

THE RULES OF ARIA

Web Accessibility for
front-end developers

First rule of ARIA

<https://www.w3.org/TR/using-aria/#rule1>

DAY ONE

How to get accessibility
right without ARIA

DAY TWO

How to use ARIA to fill
some of the gaps

DAY ONE

How to get accessibility
right without ARIA

DAY TWO

How to use ARIA to fill
some of the gaps

INTRO

Housekeeping

Mute your microphone, feel free to
unmute for questions

Let me know if you need a break

A portrait photograph of a man with short brown hair, smiling broadly. 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

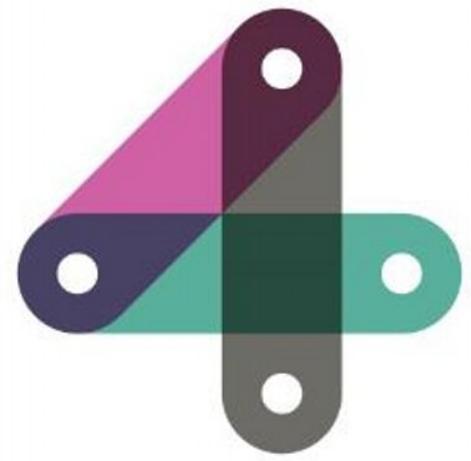
**Freelance front-end developer
and accessibility specialist**



moz://a



Den Haag



delta lloyd

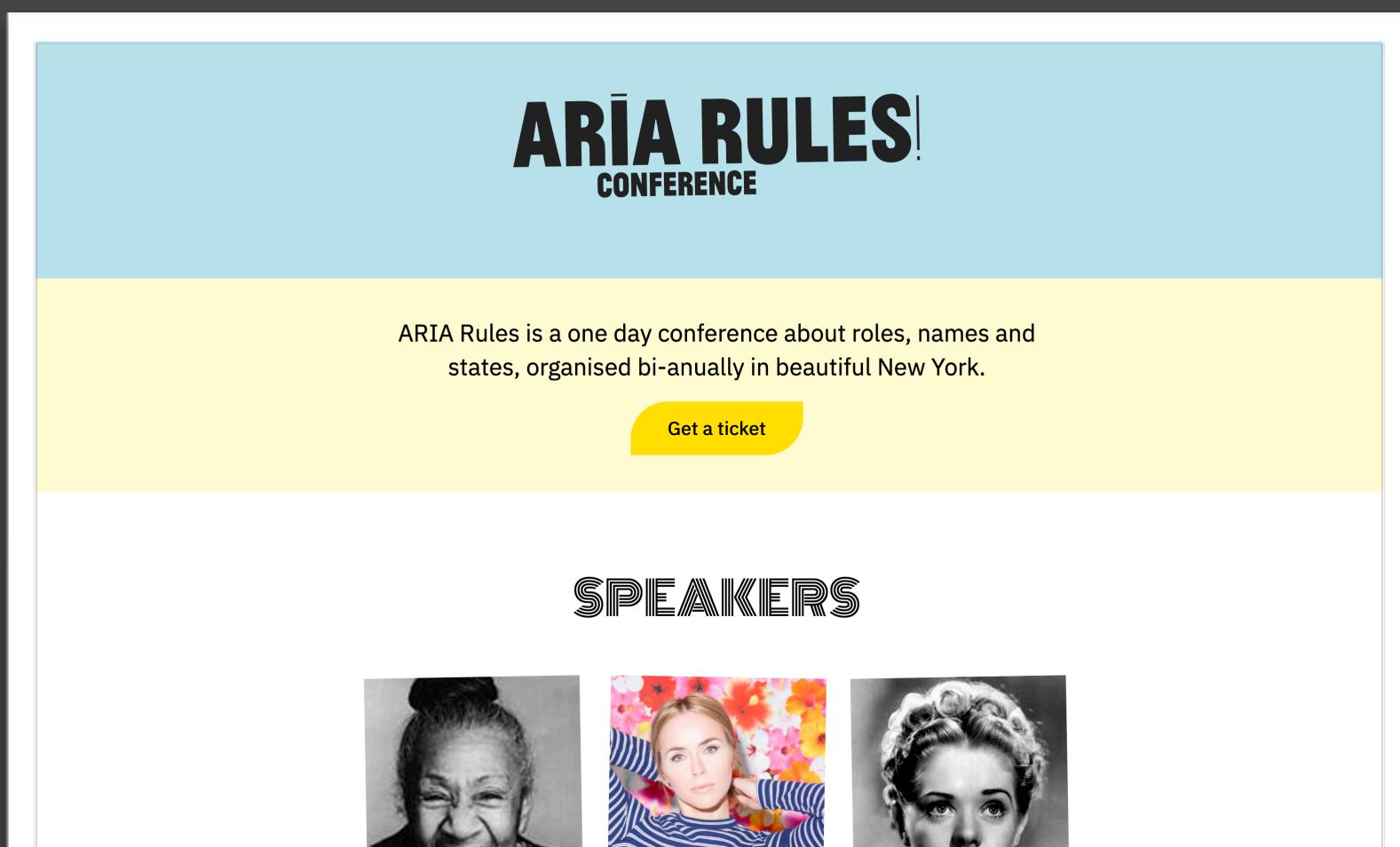
Introductions

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

What you'll need

Example code

github.com/hidde/workshop-aria-rules



BACKGROUND

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 made of light-colored rectangular tiles. A thick, dark grey tactile paving strip runs along the edge of the sidewalk. The street is paved with reddish-brown rectangular tiles. In the background, there are buildings, some parked cars, and a few people walking.

Tactile paving

A photograph of a modern glass elevator at a train station. The elevator has a transparent glass wall and a dark metal frame. It is positioned on a green-painted platform. In the background, a yellow and grey train is stopped at the platform under a large, modern canopy. The station has a clean, minimalist design with white walls and ceiling. A sign with the word "Elevator" is visible in the top right corner.

Elevator

Digital accessibility

lots of people
benefit

1-2%

Blind/visually impaired

KENNISPLEIN GEHANDICAPTENSECTOR

**lots of people
benefit**

1-2%

Blind/visually impaired

KENNISPLEIN GEHANDICAPTENSECTOR

4%

Colour blind

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

**lots of people
benefit**

1-2%

Blind/visually impaired

KENNISPLEIN GEHANDICAPTENSECTOR

4%

Colour blind

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

**lots of people
benefit**

9%

Deaf/hard of hearing

HOORWIJZER

1-2%

Blind/visually impaired

KENNISPLEIN GEHANDICAPTENSECTOR

4%

Colour blind

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

**lots of people
benefit**

9%

Deaf/hard of hearing

HOORWIJZER

15%

Low literate/numerate

ALGEMENE REKENKAMER

lots of people
benefit



lots of people
benefit



lots of people
benefit



lots of people
benefit



lots of people
benefit

lots of people
benefit



lots of people
benefit



lots of people
benefit





lots of people
benefit



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

WCAG 2.1

Web Content Accessibility Guidelines

50 criteria
(A/AA)

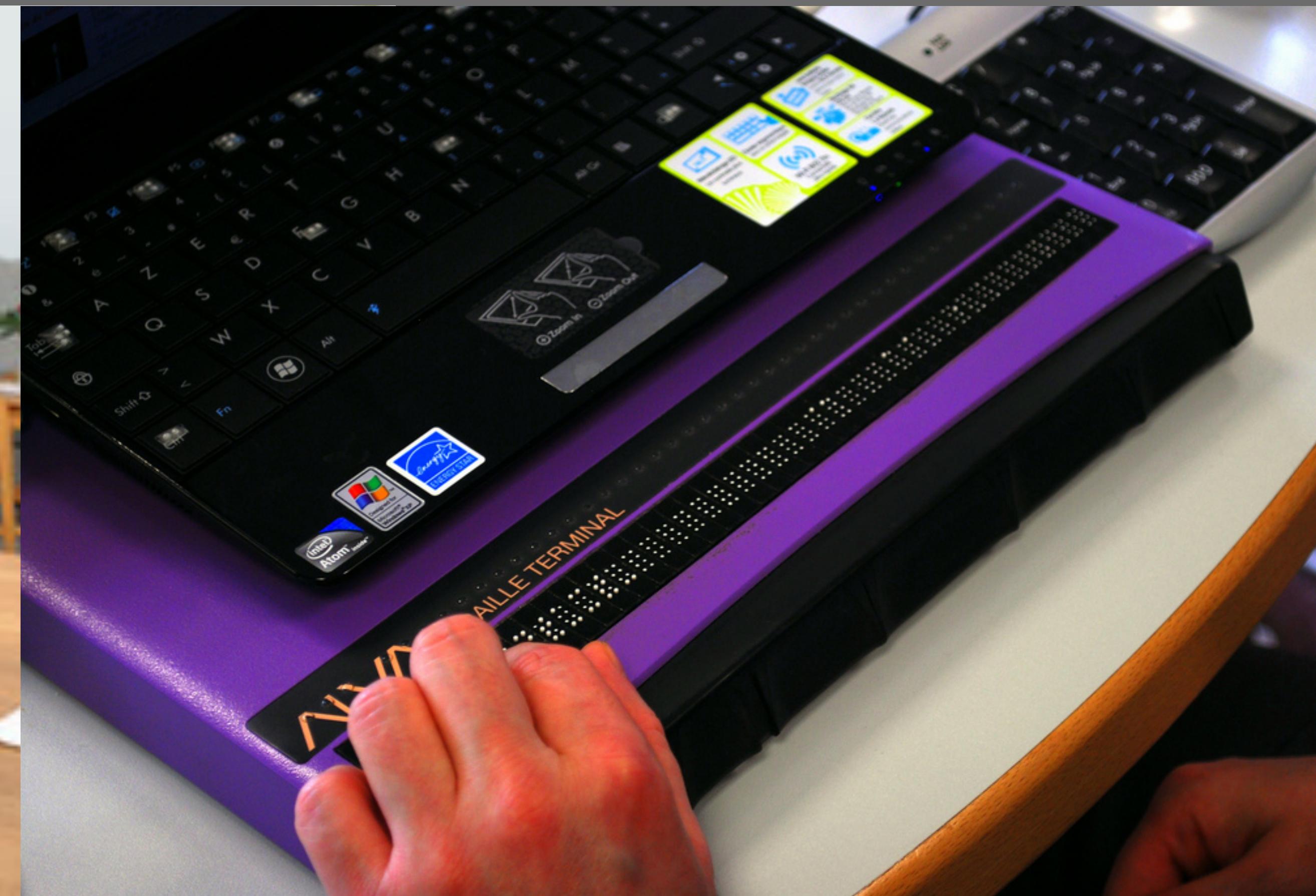
Perceivable

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.





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

Perceivable

Perceivable

Perceivable

Text alternatives
including subtitles, transcripts

Perceivable

Text alternatives
including subtitles, transcripts

Structure

Perceivable

Text alternatives
including subtitles, transcripts

Structure

Color and contrast

Perceivable

Text alternatives
including subtitles, transcripts

Structure

Color and contrast

Zoom

Operable

User interface components and navigation must be
operable.





Operable

Operable

Operable

Works with keyboard

Operable

Works with keyboard

Gives people time

Understandable

Information and the operation of user interface must be understandable.

Understandable

Understandable

Understandable Language

Understandable

Language

Consistency between pages

Understandable

Language

Consistency between pages

Help with input

Robust

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

the guardian.com

Support The Guardian
Available for everyone, funded by readers
[Contribute →](#) [Subscribe →](#)

Search jobs [Sign in](#) [Search](#) International edition

The Guardian

News Opinion Sport Culture Lifestyle More

Environment ► Climate change Wildlife Energy Pollution

United States of Plastic
Plastics

United States of Plastic is supported by

 FORD FOUNDATION

About this content
Susan Strasser
Fri 21 Jun 2019 06.00 BST

42   

Never gonna give you up: how plastic seduced America



The Guardian website interface:

- Header:** "Support The Guardian" (Available for everyone, funded by), "Contribute →", "Subscribe →", "Search jobs", "Sign in", "Search", "International edition".
- Main Navigation:** News, Opinion, Culture, Lifestyle, More.
- Section:** Environment (Climate change, Wildlife, Energy, Pollution).
- Article:**
 - Title:** "Never gonna give you up: how plastic seduced America" (by United States of Plastic Plastics).
 - Image:** A woman in a yellow dress stands on a balcony of a modern, white, angular building, surrounded by greenery and flowers.
 - Text:** "United States of Plastic is supported by FORD FOUNDATION".
 - Details:** "About this content", "Susan Strasser", "Fri 21 Jun 2019 06.00 BST", social sharing icons (Facebook, Twitter, Email).

the guardian.com

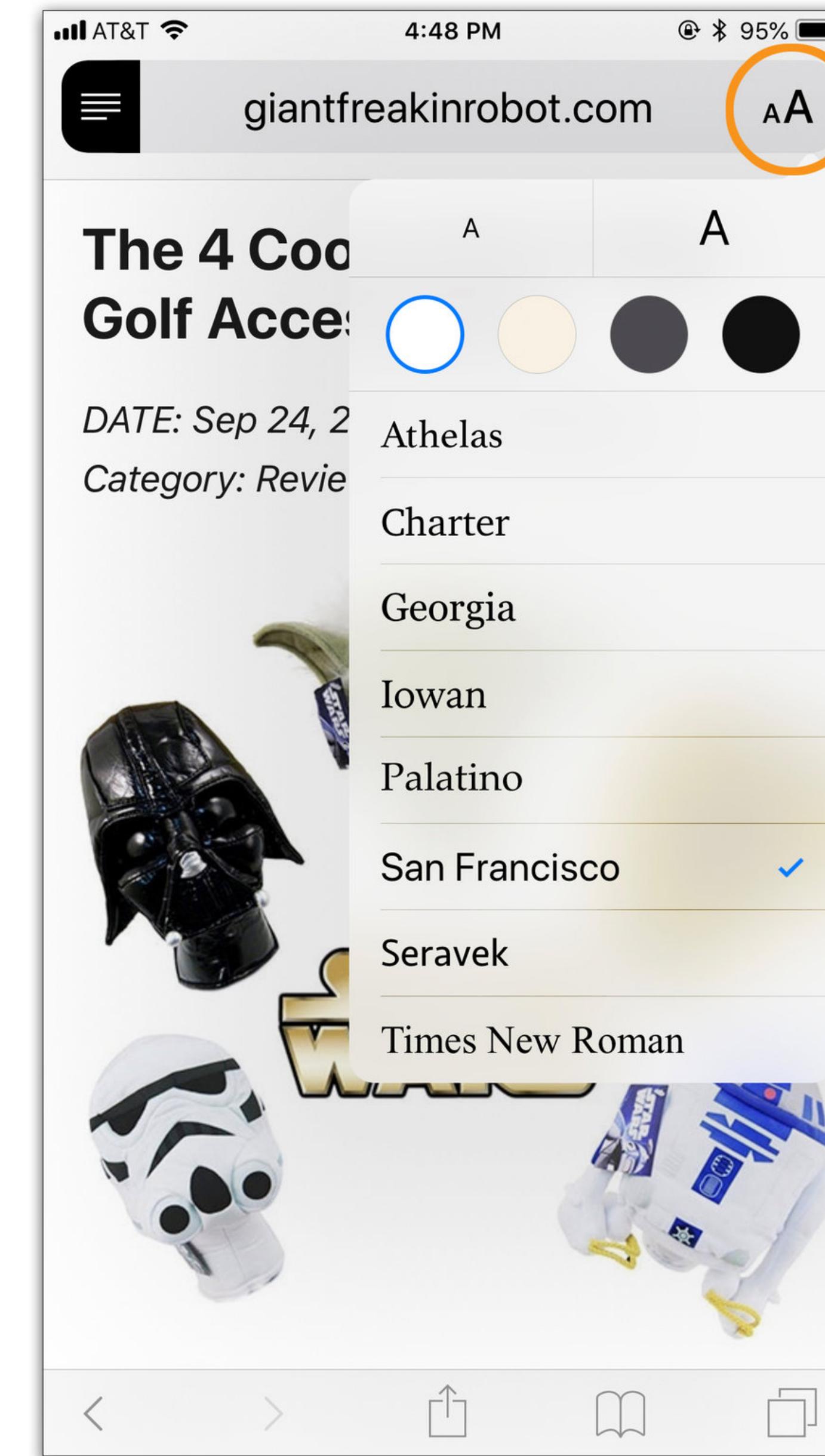
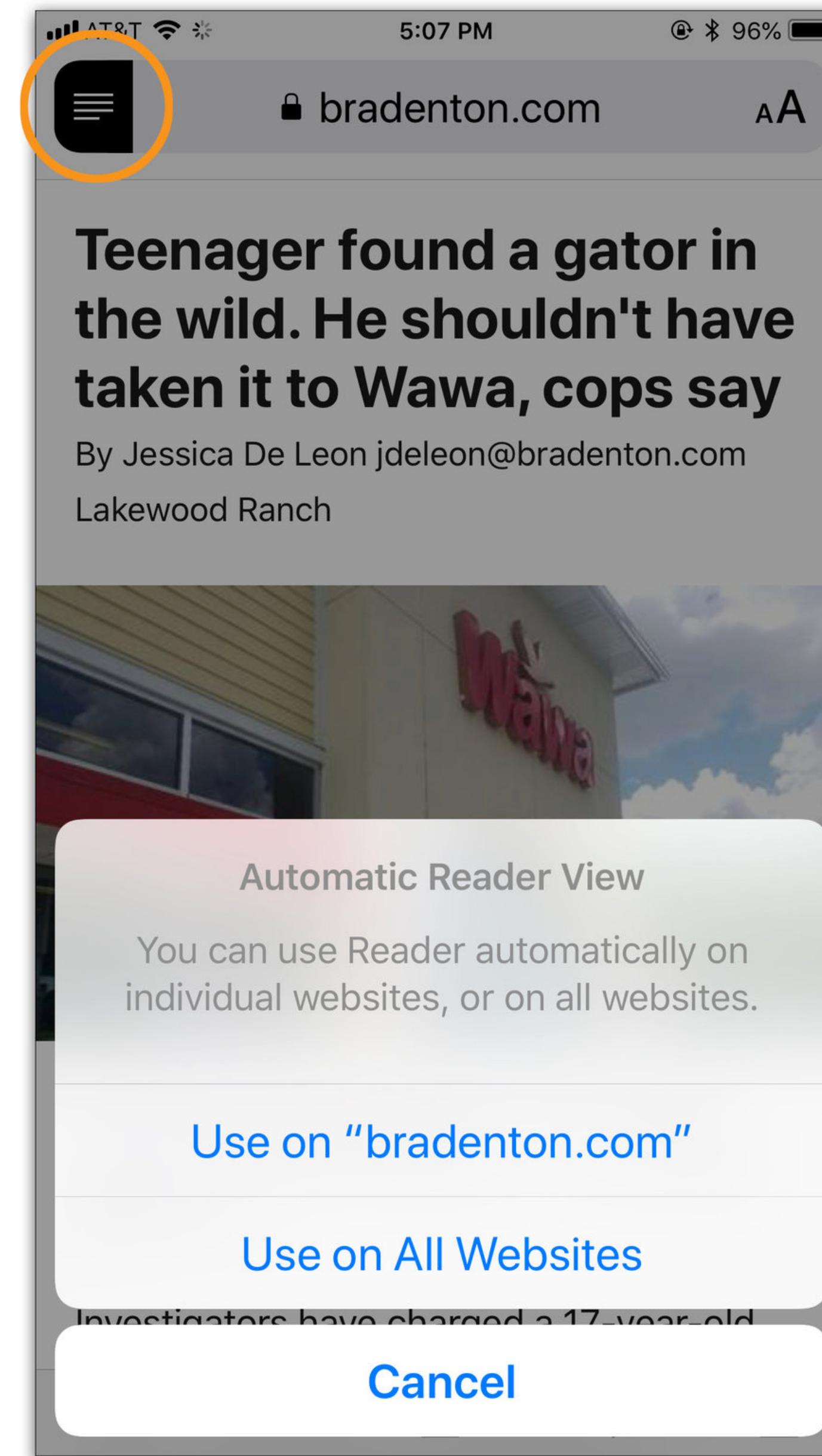
Never gonna give you up: how plastic seduced America

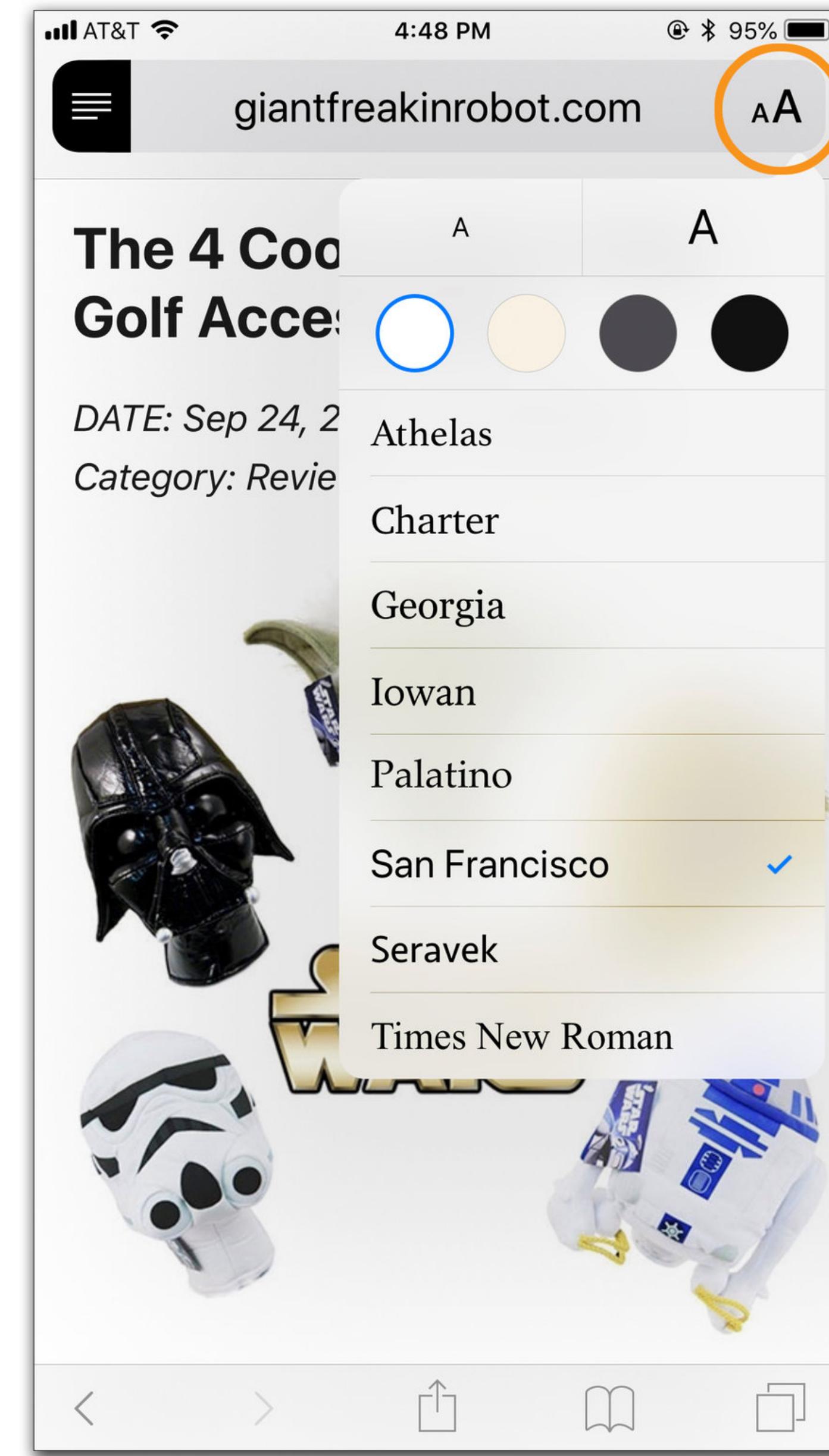
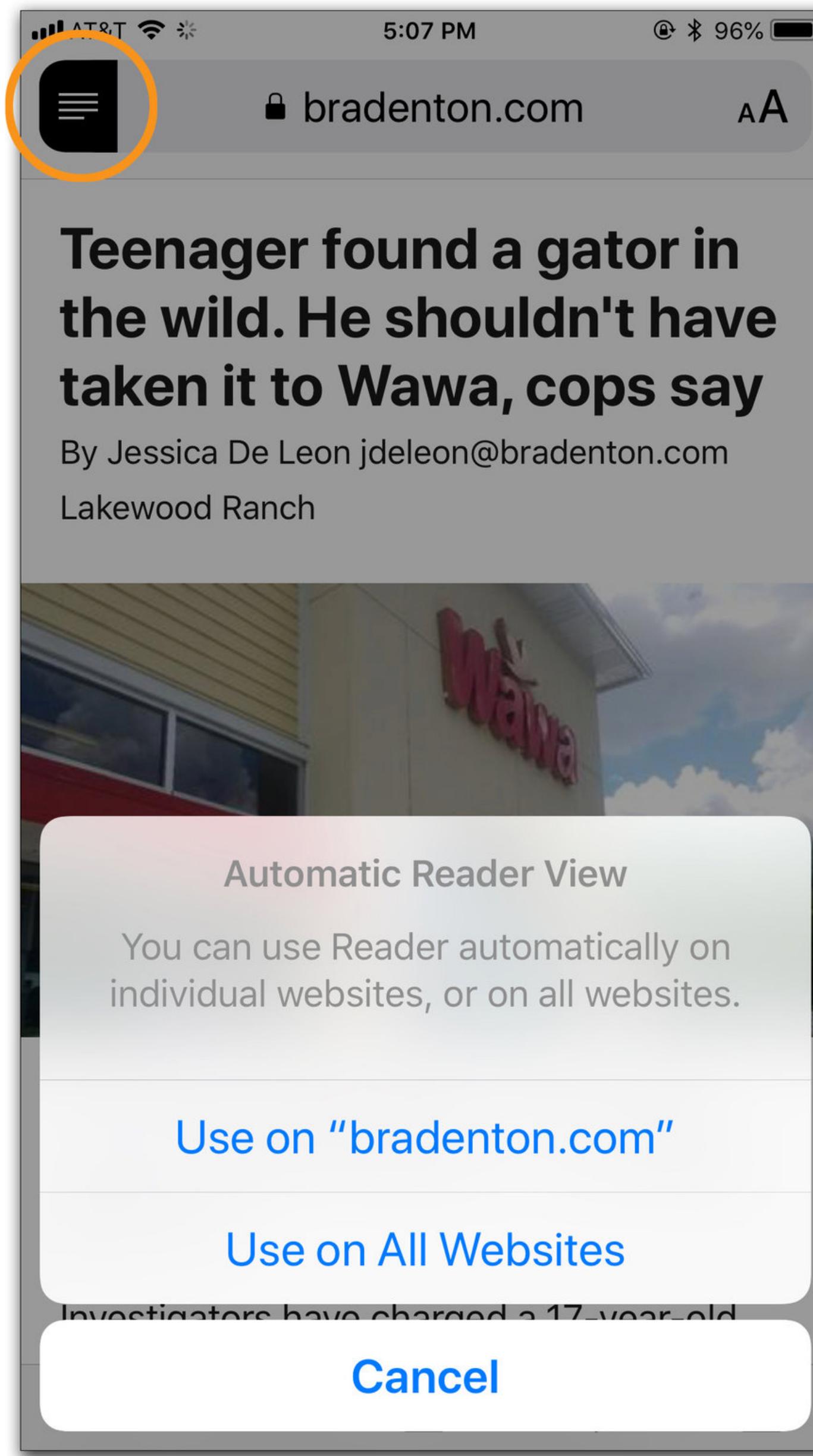
Susan Strasser • Fri 21 Jun 2019 06.00 BST

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





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 Web Accessibility Initiative (WAI) logo is visible.

On the left sidebar, there is a navigation menu with the following sections and sub-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](#)

In the main content area, a yellow banner at the top indicates 'Selected Filters: WCAG 2.1: all success criteria and all techniques.' It also includes buttons for 'Clear filters', 'Expand all sections', and 'Share'.

Principle 1 – Perceivable

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

Guideline 1.1 – Text Alternatives

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.

1.1.1 Non-text Content — Level A

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. [Show full description](#)

[Show techniques and failures for 1.1.1](#)

[SHARE](#) | [BACK TO TOP](#)

Guideline 1.2 – Time-based Media

Provide alternatives for time-based media.

1.2.1 Audio-only and Video-only (Prerecorded) — Level A

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:

[Show full description](#)

[Show techniques and failures for 1.2.1](#)

What can we do?

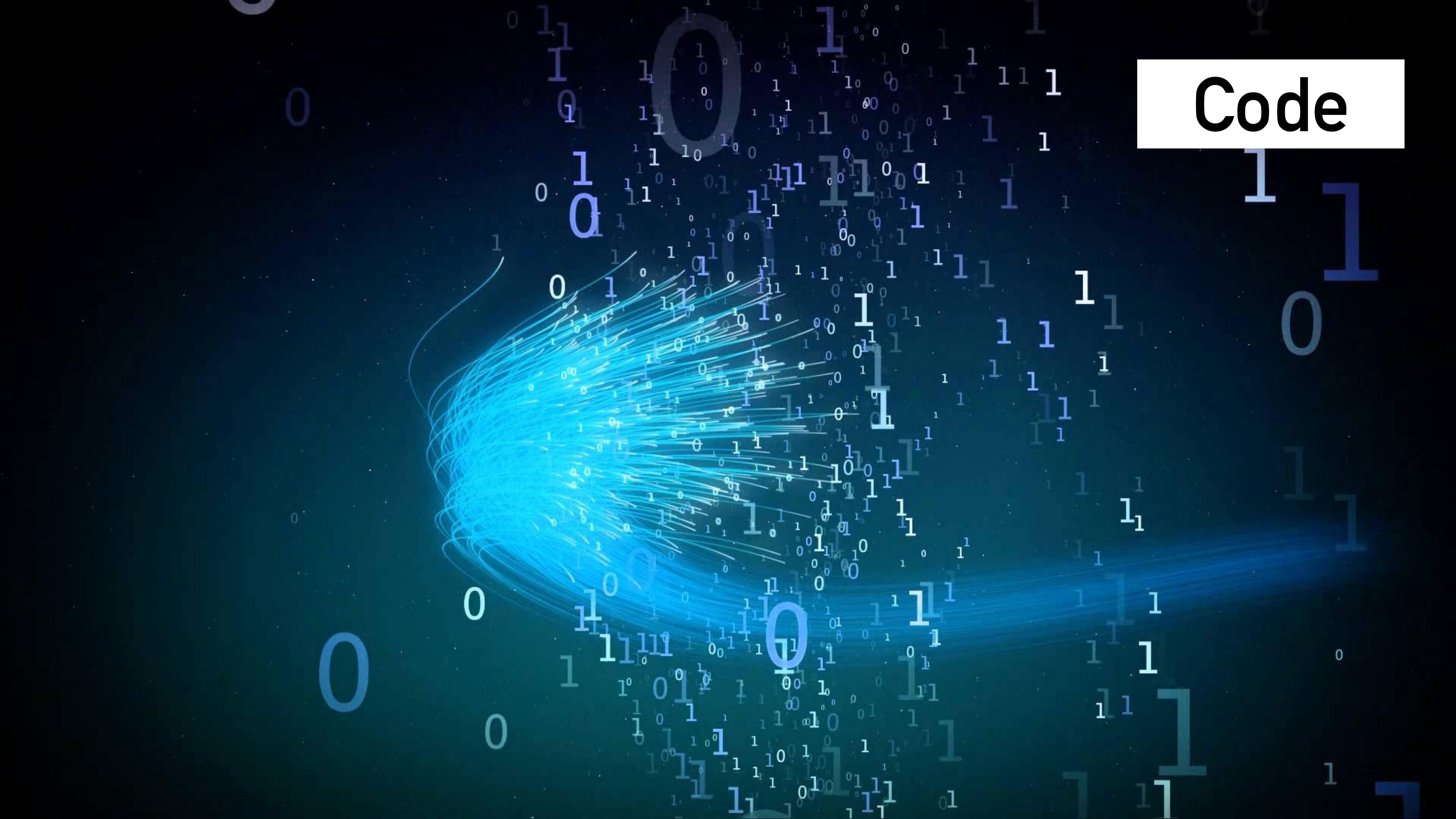
The background of the image consists of numerous overlapping circles of various sizes and colors, creating a vibrant and dynamic visual effect. The colors transition through a full spectrum, including red, orange, yellow, green, blue, and purple. The circles are semi-transparent, allowing the ones behind them to be visible, which adds depth to the composition.

Colour

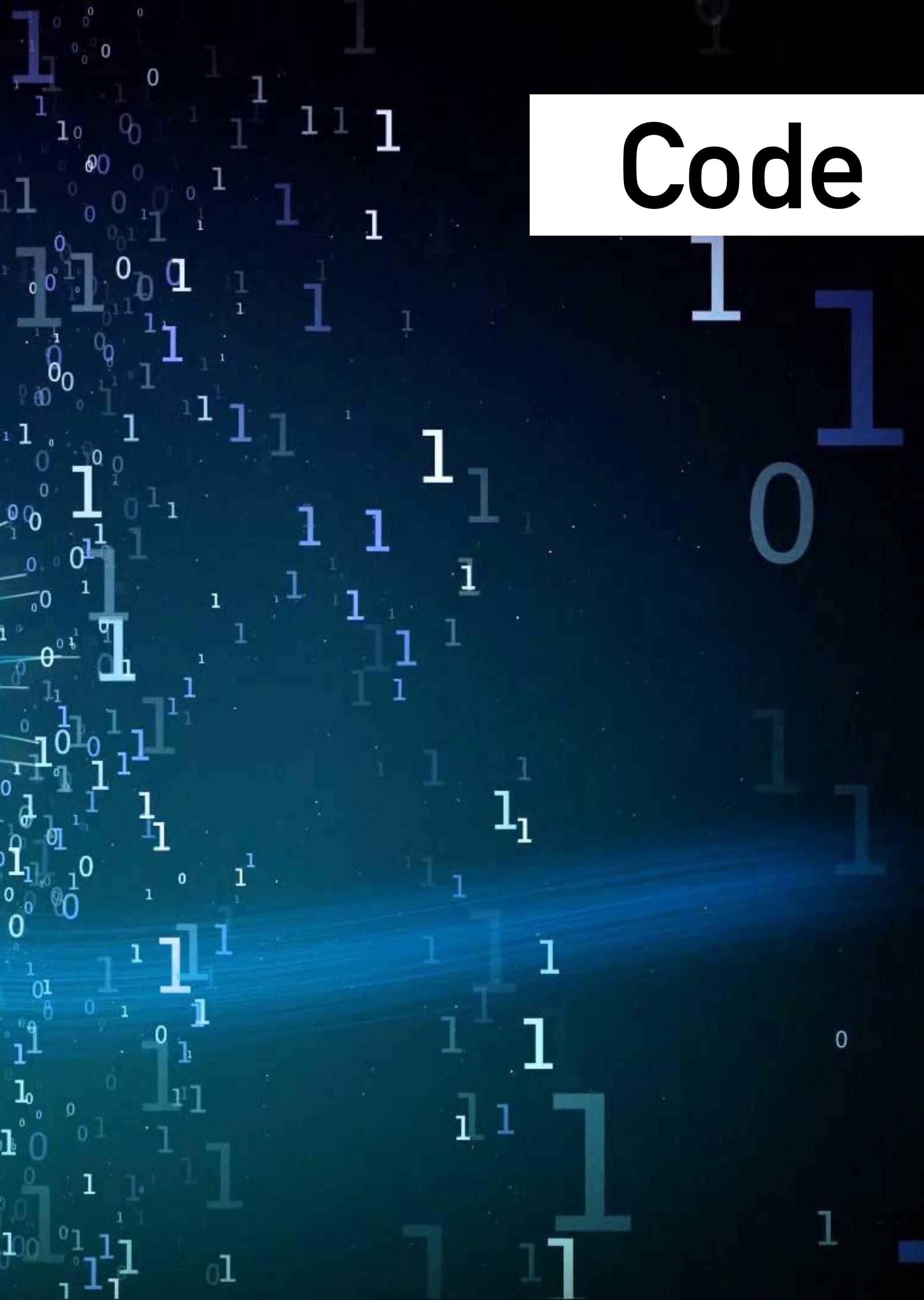
Language

THE OXFORD
ENGLISH
DICTIONARY

THE OXFORD
ENGLISH
DICTIONARY

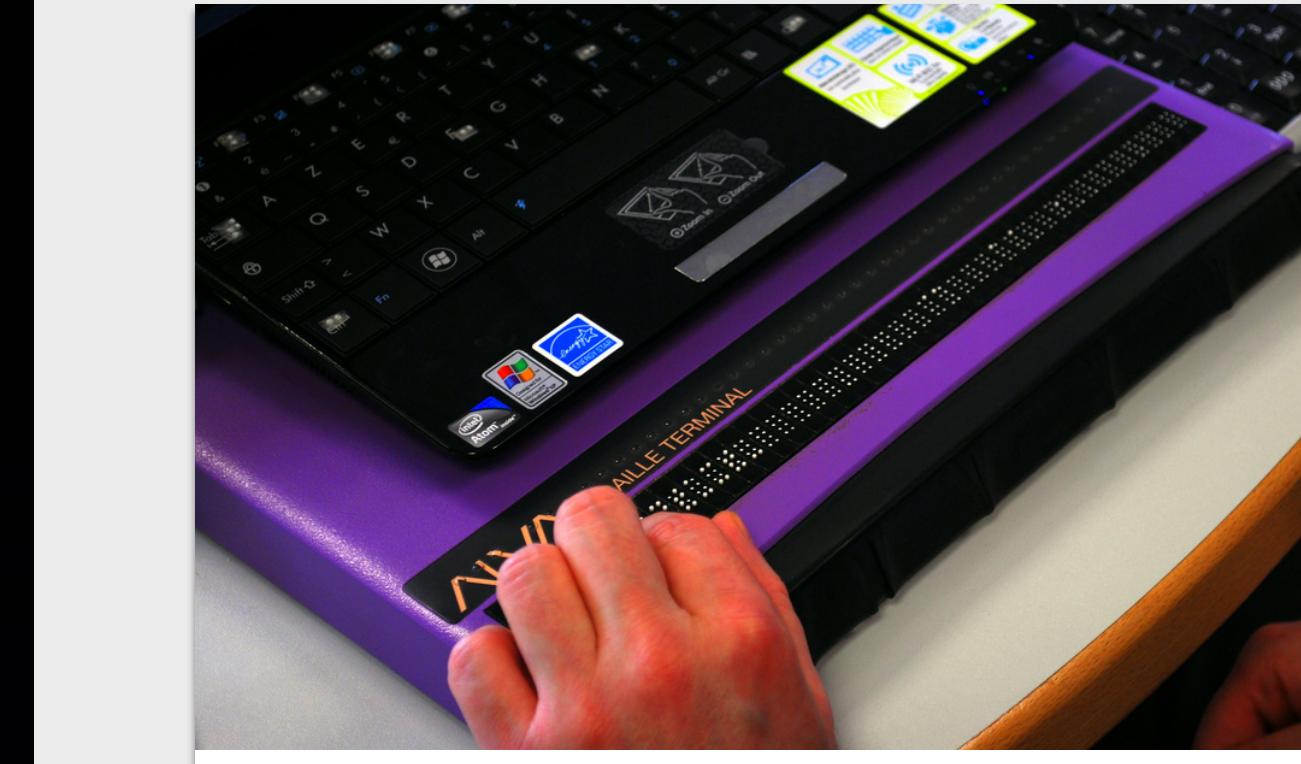


Code



Code

alternate pointing devices



braille bars



JAWS for Windows



screenreaders



screen magnifiers

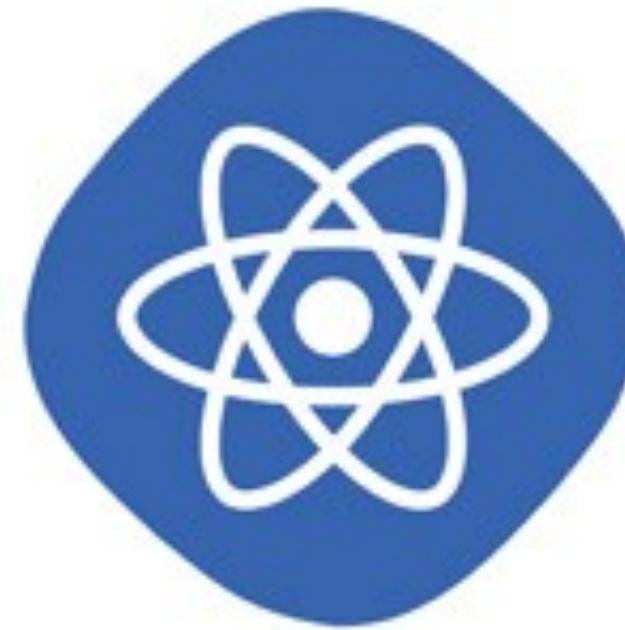




This time, it doesn't matter which
framework you choose



ember



Ultimately, it's all...

HTML
CSS
JavaScript

HTML
describes what things are

CSS
describes what things look like

JavaScript
behavior, state, etc



Tim Berners-Lee
Web Developer

THIS IS FOR EVERYONE



“This is for everyone”
is built into
web standards

Accessibility
is built into
web standards

THE BENEFITS OF TEXT

The web is mostly text

selectable

The web is mostly text

selectable

copyable

The web is mostly text

selectable

copyable

The web is mostly text

adaptable

selectable

copyable

The web is mostly text

enlargeable

adaptable

selectable

copyable

The web is mostly text

enlargeable

Google Translate-able

adaptable

selectable

copyable

screenreader-announcable

The web is mostly text

enlargeable

Google Translate-able

adaptable

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	



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!

Ceci n'est pas une pomme



Magritte

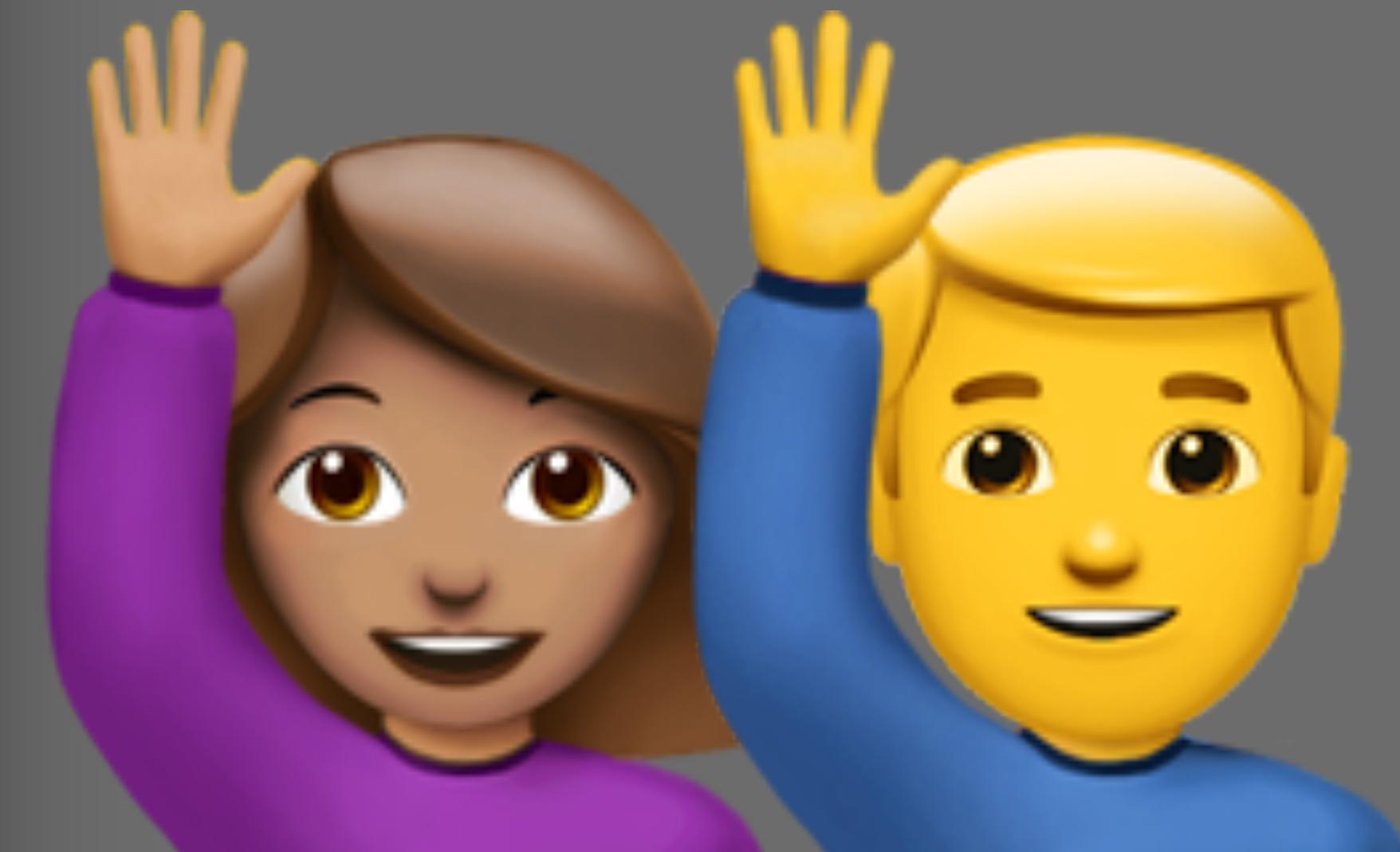
< Tweets Detail

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
@sheilasitalsing @volkskrant 't Is een schande. Eén
troost: je hoeft het niet per se zo te spellen.



Ceci n'est pas
un texte

A screenshot of a Twitter mobile application. The top navigation bar shows 'Tweets' and 'Detail'. On the left, there's a vertical toolbar with icons for reply, mention, message, search, like, profile, and more. The main content area displays a tweet from user @sheilasitalsing. The tweet text is partially visible as 'Haanstra le... iet persé de... rrors' 700'. Below the text is a small profile picture of a woman. The tweet details show 94 Likes and 12 Retweets. The timestamp is 21/08/2017 at 12:54, and it was posted via Twitter for Android. At the bottom, there's a blue footer bar with icons for back, refresh, like, share, and settings.

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

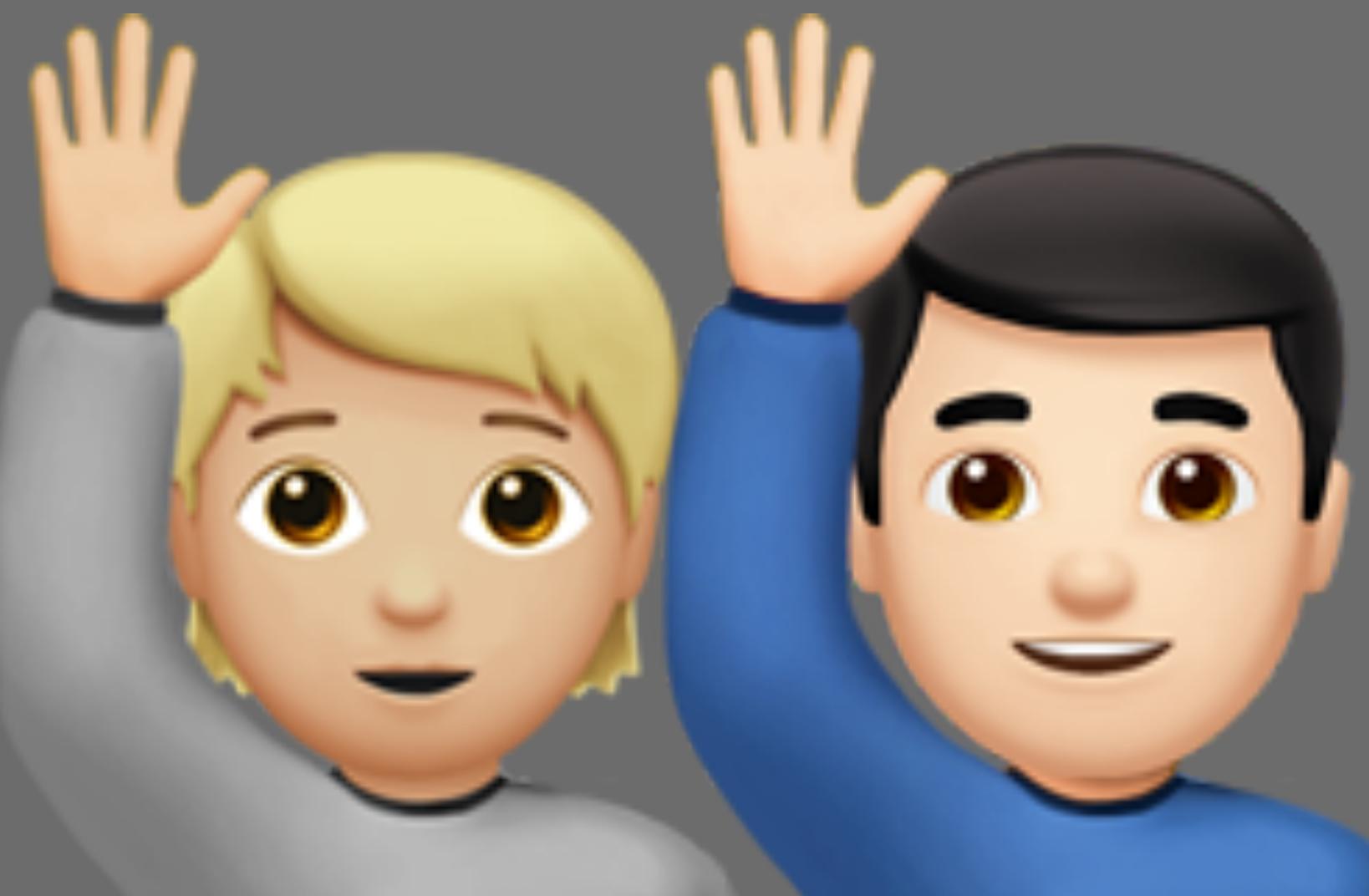
Wim Knol @WimKnol

Screenshots of a memo

Corona graphs in the news

Special offer

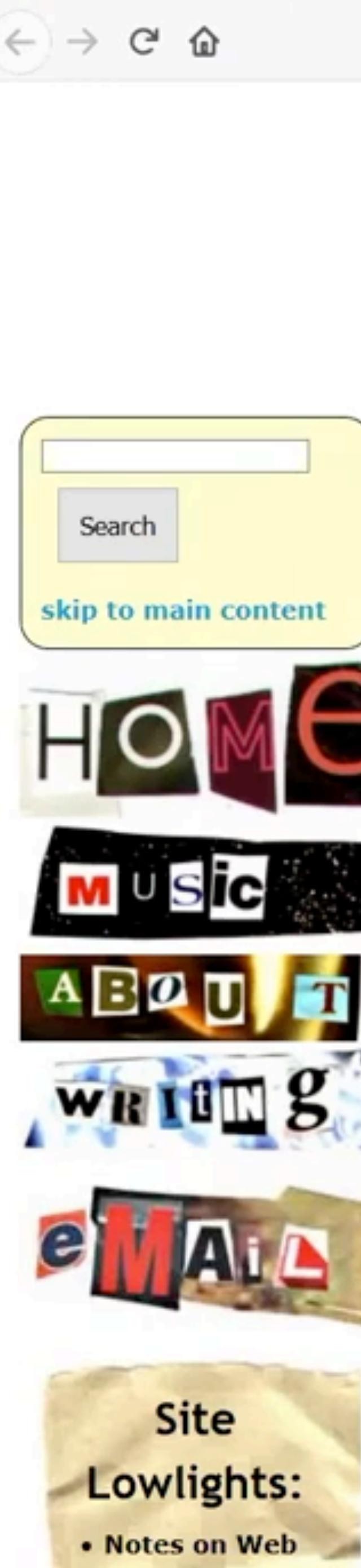
...



Document STRUCTURE

Look at your page
with CSS turned off

Have a sensible structure



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"

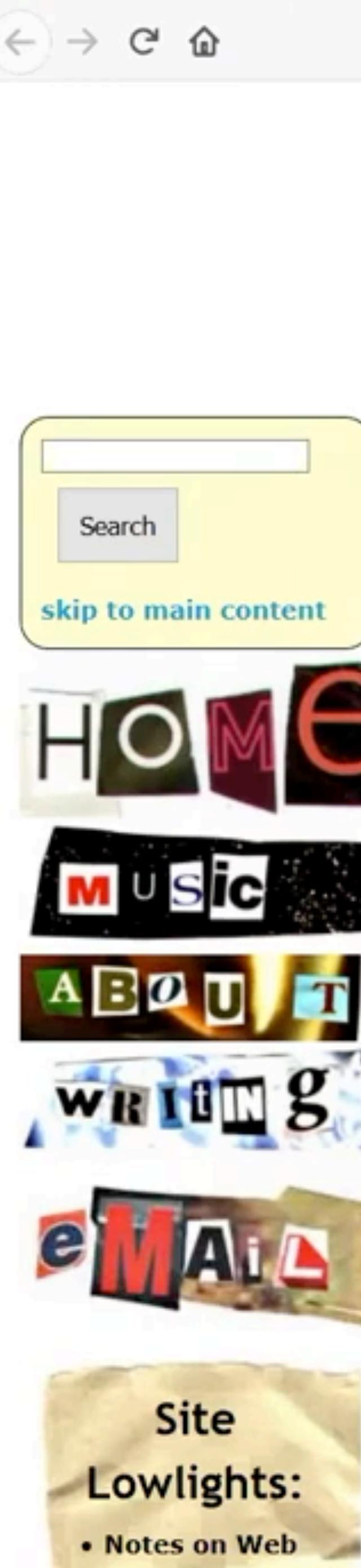
Posted in [accessibility](#), [web standards](#), [reading list](#).
[Leave a comment](#)

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>



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.

Use a unique <title>

h1

h2

h3

h4

h5

h6

Avoid skipping
heading levels

“

Headings are much more than a big bold title, they provide a solid structure to the webpage. Think of headings as an outline of your webpage.

<https://www.nomensa.com/blog/2017/how-structure-headings->

“

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

<https://hiddedevries.nl/en/blog/2018-09-01-heading-structures->

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

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](#)

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>
```

<section>

<header>

<footer>

<nav>

<article>

<main>

<aside>

“page regions”

Exercise 1

Make sure the page has
a sensible structure.

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

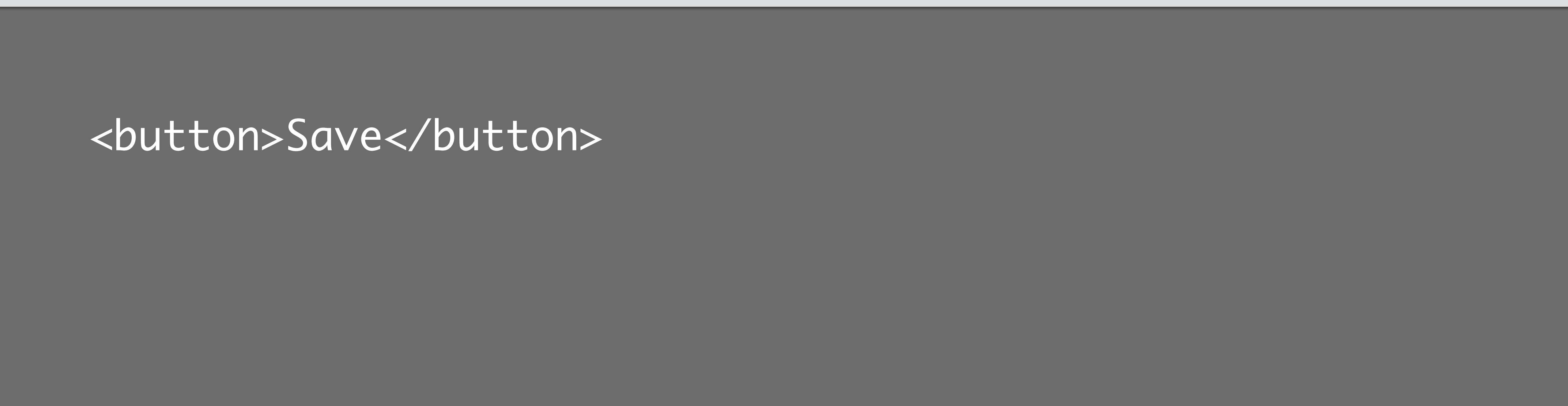
<button> does something

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>
```

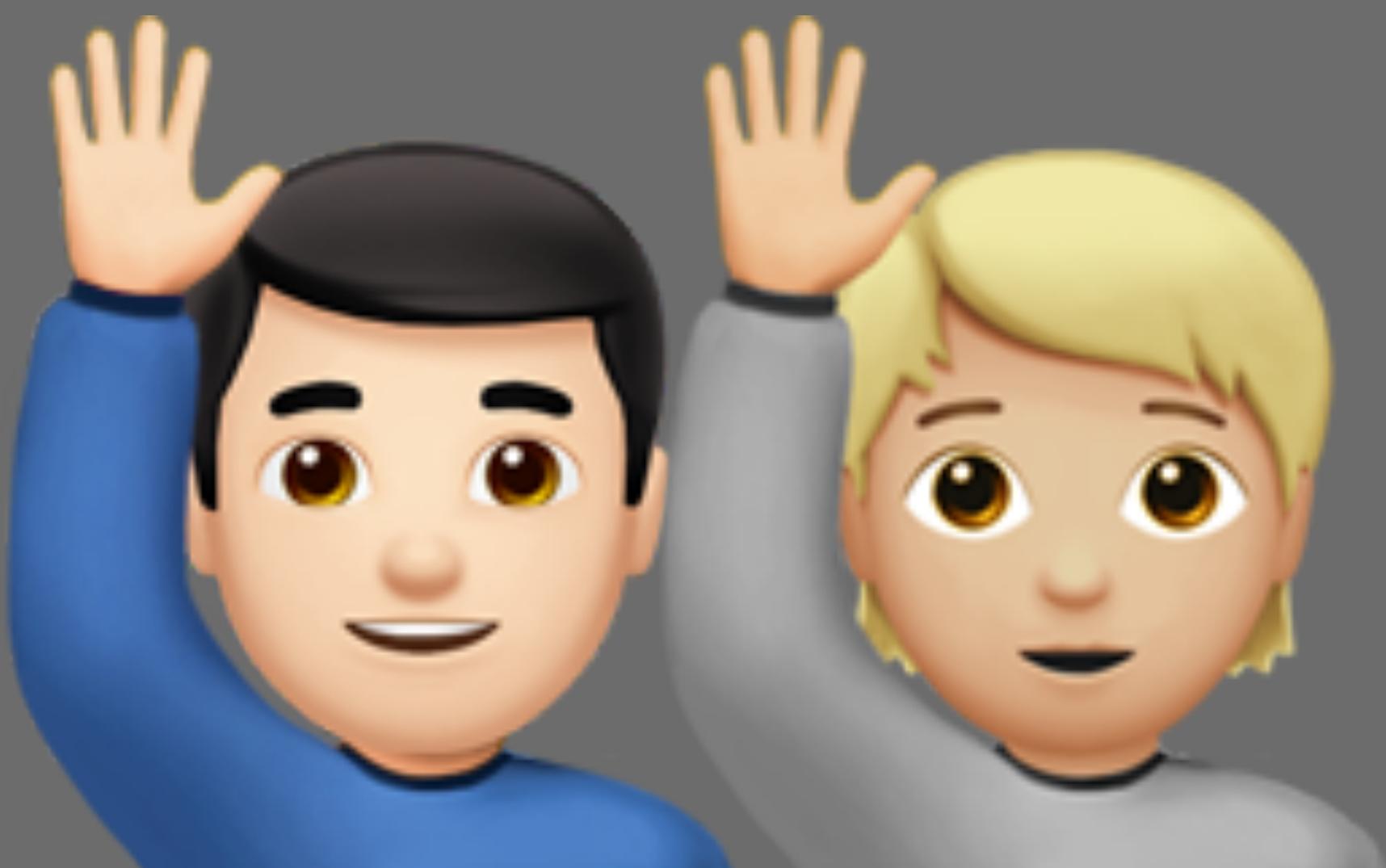
Complementary benefits:

- * 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>
```

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 ↵

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

Exercise 2

Improve the HTML tags
that are being used.

Naming THINGS

Unique names
help distinguish





Bella





Bella

Bella

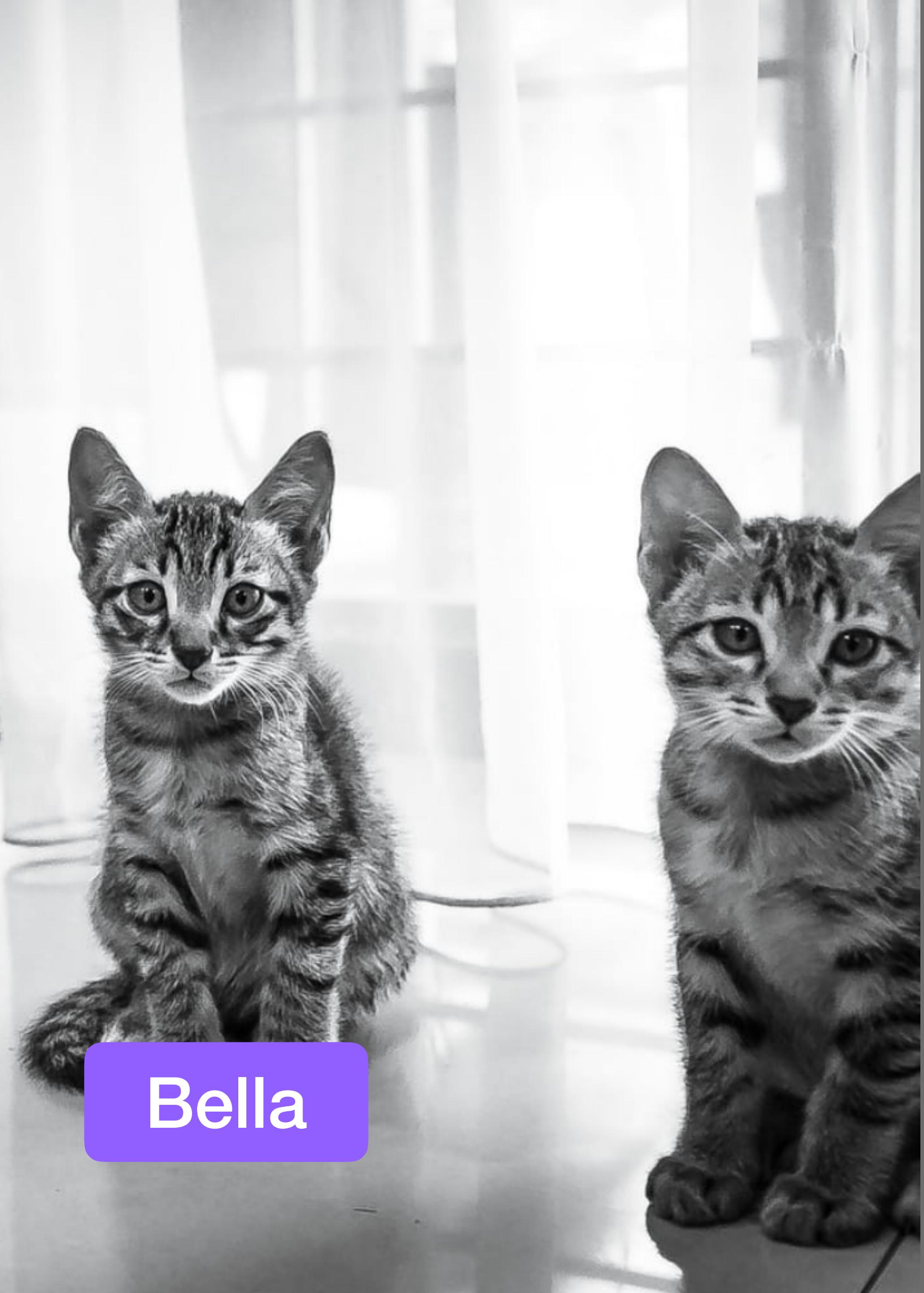


Bella



Bella

Bella



Bella



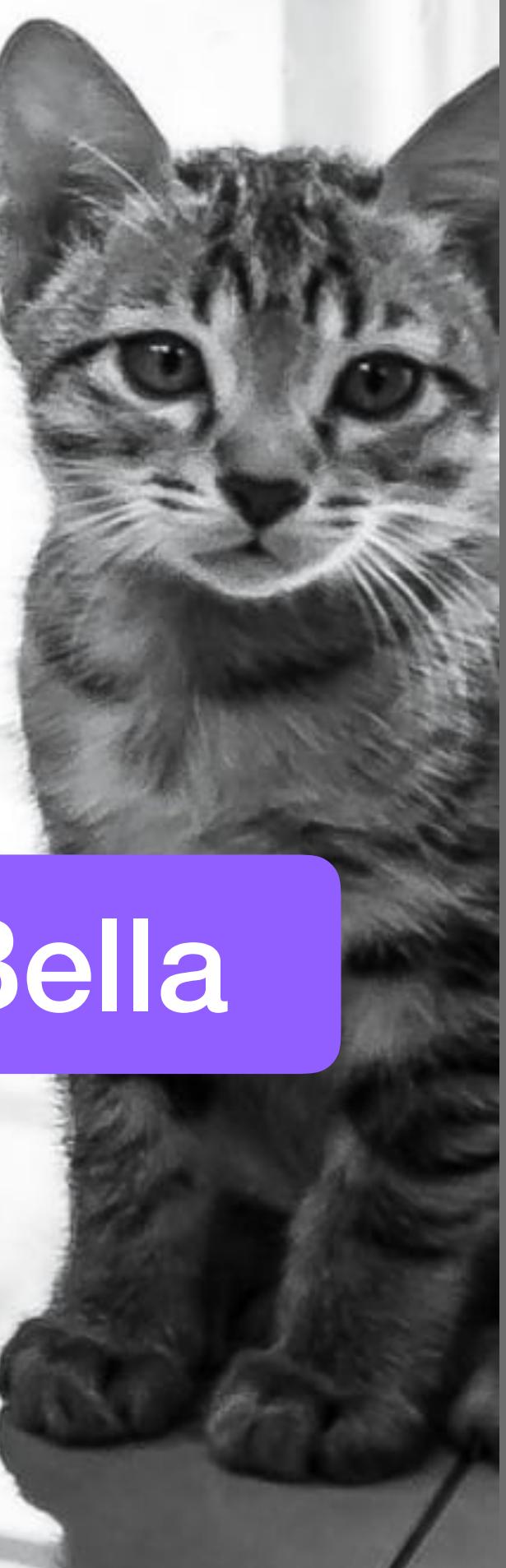
Bella

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" />
```

Personal details

Name:

Address:

City:

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

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*.

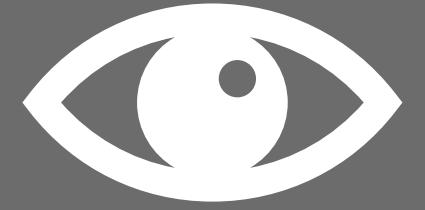
Exercise 3

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



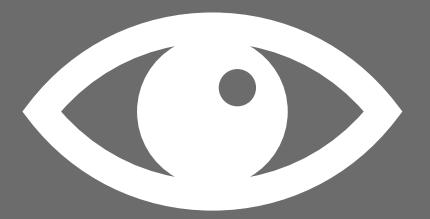
non-visual

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



all

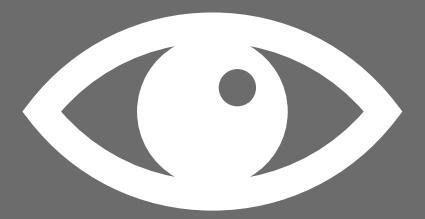
visual + non-visual



visual

e.g. those who can
see the page

Contextual cues to
supplement visual cues.

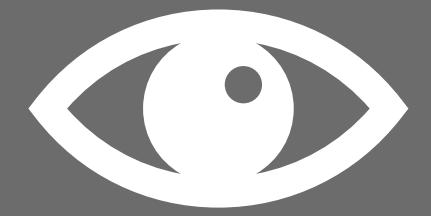


visual

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/>

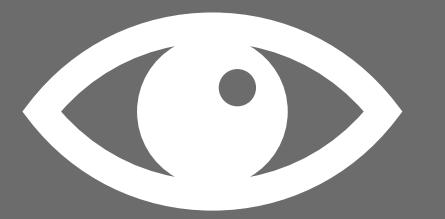


visual

e.g. those who can
see the page

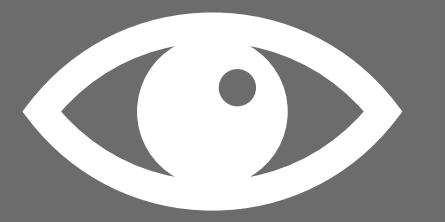
```
<span class="visually-hidden">  
  Only show me to non-visual users  
</span>
```

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



visual

e.g. those who can
see the page



visual

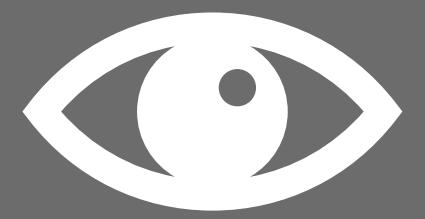
e.g. those who can
see the page

About us

Products

Projects

Contact



visual

e.g. those who can
see the page

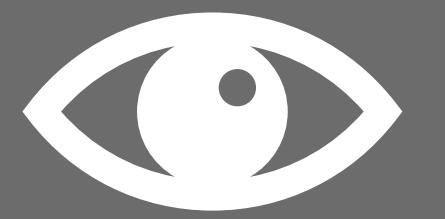
About us

Products

Projects

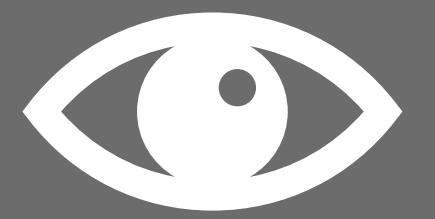
Contact

```
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

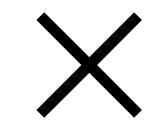
e.g. those who can
see the page



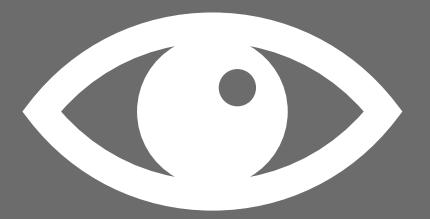
visual

e.g. those who can
see the page

Please accept our
cookie policy



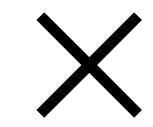
OK



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.

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.

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.

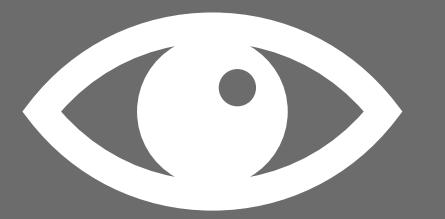
Suggested solution: add visually hidden text to button

Visual hiding gone wrong

Suggested solution: add visually hidden text to button

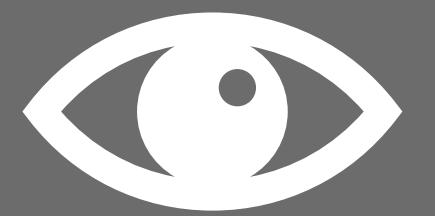
```
1 <button type="button">  
2 ...<span class="visually-hidden">Zoek</span>  
3 </button>
```

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



visual

e.g. those who can
see the page

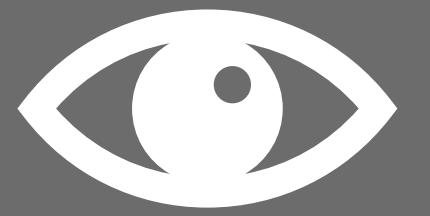


visual

e.g. those who can
see the page

First name *

A rectangular input field with a thick black border, representing a text input for a first name.

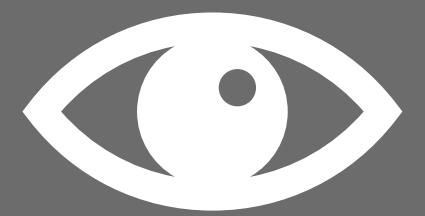


visual

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

Text alternatives



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

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](#)

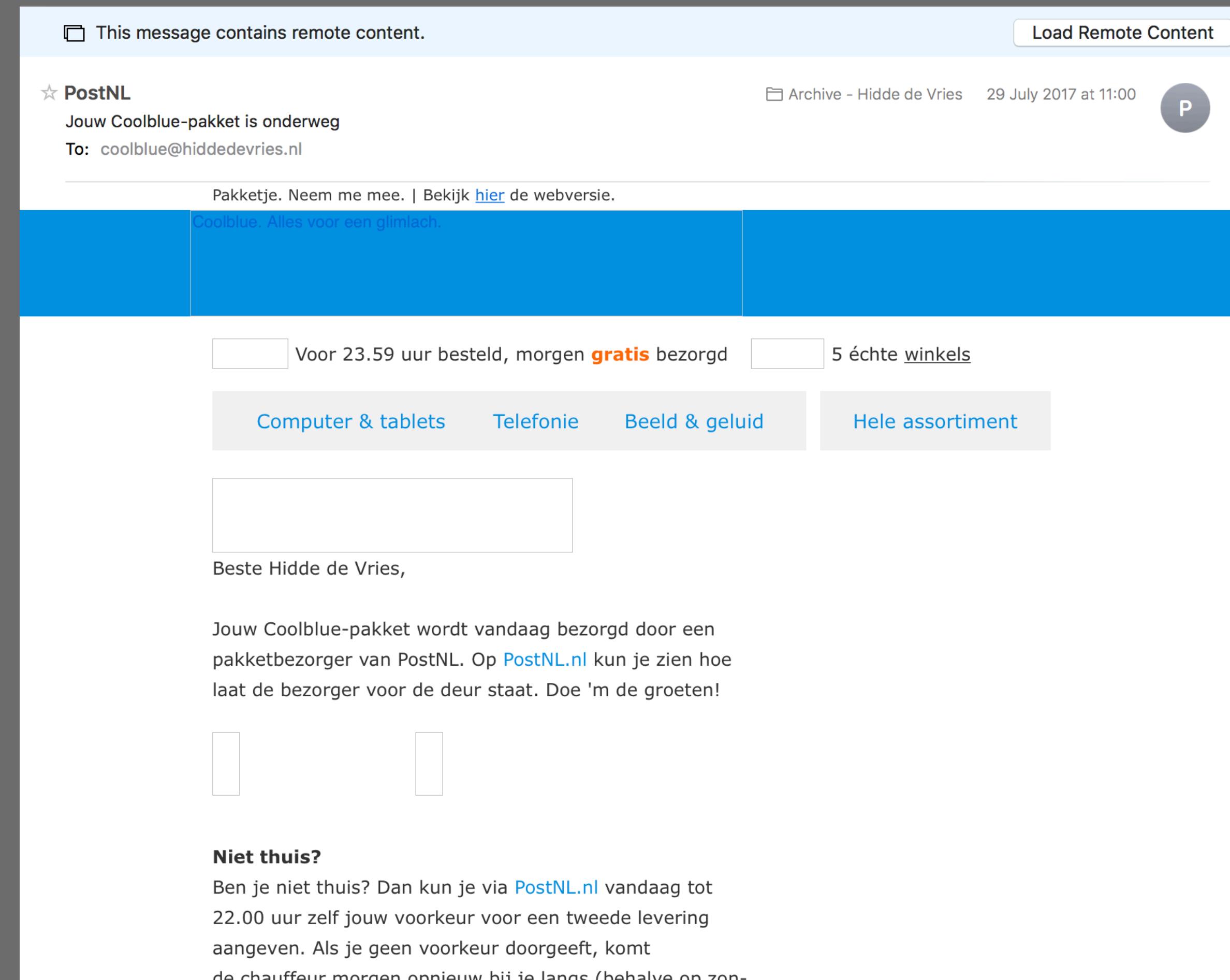
Computer & tablets Telefonie Beeld & geluid Hele assortiment

Beste Hidde de Vries,

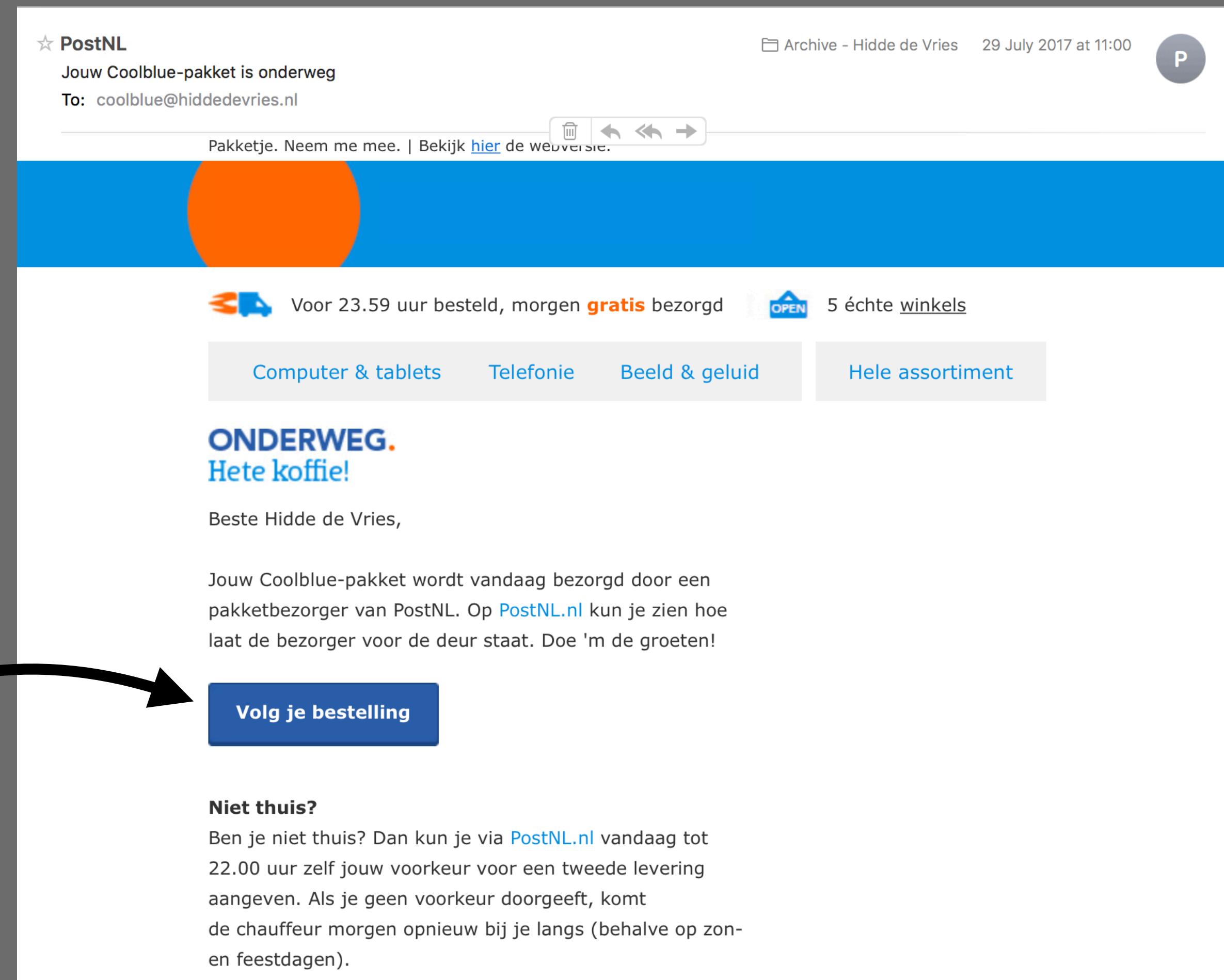
Jouw Coolblue-pakket wordt vandaag bezorgd door een pakketbezorger van PostNL. Op [PostNL.nl](#) kun je zien hoe laat de bezorger voor de deur staat. Doe 'm de groeten!

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?



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



*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

Front-End Performance: The Dark Side by Mathias Bynens



Mathias Bynens

Front-End Performance: The Dark Side

▶ 00:00 / 20:04

音量

*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

Lees de transcriptie

0:00 / 0:00 slower faster

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.

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

Lees de transcriptie

0:00 / 0:00 slower faster

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?

Exercise 5

Add text alternatives where they are missing.

Keyboards and other inputs

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 the holistic world view of disruptive innovation and 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.

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.

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.

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.

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.

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.

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



Prinsjesdag



© ANP

Actueel

Nieuwsberichten van de Rijksoverheid.

Regering

Welke ministers en staatssecretarissen vormen samen het kabinet? Wat doet het

Onderwerpen

Overzicht van alle onderwerpen waar de Rijksoverheid beleid voor maakt.

Documenten

Overzicht van publicaties van de Rijksoverheid, zoals Kamerbrieven en

Ministeries

Informatie over de ministeries en met welke onderwerpen ze zich bezighouden.

Doe mee

Denk en praat mee over het maken of uitvoeren van beleid.



Prinsjesdag



© ANP

Actueel

Nieuwsberichten van de Rijksoverheid.

Regering

Welke ministers en staatssecretarissen vormen samen het kabinet? Wat doet het

Onderwerpen

Overzicht van alle onderwerpen waar de Rijksoverheid beleid voor maakt.

Documenten

Overzicht van publicaties van de Rijksoverheid, zoals Kamerbrieven en

Ministeries

[Informatie over de ministeries en met welke onderwerpen ze zich bezighouden.](#)

Doe mee

Denk en praat mee over het maken of uitvoeren van beleid.

Exercise 6

Make focus visible

On focus
management

Interactive elements

<button>

Interactive elements

<button>

<a href>

Interactive elements

<button>

<a href>

Interactive elements

<input>

<button>

<a href>

Interactive elements

<input>

<details>

<button>

<a href>

Interactive elements

<input>

<details>

<select>

Move focus with
JavaScript

element.focus()

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”

Structure

Appropriate
HTML tags

lang

Naming things

Take care when
hiding content

Text
alternatives

Keyboard

That's a wrap!

Questions?



DAY ONE

How to get accessibility
right without ARIA

DAY TWO

How to use ARIA to fill
some of the gaps

ARIA 101

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

1 <p>The Blue Book was dictated between
1933 and 1934, and contains certain themes unaddressed in
Wittgenstein's later works, including deliberations on
thinking as operating with signs. An early conception of
what would later become known as <a href="#language-games"
>language games is present in the text, which
represents the first period of Wittgenstein's thought
after 1932, a method of linguistic analysis which would
later become ordinary language philosophy.</p>

1 <p>The Blue Book was dictated between 1933 and 1934, and contains certain themes unaddressed in Wittgenstein's later works, including deliberations on thinking as operating with signs. An early conception of what would later become known as language games is present in the text, which represents the first period of Wittgenstein's thought after 1932, a method of linguistic analysis which would later become ordinary language philosophy.</p>

role = link

name = language games

state = n/a

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

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

Role	Name	Properties
▶ listitem:	"Blog"	name: "Twitter (@mozilla.org)"
▶ listitem:	"Contact Us"	role: "link"
▼ listitem:	"Donate"	actions: [...]
statictext:	""	value: "https://twitter.com/mozillaorg/donate"
▶ link:	"Donate"	DOMNode: a.twitter
▼ listitem:	"Contribute to this site"	description: ""
statictext:	""	help: ""
▶ link:	"Contribute to this site"	keyboardShortcut: ""
▼ listitem:	"Source code for this page"	childCount: 2
statictext:	""	indexInParent: 0
▶ link:	"Source code for this page"	states: [...]
▼ listitem:	"Twitter (@mozilla.org) Facebook (Mozilla.org) Instagram (@mozilla.org)"	attributes: {...}
statictext:	""	
▼ list:	""	
▼ listitem:	"Twitter (@mozilla.org)"	
▶ link:	"Twitter (@mozilla.org)"	
text leaf:	""	
▼ listitem:	"Facebook (Mozilla.org)"	
▶ link:	"Facebook (Mozilla.org)"	
text leaf:	""	
▼ listitem:	"Instagram (@mozilla.org)"	
text leaf:	""	
▼ section:	""	
▼ heading:	"Firefox"	
▶ link:	"Firefox"	
text leaf:	""	
▼ list:	""	
▼ listitem:	"Download Firefox"	
statictext:	""	
▶ link:	"Download Firefox"	
▶ listitem:	"Desktop"	
▶ listitem:	"Mobile"	

AT



JAWS[®] for Windows



text-to-speech
screen magnifiers
alternate pointing devices

Platform APIs



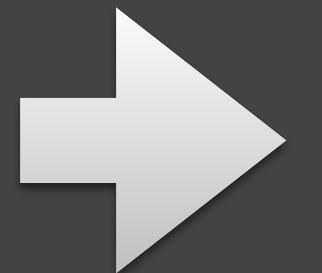
Microsoft Active Accessibility
Microsoft User Interface Automation
MSAA



Mac OS X Accessibility Protocol



Linux/Unix Accessibility Toolkit
IAccessible2



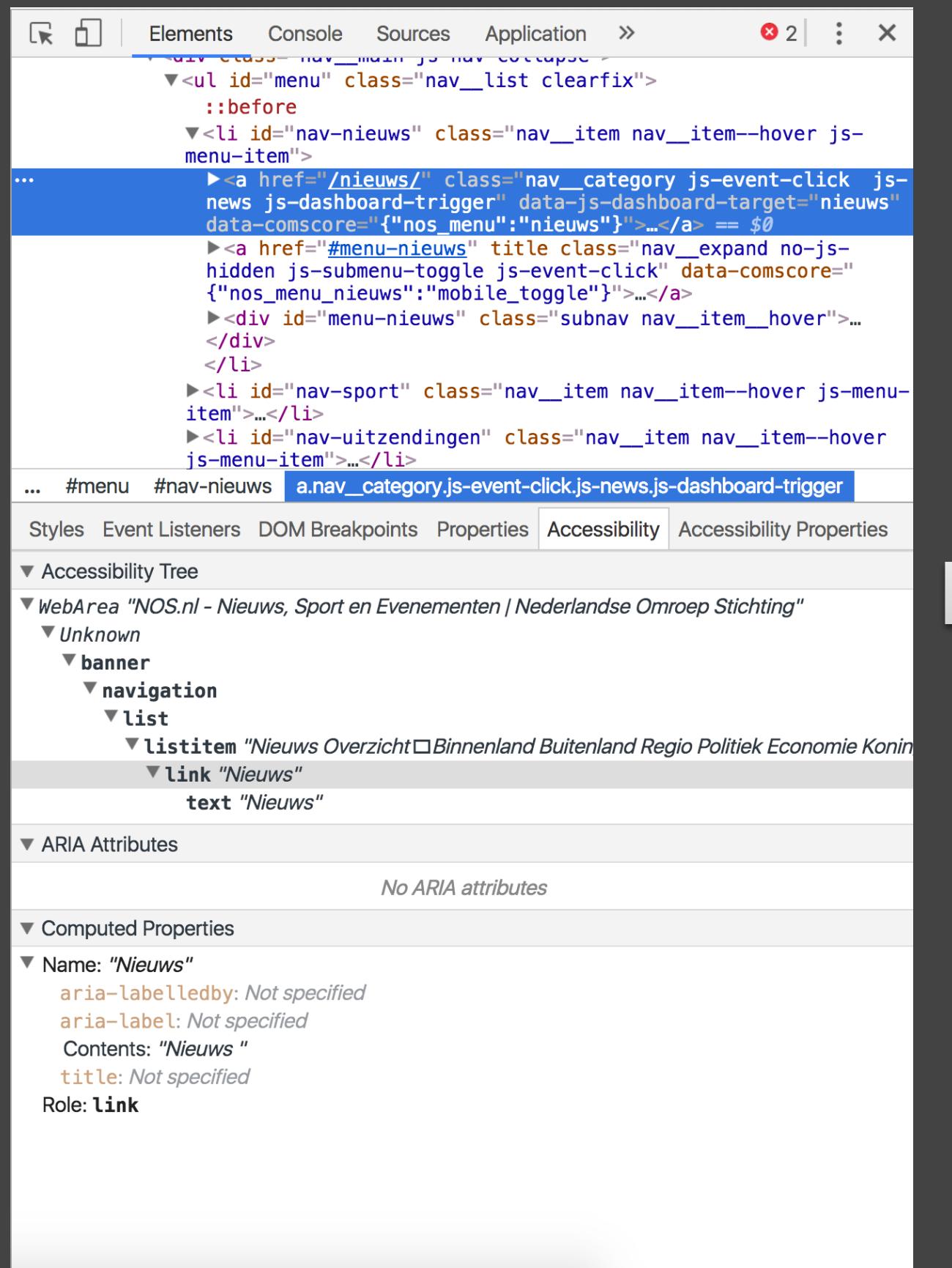
JAWS®forWindows



text-to-speech
screen magnifiers
alternate pointing devices

AT

Accessibility tree



A screenshot of the Chrome DevTools Accessibility panel. It shows the DOM tree with several nodes expanded, including a menu item for 'Nieuws'. The 'Accessibility' tab is selected. A large white arrow points from this panel to the Microsoft section.

```
<div class="nav__main js-nav__collapse">
  <ul id="menu" class="nav__list clearfix">
    <li id="nav-nieuws" class="nav__item nav__item--hover js-menu-item">
      <a href="/nieuws/" class="nav__category js-event-click js-news js-dashboard-trigger" data-js-dashboard-target="nieuws" data-comscore="{"nos_menu":"nieuws"}">...
      <a href="#menu-nieuws" title="nav_expand no-js-hidden js-submenu-toggle js-event-click" data-comscore="{"nos_menu_nieuws":"mobile_toggle"}">...

WebArea "NOS.nl - Nieuws, Sport en Evenementen | Nederlandse Omroep Stichting"



Unknown



banner



navigation



list



listitem "Nieuws Overzicht □ Binnenland Buitenland Regio Politiek Economie Konink..."



link "Nieuws"



text "Nieuws"



ARIA Attributes



No ARIA attributes



Computed Properties



Name: "Nieuws"



aria-labelledby: Not specified



aria-label: Not specified



Contents: "Nieuws "



title: Not specified



Role: link


```

Platform APIs



Microsoft Active Accessibility
Microsoft User Interface Automation
MSAA



Mac OS X Accessibility Protocol



Linux/Unix Accessibility Toolkit
IAccessible2

AT



JAWS® for Windows

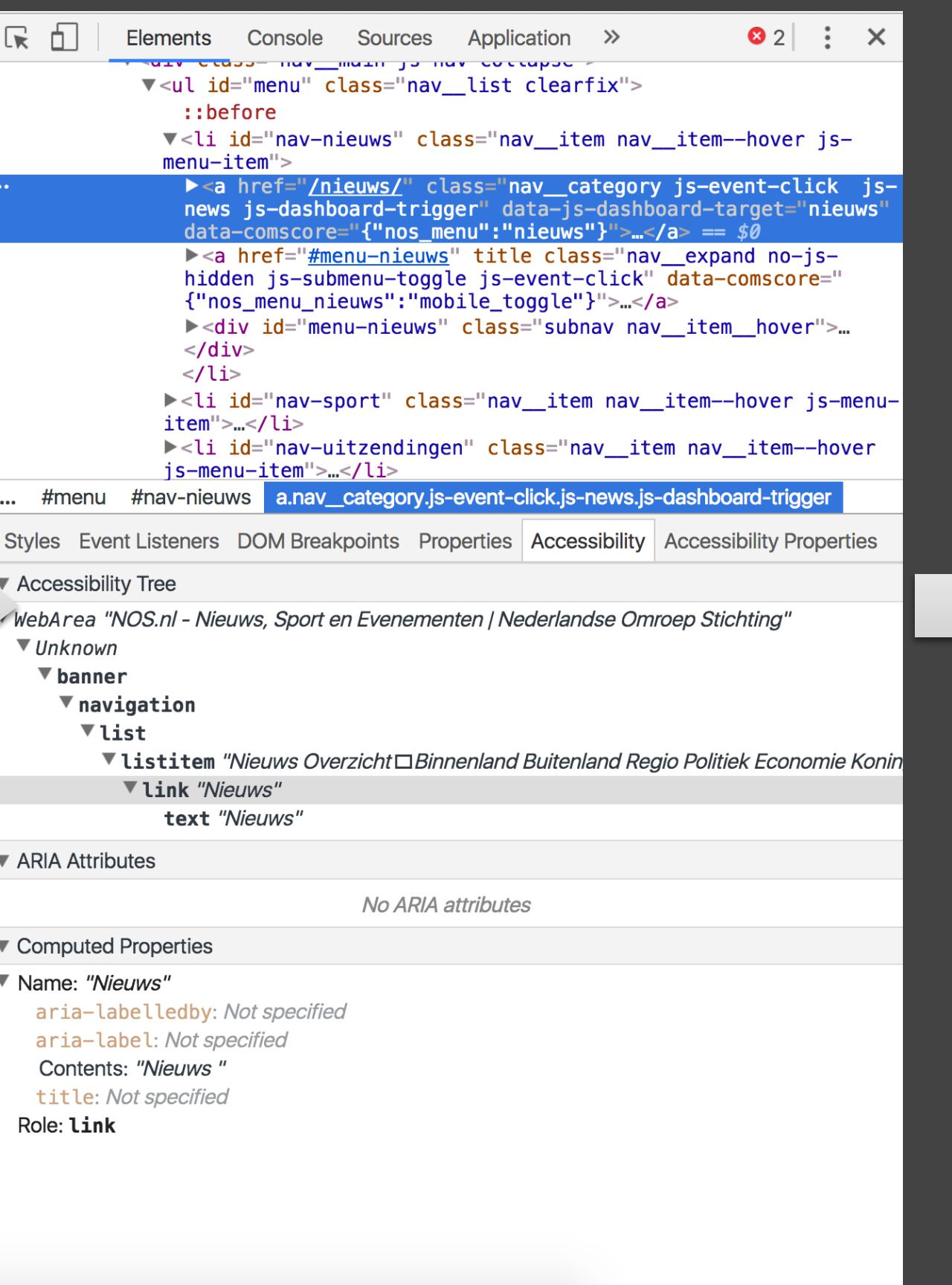


text-to-speech
screen magnifiers
alternate pointing devices



Your
markup

DOM tree



Accessibility tree

Platform APIs



Microsoft Active Accessibility
Microsoft User Interface Automation
MSAA



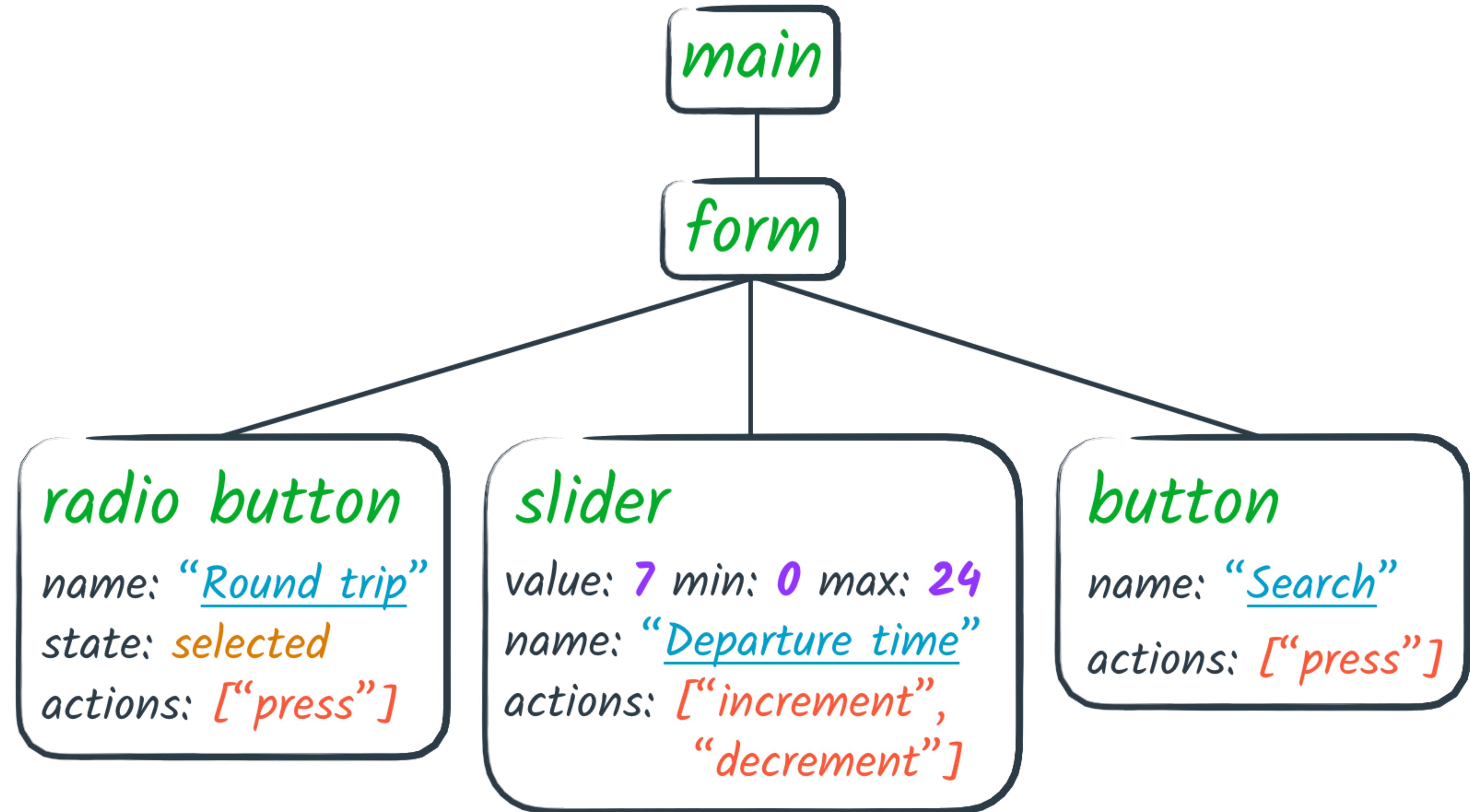
Mac OS X Accessibility Protocol



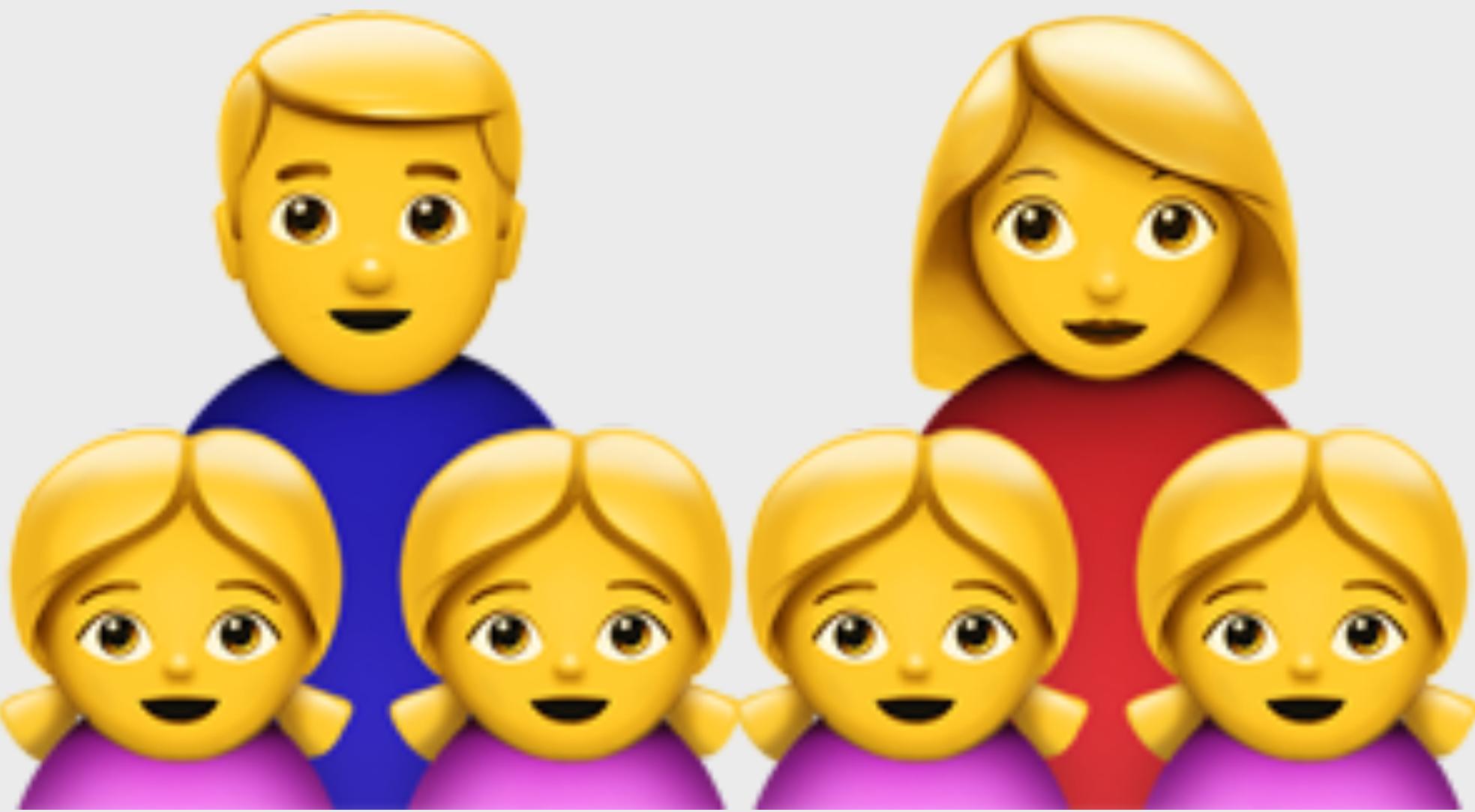
Linux/Unix Accessibility Toolkit
IAccessible2

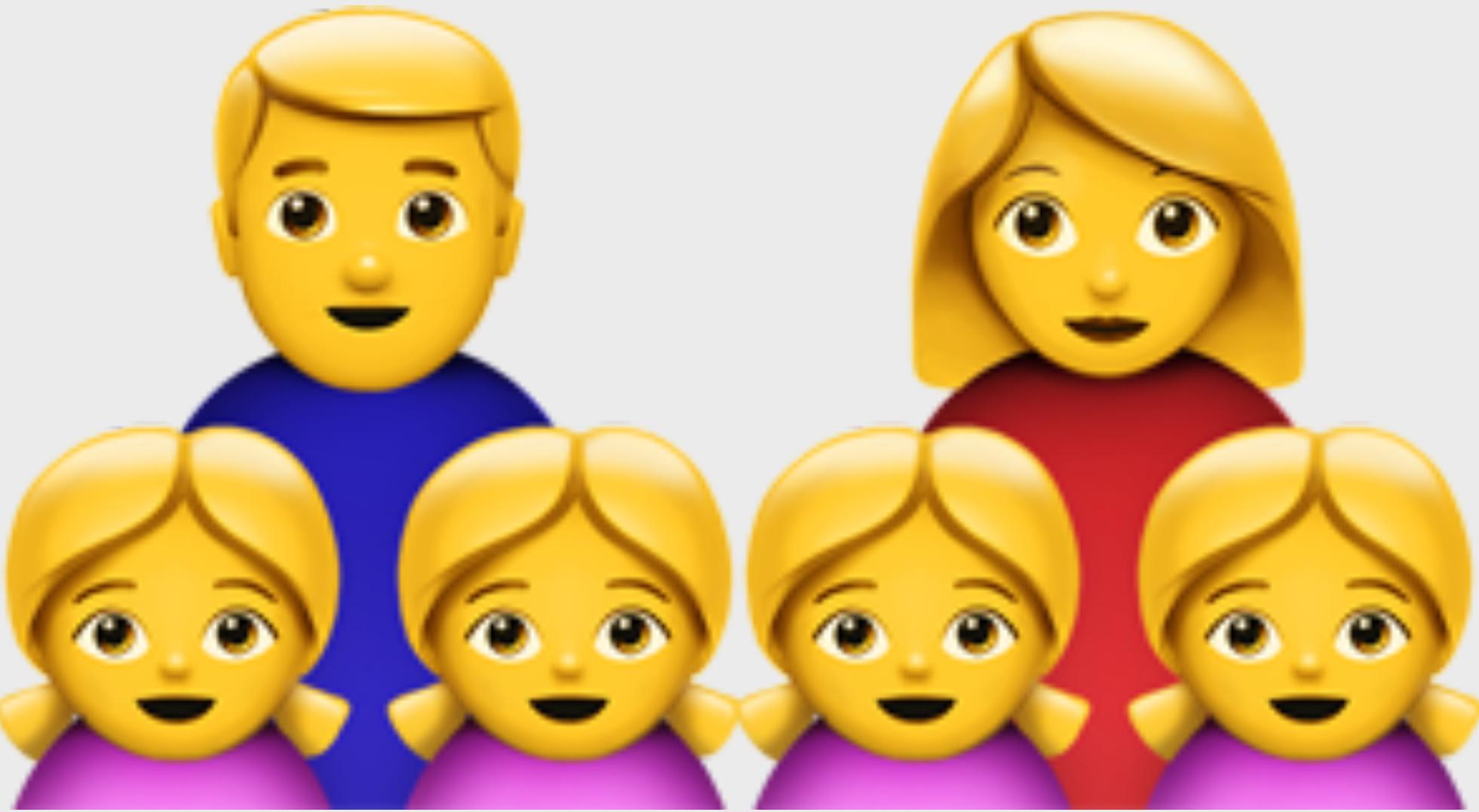
alte



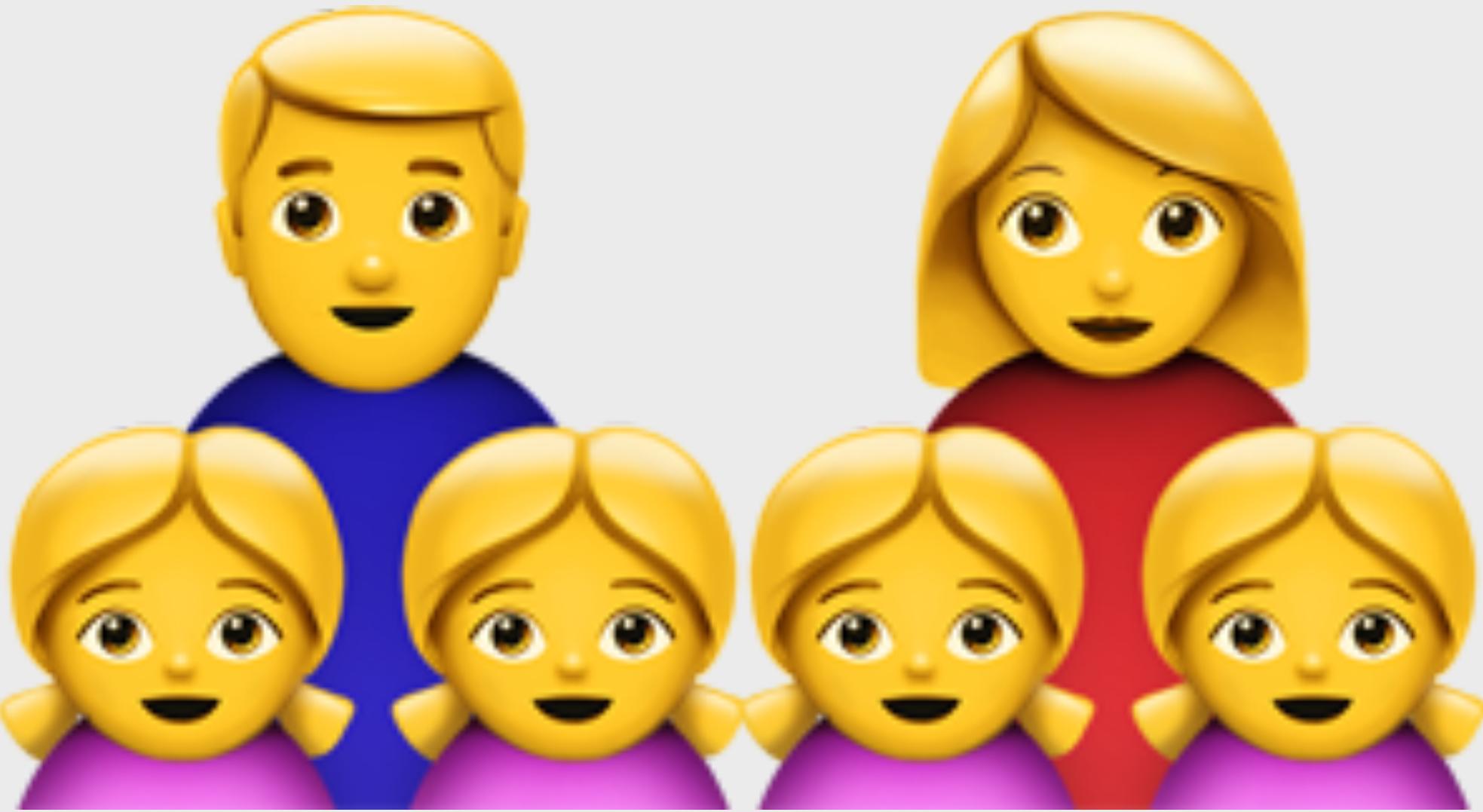


Better names

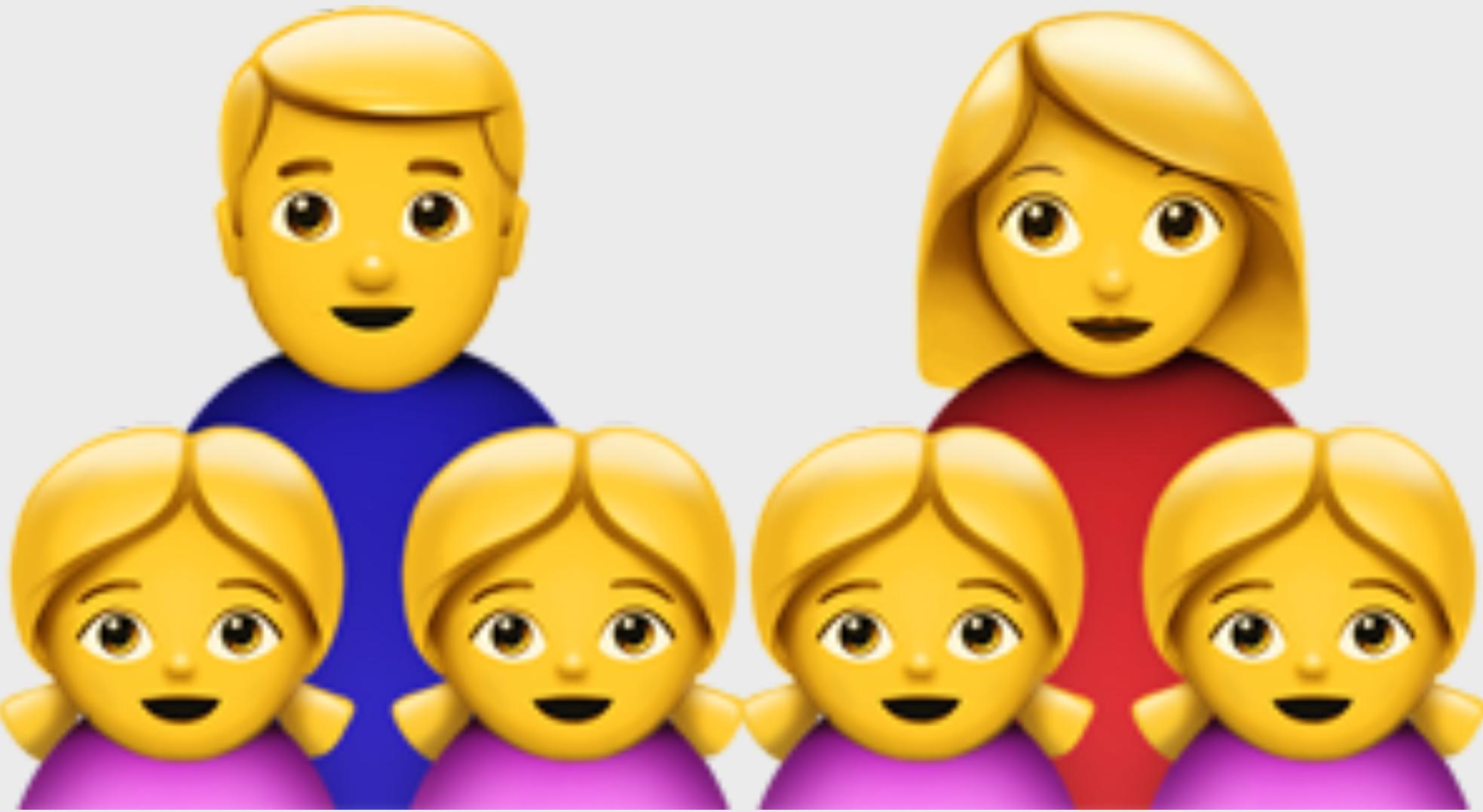




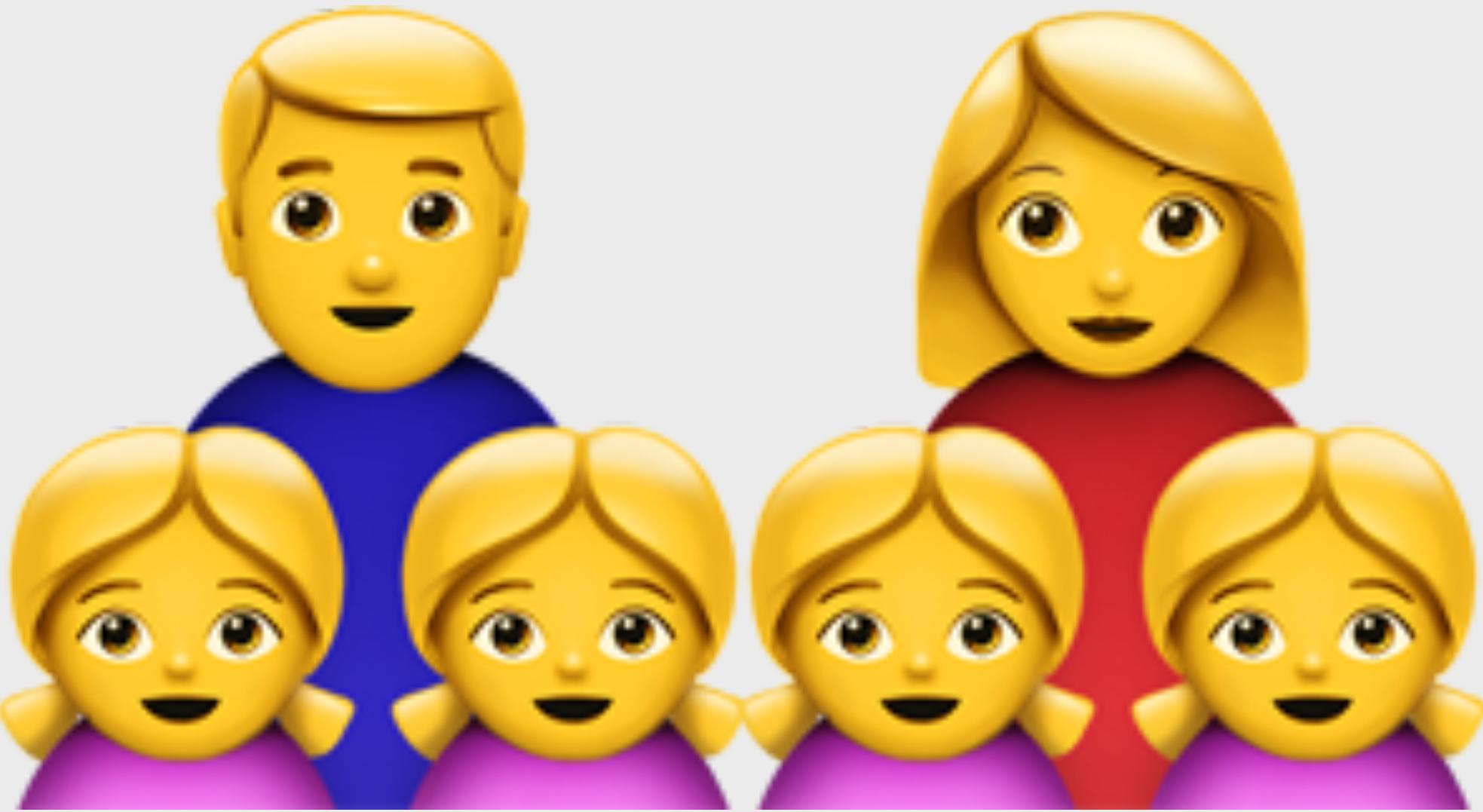
Alice



Alice Alice



Alice Alice Alice



Alice Alice Alice Alice

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](#)

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](#)

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*

Use unique link text
that makes sense
out of context

All of these elements
can name things

<a>

<hx>

<caption>

<legend>

<label>

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

Re: accessible names

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')

Some ARIA is well
supported, some
is not supported

<https://a11ysupport.io/>

**LET'S USE
SOME
ARIA!**

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 dated "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 lists several URLs for different versions and editors.

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)

Copyright © 2015-2017 W3C® (MIT, ERCIM, Keio, Beihang). W3C liability, trademark and permissive document license rules apply.

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

ally.js

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?

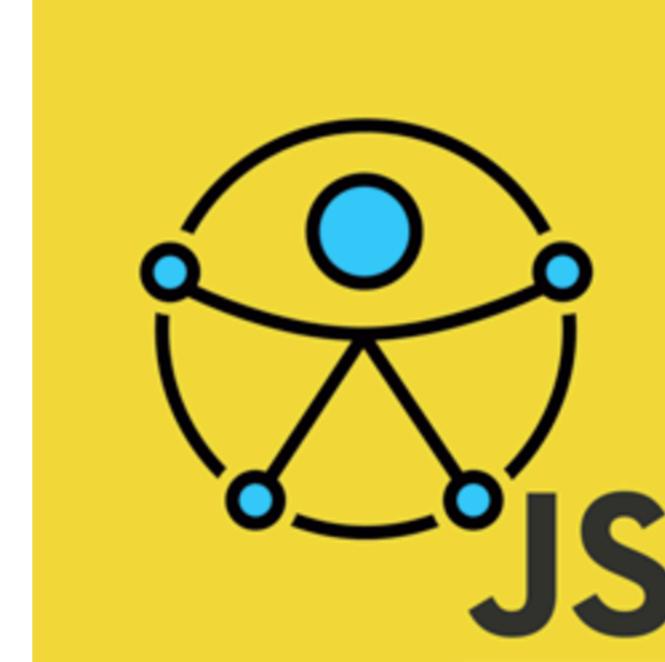
ally.js is a JavaScript library simplifying certain accessibility features, functions and behaviors. However, simply loading ally.js will not automagically make a web application accessible. The library provides certain standard functions the "web platform" should've provided itself, so JavaScript applications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



Collapsibles / 'Accordion'

Header vs panel

aria-expanded

aria-controls

ENTER

Collapsibles

**Turn the FAQ section into
collapsibles**

(So that each question toggles an answer)

Tabs

Tab, tablist, tabpanel

TAB 1

TAB 2

TAB 3

Tab, tablist,tabpanel

Tab



TAB 1

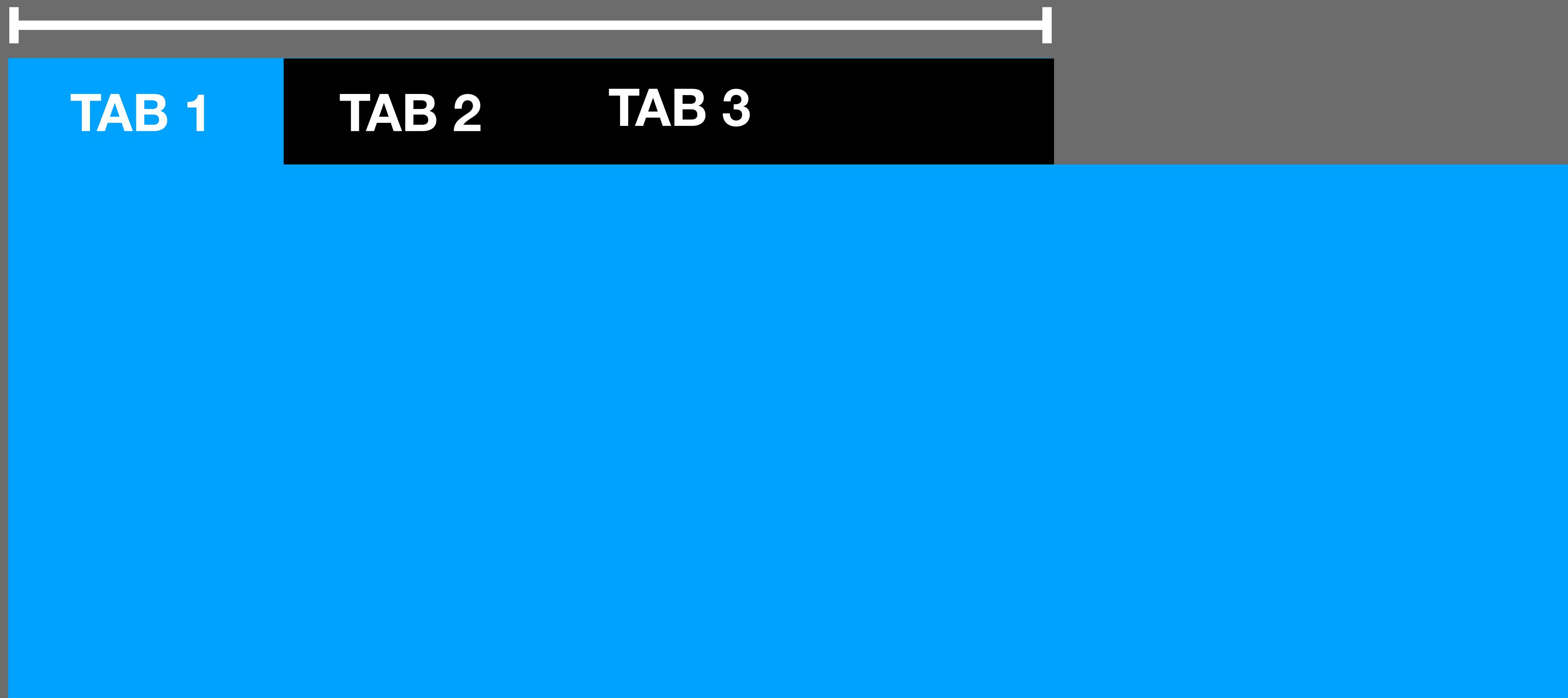
TAB 2

TAB 3



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)

Sign-up for the
newsletter

When a new error
happens,
make sure it is
announced

NEWSLETTER

Sign up for our newsletter

E-mail:

Sign up

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

Turns element into assertive live region

Where should
the focus go?

Newsletter sign up

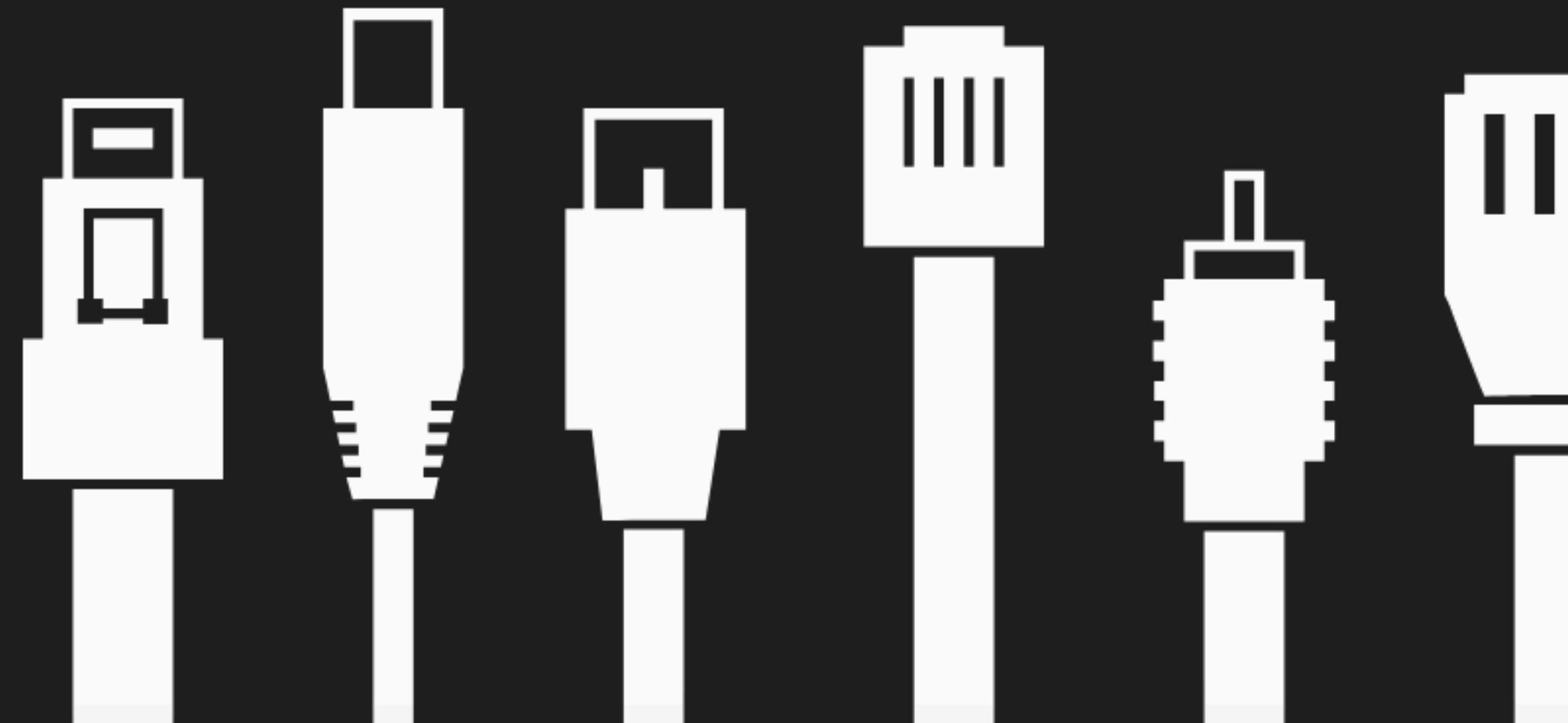
When user enters invalid
email address, show error

Some resources

Inclusive Components

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

Inclusive Components
[\(inclusive-components.design\)](http://inclusive-components.design)



WAI (Web Accessibility Initiative)

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

The screenshot shows the homepage of the W3C Web Accessibility Initiative (WAI) website. The page is titled "WAI (Web Accessibility Initiative)" with the URL "(<https://w3.org/WAI/>)". The header includes the W3C logo, navigation links for "Skip to Content", "Change Text Size or Colors", and "All Translations", and a search bar. Below the header, there's a main menu with categories like "Accessibility Fundamentals", "Planning & Policies", "Design & Develop", "Test & Evaluate", "Teach & Advocate", and "Standards/Guidelines". The main content area features a large section titled "Making the Web Accessible" with sub-sections for "W3C", "WAI", and "You", each with a brief description and icon. At the bottom, there's a "News" section with a recent article about audio and video media accessibility, and a "Get Resources for..." section with links for various user groups.

W3C® Web Accessibility Initiative WAI

Strategies, standards, resources to make the Web accessible to people with disabilities

Get Involved | About W3C WAI | Search

Accessibility Fundamentals | Planning & Policies | Design & Develop | Test & Evaluate | Teach & Advocate | Standards/Guidelines

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)

Making Audio and Video Media Accessible

See what we have for you:

Get Resources for...

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

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

The screenshot shows a web browser window displaying the 'Tutorials Overview' page from the W3C Web Accessibility initiative. The page title is 'Web Accessibility Tutorials' with the subtitle 'Guidance on how to create websites that meet WCAG'. A sidebar on the left lists 'All Tutorials' and links to 'Page Structure', 'Menus', 'Images', 'Tables', 'Forms', and 'Carousels'. The main content area features a large heading 'Tutorials Overview'. It explains that the collection of tutorials aims to develop accessible web content for people with disabilities and improve user experience. It lists target audiences: web developers, designers, trainers, content authors, and project managers. Below this, it discusses the coverage of various accessibility topics like images and tables using HTML5 and other technologies. A 'Relationship to WCAG' section is visible in the sidebar.

W3C Tutorials Overview • WAI Web A X +

Web Accessibility Tutorials
Guidance on how to create websites that meet WCAG

All Tutorials

Page Structure

Menus

Images

Tables

Forms

Carousels

Tutorials Overview

This collection of tutorials shows you how to develop web content that is accessible to people with disabilities, and that provides a better user experience for everyone.

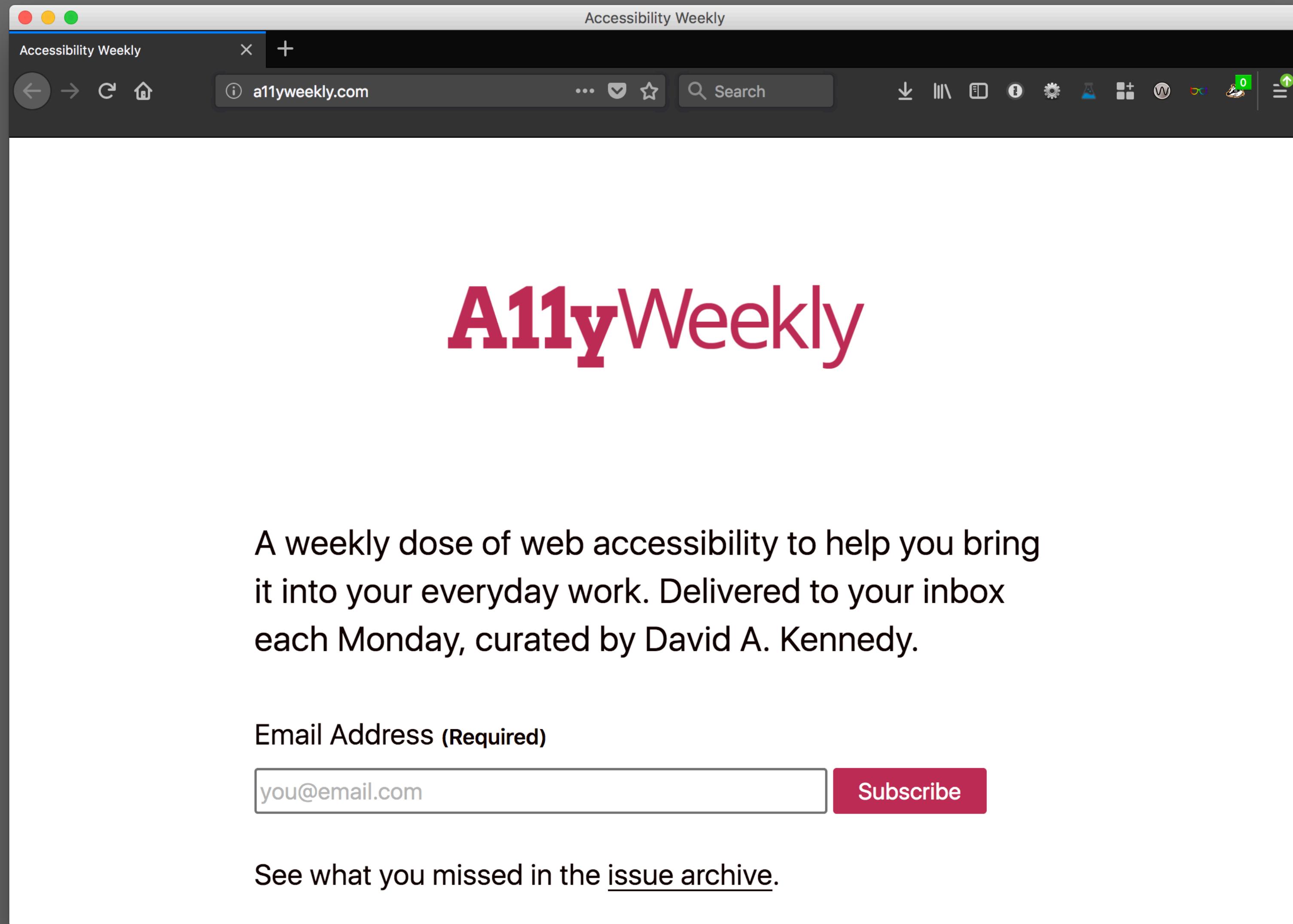
The tutorials are designed to be used by a variety of individuals, including:

- **Web developers** will find guidance and boilerplate solutions for many common coding challenges.
- **Web designers** will learn how to create web page components with a built-in inclusive design.
- **Web trainers** will find examples to teach people about accessible web design and development.
- **Content authors** will learn concepts and techniques for preparing their content in an accessible way.
- **Project managers** will gain an understanding of ways to integrate accessibility into their projects.

The tutorials cover various accessibility topics, based on common tasks in web projects. For example, they show you how to provide accessible images and tables using a variety of web technologies, including HTML4, HTML5, CSS3, WAI-ARIA, MathML, and SVG. The concepts and techniques explained in the tutorials apply to other formats as well.

Web authoring tools (Content Management Systems (CMS), WYSIWYG editors, word processors, etc.) can often help you create content that is accessible as shown in these tutorials.

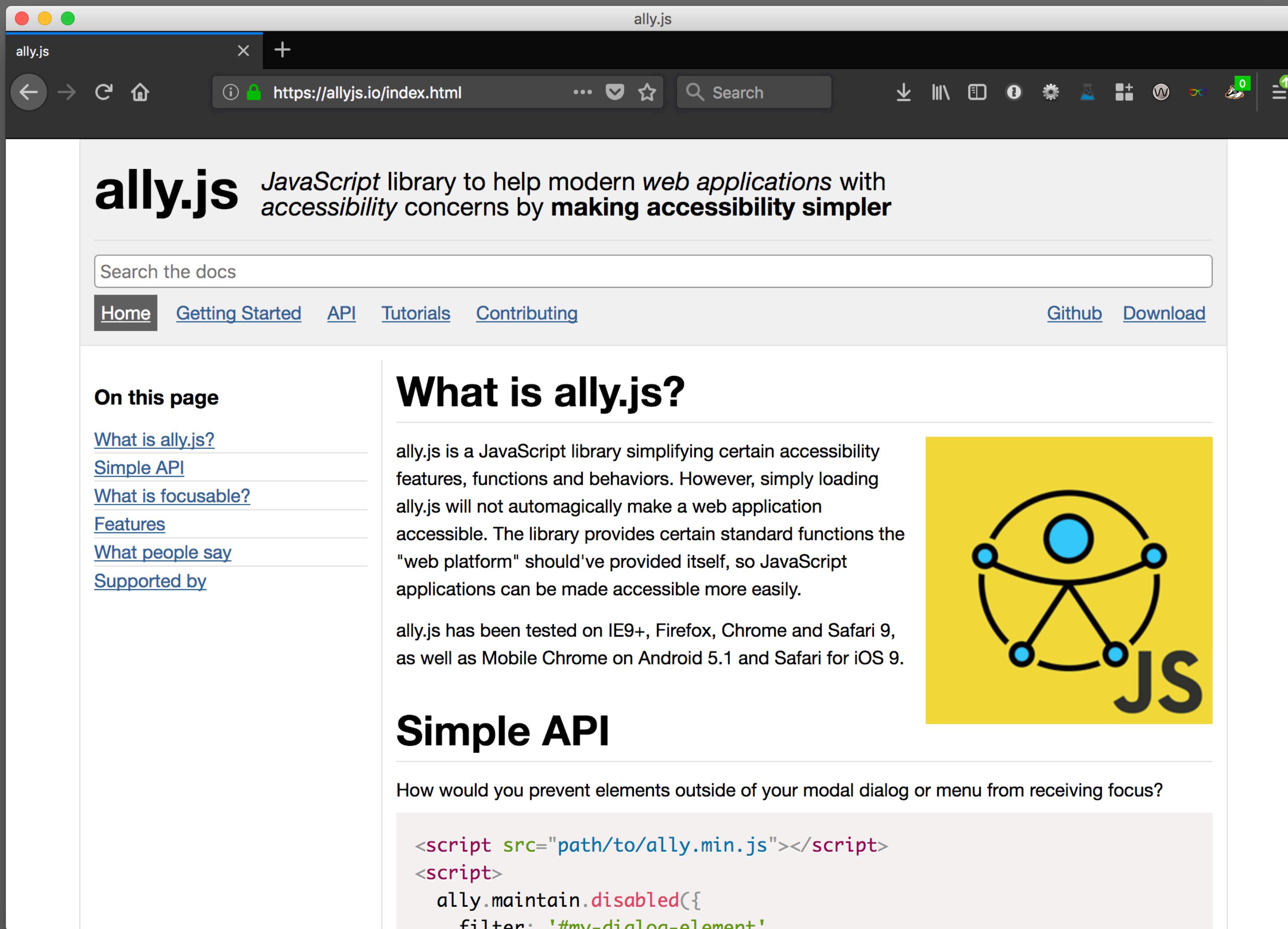
W3C Web Accessibility initiative



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 the URL "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 A11Y Project

The A11Y Project

Patterns Checklist Resources Events Follow About

The A11Y Project

A community-driven effort to make web accessibility easier.

Learn more Contribute on Github

How-tos Categories How-tos

A screenshot of a web browser displaying the homepage of The A11Y Project. The title bar shows 'The A11Y Project'. The address bar contains 'https://a11yproject.com'. The page features a large circular logo with a white stick figure icon. Below the logo is the text 'The A11Y Project' and 'A community-driven effort to make web accessibility easier.' There are two green buttons: 'Learn more' and 'Contribute on Github'. At the bottom left is a 'How-tos' button, and at the bottom right is a 'Categories' section with 'How-tos' listed. The browser interface includes standard navigation buttons (back, forward, search) and a toolbar with various icons.

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 "aXe Playground" heading. Below it, a section titled "Experiment with aXe." includes a "SELECT AN EXAMPLE" button and a text input field containing the HTML code: . Buttons for "ANALYZE HTML" and "CLEAR FIELD" are below the input. A horizontal line separates this from the "aXe Results" section, which contains a message: "Violations as they are returned by axe-core. For a detailed description of the format, see the [API documentation](#) .", a "CHANGE AXE OPTIONS" button, and a final message: "Click "Analyze HTML" to see the results.".

WebAIM: Web Accessibility In Mind

Web AIM: Web Accessibility In M X +

Accessibility https://webaim.org Search

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.

Technical Assistance

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

Accessible Site Certification

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

Evaluation and Reporting

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

Community

WebAIM Blog

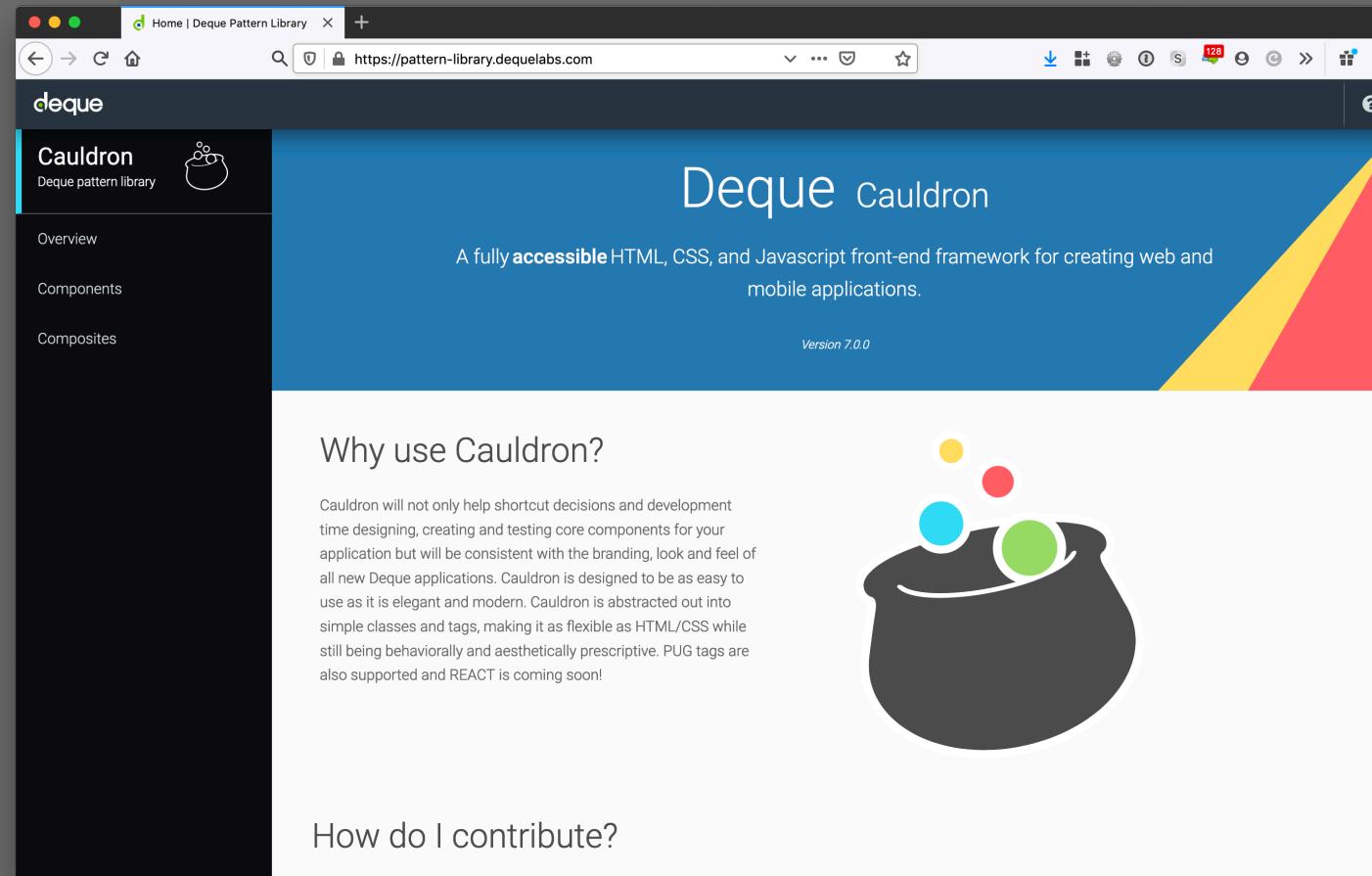
Newsletter

E-mail Discussion List

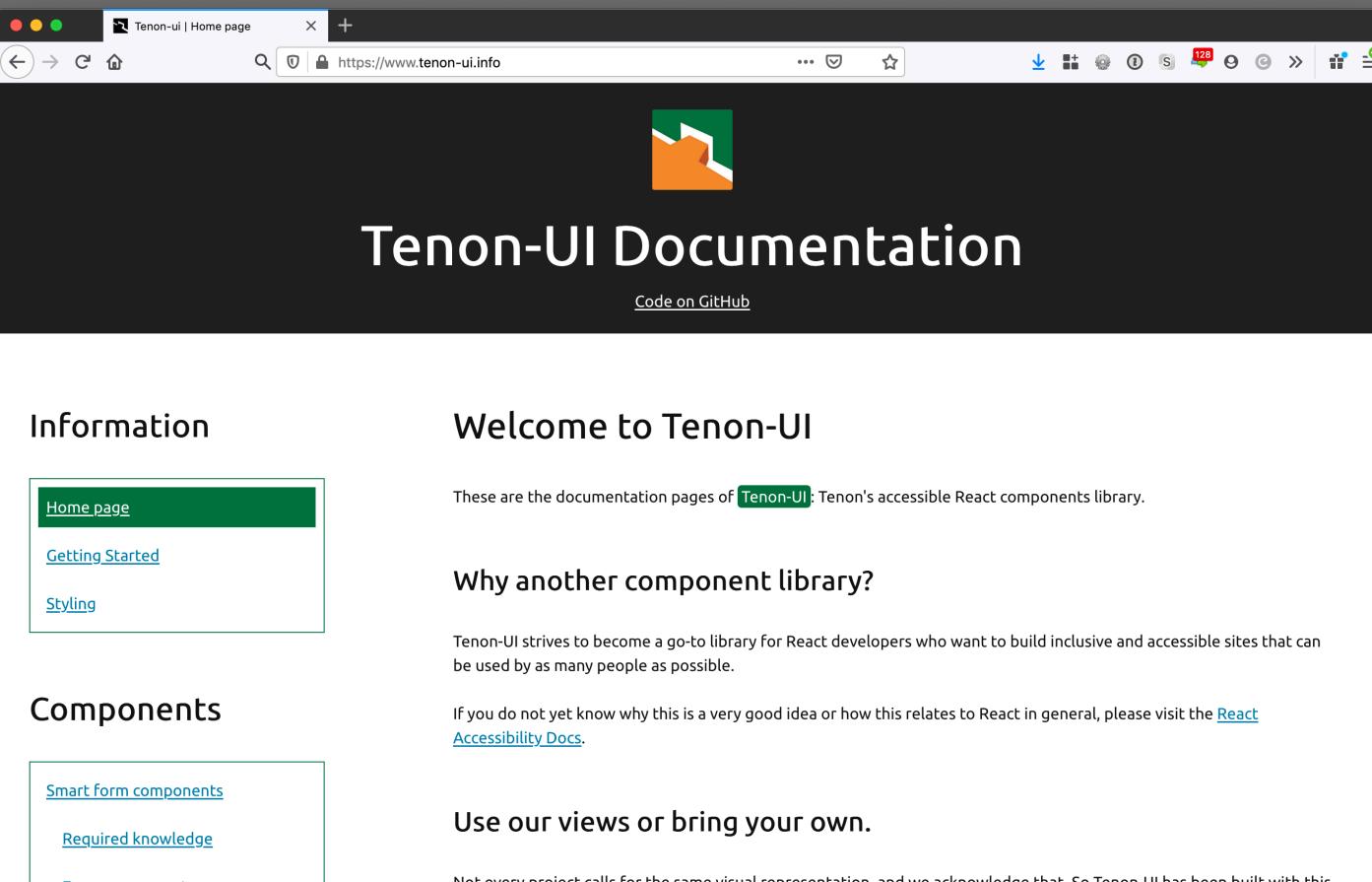
Twitter

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

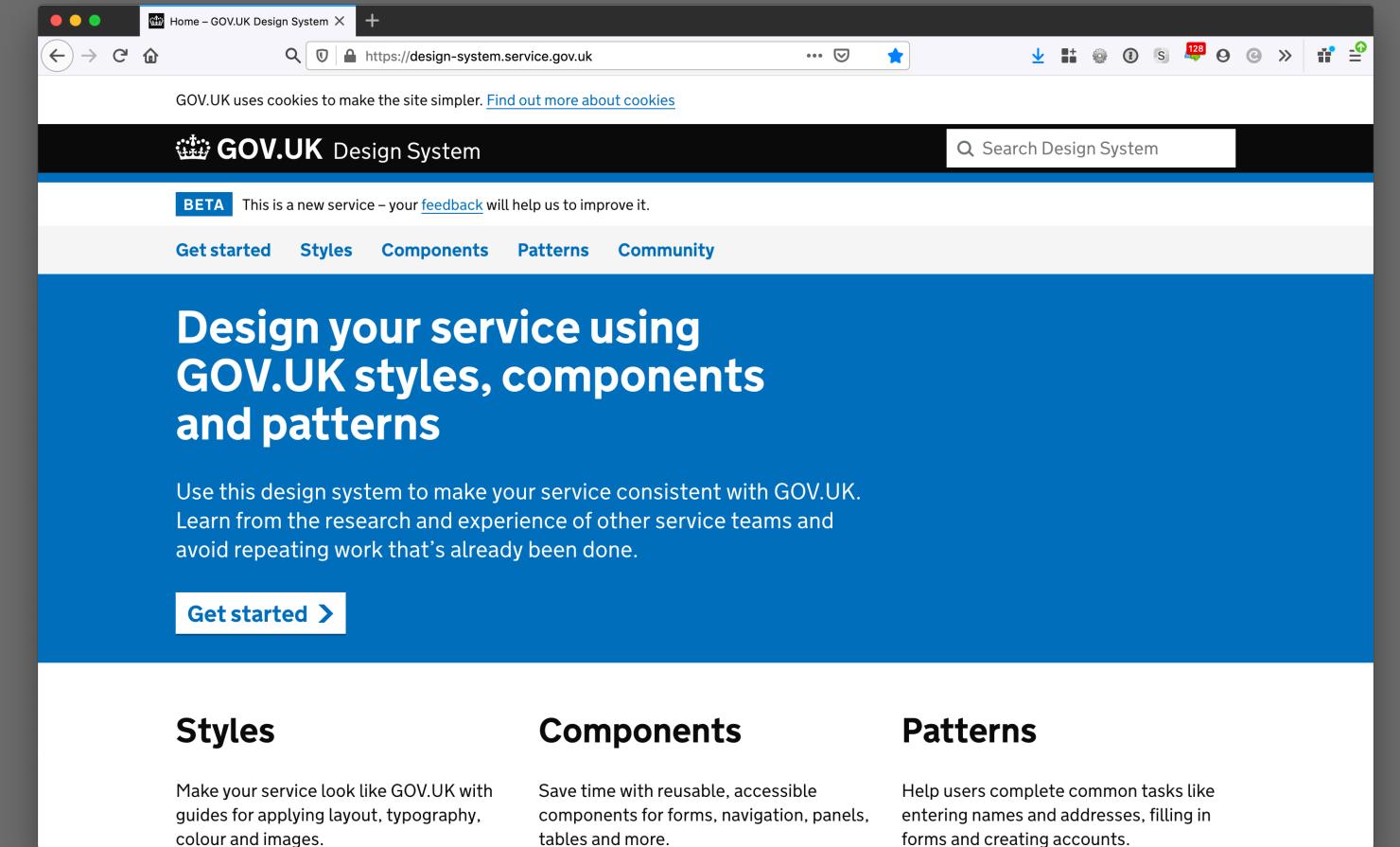
Pattern libraries with accessibility support



Deque “Cauldron”
<https://pattern-library.dequelabs.com/>



Tenon UI
<https://www.tenon-ui.info/>



GOV.UK Design System
<https://design-system.service.gov.uk/>

THANKS!

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