

# THE RULES OF ARIA

Web Accessibility for  
front-end developers

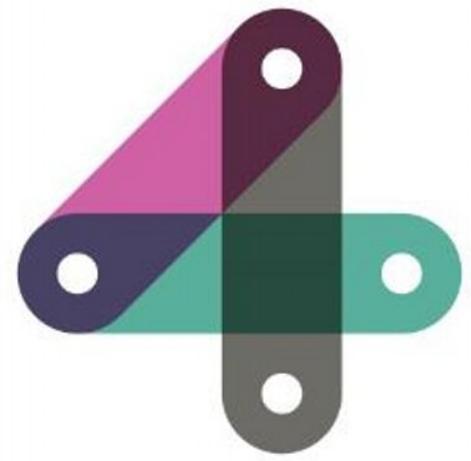
**hiddedevries.nl**



moz://a



Den Haag



delta lloyd

# Introductions

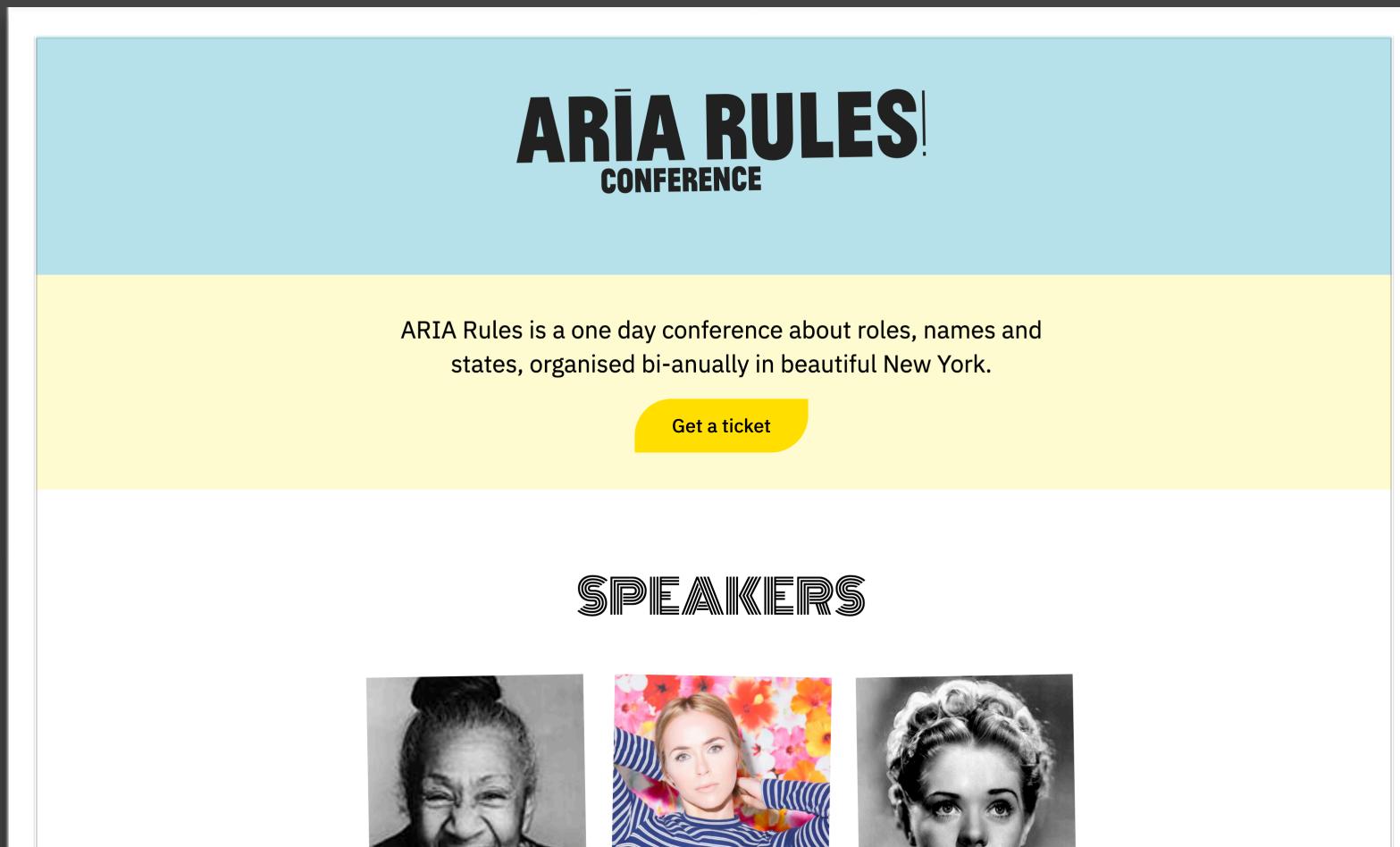
What's your name and what's  
your favourite HTML element?

# What you'll need

# What you'll need

Example code

[github.com/hidde/workshop-aria-rules](https://github.com/hidde/workshop-aria-rules)



# What you'll need

Web browser with  
accessibility tools



<https://www.mozilla.org/firefox/channel/desktop/>

# BACKGROUND

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

A photograph of a city street during the day. On the left, there's a large planter box filled with greenery. In the center, a sidewalk made of grey concrete pavers has a distinct tactile paving strip running along its edge. This strip consists of raised, rectangular tiles. To the right of the sidewalk, there's a red brick-paved area. Further right, a street with parked cars and some buildings is visible. A person in a red jacket is walking on the sidewalk.

# Tactile paving



**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**

**15%**

**Low literate/numerate**

ALGEMENE REKENKAMER

**9%**

**Deaf/hard of hearing**

HOORWIJZER

**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)

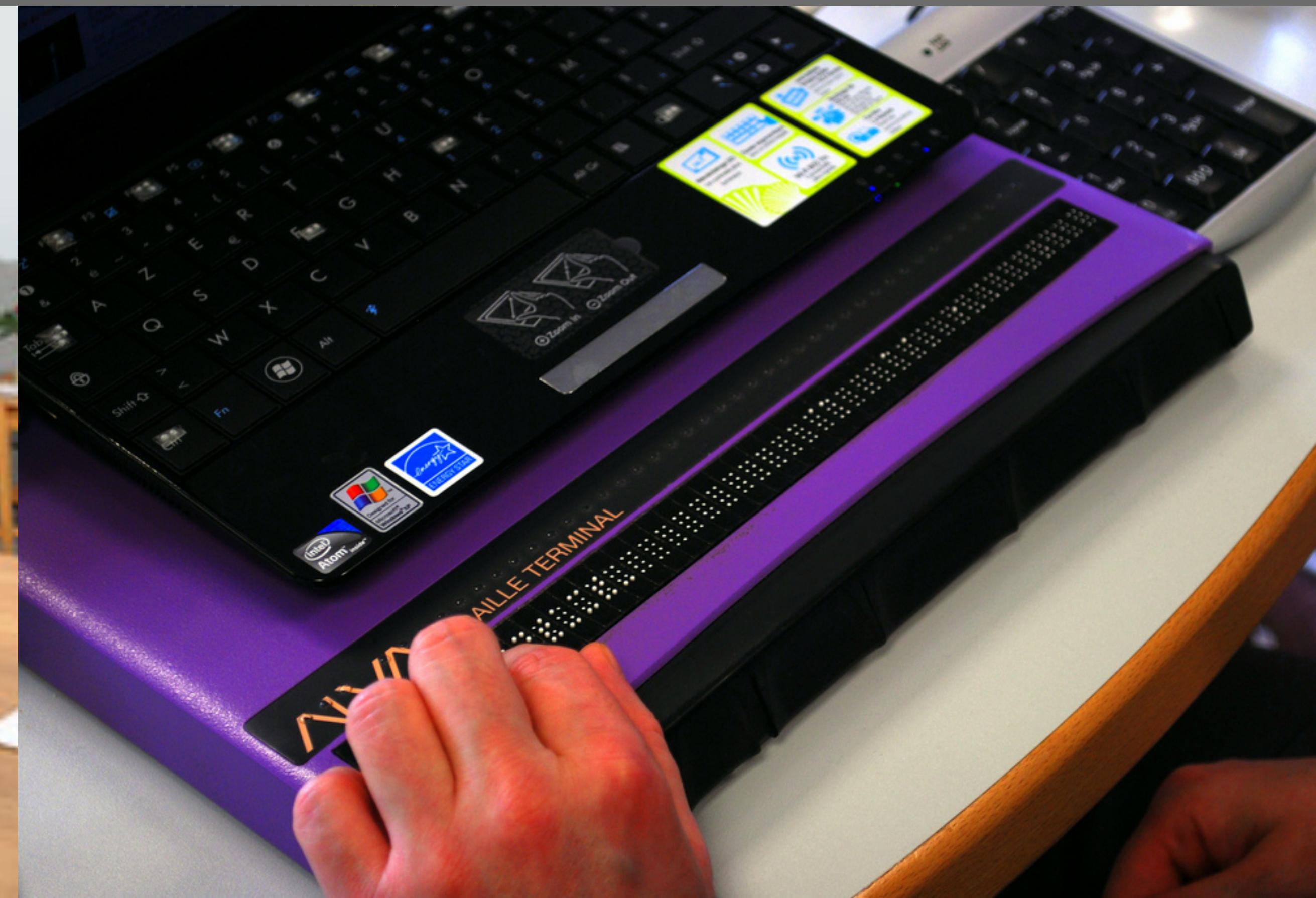
# Perceivable

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

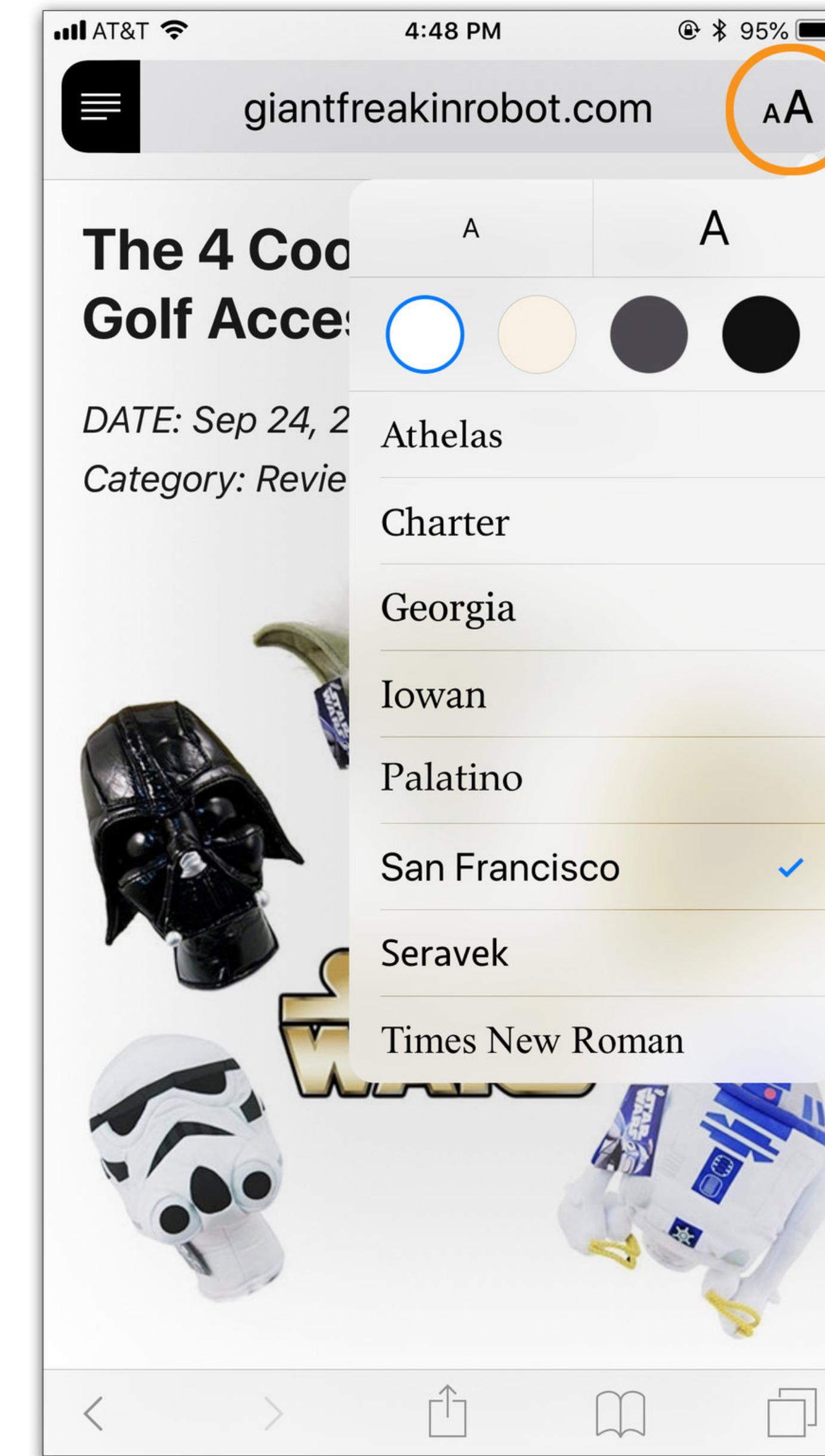
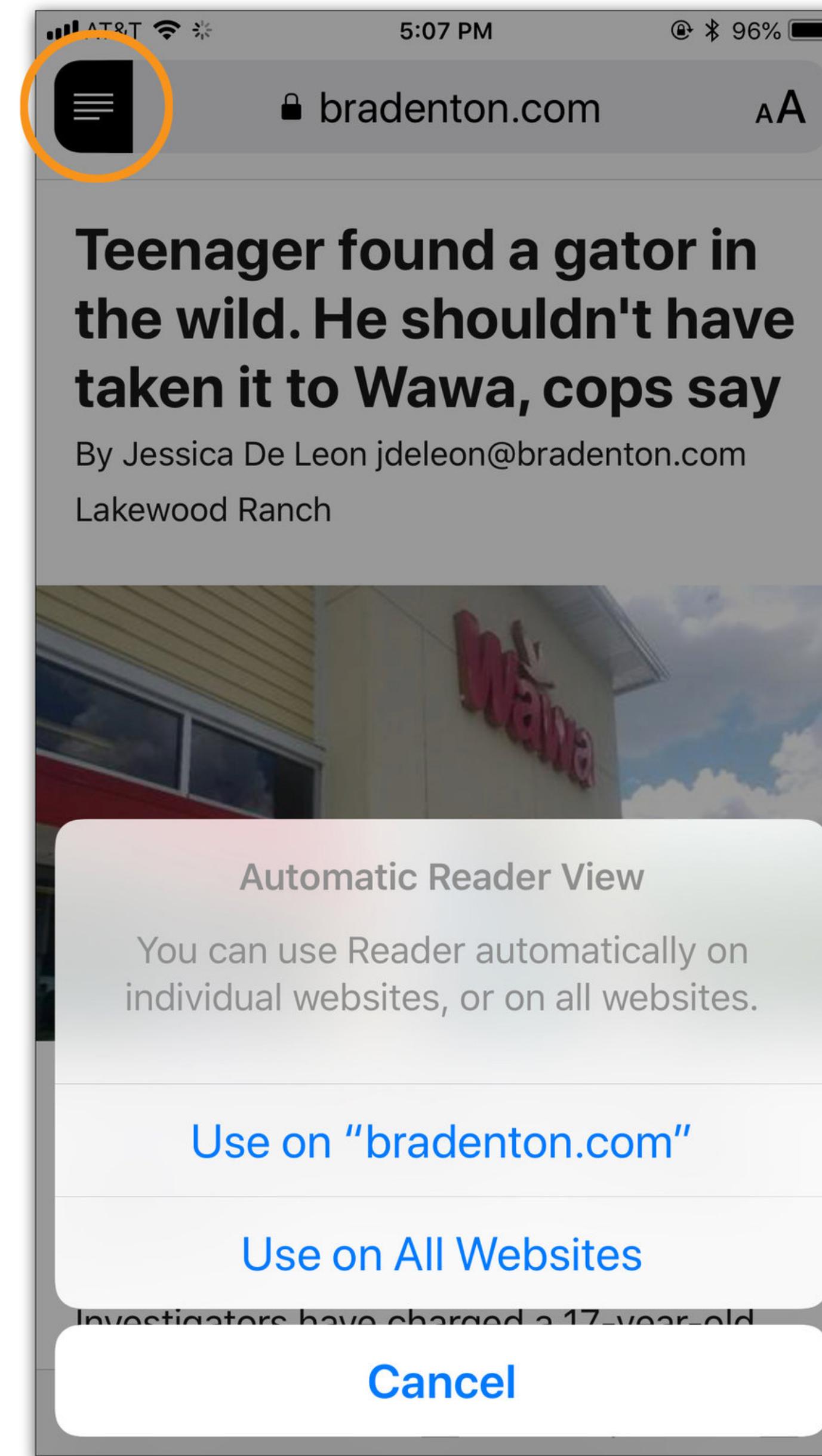
# Never gonna give you up: how plastic seduced America

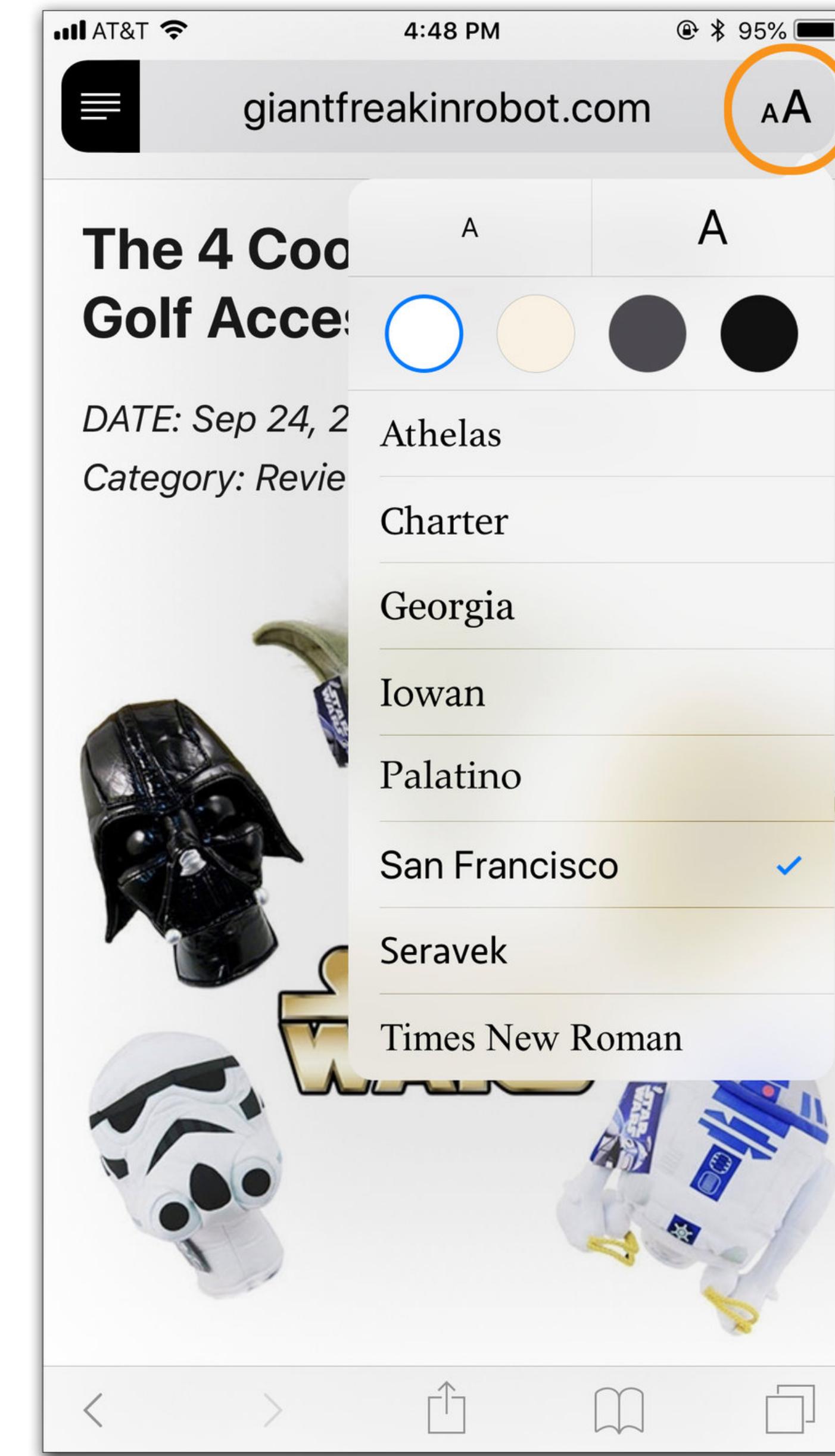
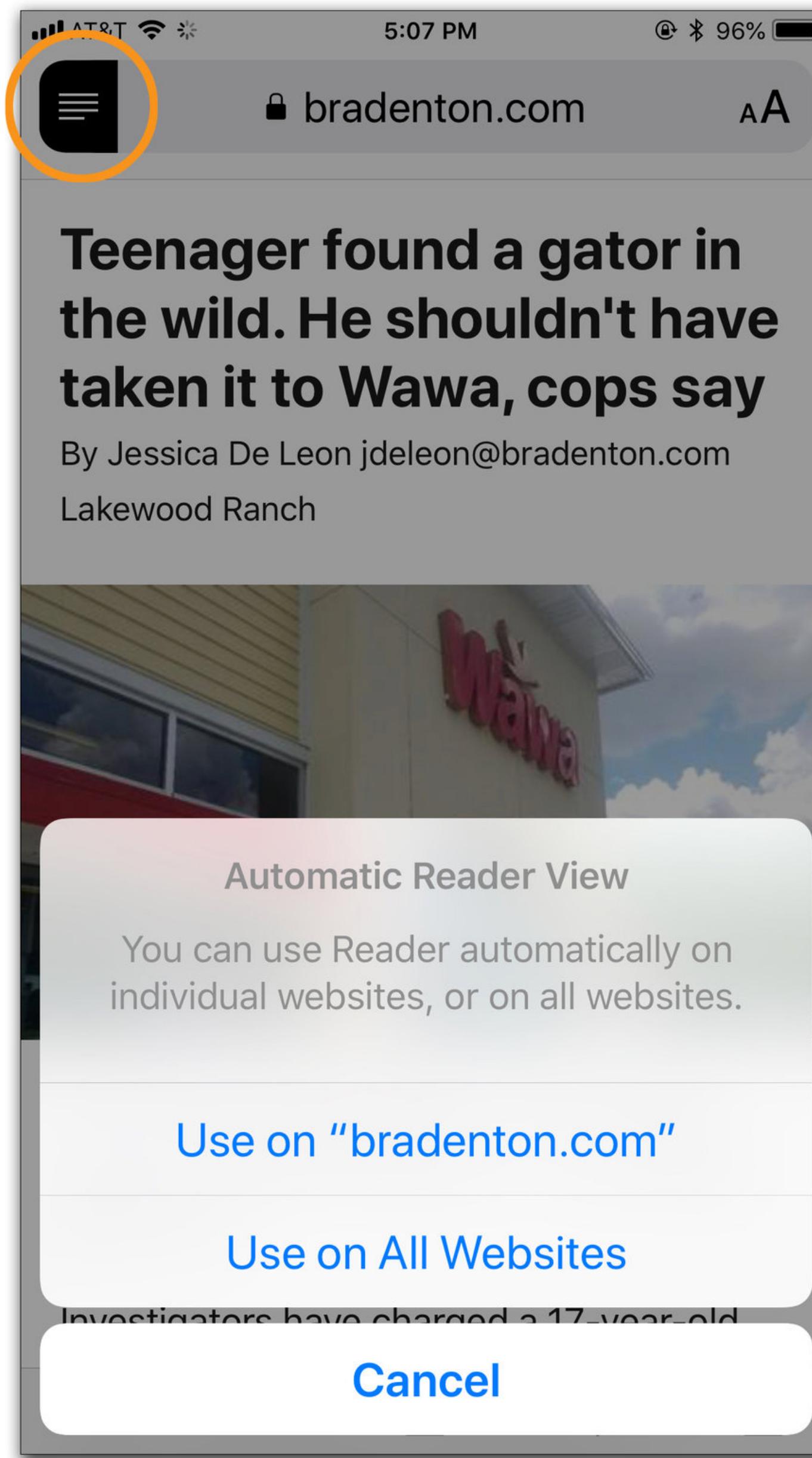
Susan Strasser • Fri 21 Jun 2019 06.00 BST

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 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 "Show About & How to Use" link. 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

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." and buttons for "Clear filters", "Expand all sections", and "Share".

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

Below this is a blue box for "Guideline 1.1 – Text Alternatives" with the 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."

Under "Guideline 1.1", there is a section for "1.1.1 Non-text Content — Level A" with the 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 "Show full description" link and a "Understanding 1.1.1" link.

There is also a "Show techniques and failures for 1.1.1" link.

At the bottom of the main content area, there are links for "SHARE" and "BACK TO TOP".

Another blue box follows for "Guideline 1.2 – Time-based Media" with the description: "Provide alternatives for time-based media."

Under "Guideline 1.2", there is a section for "1.2.1 Audio-only and Video-only (Prerecorded) — Level A" with the 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 "Show full description" link and a "Understanding 1.2.1" link.

There is also a "Show techniques and failures for 1.2.1" link.

# What can we do?

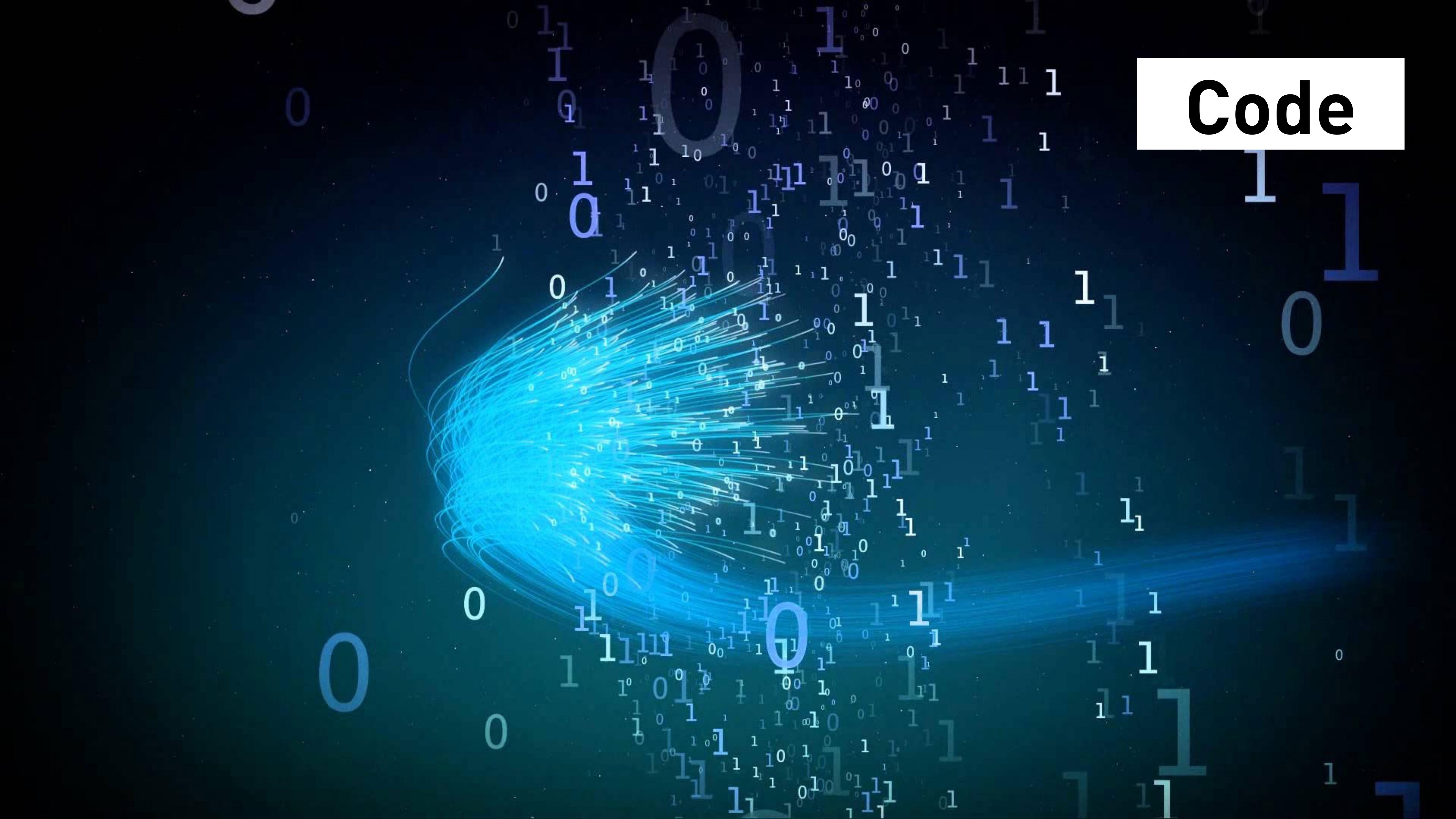
The background of the image consists of numerous overlapping circles of various sizes and colors, creating a vibrant and dynamic visual effect. The colors transition through a full spectrum, including red, orange, yellow, green, blue, and purple. The circles are semi-transparent, allowing the ones behind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

**Colour**

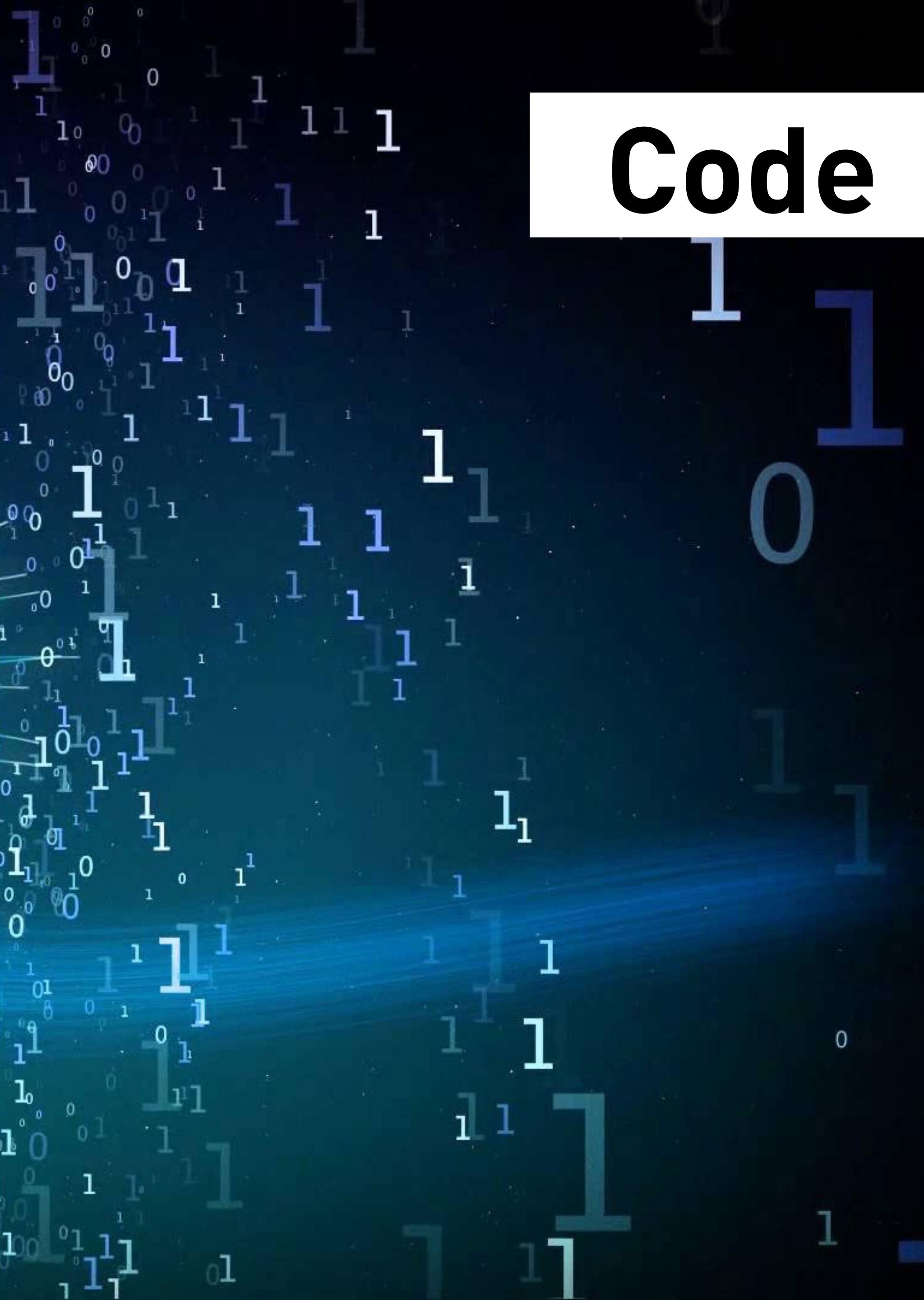
Language

THE OXFORD  
ENGLISH  
DICTIONARY

THE OXFORD  
ENGLISH  
DICTIONARY

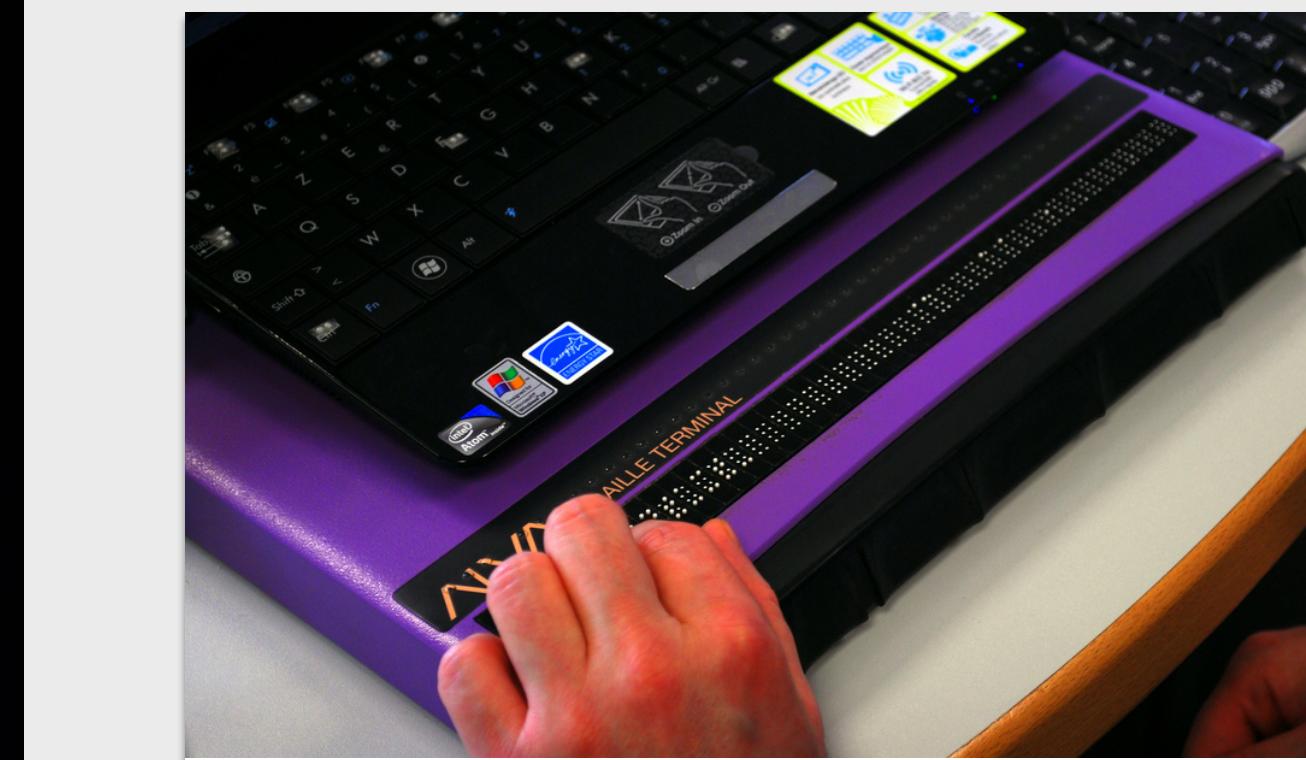


# Code



# Code

alternate pointing devices



braille bars



JAWS for Windows



screenreaders



screen magnifiers





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!*

René Magritte

*Ceci n'est pas une pomme*



Magritte

< Tweets Detail ⬤

 Haanstra les  
iet persé de  
irators' 700

 **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](http://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

7d

Ceci n'est pas  
un texte

Tweets Detail ↑

 Haanstra leet persé de irrora's' 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](http://pic.twitter.com/S0FukcRLDm)

94 Likes 12 Retweets

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

← ↔ Heart Upload Settings

 **Wim Knol** @WimKnol

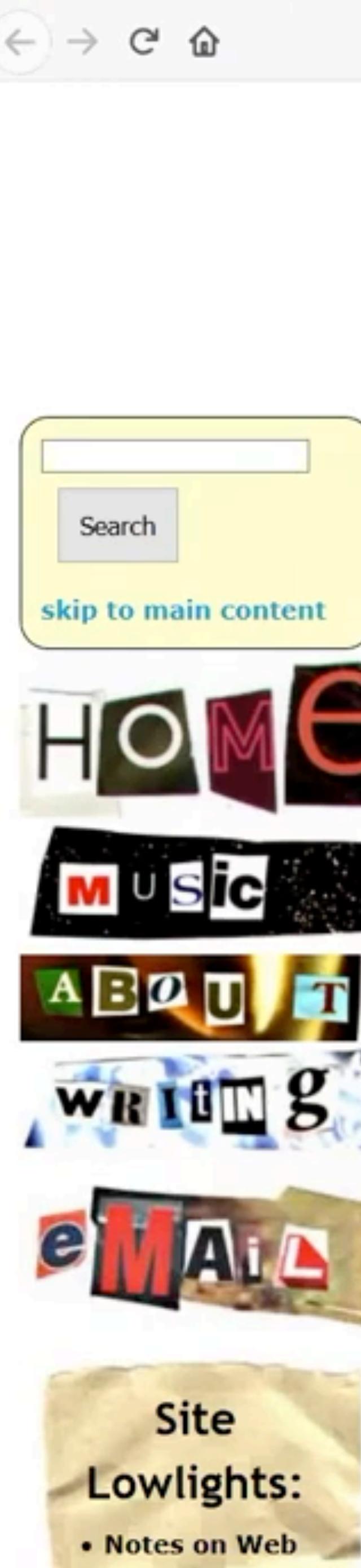
Yay, text!

# SIX WAYS TO make YOUR WEBSITE more accessible

1

Structure your  
document

# 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.*

Léonie Watson, accessibility expert and screenreader user

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-web-accessibility>

“

*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><b>Header 3</b></td><td><input checked="" type="checkbox"/></td></tr><tr><td><b>Header 1</b></td><td><input type="checkbox"/></td></tr><tr><td><b>Header 2</b></td><td><input checked="" type="checkbox"/></td></tr><tr><td>Header &amp; 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"/>	<b>Header 3</b>	<input checked="" type="checkbox"/>	<b>Header 1</b>	<input type="checkbox"/>	<b>Header 2</b>	<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"/>																			
<b>Header 3</b>	<input checked="" type="checkbox"/>																			
<b>Header 1</b>	<input type="checkbox"/>																			
<b>Header 2</b>	<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

Paragraph Styles #'

Body

Header 3

Header 1

Header 2

Header & Footer

Footnote 1

Range

Entire Document

Body

Caption

Heading 3

Heading Red

Heading 2

Heading 1

Title

Subtitle

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%**

1

2

3

## 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 [70 services out of 114](#)

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

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>
```

Look at your page  
with CSS turned off

Exercise 1

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



Use HTML tags as  
they were designed

Look beyond  
divs and spans

**Save**

<div>Save</div>

*don't do this*

**Save**

<span>Save</span>

*don't do this*

<a>

vs

<button>

`<a>` goes elsewhere

vs

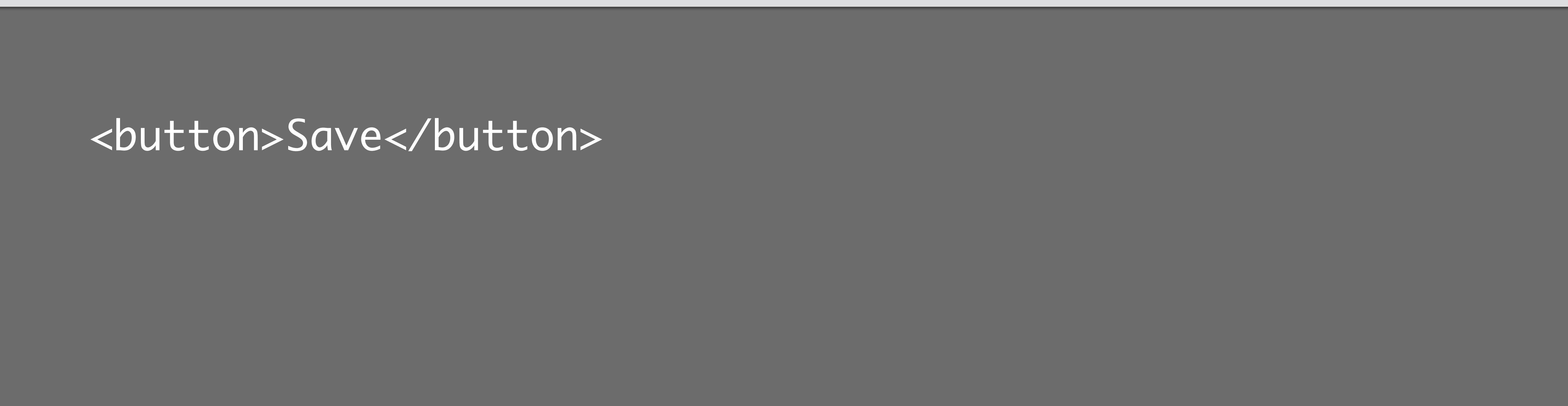
`<button>` does something

**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

<b>Fixed assets</b>	210,000
<b>Current Assets</b>	4,532
<b>Creditors</b>	23,003
<b>Capital and reserves</b>	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>

<section>

<header>

<footer>

<nav>

<article>

<main>

<aside>

“page regions”

```
<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](https://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](#)

- [Privacy concerns](#)
- [Quick introduction to HTML](#)
- [Performance requirements for authors](#)

- 1.12 [Suggested reading](#)

Search. Press ↵

Check  
the spec:

[developers.whatwg.org](https://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 [Quick introduction to HTML](#)
- 1.11 [Performance requirements for authors](#)
- 1.12 [Suggested reading](#)

Search. Press ↵

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

Exercise 2

**Improve the HTML tags  
that are being used.**



Specify the language  
of your content

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

<span lang="zh-TW">

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

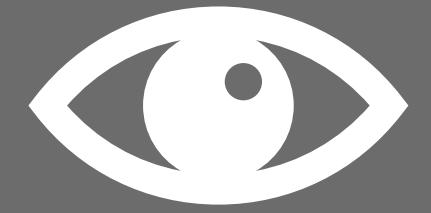
**Make sure language is declared where appropriate.**



Take care when  
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



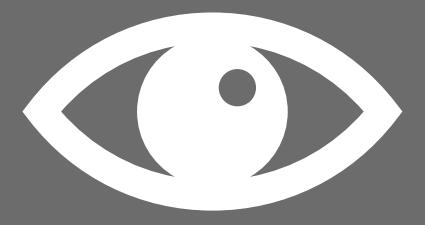
**non-visual**

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



**all**

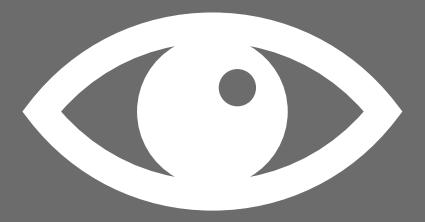
visual + non-visual



**visual**

e.g. those who can  
see the page

Contextual cues to  
supplement visual cues.

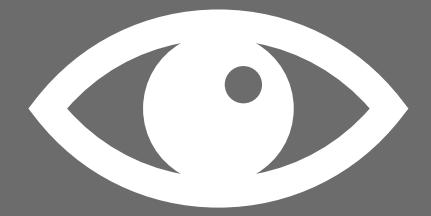


**visual**

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/>

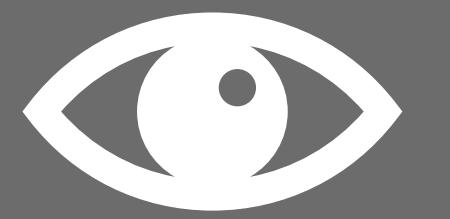


## visual

e.g. those who can  
see the page

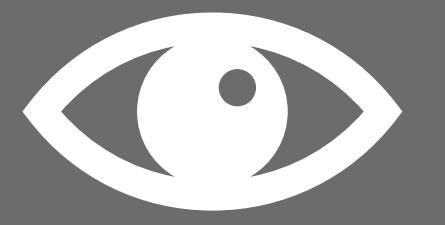
```
<span class="visually-hidden">  
  Only show me to non-visual users  
</span>
```

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



## **visual**

e.g. those who can  
see the page



**visual**

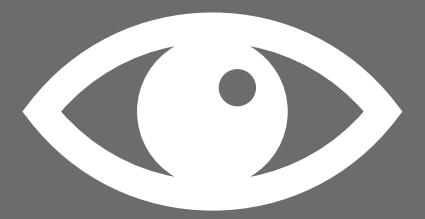
e.g. those who can  
see the page

About us

Products

Projects

Contact



**visual**

e.g. those who can  
see the page

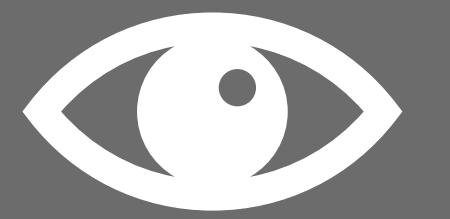
About us

Products

Projects

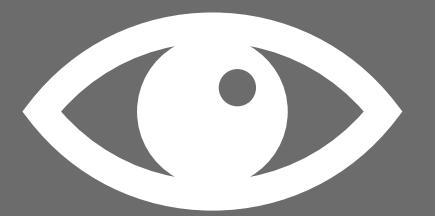
Contact

```
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



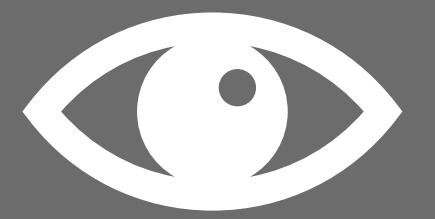
## visual

e.g. those who can  
see the page

Please accept our  
cookie policy

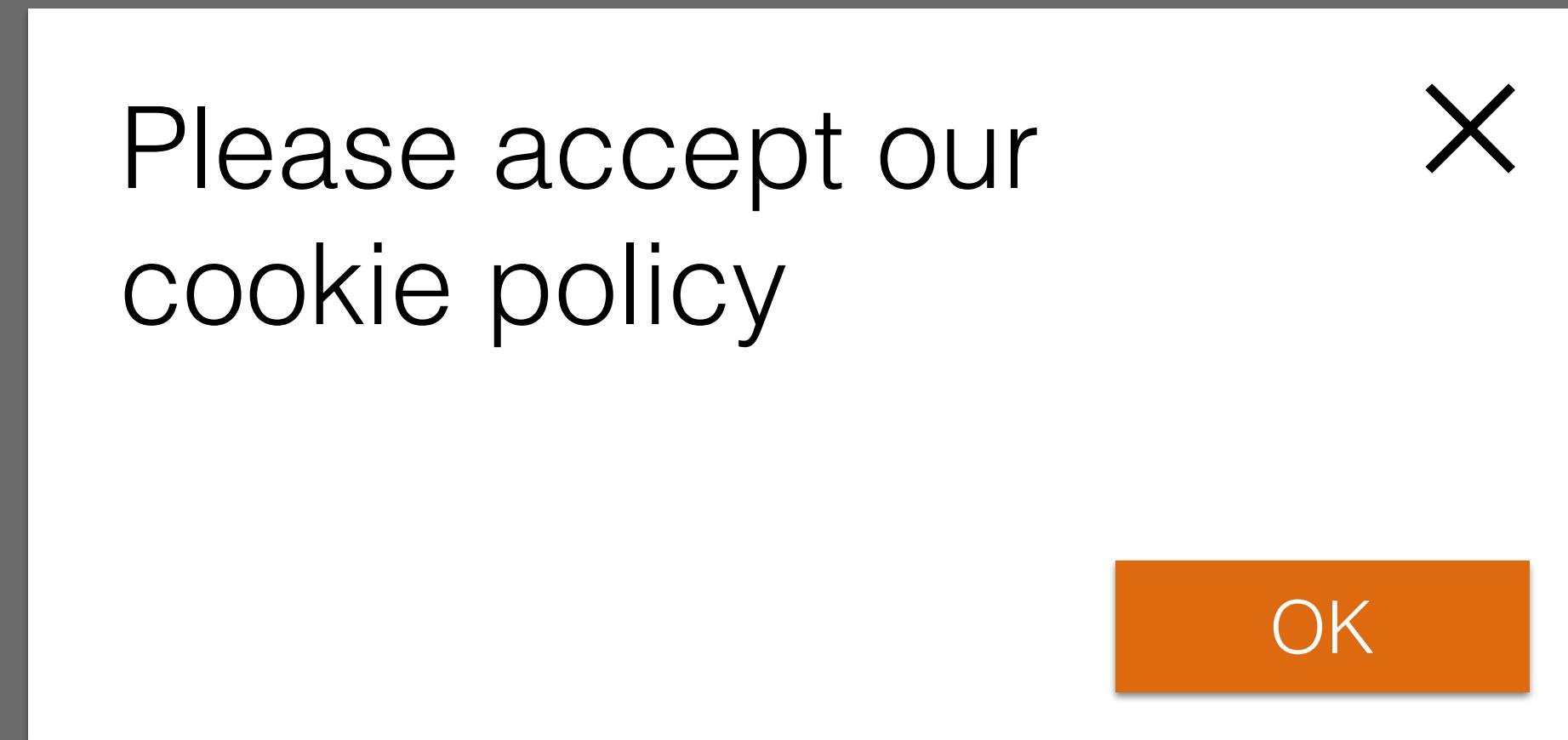


OK



## visual

e.g. those who can  
see the page



```
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.

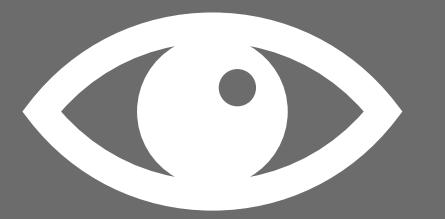
Suggested solution: add visually hidden text to button

# Visual hiding gone wrong

Suggested solution: add visually hidden text to button

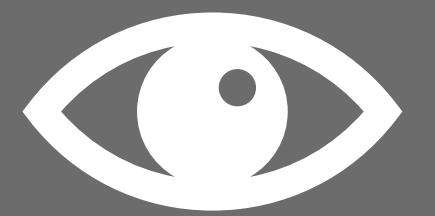
```
1 <button type="button">  
2 ...<span class="visually-hidden">Zoek</span>  
3 </button>
```

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



## **visual**

e.g. those who can  
see the page

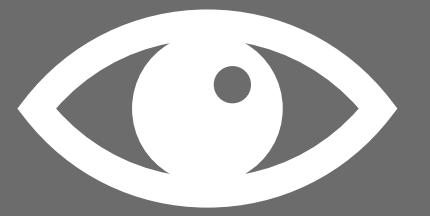


**visual**

e.g. those who can  
see the page

First name \*

A rectangular input field with a thick, dark gray border, designed to look like a pencil sketch.

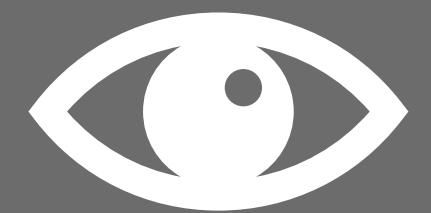


## visual

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							

[Current aligned](#) [Usage relative](#) [Date relative](#) [Show all](#)

[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**



# Offer 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 Archive - Hidde de Vries 29 July 2017 at 11:00

Jouw Coolblue-pakket is onderweg P

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,

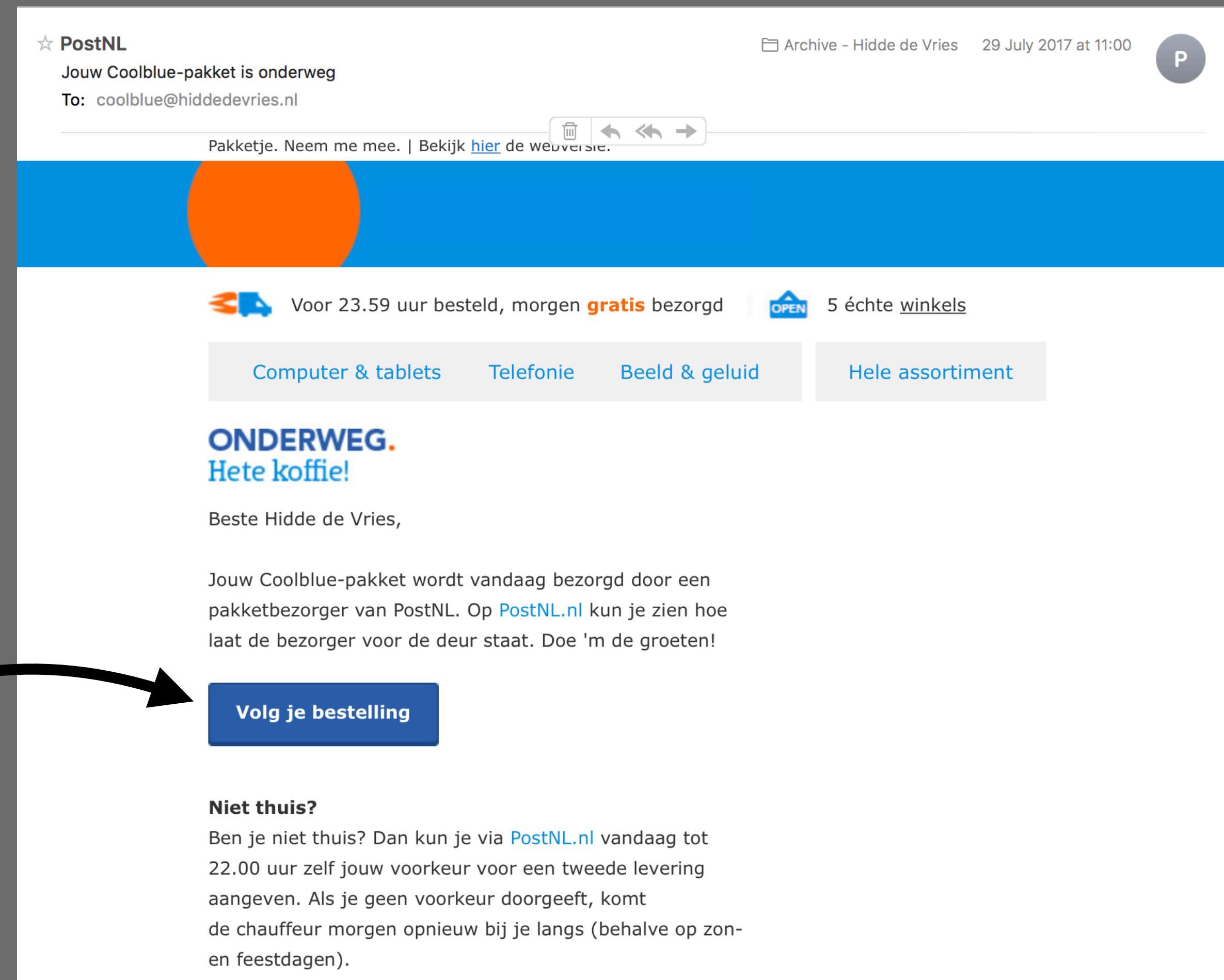
Jouw Coolblue-pakket wordt vandaag bezorgd door een pakketbezorger van PostNL. Op [PostNL.nl](#) kun je zien hoe laat de bezorger voor de deur staat. Doe 'm de groeten!

**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



*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.**



# Test with a keyboard

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 opportunities via 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.

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”

1

Structure

2

Appropriate  
HTML tags

3

lang

4

Take care when  
hiding content

5

Text  
alternatives

6

Keyboard

# 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><strong>The Blue Book</strong> 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</a> 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><strong>The Blue Book</strong> 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</a> 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"	
▶ 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"	

# AT



**JAWS<sup>®</sup>forWindows**



text-to-speech  
screen magnifiers  
alternate pointing devices

# Platform APIs AT



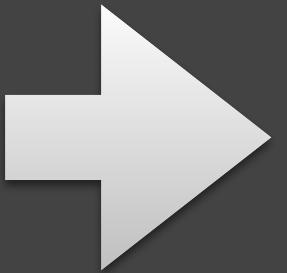
Microsoft Active Accessibility  
Microsoft User Interface Automation  
MSAA



Mac OS X Accessibility Protocol



Linux/Unix Accessibility Toolkit  
IAccessible2

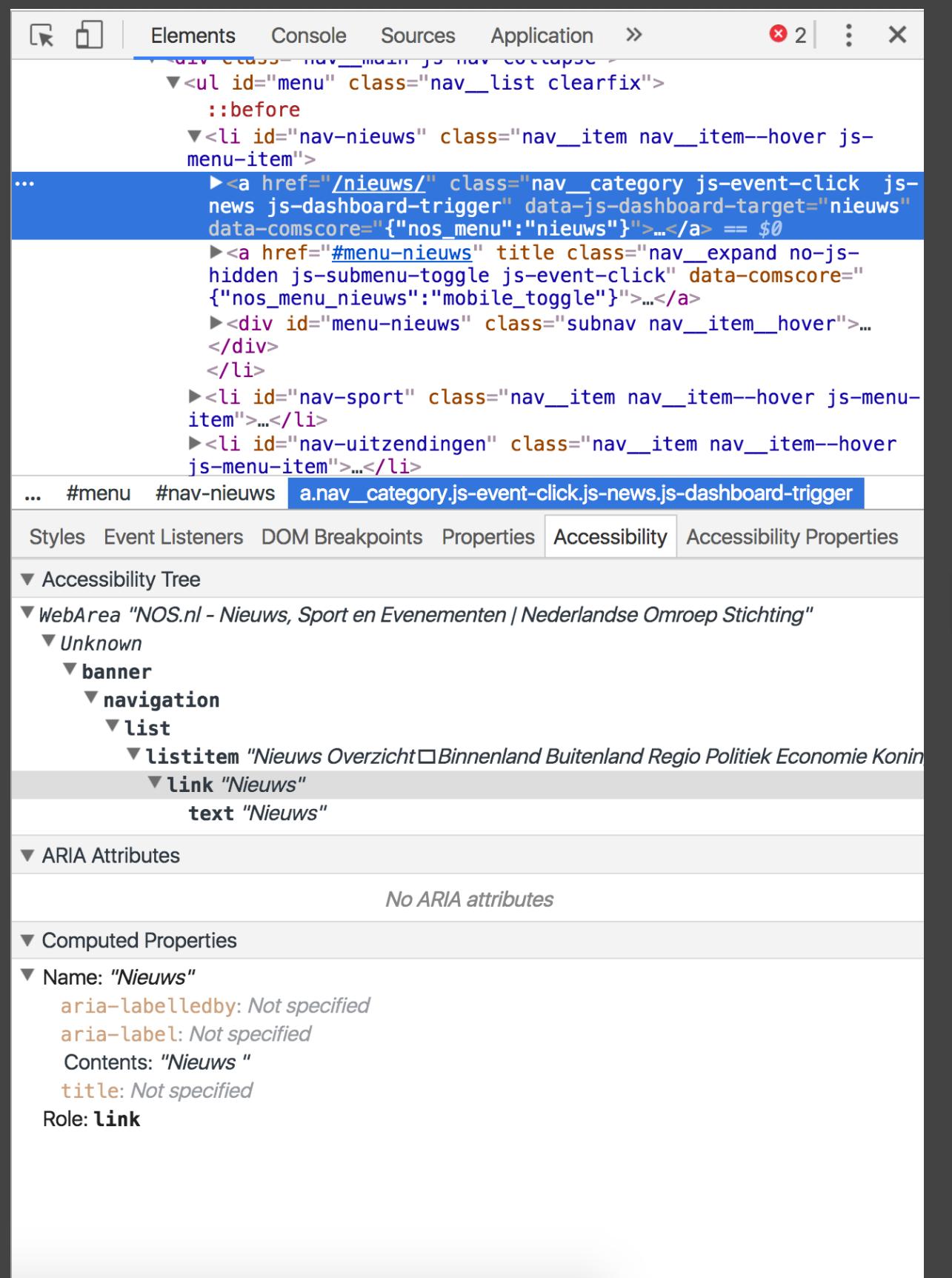


**JAWS®forWindows**



text-to-speech  
screen magnifiers  
alternate pointing devices

# Accessibility tree



The screenshot shows the Chrome DevTools Accessibility panel. At the top, there's a navigation bar with tabs like Elements, Console, Sources, Application, etc. Below it is the DOM tree, which is expanded to show a menu structure. A specific menu item is highlighted in blue. The bottom half of the panel is the Accessibility Tree, which lists nodes from the DOM tree. One node is expanded to show its children, including a link labeled "Nieuws". The "Computed Properties" section at the bottom shows properties like Name, Role, and Title for the selected element.

# Platform APIs



Microsoft Active Accessibility  
Microsoft User Interface Automation  
MSAA



Mac OS X Accessibility Protocol



Linux/Unix Accessibility Toolkit  
IAccessible2



JAWS® for Windows

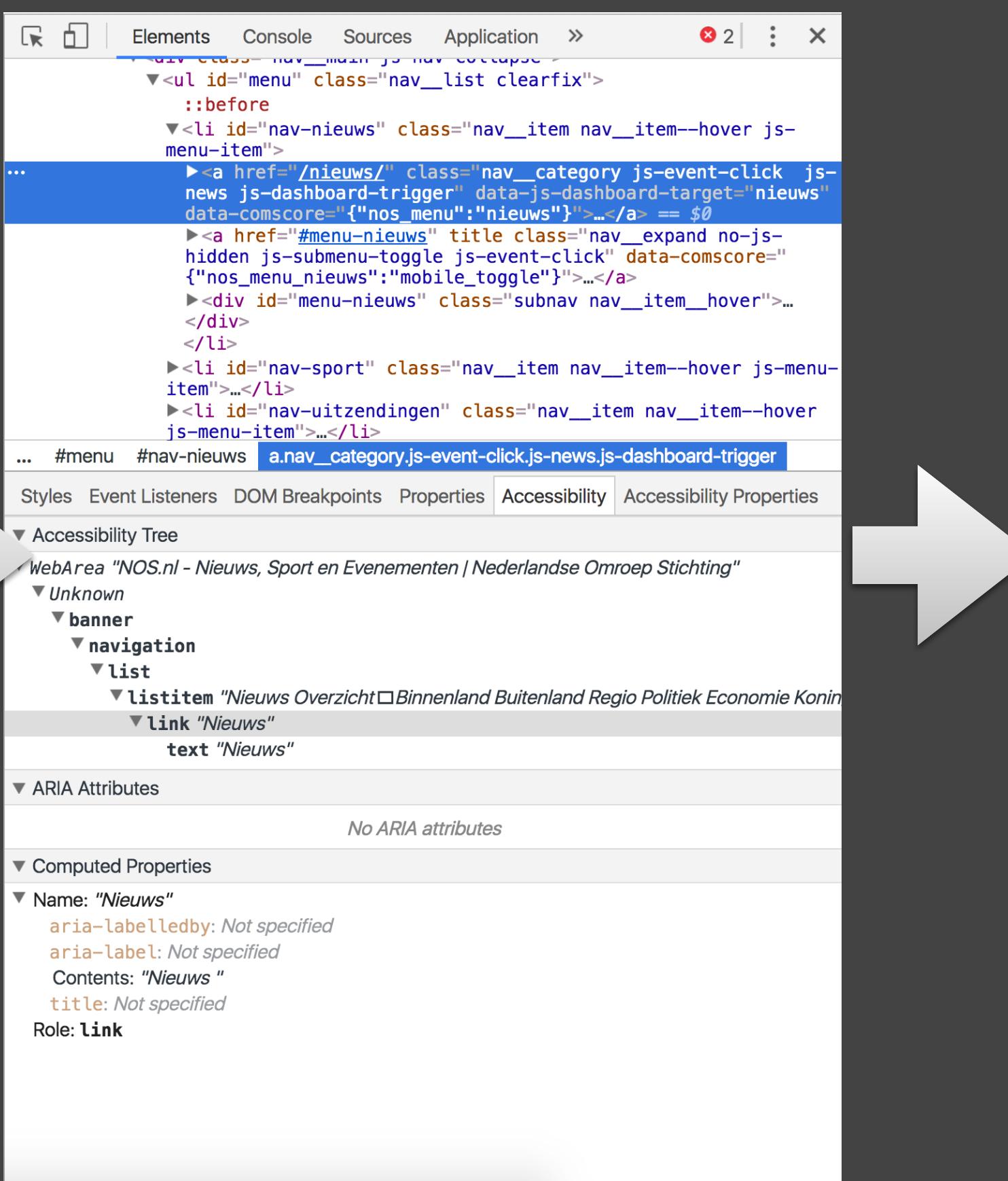


text-to-speech  
screen magnifiers  
alternate pointing devices

# AT

Your  
markup

DOM  
tree



## Accessibility tree

## Platform APIs



Microsoft Active Accessibility  
Microsoft User Interface Automation  
MSAA



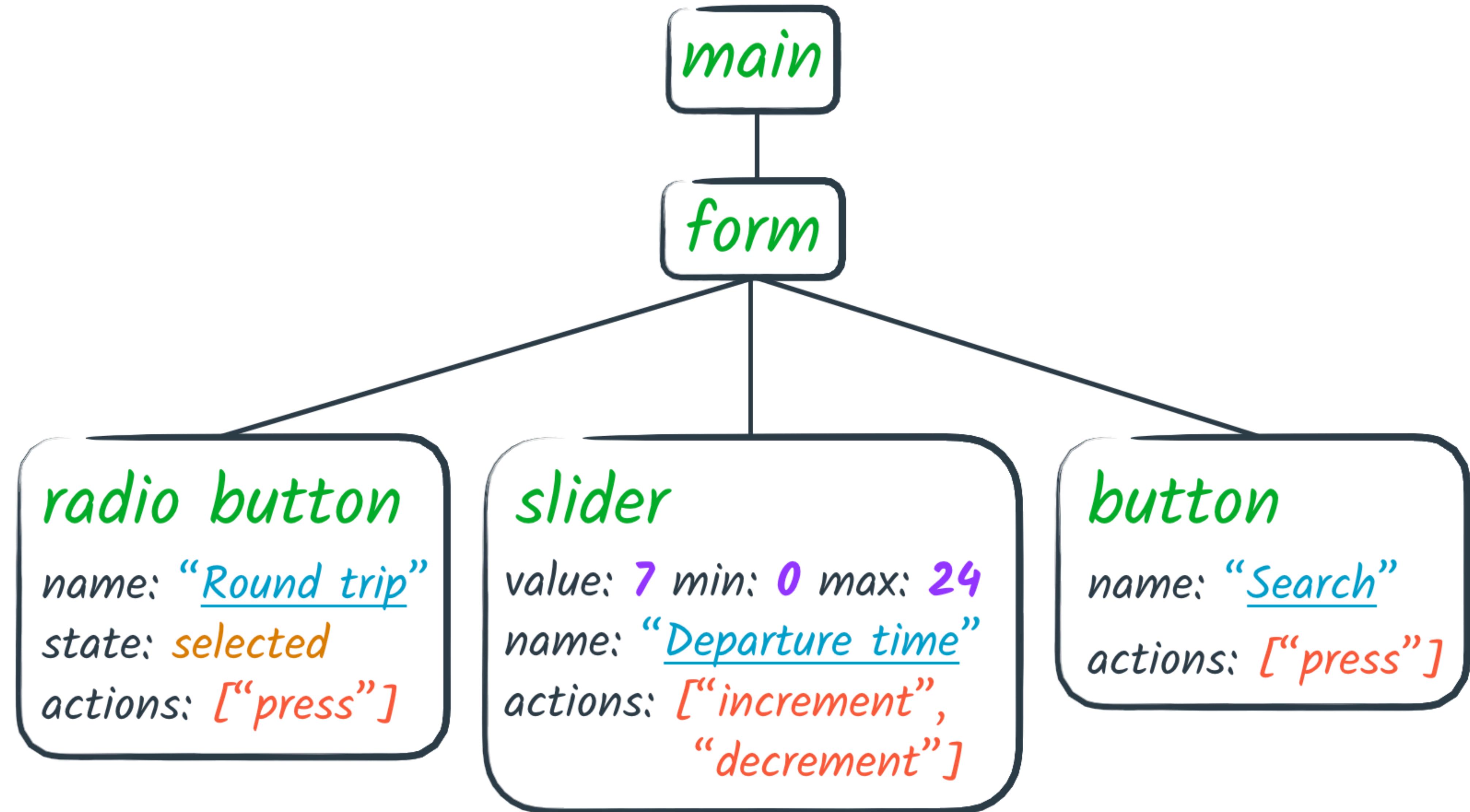
Mac OS X Accessibility Protocol



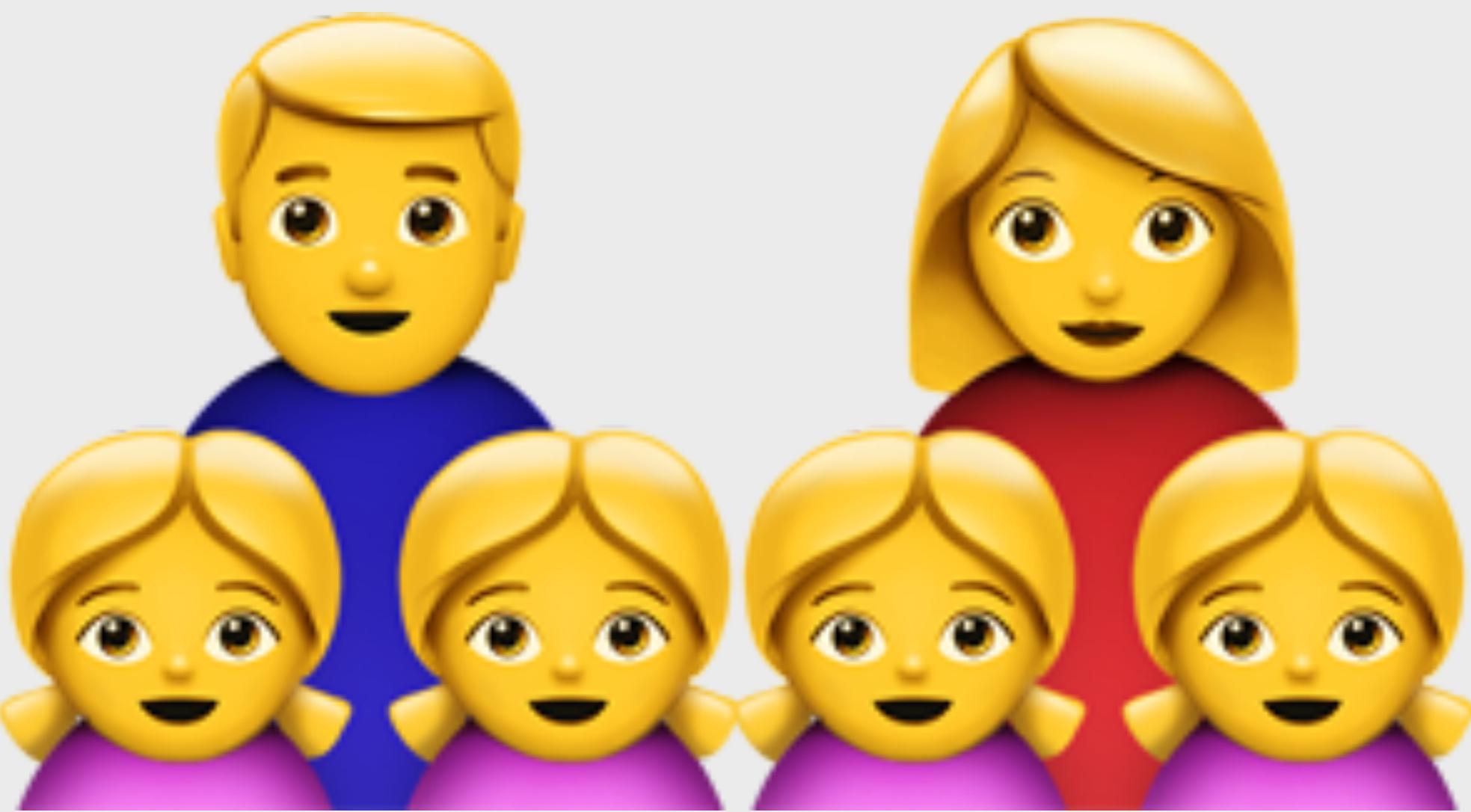
Linux/Unix Accessibility Toolkit  
IAccessible2

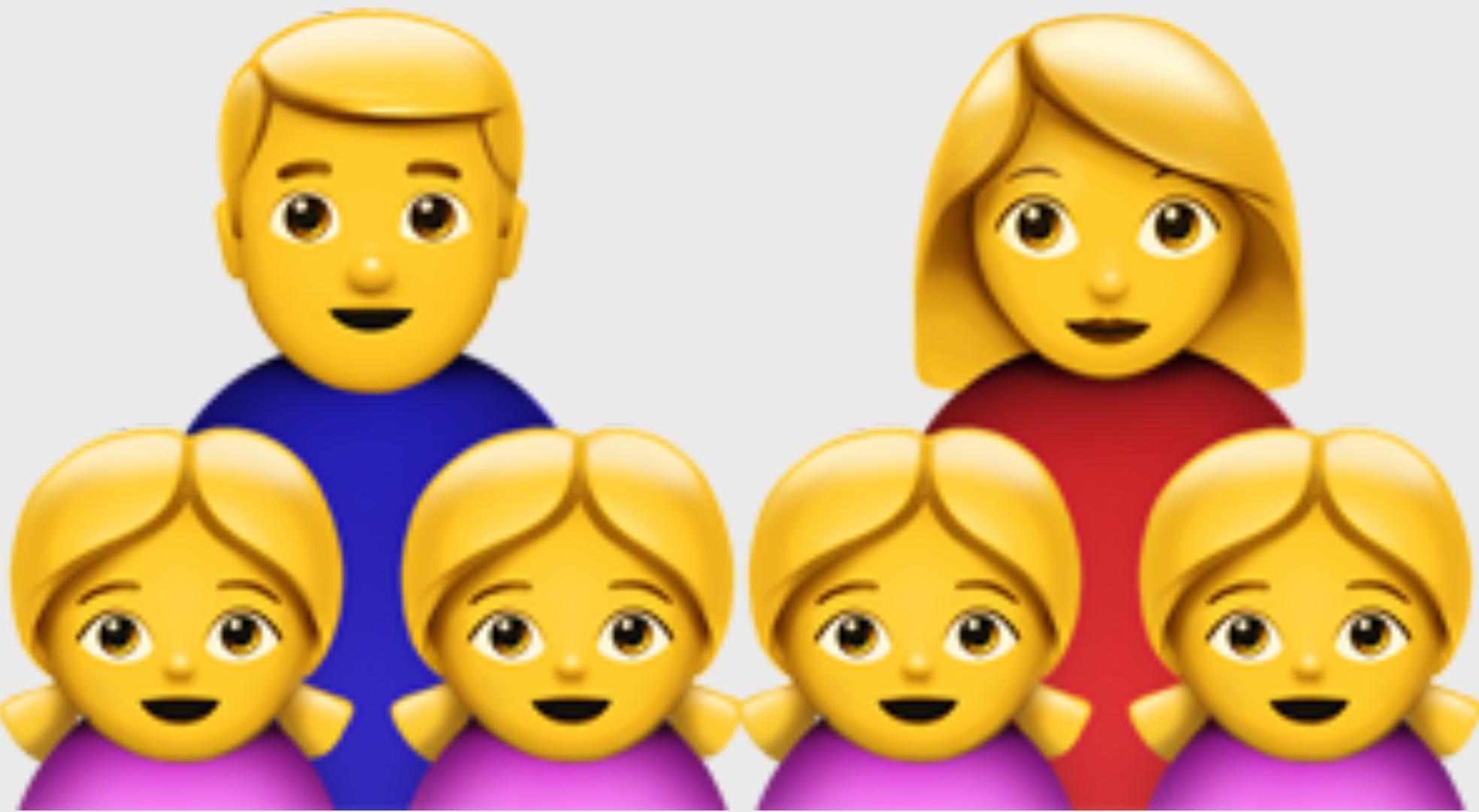
alter



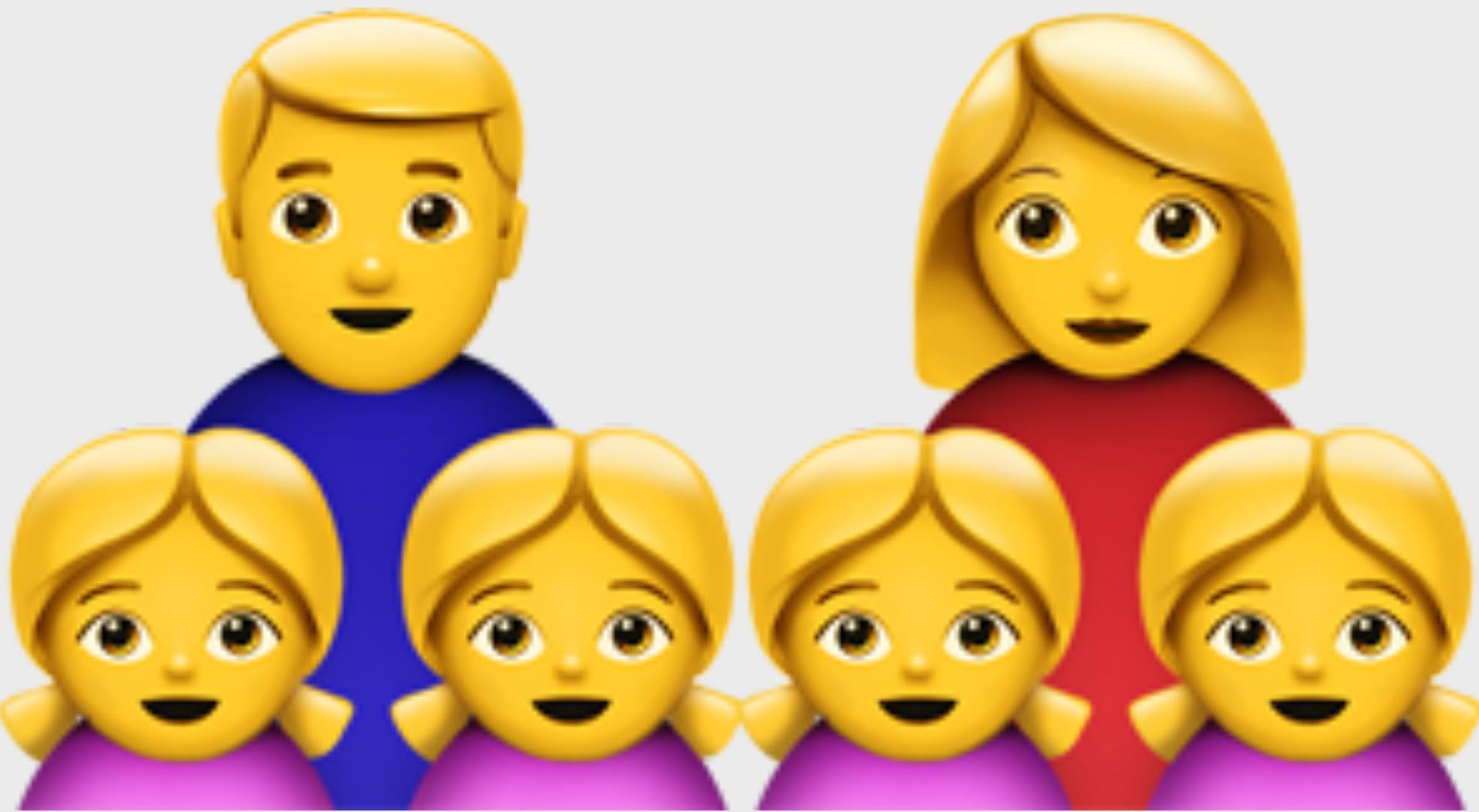


# Better names

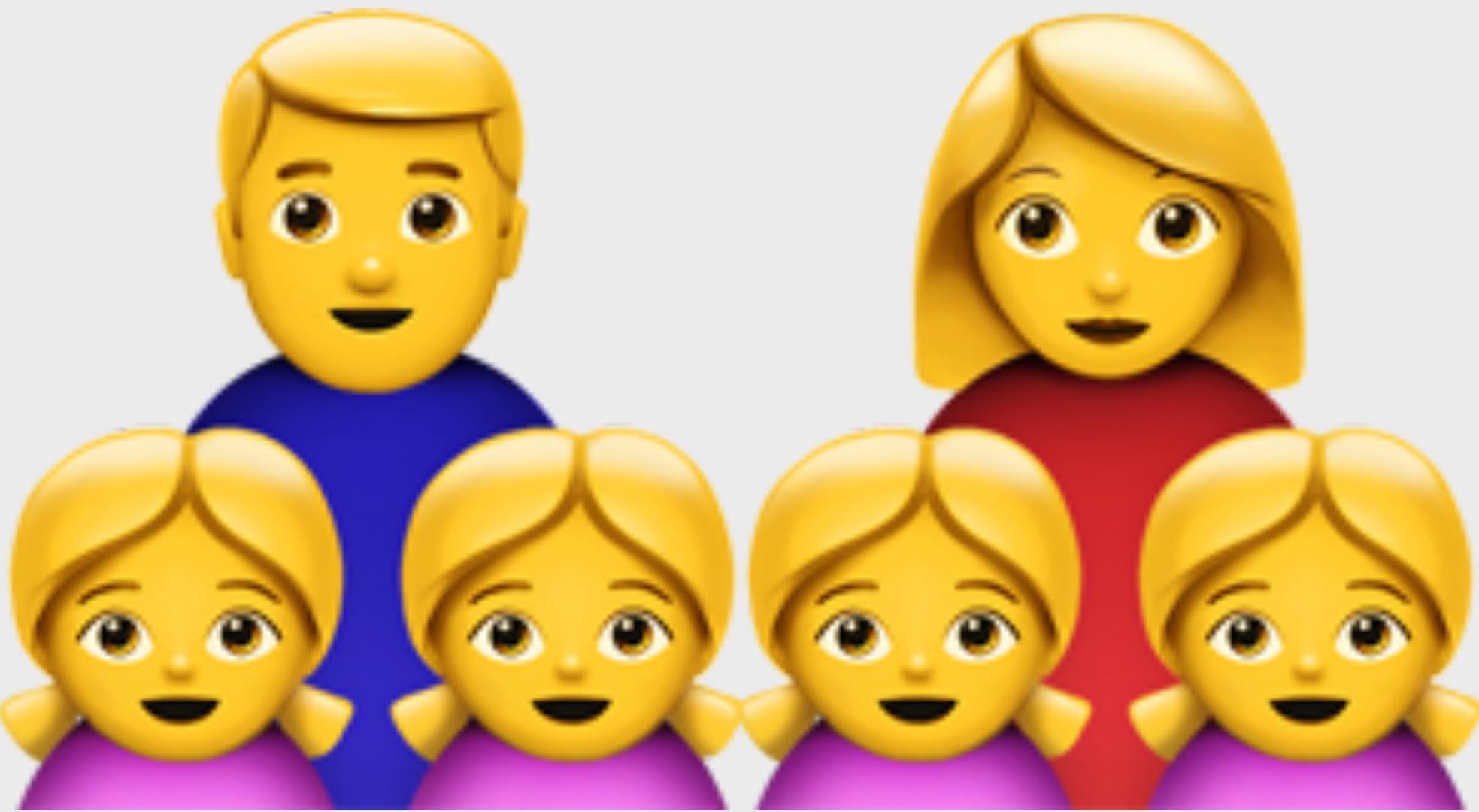




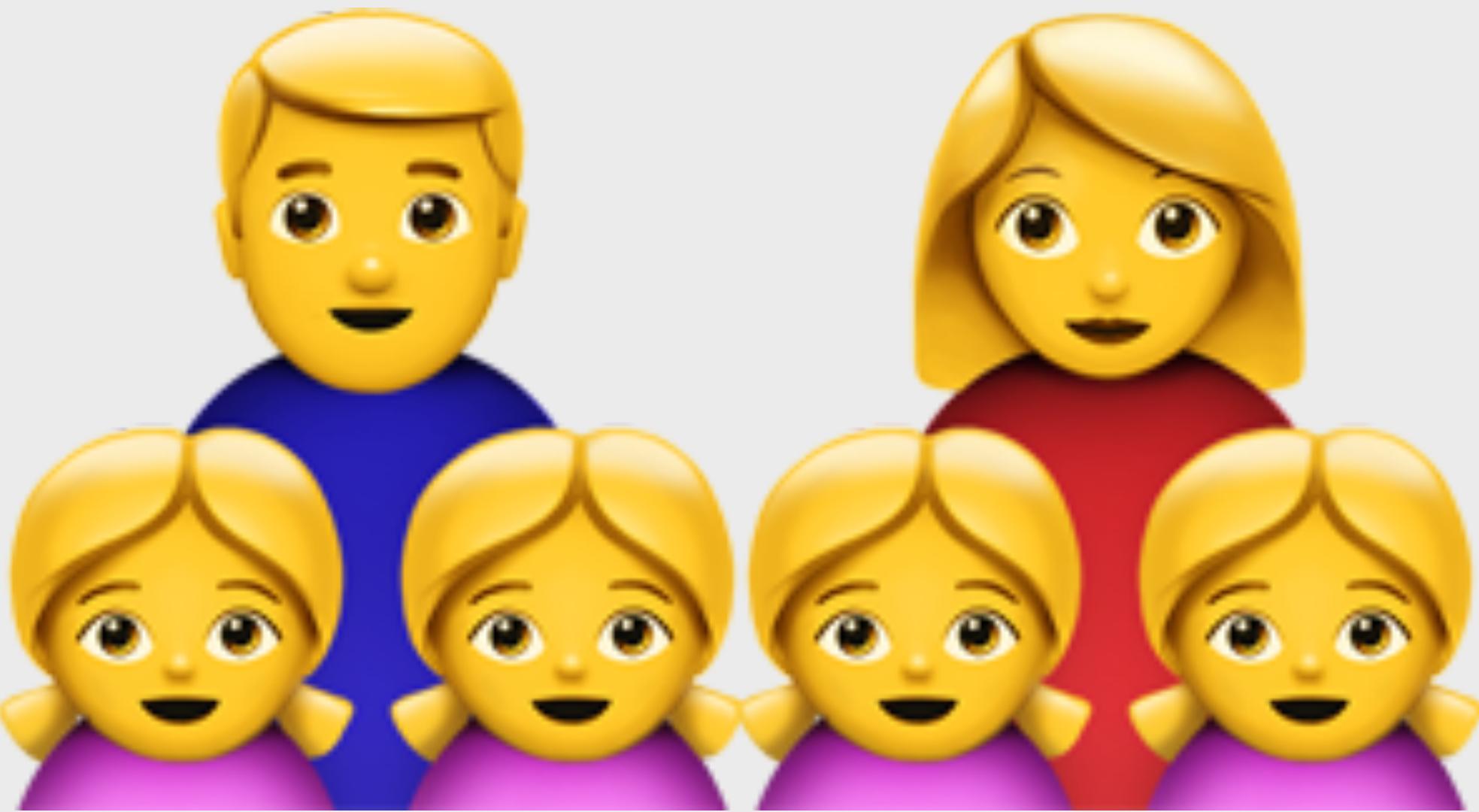
Alice



Alice Alice



Alice Alice Alice



Alice Alice Alice Alice

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

[READ MORE](#)

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

[READ MORE](#)

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

[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 blue sidebar on the left is labeled "W3C Working Group Note". The main content area includes links for "This version", "Latest published version", "Latest editor's draft", "Previous version", and a list of "Editors" with their contact information. At the bottom, there is a copyright notice.

WAI-ARIA Authoring Practices 1.1

W3C Working Group Note 14 December 2017

**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](mailto:mck@fb.com)  
James Nurthen, Oracle Corporation, [james.nurthen@oracle.com](mailto:james.nurthen@oracle.com)  
Michiel Bijl, Invited Expert  
[Michael Cooper](mailto:Michael.Cooper@w3.org), W3C, [cooper@w3.org](mailto: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  
[\(https://a11yjs.io/\)](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?**

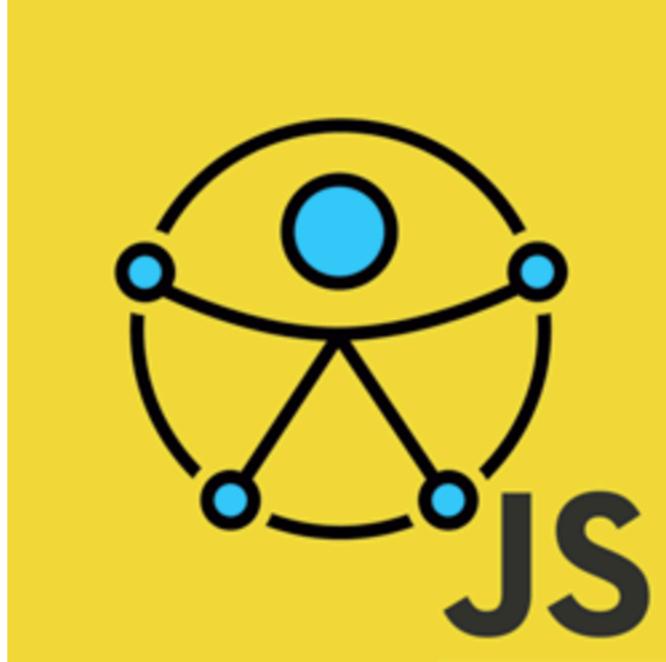
ally.js is a JavaScript library simplifying certain accessibility features, functions and behaviors. However, simply loading ally.js will not automagically make a web application accessible. The library provides certain standard functions the "web platform" should've provided itself, so JavaScript applications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

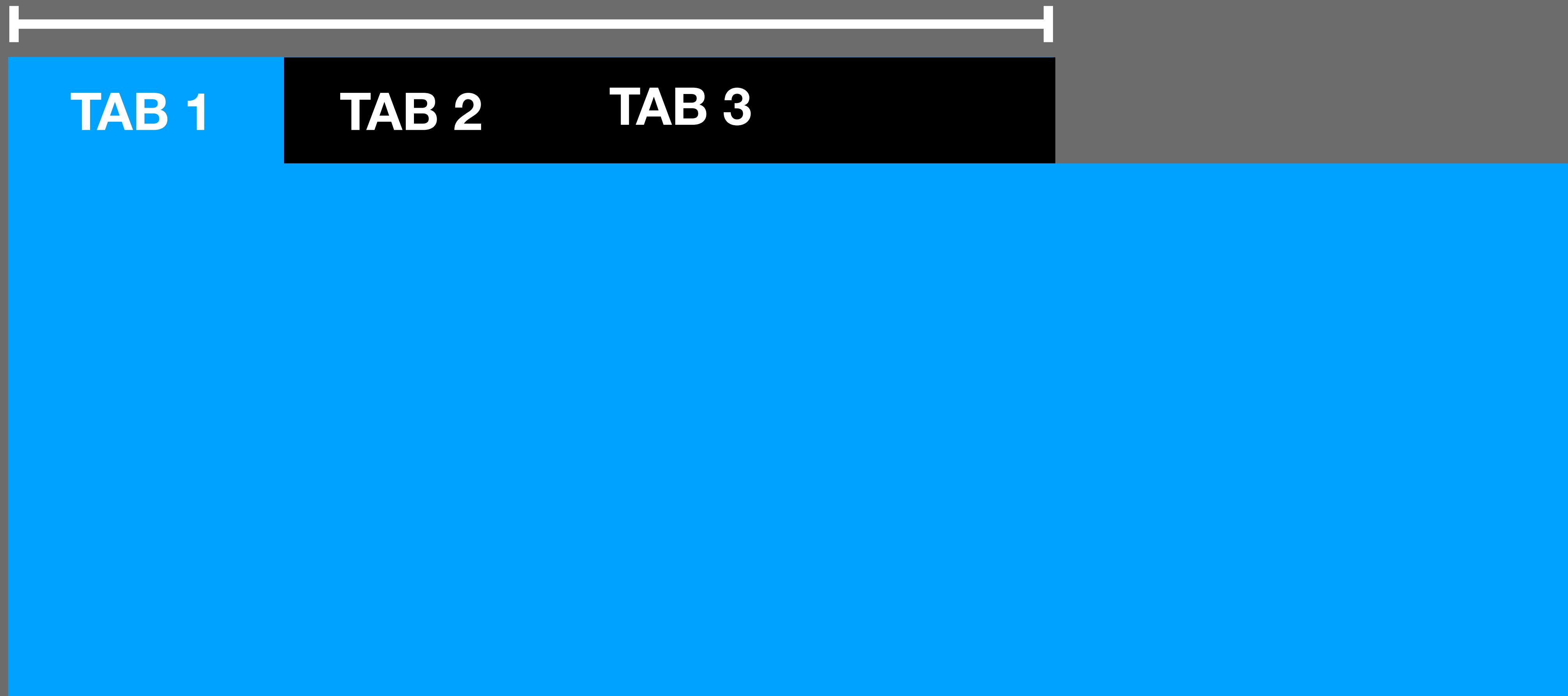
TAB 2

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?

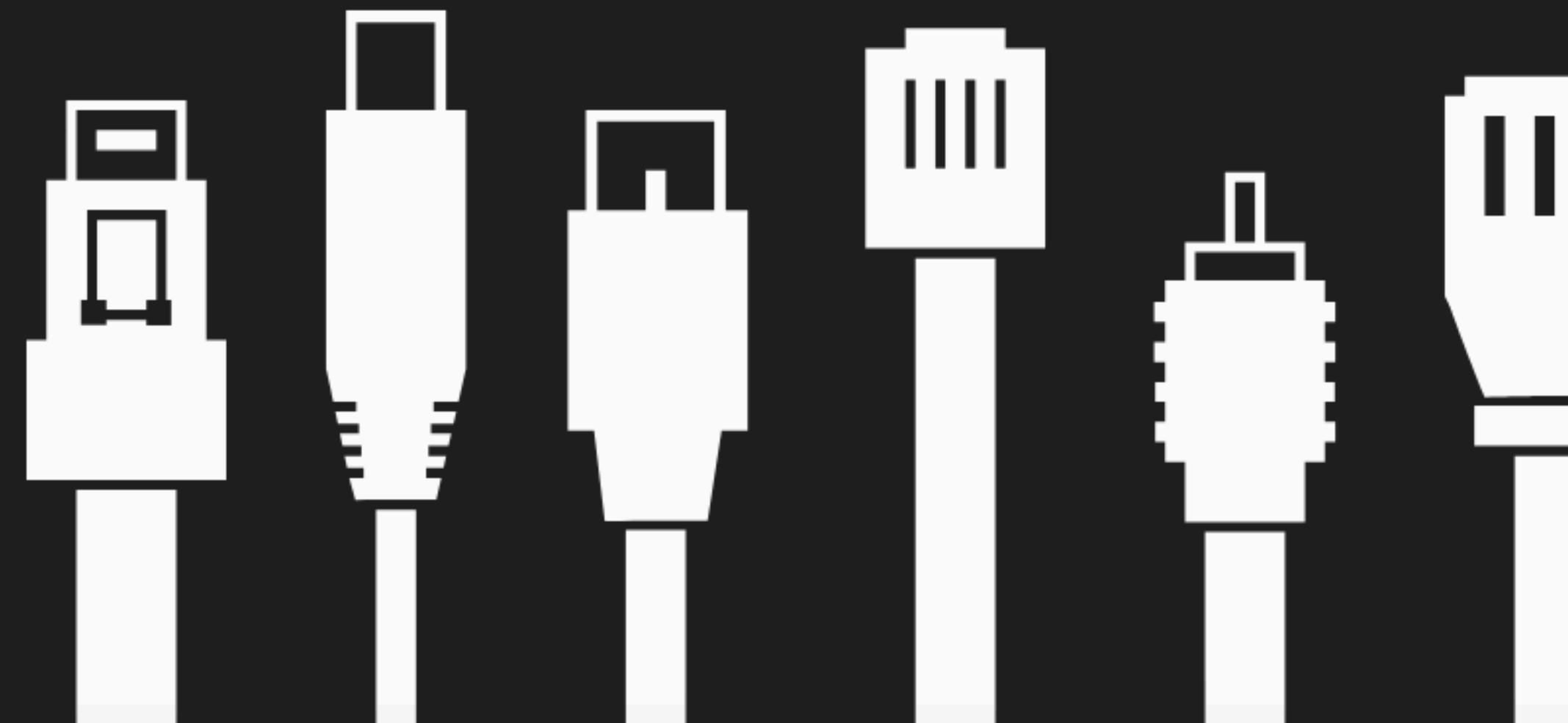
Newsletter sign up

**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 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 content area features three columns: "W3C" (with a book icon), "WAI" (with a wrench and hammer icon), and "You" (with a computer monitor icon). Each column contains a brief description of what their respective organizations do. Below this, there's a "News" section with a recent article about making audio and video media accessible, and a "Get Resources for..." section with links for various user groups.

**W3C Home | Web Accessibility Initiative**

<https://www.w3.org/WAI/>

Skip to Content | Change Text Size or Colors | All Translations

**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.

**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

**News**

**New Resource: Making Audio and Video Media Accessible**

(2019-09-10)

**Making Audio and Video Media Accessible**

**W3C® Web Accessibility Initiative WAI**

# 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 describes the collection of tutorials as guidance for developing accessible web content. It highlights that the tutorials are designed for various roles: web developers, web designers, web trainers, content authors, and project managers. The tutorials cover various accessibility topics based on common web project tasks, using technologies like HTML4, HTML5, CSS3, WAI-ARIA, MathML, and SVG. A "Relationship to WCAG" section and "Additional Resources" are also mentioned. The W3C logo and "Web Accessibility initiative" text are visible in the top right corner.

W3 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.

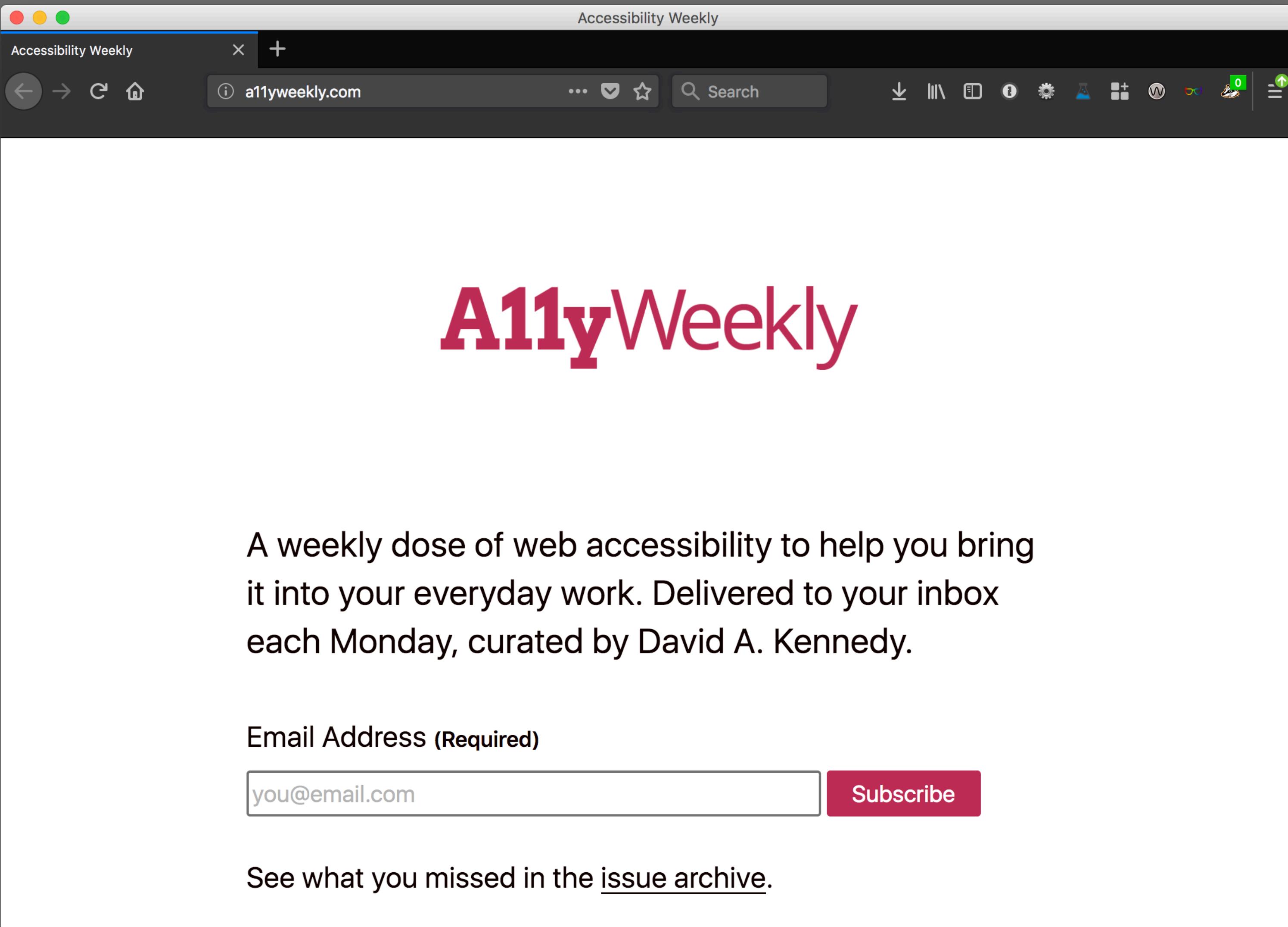
The tutorials are designed to be used by a variety of individuals, including:

- **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.

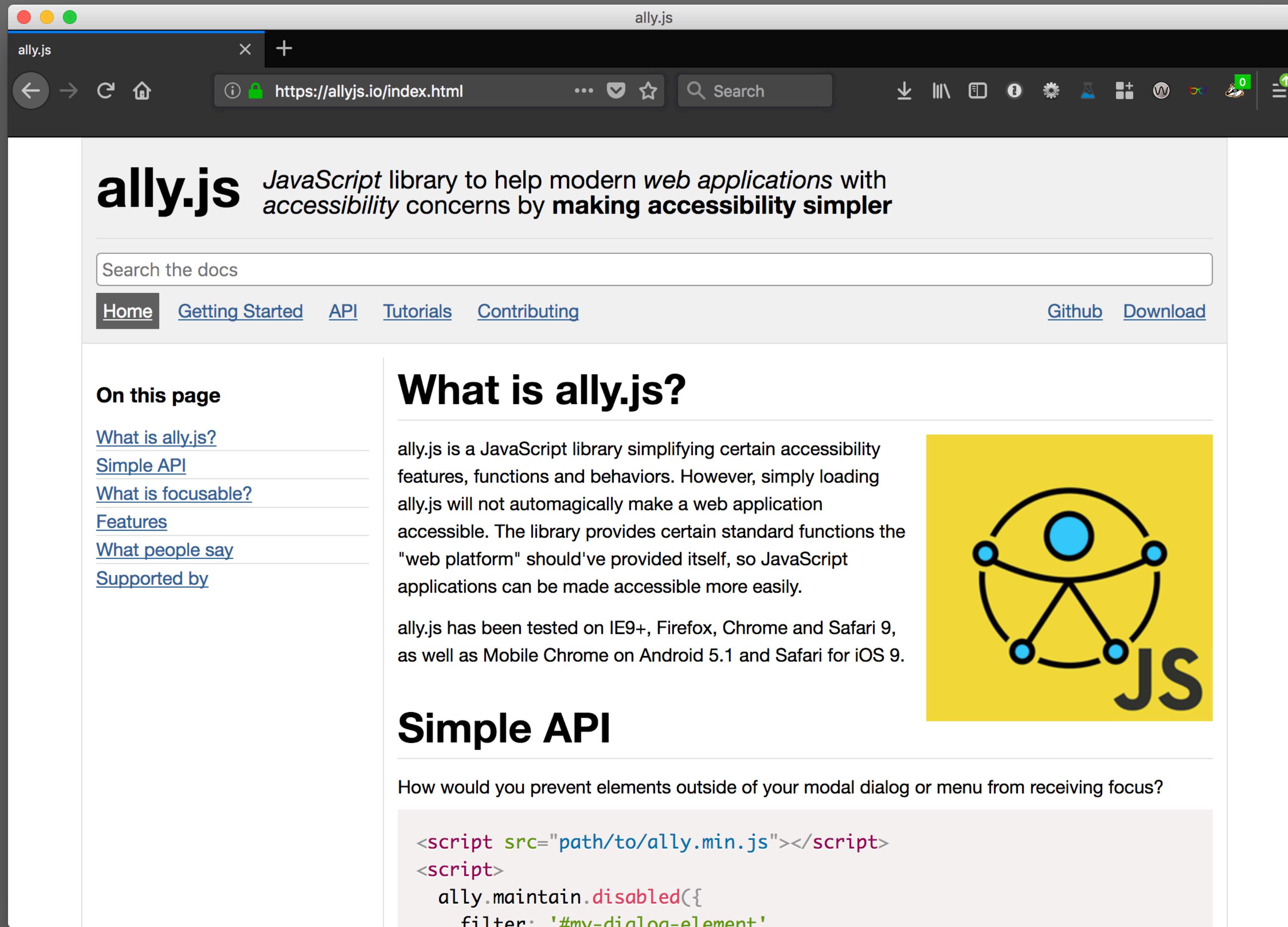
W3C Web Accessibility initiative



A11y Weekly ([a11yweekly.com](http://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 "On this page" (links to What is ally.js?, Simple API, What is focusable?, Features, What people say, Supported by) and "What is ally.js?". A yellow graphic featuring a stylized eye and the letters "JS" is on the right. A code snippet at the bottom shows how to prevent focus from leaving a modal dialog.

# 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, the text 'The A11Y Project' is displayed in a large, bold, dark font. Underneath, a subtitle reads 'A community-driven effort to make web accessibility easier.' At the bottom of the main content area, there are two green buttons: 'Learn more' and 'Contribute on Github'. In the bottom right corner of the main content area, there is a small sidebar with the heading 'Categories' and a single item 'How-tos'.

The A11y Project  
[\(https://a11yproject.com/\)](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 "SELECT AN EXAMPLE" button and a text input field containing the HTML code: . There are "ANALYZE HTML" and "CLEAR FIELD" buttons below the input field. 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

WebAIM: Web Accessibility In Mind X +

https://webaim.org

Search

Accessibility

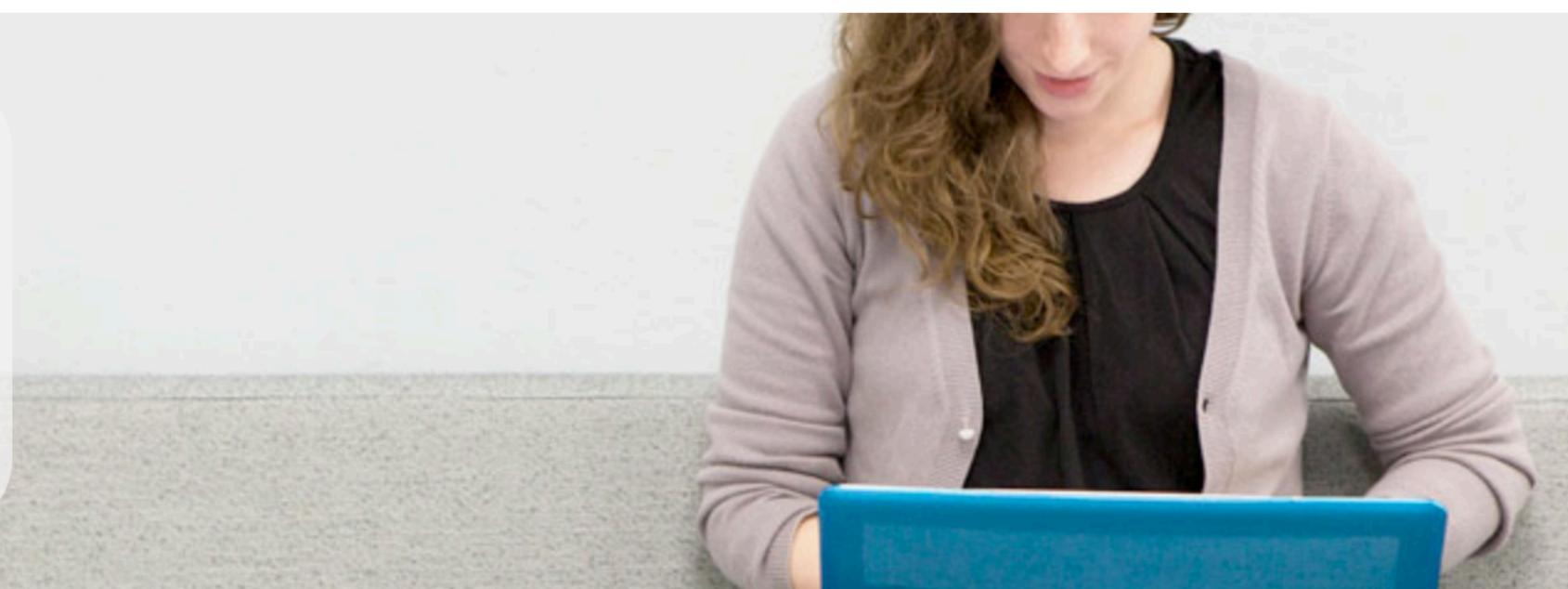
WebAIM web accessibility in mind

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** 

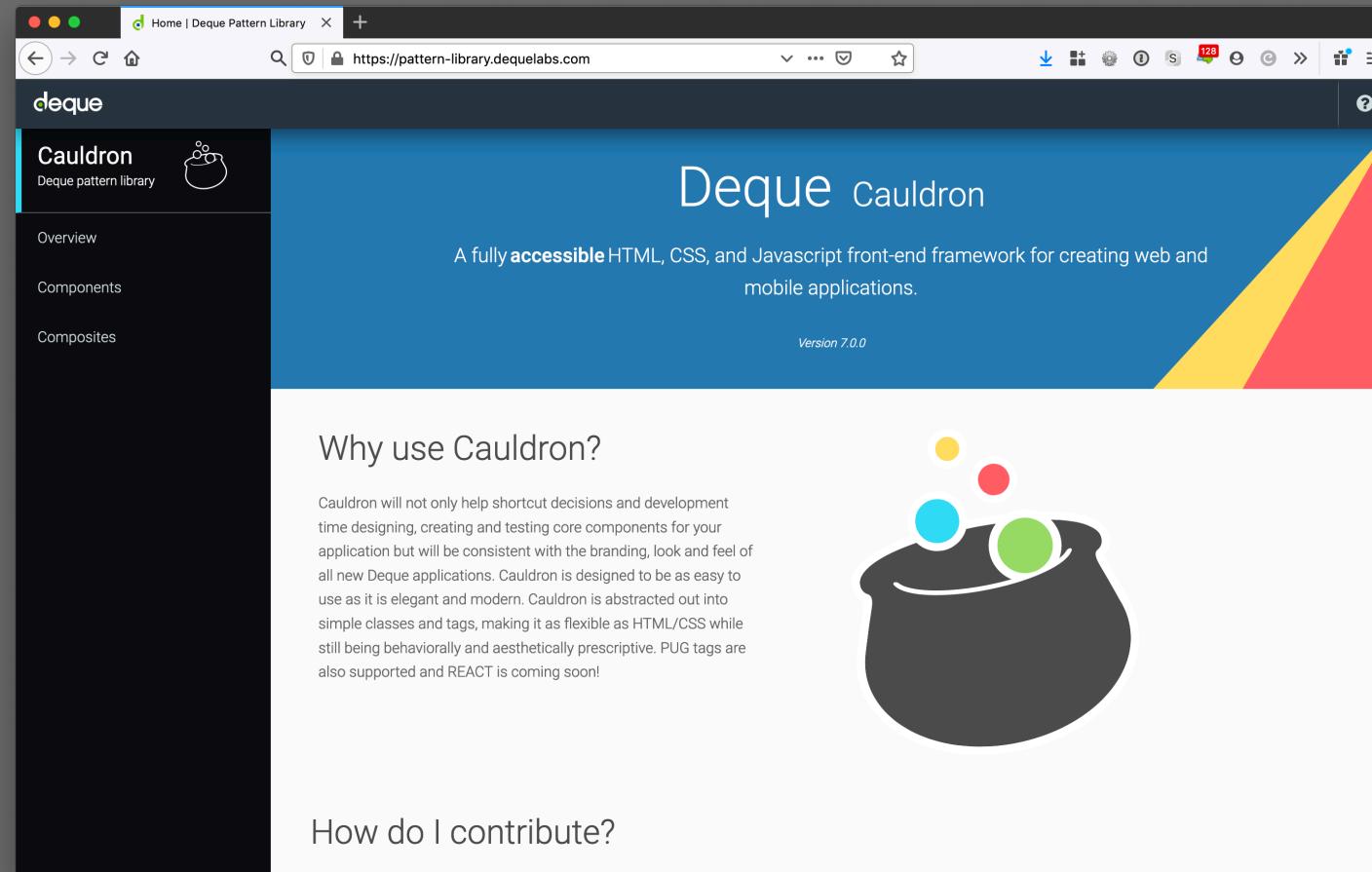
Need assistance implementing accessibility? WebAIM's expert staff can provide the

**Evaluation and Reporting** 

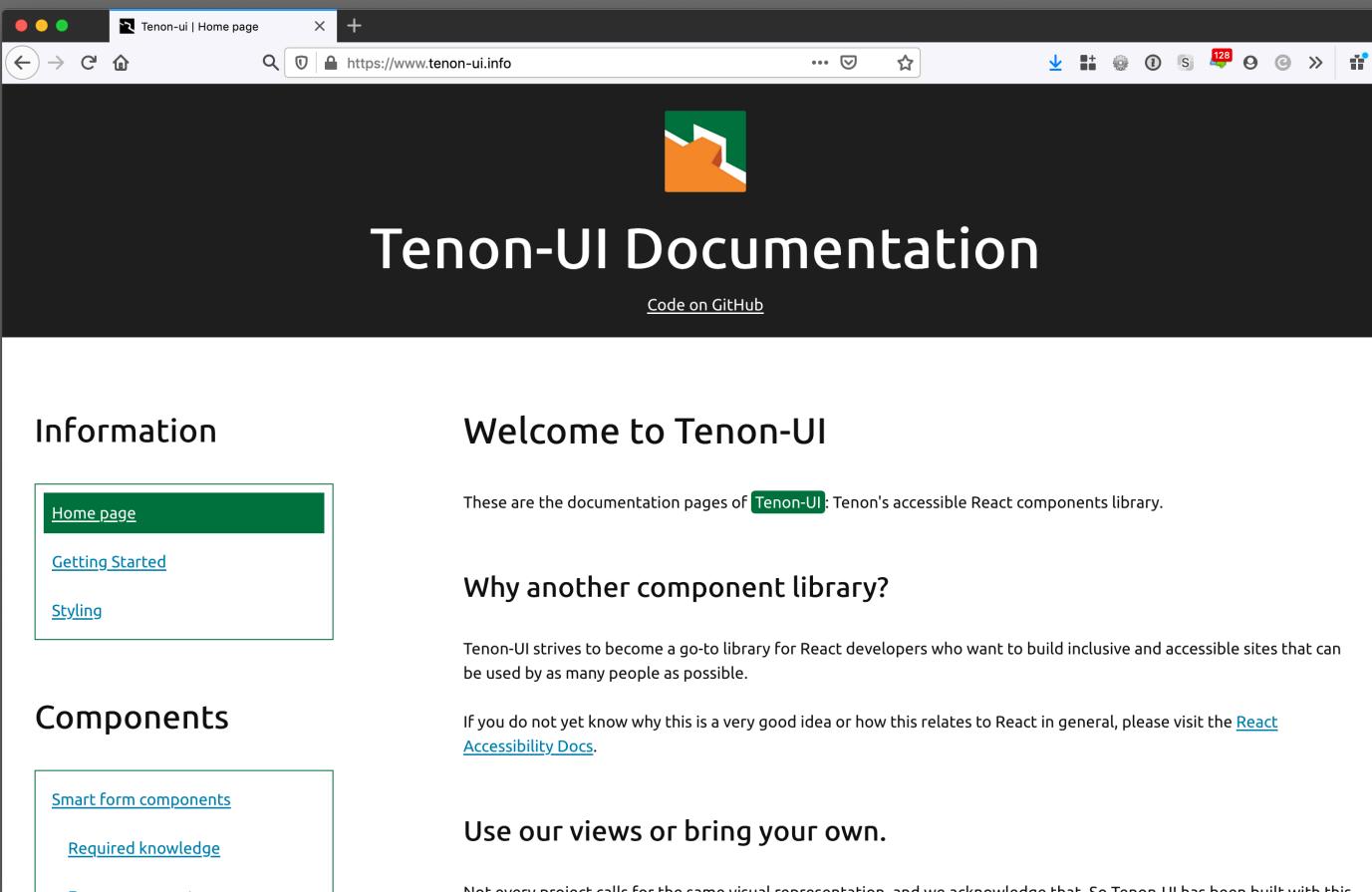
We can provide reports to help you know how accessible your site is and how to make it

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

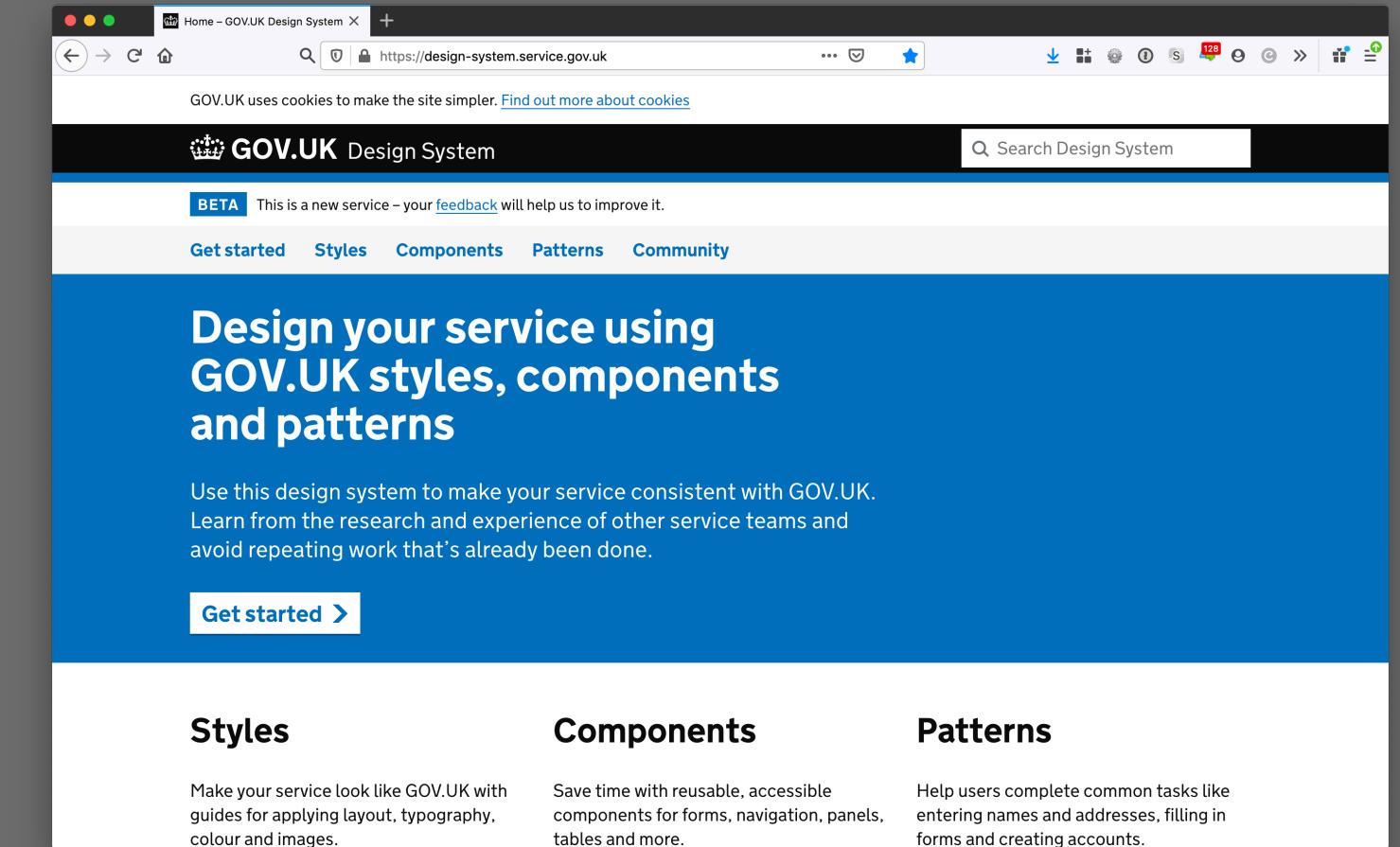
# Pattern libraries with accessibility support



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).