

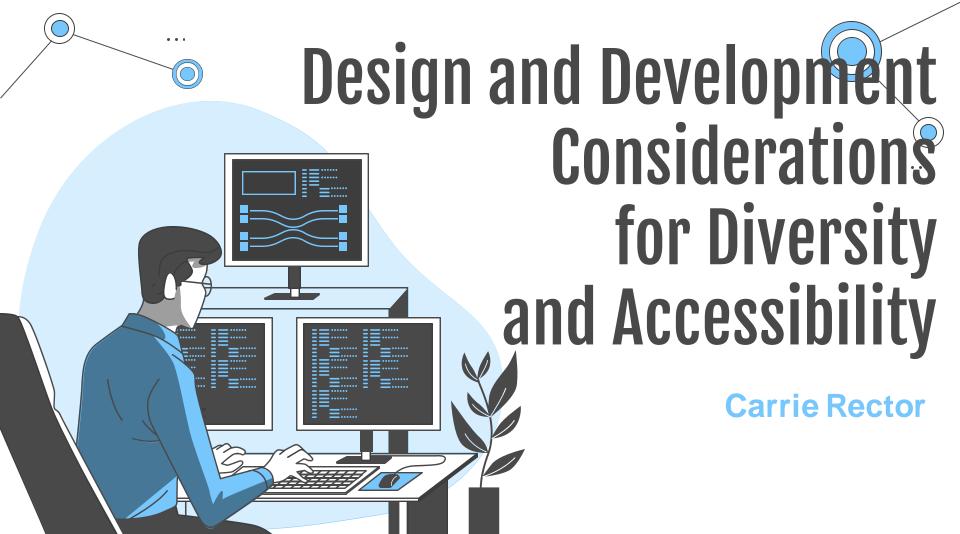
We wish to acknowledge and honor the Indigenous communities native to this region, and recognize that **Indiana University Bloomington** is built on Indigenous homelands and resources. We recognize the myaamiaki [Meah-ma-key], Lënape [len-ah-peh], Bodwéwadmik [bode-eh-wad-meek], and saawanwa [sah-wan-wa] people as past, present, and future caretakers of this land.





At the Center of Excellence for Women & Technology, we are dedicated to centering Indigenous voices & perspectives, improving community relationships, correcting the narrative, and making the IUB campus a more supportive and inclusive place for Native and Indigenous students, faculty & staff. We want to acknowledge that tech industries often privilege technological advances from the West, ignoring how Indigenous tribes have invented numerous technologies to support one another and care for the land, which was forcibly taken from them.

We work to help those affiliated with the Center to understand how technology ignores Indigenous epistemologies and reinforces inequalities for all people. We encourage everyone to engage with contemporary communities, to learn the histories of this land, to look at who has and does not have access to its resources, and to examine your own place, abilities, and obligations within this process of reparative work that is necessary to promote a more equitable and socially just Indiana University Bloomington.





#### **Diversity Considerations**

How to design and develop for different cultures





#### **Web Accessibility**

Learn the accessibility principles and guidelines



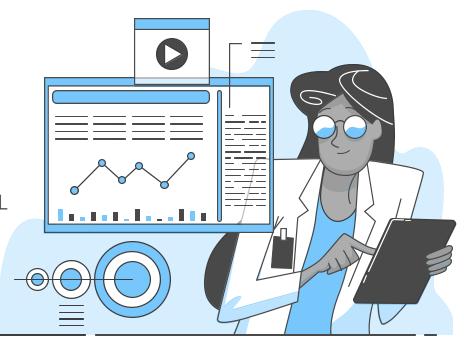
#### **Semantic Elements**

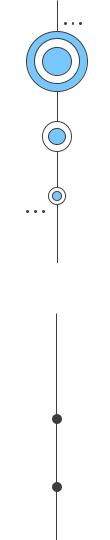
Learn accessibility tools readily available through HTML



#### **Accessibility Tools**

Learn tools to fix your accessibility issues





# O1 Diversity Considerations



# **Cultural Sensitivity and Awareness**





#### •••

Walmart Expansion into Germany

- Decade Later
- Couldn't find a buyer
- Paid a competitor to take over real estate and employee liabilities in 2006

**Walmart Greeters** 

**Smiling at Customers** 

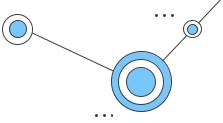
**Morning Chants** 

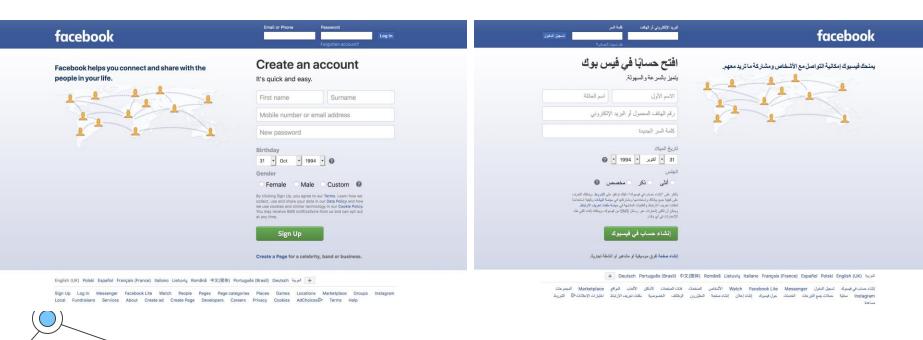
**Bagged Groceries** 



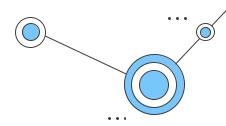


# **Localized Content and Language**

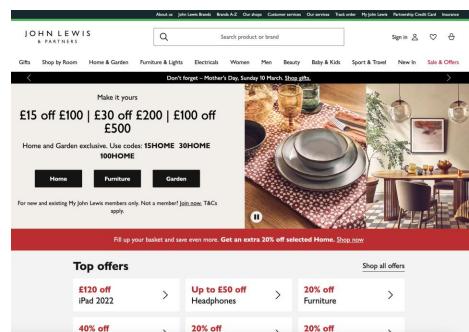




# **Visual Aesthetics and Symbols**

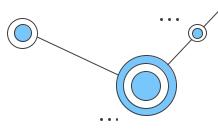








### **User Behaviors and Preferences**

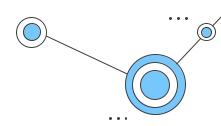






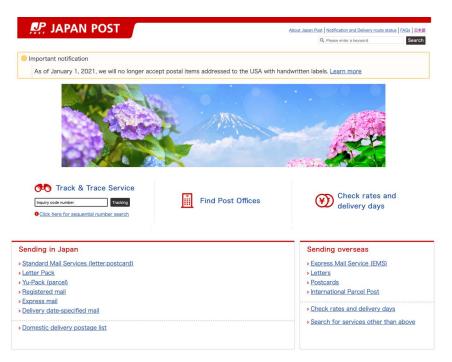


# **Typography**

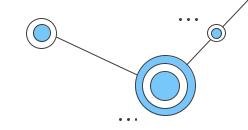




> ゆうゆう窓口 (営業時間外窓口) を探す

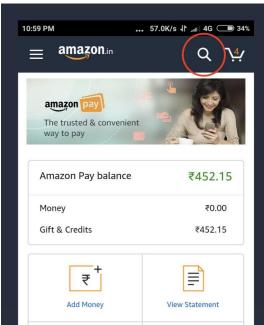


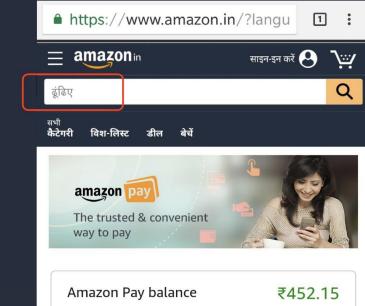
# Navigation and Layout amazon



Amazon India launch – late 2018

 Customers were not using the search functionality – Amazon's primary driver for revenue









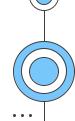
# **Iconography and Imagery**

Popular European television ad shown in Japan:

The ad showed a Japanese man walking into the bathroom while his wife sat in the tub.

Our consumers resented the breach of good manners and the overt chauvinism of the situation.

- Mia Ishigura Camay employee, Japan





### **Culture Colors**

# RED

Culture	Meaning
Western Countries	Love, Danger
India	Purity
China	Good Luck
Africa	Death/Mourning

### COLORS by Culture



#### FAR EASTERN Culture



#### INDIAN Culture



#### MIDDLE EASTERN Culture











Mourning Heaven Spirituality



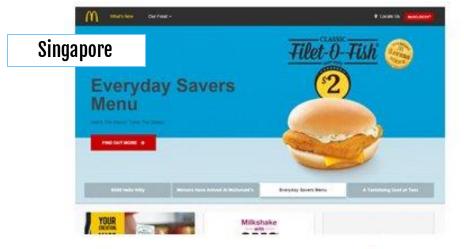
Royalty





Evil

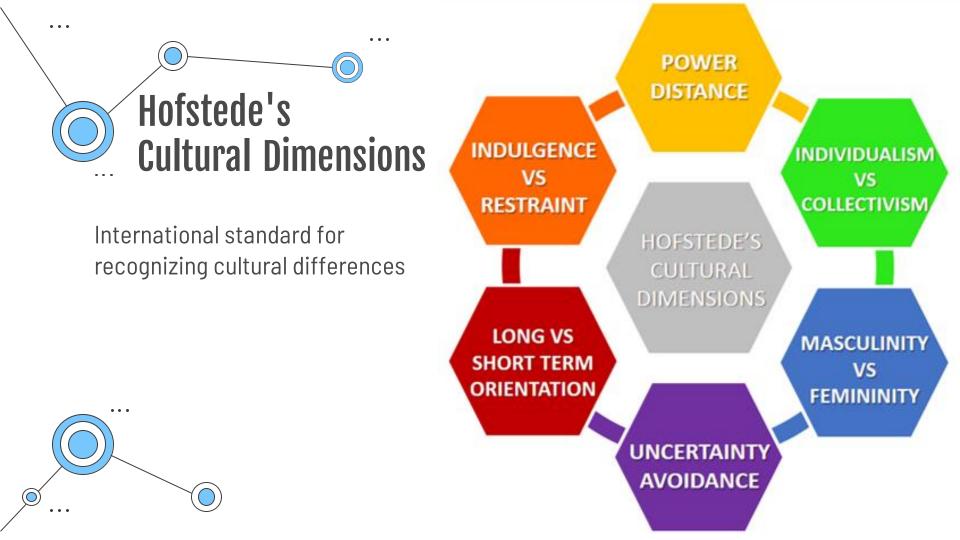
Darkness Negativity







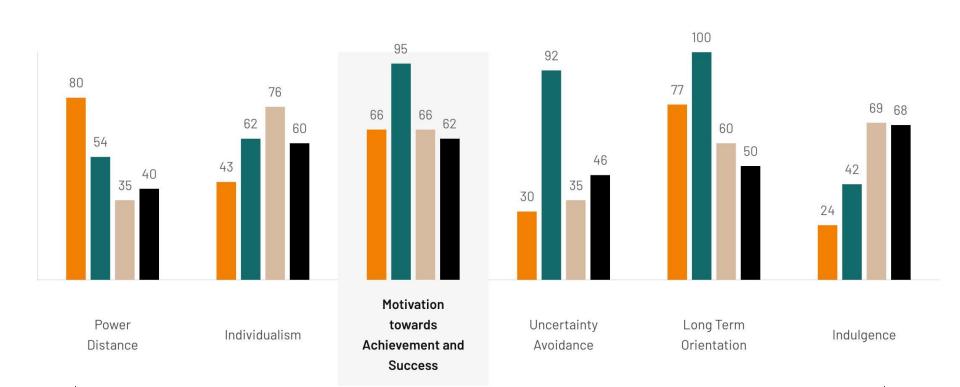




0 ← HOFSTEDE'S CULTURAL DIMENSIONS> 100		
LOW POWER DISTANCE	PDI	HIGH POWER DISTANCE
COLLECTIVISTIC	INV	INDIVIDUALISTIC
FEMININE	MAS	MASCULINE
LOW UNCERTAINTY AVOIDANCE	UAI	HIGH UNCERTAINTY AVOIDANCE
SHORT TERM ORIENTATION	LTO	LONG TERM ORIENTATION
RESTRAINT	IND	INDULGENCE

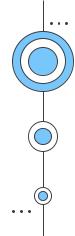
# **Interactive Country Comparison Tool**













### World-Wide Web Consortium

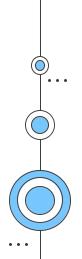
The World Wide Web Consortium (W3C) develops standards and guidelines to help everyone build a web based on the principles of accessibility, internationalization, privacy, and security.

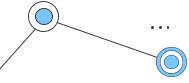
# WCAG

Website Content Accessibility Guidelines

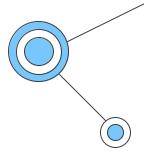
## WAI-ARIA

Web Accessibility Initiative: Accessible Rich Internet Applications





# Web Content Accessibility Guidelines (WCAG) Principles



01

#### Perceivable

- Provide text alternatives
- Captions/alternatives for multimedia
- Present content in different ways
- See and hear content

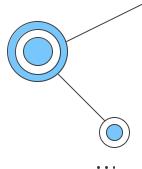
02

#### Operable

- Keyboard functionality
- Enough time to read and use content
- No use of content that could cause seizures
- Navigating and finding content
- Inputs other than keyboards



# Web Content Accessibility Guidelines (WCAG) Principles



03

#### Understandable

- Make text readable and understandable
- Make content appear and operate in predictable ways
- Help users avoid and correct mistakes

04

#### Robust

Maximize compatibility with current and future user tools



# Understanding Web Content Accessibility Guidelines (WCAG)



Provides a single shared standard for web content accessibility that meets the needs of individuals, organizations, and governments internationally

A

AA

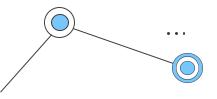
**AAA** 

Basic compliance

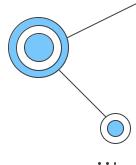
Most organizations strive for this level

Site accessible to maximum amount of users

•••



# **WCAG Principles: Level A**



01

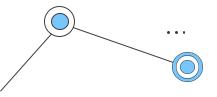
#### Perceivable

- All non-text content has a text alternative
- Captions provided for audio and video content
- Information, structure, and relationships conveyed through presentation
- Content is not based on color, size, shape, position, sound or any other sensory characteristics

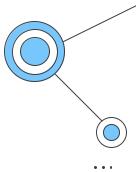
02

#### Operable

- All functionality is operable through a keyboard interface without specific timings
- Focus can move to and from a component using a keyboard interface
- No more than three flashes per second



# **WCAG Principles: Level A**



03

#### Understandable

- Use the lang attribute
- Element focus does not change context

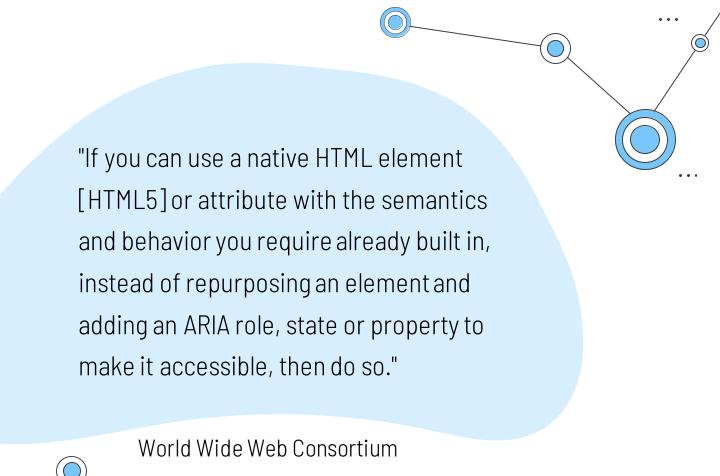
04

#### Robust

- Elements have start and end tags
- Proper nesting
- No duplicate attributes
- IDs are unique











Home pages with ARIA present averaged 41% more detected errors than those without ARIA.

WebAIM 2023 Survey



# **ARIA Accessibility Features Support**



#### WAI-ARIA Accessibility features - REC

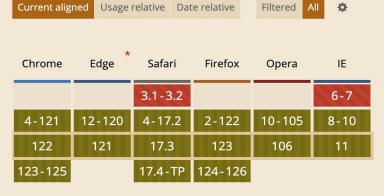
Global

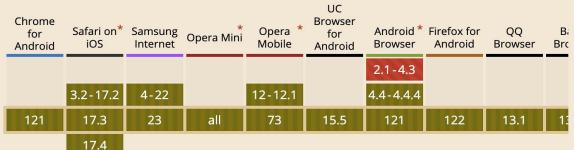
Usage

0% + 98.56% = 98.56%

% of all users

Method of providing ways for people with disabilities to use dynamic web content and web applications.





Notes

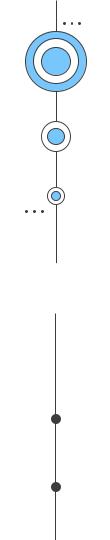
Test on a real browser

Known issues (0)

Resources (7)

Feedback

Support for ARIA is rather complex and currently is not fully supported in any browser. For detailed information on partial support see the ARIA 1.0 Implementation Report



# 03 Semantic Elements

# **Semantic HTML**



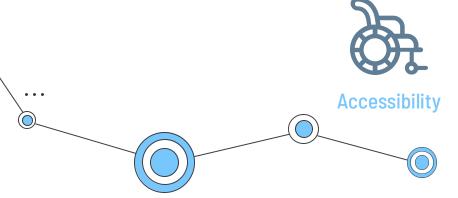




**Better on Mobile** 

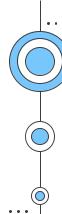


**Good for SEO** 





Legibility



# Macrostructure vs Microstructure Semantic HTML

#### **Macrostructure Semantic**

HTML representing containers of a page, such as <header>, <nav>, <main>, <article>, <section> among other structural elements

#### Microstructure Semantic

Elements that fall within containers or macrostructure semantic HTML elements.

Some of these elements include , <em>, and <span>







# **Macrostructure Semantic HTML Elements**

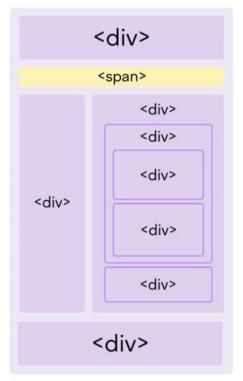
Element	Use
article	Independent, self-contained content that can be independently distributed or reusable. Ex. Forum or blog posts, user comments, newspaper articles
aside	Content indirectly related to the document's main content. Ex. Sidebars or call-out boxes
footer	Bottom content for a document or section. Ex. Copyright, contact, sitemap, authorship information
header	Container for introductory content or a set of navigation links. Ex. Top content bar on most websites
main	Dominant content that is directly related to the central topic of a document.
nav	Set of navigation links. Ex. Main navigation for site.
section	Thematic grouping of content. Ex. Chapters, introduction, news items, contact Information



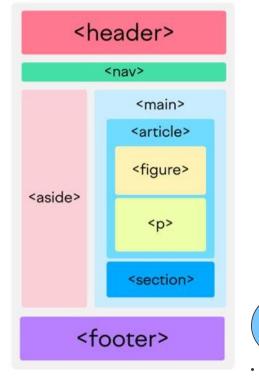
### **Macrostructure HTML**

```
<div id="header">
<div id="nav">
<div id="main">
<div class="section">
<div id="footer">
<span id="quote">
```

#### Non-Semantic HTML



#### Semantic HTML

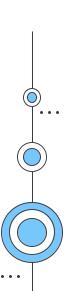




# **ARIA Landmark Roles**

Landmark Role	HTML Semantic Element Equivalent
banner	header
complimentary	aside
contentinfo	footer
navigation	nav
main	main
section	section
form	form
region	content should make sense if separated from the main content of the document. This should be accompanied by aria-labelledby
search	search

<div id="header" role="banner"></div>





#### Accessible Names and Content

- Convey the purpose or intent of the element
- Distinguish the element from other elements on the page

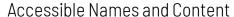
<img src="images/dog.jpg" alt="Yorkshire
Terrier playing with a ball in the grass" />

<img src="bkgrdPattern.jpg" alt=""/>









- Convey the purpose or intent of the element
- Distinguish the element from other elements on the page



Labeling Tables and Images

```
<caption>Special opening hours</caption>
 30 MayClosed
 6 June11:00-16:00
<figure>
 <img alt="Painting of a person walking in a desert."</pre>
     src="Hole_JesusalDesierto.jpg"/>
 <figcaption>Jesus entering the desert as imagined by William Hole,
     1908</figcaption>
</figure>
```



Content is not based on color, size, shape, position, sound or any other sensory characteristics

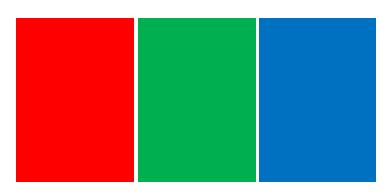
Each Track is indicated by color:

**Design Track** 

Development Track

**Usability Track** 





**Design Track** 

Category: Design



# aria-label

Attribute that defines a string value that labels an interactive element

- Button containing an SVG image
- Buttons that look like hamburger and kebab icons

<button type="button" aria-label="Close">X</button>









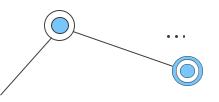
# aria-labelledby

Attribute that identifies the element (or elements) that labels the element it is applied to.

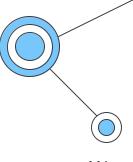
Established an association between an element and the text that provides the accessible name

```
<h1 id='id1'>Famous People</h1>
  <label id='id2'> Andy Williams<input type='radio' aria-labelledby='id1 id2'/>
</label>
```

<span role="checkbox" aria-checked="false" tabindex="0" aria-labelledby="tac">
</span>
<span id="tac">I agree to the Terms and Conditions.</span>



# **Common Semantic Errors**



01

## <div> and <span>

Overuse of these non-semantic elements

02

## Misusing WAI-ARIA markup

Can prevent users from understanding content and/or from regaining control of their browser

03

## **Use HTML for Layout**

Using table elements for web design layouts

04

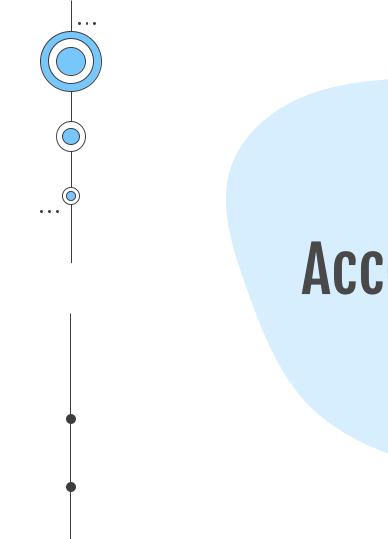
## Generic class and id values

Unclear purpose and function of interactive elements

# ARIA Questions to Ask

- Can I use semantic HTML instead of ARIA?
- 2. Do I understand the risks of poor ARIA implementation?
- 3. Am prepared to test my ARIA implementation?
- 4. Does my site have other accessibility barriers?





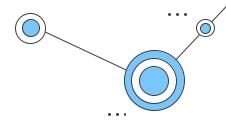
# O4 Accessibility Tools

# Design and Develop for Diversity and Accessibility

- 1. Localization
  - Imagery, color psychology, cultural nuances
- 2. Language
  - Typography, directionality, linguistic differences
- 3. Content density
- 4. Technology
- 5. Consult with Experts
  - Local experts, translators, user testing participants with varied backgrounds



# **Accessibility Tools**



## **Auditing Tools**

- <u>Wave</u> online accessibility testing that returns annotated view with problems highlighted
  - o Chrome, Firefox, and Edge browser extensions

### **Automation Tool**

- AXe Tool has browser extensions for both <u>Chrome</u> and <u>Firefox</u>
- <u>Silktide</u>
- Total Validator
- <u>Lighthouse</u> Chrome DevTool

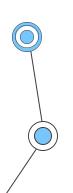
## Simulated User Experience

- Silktide
- Luma
- Monsido (recently acquired by Acquia)

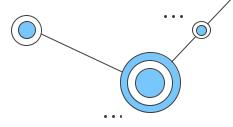








# **Screen Readers**



## Free Tools

- •NVDA (Windows)
- <u>ChromeVox</u> (Chrome, Windows, macOS)
- •Orca(Linux)

## Operating System Built-In Tools

- <u>VoiceOver</u> (macOS and iOS)
- <u>ChromeVox</u>(Chromebooks)
- TalkBack (Android)



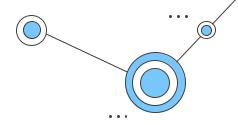








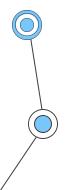
# Other Helpful Tools



## **Color Contrast Tools**

- Accessible Color Combinations
  - Accessible Color Palette Builder
  - Contrast Grid
  - Contrast Checker

Text to Background Color Contrast Ratios		
Small Text	4.5:1	
Large Text	3:1	



## **Color Blindness**

- •Color Blindness Simulator
- •Colorblind Web Page Filter



# Thanks!

## Do you have any questions?

cmrector@iu.edu https://luddy.iupui.edu



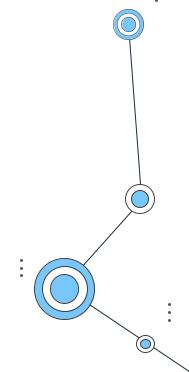
@UIFocused

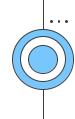


www.linkedin.com/in/carrie-rector









## Resources

https://www.toptal.com/designers/ux/guide-to-cross-cultural-

design#:~:text=To%20be%20effective%2C%20designers%20need,values%2C%20customs%2C%20and%20taboos.

https://www.toptal.com/designers/ux/color-psychology

https://www.trootech.com/blog/master-ui-ux-with-mcdonalds-cross-cultural-web-design

https://conversion-uplift.co.uk/post/cultural-factors-in-web-design/

https://developer.mozilla.org/en-US/docs/Web/Accessibility/ARIA

https://www.w3.org

https://accessibility.digital.gov/visual-design/color-and-contrast/

https://bootcamp.uxdesign.cc/exploring-cultural-considerations-in-global-ui-ux-design-

 $dcf1638d10d4\#: \sim text = Language\%20plays\%20a\%20pivotal\%20role, that\%20the\%20message\%20resonates\%20accurately.$ 

https://www.brandingmarketingagency.com/blogs/how-to-create-culturally-sensitive-web-design/

https://www.linkedin.com/pulse/3-embarrassing-examples-cross-cultural-business-failures-karge/

https://www.linkedin.com/pulse/3-embarrassing-examples-cross-cultural-business-failures-karge/

https://www.trootech.com/blog/master-ui-ux-with-mcdonalds-cross-cultural-web-design

https://nanjingmarketinggroup.com/blog/5-differences-between-chinese-and-western-website-design

https://www.deseret.com/2011/4/29/20371882/international-business-some-international-ads-are-perceived-as-sexist-due-to-different-cultural-norm/

https://userpeek.com/blog/cross-cultural-ux-design-a-comprehensive-quide/#t-1629953049101

https://www.mindtools.com/alecvyx/hofstedes-cultural-dimensions

https://www.boia.org/blog/semantics-and-screen-readers-creating-better-content

 $https://developer.mozilla.org/en-US/docs/Learn/Tools\_and\_testing/Cross\_browser\_testing/Accessibility\#screen\_readers$ 

https://www.deseret.com/2011/4/29/20371882/international-business-some-international-ads-are-perceived-as-sexist-due-to-different-cultural-norm/linear-perceived-as-sexist-due-to-different-cultural-norm-linear-perceived-as-sexist-due-to-

https://medium.com/demagsign/a-guide-to-cross-cultural-design-by-senongo-apkem-368c90de1b76

