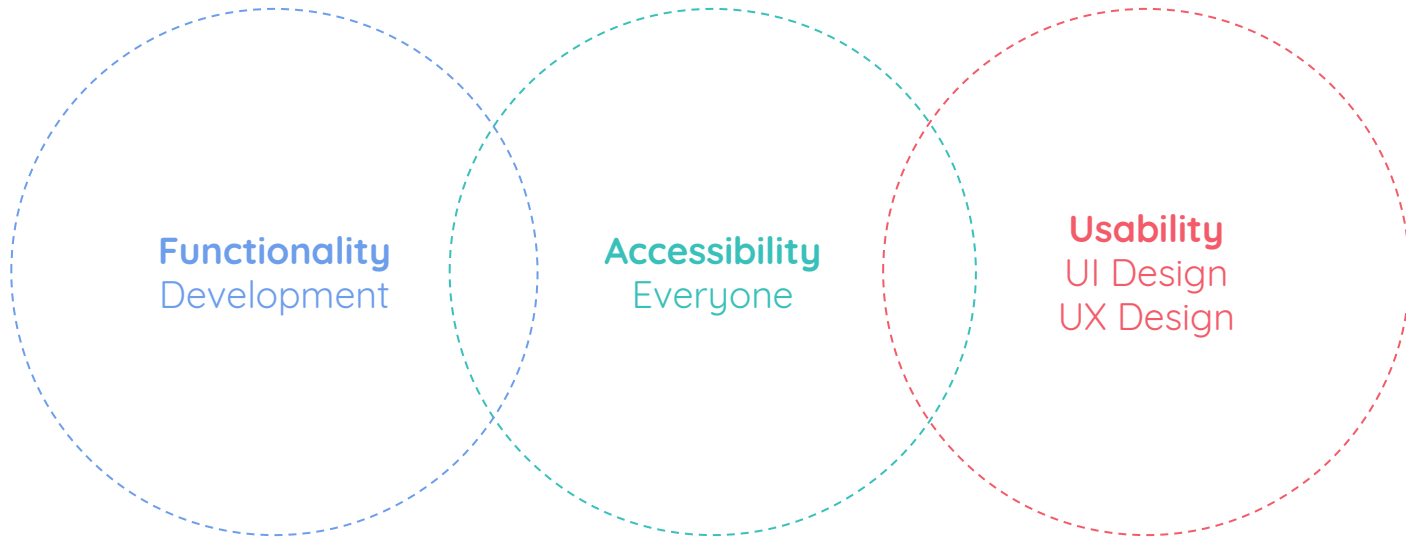


# Web Accessibility

6/8/2017

# Who's involved?



# 4 types of accessibility concerns

1. Visual
2. Hearing
3. Motor
4. Cognitive

# Visual

**Includes:** Color blindness, hard of seeing, blind

**Software:** magnification and text size, screen reading, contrast, color selection, haptic/auditory feedback

**Hardware:** tactile buttons, auto-answer/hang-up, haptic feedback

# Visual

**8.1 million (8.2%)**

Have a vision related impairment

Source: <http://www.interactiveaccessibility.com/accessibility-statistics>

# Hearing

**Includes:** Hard of hearing, deaf

**Software:** haptic feedback, captioning

**Hardware:** compatibility with hearing aids/devices, convert stereo to mono sound, auto-answer/hang-up, haptic feedback

# Hearing

**7.6 Million (3.1%)**

Have a hearing related impairment

Source: <http://www.interactiveaccessibility.com/accessibility-statistics>

# Motor

**Includes:** Limited movement in limbs and muscles

**Software:** button size, touch screen vs. tactile buttons, voice recognition, custom gestures, predictive text/autocorrect

**Hardware:** size of device, response to prosthetics



# Motor

**19.9 Million (8.2%)**

Have a motor related impairment

Source: <http://www.interactiveaccessibility.com/accessibility-statistics>

# Cognitive

**Includes:** inability to keep attention and focus or gets easily distracted

**Software:** limit access to parts of screen/interface

**Hardware:** size of device, response to prosthetics

## Cognitive

**15.2 Million (6.3%)**

Have a cognitive related impairment

Source: <http://www.interactiveaccessibility.com/accessibility-statistics>

## Disability statistics

**56.7 Million (18.7%)**

Of the US population has some form of disability

Source: <http://www.interactiveaccessibility.com/accessibility-statistics>

# Why make things accessible?

Accessibility doesn't just mean making things easier for people with disabilities, it means making all things easier to use for everyone.

“ We can reframe accessibility in terms of what we provide, not what other people lack.” - Anne Gibson (Information Architect)

Source: <https://alistapart.com/article/reframing-accessibility-for-the-web>

WCAG

# What is WCAG?

## Web Content Accessibility Guidelines

3 Levels of conformance

- Level A - minimum
- Level AA - level we are trying to achieve
- Level AAA - highest

# WCAG Resources

WCAG 2.0 guidelines:

<https://www.w3.org/TR/WCAG20/>

WCAG 2.0 checklist:

<https://www.wuhcag.com/wcag-checklist/>



ARIA

# What is ARIA?

## **Accessible Rich Internet Applications**

A specification from the W3C's Web Accessibility Initiative. Provides a way to add the missing semantics needed by assistive technologies such as screen readers.

# ARIA Types

**Roles:** Describe elements that otherwise aren't accessible, such as carousels, tabs and dialog boxes.

**States:** Describe the current interaction state of an element, informing the assistive technology if it is busy, disabled, selected or hidden.

**Properties:** Describe characteristics of these elements, such as if they are draggable, have a required element or have a popup associated with them.

# ARIA Resources

Full list of ARIA states and properties:

[https://www.w3.org/TR/wai-aria/states\\_and\\_properties](https://www.w3.org/TR/wai-aria/states_and_properties)

Full list of ARIA roles:

<http://www.w3.org/TR/wai-aria/roles>

# ARIA Example

```
<div class="alert alert-danger" role="alert">  
  This is a very important message!  
</div>
```

# 5 rules of Aria

# Rule 1

If you can use a native HTML element or attribute with the semantics and behavior you require already built in, instead of re-purposing an element and adding an ARIA role, state or property to make it accessible, then do so.

# Rule 1: Example

```
<nav>
  <ul>
    <li>
      <a href="#">My Link</a>
    </li>
  </ul>
</nav>

<div role="navigation">
  <ul>
    <li>
      <a href="#">My Link</a>
    </li>
  </ul>
</div>
```



## Rule 2

Do not change native semantics, unless you REALLY have to. For example, building a button.

## Rule 2: Example

```
<!--DO NOT DO THIS!-->  
<h1 role="button">A heading button</h1>  
  
<!--THIS IS THE PROPER WAY-->  
<h1>A heading</h1>  
<button>A button</button>  
  
<!--THIS MAY BE OK-->  
<h1>A heading</h1>  
<span role="button">Anchor button</span>
```

## Rule 3

All interactive ARIA controls must be usable with a keyboard. For example, navigating all of the slides of a carousel.

## Rule 4

When hiding an element, make sure that ‘aria-hidden=”true”’ is used. Simply using ‘display:none’ or moving the element off the screen using CSS still makes it accessible to screen readers.

# Rule 5

All interactive elements must have an accessible name.

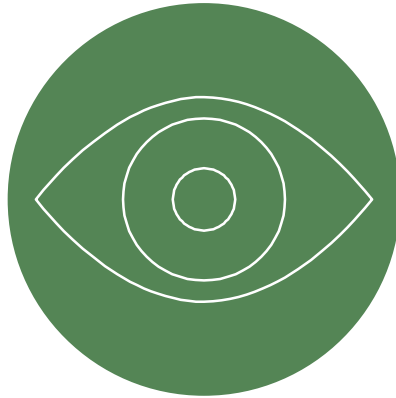
## Rule 5: Example

```
<!--Not accessible-->  
<input type="text" />  
  
<!--Accessible-->  
<label>First Name  
    <input type="text" />  
</label>
```

# Vision Demo

# Vision Demo

Objective: Simulate tunnel vision to show how layout can affect the navigation of a web page.





# Vision Demo

First Name

Last Name

Are you a student?

Yes

No

Are you sure?

Yes

No

Quit

Previous

Next

# Vision Demo

First Name

Last Name

Are you a student?

- Yes  
 No

Are you sure?

- Yes  
 No

Previous

Next

Quit

# Accessibility Tools

# Accessibility Tools

- **Contrast checker** - <http://webaim.org/resources/contrastchecker/>
- **WAVE** - <http://wave.webaim.org/>
- **JAWS Screen Reader** -  
<http://www.freedomscientific.com/Products/Blindness/JAWS>

## Platform Specific:

- **OSX** - [https://www.apple.com/voiceover/info/guide/\\_1124.html](https://www.apple.com/voiceover/info/guide/_1124.html)
- **Windows** -  
<https://support.microsoft.com/en-us/help/22798/windows-10-narrator-get-started>

# Accessibility Tools

- **MSU Accessibility Guidelines** - [http://webaccess.msu.edu/Policy\\_and\\_Guidelines/web-accessibility-policy.html](http://webaccess.msu.edu/Policy_and_Guidelines/web-accessibility-policy.html)
- **MSU Web Access** - <http://webaccess.msu.edu/>
  - Contains guides/tutorials on

# Mobile Assistive Technology

# Mobile Assistive Technology

**iOS & Android:** screen reader, screen magnifier, large text, haptic feedback, themes/high contrast, switch control, guided access, assistive touch

**Windows:** screen reader, screen magnifier, large text, haptic feedback, themes/high contrast

# Mobile Assistive Technology

## Definitions:

**Screen Reader:** a text-to-speech interpretation of what is being displayed on screen

**Screen Magnifier:** A tool to enlarge screen content

**Large Text:** The ability to increase font sizes on the screen

**Haptic Feedback:** Tactile feedback technology which recreates the sense of touch by applying forces, vibrations or motions to the user

**Themes/High Contrast:** The ability to switch between color overlays to help increase contrast of a display or counter color-blindness



# Mobile Assistive Technology

## Definitions (continued):

**Switch Control:** Allows users with limited mobility to control an interface by emulating more complex gestures with simple ones

**Guided Access:** Restricts access to a single application or function on a device

**Assistive Touch:** Mimics hardware interactions and touch interaction on the interface

# Mobile Assistive Technolog

**iOS:** Settings -> General -> Accessibility -> Voiceover

**Android:** Settings -> Accessibility -> Talkback

# Demo