bookmarks

**WAVE**  
web accessibility evaluation tool

Styles No Styles Contrast

**Summary**

WAVE has detected the following:

- 0 Errors
- 0 Alerts
- 6 Features
- 13 Structural Elements
- 18 HTML5 and ARIA
- 0 Contrast Errors

**Panel Options**

- DETAILS: A listing of all the WAVE icons in your page.
- DOCUMENTATION: Explanation of the WAVE icons and how you can make your page more accessible.
- OUTLINE: The heading structure of the web page.

# Designing the impossible makes it possible

2 May 2018 | 2 minute read

As an interaction designer, I hear a sentence at least once on every project I work on. "We can't do that because [insert mediocre excuse here]."

A lot of the time this is because of technology restrictions. We can't integrate with legacy systems. Or, we can, but the legacy system wants the information in a ridiculous format. So we have to change the design to ask for a mandatory middle name, where people have to write "none" in the box to progress. Urgh.

It's easy to make a snap decision, bow to peer pressure and change the

```
<html lang="en" class="gr_craigabbott_co_uk" style="margin-left: 268px;"> ▾ <code> ▾
<div id="waveStopbar" style="width: 100%">
<head>
  <meta charset="utf-8">
  <title>
    craigabbott.co.uk – Home
  </title>
  <link href="/stylesheets/style.css" rel="stylesheet" type="text/css">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <script src="" src="https://www.google-analytics.com/analytics.js">
```

Automated accessibility tools  
**are not enough!**

## How did each tool do?

	<b>Barriers found</b>	<b>Barriers and potential barriers found</b>
<a href="#"><u>SortSite</u></a>	40%	40%
<a href="#"><u>Tenon</u></a>	34%	34%
<a href="#"><u>AChecker</u></a>	31%	35%
<a href="#"><u>WAVE</u></a>	30%	39%
<a href="#"><u>aXe</u></a>	29%	30%
<a href="#"><u>Siteimprove</u></a>	29%	36%

Tools can be good to build empathy  
and find obvious errors, but they  
can **never** replace usability testing.

# Inclusion > Empathy

- Liz Jackson

@abbott567

“More than **1 in 3** people show  
an unconscious**bias** against  
those with a disability.”

Staci Kroon  
CEO of BraunAbility

@abbott567

**By law,** all public sector websites and apps will need to be accessible by 2021.



**You'll be breaking the law if your website or app is not accessible.  
There will be government checks to make sure that websites and  
apps follow the rules.**

**Private sector** companies are  
**not** necessarily **exempt**

**Winn✓Dixie®**

<https://www.law360.com/articles/934358/winn-dixie-loses-ada-fight-over-website-accessibility>

@abbott567



# TARGET



# GRUBHUB

@abbott567



<https://www.theguardian.com/music/2019/jan/04/beyonce-parkwood-entertainment-sued-over-website-accessibility>

Spend your money on accessibility,  
**NOT** lawyers

@abbott567

**20% of the population have blue eyes.**

This is the same statistic as people who have a disability.

Imagine saying you can't use this product because you have blue eyes.

~ Molly Watt

If your product is accessible,  
you have another **10 million**  
potential customers

Accessibility experts are rare,  
people will **pay** for your knowledge!

Be passionate about accessibility  
because **it's the right thing to do!**

If we design things with accessibility in mind, it makes things better for

**EVERYBODY!**

Why are we even talking about  
accessibility? It's a **human right**  
and it should be done by default!

- Colin Oakley

@abbott567

# That's all folks

UK Disability facts and figures: <http://www.craigabbott.co.uk/accessibility-is-not-an-edge-case>

Sim Daltonism: <https://michelf.ca/projects/sim-daltonism/>

Funkify: <http://www.funkify.org/>

Action Deafness posters: <http://actiondeafness.org.uk/product/deaf-awareness-posters/>

Vine simulation glasses: <https://vinesimspecs.com/>

Wave accessibility tool: <https://wave.webaim.org/>

Home Office posters: <https://abtt.co/hod-a11y-posters>

Accessible error messages: <http://www.craigabbott.co.uk/error-messages-are-not-funny>

AegiSub subtitles: <http://www.aegisub.org/>

Screenreader shortcuts: <https://abtt.co/screen-reader-shortcuts>