



# SHIFTING LEFT

*or: making accessibility  
easier by doing it earlier*

# HI, I'M HIDDE

developer relations person +  
accessibility specialist +  
blogger (hidde.blog)

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# ACCESSIBILITY, A BRIEF INTRO

# WEB ACCESSIBILITY

to ensure people with disabilities  
can use your site/app



# WEB ACCESSIBILITY

to ensure people with disabilities  
can buy your product

# WEB ACCESSIBILITY

to ensure people with disabilities  
can use your service

**1-2%**

blind/visually impaired

,

**4%**

colour blind

OOGVERENIGING (1 IN 12 MEN, 1 IN 250 WOMEN)

**THIS CONCERNS  
A LOT OF PEOPLE**

**9%**

deaf/heard of hearing

HOORWIJZER

**15%**

low numerate / low literate

ALGEMENE REKENKAMER

# A LOT OF PEOPLE

- zoom in web pages
- use high contrast modes
- have screenreader
- need audio/video transcribed
- do not use a mouse
- use voice recognition
- prefer reduced motion

# WHAT TO TEST?

**ALLY**  
**STANDARDS** + **BEST**  
**PRACTICES** + **USER**  
**TESTING**

(You'll need all of the above)





(You'll need all of the above)

# WCAG 2.1

[w3.org/TR/WCAG21](https://www.w3.org/TR/WCAG21)

WCAG: internationally implemented guidelines that provide a baseline for testing web accessibility

# WCAG 2.1

[w3.org/TR/WCAG21](https://www.w3.org/TR/WCAG21)

## Principles

↳ Guidelines

↳ Success Criteria

# WCAG 2.1

[w3.org/TR/WCAG21](https://www.w3.org/TR/WCAG21)

## Principles

↳ Guidelines

↳ Success Criteria (three levels)

# WCAG 2.1

[w3.org/TR/WCAG21](https://www.w3.org/TR/WCAG21)

## Principles

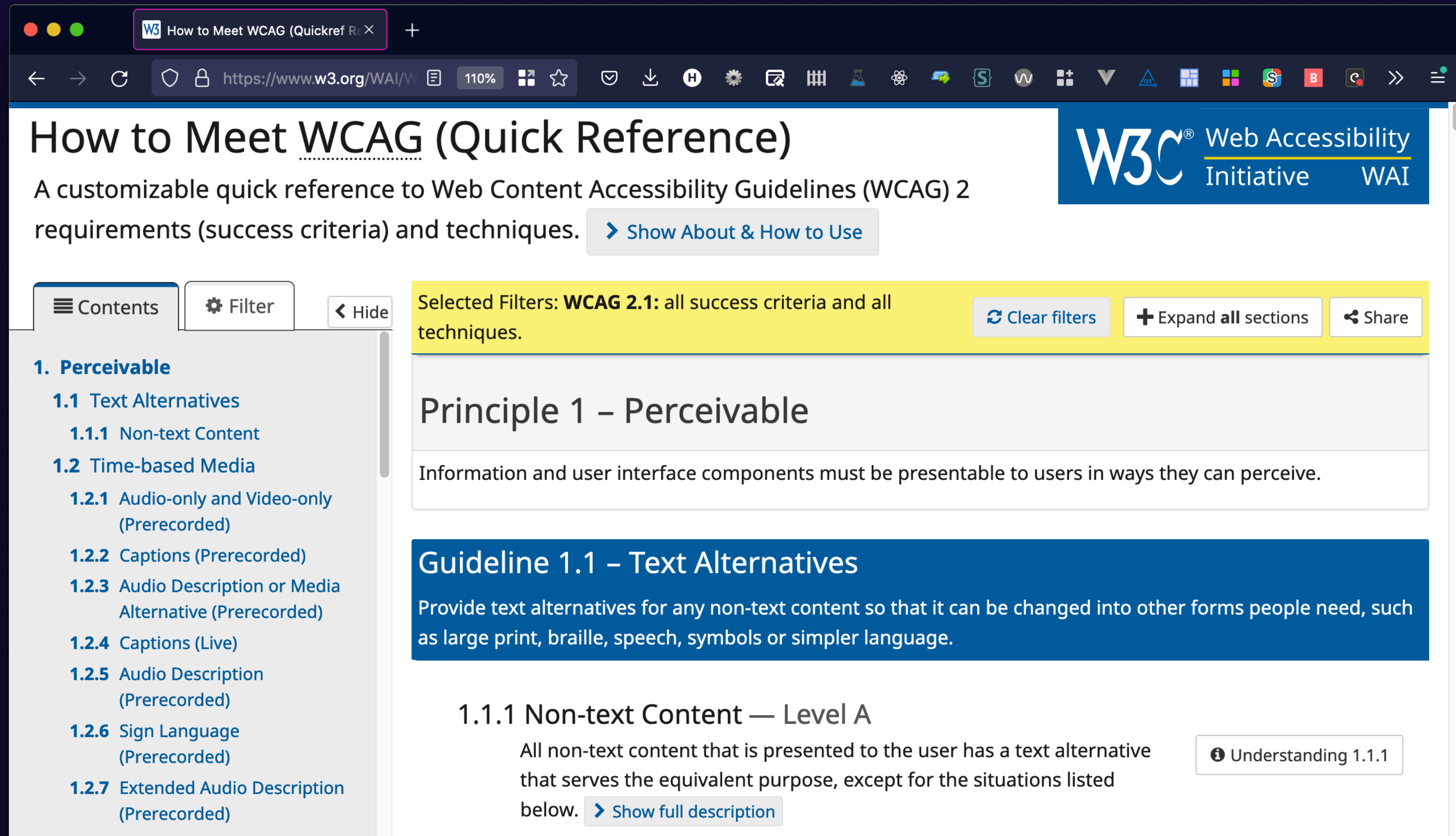
↳ Guidelines

↳ Success Criteria (three levels)

50 criteria at Level A + AA

## QUICK REFERENCE

[w3.org/WAI/WCAG21/quickref/](https://w3.org/WAI/WCAG21/quickref/)





# THIS IS WCAG

thisiswcag.com

✓ This is WCAG

×

+

←

→

↻

🔒

https://thisiswcag.com

🖨

☆

📧

⬇

H

⚙

🔗

📊

🧪

🔬

📄

📖

🔍

⌵

⋮

This is WCAG 2.1

all

content

custom-controls

forms-and-UI

audio-video

structure

colour

font-size

dynamic-content

keyboard

link

Total tests 103

showing 103 tests

filtered by forms

WCAG in plain language

Build and test against the Web Content Accessibility Guidelines (WCAG) consistently by understanding what is a failure against the success criteria.

These tests help you focus on the relevant criteria you need to apply and test against.

Disagree with any of the tests? put forward a change recommendation in the [project repository](#)

Notify me

Stay up to date whenever tests are added and updated.

Email address

We'll never share your email with anyone else.

Notify me

# 50 SUCCESS CRITERIA

- about issues people with disabilities face
- testable (some by humans, some by machines)



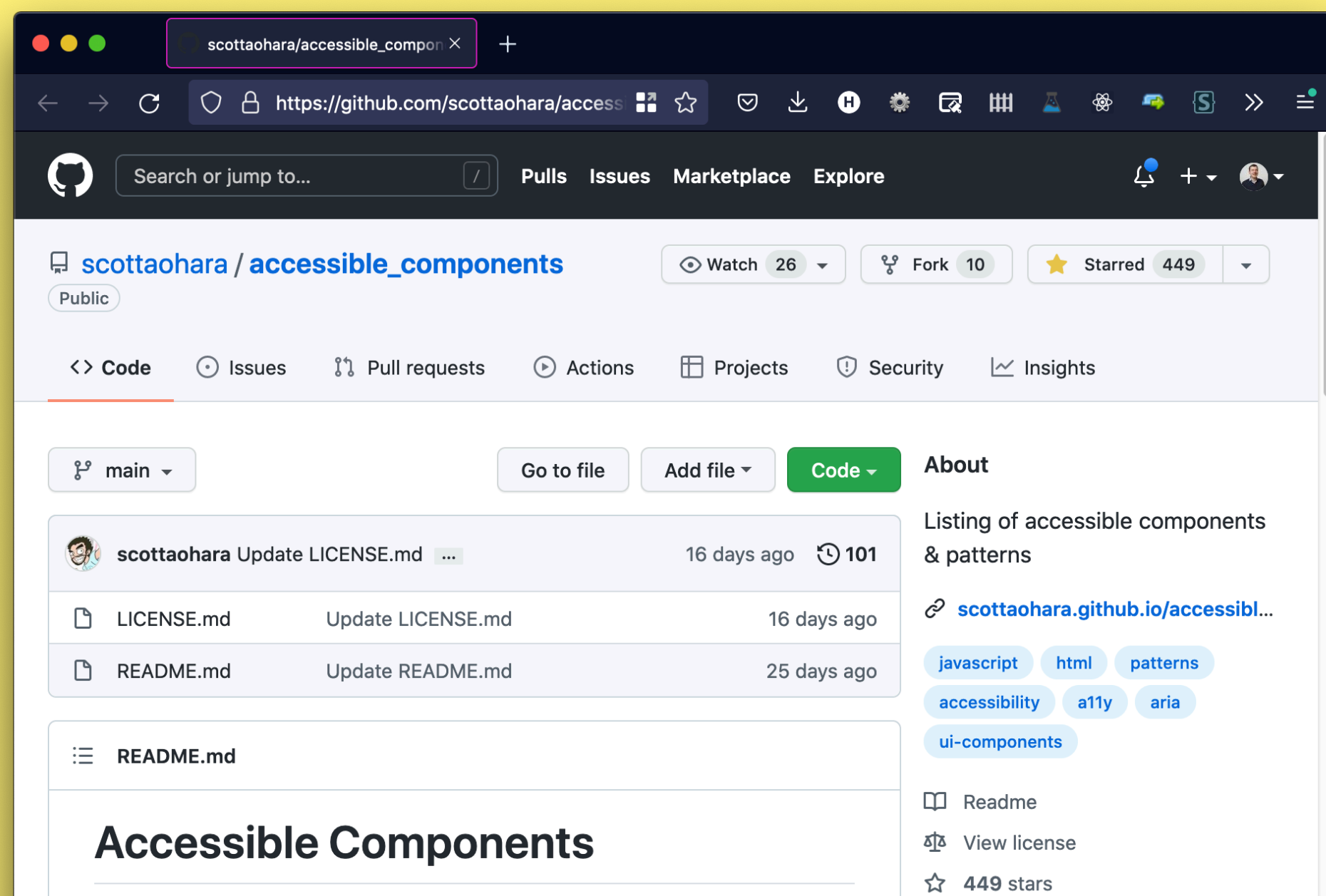
(You'll need all of the above)

# BEST PRACTICES

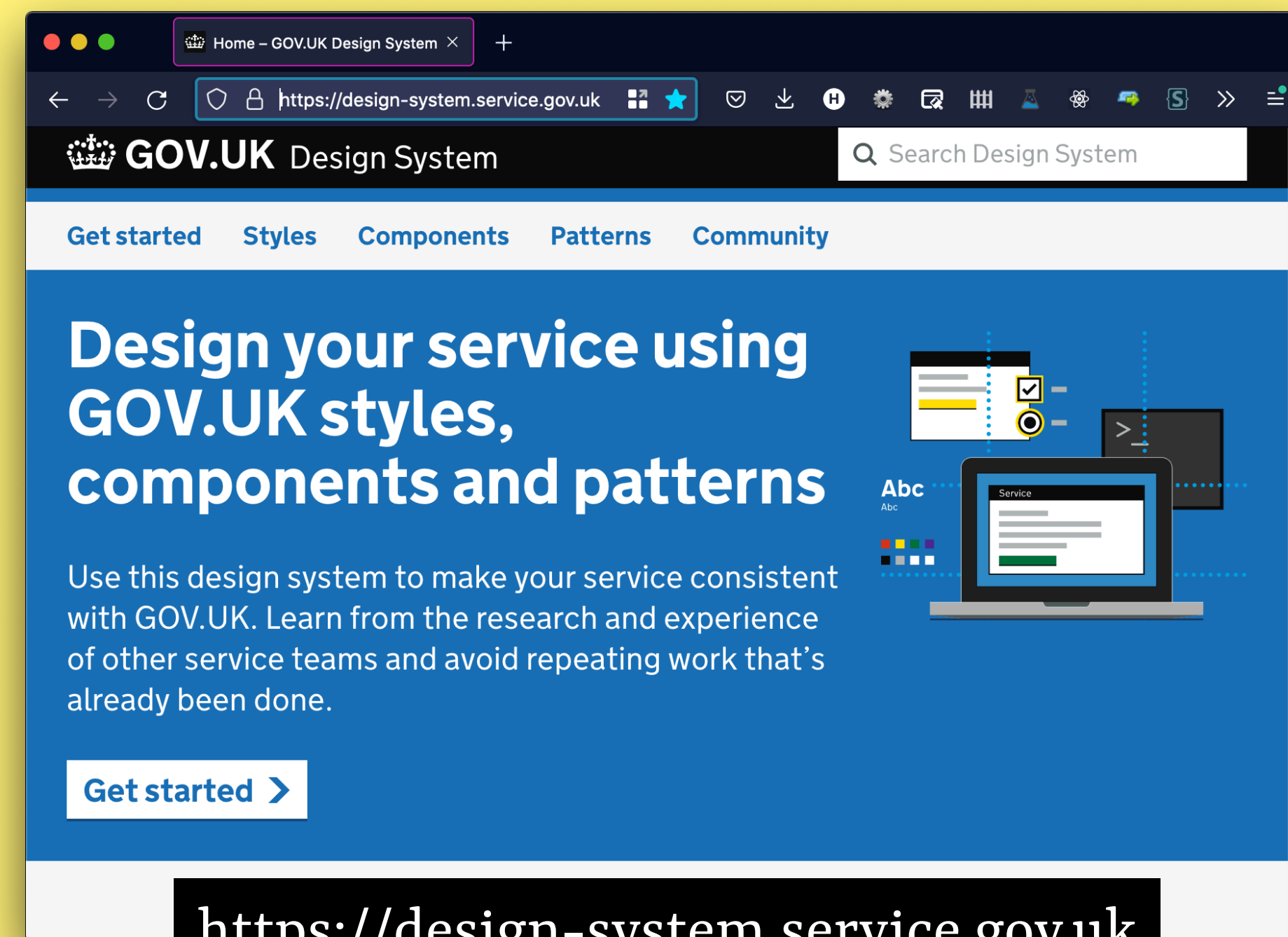
Be careful about what you adopt,  
look for well-tested patterns

# BEST PRACTICES

Be careful about what you adopt,  
look for well-tested patterns



[https://github.com/scottaohara/accessible\\_components](https://github.com/scottaohara/accessible_components)



<https://design-system.service.gov.uk>

**ALLY**  
**STANDARDS** + **BEST**  
**PRACTICES** + **USER**  
**TESTING**

(You'll need all of the above)



# TESTING WITH USERS

- test with a range of different users:  
one user doesn't speak for all

# TESTING WITH USERS

- test with a range of different users:  
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- allow for plenty of time

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- test with a range of different users:  
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- **test only when you're ready**

# TESTING WITH USERS

- test with a range of different users:  
one user doesn't speak for all
- allow for plenty of time
- test only when you're ready
- **ensure your lab is accessible**

# HOW TO TEST?

# MANUAL VS AUTOMATED

You will need both!



# MANUAL VS AUTOMATED

- how many issues?
- how many Success Criteria?

# MANUAL VS AUTOMATED

```

```

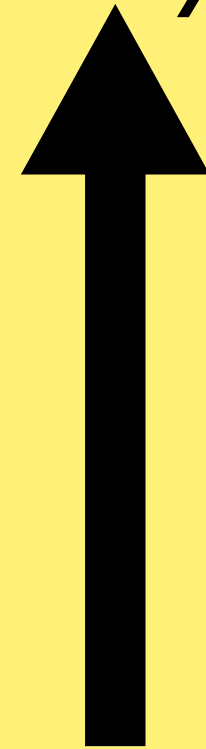


**50%  
OFF**

# MANUAL VS AUTOMATED

```

```



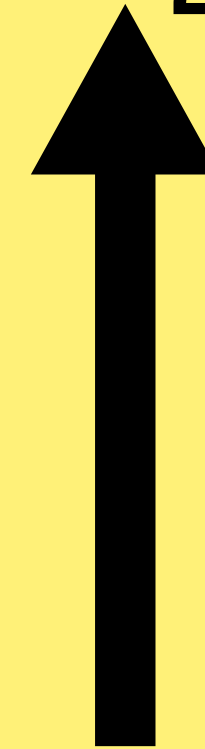
Problem: there is no alt  
(machines can establish this)



# MANUAL VS AUTOMATED

```

```



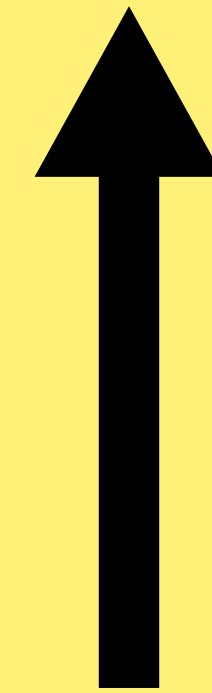
Problem: the alt does not  
reflect what image says  
(would require machine that  
can do OCR, most  
accessibility testing tools don't)



# MANUAL VS AUTOMATED

```

```



Problem: the alt is  
redundant  
(hard for machines  
to decide)



**SALE! 50% OFF**

# MANUAL TESTING

Tests that most people on the team can do periodically

# MANUAL: USE OF COLOR

Is it not the only way?

Leverage agile frameworks to provide a robust synopsis for high level overviews. Iterative approaches to **corporate strategy** foster collaborative thinking to further the overall value proposition. Organically grow the holistic world view of disruptive innovation via workplace diversity and empowerment.

Bring to the table win-win survival strategies to ensure proactive domination. At the end of the day, going forward, a **new normal** that has evolved from generation X is on the runway heading towards a streamlined cloud solution. User generated content in real-time will have multiple touchpoints for offshoring.

Capitalize on low hanging fruit to identify a ballpark value added activity to beta test. Override the digital divide with additional clickthroughs from DevOps. Nanotechnology immersion along the information highway will close the loop on focusing solely on the bottom line.



# MANUAL: USE OF COLOR

Is it not the only way?

Leverage agile frameworks to provide a robust synopsis for high level overviews. Iterative approaches to corporate strategy foster collaborative thinking to further the overall value proposition. Organically grow the holistic world view of disruptive innovation via workplace diversity and empowerment.

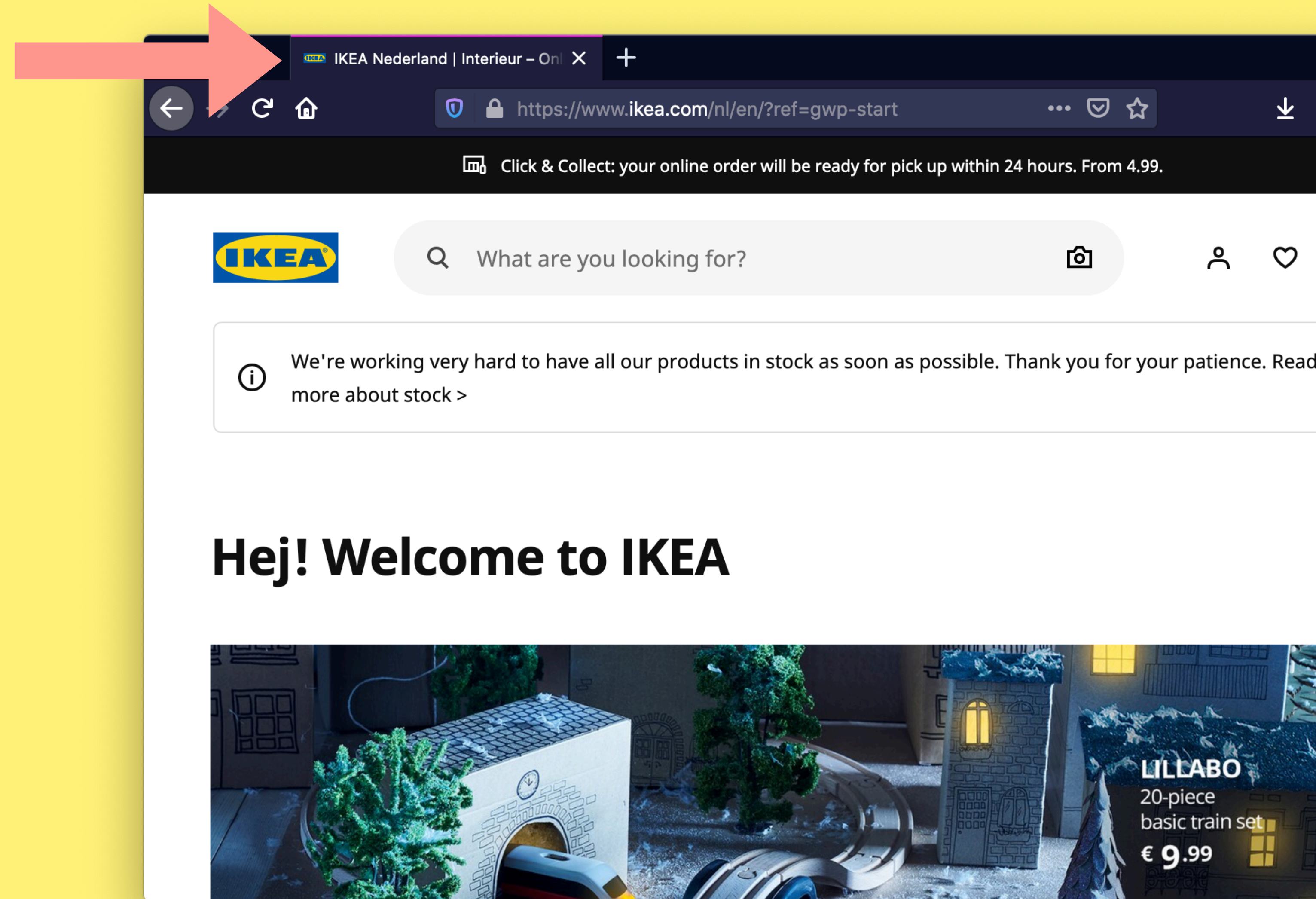
Bring to the table win-win survival strategies to ensure proactive domination. At the end of the day, going forward, a new normal that has evolved from generation X is on the runway heading towards a streamlined cloud solution. User generated content in real-time will have multiple touchpoints for offshoring.

Capitalize on low hanging fruit to identify a ballpark value added activity to beta test. Override the digital divide with additional clickthroughs from DevOps. Nanotechnology immersion along the information highway will close the loop on focusing solely on the bottom line.



# MANUAL: PAGE TITLE

Is there a title? Does  
it describe the page?



# MANUAL: KEYBOARD

Can I get to all  
*interactive elements?*

<select>

<details>

<input>

# INTERACTIVE ELEMENTS

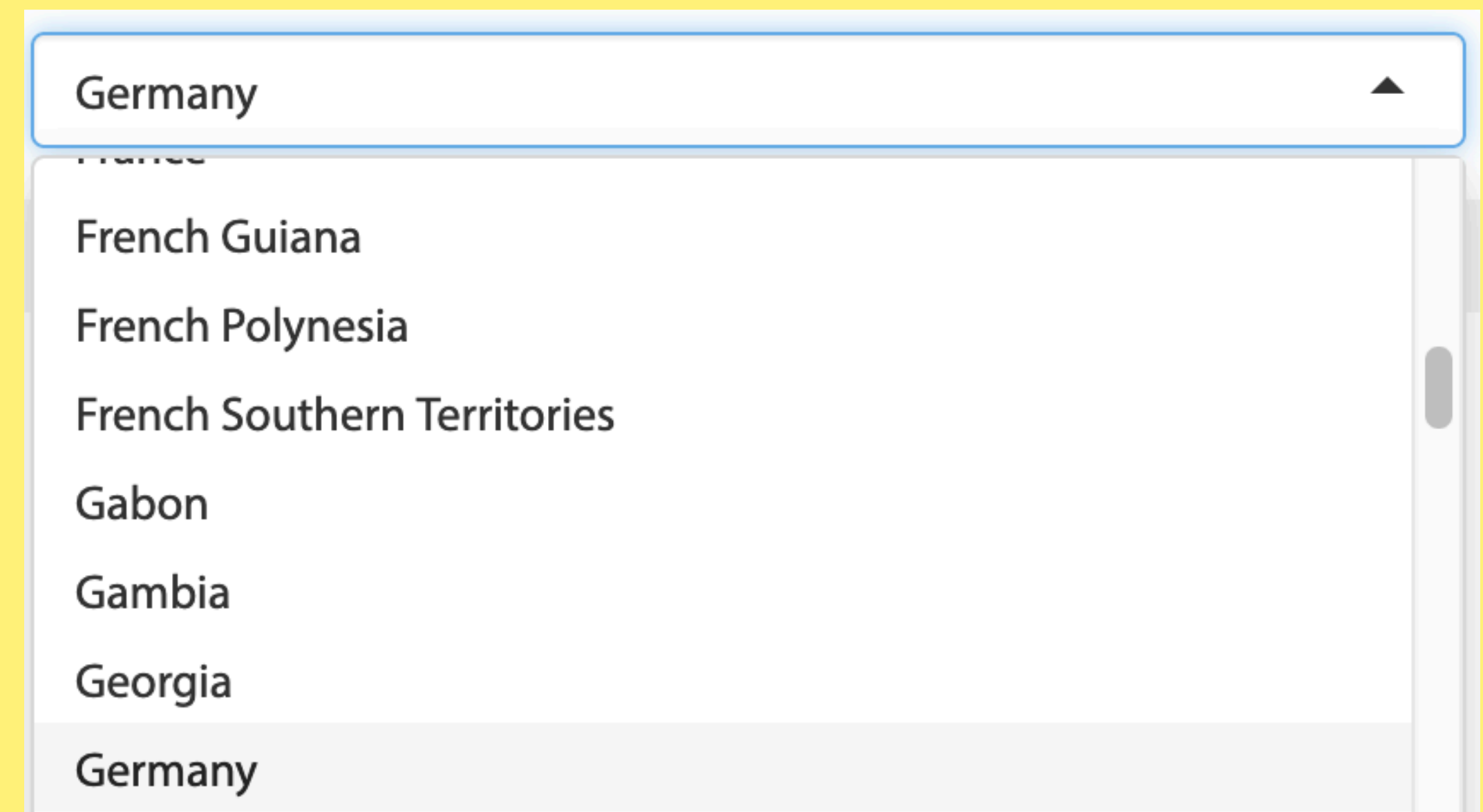
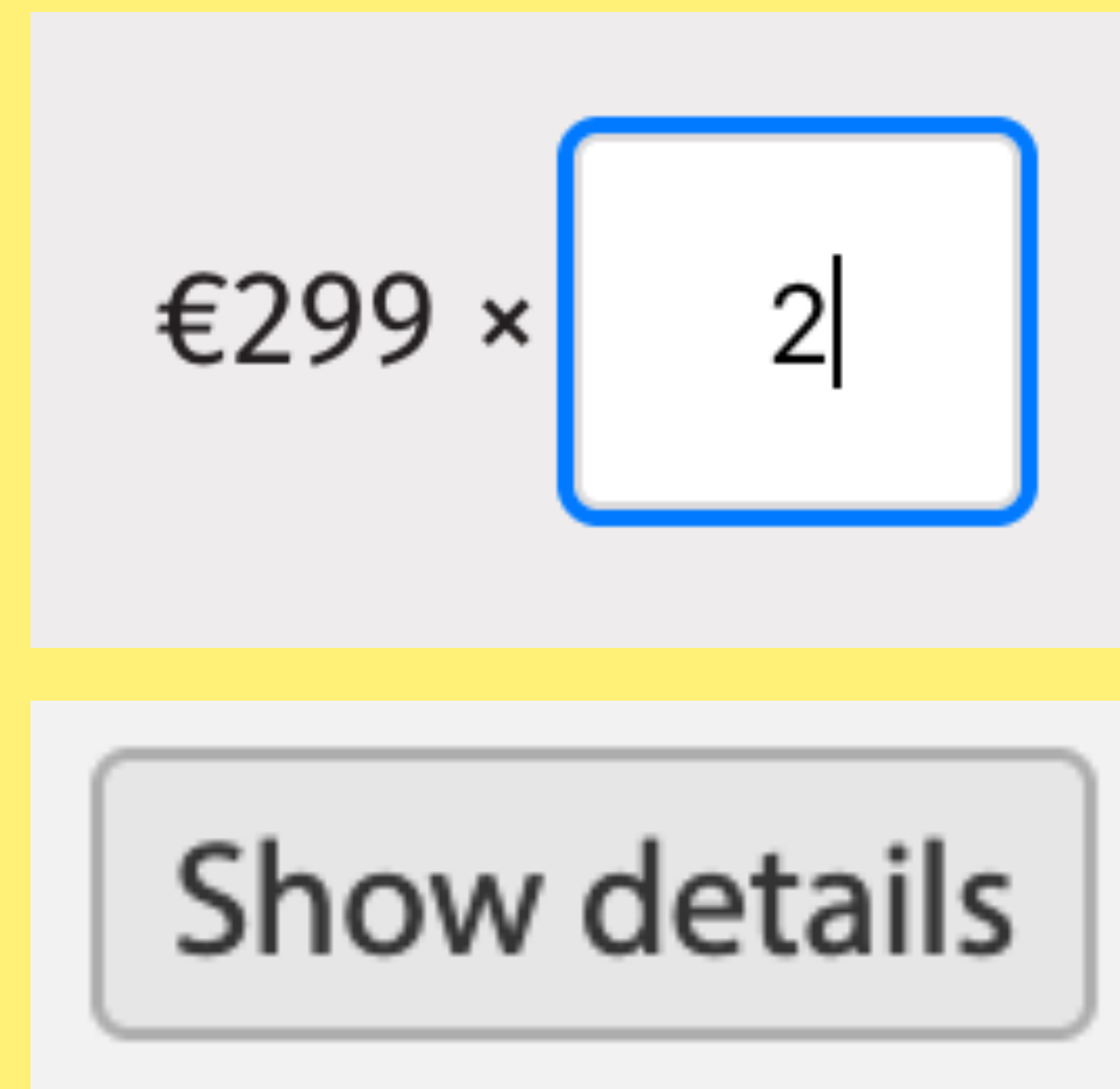
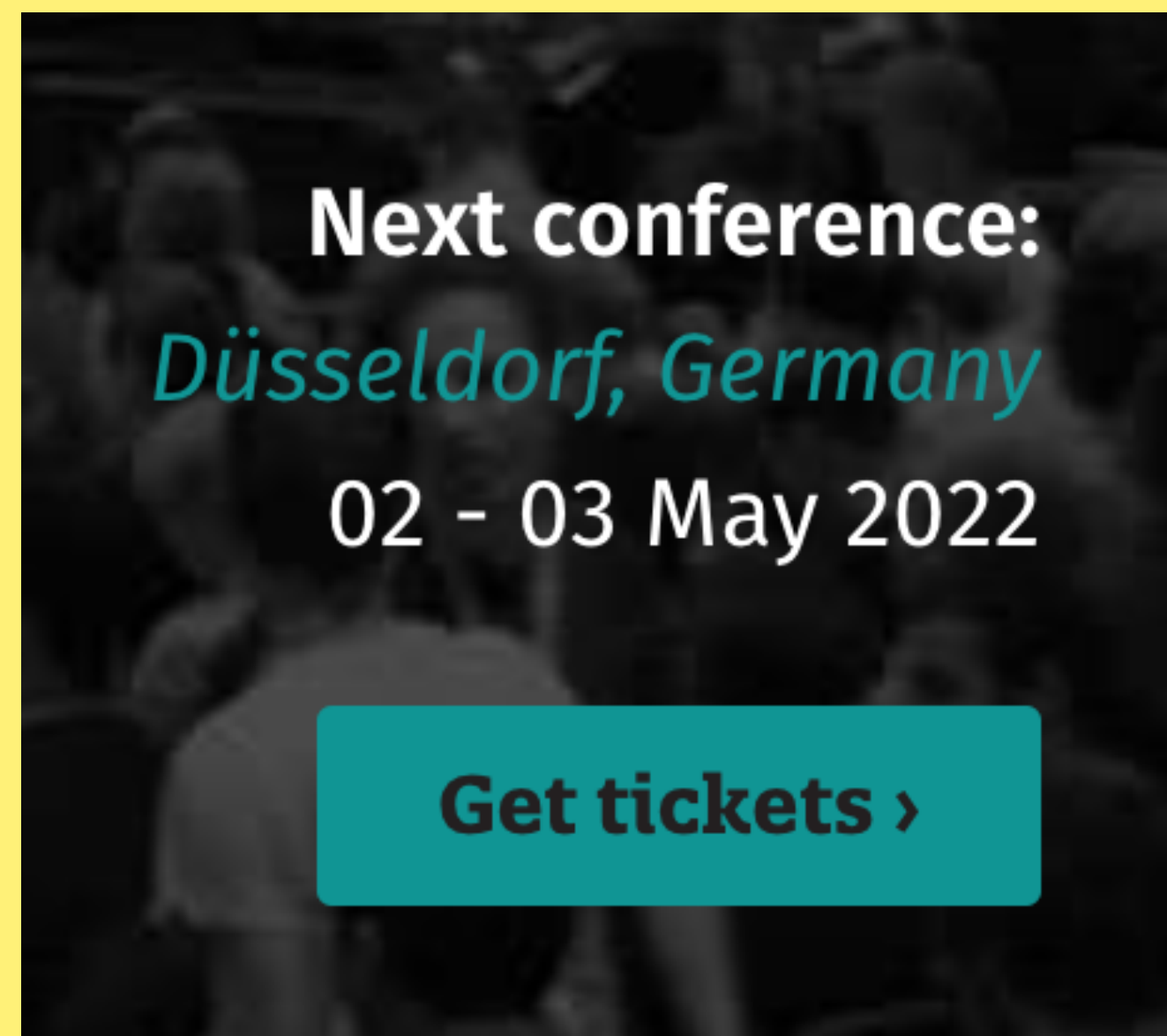
<textarea>

<button>

<a>

# MANUAL: KEYBOARD

Can I do everything  
with just the keyboard?





# MANUAL: KEYBOARD

Can I see where I am?

Leverage agile frameworks to provide a robust synopsis for high level overviews. Iterative approaches to corporate strategy foster collaborative thinking to further the overall value proposition. Organically grow the holistic world view of disruptive innovation via workplace diversity and empowerment.

Bring to the table win-win survival strategies to ensure proactive domination. At the end of the day, going forward, a new normal that has evolved from generation X is on the runway heading towards a streamlined cloud solution. User generated content in real-time will have multiple touchpoints for offshoring.

# MANUAL: KEYBOARD

Can I get to all interactive elements?

Can I see where I am?

Does the order make sense?

Are you never trapped?

Is there anything with `tabindex > 0`?

Is there nothing in tab order that shouldn't be there?

# MANUAL: IMAGES

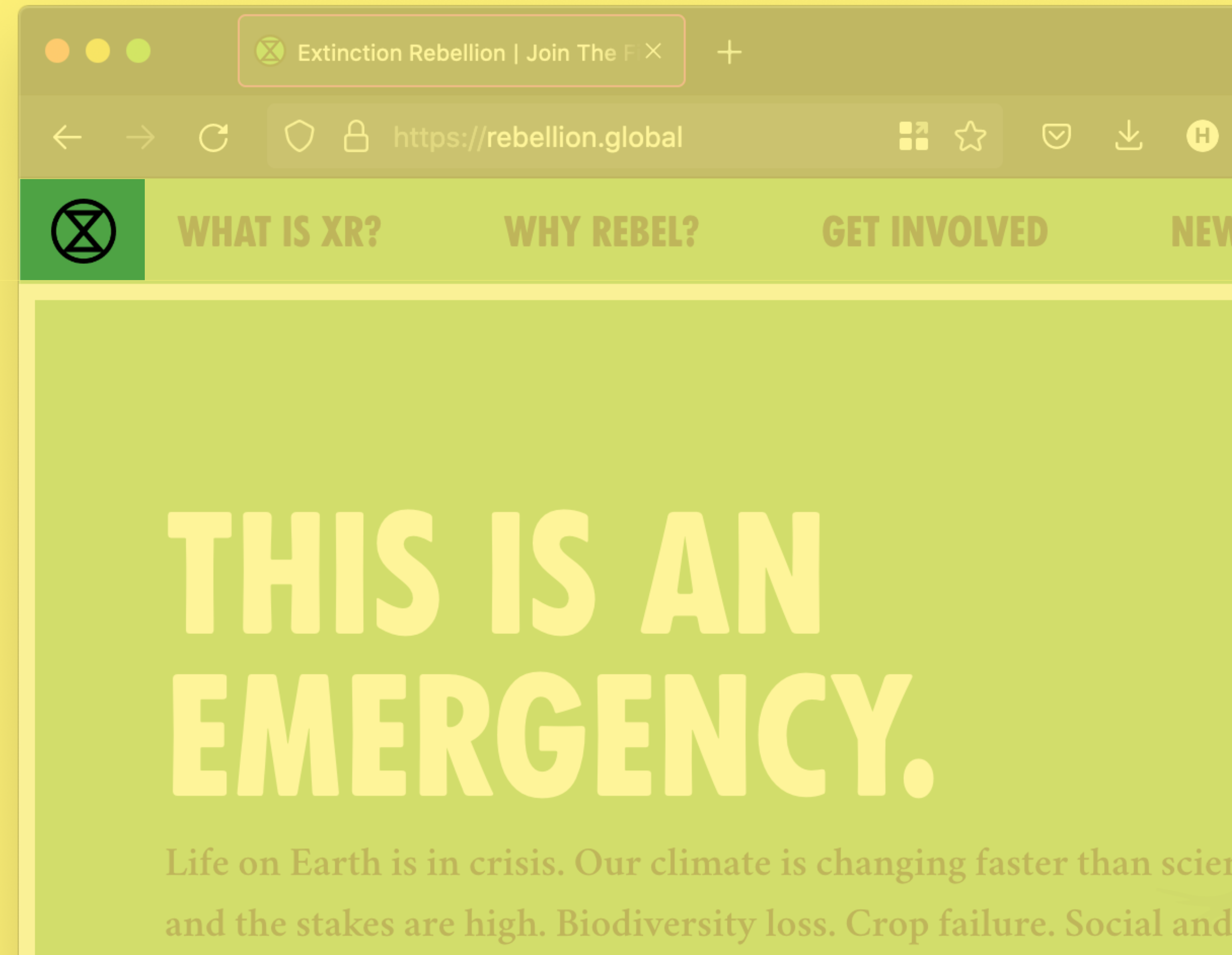
Do all images have an `alt` attribute?

Is the `alt` appropriate?

- left empty when it should be
- contains everything that's in the image
- imagine image fails; is it a good replacement?

# MANUAL: IMAGES

Is the image the only thing in a link? The alt is now the link's name.





# MANUAL: VIDEO

Are captions available and correct?

Is everything that's visible also in audio?

# MANUAL: AUDIO

Is everything in the audio  
available as text?

“[podcasts] really boomed during the first months of lockdown. As a deaf person, almost all of these podcasts are inaccessible to me because they don’t have transcripts or I have to wait weeks before they are available.”

Darice de Cuba, *The Podcast Transcript Experimentation*



# MANUAL: HEADINGS

Do headings describe the  
section they're a heading of?

# MANUAL: HEADINGS

Is everything that looks like a heading marked up with a hx tag?

```
<div class="text-5xl font-medium text-green-600">Our products</div>
```

# MANUAL: ZOOM

When you zoom in (up to 400%),  
does everything still work?

- text should not overlap
- text should not be cut off
- all controls should be usable
- no horizontal and vertical scrolling



# MANUAL: COLOR MODES

Can everything be used with  
Windows High Contrast Mode on?

# MANUAL: SCREENREADERS

Use the website with a  
screenreader, *but*

- if you're not a regular screenreader user, add a pinch of salt, don't jump to conclusions
- keep common browser/screenreader combinations in mind
- “it works” also depends on user skill, not all users are tech savvy



# SEMI-AUTOMATED TESTING

Tests that remove some of the manual work so you can make decisions quicker



# **FIREFOX DEV TOOLS**

- Visualise tabbing order

1

English

383 000+ articles

2

日本語

1 292 000+ 記事

3

Русский

1 756 000+ статей

4

Deutsch

2 617 000+ Artikel

5

Español

1 717 000+ artículos

6

Français

2 362 000+ articles

7

中文

1 231 000+ 條目

8

Italiano

718 000+ voci

9

Português

1 074 000+ artigos

10

Polski

1 490 000+ hasła

11

EN ▾

12

13

14

Read Wikipedia in your language ▾

15

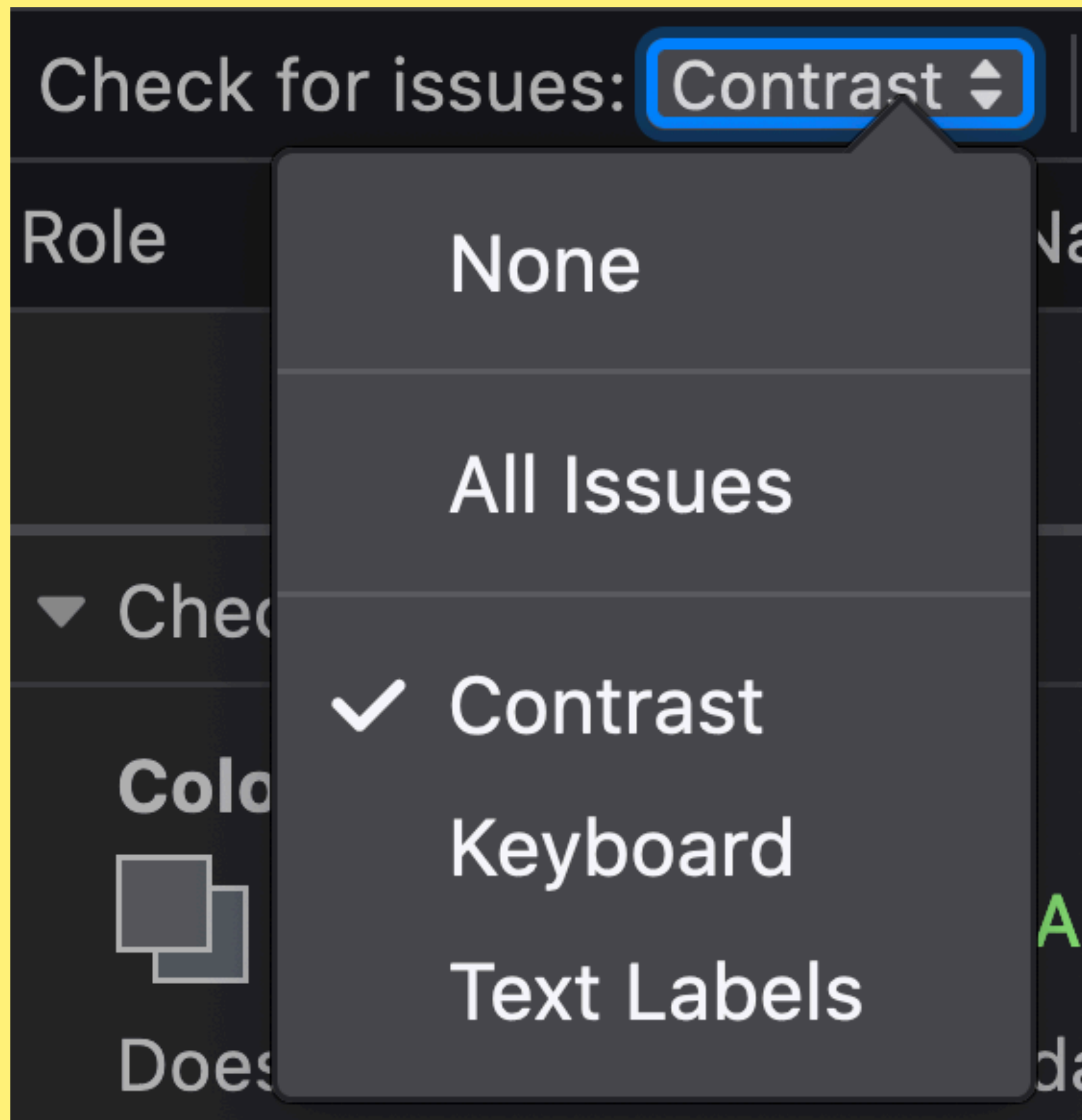
Accessibility >>

Check for issues: None | ☒ Show Tabbing Order

| Role                     | Name |
|--------------------------|------|
| Checks                   |      |
| No checks for this node. |      |
| Properties               |      |
| name: "Wikipedia"        |      |
| role: "document"         |      |
| actions: [...]           |      |
| value: ""                |      |
| DOMNode: #document       |      |
| description: ""          |      |
| keyboardShortcut: ""     |      |
| childCount: 22           |      |

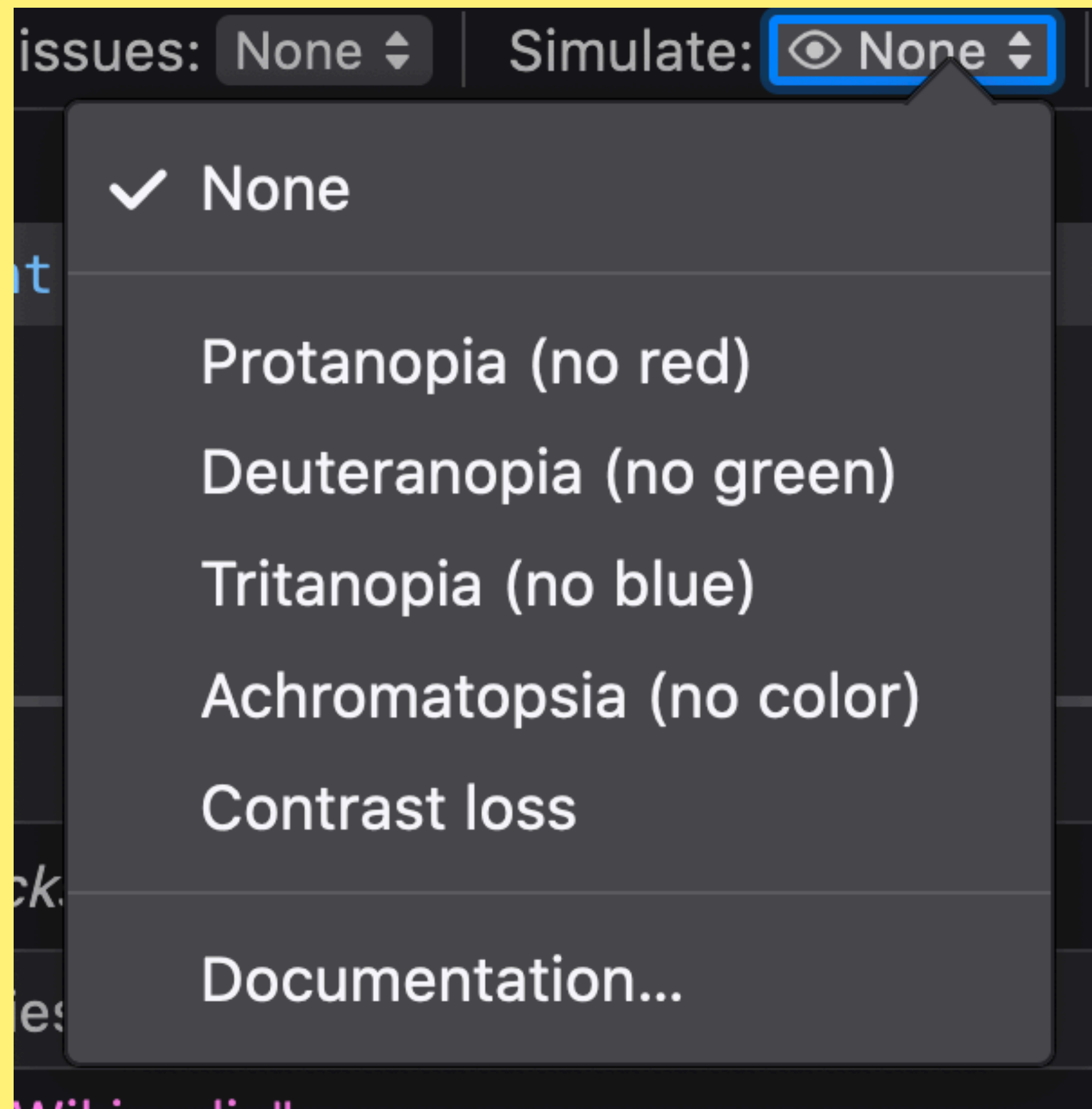
Filter Output

Errors Warnings Logs Info Debug CSS XHR



## FIREFOX DEV TOOLS

- Visualise tabbing order
- Test Contrast, Keyboard and Text Labels on a page



## FIREFOX DEV TOOLS

- Visualise tabbing order
- Test Contrast, Keyboard and Text Labels on a page
- Simulate colour vision deficiencies / contrast loss



# HTML VALIDATOR

validator.nu

Validation results for https://theguardian.com

Validator Input

Address

Encoding

Schemas

Preset

Parser

XMLNS Filter

☐ Be lax about HTTP Content-Type

☐ Show Image Report

☐ Show Source

☐ Show Outline

Group Messages

- Warning:** Content-Security-Policy HTTP header: Bad content security policy: The child-src directive is deprecated as of CSP level 3. Authors who wish to regulate nested browsing contexts and workers SHOULD use the frame-src and worker-src directives, respectively.  
https://theguardian.com/
- Warning:** The document is not mappable to XML 1.0 due to two consecutive hyphens in a comment



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@hdv

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Sport

Culture

Lifestyle

More

World

UK

Coronavirus

Climate crisis

Environment

Science

Global development

Football

Tech

Business

Obituaries

Headlines

Tuesday 18 January 2022

Leeuwar ...

Now

5°C

13:00

7°C

16:00

7°C

19:00

5°C

View full forecast

Tonga volcano / First pictures show islands blanketed in ash, as two deaths confirmed

A New Zealand defence force surveillance flight has returned from Tonga. Pictures show land and trees coated in ash

Leaked images

New Zealand military photos show scale of

Communications

Damaged undersea cable could cut off nation

Visual guide

The eruption and its aftermath

Russia / Moscow moves troops to Belarus for joint exercises near Ukraine border

Ukraine

Russia would pay 'high price' for attack, says German

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**WAVE**  
wave.webaim.org



# AUTOMATED TESTING

Tests you can run against a website automatically (eg in CI/CD)

```
hdv ~/Projects ➤ axe https://dequeuniversity.com/rules/axe/4.1/image-alt
Running axe-core 4.1.1 in chrome-headless

Testing https://dequeuniversity.com/rules/axe/4.1/image-alt ... please wait, this
may take a minute.
0 violations found!

Please note that only 20% to 50% of all accessibility issues can automatically be
detected.
Manual testing is always required. For more information see:
https://dequeuniversity.com/curriculum/courses/testingmethods
```



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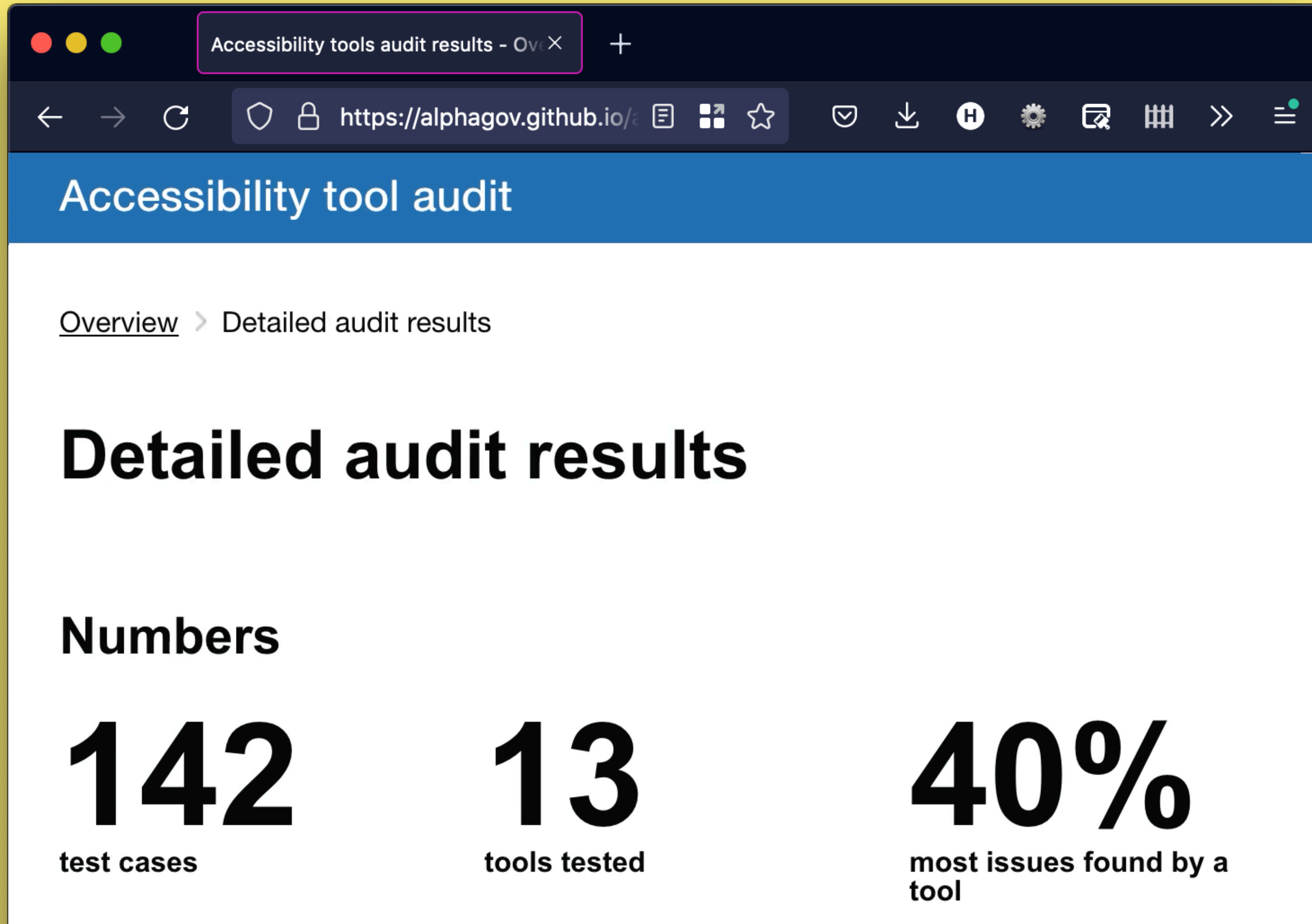
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https://dequeuniversity.com/curriculum/courses/testingmethods
```

# AUTOMATED TESTING



Most of these integrate with your CI/CD and can export to interoperable data formats

# AUTOMATED TESTING



# WHEN TO TEST?

**IT'S EASIER WHEN  
YOU DO IT EARLIER**

# IT'S EASIER WHEN YOU DO IT EARLIER

Eg, pick a CMS that supports accessibility

# IT'S EASIER WHEN YOU DO IT EARLIER

Eg, pick a CMS that supports accessibility,  
check designs before building

# IT'S EASIER WHEN YOU DO IT EARLIER

Eg, pick a CMS that supports accessibility,  
check designs before building, **check**  
**builds before merging**



# IT'S EASIER WHEN YOU DO IT EARLIER

Eg, pick a CMS that supports accessibility,  
check designs before building, check  
builds before merging, **check merged code  
before shipping, etc**

## OFTEN & EARLY

Manual checks that  
most can do +  
automated checks

## ONCE IN A WHILE

WCAG audits, user tests  
that include users  
with disabilities

# WHAT?

Accessibility standards  
Best practices  
User testing

# HOW?

Browser tools  
Software plugins

CLI tools  
Formal audits

# WHEN?

Often, during development  
Periodically, with audits and user tests

# THANK YOU.

## Contact/resources

[talks.hiddedevries.nl](https://talks.hiddedevries.nl)

@hdv or [hidde@hiddedevries.nl](mailto:hidde@hiddedevries.nl)

## Typefaces

Bungee by David Jonathan Ross (DJR)

Rasa by Anna Giedryś, David Březina (Rosetta)