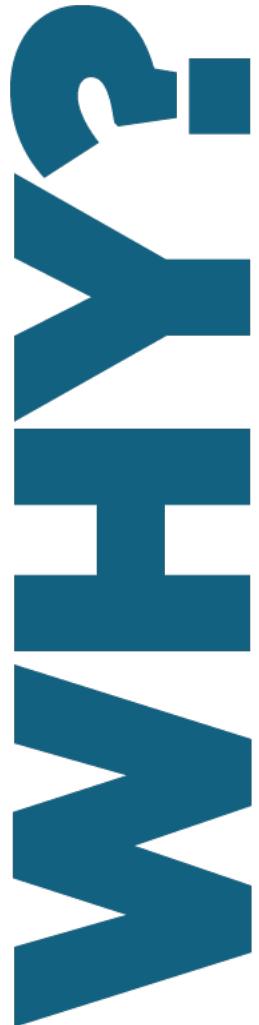


**THINGS I LEARNED
ON ACCESSIBILITY
BUILDING A
FLUENT DESIGN
FRAMEWORK FOR
EVERYONE**

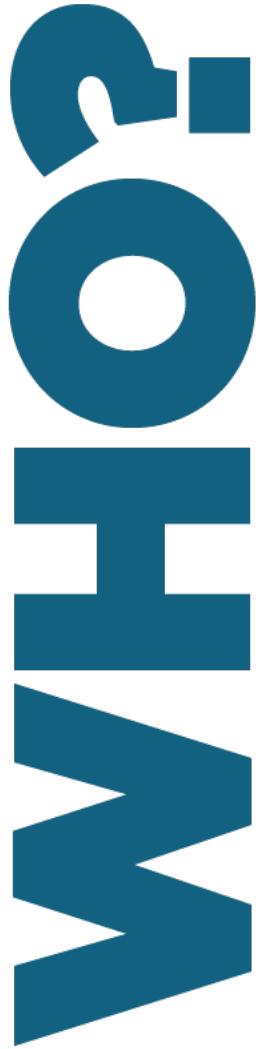
ACCESSIBILITY

FLUENT DESIGN

EVERYONE

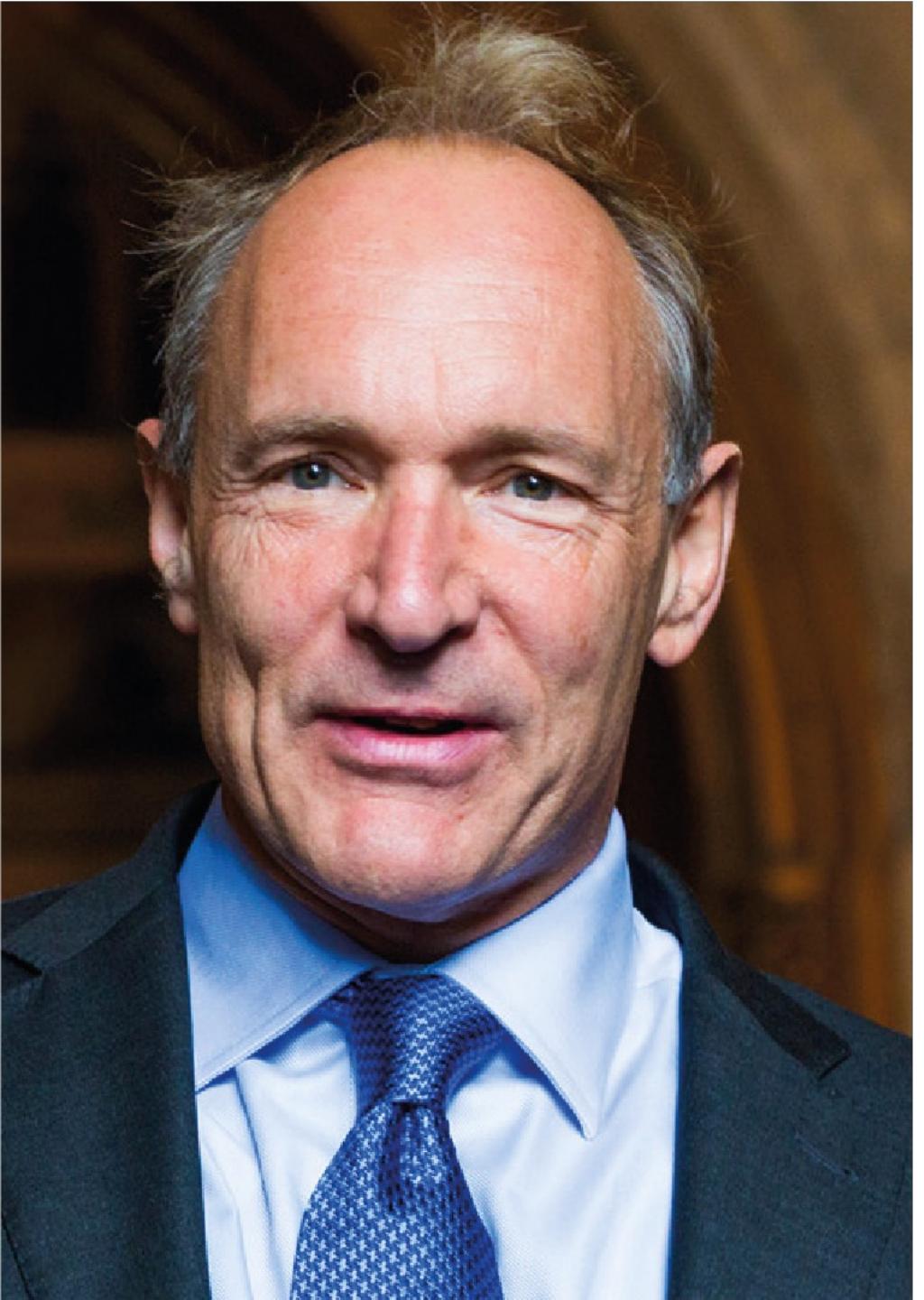


“Accessibility is essential for developers and organizations that want to create high-quality websites and web tools, and not exclude people from using their products and services.”



“Web accessibility means that websites, tools, and technologies are designed and developed so that people with disabilities can use, perceive, understand, navigate, and interact with the Web contribute to the Web.”

**INCLUSION
FOR
EVERYONE**



**“THE POWER OF THE WEB
IS IN ITS UNIVERSALITY.
ACCESS BY
EVERYONE
REGARDLESS
OF DISABILITY
IS AN ESSENTIAL ASPECT.”**

Tim Berners-Lee

WHAT ARE THESE DISABILITIES?



AUDITORY



PHYSICAL



COGNITIVE



SPEECH



NEUROLOGIC



VISUAL

TEMPORARY OR PERMANENT

people using mobile phones, smart watches, smart TVs, and other devices with small screens, different input modes, etc.

older people with changing abilities due to ageing

people with “temporary disabilities” such as a broken arm or lost glasses

people with “situational limitations” such as in bright sun-

light or in an environment where they cannot listen to audio

people using a slow Internet connection, or who have limited or expensive bandwidth

How to learn **ACCESSIBILITY**

A  11  Y

QnP¹ WITH FLUENT DESIGN AND UI

Accessibility?

How hard could it be?

What components are documented?

React Only

Static and less flexible

Always outdated nothing new

¹ Questions and Problems

PROJECTS



H2O

FLUENT AND PERFORMANCE

**CHECK
IT OUT**



A11Y

NO ONE SIZE - FITS ALL SOLUTION

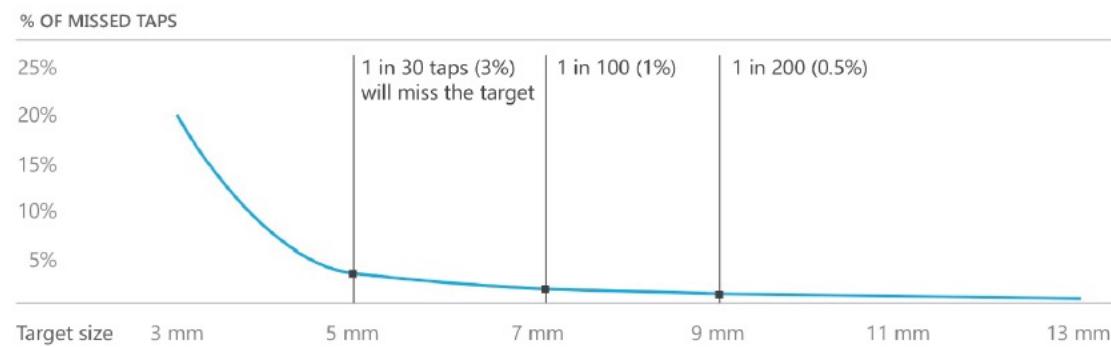
DEPENDANT ON SEVERAL COMPONENTS

WORKING TOGETHER

WEB TECHNOLOGIES, WEB BROWSERS AND

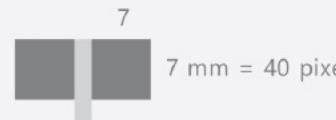
OTHER "USER AGENTS", AUTHORIZING TOOLS, AND

USABILITY CONSTRAINTS



7x7 mm: Recommended minimum size

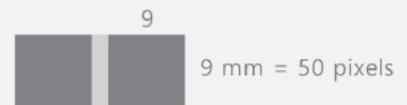
7x7 mm is a good minimum size if touching the wrong target can be corrected in one or two gestures or within five seconds. Padding between targets is just as important as target size.



2mm padding (10 pixels) between targets

WHEN ACCURACY MATTERS

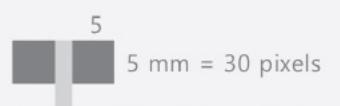
Close, delete, and other actions with severe consequences can't afford accidental taps. Use 9x9 mm targets if touching the wrong target requires more than two gestures, five seconds, or a major context change to correct.



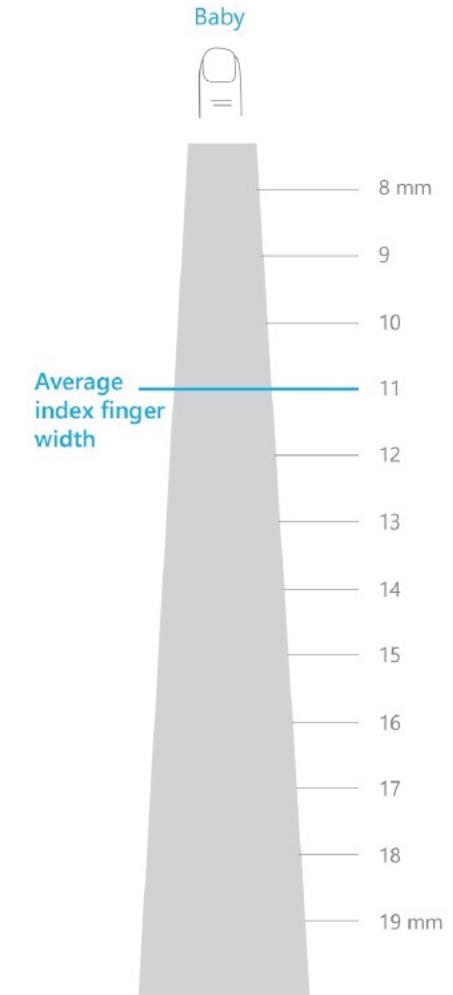
2mm padding (10 pixels) between targets

WHEN IT JUST WON'T FIT

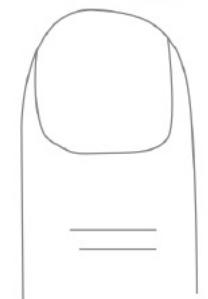
If you find yourself cramming things to fit, it's okay to use 5x5 mm targets as long as touching the wrong target can be corrected with one gesture. Using 2 mm of padding between targets is extremely important in this case.



2mm padding (10 pixels) between targets



Basketball player



WEB ACCESSIBILITY INITIATIVE

[HTTPS://WWW.W3.ORG/WAI/](https://www.w3.org/WAI/)

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

WEB CONTENT ACCESSIBILITY GUIDELINES

[HTTPS://WWW.W3.ORG/WAI/WCAG21/QUICKREF/](https://www.w3.org/WAI/WCAG21/quickref/)

WCAG

Define a set of criteria to make web sites accessible for everyone.

Different Levels

A.....Good

AA..... Better

AAA....Best (but pretty hard)

How to Meet WCAG (Quick Reference)

A customizable quick reference to Web Content Accessibility Guidelines (WCAG) 2 requirements (success criteria) and techniques.

[Show About & How to Use](#)

[Contents](#)

[Filter](#)

[Hide](#)

Selected Filters: **WCAG 2.1:** all success criteria and all techniques.

[Clear filters](#)

[+ Expand all sections](#)

[Share](#)

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

1.4.3 Contrast (Minimum)

1.4.4 Resize text

1.4.5 Images of Text

1.4.6 Contrast (Enhanced)

Principle 1 – Perceivable

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

Guideline 1.1 – Text Alternatives

Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language.

1.1.1 Non-text Content — Level A

All non-text content that is presented to the user has a text alternative that serves the equivalent purpose, except for the situations listed below.

[Show full description](#)

[Understanding 1.1.1](#)

[Show techniques and failures for 1.1.1](#)

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

Guideline 1.2 – Time-based Media

Provide alternatives for time-based media.

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

For prerecorded audio-only and prerecorded video-only media, the following are true, except when the audio or video is a media alternative for text and is clearly labeled as such:

[Show full description](#)

[Understanding 1.2.1](#)

[Show techniques and failures for 1.2.1](#)

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

1.2.2 Captions (Prerecorded) — Level A

Captions are provided for all prerecorded audio content in synchronized media, except when the media is a media alternative for text and is clearly labeled as such.

[Understanding 1.2.2](#)

WCAG I SVERIGE

Vägledning för
webbutveckling

<https://webbriktlinjer.se/>

Follows WCAG Guidelines and provide a
great service for developers

ACCESSIBLE RICH INTERNET APPLICATIONS

[HTTPS://WWW.W3.ORG/WAI/STANDARDS-GUIDELINES/ARIA/](https://www.w3.org/WAI/standards-guidelines/aria/)

FINALLY CODE

**A
R
I
A** Describe HTML Element in more detail for assistive technologies.
(i.e. screen readers, magnifiers, text-to-speech, etc.):

A Defines in your HTML



Roles
Relations
States
Properties

**FIRST RULE OF ARIA
DO NOT USE ARIA**



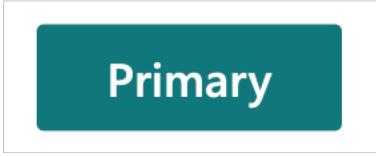
USING ARIA - <https://www.w3.org/TR/using-aria/>

SPOT THE DIFFERENCE

Primary

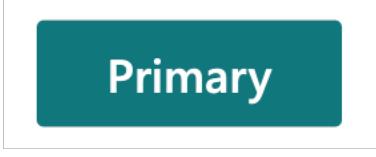
Primary

SPOT THE DIFFERENCE



Primary

```
<a href="#" class="hoo-button-primary">  
  <div class="hoo-button-label">Primary</div>  
</a>
```



Primary

```
<button class="hoo-button-primary">  
  <span class="hoo-button-label">Primary</span>  
</button>
```

SPOT THE DIFFERENCE

Primary

```
<a href="#" class="hoo-button-primary" role="button">  
  <div class="hoo-button-label">Primary</div>  
</a>
```

Primary

```
<button class="hoo-button-primary">  
  <span class="hoo-button-label">Primary</span>  
</button>
```

Use always the correct HTML element

WAI-ARIA ROLES

alert, application, article, banner,
button, cell, checkbox, comment, complementary, contentinfo, dialog, document, feed, figure, form, grid, gridcell, heading, img, list, listbox, listitem, main, mark, navigation, region, rowgroup, search, suggestion, switch, tab, table,tabpanel, textbox, timer

WAI-ARIA ROLES

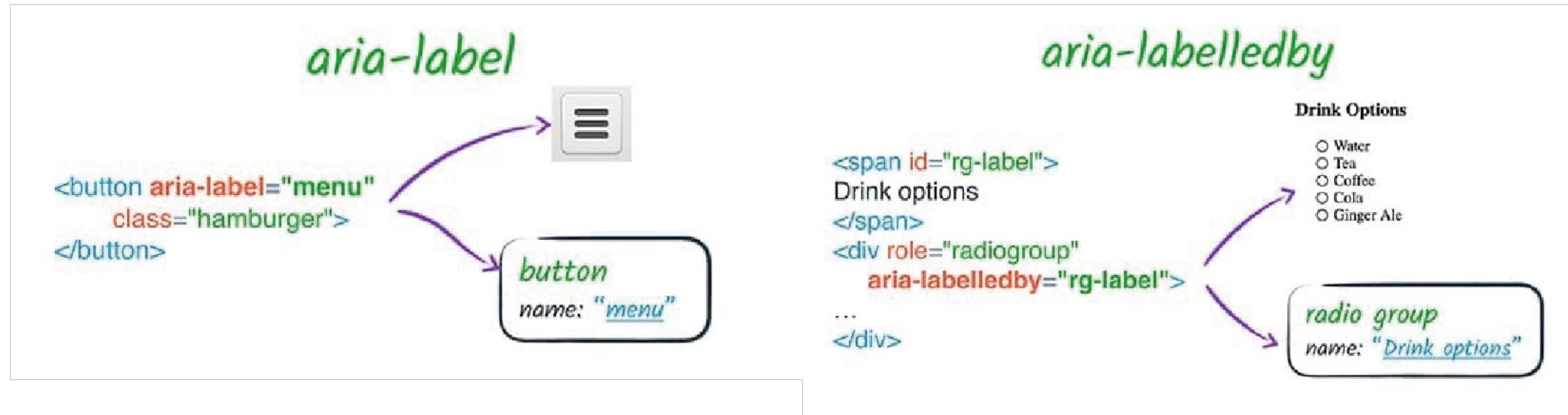
```
<div role="article">
  <div role="heading">First Header</div>
  <div>Lorem ipsum, dolor sit amet consectetur adipisicing elit. Rerum, soluta?</div>
  <div>Aut quis doloribus illo suscipit distinctio explicabo labore numquam debitis unde eveniet!</div>
  ... controls to interact with the article, share it, etc. ...
</div>
<div role="article"> ... </div>
```

WAI-ARIA ROLES

```
<article>
  <h2>First Header</h2>
  <p>Lorem ipsum, dolor sit amet consectetur adipisicing elit. Rerum, soluta?</p>
  <p>Aut quis doloribus illo suscipit distinctio explicabo labore numquam debitis unde eveniet!</p>
  ... controls to interact with the article, share it, etc. ...
</article>
<article> ... </article>
```

No ARIA roles required

WAI-ARIA RELATIONS



<https://web.dev/aria-labels-and-relationships/>

WAI-ARIA RELATIONS

aria-describedby

```
<label for="pw">Password:</label>
<input type="password" id="pw"
       aria-describedby="pw-help">
<div id="pw-help">
  Password must be at least 12 characters
</div>
```

Password:

Password must be at least 12 characters

<https://web.dev/aria-labels-and-relationships/>

WAI-ARIA STATE

Widget attributes

- aria-autocomplete
- aria-checked
- aria-current
- aria-disabled
- aria-errormessage
- aria-expanded
- aria-haspopup
- aria-hidden
- [aria-invalid](#)
- [aria-label](#)
- aria-level
- aria-modal
- aria-multiline
- aria-multiselectable
- [aria-orientation](#)
- aria-placeholder
- aria-pressed
- aria-readonly
- [aria-required](#)
- aria-selected
- aria-sort
- [aria-valuemax](#)
- [aria-valuemin](#)
- [aria-valuenow](#)
- [aria-valuetext](#)

WAI-ARIA STATE EXAMPLES

```
<label for="firstName">First name:</label>
<input id="firstName" type="text" required="true" aria-required="true" />
<br />
<label for="lastName">Last name:</label>
<input id="lastName" type="text" required="true" aria-required="true" />
<br />
<label for="streetAddress">Street address:</label>
<input id="streetAddress" type="text" />
```

WAI-ARIA STATE EXAMPLES

```
<nav aria-label="Main Navigation" role="navigation">
  <ul>
    <li><a href="...">Home</a></li>
    <li><a href="...">Shop</a></li>
    <li class="has-submenu">
      <a aria-expanded="false" aria-haspopup="true" href="...">SpaceBears</a>
      <ul>
        <li><a href="...">SpaceBear 6</a></li>
        <li><a href="...">SpaceBear 6 Plus</a></li>
      </ul>
    </li>
    <li><a href="...">MarsCars</a></li>
    <li><a href="...">Contact</a></li>
  </ul>
</nav>
```

WAI-ARIA TAKEAWAY

1. Use the correct HTML elements
2. Do not change semantic of HTML
 - <a>** link is not a **<button>**
 - <i>** do not stand for icon
3. Know and make the relations between elements

WAI-ARIA TAKEAWAY

- 3. Use additional descriptions and states handling**
4. additional JS code is required
5. all interactive elements need to be <keyboard> accessible.

WAI-ARIA TAKEAWAY

6. Decorative element

role="presentation"

or aria-hidden="true"

**7. Give all interactive elements an
accessible name**

aria-label="search" or use <label>

```
<div>
  <div>
    <div>
      <div>
        <div>
          <div>
            <div>
              <div>
                <div>
                  <div>My inner design of my web part</div>
                </div>
              </div>
            </div>
          </div>
        </div>
      </div>
    </div>
  </div>
</div>
```

<https://www.html5accessibility.com>

HTML5 Accessibility

Get the current accessibility support status of HTML5 features across major browsers. **Editor's draft**, August 2020



- [Browser Results](#)
- [Overview](#)
- [Feature Support](#)
- [How to Test](#)
- [Notes & Further Resources](#)



98.5%

Chrome 84
on Windows 10



100%

Edge 80
on Windows 10



94%

Firefox 80
on Windows 10



56%

Internet Explorer 11
on Windows 10



97%

Safari 13
on Mac OS



**SOFT
FACTS**



Death to Icon Fonts

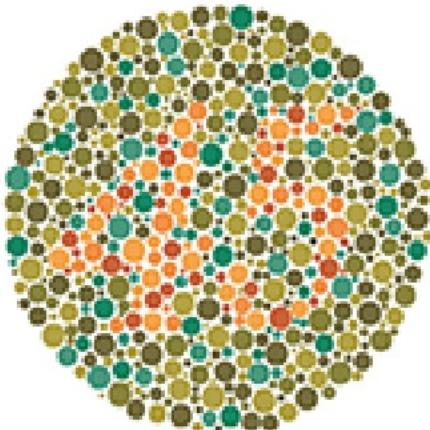
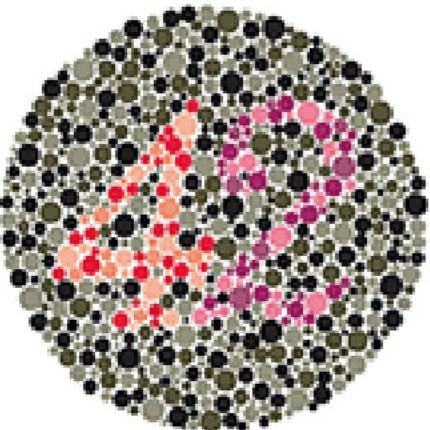
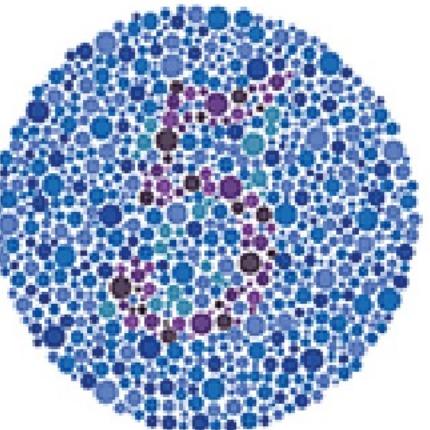
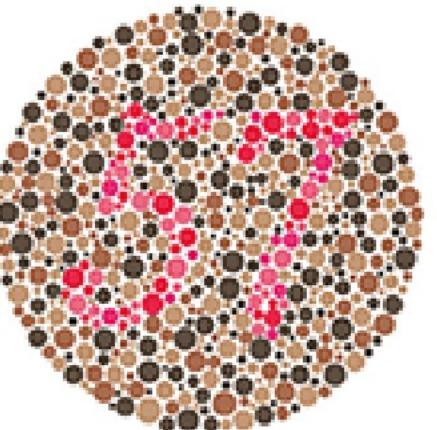
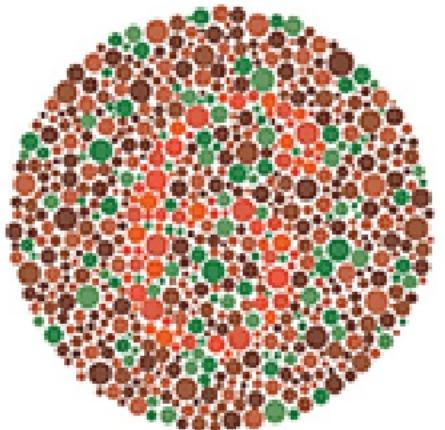
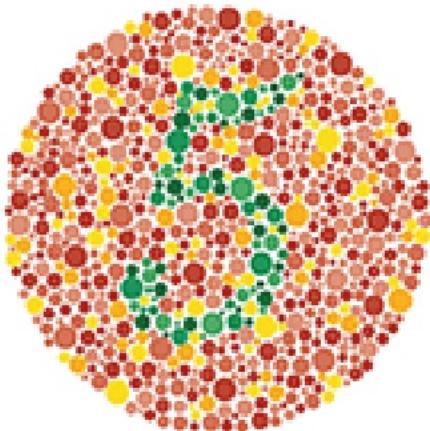
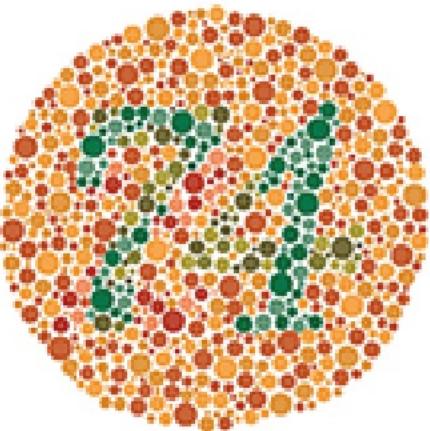
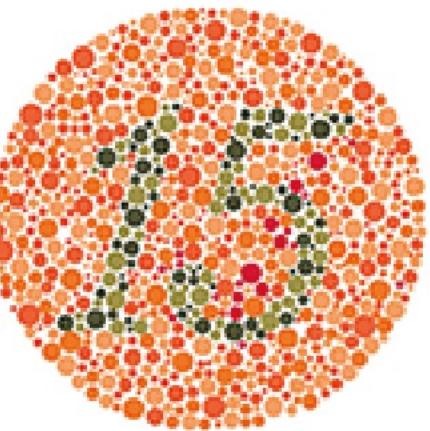
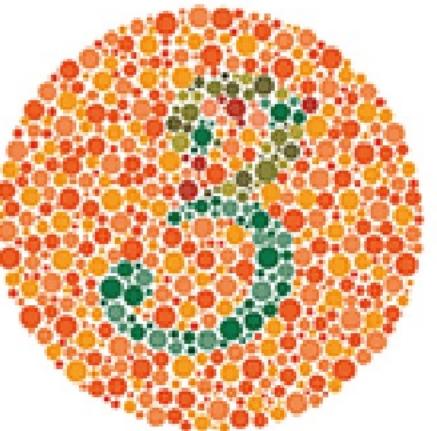
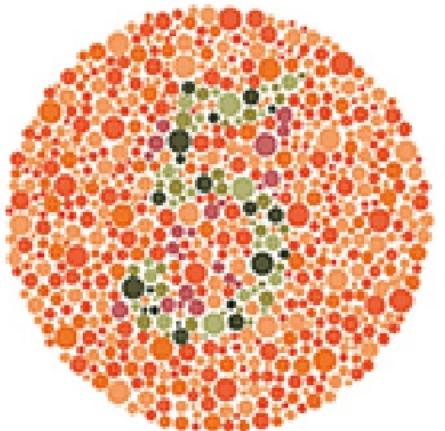
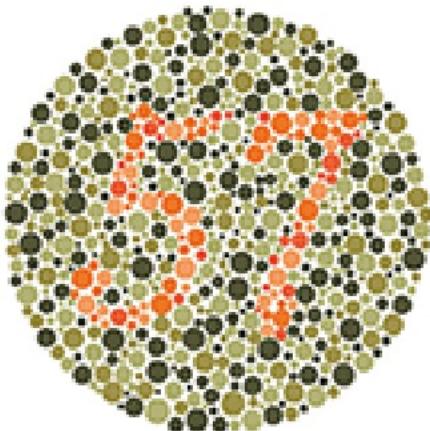
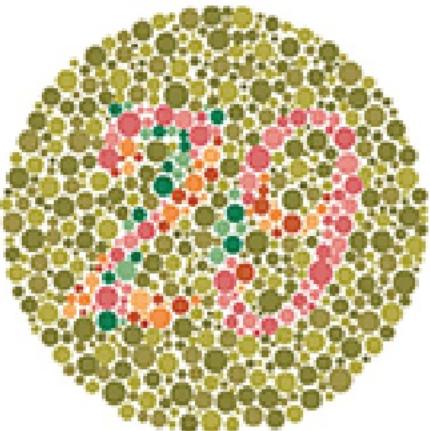
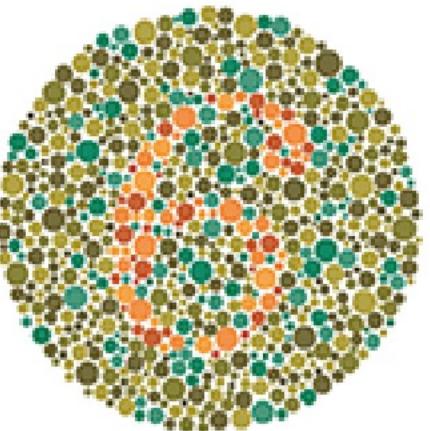
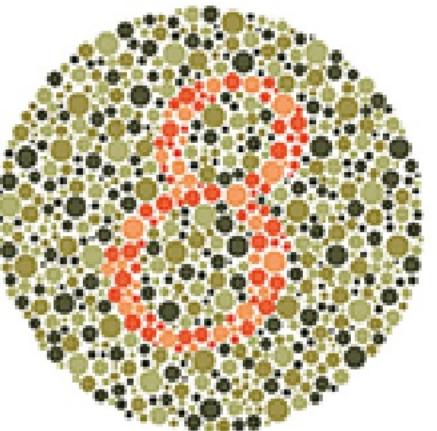
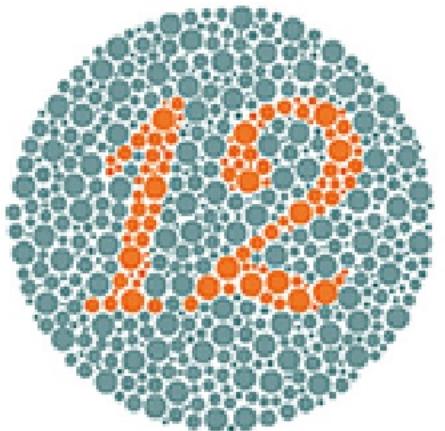
@ninjanails

LWS, June 2015

<https://www.flickr.com/photos/minifig/3186925111/>

**SEREN
DAVIES**

<https://youtu.be/9xXBYcWgCHA>



COLOR BLINDNESS

cannot see particular colors
or distinguish certain colors from others

MAN

8.0%

WOMEN

0.5%



D

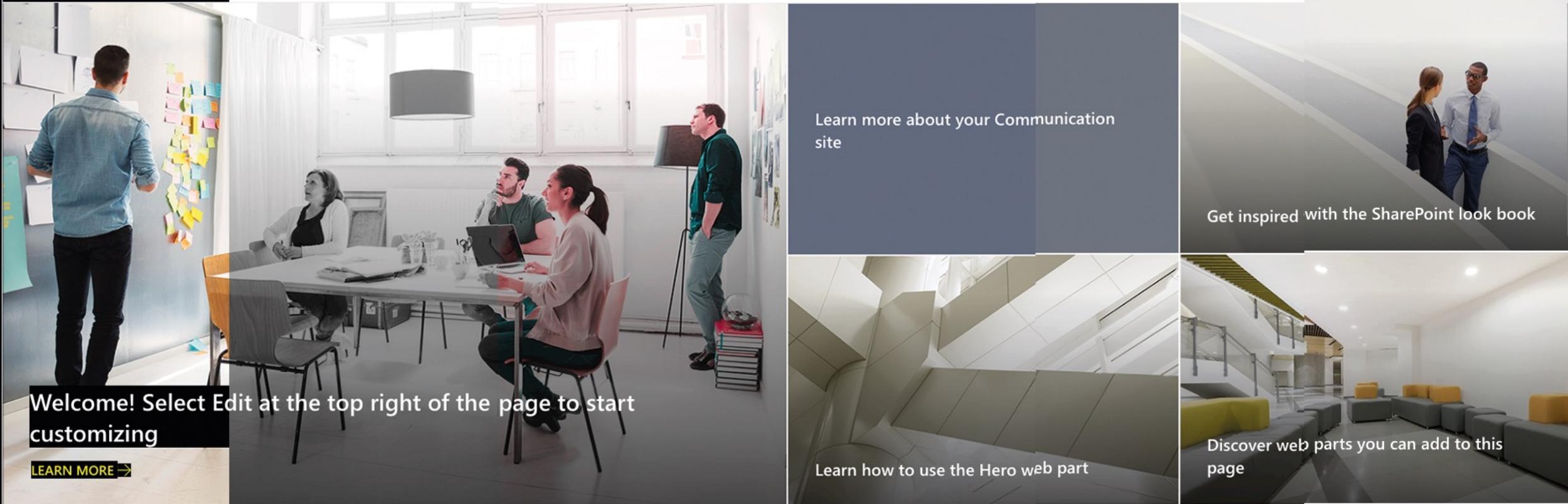
DEMO

Home

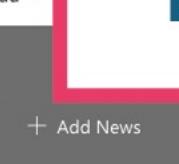
Documents Pages Site contents Edit

+ New Page details Analytics

Published Edit



News

[+ Add](#) 

HOW TO TEST FOR COLOR BLINDNESS?

[+ Add News](#)

now

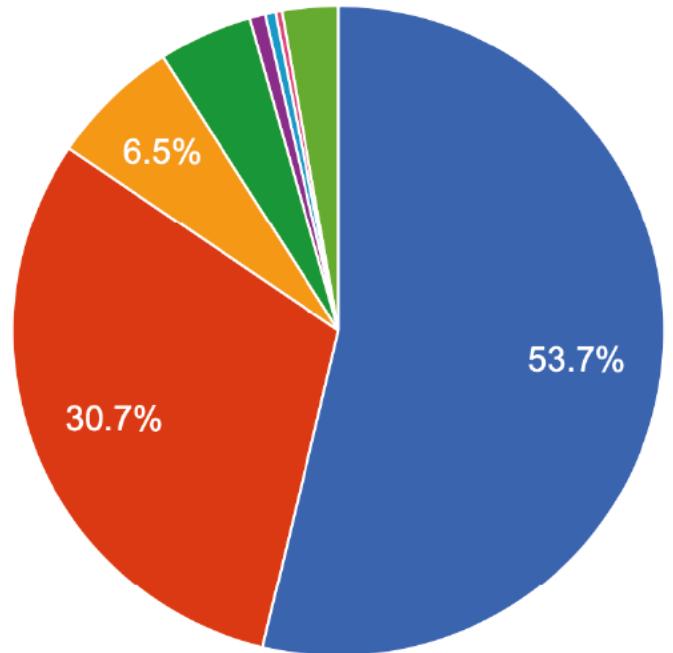
Author name A few seconds ago

Title of news post

Preview that shows the first few lines of the article

Title of news post

Preview that shows the first few lines of the article



- JAWS
- NVDA
- VoiceOver
- ZoomText/Fusion
- System Access or SA To Go
- Narrator
- ChromeVox
- Other

SCREENREADER

Narrator Windows 10/11
Text-To-Speech MacOS

Which of the following is your primary desktop/laptop screen reader?

Response	# of respondents	% of respondents
JAWS	832	53.7%
NVDA	476	30.7%
VoiceOver	100	6.5%
ZoomText/Fusion	72	4.7%
System Access or System Access to Go	12	0.8%
Narrator	8	0.5%
ChromeVox	5	0.3%
Other	43	2.8%

<https://webaim.org/projects/screenreadersurvey9/>

MORE INFORMATION

- [Web Accessibility Initiative](#) – WAI at W3C
 - [International Laws and Policies](#)
- [Web Accessibility](#) – European Commission
- Vägledning för webbutveckling [=Sweden](#)
<https://webbriktlinjer.se/>
- [Understanding accessibility requirements](#) – Gov.UK
- [Accessibility Policy](#) – usa.gov
- [Section508.gov](#) – USA

MORE TESTING

- Integrated solutions in
 - [Microsoft Edge](#)
 - [FireFox](#)
 - [Chrome](#)
- Plugin for Edge and Chrome
 - [Accessibility Insight](#) – by Microsoft
- Automated Accessibility Testing
 - <https://medium.com/@praveenpeiris95/accessibility-testing-using-playwright-694437178ed5>

MORE DEVELOPER

- [HTML5 Accessibility](#) – W3C
- [Web Accessibility Tutorials](#) – W3C
- [MDN Accessibility](#) – MDN
- [Tutorials and Articles](#) on a11y projects
- [Checklist for accessibility](#) on a11y projects
- [Do accessible websites still support IE11](#)



Hope has spent all day
preparing a surprise party
for her son's birthday.

"When we design and build our websites with the outliers in mind, whether it's for performance or even user experience, we build an experience that can be easy for all to access and use—and that's what the web is about, access and information for all."

Stephanie Stimac

Program Manager for Edge Developer Experience

**CHECK
IT OUT**



**STEFAN
*Bauer***

EST. 2015

★ N 8 D ★
WEB DESIGN & DEVELOPMENT

Information
Architect
Vienna / Austria

n8d.at/blog

[@StfBauer](https://twitter.com/StfBauer)

