

WORKSHOP

Web accessibility for front-end developers

Hidde de Vries
12 November 2021
Incentro

FROZEN ROCKETS

MAAKT TOEGANKELIJKHEID TOEGANKELIJK



INTRO

A portrait photograph of a man with short brown hair, smiling. He is wearing a dark grey V-neck sweater over a white and blue checkered collared shirt. The background is a solid light blue.

Hidde de Vries

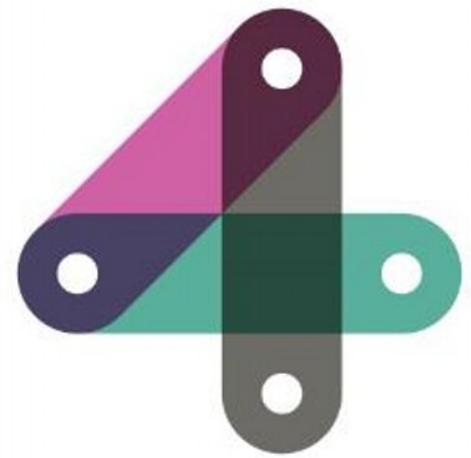
Freelance front-end developer
and accessibility specialist



moz://a



Den Haag



delta lloyd

Introductions

What's your name and what's
your favourite HTML element?

Today

Accessibility &
standards

The business case

How people with
disabilities use the web

Toolbelt for
developers

Using ARIA

Accessibility in the
process and testing

Housekeeping

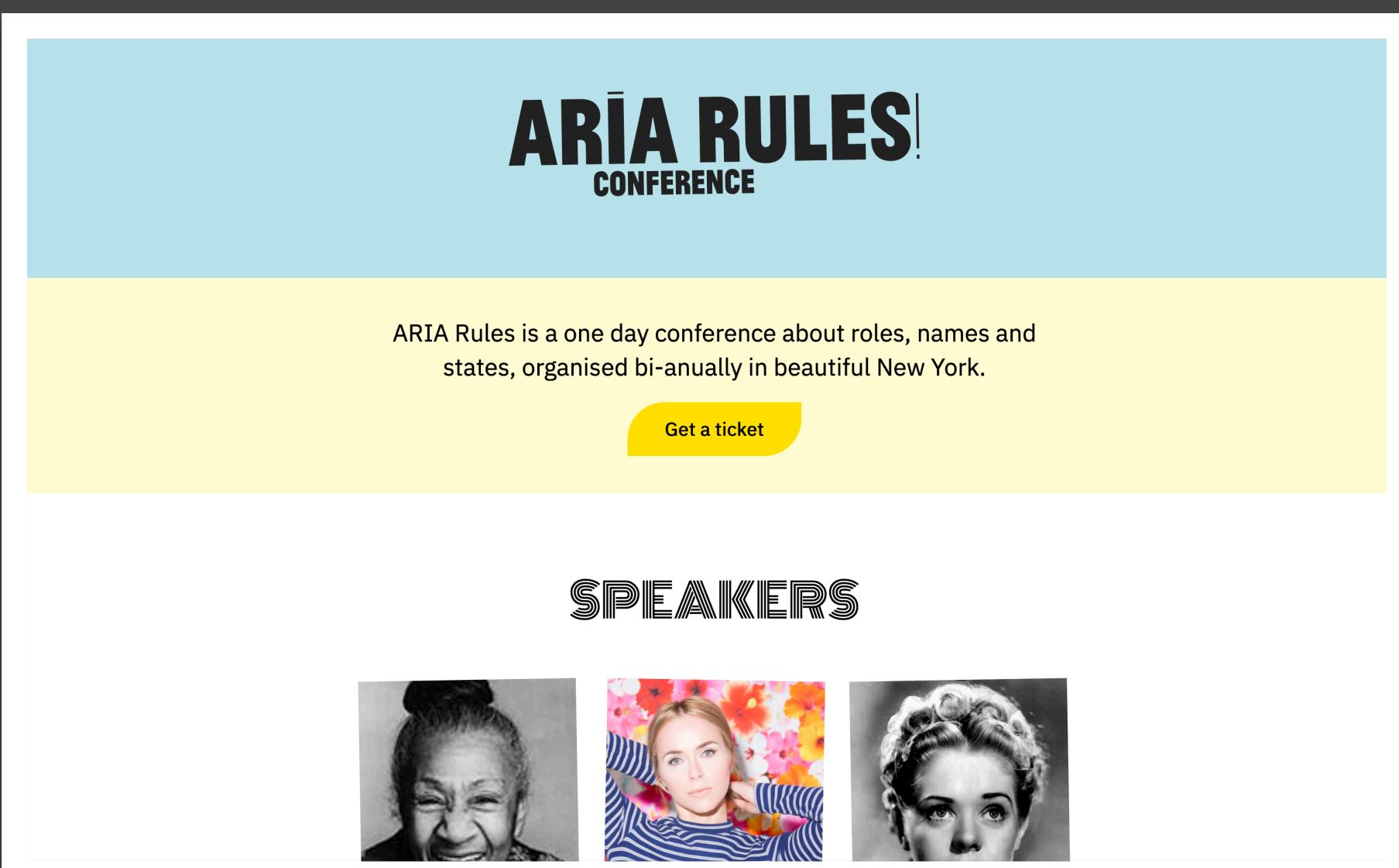
Feel free to interrupt for questions

Let me know if you need a break

What you'll need

Example code

github.com/hidde/workshop-a11y-fed



What you'll need

Web browser

Text editor

ACCESSIBILITY & STANDARDS

Web accessibility is about
maximising how many people
can use your service

A photograph of a street scene. On the left, there's a sidewalk paved with light-colored rectangular tiles. A vertical strip of larger, grey, textured tiles runs along the edge of the sidewalk. This strip is identified as tactile paving. In the background, there are brick buildings, some trees, and parked cars. A person is walking on the sidewalk.

Tactile paving

Elevator





Traffic lights

Digital accessibility

People with disabilities

- auditory
- physical
- visual
- cognitive, learning
- speech

1-2%

Blind/visually impaired

KENNISPLEIN GEHANDICAPTENSECTOR

4%

Colour blind

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

**lots of people
benefit**

15%

Low literate/numerate

ALGEMENE REKENKAMER

9%

Deaf/hard of hearing

HOORWIJZER



lots of people
benefit





lots of people
benefit



43%

of the people surveyed use one
or more accessibility settings
on their phone



14%

used two or more settings

THE PASTRY BOX PROJECT

[HOME](#) [AUTHORS](#) [STREAM](#)



An Alphabet of Accessibility Issues

by anne gibson

31 JUL 2014

A is blind, and has been since birth. He's always used a screen reader, and always used a computer. He's a programmer, and he's better prepared to use the web than most of the others on this list.

B fell down a hill while running to close his car windows in the rain, and

Standards

Standards:

WCAG

ATAG

UAAG

WAI-ARIA

EARL

Standards:

WCAG web content

ATAG

UAAG

WAI-ARIA

EARL

Standards:

WCAG web content

ATAG tools that create web content

UAAG

WAI-ARIA

EARL

Standards:

WCAG web content

ATAG tools that create web content

UAAG tools that display web content

WAI-ARIA

EARL

Standards:

WCAG web content

ATAG tools that create web content

UAAG tools that display web content

WAI-ARIA accessibility of web apps

EARL

Standards:

WCAG web content

ATAG tools that create web content

UAAG tools that display web content

WAI-ARIA accessibility of web apps

EARL reporting of conformance

WCAG 2.1

Web Content Accessibility Guidelines

published in 2018; before: 2.0 (2008), after: 2.2 (~2021)

WCAG 2.1

Principles Guidelines Success Criteria

The screenshot shows a web browser displaying the WCAG 2.1 Quickref page. The URL in the address bar is <https://www.w3.org/WAI/WCAG21/quickref/?versions=2.1>. A yellow header bar at the top indicates "Selected Filters: WCAG 2.1: all success criteria and all techniques." Below this, the "Principle 1 – Perceivable" section is shown with the following text: "Information and user interface components must be presentable to users in ways they can perceive." A sidebar on the left lists the following guidelines under "1. Perceivable":

- 1.1 Text Alternatives
 - 1.1.1 Non-text Content
 - 1.2 Time-based Media
 - 1.2.1 Audio-only and Video-only (Prerecorded)
 - 1.2.2 Captions (Prerecorded)
 - 1.2.3 Audio Description or Media Alternative (Prerecorded)
 - 1.2.4 Captions (Live)
 - 1.2.5 Audio Description (Prerecorded)
 - 1.2.6 Sign Language (Prerecorded)
 - 1.2.7 Extended Audio Description (Prerecorded)
 - 1.2.8 Media Alternative (Prerecorded)
 - 1.2.9 Audio-only (Live)
 - 1.3 Adaptable
 - 1.3.1 Info and Relationships
 - 1.3.2 Meaningful Sequence
 - 1.3.3 Sensory Characteristics
 - 1.3.4 Orientation
 - 1.3.5 Identify Input Purpose

WCAG Success Criteria are

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

The screenshot shows a web browser displaying the WCAG Quickref page at <https://www.w3.org/WAI/WCAG21/quickref/?versions=2.1>. The page is filtered for WCAG 2.1 success criteria and techniques. The main content area is titled "Principle 1 – Perceivable" with the subtext: "Information and user interface components must be presentable to users in ways they can perceive." A sidebar on the left lists the following guidelines under "Perceivable":

- 1.1 Text Alternatives
 - 1.1.1 Non-text Content
 - 1.2 Time-based Media
 - 1.2.1 Audio-only and Video-only (Prerecorded)
 - 1.2.2 Captions (Prerecorded)
 - 1.2.3 Audio Description or Media Alternative (Prerecorded)
 - 1.2.4 Captions (Live)
 - 1.2.5 Audio Description (Prerecorded)
 - 1.2.6 Sign Language (Prerecorded)
 - 1.2.7 Extended Audio Description (Prerecorded)
 - 1.2.8 Media Alternative (Prerecorded)
 - 1.2.9 Audio-only (Live)
 - 1.3 Adaptable
 - 1.3.1 Info and Relationships
 - 1.3.2 Meaningful Sequence
 - 1.3.3 Sensory Characteristics
 - 1.3.4 Orientation
 - 1.3.5 Identify Input Purpose

Level A

Level AA

(Level AAA)



most common target
(50 Success Criteria)

based on a number
of considerations

1

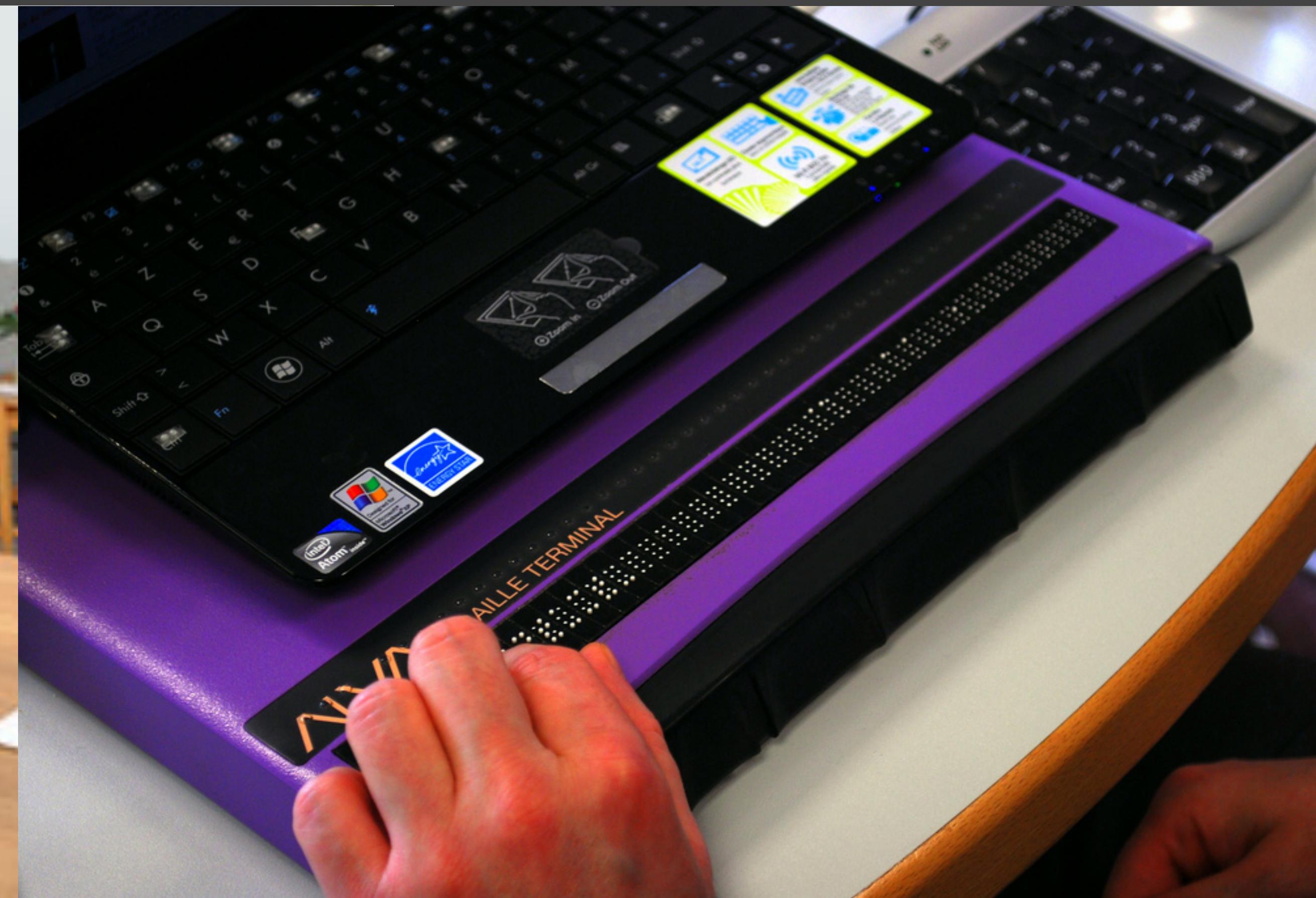
Perceivable

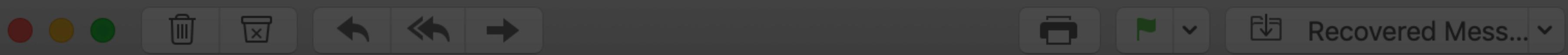
Information and user interface components must be presentable to users in ways they can perceive.





De mannen worden verdacht van het kapen
van een helicóptero in Limburg.





From: info@yourdentist.com

To: janet232@mail.com

Subject: Schedule your dentist visit

Hello Ms Ericsson,

Your next dentist visit is due, so please contact us as soon as possible to schedule an appointment.

Call us between 9.00 and 15.00 on any business day, or between 9.00 and 11.00 on Saturdays:

Or simply reply to this email

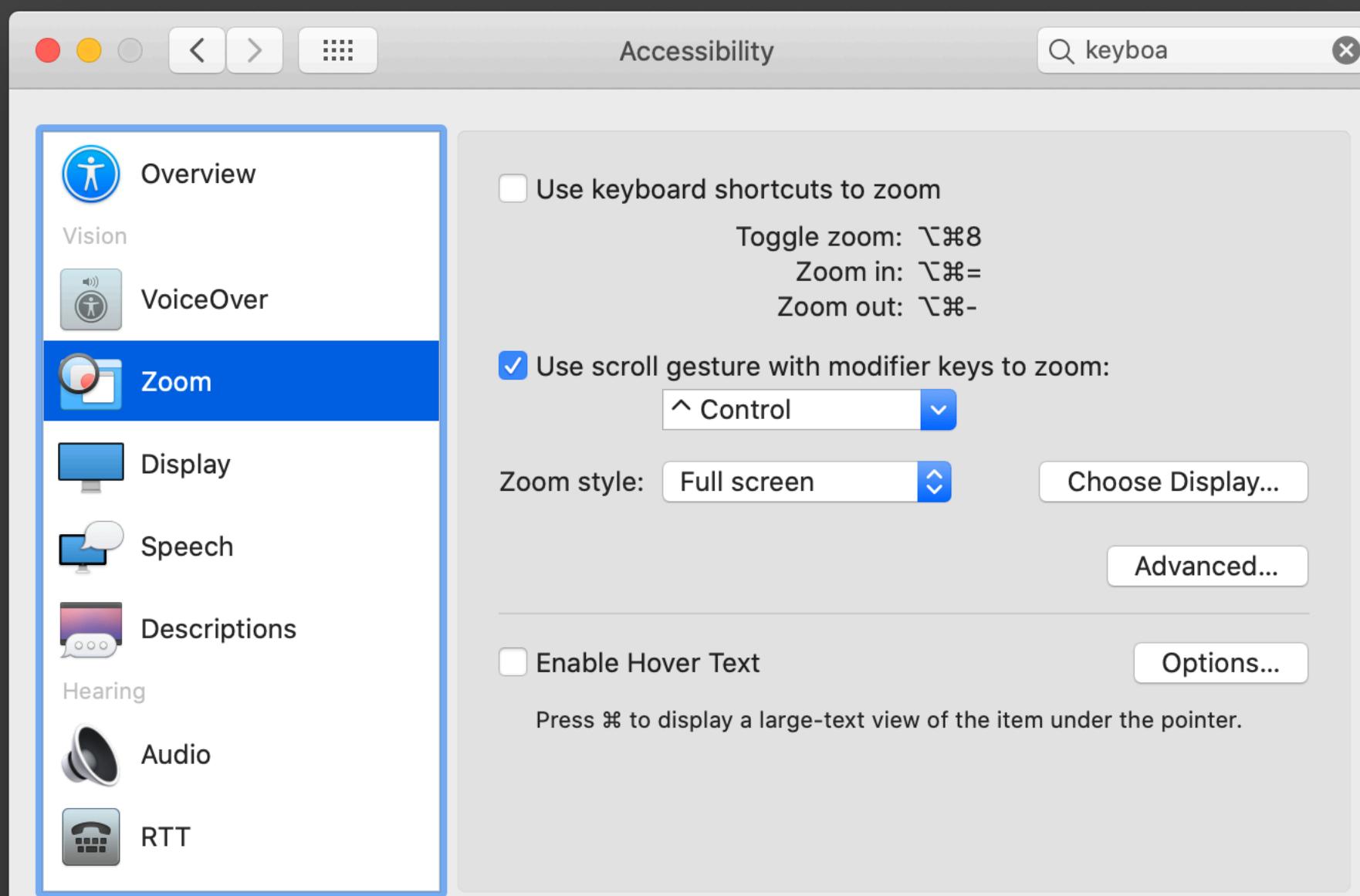
Your dentist



Some examples of screenreaders: VoiceOver (macOS/iOS,) JAWS (Windows), NVDA (Windows)

Test with screenreaders,
see the README for documentation
for the most common

Test with zoom, for instance in the browser or with the OS



Perceivable

Text alternatives
including subtitles, transcripts

Popup/content blocker
compatibility

Structure

Volume controls

Color and contrast

Zoom

2

Operable

User interface components and navigation must be operable.

Motor impairments

Spinal cord injuries, e.g. due to accidents (44%), violence (24%), falls (22%), sports (8%)

Loss or damage of of limbs

Diseases like cerebral palsy, multiple sclerosis, arthritis, Parkinson's

Motor impairments

User cannot use mouse

User cannot control mouse or keyboard well

User uses voice control

User is fatigued

User is unable to turn their device



More info <https://webaim.org/articles/motor/assistive>

Operable

Works with keyboard

Gives people time

3

Understandable

Information and the operation of user interface must be understandable.

Understandable

Language

Consistency between pages

Predictability

Help with input, including errors



4

Robust

Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

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United States of Plastic
Plastics

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About this content
Susan Strasser
Fri 21 Jun 2019 06.00 BST

f t e

42

Never gonna give you up: how plastic seduced America



The Guardian website interface with a circular callout highlighting the sidebar menu icon.

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42

Never gonna give you up: how plastic seduced America



Never gonna give you up: how plastic seduced America

Susan Strasser • Fri 21 Jun 2019 06.00 BST

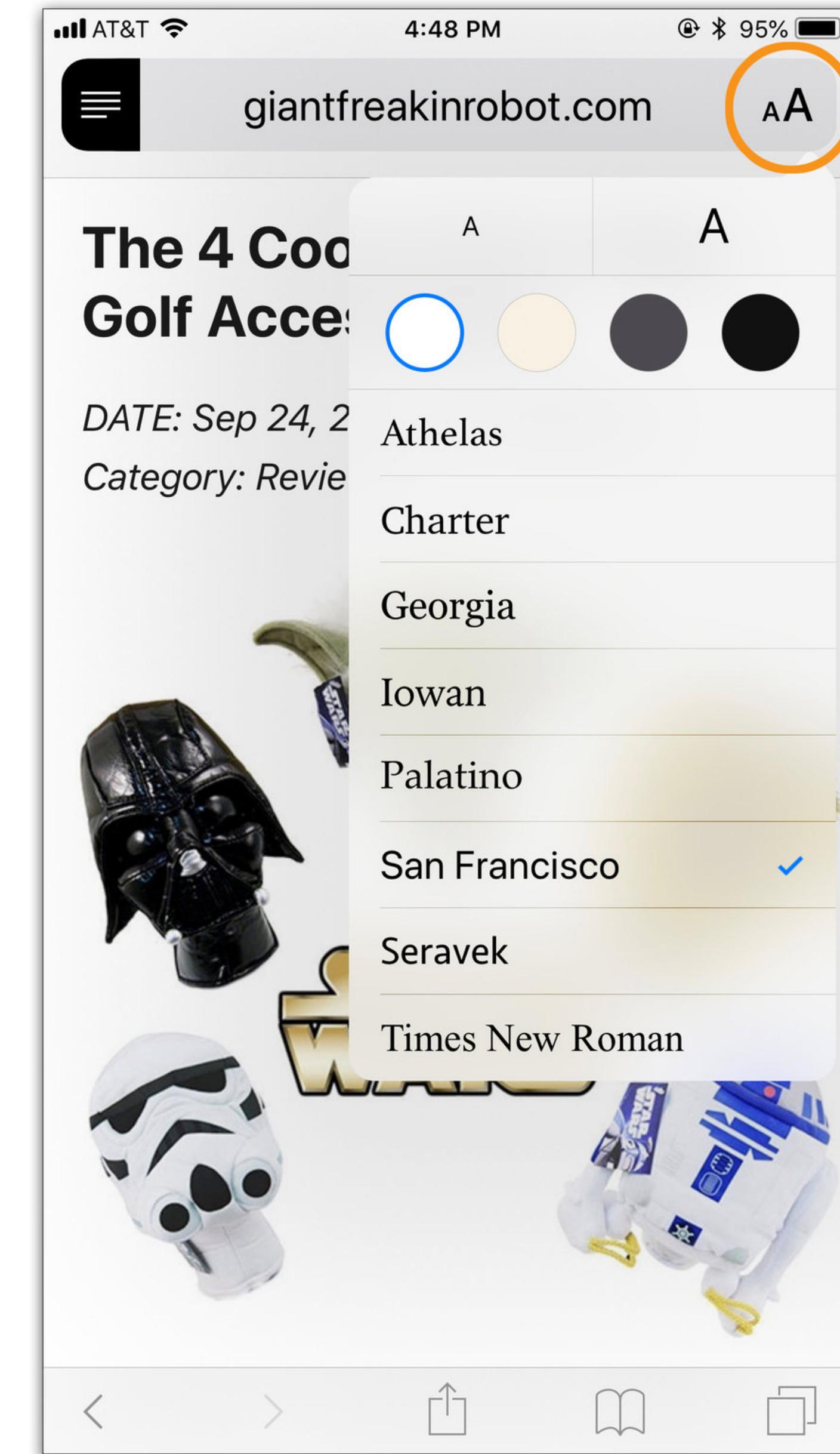
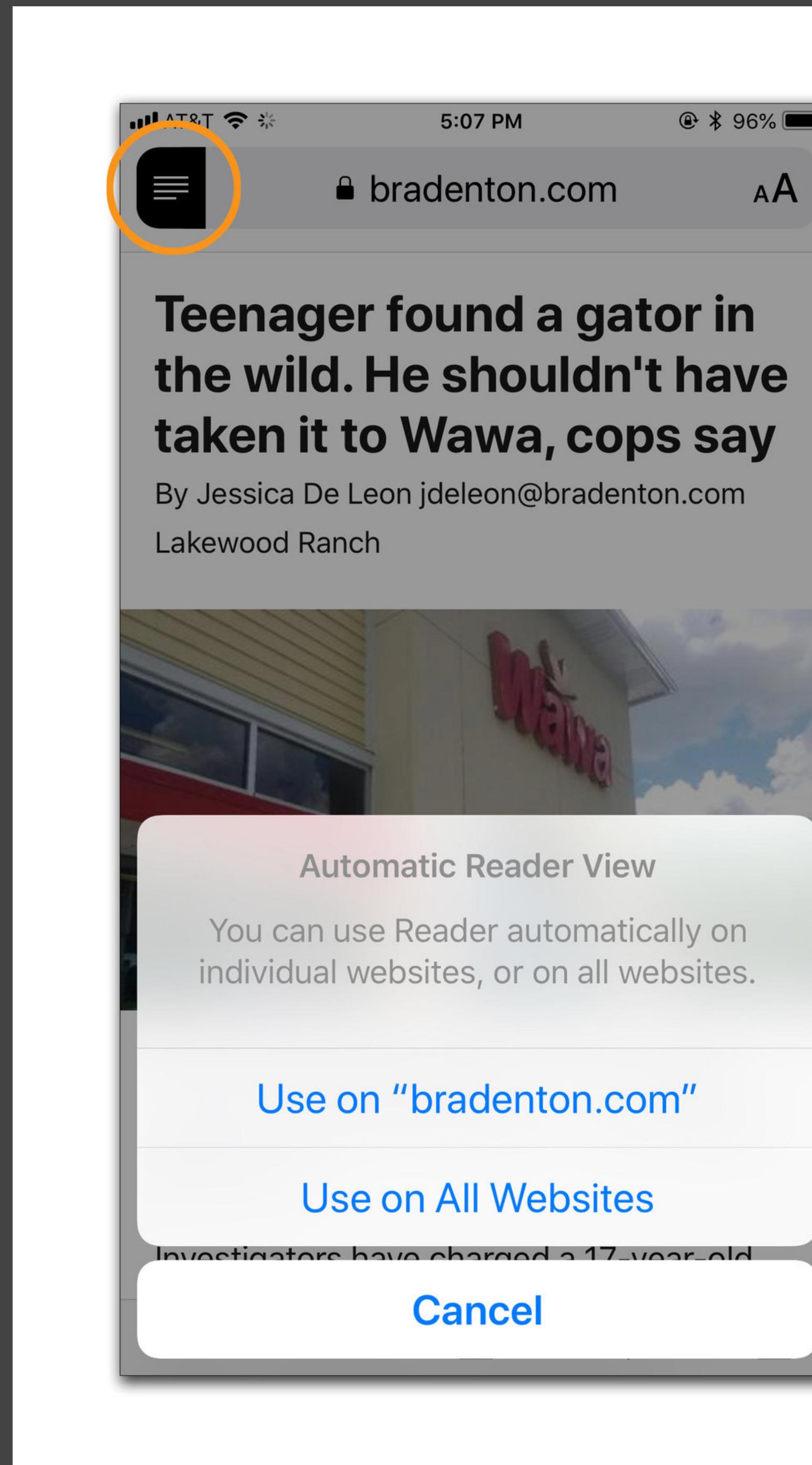
Once we lived without it, now we can't escape it. A historian unpacks the origins of our plastic addiction



Monsanto's House of the Future attraction was on display at Disneyland from 1957 to 1967.

Photograph: Ralph Crane/Getty Images

In 1957 Disneyland opened the [Monsanto House of the Future](#), an all-plastic



Robust

Parseable by browsers and
assistive technologies

WCAG QuickRef — <https://www.w3.org/WAI/WCAG21/quickref/>

The screenshot shows a web browser displaying the 'How to Meet WCAG (Quick Reference)' page. The URL in the address bar is <https://www.w3.org/WAI/WCAG21/quickref/>. The page title is 'How to Meet WCAG (Quick Reference)'. A sub-header states: 'A customizable quick reference to Web Content Accessibility Guidelines (WCAG) 2 requirements (success criteria) and techniques.' Below this is a button labeled 'Show About & How to Use'. On the right side, the W3C logo is visible with the text 'Web Accessibility Initiative WAI'.

On the left, a sidebar menu lists the following sections:

- 1. Perceivable**
 - 1.1 Text Alternatives
 - 1.1.1 Non-text Content
 - 1.2 Time-based Media
 - 1.2.1 Audio-only and Video-only (Prerecorded)
 - 1.2.2 Captions (Prerecorded)
 - 1.2.3 Audio Description or Media Alternative (Prerecorded)
 - 1.2.4 Captions (Live)
 - 1.2.5 Audio Description (Prerecorded)
 - 1.2.6 Sign Language (Prerecorded)
 - 1.2.7 Extended Audio Description (Prerecorded)
 - 1.2.8 Media Alternative (Prerecorded)
 - 1.2.9 Audio-only (Live)
 - 1.3 Adaptable
 - 1.3.1 Info and Relationships
 - 1.3.2 Meaningful Sequence
 - 1.3.3 Sensory Characteristics
 - 1.3.4 Orientation
 - 1.3.5 Identify Input Purpose
 - 1.3.6 Identify Purpose
 - 1.4 Distinguishable
 - 1.4.1 Use of Color
 - 1.4.2 Audio Control

At the top of the main content area, there is a yellow banner with the text 'Selected Filters: WCAG 2.1: all success criteria and all techniques.' followed by buttons for 'Clear filters', 'Expand all sections', and 'Share'.

The main content starts with 'Principle 1 – Perceivable' and a definition: 'Information and user interface components must be presentable to users in ways they can perceive.'

Under 'Principle 1 – Perceivable' is a section titled 'Guideline 1.1 – Text Alternatives' with the following description: 'Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language.'

Below this is a sub-section titled '1.1.1 Non-text Content — Level A' with the following description: 'All non-text content that is presented to the user has a text alternative that serves the equivalent purpose, except for the situations listed below.' It includes a link to 'Show full description' and a button to 'Show techniques and failures for 1.1.1'. There are also 'SHARE' and 'BACK TO TOP' buttons.

Further down is a section titled 'Guideline 1.2 – Time-based Media' with the following description: 'Provide alternatives for time-based media.'

Finally, there is a sub-section titled '1.2.1 Audio-only and Video-only (Prerecorded) — Level A' with the following description: 'For prerecorded audio-only and prerecorded video-only media, the following are true, except when the audio or video is a media alternative for text and is clearly labeled as such.' It includes a link to 'Show full description' and a button to 'Show techniques and failures for 1.2.1'.

Standards:

WCAG

ATAG

UAAG

WAI-ARIA

EARL

Standards:

WCAG

ATAG

UAAG

WAI-ARIA

EART

usability testing

What can we do?

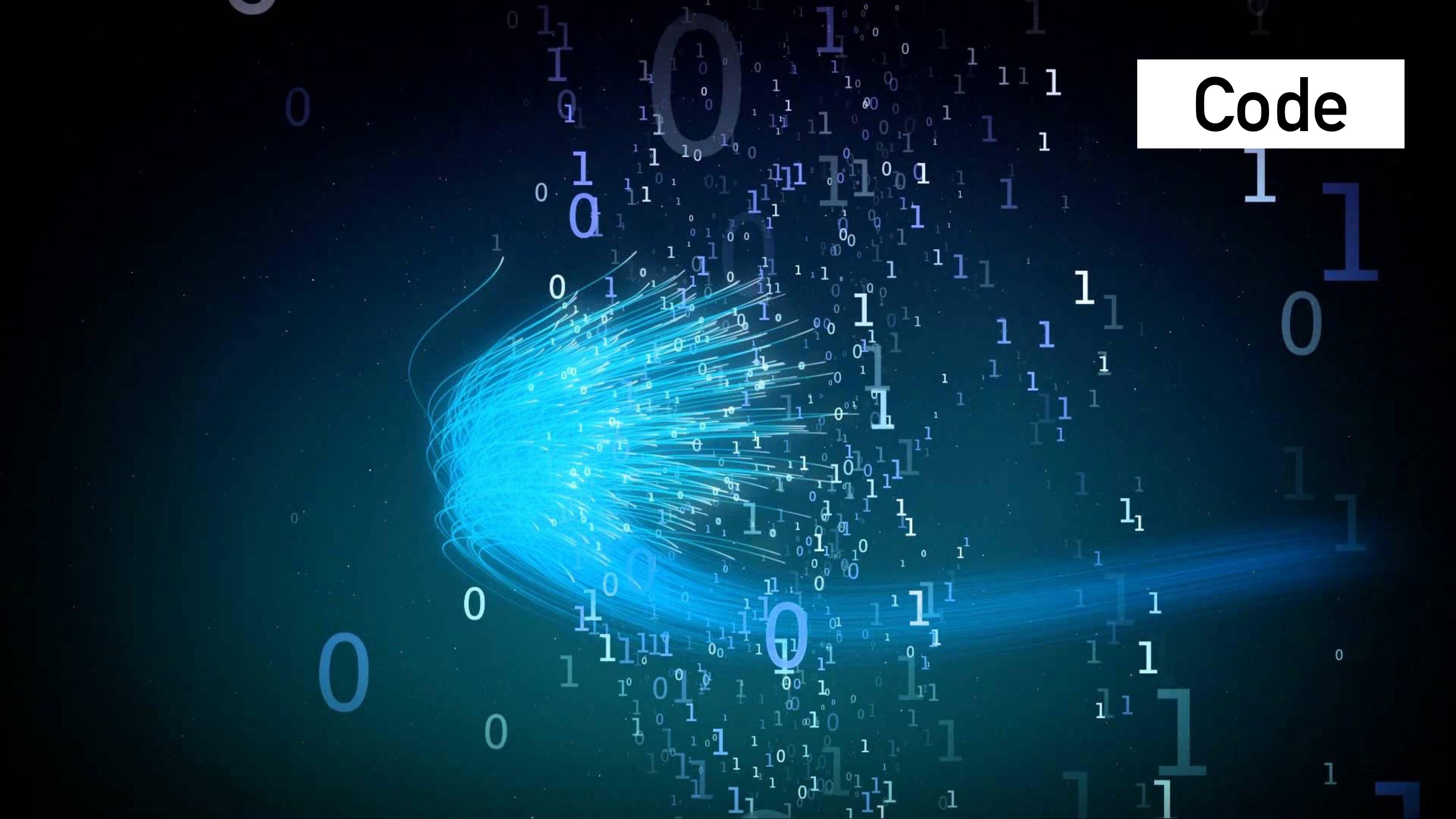
The background of the image consists of numerous overlapping circles of various sizes and colors, creating a vibrant and dynamic visual effect. The colors transition through a full spectrum, including red, orange, yellow, green, blue, and purple. The circles are semi-transparent, allowing the ones behind them to be visible. They appear to be floating in a dark space, with some circles having bright highlights on their edges.

Colour

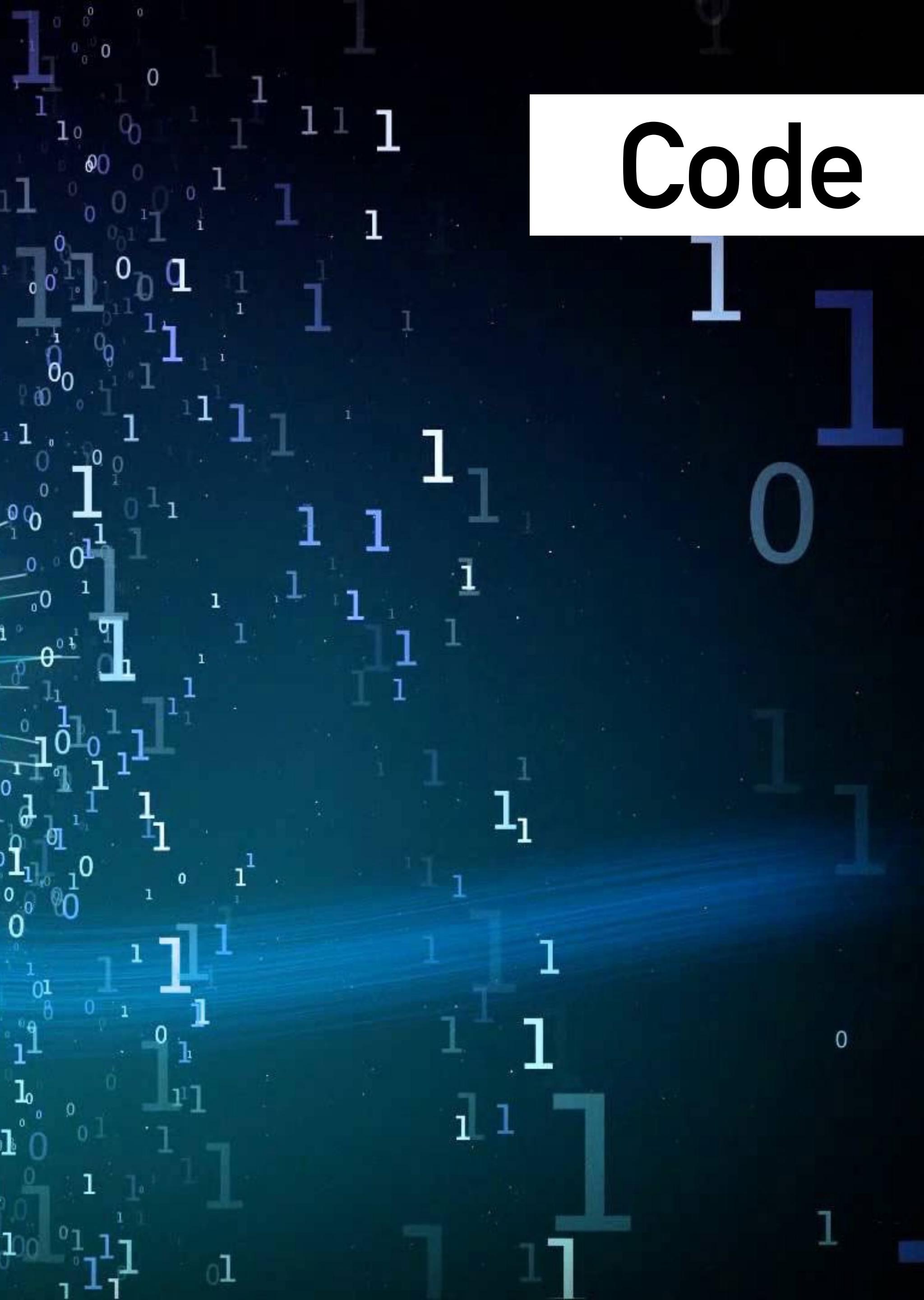
Language

THE OXFORD
ENGLISH
DICTIONARY

THE OXFORD
ENGLISH
DICTIONARY

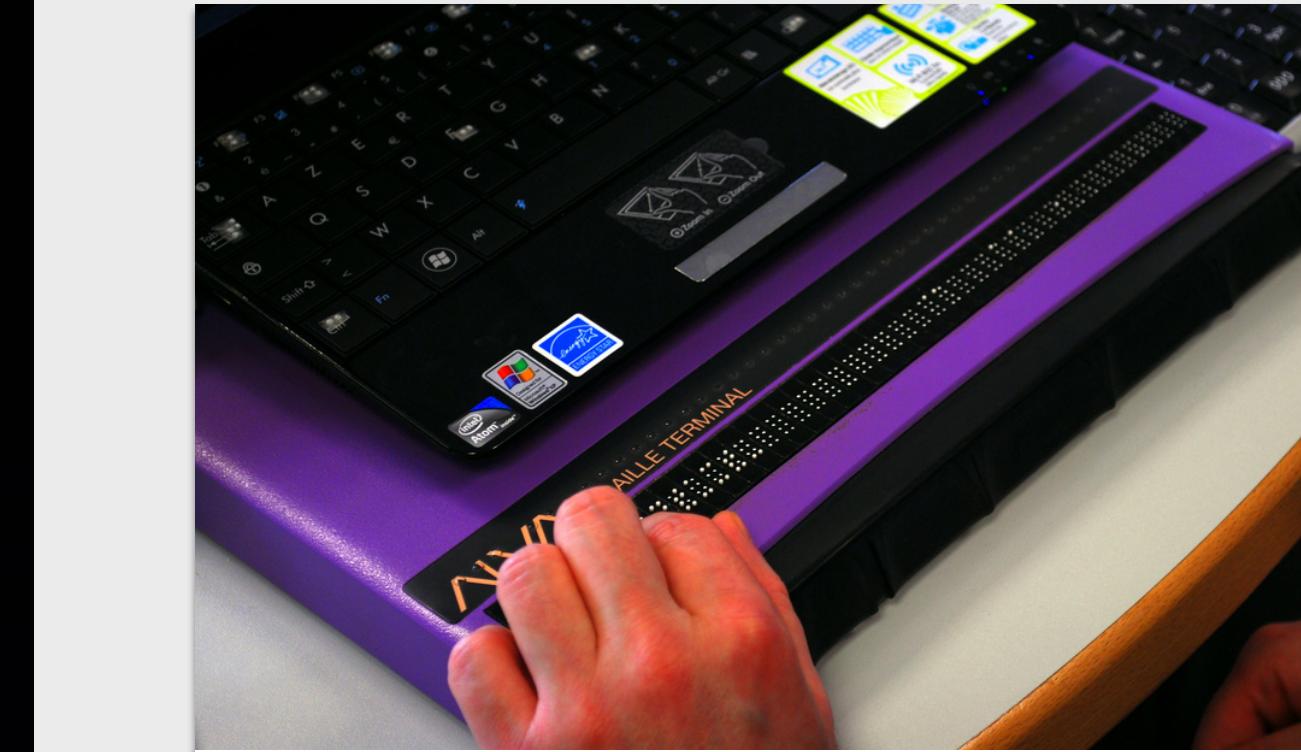


Code



Code

alternate pointing devices



braille bars



JAWS for Windows



screenreaders



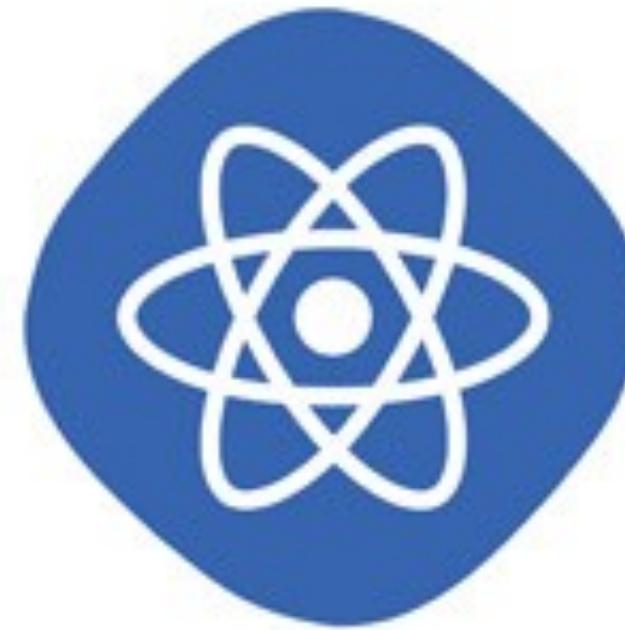
screen magnifiers



This time, it doesn't matter which
framework you choose



ember



Ultimately, it's all about the...

HTML

CSS

JavaScript

HTML
describes what things are

CSS
describes what things look like

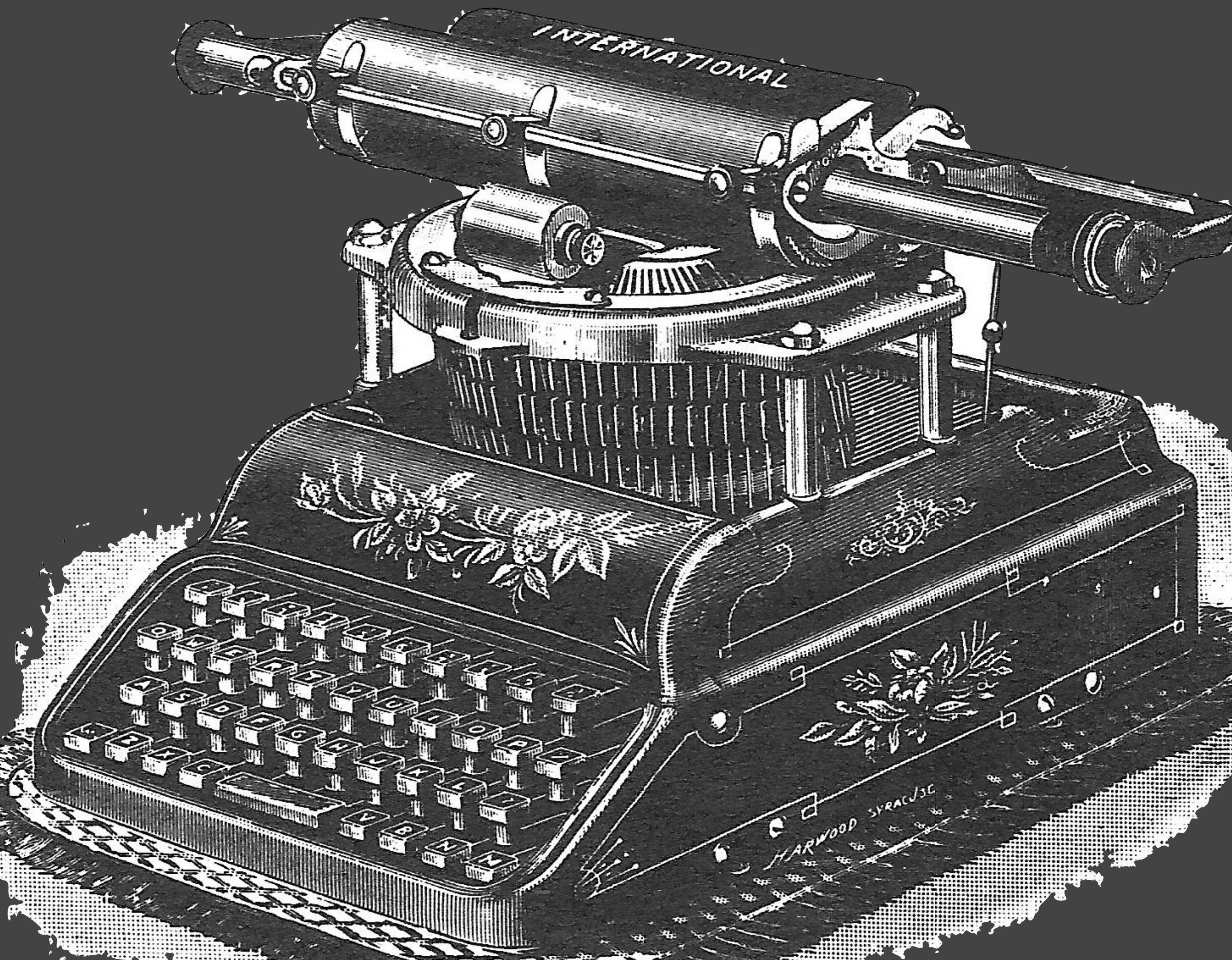
JavaScript
behavior, state, etc

Accessibility
is built into
web standards

The Business Case

Innovation

A 19th century Italian inventor built the first typewriter for a blind friend.



Ethics

It is a basic human right.

Some companies take responsibility, some customers prefer them for that reason.



Ethics

Apple devices have built-in accessibility features, like a screenreader, voice control, hearing aids support, etc



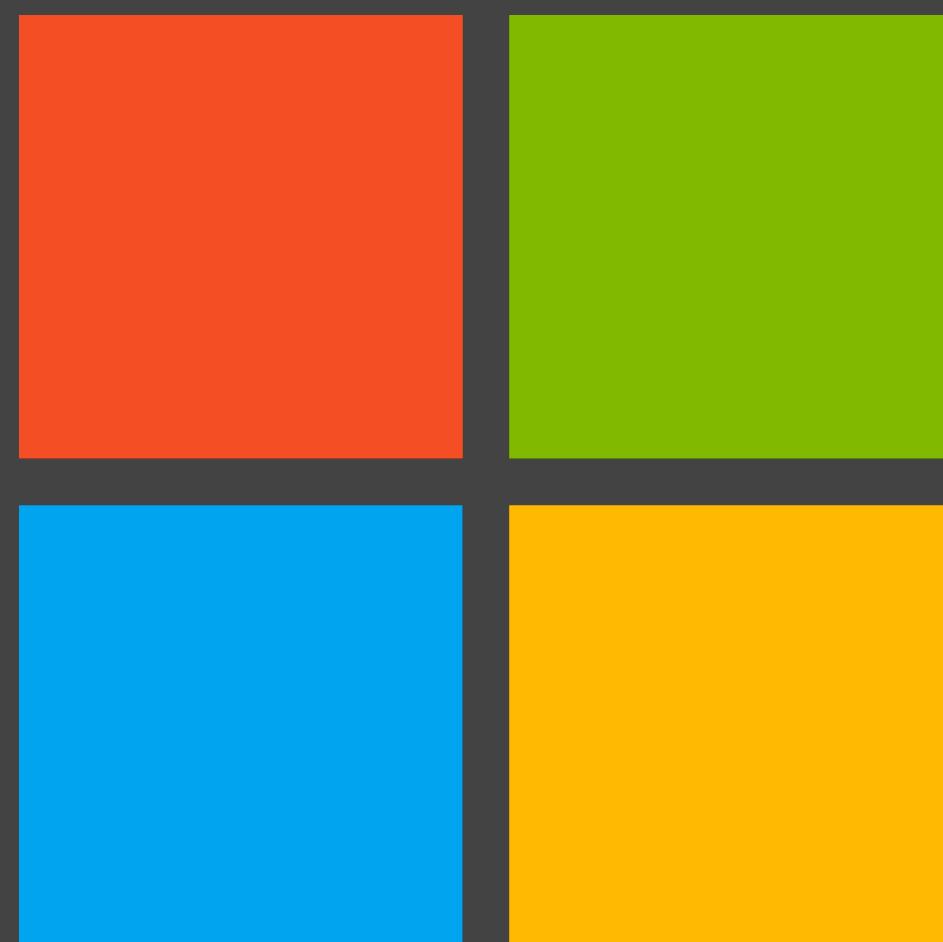
Ethics

Apple execs get 10% increase/
decrease in bonus for
performance around 'core
values', including accessibility.



Ethics

Live captions in Teams. High Contrast Mode, magnifier, screenreader in Windows. Enable Labs to research solutions for and with people with disabilities.



Code quality

Code with more structure
is likely easier to maintain.

```
<!DOCTYPE html>
<html>
  <head>
    <title>Example</title>
    <link rel="stylesheet" type="text/css" href="style.css" />
  </head>
  <body>
    <h1>Welcome to my website!</h1>
    <nav>
      <a href="/">Home</a>
      <a href="one/">One</a>
      <a href="two/">Two</a>
      <a href="three/">Three</a>
    </nav>
```

SEO

Code with more structure
is also easier to find for
search engines.

```
<!DOCTYPE html>
<html>
  <head>
    <title>Example</title>
    <link rel="stylesheet" href="style.css" />
  </head>
  <body>
    <h1>Hello World!</h1>
    <a href="/">Home</a>
    <a href="one/">One</a>
    <a href="two/">Two</a>
    <a href="three/">Three</a>
  </body>
</html>
```

Legal

Tijdelijk besluit digitale toegankelijkheid overheid (2018)

Applies to websites of all government organisations in The Netherlands (from 23 June 2021: also applies to mobile applications) <https://www.digitoegankelijk.nl/wetgeving/voor-wie-is-het-verplicht>

Meet
accessibility
standards
(WCAG 2.1
A/AA)

Provide a
detailed
accessibility
statement

Provide a
feedback
mechanism

Legal

Wet gelijke behandeling op grond van handicap of chronische ziekte (2017)

Applies to businesses too.



Offer goods and services as accessible as is feasible

Legal

European Accessibility Act

or: Directive (EU) 2019/882 on the accessibility requirements for products and services. It has to become law in the EU countries by 28 June 2022. EU countries must apply the measures from 28 June 2025.

Applies to businesses too, in some sectors:

- telephone services
- consumer banking
- e-commerce
- transport (eg e-ticketing)



Build online services according to accessibility guidelines



WCAG 2.1

Legal

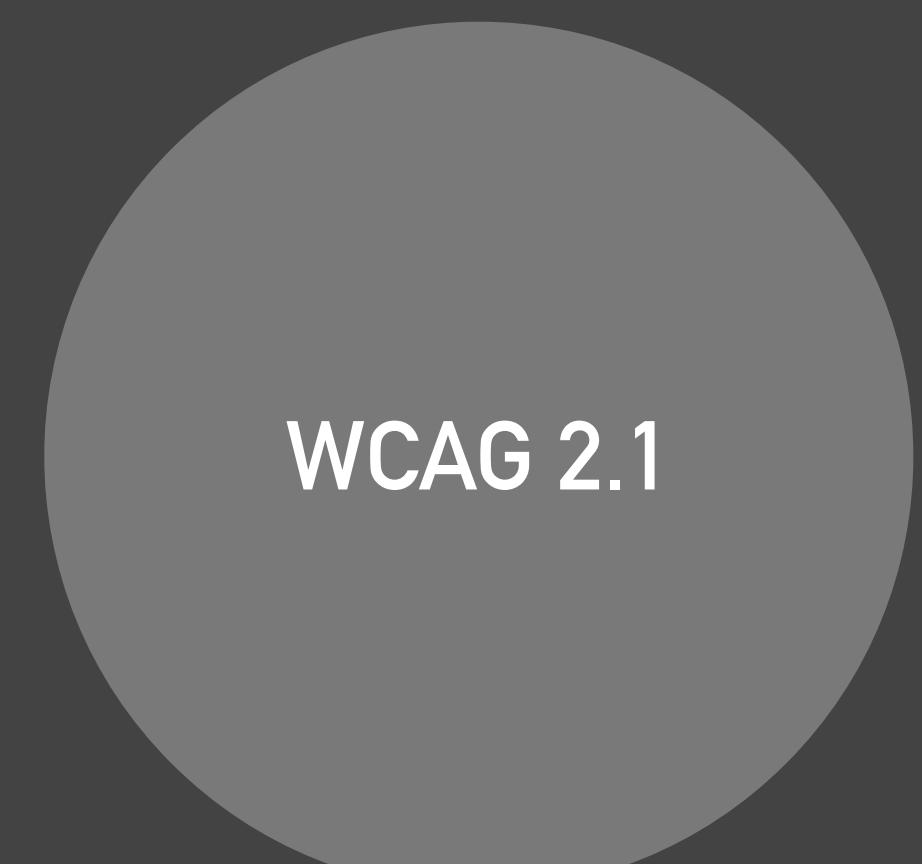
European Accessibility Act

Applies to businesses too, in some sectors:

- telephone services
- consumer banking
- e-commerce
- transport (eg e-ticketing)



Build online
services according
to accessibility
guidelines



WCAG 2.1

Legal

European Accessibility Act

Directive (EU) 2019/882 ➡

Directive (EU) 2016/2102 ➡

EN 301 549 V1.1.2 (2015-04)
(which refers to WCAG 2.1)

Build online
services according
to accessibility
guidelines

WCAG 2.1

Reach

Reach more people. Sell more. Make services digital for more users.

TOOLBELT FOR DEVELOPERS

Toolbelt

Document structure

Appropriate tags

Naming things

Specifying language

Hiding content

Text alternatives

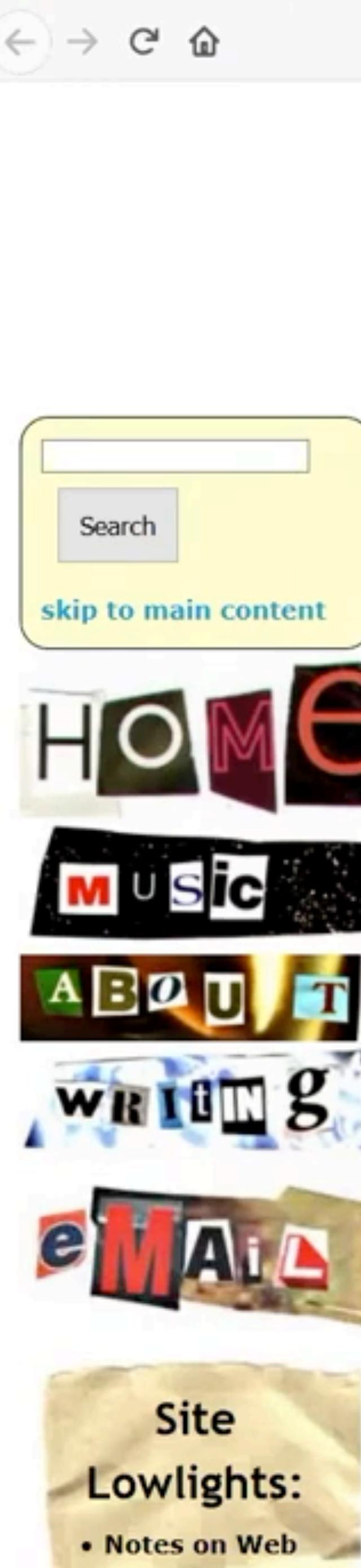
Keyboard and other
inputs

Document STRUCTURE

Good page structure helps
people with disabilities
orient and navigate

TITLE

The <title> tells people
they're on the page they
expected to be on



BruCe lawSoN

Reading List

Friday 18 January 2019

A (usually) weekly round-up of interesting links I've tweeted. Sponsored by [Smashing Magazine](#) who slip banknotes into my [lacy red manties](#) so I can spend time reading stuff.

- [Big Win for Web Accessibility in Domino's Pizza Case](#) – "the district court can order compliance with WCAG 2.0 as an equitable remedy if, after discovery, the website and app fail to satisfy the ADA."
- [IDB-Keyval](#) – "a super-simple-small promise-based keyval store implemented with IndexedDB". Basically, async localstorage, by Jank Architect
- [Cross-Cultural Design and the Role of UX](#) by Jenny Shen
- [Which Smartphone Features Really Matter to Consumers?](#) – TL;DR: storage, battery life, processor speed, duh.
- [Twitter warns that private tweets were public for years](#) – AFAICT, "protected tweets" (whatever they are) rather than DMs. Android app only, not web, iOS.
- [The Big Hangup: Why the Future Is Not Just Your Phone](#) – "The once-revolutionary smartphone is losing its power to amaze—and maybe its singular hold on our lives"

Posted in [accessibility](#), [web standards](#), [reading list](#).
[Leave a comment](#)

On Smart TVs

Monday 14 January 2019

When I was doing developer relations at Opera, I did everything I could to avoid having to go near the Opera TV part of the business – which was basically an app store of HTML5 websites for "Smart" TVs. This was for two reasons. First, the world of Smart TVs was a world of closed standards. Secondly, as Patrick Lauke wrote, the chips in the early Smart TVs were cheap and crappy which [seriously crippled the web experience](#).

Smashing TV: Léonie Watson on why semantic HTML document landmarks assist her using a screenreader
<https://www.youtube.com/watch?v=iUCYPM6up9M>

“

[The <title>] is still the first guarantee or first confirmation that you've ended up on the page that you intended to reach.

Léonie Watson, accessibility expert and screenreader user

Use a unique <title>

From unique to general

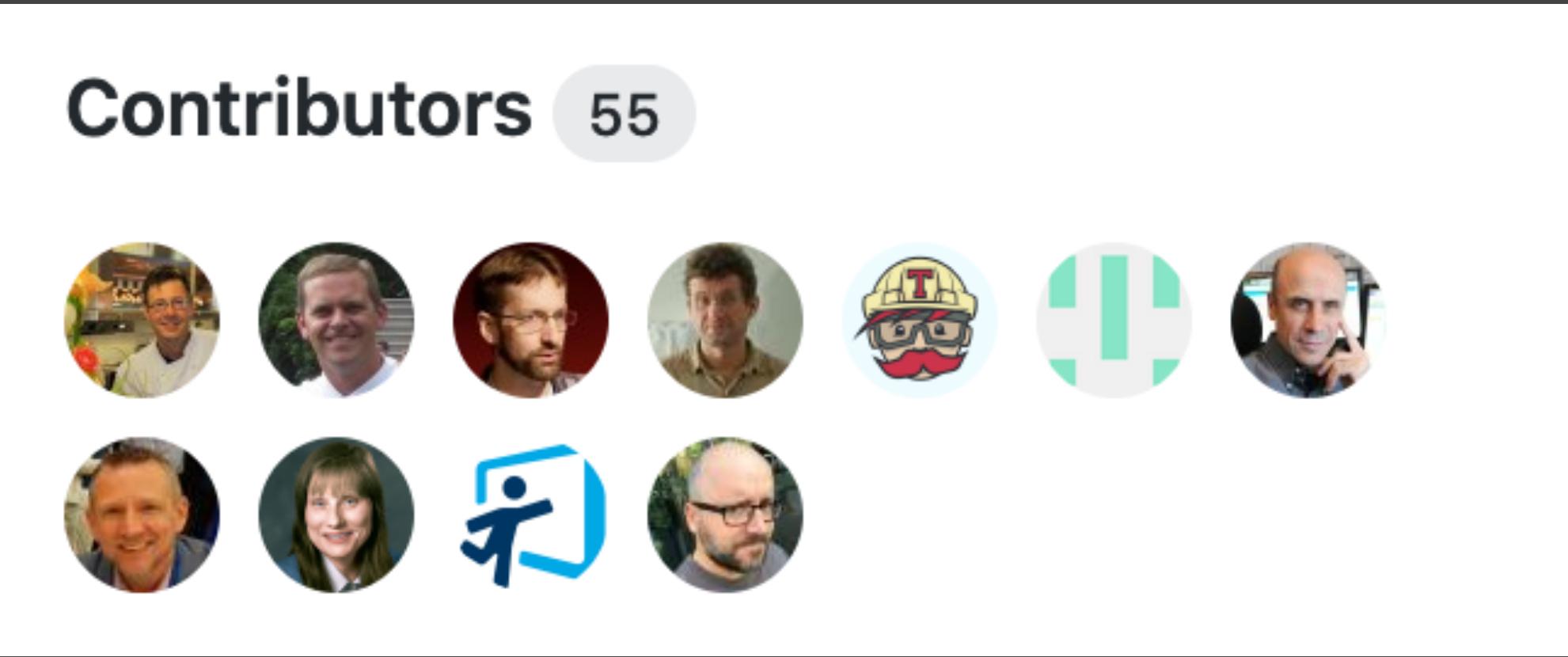
Headings

If you use a heading (h1-h6),
it should describe the content
that it is a heading of

Example 1: “2 March 2021”



Example 2: “Contributors”



“

The heading structure of a web page is like its table of contents.

[https://hiddedevries.nl/en/blog/2018-09-01-heading-structures-
are-tables-of-contents](https://hiddedevries.nl/en/blog/2018-09-01-heading-structures-are-tables-of-contents)

h1 h2 h3 h4 h5 h6

open-borders.pages — Edited

View Zoom Insert Table Chart Text Shape Media Comment Collaborate Format Document

	Table of Contents	Text																		
1. Introduction	4	Select paragraph styles whose text will appear in the table of contents:																		
Structure	5	<table><thead><tr><th>Paragraph Styles</th><th>#'s</th></tr></thead><tbody><tr><td>Body</td><td><input checked="" type="checkbox"/></td></tr><tr><td>Blockquote</td><td><input checked="" type="checkbox"/></td></tr><tr><td>Bibliography entry</td><td><input checked="" type="checkbox"/></td></tr><tr><td>Header 3</td><td><input checked="" type="checkbox"/></td></tr><tr><td>Header 1</td><td><input type="checkbox"/></td></tr><tr><td>Header 2</td><td><input checked="" type="checkbox"/></td></tr><tr><td>Header & Footer</td><td><input type="checkbox"/></td></tr><tr><td>Footnote 1</td><td><input type="checkbox"/></td></tr></tbody></table>	Paragraph Styles	#'s	Body	<input checked="" type="checkbox"/>	Blockquote	<input checked="" type="checkbox"/>	Bibliography entry	<input checked="" type="checkbox"/>	Header 3	<input checked="" type="checkbox"/>	Header 1	<input type="checkbox"/>	Header 2	<input checked="" type="checkbox"/>	Header & Footer	<input type="checkbox"/>	Footnote 1	<input type="checkbox"/>
Paragraph Styles	#'s																			
Body	<input checked="" type="checkbox"/>																			
Blockquote	<input checked="" type="checkbox"/>																			
Bibliography entry	<input checked="" type="checkbox"/>																			
Header 3	<input checked="" type="checkbox"/>																			
Header 1	<input type="checkbox"/>																			
Header 2	<input checked="" type="checkbox"/>																			
Header & Footer	<input type="checkbox"/>																			
Footnote 1	<input type="checkbox"/>																			
The debate: closed borders versus open borders	5																			
Who wants to cross borders?	7																			
Perspective	7																			
2. The case for closed borders	9																			
The right to self-determination	9																			
The freedom of association argument	10																			
Preservation of culture	12																			
Associative ownership	14																			
Summary	17																			
3. The case for open borders	18																			
Carens' case for open borders	18																			
All humans are equal	21																			
Applicability of democratic justification	22																			
Emigration requires immigration	24																			
Multiculturalism	25																			
Summary	26																			
4. The feasibility of open borders	28																			
The political reality	28																			
"Transnational"	31																			
14,744 words																				
Presuppositions for an open border theory	32																			

Table of Contents Text

Select paragraph styles whose text will appear in the table of contents:

Paragraph Styles	#'s
Body	<input checked="" type="checkbox"/>
Blockquote	<input checked="" type="checkbox"/>
Bibliography entry	<input checked="" type="checkbox"/>
Header 3	<input checked="" type="checkbox"/>
Header 1	<input type="checkbox"/>
Header 2	<input checked="" type="checkbox"/>
Header & Footer	<input type="checkbox"/>
Footnote 1	<input type="checkbox"/>

Body

Paragraph Styles +

Title

Subtitle

Heading

Heading 2

Heading 3

Heading Red

✓ Body

CAPTION

Header & Footer

Footnote

Label

Label Dark

Lines 1

h1

h2

h3

h4

h5

h6

Avoid skipping
heading levels

People may consume your
page in a different way
than you anticipated

[Performance](#) > [Services data](#)

Services data

114 services

Transactions per year

1.56bn

total for [94 services out of 114](#)

Digital take-up

90.2%

weighted average for [70 services out of 114](#)

weighted average for [9 services out of 114](#)

Headings

- [1: Services data](#)
- [2: Number of services](#)
- [2: Filter services by keyword or department](#)
- [2: Totals and averages for filtered services](#)
- [3: Transactions per year](#)
- [3: Annual cost](#)
- [3: Cost per transaction](#)
- [3: Digital take-up](#)
- [3: User satisfaction](#)
- [3: Completion rate](#)
- [2: List of services](#)
- [2: Services and information](#)
- [2: Departments and policy](#)
- [2: Support links](#)

weighted average for [9 services out of 114](#)

LISTS

Mark up lists as lists

ordered

1. Boil water
2. Add pasta
3. Drain

``

unordered

- capers
- black olives
- anchovy

``

description

fusilli
a variety of pasta that are
formed into corkscrew shapes

`<dl>`

Mark up lists as lists

Lists are exposed to screenreaders
and work well with settings like
reader mode.

sections

<section>

<header>

<footer>

<nav>

<article>

<main>

<aside>

“page regions”
or “landmarks”

Name sections with labels

```
<section aria-labelledby="h">  
  <h2 id="h">Used cars</h2>  
</section>
```

Name sections with labels

```
<section aria-label="Used cars">
```

Make it easy to
skip sections

Let users skip sections

```
1 <a href="#nav">To navigation</a>
2 <a href="#main">To main content</a>
```

takeaways

- clear headings that describe sections
- headings are used for navigation
- mark up sections and label them
- use lists when listing things

Exercise 1

**Make sure the page has
a sensible structure.**

**Choose the
RIGHT TAGS**

Look beyond
divs and spans

Save

<div>Save</div>

don't do this

Save

Save

don't do this

<a>

vs

<button>



<a> goes elsewhere

vs

<button> does something

Save

< a href="#">Save</ a>

don't do this

If your href is empty,
`<a>` is likely not the
tag you should be using



Save

```
<button>Save</button>
```



Save

```
<button>Save</button>
```

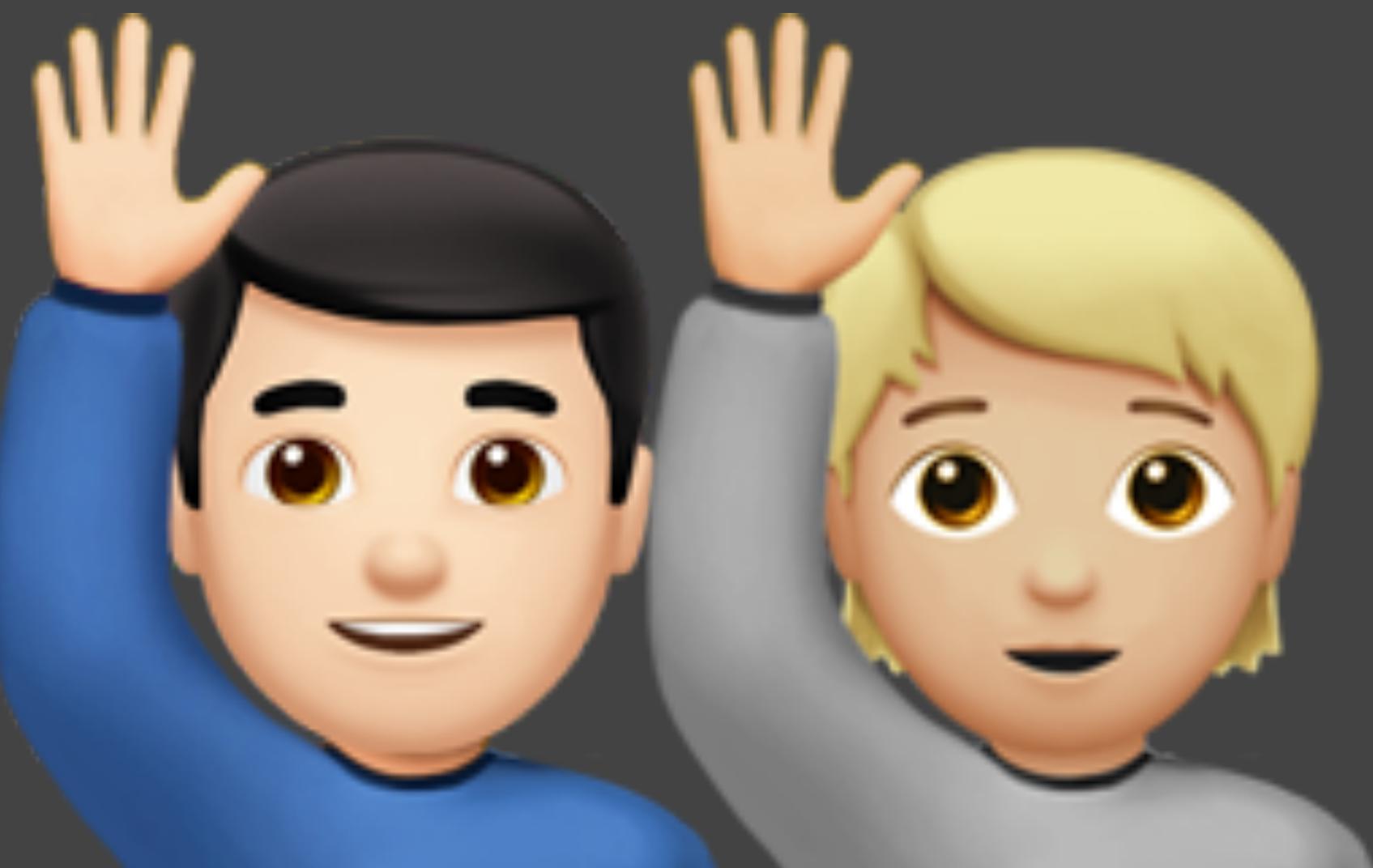
Complementary benefits:

- * can be accessed with TAB
- * can be pressed with ENTER
- * is read out as 'button'
- * receives the correct cursor

<caption>

vs

<legend>



<caption> title of a table

vs

<legend> title of a group
of form fields

Financial results 2017

Fixed assets	210,000
Current Assets	4,532
Creditors	23,003
Capital and reserves	50,500

```
<table>
<caption>Financial results 2017</caption>
<tbody>...</tbody>
</table>
```

Financial results 2017

	Amount
Fixed assets	210,000
Current Assets	4,532
Creditors	23,003
Capital and reserves	50,500

```
<table>
<caption>Financial ...</caption>
<thead>
  <tr>
    <th></th>
    <th scope="col">Amount</th>
  </tr>
</thead>
<tbody>
  <tr>
    <th scope="row">Fixed assets</th>
    <td>210,000</td>
  </tr>
</tbody>
</table>
```

Personal information

Name:

Address:

City:

```
<form>
<fieldset>
  <legend>Personal information</legend> ...
</fieldset>
</form>
```

<i>



<i> change in tone
of voice
technical terms

(not for icons,
sorry Bootstrap)

Alex and Martina left for France in order to open a chambre d'hôte.



Alex and Martina left for France in order to open a *chambre d'hôtes*.

The term *box formatting context* is defined above.

<p>The term *box formatting context* is defined above.</p>

```
<details>  
  <summary>...</summary>  
  ...  
</details>
```

```
<details>
  <summary>Ingredients</summary>
  <ul>
    <li>Tomato</li>
    <li>Courgette</li>
    <li>Ricotta</li>
  </ul>
</details>
```

Check
the spec:

developers.whatwg.org



HTML: The Living Standard

Developer's Edition — Last Updated 18 September 2017

TABLE OF CONTENTS

- 1 [Introduction](#)
 - 1.1 [Is this HTML5?](#)
 - 1.2 [Background](#)
 - 1.3 [Audience](#)
 - 1.4 [Scope](#)
 - 1.5 [History](#)
 - 1.6 [Design notes](#)
 - 1.7 [HTML vs XML syntax](#)
 - 1.8 [Structure of this specification](#)
 - 1.9 [Privacy concerns](#)
 - 1.10 [A quick introduction to HTML](#)
 - 1.11 [Conformance requirements for authors](#)
- 1.12 [Suggested reading](#)

Search. Press ↻

If there isn't a suitable HTML tag,
`<div>` or `` are great

Takeaways

- <button>s do something
- <a>s go somewhere
- <caption> for forms
- <legend> for fieldsets

Exercise 2

Improve the HTML tags
that are being used.

Naming THINGS

Unique names
help distinguish



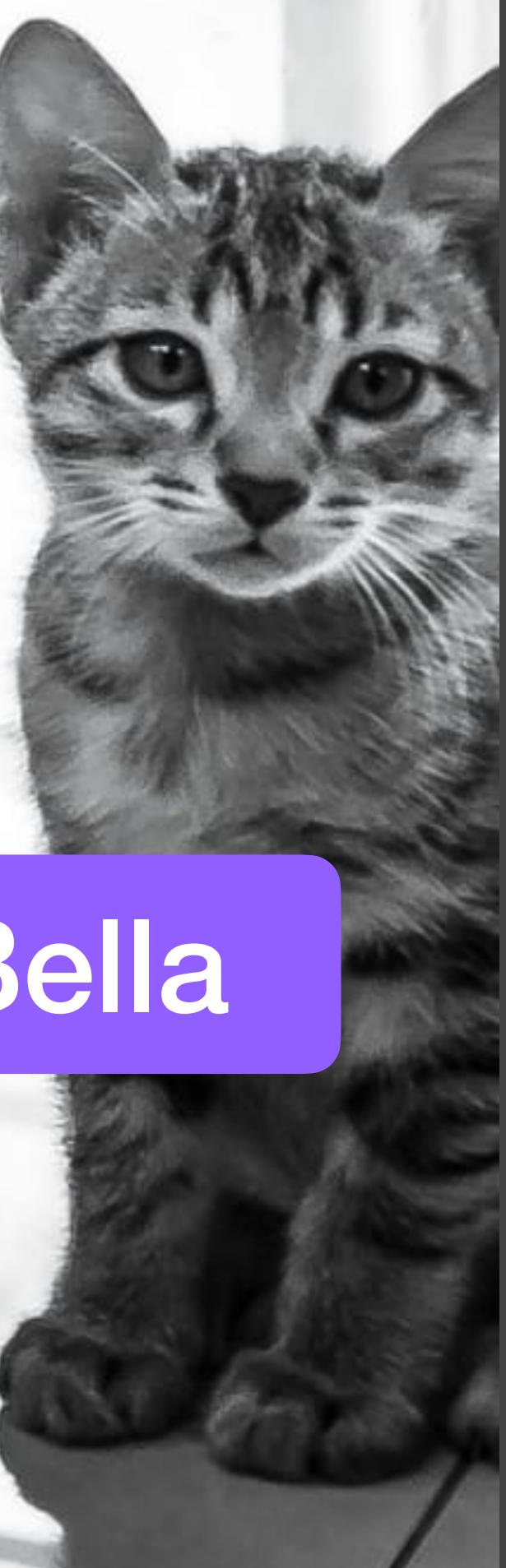
Bella

Bella



Bella

Bella



Leverage agile frameworks to provide a robust synopsis for high level overviews.

[READ MORE](#)

Organically grow the holistic world view of disruptive innovation via workplace diversity.

[READ MORE](#)

Leverage agile frameworks to provide a robust synopsis for high level overviews.

[READ MORE](#)

Iterative approaches to corporate strategy foster collaborative thinking to further the overall value proposition.

[READ MORE](#)

At the end of the day, going forward, a new normal that has evolved from generation X is on the runway

[READ MORE](#)

Iterative approaches to corporate strategy foster collaborative thinking to further the overall value proposition.

[READ MORE](#)

names a link

<a>

“

“24.4% of pages had links with ambiguous link text, such as ‘click here’, ‘more’, ‘continue’, etc”.

– WebAIM, *The WebAIM Million*

Pick a unique link name
that makes sense
out of context

If we removed the page, looked at
just the link name, would
it still make sense?

names a form field

<label>

“

“59% of form inputs were not properly labeled.”

– WebAIM, *The WebAIM Million*

Personal details

Name:

Address:

City:

```
<label for="name">Name</label>
<input type="text" id="name" />
```

All of these elements
can name things

`<a>`

`<hx>`

`<caption>`

`<legend>`

`<label>`

Convey function, not form
(e.g. “Close” instead of “X”)

Distinguishing words first

(e.g. “Edit personal info” instead of “Personal info - edit”)

Be concise

(1-3 words should be enough)

Don't include roles

(e.g. 'Edit' instead of 'Edit button')

Use unique names

(e.g. 'Edit info for Alice', 'Edit info for Bob',
instead of 'Edit info', 'Edit info')

Takeaways

- all UI controls require names
- they can often be set in HTML
- what the name is matters

SPECIFYING Language

```
<html lang="nl">
```


Alex and Martina left for France in order to open a chambre d'hôte.



Alex and Martina left for France in order to open a *chambre d'hôtes*.

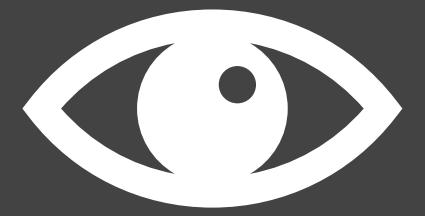
Exercise 3

Make sure language is declared where appropriate.

HIDING CONTENT

If you are hiding content,
decide from which people
you want to hide

Users we could hide content from:



visual

e.g. those who can
see the page



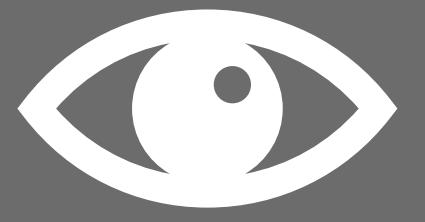
non-visual

e.g. users of screenreaders,
Google Translate, braille displays



all

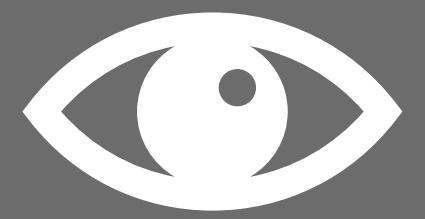
visual + non-visual



visual

e.g. those who can
see the page

Contextual cues to
supplement visual cues.

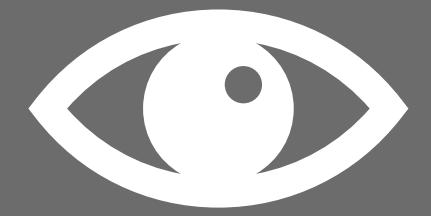


visual

e.g. those who can
see the page

“[visually hiding] can resolve some of
the tension between the demands of
accessibility and the demands of
visual design”

<http://webaim.org/techniques/css/invisiblecontent/>

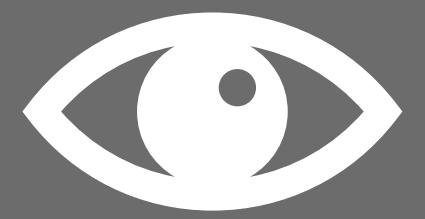


visual

e.g. those who can
see the page

```
<span class="visually-hidden">  
  Only show me to non-visual users  
</span>
```

```
.visually-hidden {  
  position: absolute;  
  left: -9999em;  
}
```



visual

e.g. those who can
see the page

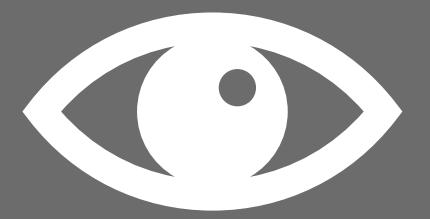
About us

Products

Projects

Contact

```
1 <nav>
2   ...<h2 class="visually-hidden">Navigation</h2>
3   ...<ul>
4     ...<li>About us</li>
5     ...<li>Products</li>
6     ...<li>Projects</li>
7     ...<li>Contact</li>
8   ...</ul>
9 </nav>
```



visual

e.g. those who can
see the page

Please accept our
cookie policy



OK

1

```
<button type="button">Close</button>
```

Visual hiding gone wrong

Ik wil graag...

zorg declareren
rekeningnummer wijzigen
adres wijzigen
schade melden
verzekering opzeggen

Over Univé

over ons
actueel nieuws
vacatures
nieuwsbrief
blog
[affiliate](#)

Vind een Univé-winkel

Kom gerust bij ons langs.

Postcode / plaats 

Klantenservice

Neem gerust contact met ons op.



You are currently on a link. To click this link, press Caps Lock-Space.

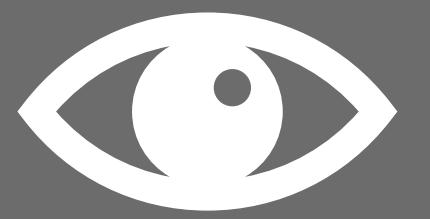
Suggested solution: add visually hidden text to button

Visual hiding gone wrong

Suggested solution: add visually hidden text to button

```
1 <button type="button">  
2 ...<span class="visually-hidden">Zoek</span>  
3 </button>
```

```
1 <input type="submit" value="Zoek">
```

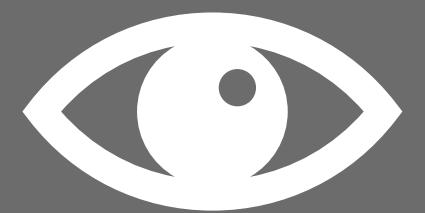


visual

e.g. those who can
see the page

First name *

```
1 <span class="required">required</span>
```



visual

e.g. those who can
see the page

```
<span class="visually-hidden">  
  Only show me to non-visual users  
</span>
```

```
.visually-hidden {  
  position: absolute;  
  clip: rect(1px, 1px, 1px, 1px);  
}
```



non-visual

e.g. users of screenreaders,
Google Translate, braille displays

Make content invisible
for users of assistive
technologies only.



non-visual

e.g. users of screenreaders,
Google Translate, braille displays

```
<span aria-hidden>  
  Only show me to visual users  
</span>
```

Note: do not use on focusable elements.



non-visual

e.g. users of screenreaders,
Google Translate, braille displays



Twitter



aria-hidden



all

visual + non-visual

If you want nobody to
see the content (yet).



all

visual + non-visual

```
<div class="hidden">  
  I am invisible  
</div>
```

```
.hidden {  
  visibility: hidden;  
}
```



all

visual + non-visual

```
<div class="hidden">  
  I am invisible  
</div>
```

```
.hidden {  
  display: none;  
}
```



all

visual + non-visual

```
<div hidden>  
  I am invisible  
</div>
```

```
[hidden] {  
  display: none; /* UA default */  
}
```

[hidden] has great browser support

hidden attribute [- LS](#)

The **hidden** attribute may be applied to any element, and effectively hides elements similar to `display: none` in CSS.

IE	Edge *	Firefox	Chrome	Safari	Opera	iOS Safari *	Opera Mini *	Android Browser *	Chrome for Android	Samsung Internet
		45	49			9.2				
		52	57	9.1	43	9.3				
		14	53	58	10	44	10.2			4
11	15	54	59	10.1	45	10.3	all	56	59	5
	16	55	60	11	46	11				
		56	61	TP	47					
		57	62							

[Notes](#) [Known issues \(0\)](#) [Resources \(2\)](#) [Feedback](#)

The hidden state can be easily overridden with a CSS `display` property set to anything other than `none`.



all

visual + non-visual

**Not exposed to AT
Not rendered
Invisible to text search**

Exercise 4

**Hide the skip link when it
is not currently focused**

- always visible for screenreaders
- only visible for all users when focused

Exercise 4

**Hide the skip link when it
is not currently focused**

- always visible for screenreaders
- only visible for all users when focused

Text alternatives

selectable

copyable

screenreader-announcable

The web is mostly text

enlargeable

Google Translate-able

adaptable

braille convertible

The web lets us have
accessibility automatically



Producten online bestellen | +

< > C ☰ 🔒 https://www.ah.nl/producten

ah Q Producten Bonus Allerhande box Recepten Winkels A

Aardappel, groente, fruit	Verse kant-en-klaar maaltijden, salades
Zuivel, eieren	Bakkerij
Wijn	Bier, sterke drank, aperitieven
Pasta	

The screenshot shows a web browser displaying the website <https://www.ah.nl/producten>. The page features a dark header with the AH logo and navigation links for 'Producten', 'Bonus', 'Allerhande box', 'Recepten', 'Winkels', and a search icon. Below the header, there are six categories arranged in a grid, each with an associated image and text: 'Aardappel, groente, fruit' (potatoes, vegetables, fruit) with an image of bananas and broccoli; 'Verse kant-en-klaar maaltijden, salades' (fresh ready-made meals, salads) with an image of a salad container; 'Zuivel, eieren' (dairy, eggs) with an image of a milk carton and two eggs; 'Bakkerij' (bakery) with an image of bread; 'Wijn' (wine) with an image of three wine bottles; and 'Bier, sterke drank, aperitieven' (beer, strong drink, aperitifs) with an image of a beer box and a bottle. The bottom right corner of the grid is empty.



Ceci n'est pas une pipe.

“

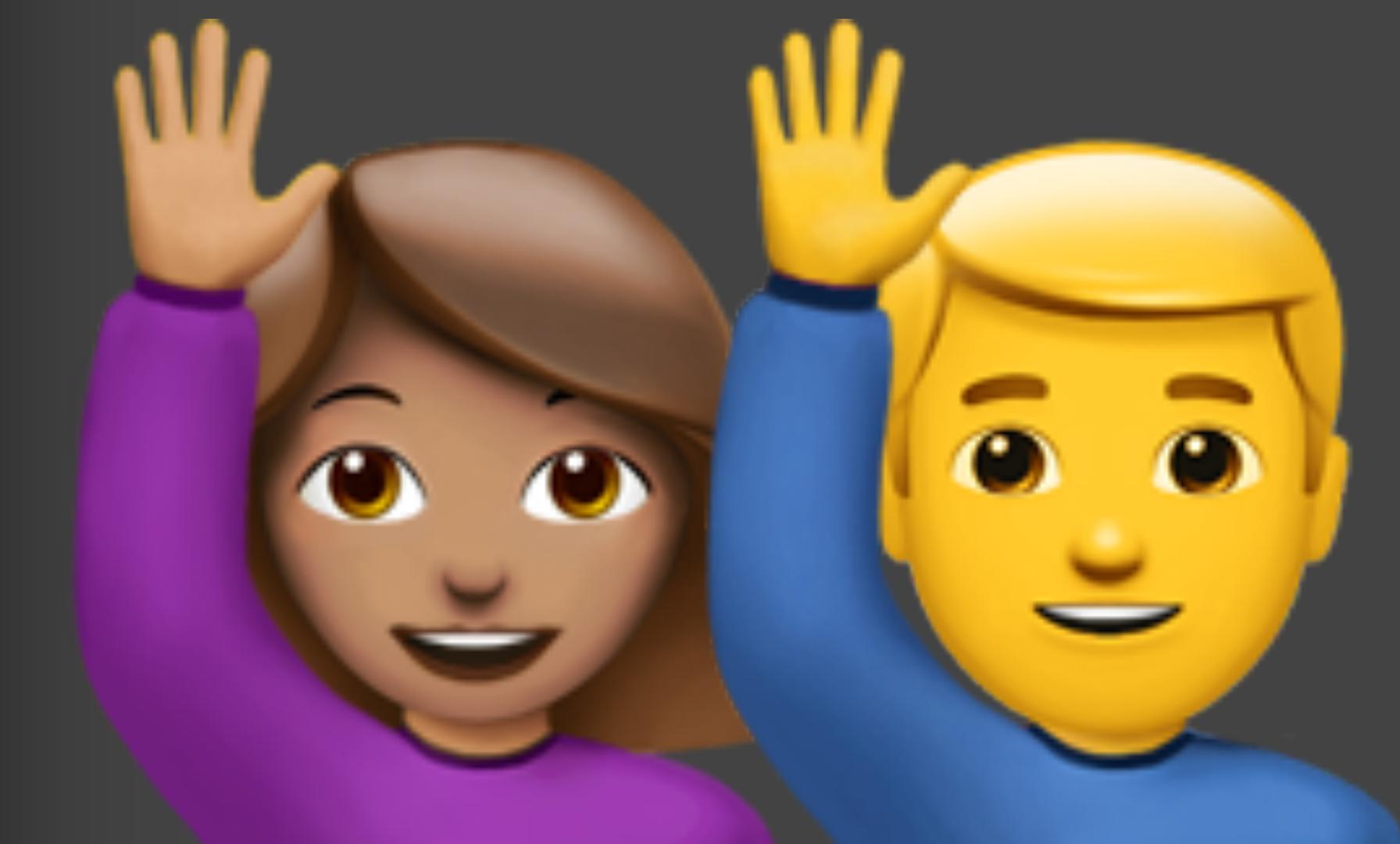
And yet, could you stuff my pipe? No, it's just a representation, is it not? So if I had written on my picture 'This is a pipe', I'd have been lying!

René Magritte

Ceci n'est pas une pomme



A screenshot of a Twitter mobile application. At the top, there's a navigation bar with three colored dots (red, yellow, green) on the left, a back arrow labeled "Tweets" in the center, the word "Detail" in the middle-right, and an upward arrow icon on the far right. On the left side of the screen is a vertical toolbar with icons for profile picture, reply, mention, message, search, trending topics, user list, and a refresh symbol. The main content area features a large, bold, black, sans-serif font on a white background. The text reads "Haanstra le" on the first line, "iet persé de" on the second line, and "irators' 700" on the third line. Below this, a smaller text block is visible. A profile picture of a woman with dark hair, identified as "sheila sitalsing @sheilasitalsing", is shown next to her tweet. The tweet text reads: "Dit is al de achtste in de afgelopen week in de @volkskrant. Wat is er gebeurd met per se? pic.twitter.com/S0FukcRLDm". Below the tweet are engagement metrics: "94 Likes" and "12 Retweets". The timestamp "21/08/2017 at 12:54" and the source "via Twitter for Android" are also present. At the bottom, a blue footer bar contains five white icons: a back arrow, a reply/reload symbol, a heart, an upward arrow, and a gear.



Ceci n'est pas
un texte

< Tweets Detail ↗

 Haanstra le
iet persé de
rrorors' Zoo

 **sheila sitalsing** @sheilasitalsing
Dit is al de achtste in de afgelopen week in de
@volkskrant. Wat is er gebeurd met per se?
pic.twitter.com/S0FukcRLDm

94 Likes 12 Retweets

21/08/2017 at 12:54 via Twitter for Android

← ↕ ❤️ ↗ ⚙️

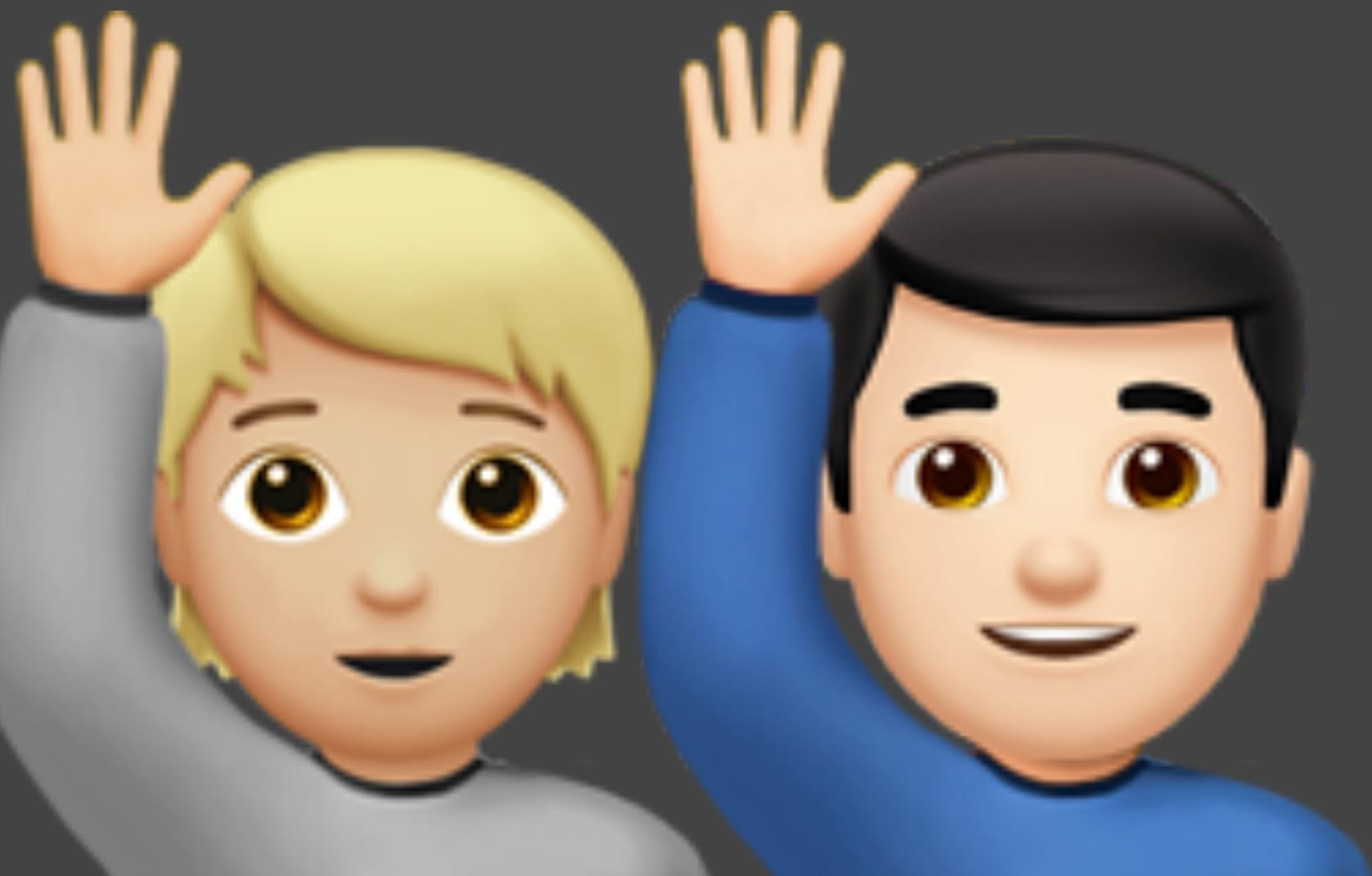
 **Wim Knol** @WimKnol

Screenshots of a memo

Corona graphs in the news

Special offer

...





Google Accessibility ✅

@googleaccess

Follow



Coming later this year: Screen reader users can ask Chrome to get automatic image descriptions from Google when an image is missing alt text. Get a sneak preview now using Chrome Canary, just open the context menu! #a11y #CSUNATC19

10:35 AM - 14 Mar 2019

“

image recognition in screen readers is a massive improvement over the absence of anything better, but it isn't better than a text description provided by a content author who knows exactly what's in the image, why its being used and the context its being used in

Léonie Watson, accessibility expert and screenreader user

“

image recognition in screen readers is a massive improvement over the absence of anything better, but it isn't better than a text description provided by a content author who knows exactly what's in the image, why its being used and the context its being used in

Léonie Watson, accessibility expert and screenreader user

Images that are part of the
content

Would you get less
information if the image
wasn't there?

Would you get less information if the image wasn't there?

This message contains remote content. [Load Remote Content](#)

★ PostNL Jouw Coolblue-pakket is onderweg To: coolblue@hiddedevries.nl

Pakketje. Neem me mee. | Bekijk [hier](#) de webversie.

Coolblue. Alles voor een glimlach.

Voor 23.59 uur besteld, morgen **gratis** bezorgd 5 échte [winkels](#)

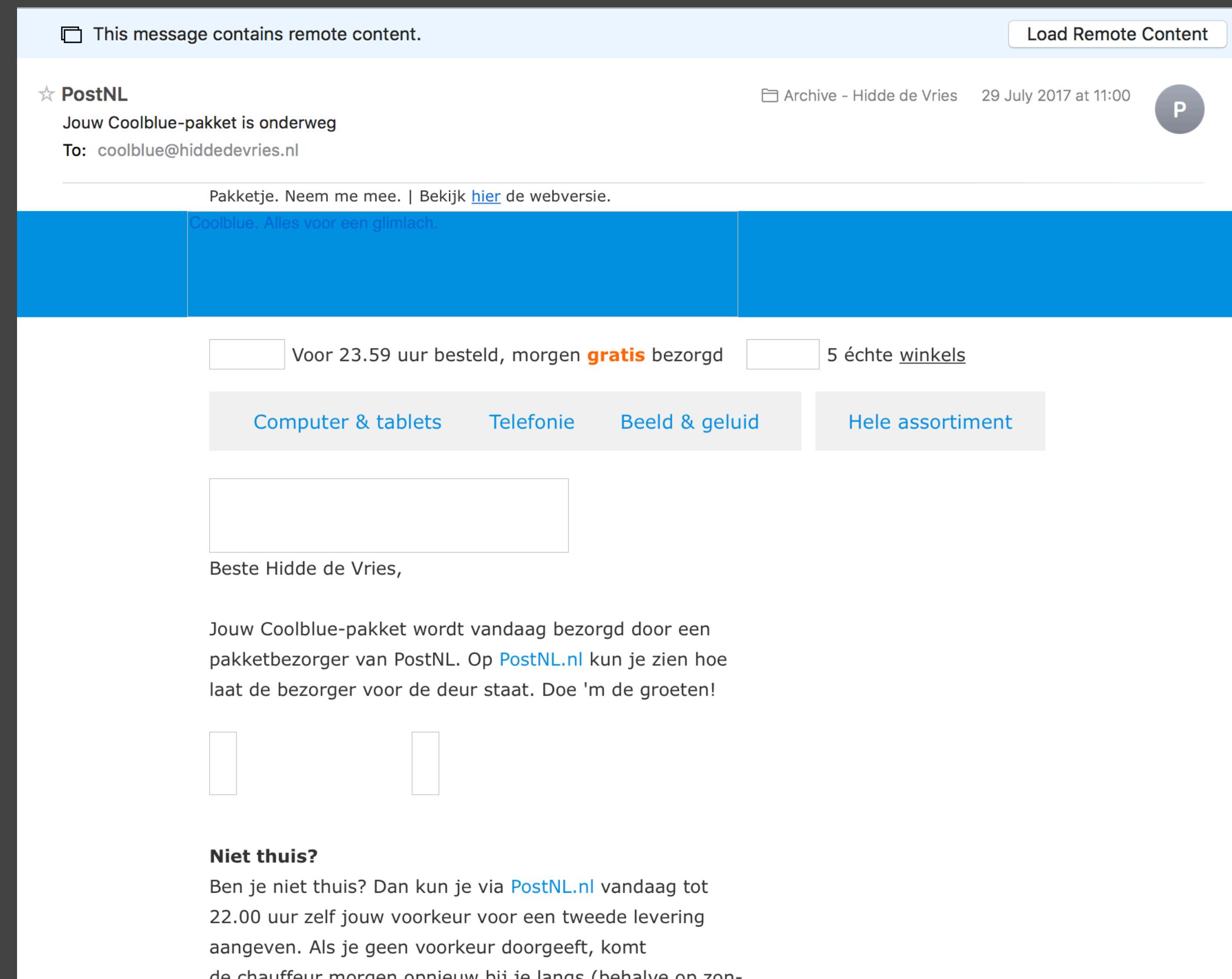
Computer & tablets Telefonie Beeld & geluid Hele assortiment

Beste Hidde de Vries,

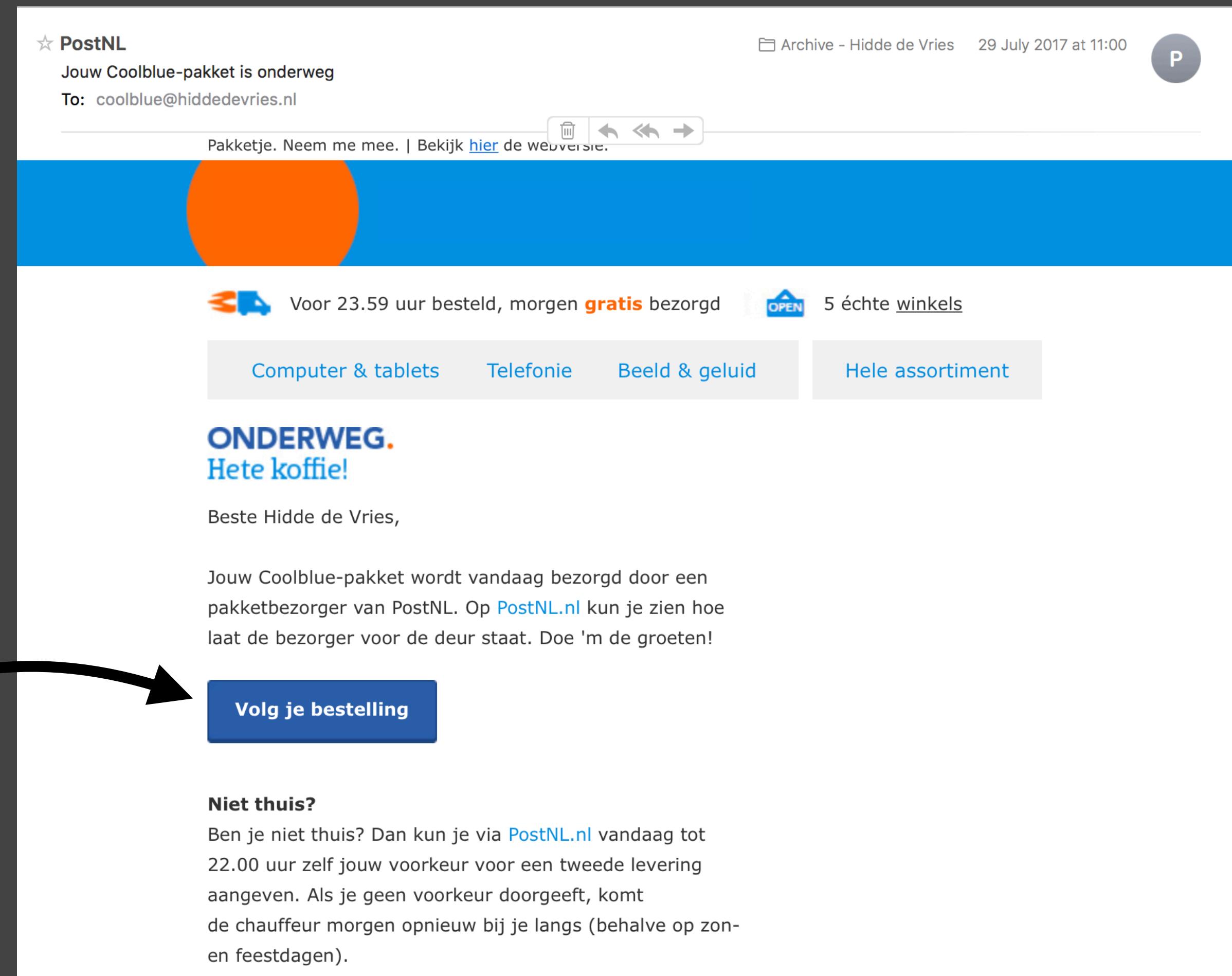
Jouw Coolblue-pakket wordt vandaag bezorgd door een pakketbezorger van PostNL. Op [PostNL.nl](#) kun je zien hoe laat de bezorger voor de deur staat. Doe 'm de groeten!

Niet thuis?

Ben je niet thuis? Dan kun je via [PostNL.nl](#) vandaag tot 22.00 uur zelf jouw voorkeur voor een tweede levering aangeven. Als je geen voorkeur doorgeeft, komt de chauffeur morgen opnieuw bij je langs (behalve op zon-



Would you get less information if the image wasn't there?



"Track your order"

Captions / transcriptions
with videos

Front-End Performance: The Dark Side by Mathias Bynens



Mathias Bynens

Front-End Performance: The Dark Side

▶ 00:00 / 20:04

音量
进度条
字幕
下载

*This is the third talk in [a set of three talks on Technical Performance](#) delivered on April 1, 2016 at
Fronteers Spring Conference in Amsterdam*

- * [Watch high quality video on Vimeo](#)
- * [Download audio \(MP3, 23MB\)](#)

In security-sensitive situations, performance can actually be a bug rather than a feature. This

```
<video src="lecture.mp4" controls>
<track src="lecture.vtt"></track>
</video>
```

Transcriptions with audio
(e.g. podcasts)

Robert Jan Verkade — The Good, The Bad, and The Interesting

Robert Jan Verkade — The Good X +

https://vasilis.nl/gbi/2018/04/13/robert-jan-verkade

Search

The Good

The Bad

The Interesting

Robert Jan Verkade

in gesprek met Vasilis van Gemert

0:00 / 0:00 slower faster

[Lees de transcriptie](#)

Robert Jan Verkade is samen met [Marrije Schaake](#) oprichter van ontwerpbureau Eend. Met Robert Jan hebben we het over het samenspel tussen de mensen die een website moeten gebruiken, de mensen die de website moeten beheren en de mensen die hem moeten maken. Die moeten allemaal blij zijn. Dit doet mij denken aan de definitie van kwaliteit die [Peter Bilak](#) hanteert voor een goed product. Hoe dat precies moet hangt natuurlijk van nogal veel factoren af: soort organisatie, budget, technische *legacy*.

“ *Eerst zeggen we dit is allemaal niet zo heel goed. Dan bieden we oplossingen aan, en dan laten we daarna ook zien dat mensen er ineens stukken beter mee kunnen gaan werken. Dus dan bieden we toch nog weer hoop*

We hebben het ook over veranderen, dat dat moeilijk is. Voor personen, maar ook voor organisaties. En we vragen ons af hoe we als designers iets meer buiten onze bubbel kunnen komen. Dat is namelijk belangrijk: je moet begrijpen voor wie je ontwerpt, en dat er mensen zijn die écht anders dan jijzelf zijn. En we hebben het ook nog heel serieus over lol. En we moeten toch ook nog een beetje grinniken over een krankzinnig kunstwerk met QR-codes.

```
1 <audio·src="podcast.mp3"·controls></audio>
2 <a·href="#transcription">Transcription</a>
3 <h3·id="transcription">Transcription</h3>
4 <p><b>Person·1:</b>·Hello·and·welcome</p>
5 <p><b>Person·2</b>·Thanks!</p>
```

Avoid redundancy

follow us



Follow us

- Follow us on Facebook
- Follow us on Twitter
- Follow us on Instagram
- Follow us on LinkedIn
- Follow us on YouTube

follow us



Follow us

- Facebook
- Twitter
- Instagram
- LinkedIn
- YouTube

How to Design Great Alt Text: An Introduction

<https://www.deque.com/blog/great-alt-text-introduction/>

Takeaways

- Informative images vs decorative images
- Balance between providing too little information and information overload
- Always have alt text if image is in link or button, if image contains text or logos

An Alt Decision Tree

<https://www.w3.org/WAI/tutorials/images/decision-tree/>

Covers also:

- Text in images
- Images in links or buttons
- Does it contribute meaning?

Takeaways

- Text alternatives are required for images, audio and video
- Sometimes, "" is the best alternative

Exercise 5

Add text alternatives where they are missing.

Keyboards and other inputs

Ensure you can do and
reach everything with just
a keyboard

Never make assumptions
about input methods.

They vary!

Ensure you can do and
reach everything with just
a keyboard

VISIBLe FOCUS

People who don't use a
mouse, use focus styles
to see where they are

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.

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.

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.

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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.





YOU WOULDN'T
STEAL THEIR
CURSOR

Laura Carvajal
@lc512k

LAURA
CARVAJAL

Let us see where
the focus is

Exercise 6

Make focus visible

Takeaways

- clearly indicate with :focus
- you can use outline, but also box-shadow (border is not ideal)
- you can use :focus-visible if you only want it to apply to “keyboard users”
- if you remove, set color to transparent

managing FOCUS

<button>

<a href>

Interactive elements

<input>

<details>

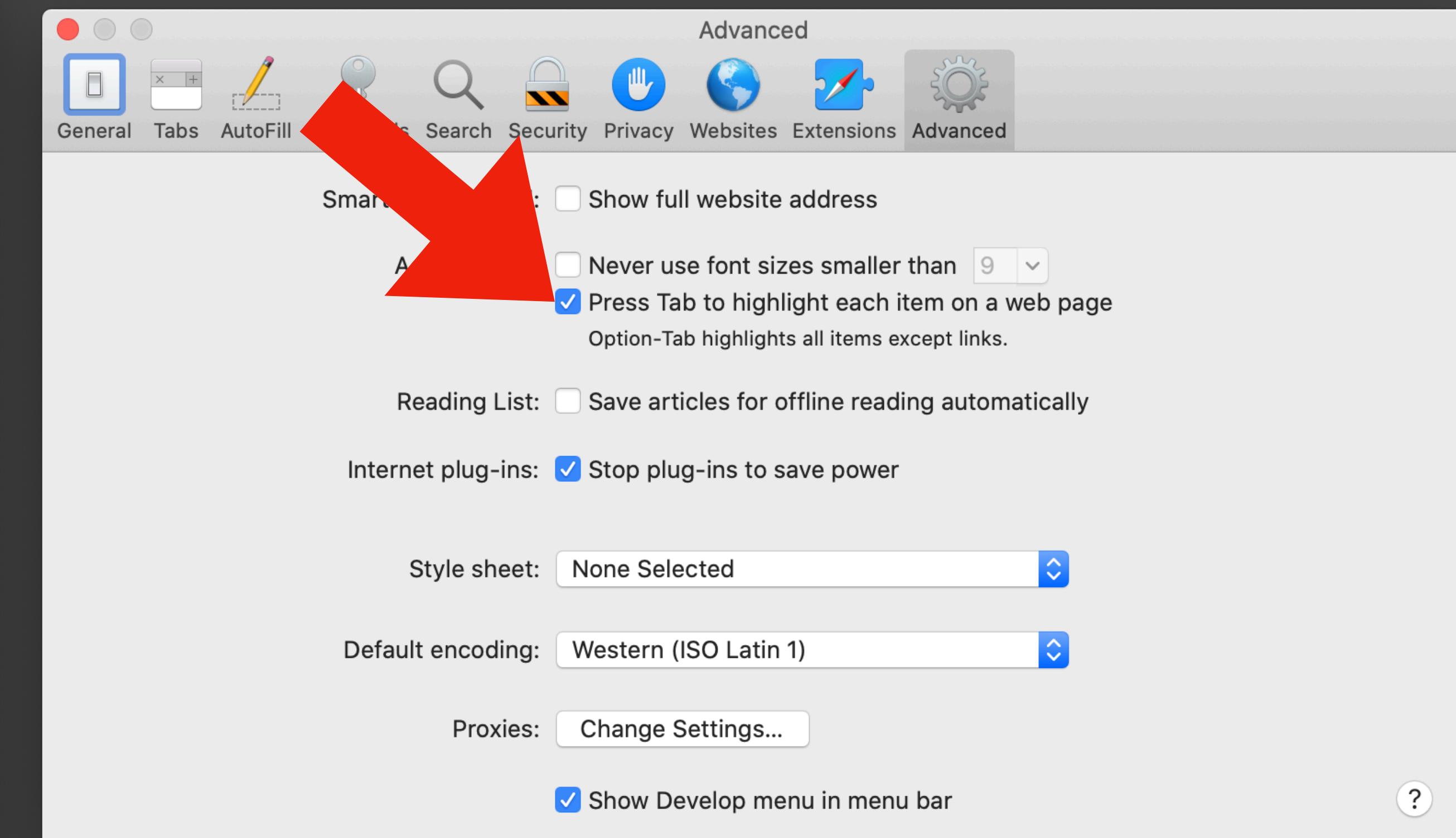
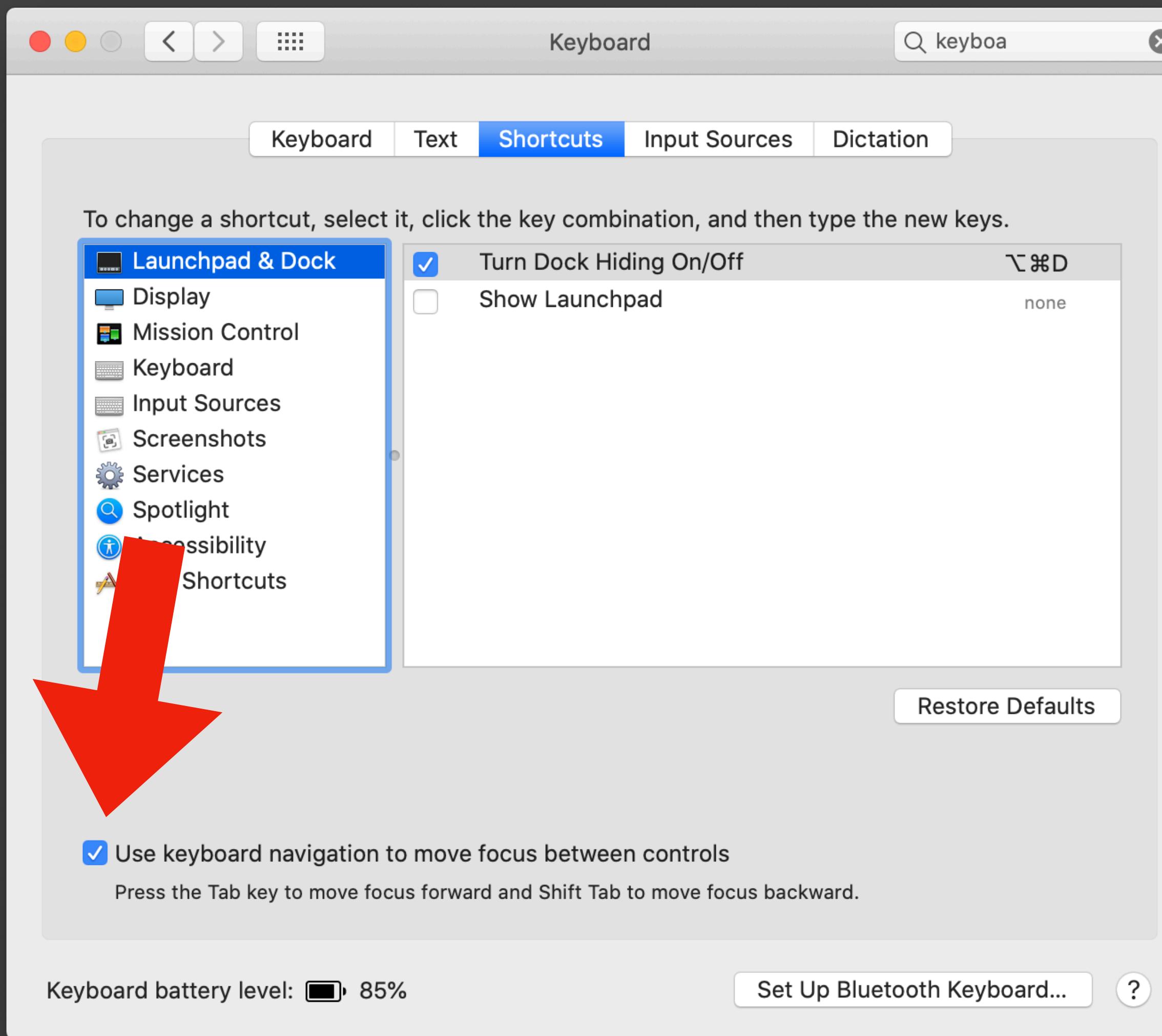
<select>

Debugging



```
document.addEventListener('focus', function() {  
  console.log('focused: ', document.activeElement)  
, true);
```

Debugging



Move focus with JavaScript

element.focus()

(in a framework, you'll probably use refs)

Trap focus in an element

Trap focus in an element

- Within a modal window
- Within a modal navigation
- In a full screen alert

Trap focus in an element

```
modalWindow.show();  
modalWindow.trapFocus();
```

How to trap focus in element (1/2)

When user presses TAB

- If there is a next focusable child in this element, give it focus
- If this was the element's last focusable child, give focus to the first focusable child

How to trap focus in element (2/2)

When user presses SHIFT-TAB

- If there is a previous focusable child in this element, give it focus
- If this was the element's first focusable element, give focus to the last focusable element

Focusable
elements

Interactive elements +
elements with tabindex

Exercise 7

Show a modal overlay when user presses “Get a ticket”

Takeaways

- focus order is DOM order, in most cases, best not to change
- you can change order with tabindex, but once you set it you need to set it everywhere
- stress-test the website's focus order by navigating with just a keyboard

takeaways

- trap focus in “modal” components while they are in the open state

Web Components and Accessibility

Web Components is a set
of new(ish) web standards
that allows developers to
extend the web

Shadow DOM Custom Elements

The same applies to WCs as
to regular components:
focusability, keyboard compat,
semantics (with or without ARIA)

Web Components are reusable,
so they allow for
reusable accessibility

Shadow DOM: accessibility across boundaries



Lion Web Components

The screenshot shows a dark-themed web browser window with the URL <https://lion-web.netlify.app>. The page title is "Lion". The main content features a large orange lion emoji at the top left, followed by the word "Lion" in a large white font. Below this is a subtitle: "Fundamental white label web components for building your design system." At the bottom, there are three buttons: "FOLLOW GUIDES" and "SEE COMPONENTS" in white text on brown rounded rectangles, and a "Why Lion?" section with three columns: "White Label", "Accessible", and "Extendable".

Lion

Fundamental white label web components for building your design system.

[FOLLOW GUIDES](#) [SEE COMPONENTS](#)

Why Lion?

White Label	Accessible	Extendable
Style the way you need it - no need to override any opinionated existing styling.	All of our components align to platform standards, WAI ARIA patterns, and are always tested on accessibility, both through aXe automated tests but also manually with	Our components are meant to be extended and allow for flexible integrations.

Using ARIA

HTML semantics are
essential for accessibility

ARIA polyfills HTML semantics

It adds semantics for “Rich Internet Applications”

What sort of widget is this?

What is this thing in the page structure?

What's the state of this widget?

Will this part of the page be updated?

Roles, names, states

role = alert

role = link

role = button

role = checkbox

role = tab

role = radio

role = dialog

role = progressbar

role = slider

role = tooltip

ARIA lets developers
control how their stuff ends
up in the accessibility tree

YES, we can use JavaScript
to make websites and apps
more accessible

Accessibility Tree?

When you send your
markup to the browser,
it generates two trees

(amongst others)

DOM tree

```
[endif]-->
<!--[if IE 8]><html class="no-js lt-ie10 lt-ie9" lang="nl"><![endif]-->
<!--[if (gt IE 8) & (!IEMobile)]><html class="no-js lt-ie10 ie9-desktop"
lang="nl"><![endif]-->
<!--[if (gt IE 8) & (IEMobile)]><html class="no-js lt-ie10 ie9-mobile"
lang="nl"><![endif]-->
<!--[if !IE]><!-->
<html class="js applicationcache audio canvas hashchange history postmessage
no-touchevents video cssanimations backgroundsize bgsizecover borderradius
boxsizing csscalc csscolumns csscolumns-width csscolumns-span csscolumns-fill
csscolumns-gap csscolumns-rule csscolumns-rulecolor csscolumns-rulestyle
csscolumns-rulewidth csscolumns-breakbefore csscolumns-breakafter csscolumns-
breakinside flexbox flexboxlegacy fontface cssgradients rgba csstransforms
csstransitions localstorage" lang="nl">
  ►#shadow-root (open)
    <!--<![endif]-->
  ►<head>...</head>
  ▼<body class="homepage cookiewall" data-comscore='{"name":
"track.click.homepage"}' style="position: relative; margin-top: 474px;">
    ►<div id="npo_cc_notification" style="top: -474px;">...</div>
    ►<header id="nav" class="nav-wrapper">...</header>
    ▼<main id="content" role="main">
      ::before
      ... ▼<section id="topstories" class="js-topstories js-topstories-
interactive" data-comscore='{"nos_origin":"topstory"}'> == $0
        <h2 class="vh">Topstories</h2>
        ►<div class="topstories_wrapper topstories-twostories">...</div>
      </section>
      ►<div id="main">...</div>
      ►<section id="most_viewed_videos">...</section>
      ►<section id="editors_picks">...</section>
      ►<section id="nieuws_in_beeld">...</section>
      ►<section id="websites">...</section>
      ►<section id="categories">...</section>
      ::after
    </main>
```

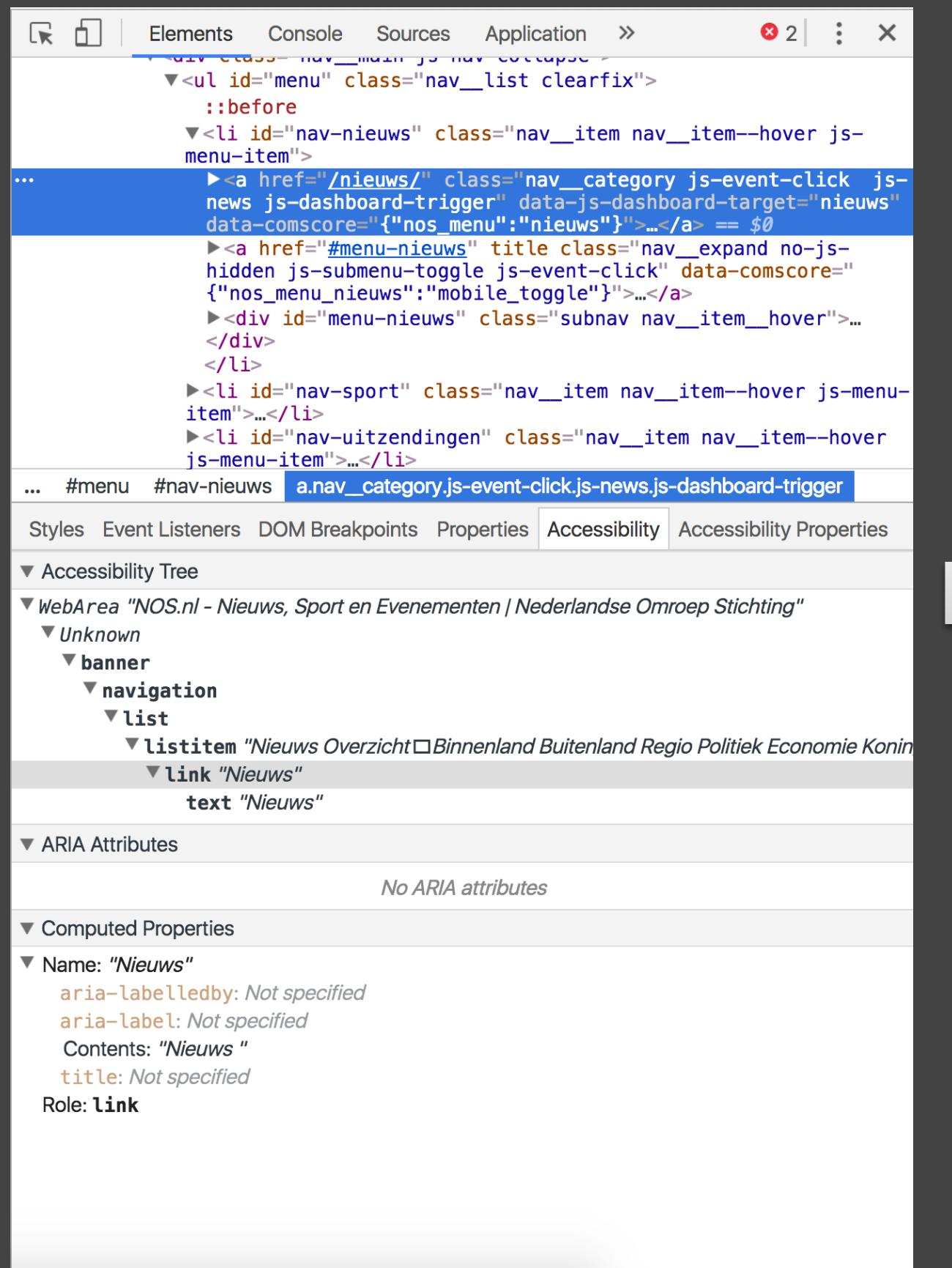
html body main#content

section#topstories.js-topstories.js-topstories-interactive

Accessibility tree

Role	Name	Properties
▶ listitem:	"Blog"	
▶ listitem:	"Contact Us"	
▼ listitem:	"Donate"	
statictext:	""	
▶ link:	"Donate"	
▼ listitem:	"Contribute to this site"	
statictext:	""	
▶ link:	"Contribute to this site"	
▼ listitem:	"Source code for this page"	
statictext:	""	
▶ link:	"Source code for this page"	
▼ listitem:	"Twitter (@mozilla) Facebook (Mozilla) Instagram (@mozilla)"	
statictext:	""	
▼ list:	""	
▼ listitem:	"Twitter (@mozilla)"	
▶ link:	"Twitter (@mozilla)"	
text leaf:	""	
▼ listitem:	"Facebook (Mozilla)"	
▶ link:	"Facebook (Mozilla)"	
text leaf:	""	
▼ listitem:	"Instagram (@mozilla)"	
text leaf:	""	
▼ section:	""	
▼ heading:	"Firefox"	
▶ link:	"Firefox"	
text leaf:	""	
▼ list:	""	
▼ listitem:	"Download Firefox"	
statictext:	""	
▶ link:	"Download Firefox"	
▶ listitem:	"Desktop"	
▶ listitem:	"Mobile"	

Accessibility tree



The screenshot shows the Chrome DevTools Accessibility panel. It displays the DOM tree with various nodes expanded to show their accessibility properties. A specific element, a link labeled "Nieuws", is highlighted in blue. The panel includes tabs for Styles, Event Listeners, DOM Breakpoints, Properties, Accessibility (which is selected), and Accessibility Properties. The Accessibility section shows the tree structure, including a "WebArea" node for "NOS.nl".

Platform APIs



Microsoft Active Accessibility
Microsoft User Interface Automation
MSAA



Mac OS X Accessibility Protocol



Linux/Unix Accessibility Toolkit
IAccessible2

AT



JAWS® for Windows

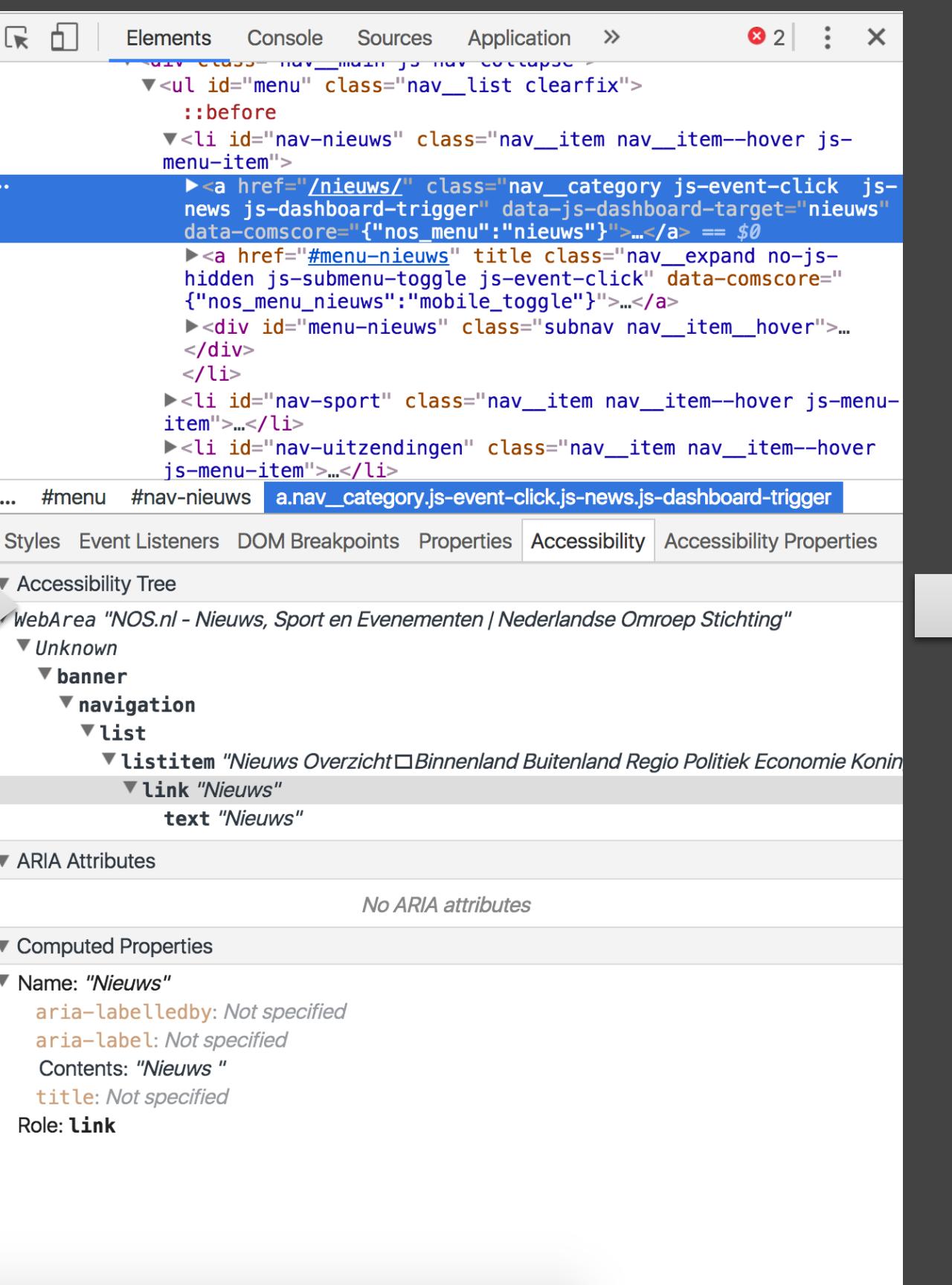


text-to-speech
screen magnifiers
alternate pointing devices



Your
markup

DOM tree



The screenshot shows the Chrome DevTools Elements tab with the DOM tree open. The tree structure starts with a `<ul id="menu" class="nav_list clearfix">` element. Under it, there are several `` items, one of which is highlighted in blue. This highlighted item has attributes like `id="nav-nieuws"`, `class="nav_item nav_item--hover js-menu-item"`, and `aria-label="Nieuws"`. The tree also includes nested elements such as `Nieuws` and `<div id="menu-nieuws" class="subnav nav_item_hover"></div>`. The bottom of the screenshot shows the DevTools sidebar with sections like Accessibility, ARIA Attributes, and Computed Properties.

Accessibility tree

Platform APIs



Microsoft Active Accessibility
Microsoft User Interface Automation
MSAA



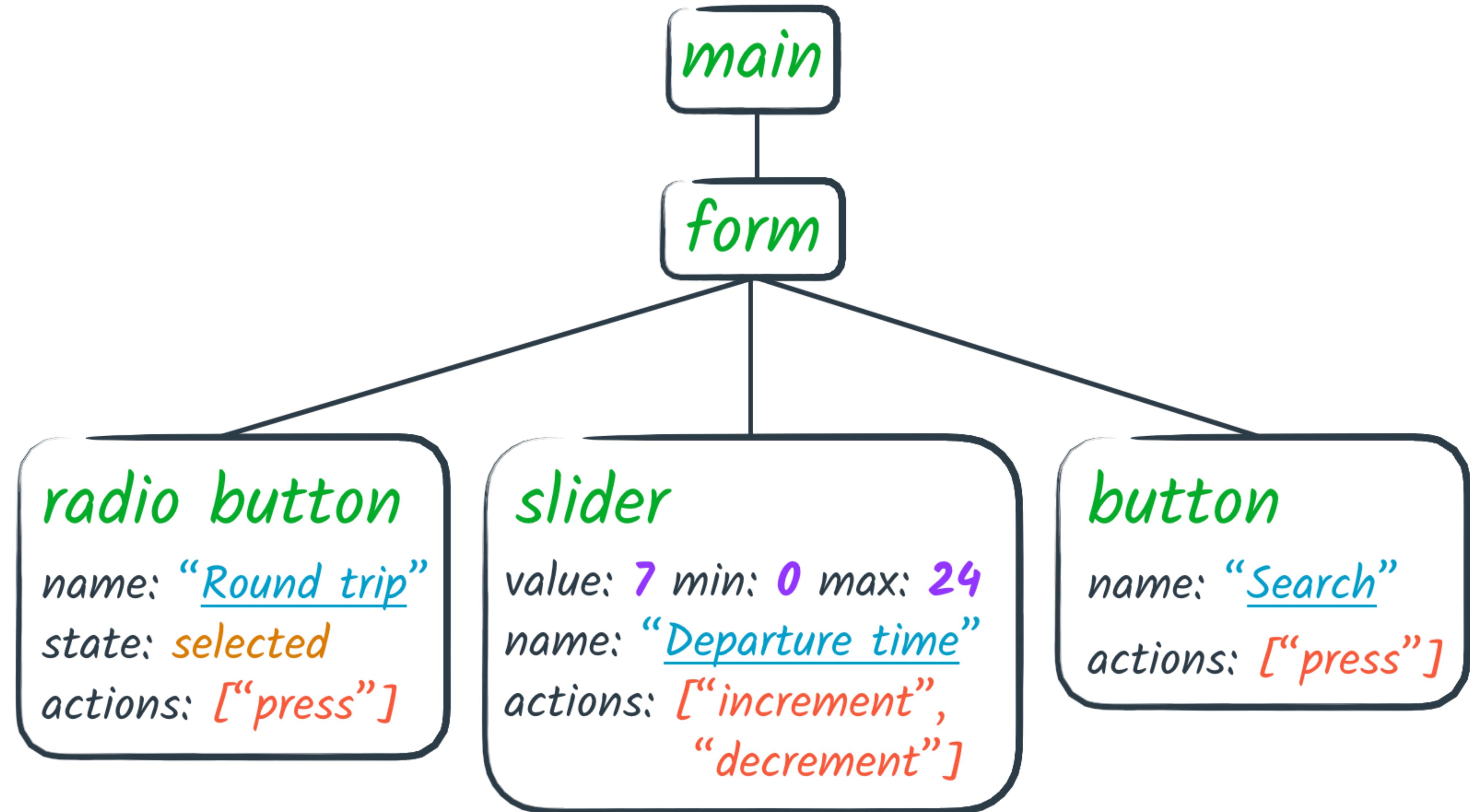
Mac OS X Accessibility Protocol



Linux/Unix Accessibility Toolkit
IAccessible2

alte





Naming things with ARIA

aria-label

aria-labelledby

Start quiz

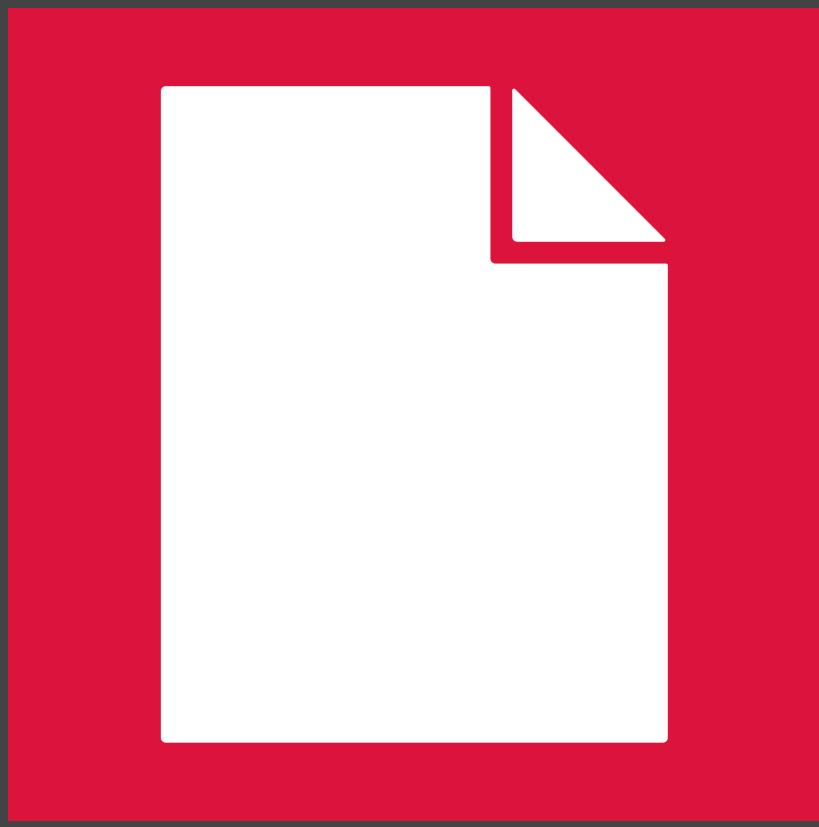


```
<button type="button">Start quiz</button>
```

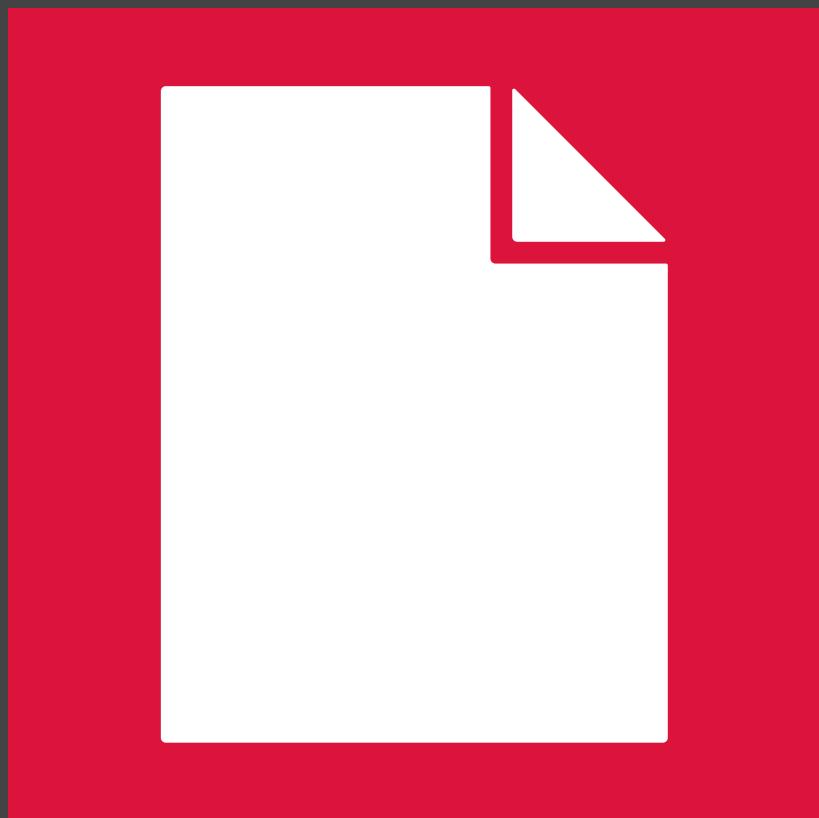
Start quiz



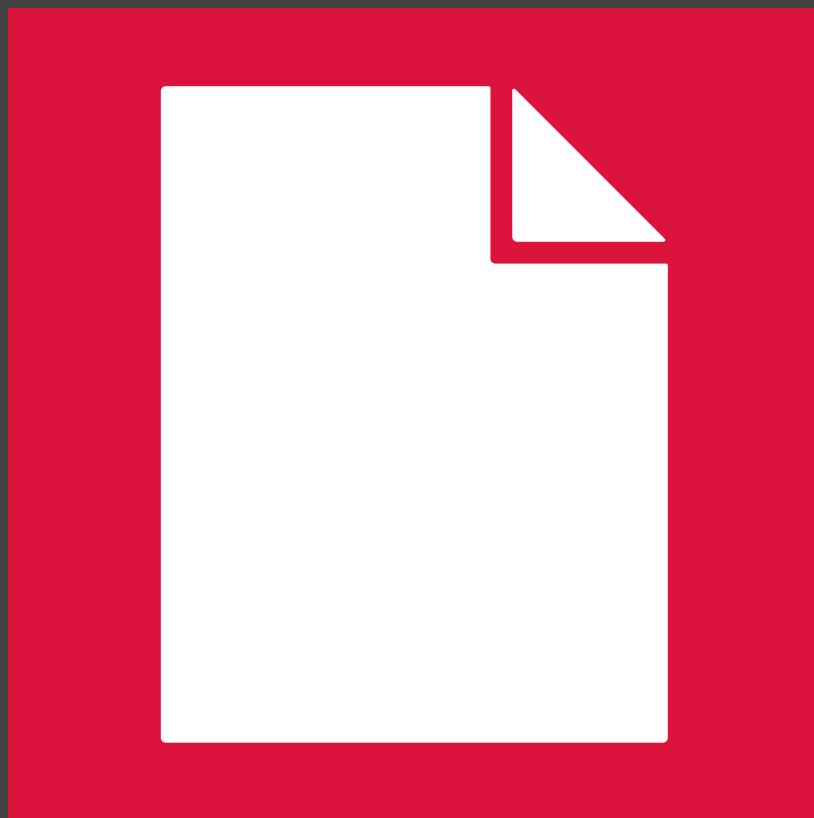
```
<button type="button">Start quiz</button>
```



```
<button type="button">  
  <svg>...</svg>  
</button>
```



```
<button  
  type="button"  
  aria-label="New project">  
  <svg>...</svg>  
</button>
```



```
<button  
  type="button"  
  aria-label="New project">  
  <svg>...</svg>  
</button>
```

Name computation

1. Text content in control (including ::before/::after)
2. aria-label
3. aria-labelledby

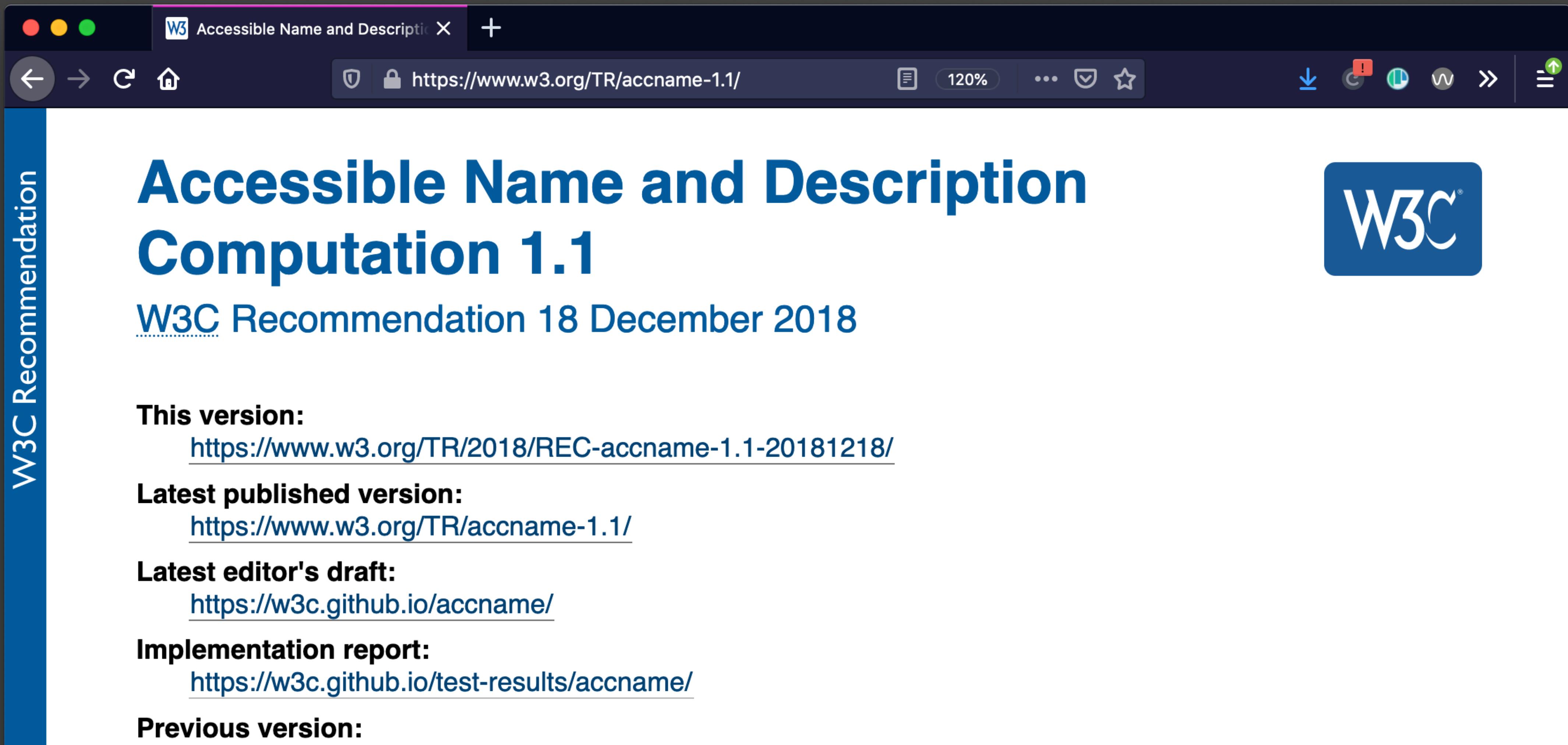
in forms, <label> also serve as an accessible name (even placeholder and title; not recommended)

Name computation

Controls and elements have name only

Use browser dev tools to inspect

Names only make sense on specific elements, or
elements with specific roles



Accessible Name and Description

Computation 1.1

The W3C logo consists of the letters "W3C" in a white serif font, enclosed within a rounded blue square.

W3C Recommendation 18 December 2018

This version:

<https://www.w3.org/TR/2018/REC-accname-1.1-20181218/>

Latest published version:

<https://www.w3.org/TR/aciname-1.1/>

Latest editor's draft:

<https://w3c.github.io/accname/>

Implementation report:

<https://w3c.github.io/test-results/accname/>

Previous version:

<https://www.w3.org/TR/2018/PR-accname-1.1-20181018/>

Previous Recommendation:

<https://www.w3.org/TR/wai-aria-implementation-1.0/>

Editors:

Joanmarie Diggs (Igalia, S.L.)

Bryan Garaventa ([Level Access](#))

Michael Cooper ([W3C](#))

Using ARIA effectIVeLY FOR users

No ARIA is better
than bad ARIA.

Standard HTML semantics

+ ARIA semantics for things that don't exist in HTML

“A role is a promise”

If you say something has a role of X, it's now
your responsibility to make it behave like an X.

ARIA as a cloak: replaces semantics

(I.E. USE WITH CARE!)

Rules of ARIA

<https://www.w3.org/TR/using-aria/>

1

Prefer native semantics

Example:

```
<button type="button">
```

instead of

```
<div role="button">
```

2

Don't change native semantics

Example, avoid:

```
<h2 role="tab">
```

instead, add that role to something that has no role, like:

```
<div role="tab">
```

3

Always test with keyboard

4

No role="presentation" or
aria-hidden="true" on
focusable elements

(or on elements that contain focusable elements)

5

All interactive elements need an
accessible name

Not all ARIA is
(well) supported,
gather information

<https://a11ysupport.io/>

WAI-ARIA Authoring Practices (<https://www.w3.org/TR/wai-aria-practices-1.1/>)

The screenshot shows a web browser window with the title "WAI-ARIA Authoring Practices 1.1". The address bar displays the URL <https://www.w3.org/TR/wai-aria-practices-1.1/>. The page content is titled "WAI-ARIA Authoring Practices 1.1" and is identified as a "W3C Working Group Note 14 December 2017". A prominent blue "W3C" logo is on the right. On the left, a vertical sidebar is labeled "W3C Working Group Note". The main content area contains links for "This version", "Latest published version", "Latest editor's draft", "Previous version", and a list of "Editors" with their contact information.

This version:
<https://www.w3.org/TR/2017/NOTE-wai-aria-practices-1.1-20171214/>

Latest published version:
<https://www.w3.org/TR/wai-aria-practices-1.1/>

Latest editor's draft:
<https://w3c.github.io/aria-practices/>

Previous version:
<https://www.w3.org/TR/2017/WD-wai-aria-practices-1.1-20170628/>

Editors:

Matt King, Facebook, mck@fb.com
James Nurthen, Oracle Corporation, james.nurthen@oracle.com
Michiel Bijl, Invited Expert
[Michael Cooper](mailto:Michael.Cooper@w3.org), W3C, cooper@w3.org
Joseph Scheuhammer, Inclusive Design Research Centre, OCAD University (Previous Editor)
Lisa Pappas, SAS (Previous Editor)
Rich Schwerdtfeger, IBM Corporation (Previous Editor)

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COLLAPSIBLES / 'Accordion'

Header vs panel

aria-expanded

aria-controls

ENTER

Collapsibles

**Turn the FAQ section into
collapsibles**

(So that each question toggles an answer)

“aria-expanded” also useful in
tooltips, autocompletes/
dropdowns

PRODUCT LIST WITH FILTERS

Product list with filters

2 065 837 resultaten

Raster

Sorteer op

Populariteit

Categorie

[Literaire fictie](#) (1 010 679)

[Poëzie](#) (330 347)

[Avonturenromans](#) (238 259)

[Vertaalde literatuur](#) (139 464)

[Toneel & Scenario's](#) (119 981)

[Spirituele romans](#) (50 988)

[Mythen & legendes](#) (48 146)



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[Engels](#) (1 068 978)

[Frans](#) (432 847)

[Meer](#)



De jongen, de mol, de vos en het paard

Charlie Mackesy

Hardcover | Nederlands

€ 20,00



Een verre horizon

Santa Montefiore

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Boek of e-book?

[Boek](#) (1 735 592)

[E-book](#) (321 936)

Reeks

Selecteer



Wildevrouw

Jeroen Olyslaegers

Accessibility considerations

- can use filters with just a keyboard
- visible focus
- buttons respond to keyboard events
- changes in view are announced
- open/closed with aria-expanded/aria-controls

2 065 837 resultaten

Raster

Sorteer op

Populariteit

Categorie

[Literaire fictie](#) (1 010 679)

[Poëzie](#) (330 347)

[Avonturenromans](#) (238 259)

[Vertaalde literatuur](#) (139 464)

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€ 20,99



Wildevrouw

Jeroen Olyslaegers

Product list

Create filter set that works
with keyboard and conveys
state through ARIA

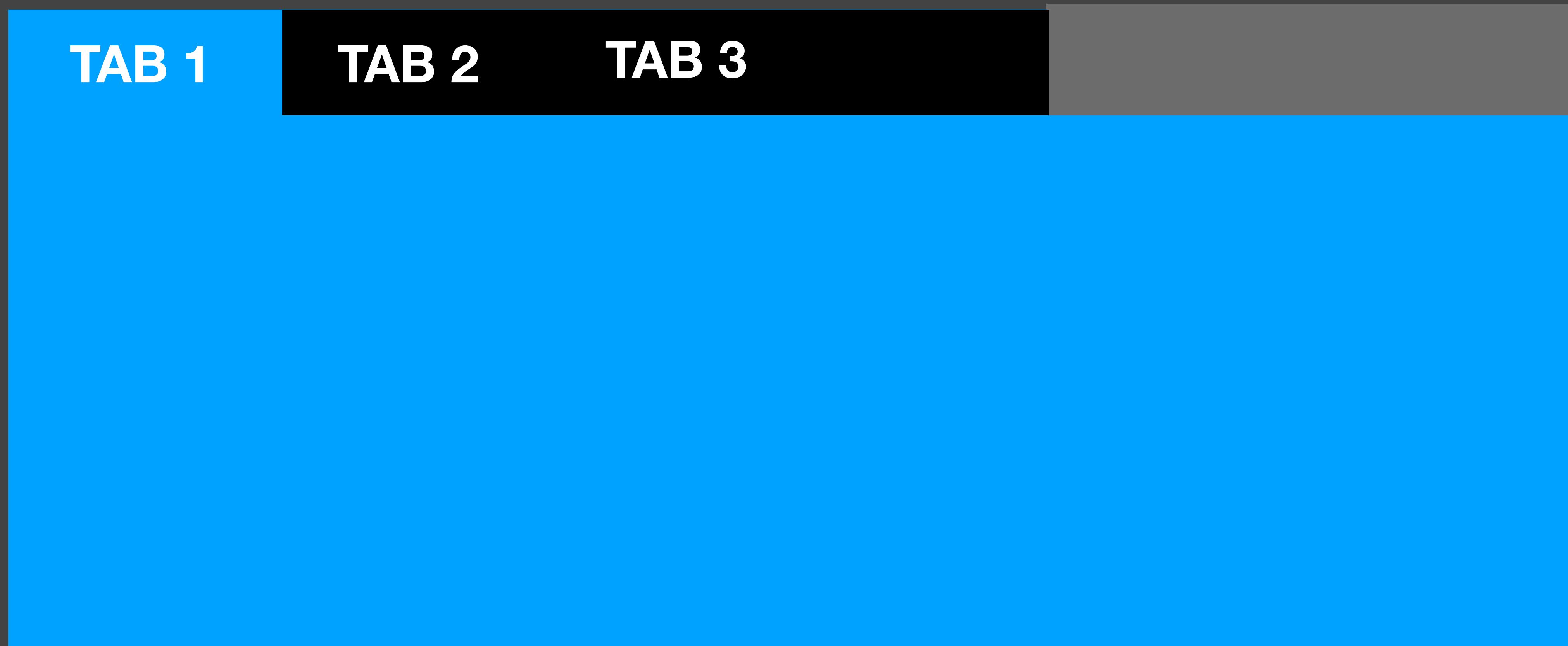
TABS

Tab, tablist, tabpanel



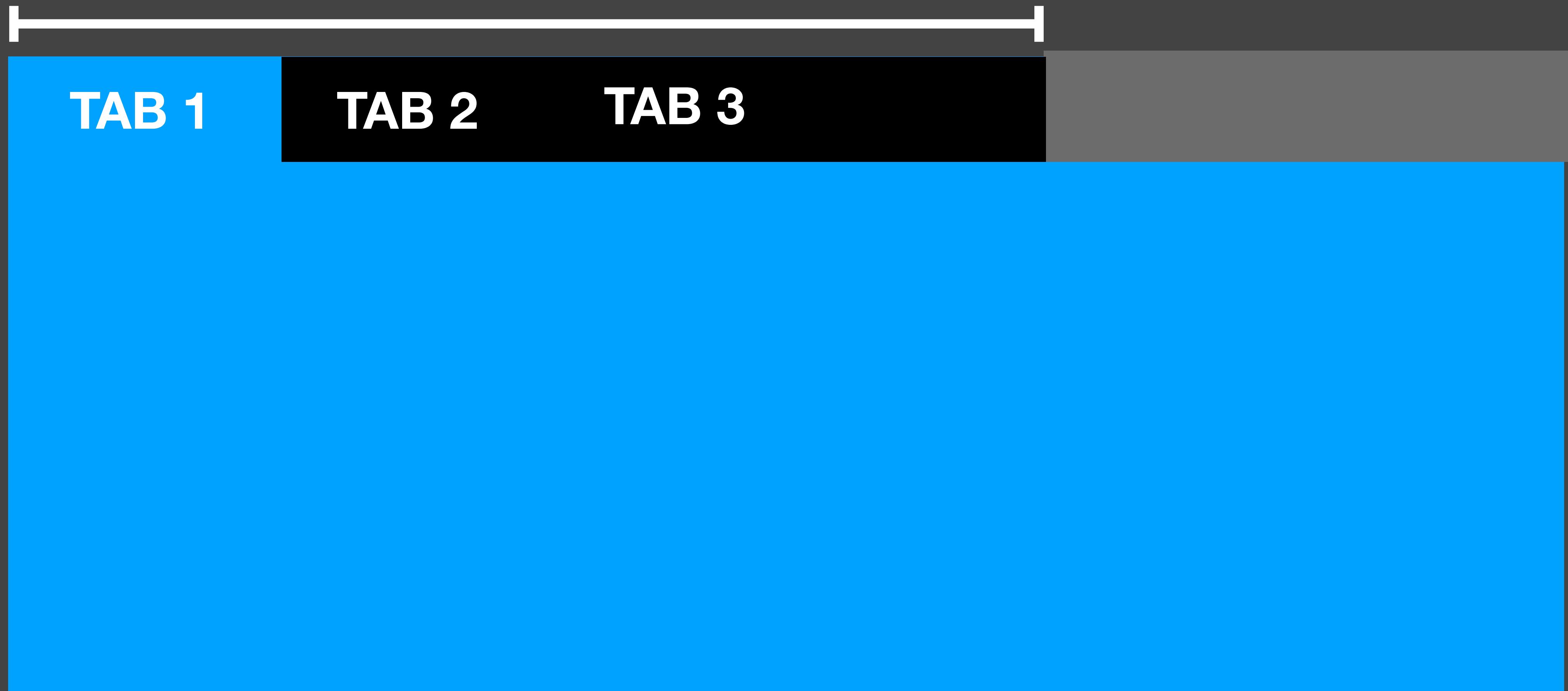
Tab, tablist,tabpanel

Tab



Tab, tablist,tabpanel

Tablist



Tab, tablist,tabpanel



Tabpanel

role = tablist

role = tab

role = tabpanel

< and > when focus
is on a tab

aria-controls
aria-selected
aria-labelledby

Tabs

**Create tabs for the
sponsor opportunities**

(One tab for each package)

ERRORS and FORMS

If a field is in error state and there is no error message:

aria-invalid="true"

NEWSLETTER

Sign up for our newsletter

E-mail:

Sign up

When a new error
message is
inserted,
make sure it is
announced

NEWSLETTER

Sign up for our newsletter

E-mail:

This does not look like an email address

Sign up

```
<div role="alert">
```

Turns element into assertive live region

Where should
the focus go?

Where should the focus go?

Error message appears

Don't move, use live region

Larger form is submitted
and it can trigger multiple
errors

Maybe display a list of
errors on submit at start of
form, move focus to list

takeaways

- Consider aria-invalid
- Announce errors with live regions
- Make error navigation easier with lists of errors

Newsletter sign up

**When user enters invalid
email address, show error**

ACCESSIBILITY AND PROCESS

**WHICH PEOPLE IN THE
TEAM ARE RESPONSIBLE?**

Everyone in the team.

product owner

QA engineer

content designer

developer

Everyone in the team.

visual designer

interaction designer

CMS integrator

Content designer

- structure content
- use clear and concise language
- explain form errors well

Developer

- use semantic HTML
- convey state changes
- label controls well

Visual designer

- ensure no reliance on color alone
- use sufficient color contrast
- plan for user settings (high contrast mode, dark mode, text enlargement)

Interaction designer

- design helpful forms
- consider multiple modalities
(phone, desktop, mouse, keyboard)

QA engineer

- check High Contrast Mode
- zoom 300%
- test interface with only keyboard

CMS integrator

- add fields for text alternatives
- plan for HTML flexibility

Product manager

- add fields for text alternatives
- plan for HTML flexibility

Definition of Done

Some checks for all user stories

- ✓ no errors in automated checks?
- ✓ does interface work with 300% zoom?
- ✓ does interface work with only keyboard?
- ✓ can you click form labels to activate fields?

Timing

It is easier
when you do
it earlier

Be early

- Choose a CMS that helps with accessibility
- Check accessibility with every feature
- Hire for HTML skills, level up proficiency

Testing

Testing

DURING DEVELOPMENT

Browser add-ons
Code linters
Contrast checkers
Editor plugins
CI/CD utilities

MANUAL QUICK CHECKS

No mouse challenge
Screenreader test
200% zoom test
Media alternatives

WCAG CONFORMANCE AUDIT

Does it meet
specific, testable
Success Criteria?

USER TESTING

Does it really
work for people?

Automated tests are
very useful, but only
test ~10-30% of issues

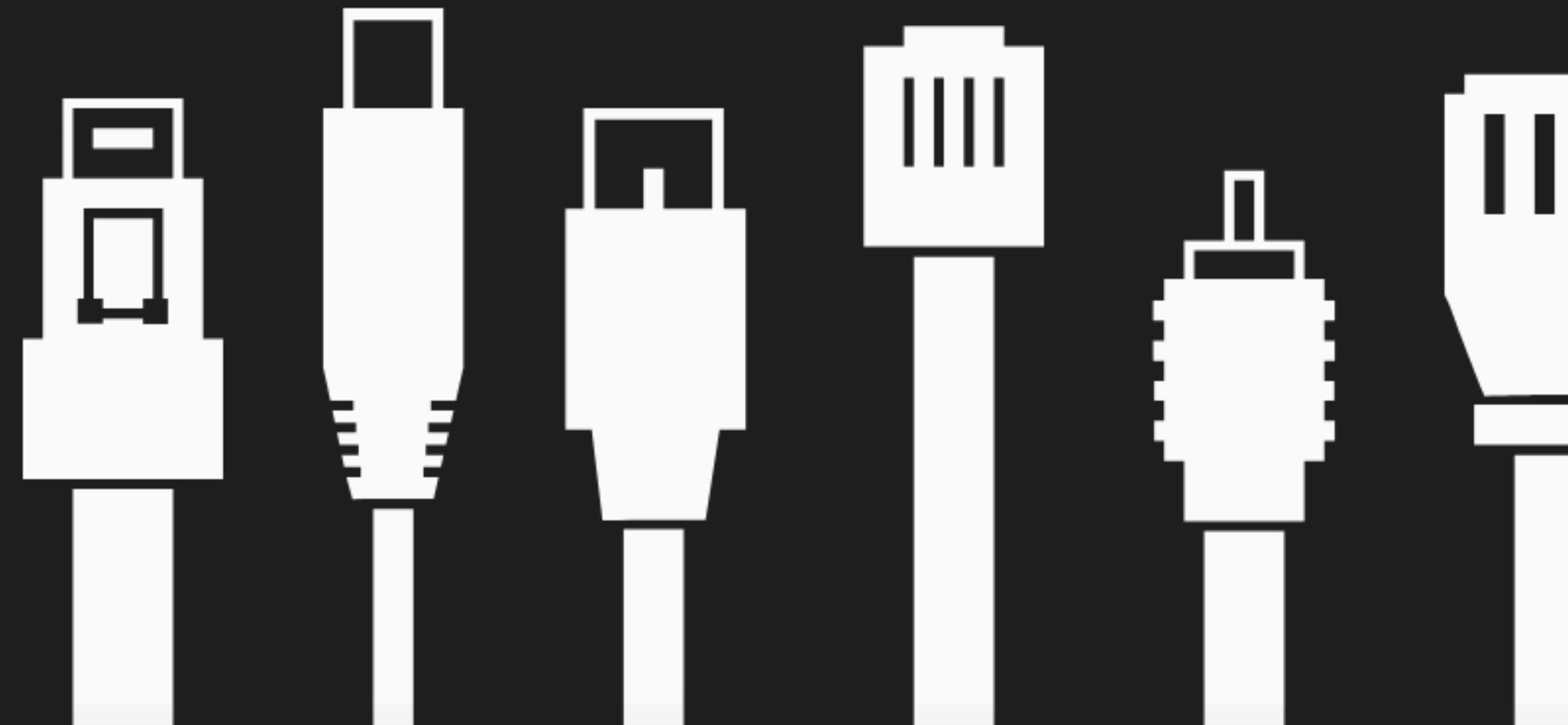
most automatically testable
!= most critical or most severe barriers

Some resources

Inclusive Components

A blog trying to be a pattern library. All about designing inclusive web interfaces, piece by piece.

Inclusive Components
inclusive-components.design



WAI (Web Accessibility Initiative)

(<https://w3.org/WAI/>)

The screenshot shows the official website for the W3C Web Accessibility Initiative (WAI). The page has a dark blue header with the W3C logo and the text "Web Accessibility Initiative WAI". Below the header, there's a sub-header: "Strategies, standards, resources to make the Web accessible to people with disabilities". The main navigation menu includes links for "Accessibility Fundamentals", "Planning & Policies", "Design & Develop", "Test & Evaluate", "Teach & Advocate", and "Standards/Guidelines". A search bar is located in the top right corner. The main content area features a large teal title "Making the Web Accessible" with a subtitle "Strategies, standards, and supporting resources to help you make the Web more accessible to people with disabilities". Below this, there are three columns: one for "W3C" (describing the Consortium), one for "WAI" (describing the initiative), and one for "You" (describing how individuals can use W3C resources). At the bottom left, there's a "News" section with a recent article about making audio and video media accessible. On the right side, there's a "Get Resources for..." section with links for various groups like Content Writers, Designers, Developers, etc.

Making the Web Accessible

Strategies, standards, and supporting resources to help you make the Web more accessible to people with disabilities.

**W3C**

The World Wide Web Consortium (W3C) develops international standards for the Web: HTML, CSS, and many more.

**WAI**

The W3C Web Accessibility Initiative (WAI) develops standards and support materials to help you understand and implement accessibility.

**You**

You can use W3C WAI resources to make your websites, applications, and other digital creations more accessible and usable to everyone.

News

New Resource: Making Audio and Video Media Accessible
(2019-09-10)



W3C Web Accessibility Initiative WAI

Making Audio and Video Media Accessible

See what we have for you:

Get Resources for...

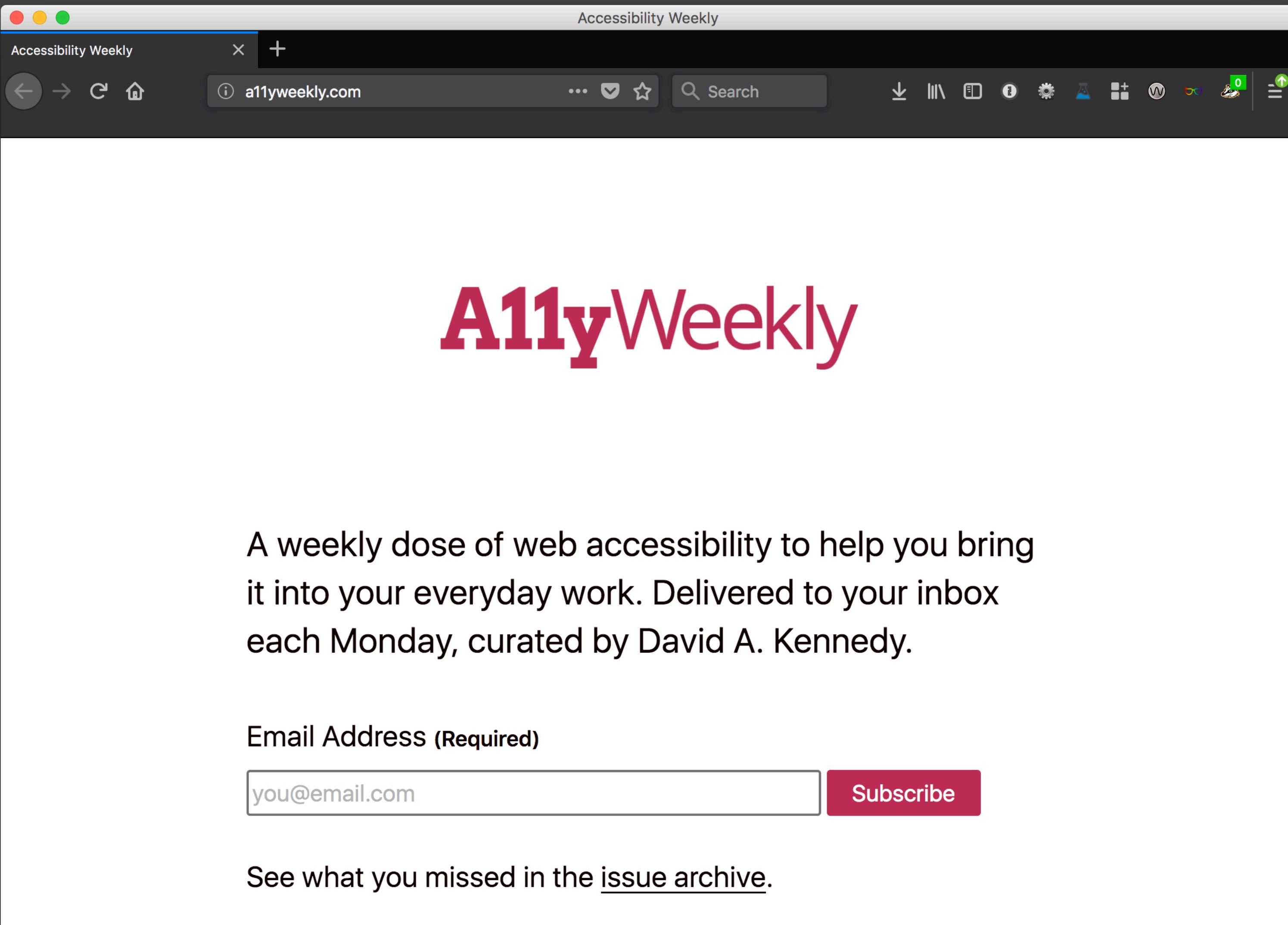
- [Content Writers](#)
- [Designers](#)
- [Developers](#)
- [Evaluators, Testers](#)
- [Managers](#)
- [Policy Makers](#)
- [Trainers, Educators](#)
- [Web Users, People with Disabilities, Advocates](#)
- [Other Languages](#)

WAI (Web Accessibility Initiative): tutorials (<https://w3.org/WAI/tutorials>)

NOTE: not all up to date

This block contains the header and main content area of the W3C Web Accessibility Tutorials Overview page.

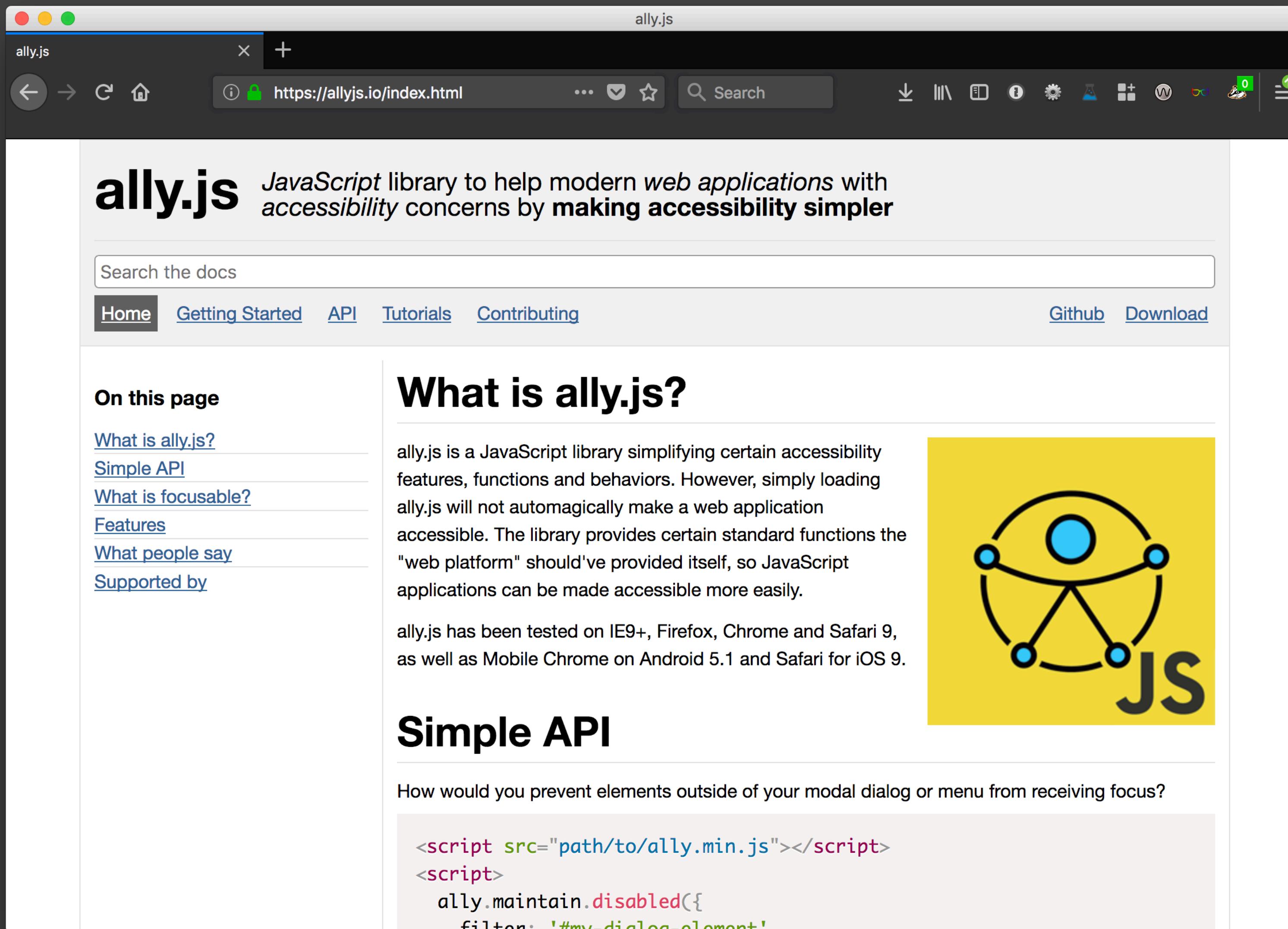
The header includes the W3C logo, a search bar, and various navigation icons. The main content features a sidebar with links to "All Tutorials" and other tutorial categories like Page Structure, Menus, Images, Tables, Forms, and Carousels. The main article discusses the purpose and target audience of the tutorials, provides a list of accessibility topics covered, and includes a sidebar for additional resources.



A11y Weekly (a11yweekly.com)

ally.js

(<https://a11yjs.io/>)



The screenshot shows the ally.js homepage in a dark-themed browser window. The title bar says "ally.js". The address bar shows "https://allyjs.io/index.html". The page content includes the ally.js logo, a search bar, navigation links (Home, Getting Started, API, Tutorials, Contributing, Github, Download), and sections for "What is ally.js?", "Simple API", and "Supported by". A yellow graphic featuring a stylized eye and the letters "JS" is on the right.

ally.js

JavaScript library to help modern web applications with accessibility concerns by **making accessibility simpler**

Search the docs

Home Getting Started API Tutorials Contributing Github Download

On this page

[What is ally.js?](#)
[Simple API](#)
[What is focusable?](#)
[Features](#)
[What people say](#)
[Supported by](#)

What is ally.js?

ally.js is a JavaScript library simplifying certain accessibility features, functions and behaviors. However, simply loading ally.js will not automagically make a web application accessible. The library provides certain standard functions the "web platform" should've provided itself, so JavaScript applications can be made accessible more easily.

ally.js has been tested on IE9+, Firefox, Chrome and Safari 9, as well as Mobile Chrome on Android 5.1 and Safari for iOS 9.

Simple API

How would you prevent elements outside of your modal dialog or menu from receiving focus?

```
<script src="path/to/ally.min.js"></script>
<script>
  ally.maintain.disabled({
    filter: '#my-dialog-element'
```

The screenshot shows the homepage of The A11Y Project website. The page has a dark green header with a white navigation bar. The header includes a circular logo with a stylized person icon, the text "THE A11Y PROJECT", and a menu with links for "Posts", "Checklist", "Resources", "About", and "Contribute". Below the header, there is a large, bold, white "a11y" logo. To the right of the logo, a white rectangular box contains the text "a11y stands for ACCESSIBILITY" in black, with "11 characters" written below it in a smaller font. Below this, a smaller text box states: "The A11Y Project is a community-driven effort to make digital accessibility easier." At the bottom of the page, there is a pink button labeled "HOW DO I GET STARTED?". The footer contains the URL "https://www.a11yproject.com/contribute/".

Home - The A11Y Project

https://www.a11yproject.com

The A11Y Project supports the Black community and the Black Lives Matter movement. #BlackDisabledLivesMatter

THE A11Y PROJECT

Posts Checklist Resources About Contribute

a11y stands for
ACCESSIBILITY
11 characters

The A11Y Project is a community-driven effort
to make digital accessibility easier.

HOW DO I GET STARTED?

https://www.a11yproject.com/contribute/

The A11y Project
(<https://a11yproject.com/>)

aXe core

(<https://axe-core.org>)

The screenshot shows a web browser window titled "aXe Playground" displaying the [aXe Playground](https://www.axe-core.org/playground) page. The page features a dark header with the "deque" logo and the "aXe" logo. A sidebar on the left contains links for "Playground" (which is active), "Integrations", "Documentation", "About", and "Community". The main content area has a large heading "aXe Playground". Below it, a section titled "Experiment with aXe." includes a text input field containing the HTML code: . There are "ANALYZE HTML" and "CLEAR FIELD" buttons. To the right of the input field is a "SELECT AN EXAMPLE" button. Further down, a section titled "aXe Results" contains a message: "Violations as they are returned by axe-core. For a detailed description of the format, see the [API documentation](#) .". At the bottom is another message: "Click "Analyze HTML" to see the results." A "CHANGE AXE OPTIONS" button is located next to the API documentation link.

WebAIM: Web Accessibility In Mind

WebAIM: Web Accessibility In Mind X +

https://webaim.org

Search

Accessibility

WebAIM web accessibility in mind

services articles resources community

Search WebAIM

Introduction to Web Accessibility

WebAIM Training

We have web accessibility in mind

Our mission is to empower organizations to make their web content accessible to people with disabilities.

Accessibility Training

Whether here in Utah or on-site at your organization, WebAIM can provide comprehensive training to fit your needs.

Accessible Site Certification

As a respected third party accessibility expert, WebAIM can evaluate and certify your site to established web accessibility guidelines.

Community

WebAIM Blog

Newsletter

E-mail Discussion List

Twitter

Technical Assistance

Need assistance implementing accessibility? WebAIM's expert staff can provide the

Evaluation and Reporting

We can provide reports to help you know how accessible your site is and how to make it

Web accessibility in mind
(<https://webaim.org>)

A screenshot of a web browser displaying the homepage of the Accessibility Developer Guide. The page has a light green background. On the left, there's a vertical navigation bar with links: Introduction, Setup, Knowledge, Examples, and Contribute. The main content area features a large, bold, black title: "Welcome to the Accessibility Developer Guide!". Below the title is a smaller, dark gray paragraph: "If you want to learn more about designing and implementing fully accessible websites, you've come to the right place." At the bottom, a footer note states: "All our contents are based strictly on the [W3C](#)'s Web Content Accessibility Guidelines ([WCAG 2.1](#)). Our goal is to provide you with the simplest and". The browser's address bar shows the URL: <https://www.accessibility-developer-guide.com>.

Welcome to the Accessibility Developer Guide!

If you want to learn more about designing and implementing fully accessible websites, you've come to the right place.

All our contents are based strictly on the [W3C](#)'s Web Content Accessibility Guidelines ([WCAG 2.1](#)). Our goal is to provide you with the simplest and

Accessibility
Developer Guide
(<https://www.accessibility-developer-guide.com/>)

Up your a11y
([https://
www.upyoura11y.com/](https://www.upyoura11y.com/))

The screenshot shows a web browser window with the URL <https://www.upyoura11y.com> in the address bar. The page has a dark background with light-colored sections. At the top is the "up your a11y" logo with a teal double-headed arrow icon above the letter "y". Below the logo are three navigation links: "ABOUT", "CONTACT", and "CONTRIBUTE". The main heading "a web accessibility toolkit" is in large black font, followed by a subtitle "tutorials & resources for developers seeking to build accessible web experiences". There are four main sections displayed as cards: "fundamentals" (teal card with a teal geometric icon), "a11y for React" (pink card with a pink React logo icon), "structure / layout" (yellow card with a yellow network icon), and "forms + inputs" (blue card with a blue form icon). Each card has a brief description below it.

Home: Up Your A11y

https://www.upyoura11y.com

ABOUT CONTACT CONTRIBUTE

a web accessibility toolkit

tutorials & resources for developers seeking to build accessible web experiences

fundamentals

understand the who, what and why of accessibility, and set up your local environment and tooling

a11y for React

overcoming common accessibility challenges in React applications

structure / layout

forms + inputs

QUESTIONS?

For any questions, tweet me (@hdv)
or send an email (hidde@hiddedevries.nl).