

THE RULES OF ARIA

Web Accessibility for
front-end developers

hiddedevries.nl



moz://a



Den Haag



delta lloyd

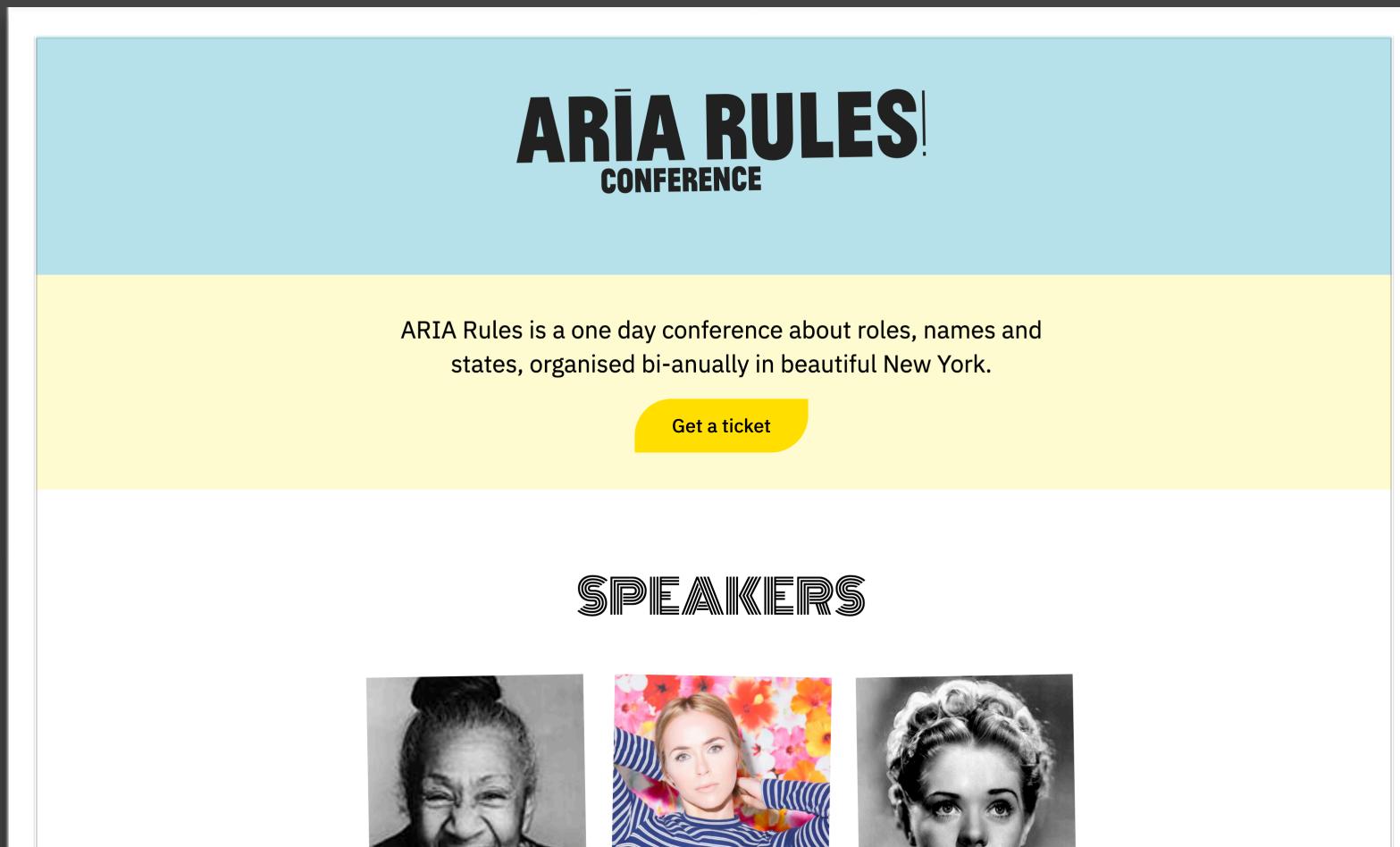
Who are you?
And what's your favourite
HTML element?

What you'll need

What you'll need

Example code

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 making your site
or app available for
more people

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

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 large black text "Elevator" is overlaid in the top right corner.

Elevator

Digital accessibility

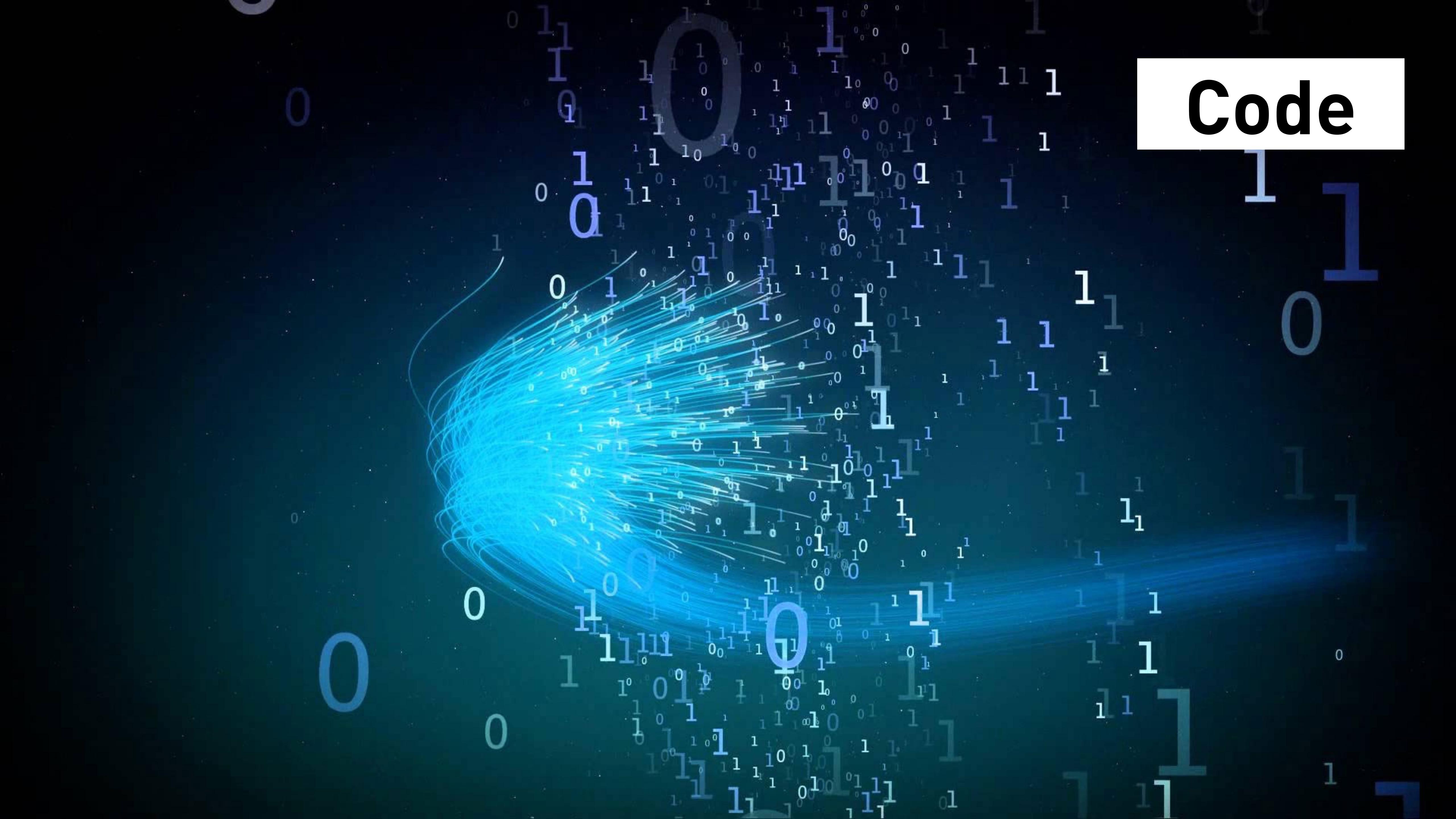
The background of the image consists of numerous overlapping circles of various sizes and colors, creating a vibrant and dynamic visual effect. The colors transition through a full spectrum, including red, orange, yellow, green, blue, and purple. The circles are semi-transparent, allowing the ones behind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

Colour

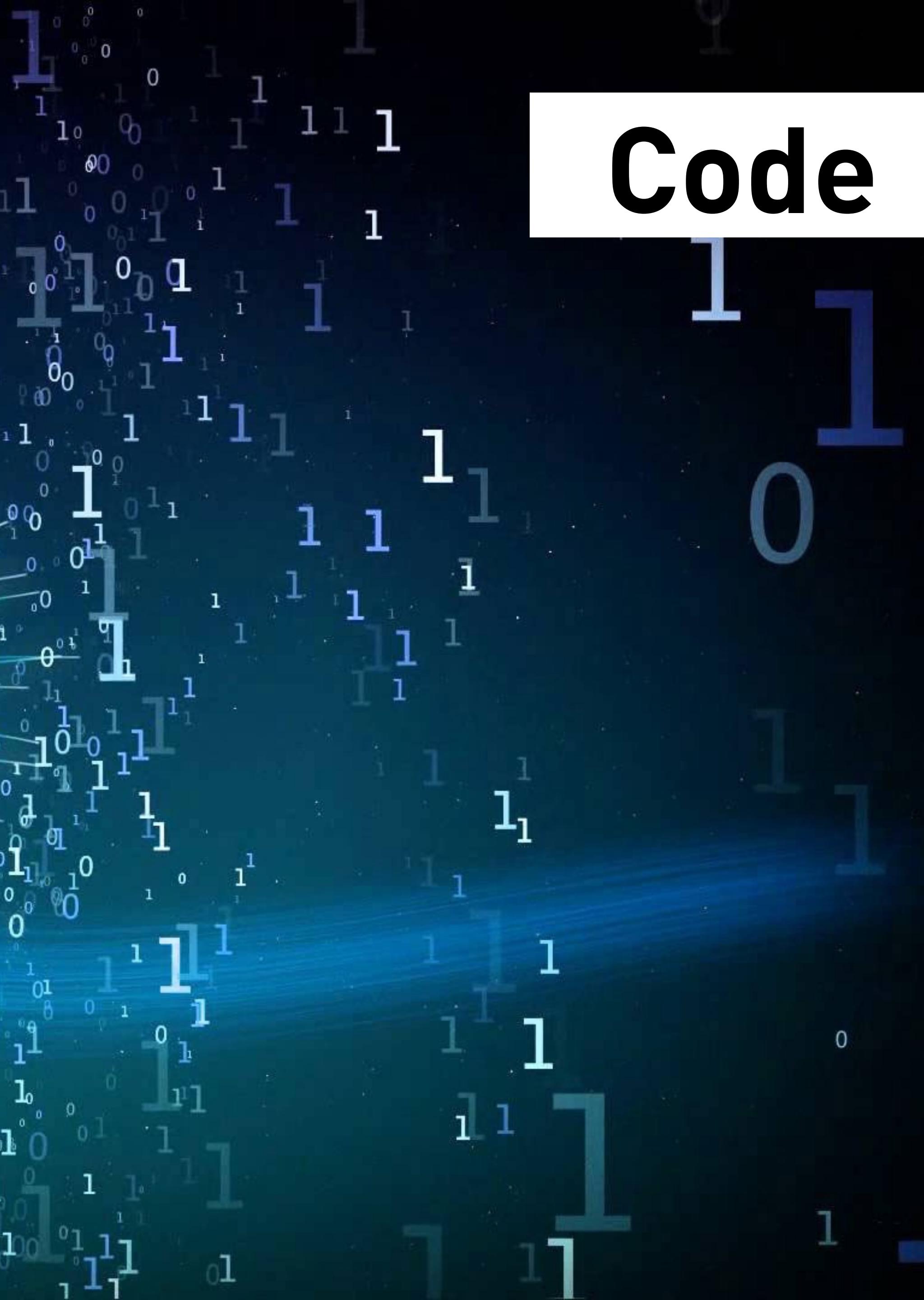
Language

THE OXFORD
ENGLISH
DICTIONARY

THE OXFORD
ENGLISH
DICTIONARY

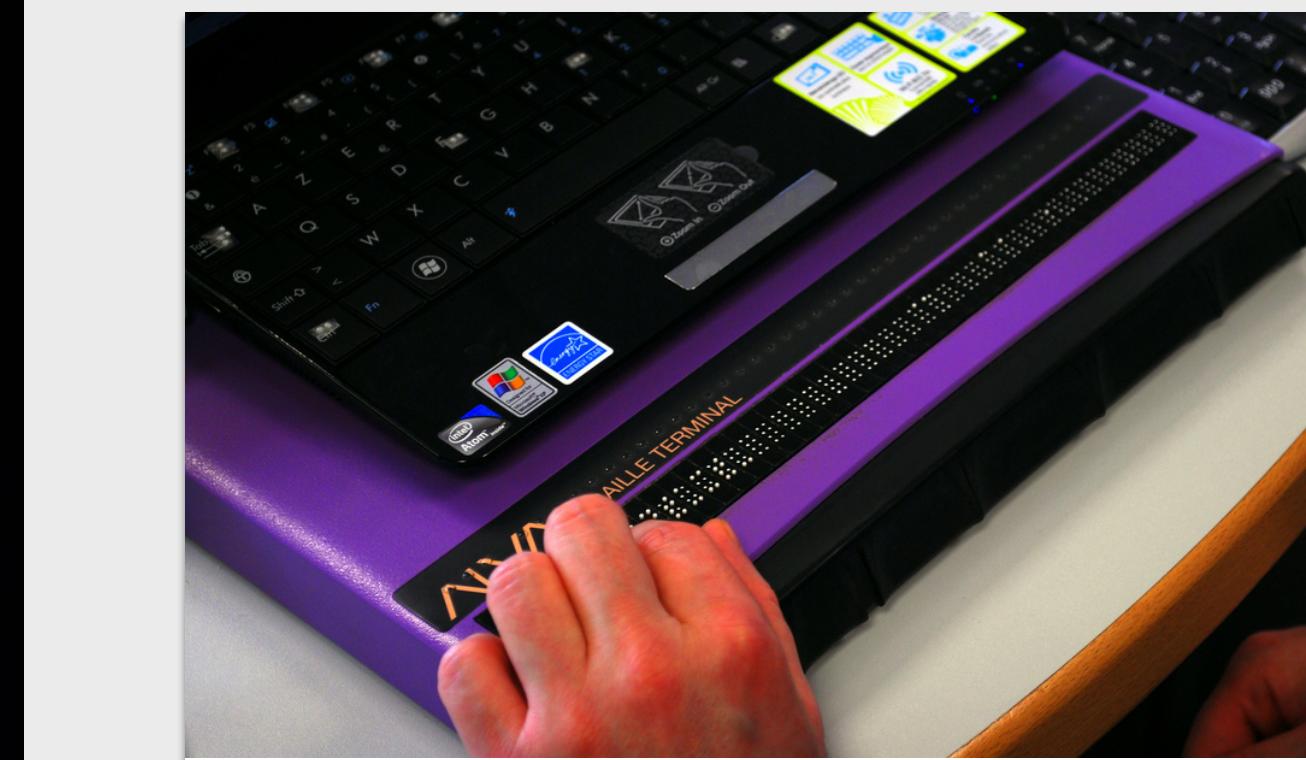


Code



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

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 legt persé de ironen' Zoo

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

94 Likes 12 Retweets

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

← ↔ Heart Upload Settings

 **Wim Knol** @WimKnol

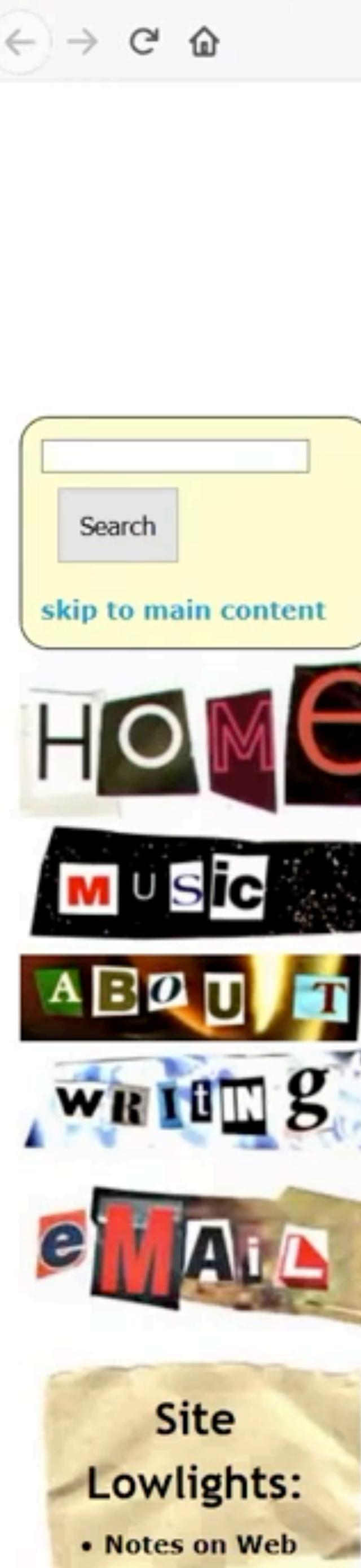
Yay, text!

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"

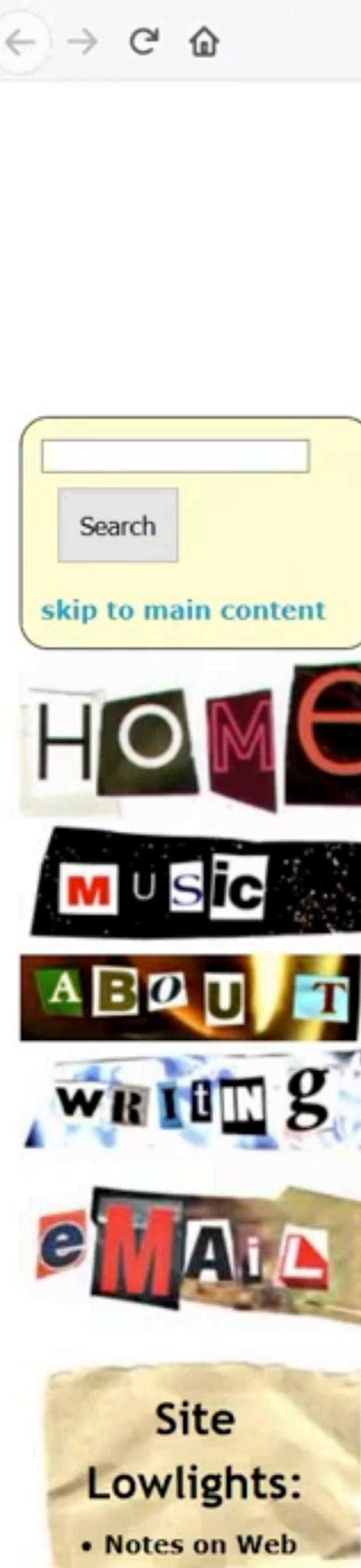
Posted in [accessibility](#), [web standards](#), [reading list](#).
[Leave a comment](#)

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

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[Leave a comment](#)

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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>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"/>																			
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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

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%

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>
```

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

Save

don't do this

<a>

vs

<button>

`<a>` goes elsewhere

vs

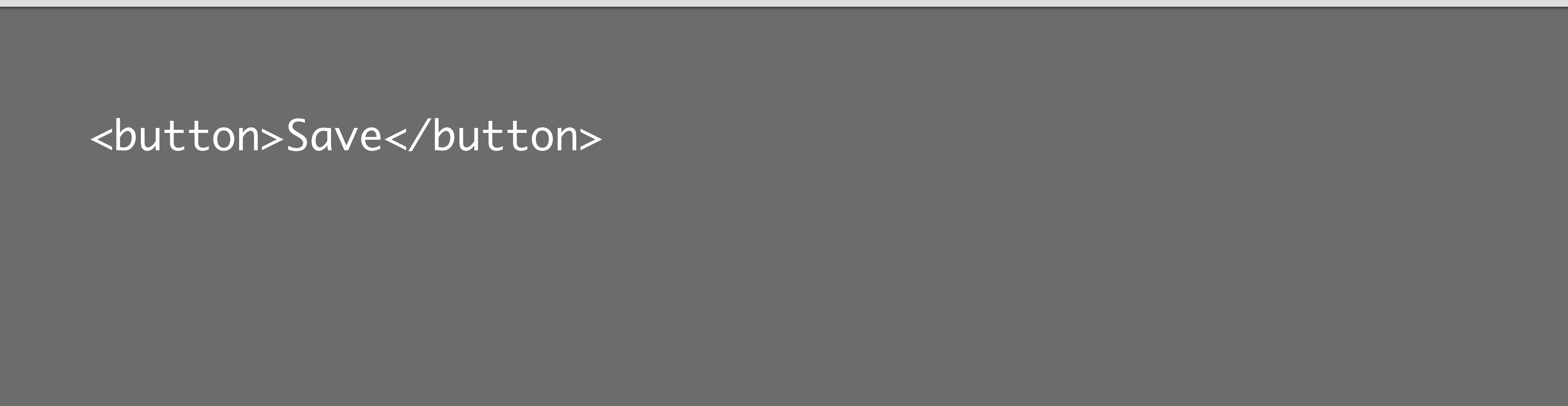
`<button>` does something

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>

<section>

<header>

<footer>

<nav>

<article>

<main>

<aside>

“page regions”

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](#)

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

- 1.12 [Suggested reading](#)

Search. Press ↵

Check
the spec:

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- 1.11 [Performance requirements for authors](#)
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Search. Press ↵

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

Exercise 2

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



Specify the language
of your content

```
<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

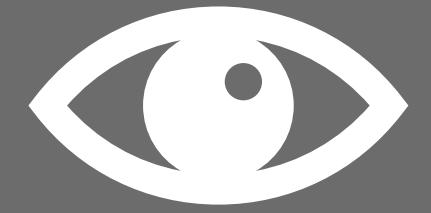
Make sure language is declared where appropriate.



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



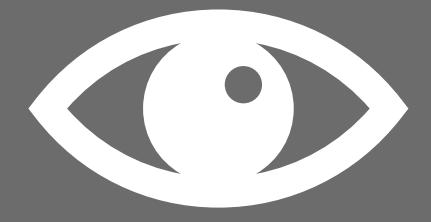
non-visual

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



all

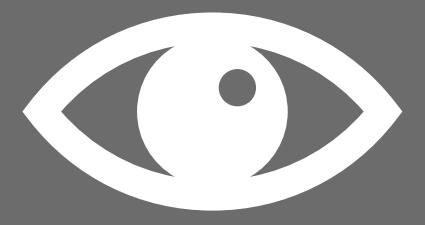
visual + non-visual



visual

e.g. those who can
see the page

Contextual cues to
supplement visual cues.

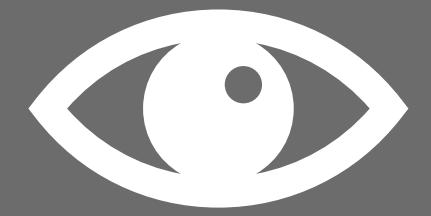


visual

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/>

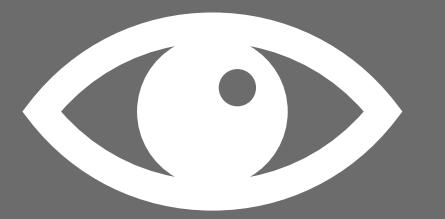


visual

e.g. those who can
see the page

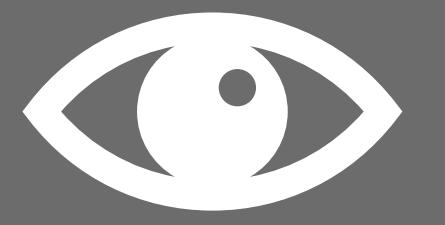
```
<span class="visually-hidden">  
  Only show me to non-visual users  
</span>
```

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



visual

e.g. those who can
see the page



visual

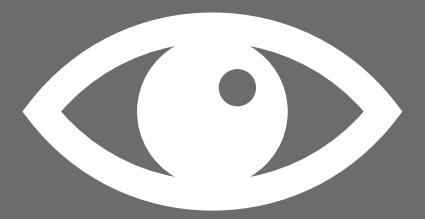
e.g. those who can
see the page

About us

Products

Projects

Contact



visual

e.g. those who can
see the page

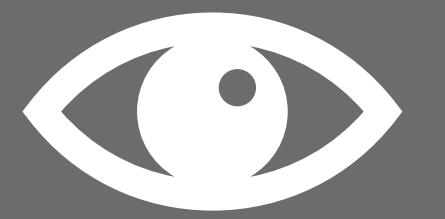
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Projects

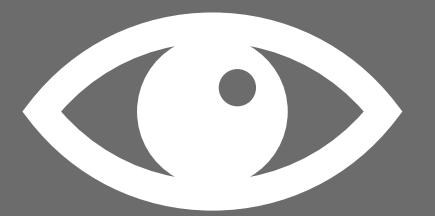
Contact

```
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

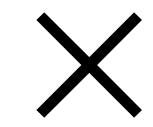
e.g. those who can
see the page



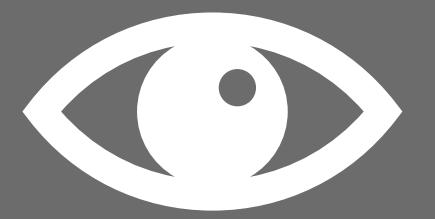
visual

e.g. those who can
see the page

Please accept our
cookie policy

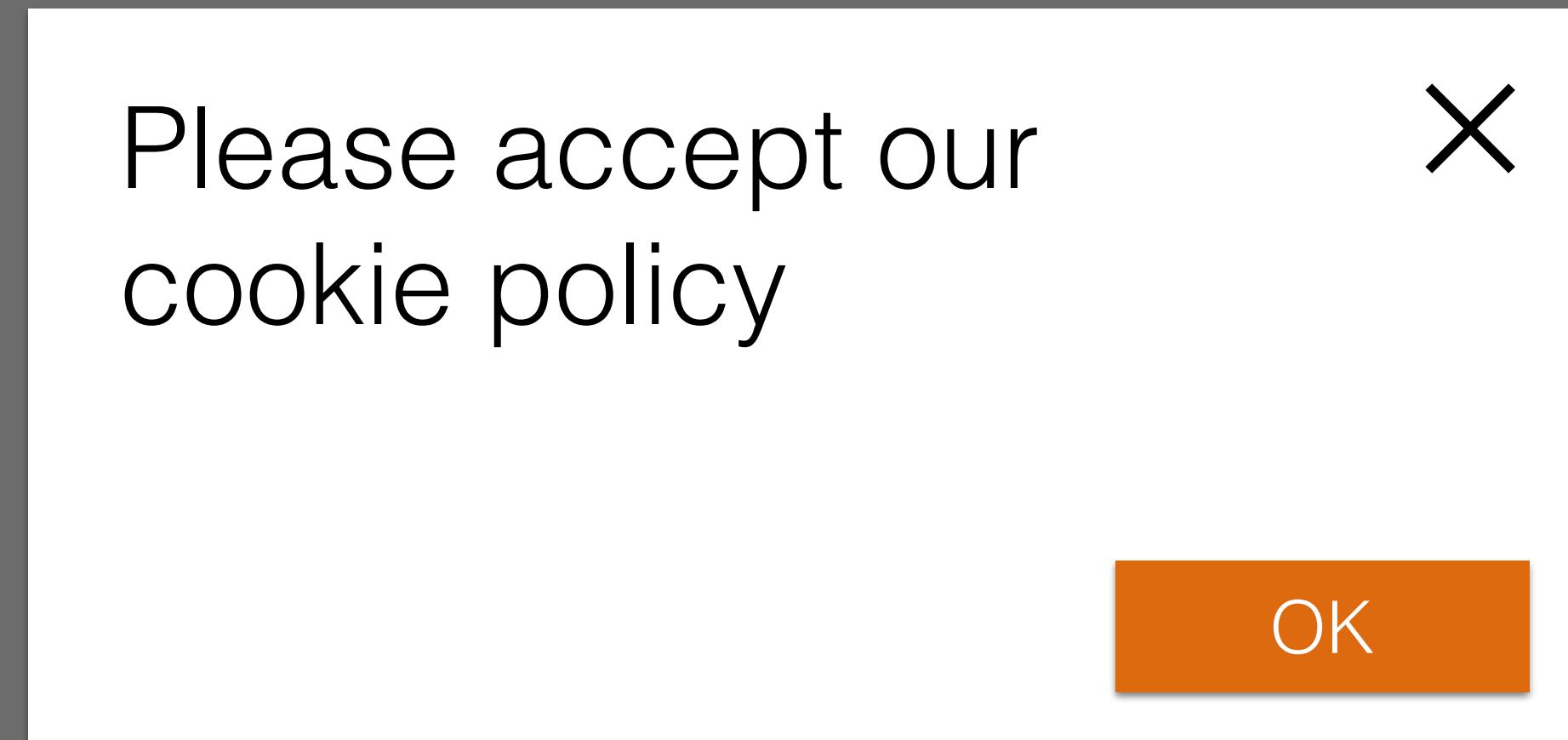


OK



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

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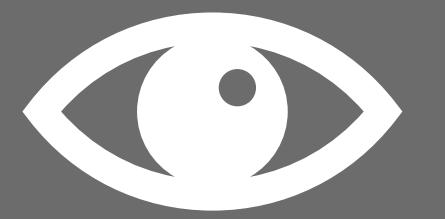
Suggested solution: add visually hidden text to button

Visual hiding gone wrong

Suggested solution: add visually hidden text to button

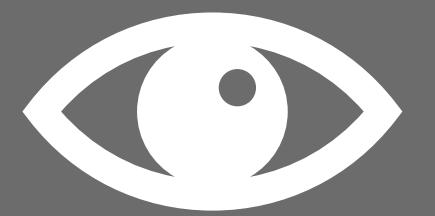
```
1 <button type="button">  
2 ...<span class="visually-hidden">Zoek</span>  
3 </button>
```

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



visual

e.g. those who can
see the page

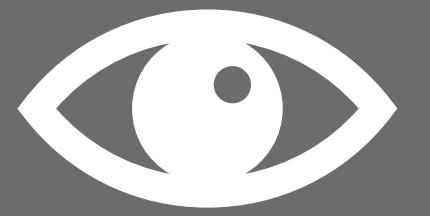


visual

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.

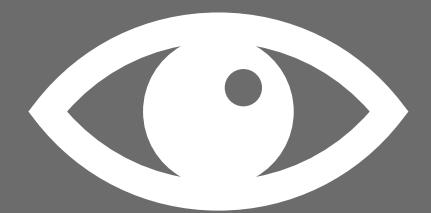


visual

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,

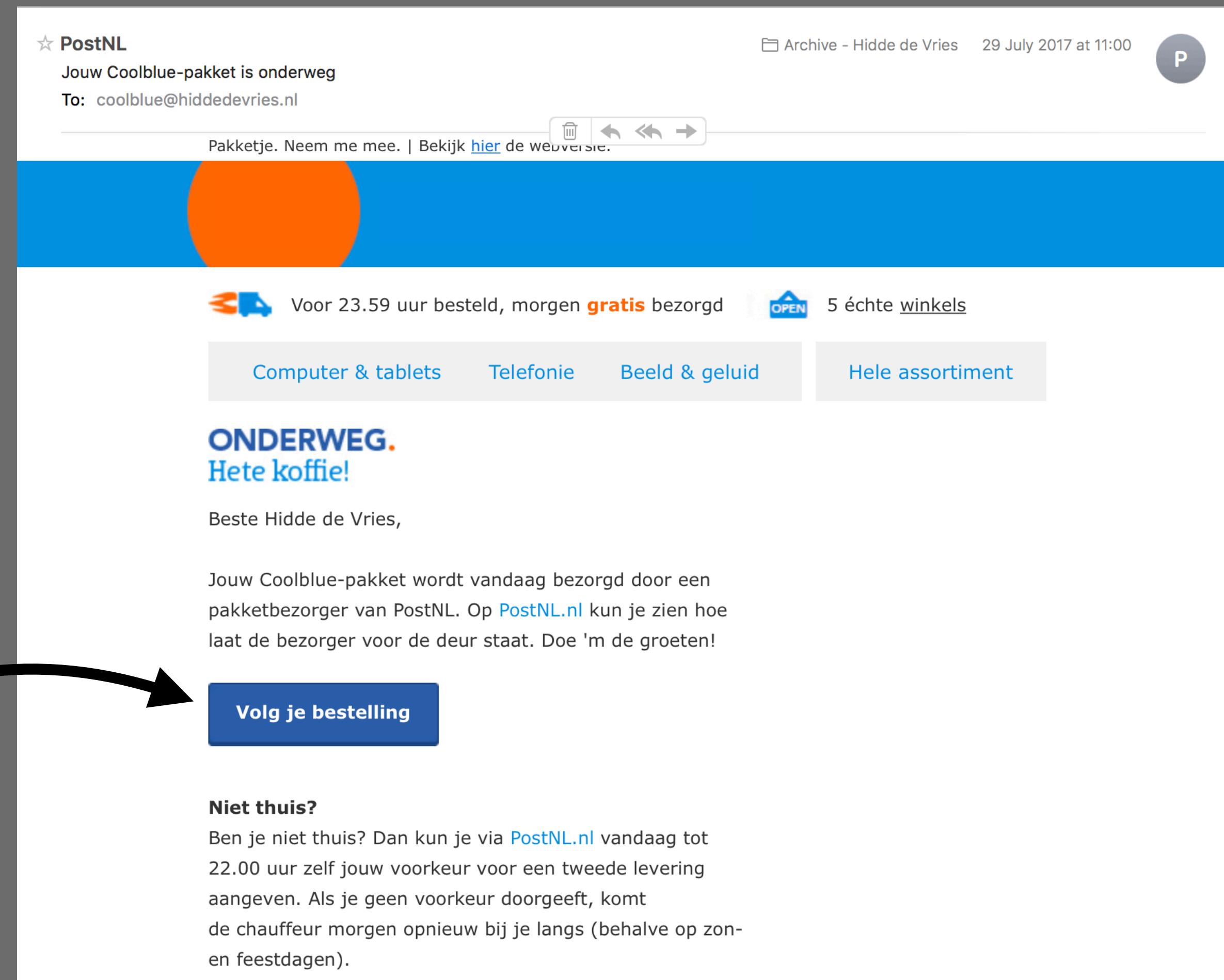
Jouw Coolblue-pakket wordt vandaag bezorgd door een pakketbezorger van PostNL. Op [PostNL.nl](#) kun je zien hoe laat de bezorger voor de deur staat. Doe 'm de groeten!

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

音量 [] ⏪ ⏹ ⏺ ⏻ CC

*This is the third talk in [a set of three talks on Technical Performance](#) delivered on April 1, 2016 at
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- * [Watch high quality video on Vimeo](#)
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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

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“ *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*

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```
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.

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

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.

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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

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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>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"	
▶ 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[®]forWindows



text-to-speech
screen magnifiers
alternate pointing devices

Platform APIs AT



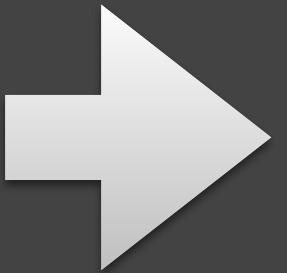
Microsoft Active Accessibility
Microsoft User Interface Automation
MSAA



Mac OS X Accessibility Protocol



Linux/Unix Accessibility Toolkit
IAccessible2

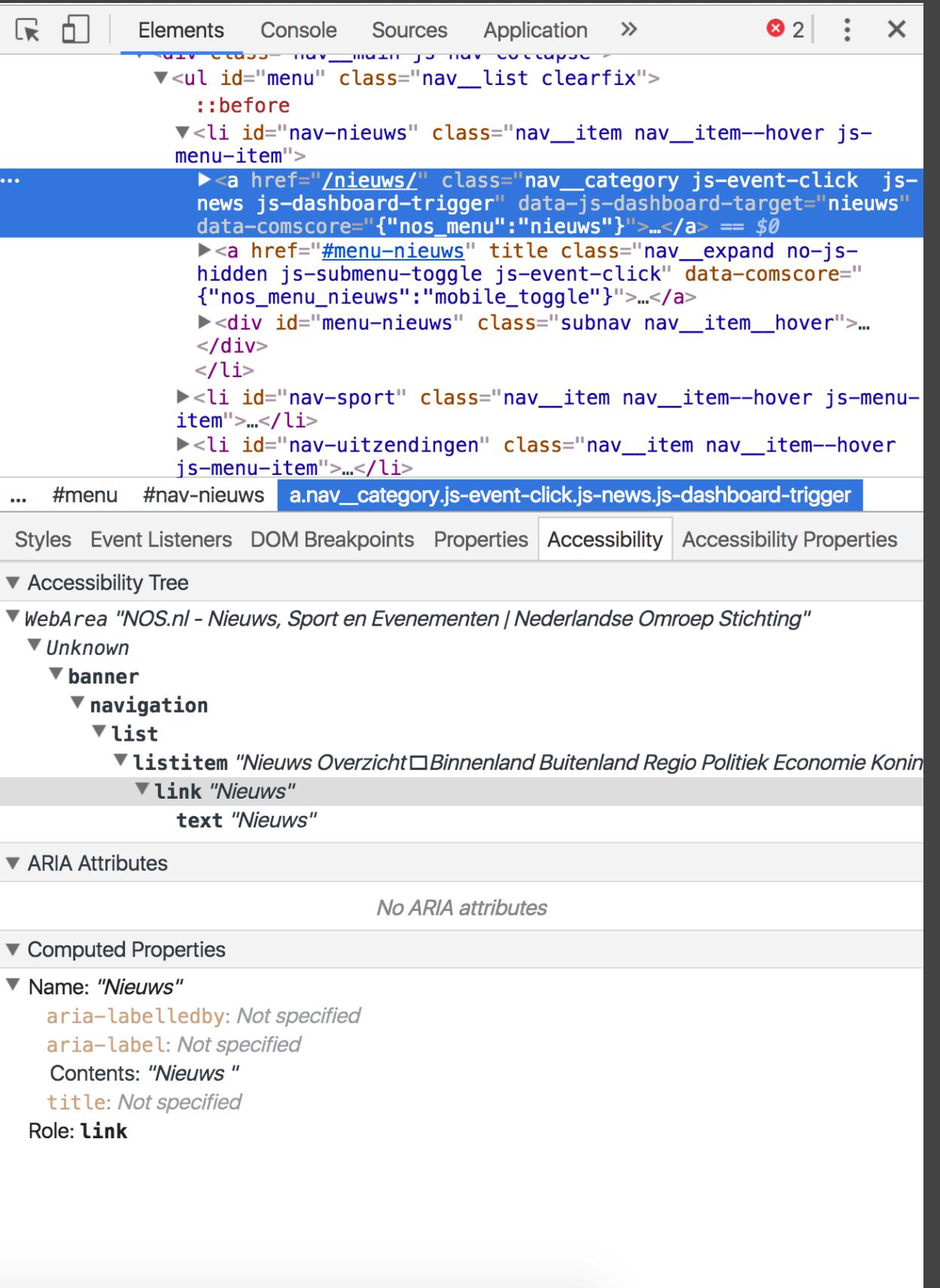


JAWS®forWindows



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 bottom section also includes sections for ARIA Attributes and Computed Properties.

Platform APIs



Microsoft Active Accessibility
Microsoft User Interface Automation
MSAA



Mac OS X Accessibility Protocol



Linux/Unix Accessibility Toolkit
IAccessible2



JAWS® for Windows



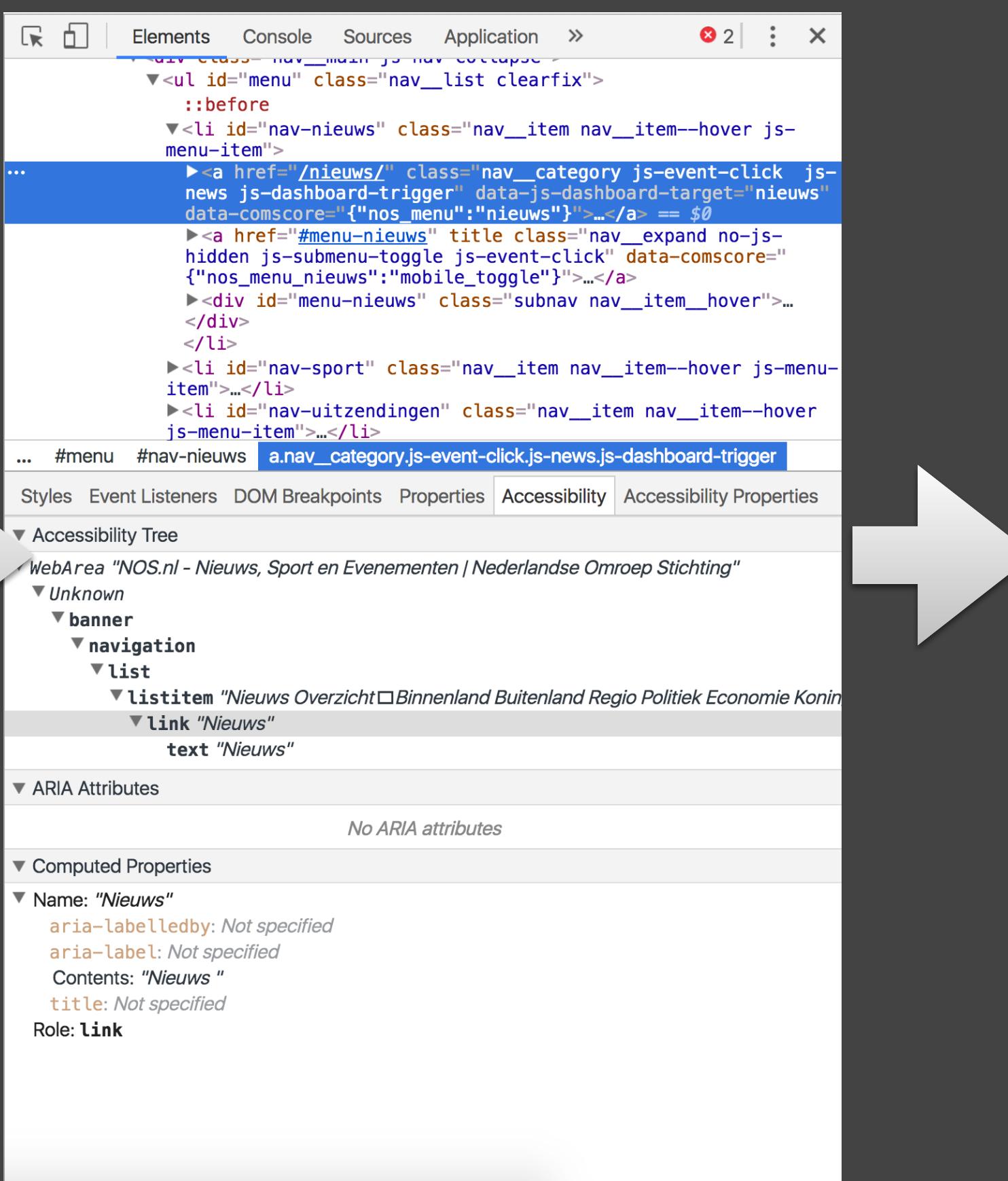
text-to-speech
screen magnifiers
alternate pointing devices



AT

Your
markup

DOM
tree



Accessibility tree

Platform APIs



Microsoft Active Accessibility
Microsoft User Interface Automation
MSAA



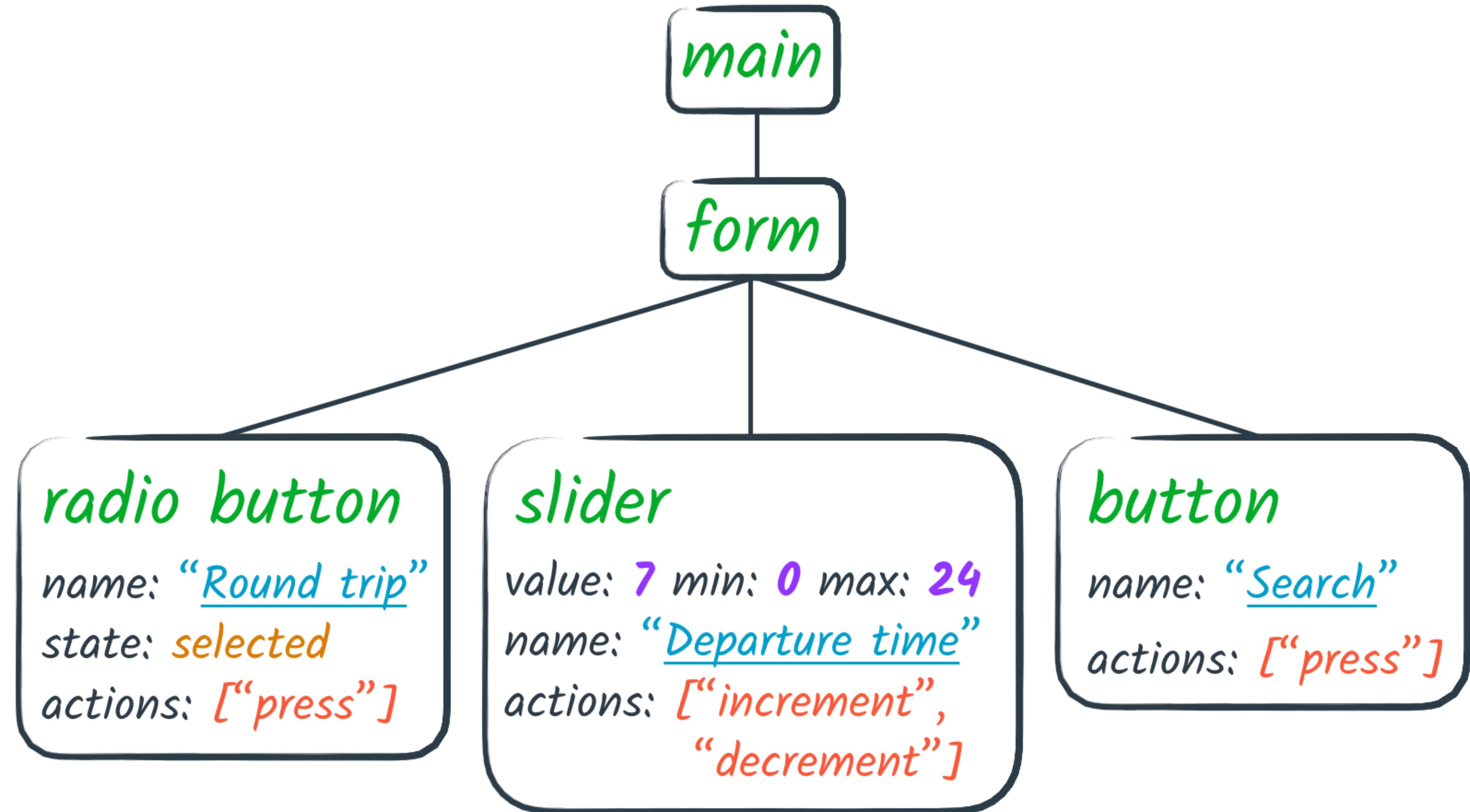
Mac OS X Accessibility Protocol



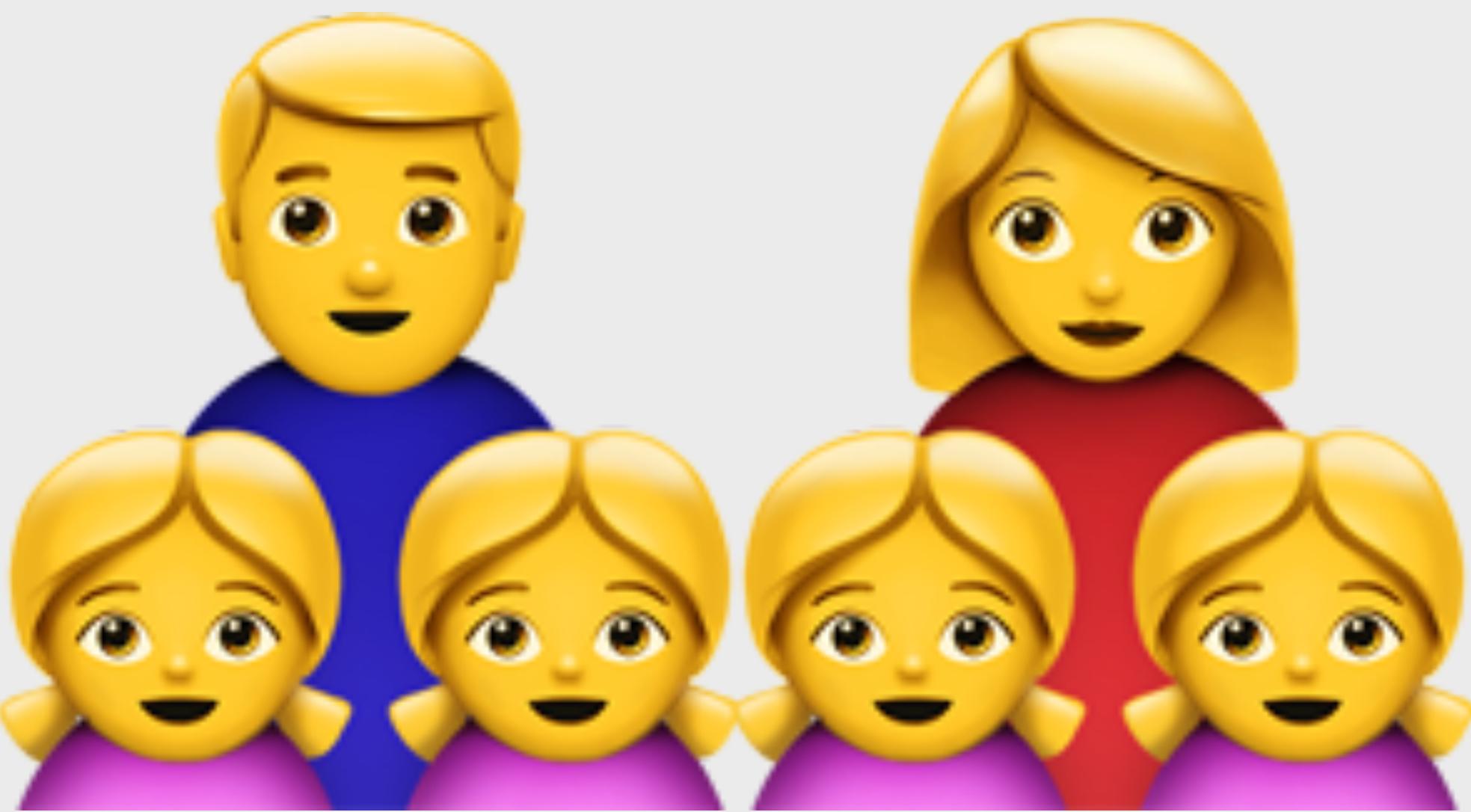
Linux/Unix Accessibility Toolkit
IAccessible2

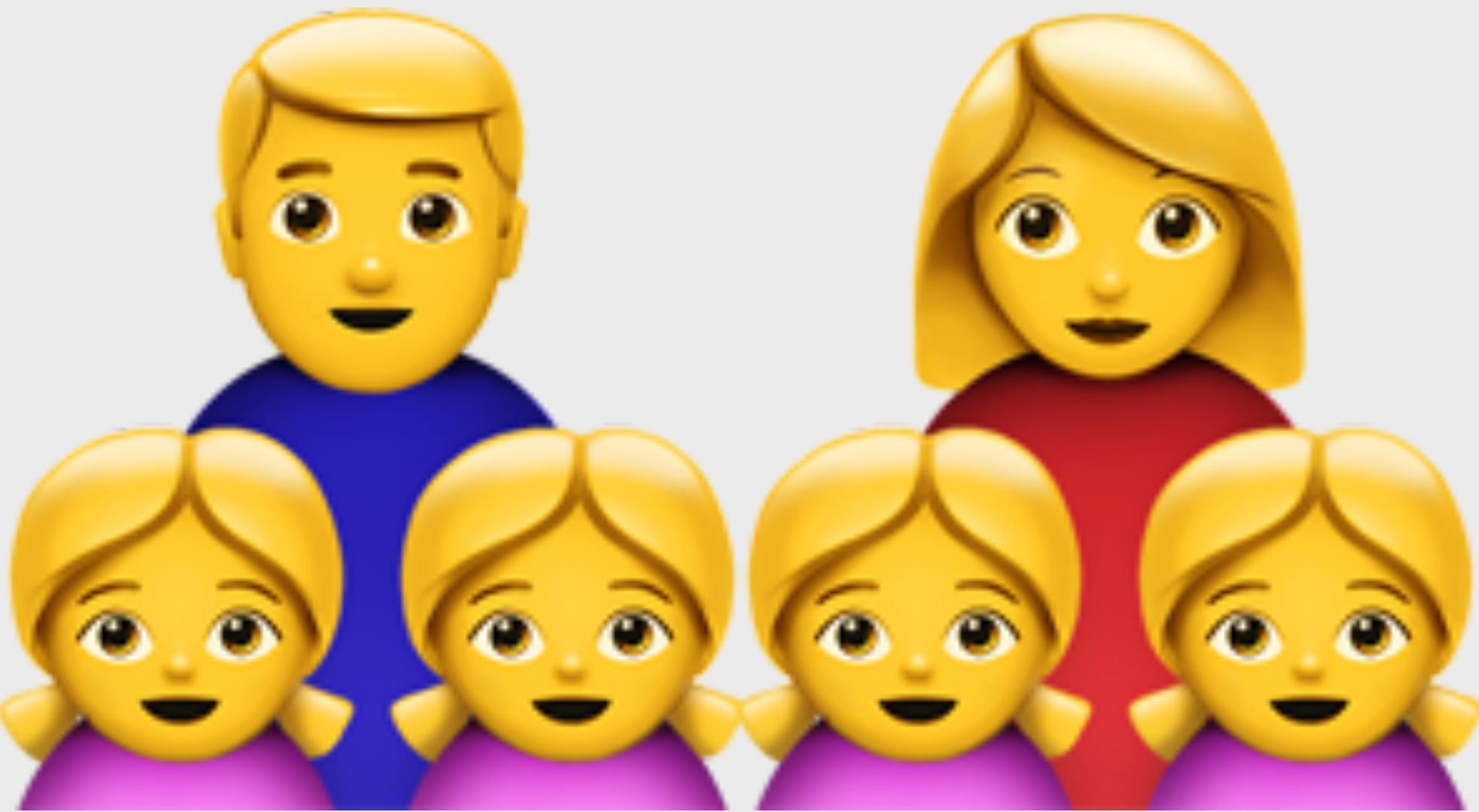
alter



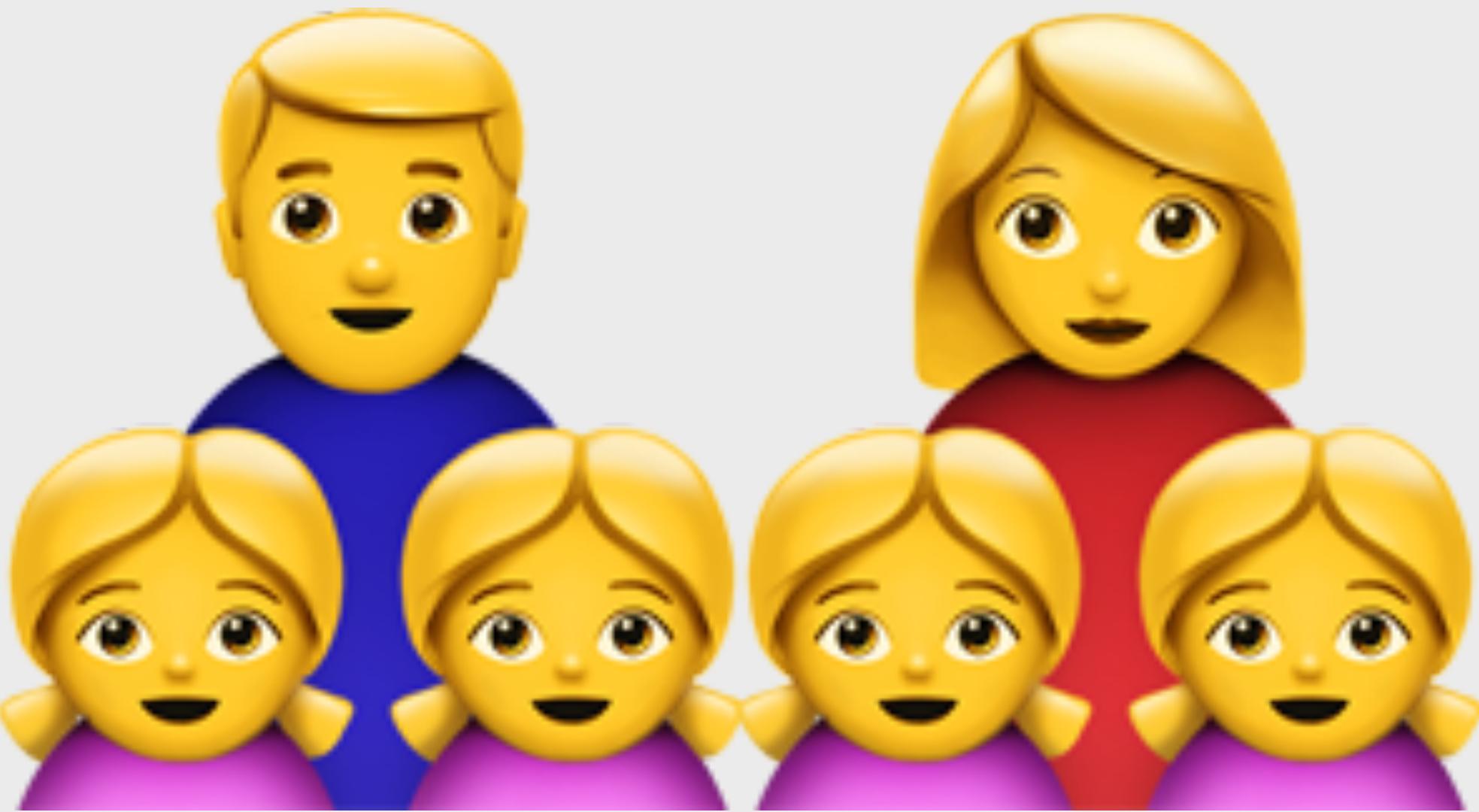


Better names

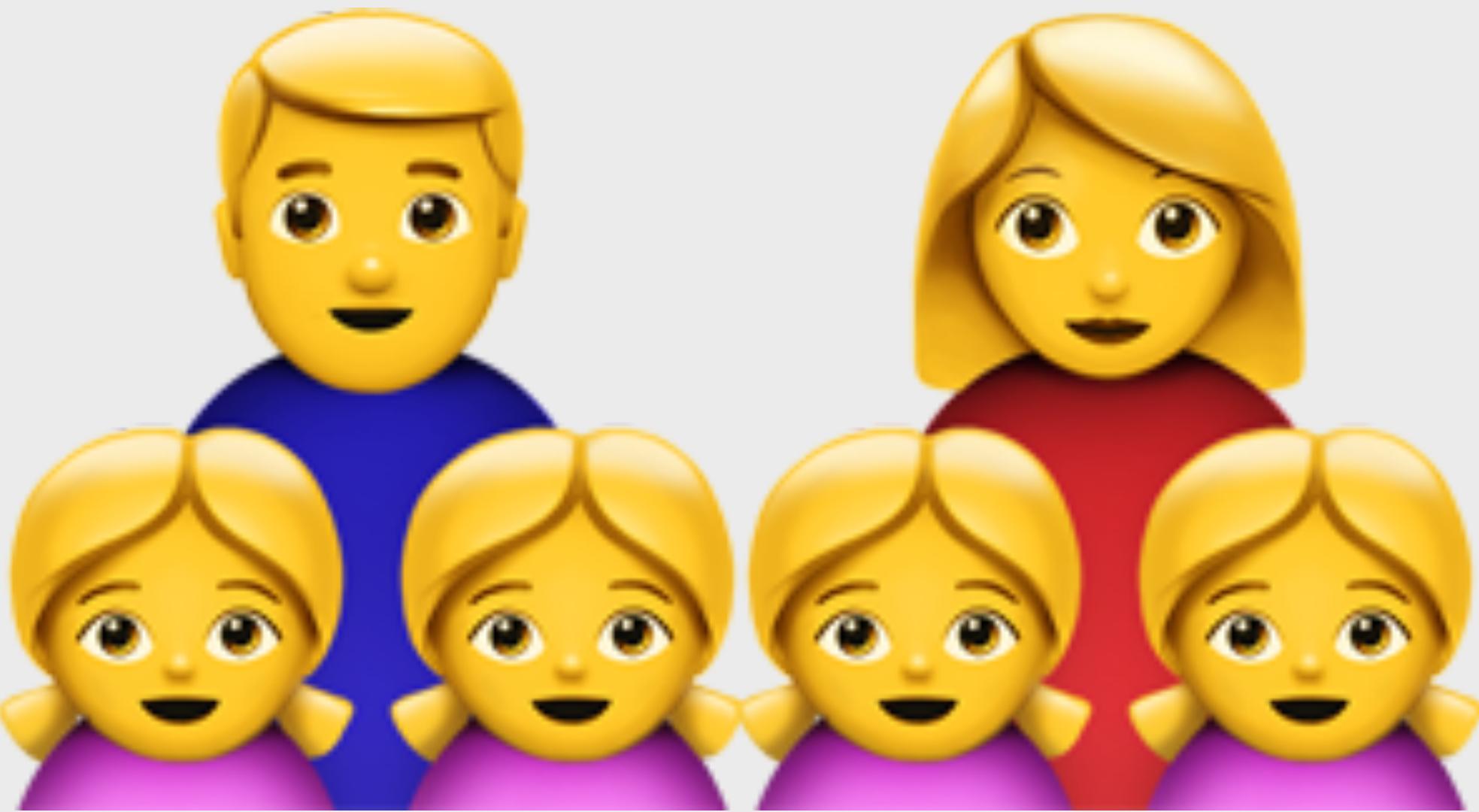




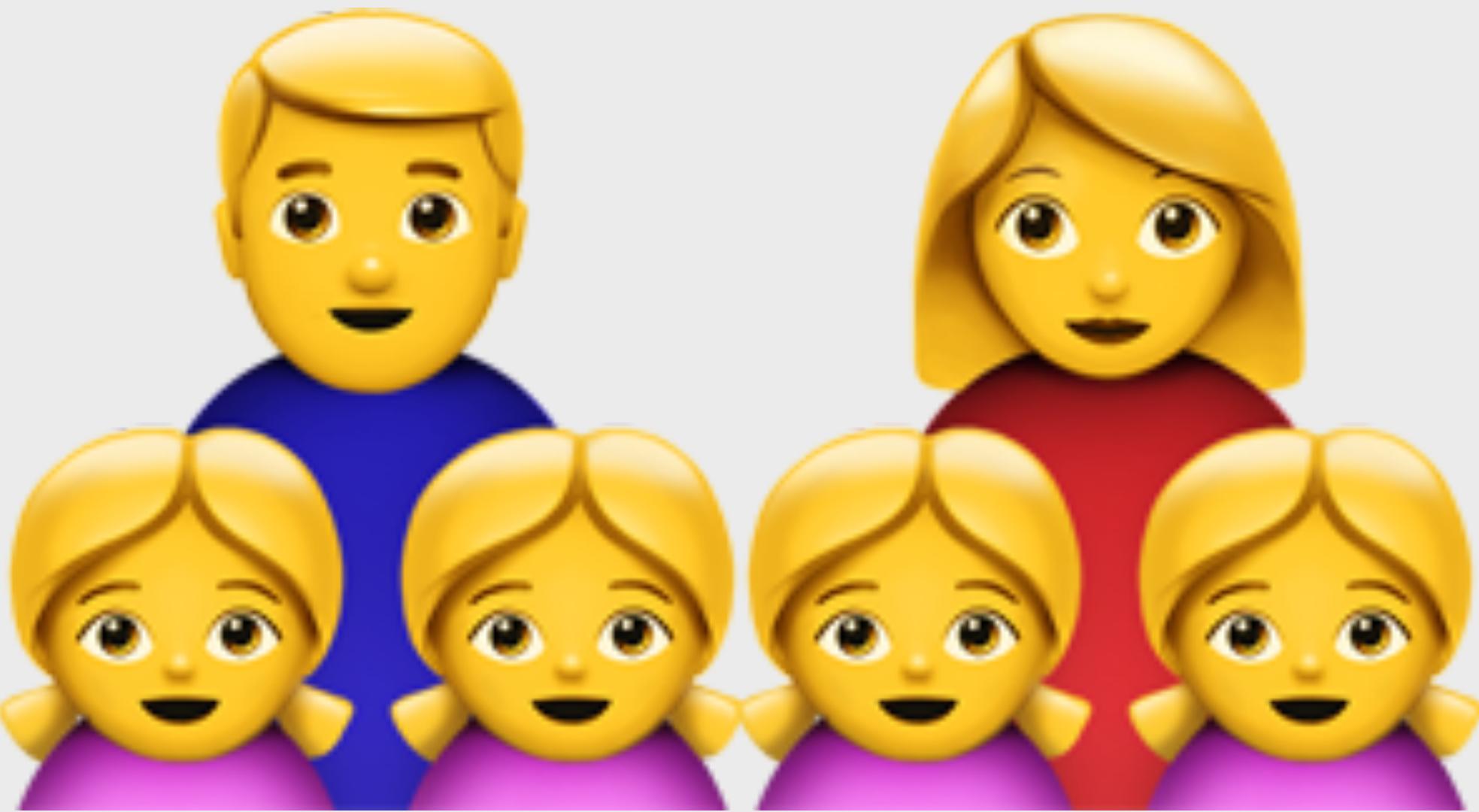
Alice



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

`<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!)

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

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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?

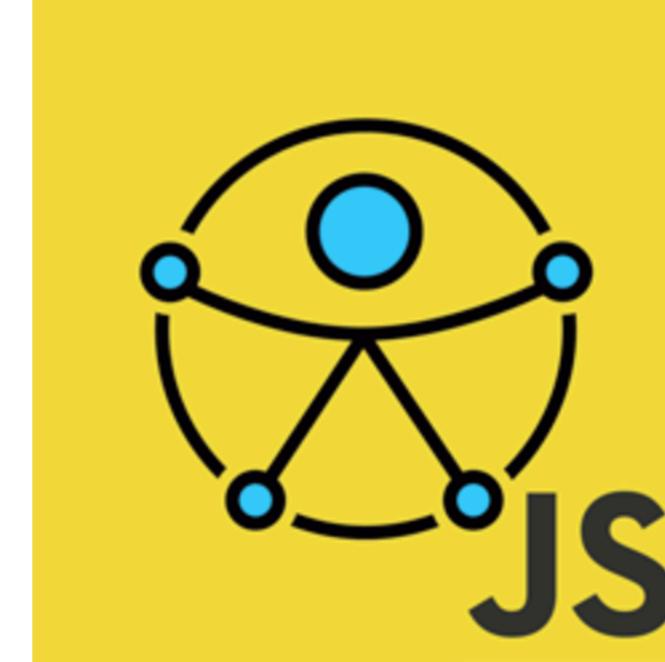
ally.js is a JavaScript library simplifying certain accessibility features, functions and behaviors. However, simply loading ally.js will not automagically make a web application accessible. The library provides certain standard functions the "web platform" should've provided itself, so JavaScript applications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

← and → when focus
is on a tab

`role = tablist`

`role = tab`

`role = tabpanel`

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?

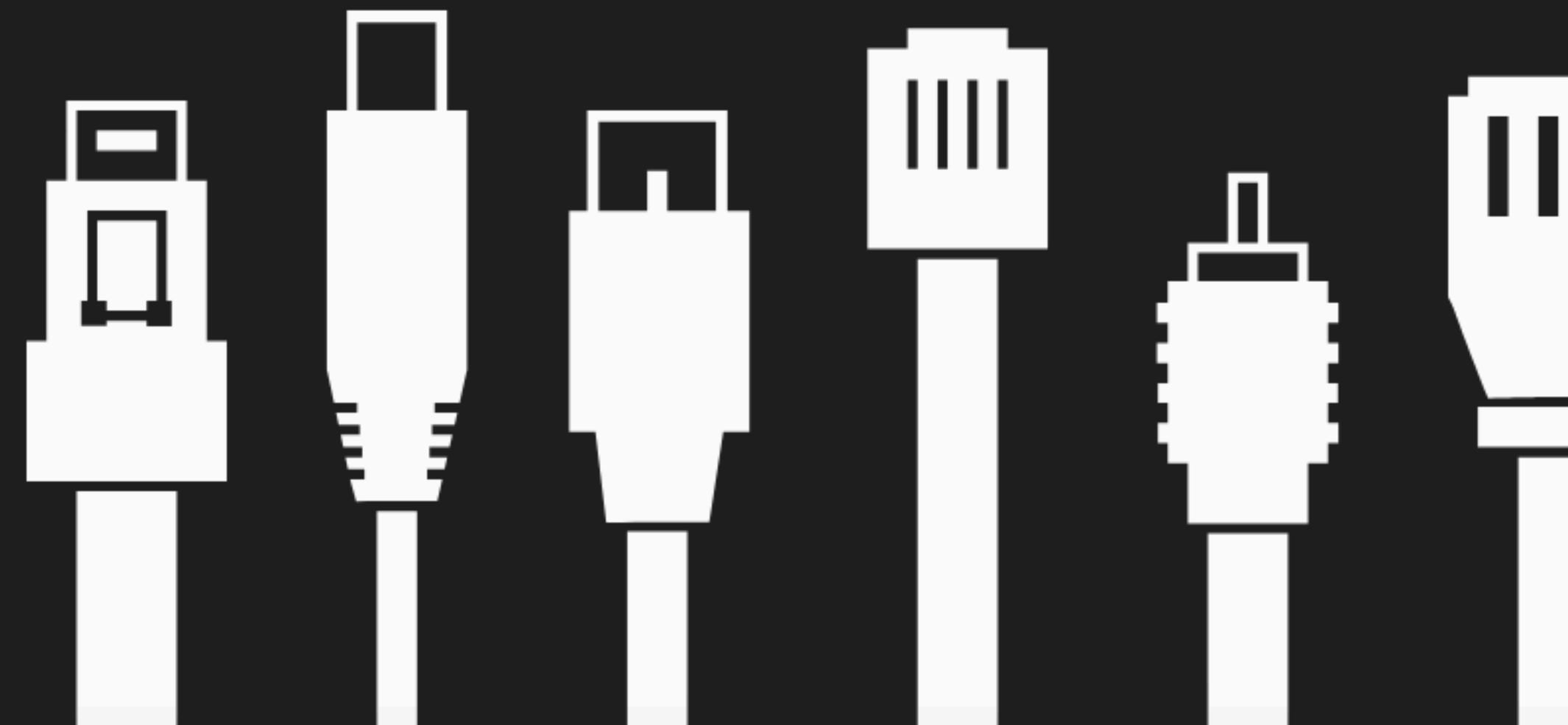
Newsletter sign up

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

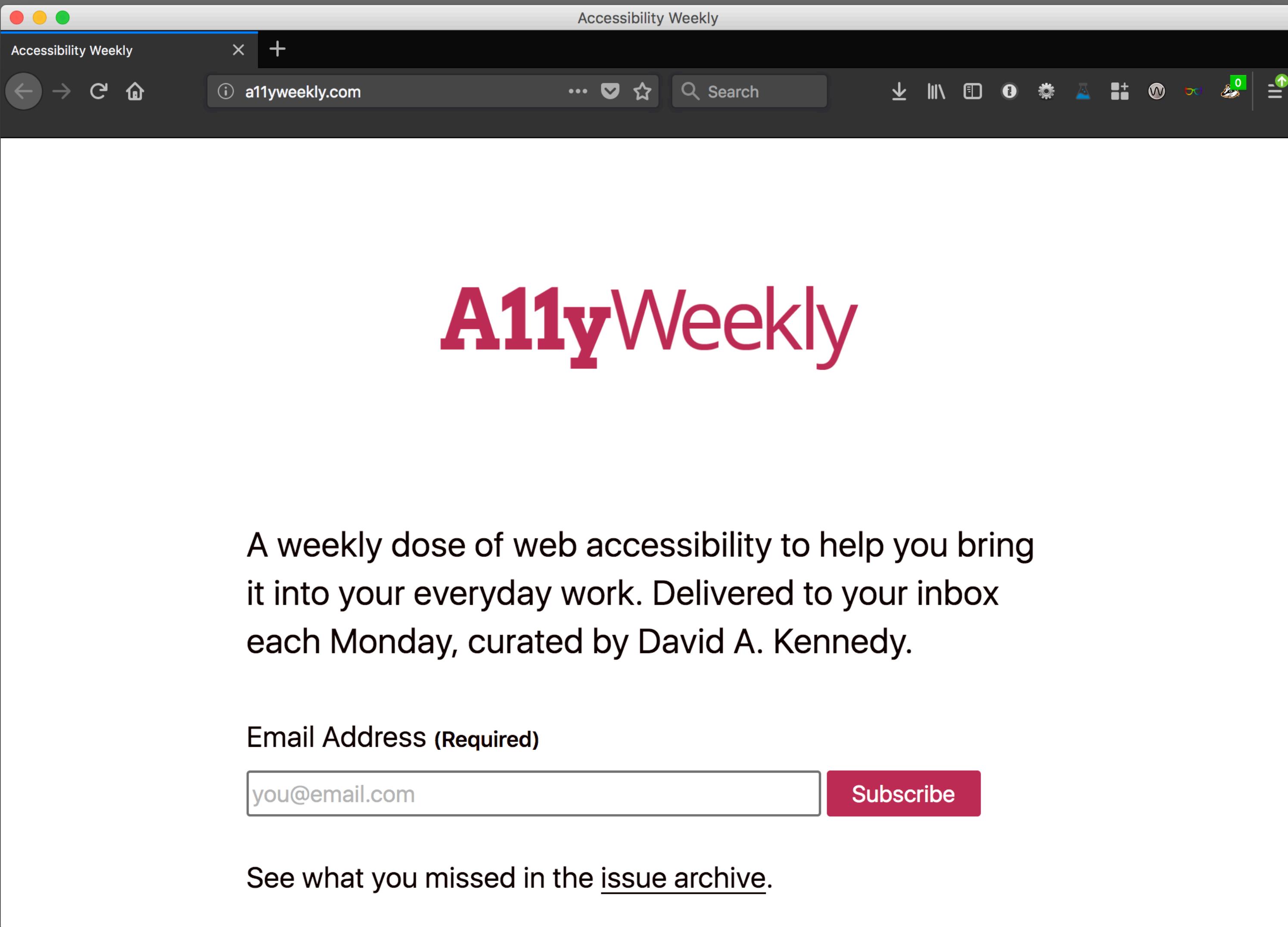
Some resources

Inclusive Components

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



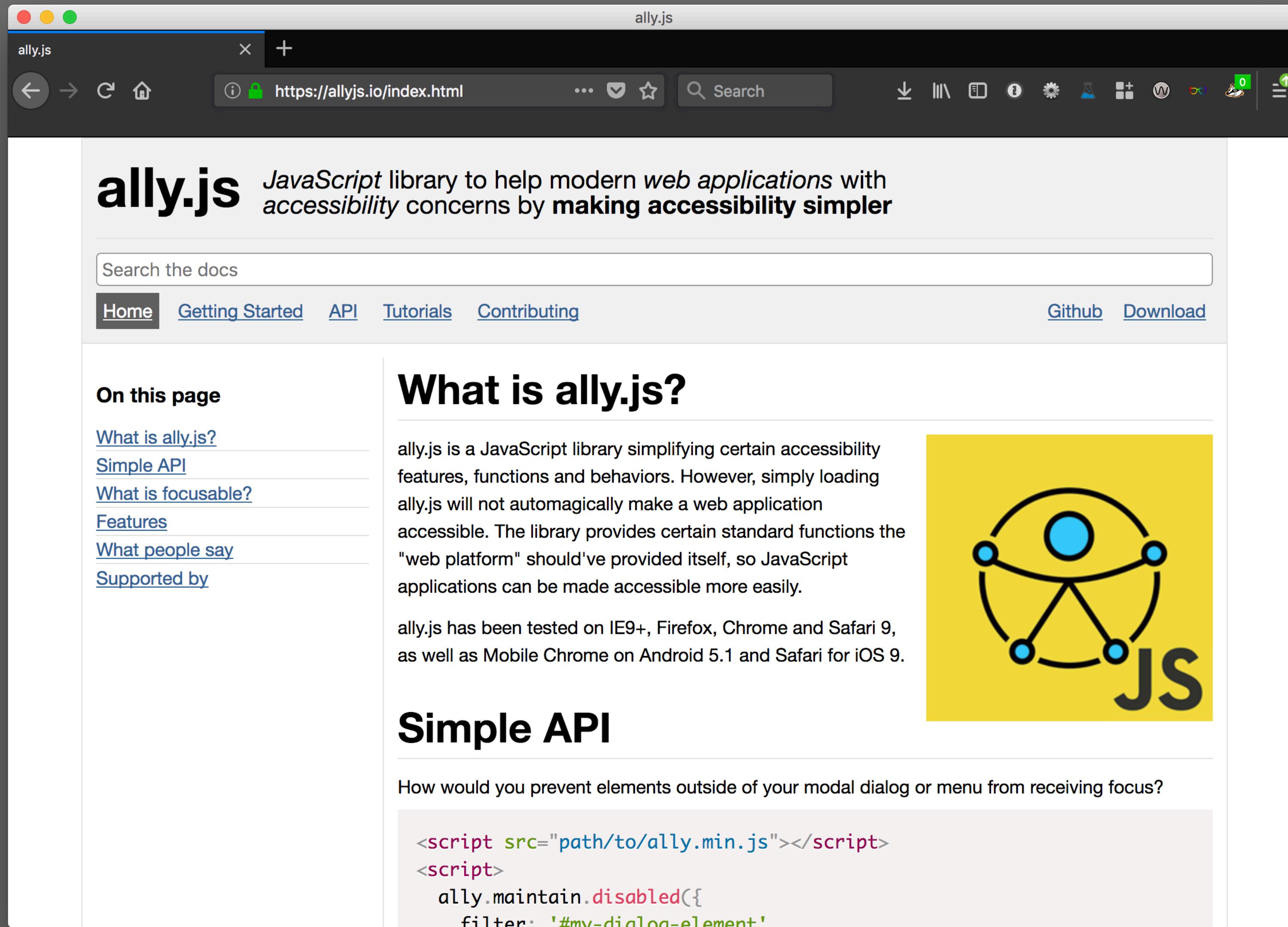
Inclusive Components
[\(inclusive-components.design\)](http://inclusive-components.design)



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 "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](#)

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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 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 large "aXe Playground" heading. Below it is a section for "Experiment with aXe" containing a text input field with sample HTML code: ``. There are "ANALYZE HTML" and "CLEAR FIELD" buttons next to the input. A "SELECT AN EXAMPLE" button is also present. The page includes a sidebar with links to "Playground", "Integrations", "Documentation", "About", and "Community". At the bottom, there's a "aXe Results" section with a note about violations and a "CHANGE AXE OPTIONS" button.

aXe Playground

Experiment with aXe. Put in your HTML, and analyze it with axe, or use one of the code examples. Change options, and find out exactly what individual rules in aXe-core do.

SELECT AN EXAMPLE

Edit the HTML code:

```

```

ANALYZE HTML CLEAR FIELD

aXe Results

Violations as they are returned by axe-core. For a detailed description of the format, see the [API documentation](#).

CHANGE AXE OPTIONS

Click "Analyze HTML" to see the results.

WebAIM: Web Accessibility In Mind

WebAIM: Web Accessibility In Mind X +

https://webaim.org

Search

Accessibility

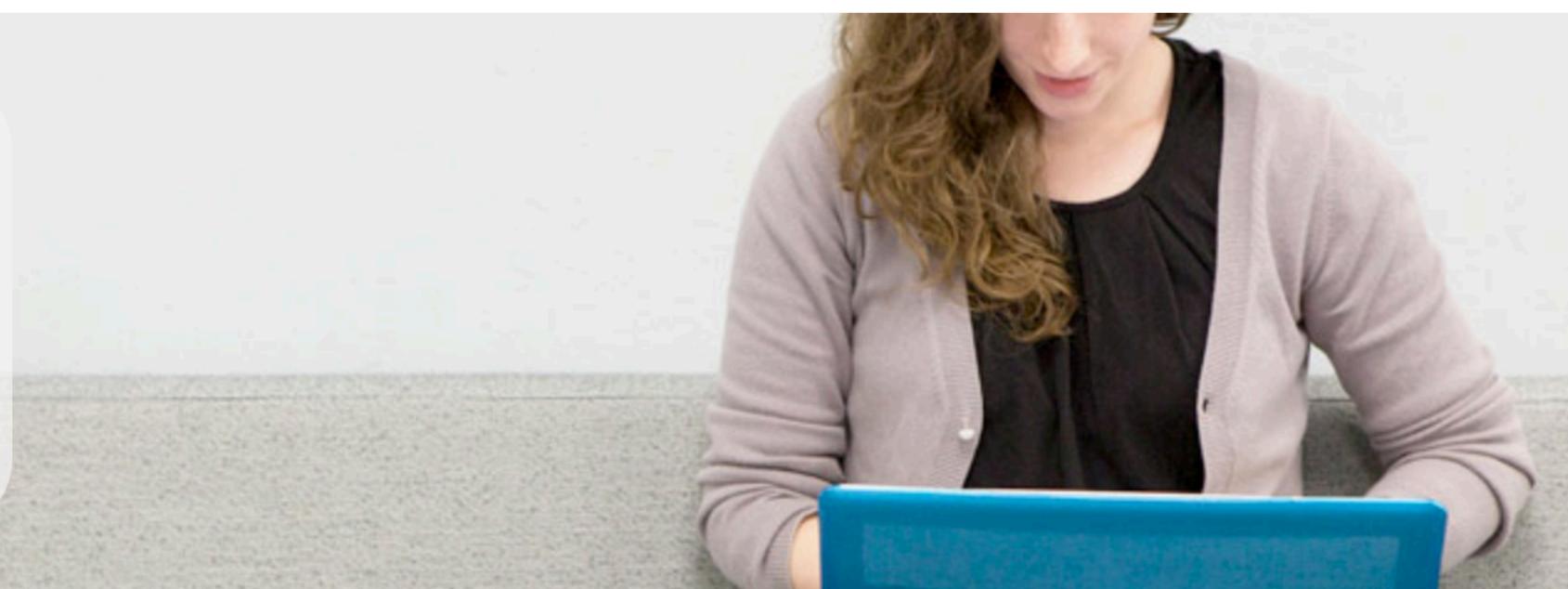
WebAIM web accessibility in mind

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>)

THANKS!

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