

# **Building for your Future Self**

**Marcelo Paiva and Claudio Luis Vera**

# Today's Workshop

**Brought to you by:**

Jenn Clarke and the CXD UX practice  
(and the letter "I" for "Inclusion")

**In coordination with & support from:**

- Vanguard Accessibility Center
- CXD Diversity, Equity and Inclusion
- CXD Vanguard Experience Team (VET)

# General Rules of the Road

## During the full session:

- We are a large group, so during the presentation portions when Marcelo and Claudio are speaking and presenting, please have video off and your sound muted to minimize interruptions.
- If you want to make a comment or ask a question while they are presenting on a topic, please use the Teams chat function to do so – precede a comment with a "C" and questions with a "Q".
- These presentation portions (that bookend the activity section) will be recorded. The facilitated, smaller breakout sessions will be safe conversational spaces only, with no recording.
- The presentation slides will be made available following the workshop as well.

# Safe and Inclusive

This is an inclusive and safe space to collaborate.

**Q:** Do we have your permission to record this session?

**Break out sessions and activities won't be recorded.**

# **Building Your Future Self**

**Marcelo Paiva and Claudio Luis Vera - May 19, 2021**



# Roles that we've played

## Organizations

- Royal Caribbean
- UKG
- Sapient Global Markets (Publicis)
- Fidelity Investments
- Thomson Reuters
- Barclays Capital
- Franklin Templeton

## Speaking Venues

- Access+Equity
- IXDA Interaction Design Association
- UX India - 2016, 2020
- Taylor Center for Social Innovation and Design Thinking - Tulane University
- Inclusive Design - Unisinos University
- UXperience Conference
- DEVCON - Conference
- UXDEV Conference 2016, 2017, 2018



Part 1:

# The Role Of Design In Discrimination

Claudio Luis Vera

Going Back In Time...

80 years ago  
on a Saturday  
afternoon,  
at a movie house,  
in the Mississippi  
Delta



## **Marion Post Wolcott**

**29 years old,  
photographed the  
effects of rural  
poverty.**



## Racial segregation

was so common, it  
would have been  
overlooked



## Corporate sponsorship

Today, this photo would have triggered boycotts and divestment



# Jumping forward to today

Segregation based  
on ability to pay



## Two-class system

Those who pay and those who can't



What's the  
breaking  
point?

How does it feel to  
be unable to use it?



ONLY

easant Hill  
ad

allowford  
ad

\$1.00

\$139.50?

~~\$139.50~~



# Being marginalized

- **feeling that something is not designed for you**
- **adj. (of a person, group, or concept) treated as insignificant or peripheral.**

**"members of a marginalized cultural group"**

# What Does Discrimination Look Like?

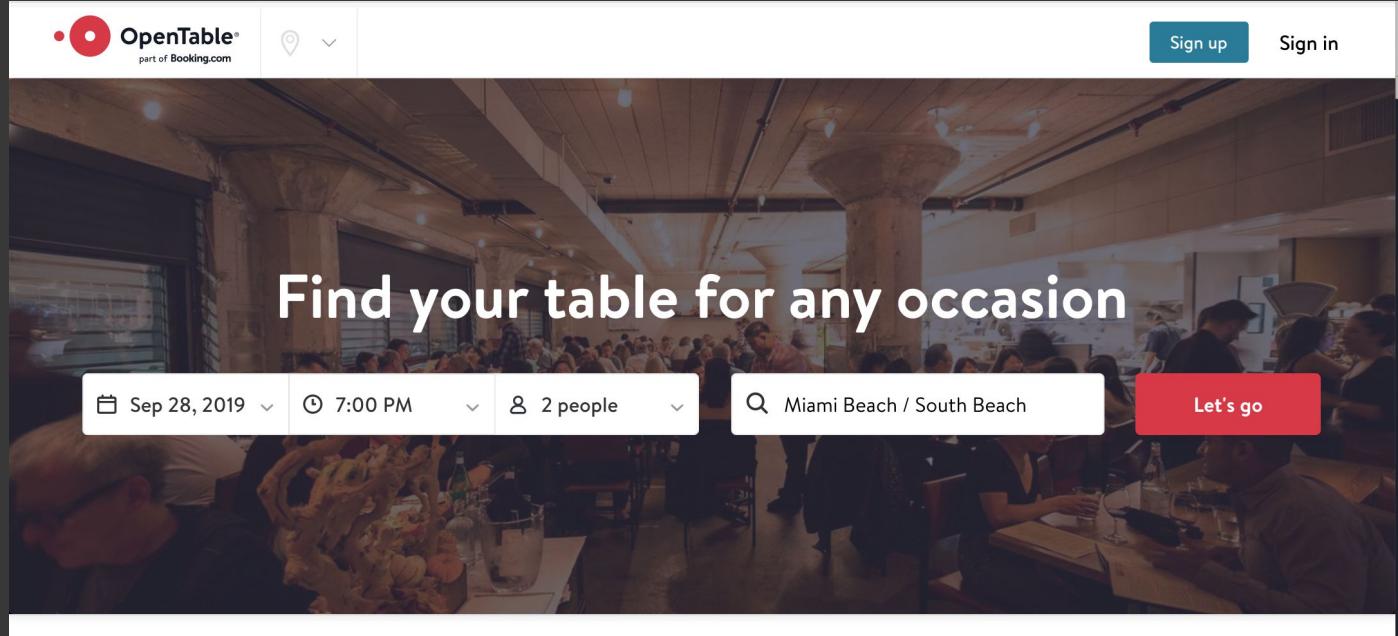
## What it's not.

Today's kind of discrimination is more subtle, but just as marginalizing.



**Today:**  
A restaurant  
reservation system  
that doesn't work for  
blind people

Based on  
*White v. Square*  
lawsuit



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INTRODUCING  
**MARBLED**  
**COOKIE BROWNIE**  
*A warm and gooey blend of milk chocolate chunk cookie and fudge brownie.*

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PIECE of the PIE  
**REWARDS**

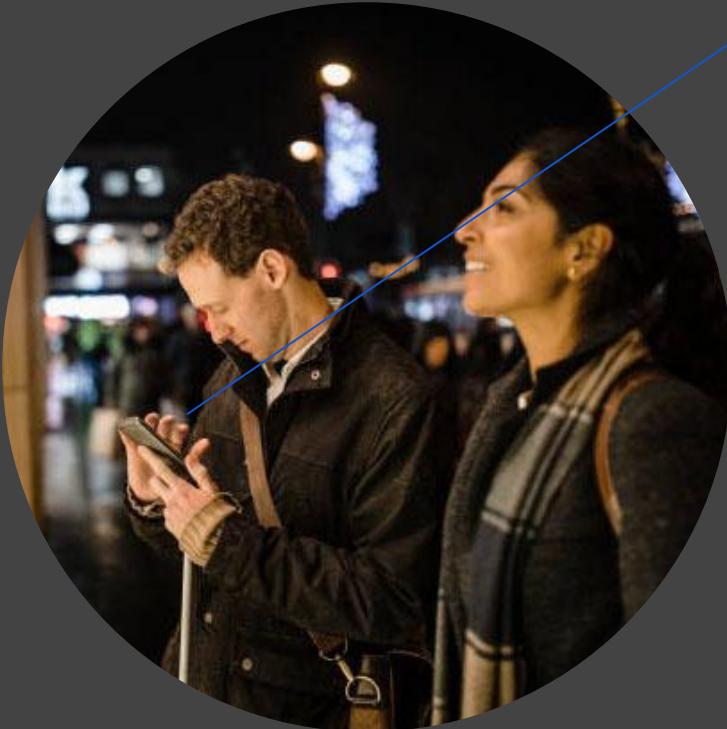
JOIN TODAY  
START EARNING  
POINTS TOWARD

**FREE PIZZA**

[JOIN NOW](#)

# Today:

What does  
discrimination sound  
like?



*Blind/older people don't  
use our app.*

*These are edge cases.*

*Accessibility is not in  
our budget.*

*It's not MVP*

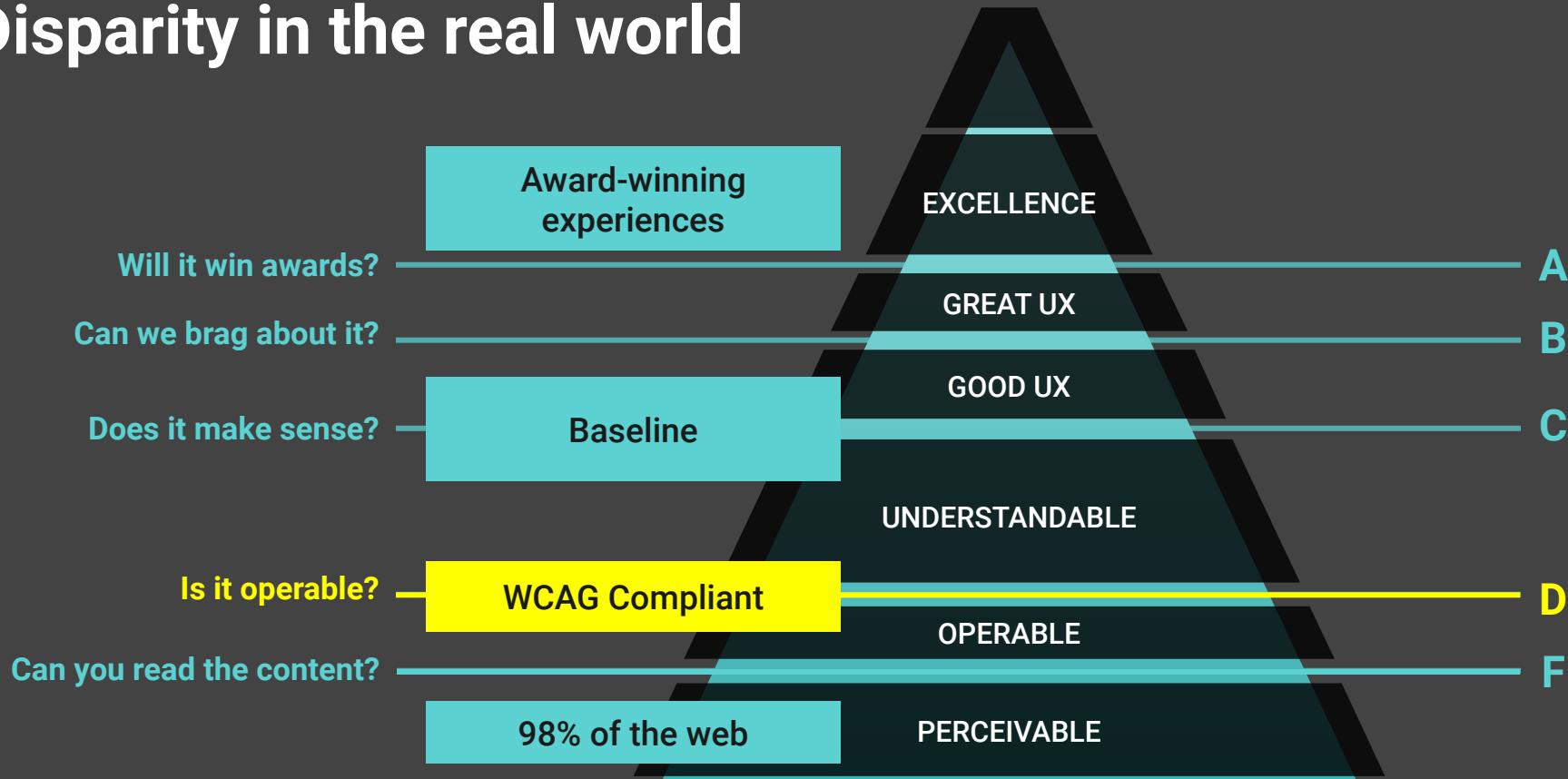
*OK, Boomer*

# A Built-in Imbalance

# Hierarchy of UX

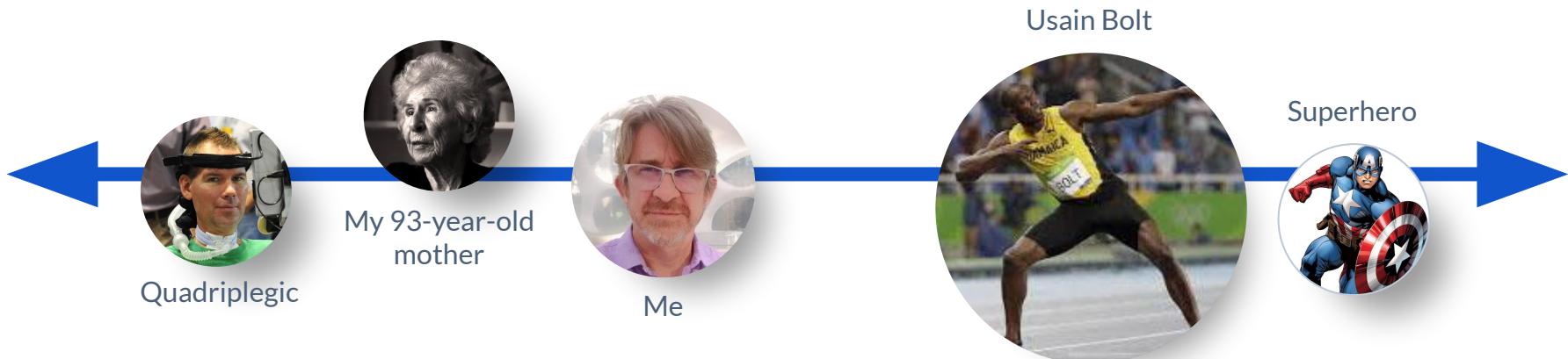


# Disparity in the real world



# Mismatches And Disabilities

# Spectrum of abilities



# Our view of disability

## Medical model

- Highly visible conditions
- Origins in the Reconstruction, when benefits were given to permanently disabled veterans of the Civil War

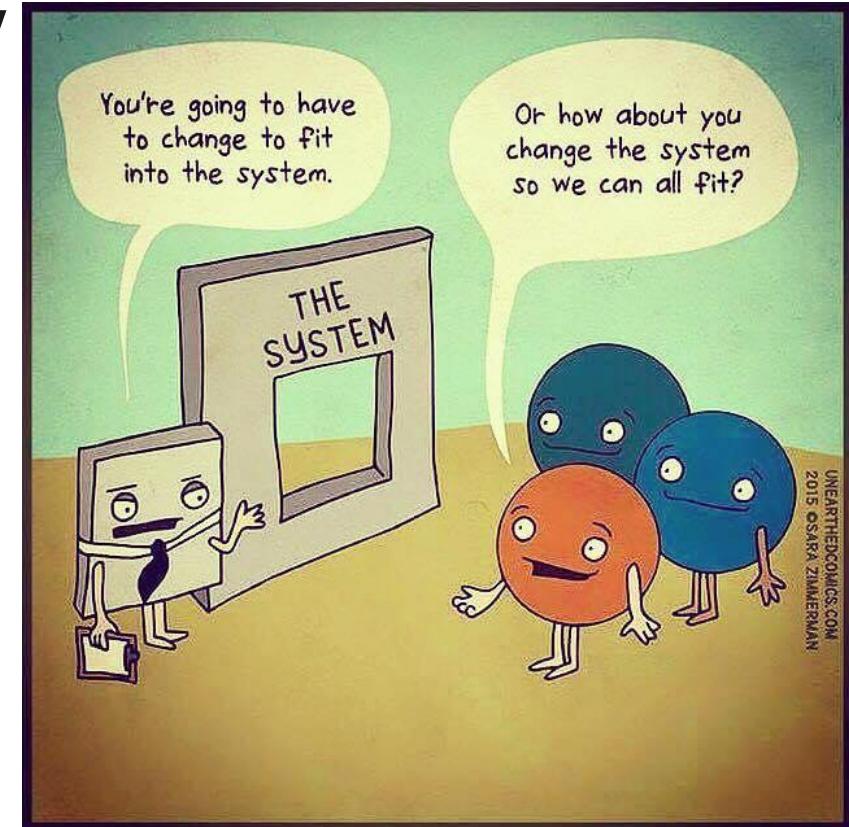
## Charity model

- People with disabilities are dependent and to be pitied.



# The social model of disability

- The problem is not the impairment, it's the barriers we create as a society.
- We create and perpetuate our own disabilities.



# Not every impairment is permanent

Touch



One arm



Arm injury



New parent

Hear



Deaf



Ear infection



Bartender

See



Blind



Cataract



Distracted driver

Speak



Non-verbal



Laryngitis



Heavy accent



# What is a disability?



**Disability is *not*  
a personal health  
condition.**



**Disability is when your  
abilities aren't up to the  
task at hand**



## Built-in accessibility

Is as elegant as the rest of your design experience



## Bolt-on accessibility

Is added after the  
fact



# Hyperloop: bolt-on in the making

Public transportation  
where disabilities are  
an afterthought.



2

3

PODBAY POD  
E2 240  
NOW BOARDING



Virgin  
hyperloop

# Takeaways

- Exclusion is so pervasive we don't see it
- Even if you don't intend to, you can marginalize people through your design and tech decisions
- Accessibility should be built in from the start
- Consider all the use cases

# Breakout Activity

Facilitators take groups into virtual rooms

# 10 min Break

**Stand up, stretch and drink some water!**

# Welcome back

Group discussion (15 min)

Not being recorded.

# Reflection

**Now that you've connected with your future self,  
how would you build experiences differently?**

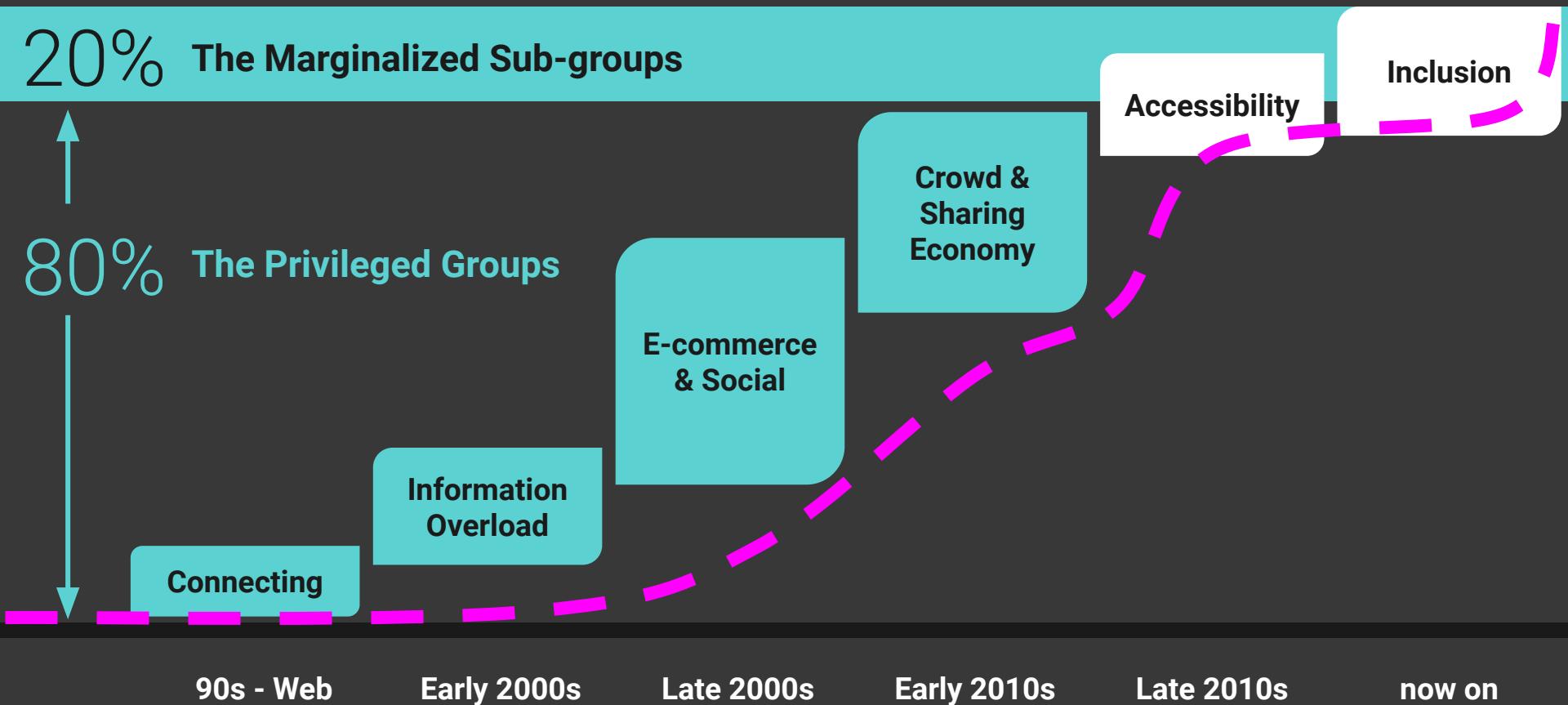
## Part 3:

# Understanding Inclusive Design

Marcelo Paiva (30min)



# Design focus over the years in the United States

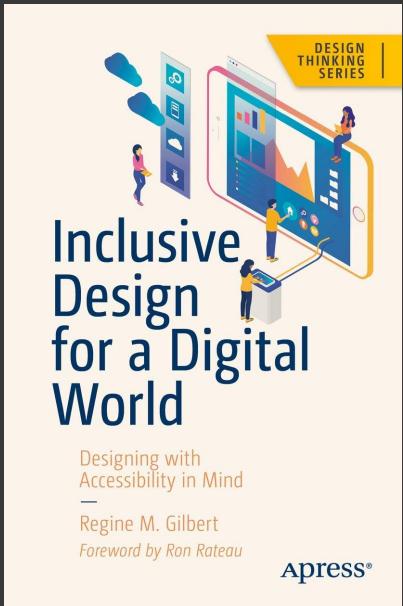


**Have you ever felt  
left out?**



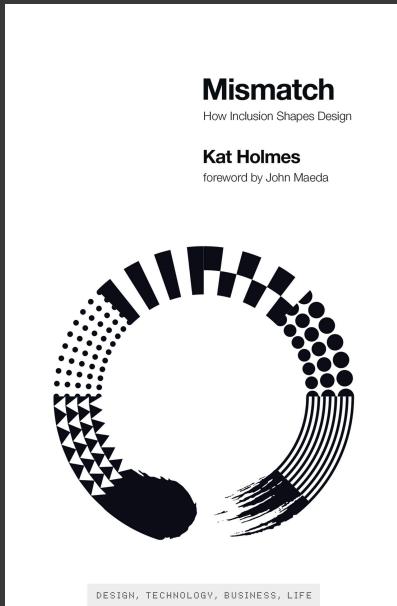


## Results of my study based on:



**Inclusive Design for a  
Digital World**

Regine M. Gilbert



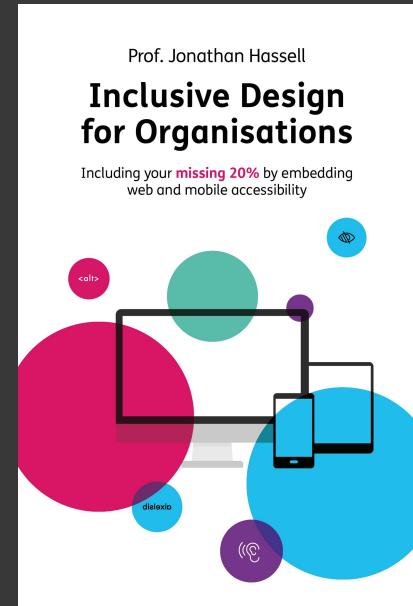
**Mismatch  
How Inclusion Shapes Design**

Kat Holmes



**A Web for Everyone  
Designing Accessible UX**

Horton, Quesenberry



**Inclusive Design for  
Organisations**

Jonathan Hassell

## Inclusive Design for a Digital World

When we create products and experiences that are **not inclusive and accessible**, there is the possibility we are leaving folks with the feeling of being **left out of experiences**.

# **Universal Design**

**is the design of buildings, products or environments to make them accessible to all people, regardless of age, disability or other factors.**

## Universal Design example:

Photo displays the entrance to one of the buildings at St. Olav's Hospital, in Norway.

Two wheelchair circular ramps originate from each side of the sidewalk towards the entrance of the building, crossing each other, leaving the stairway steps in the middle filling the intersection left by the ramps.

The design that is both functional and beautiful.

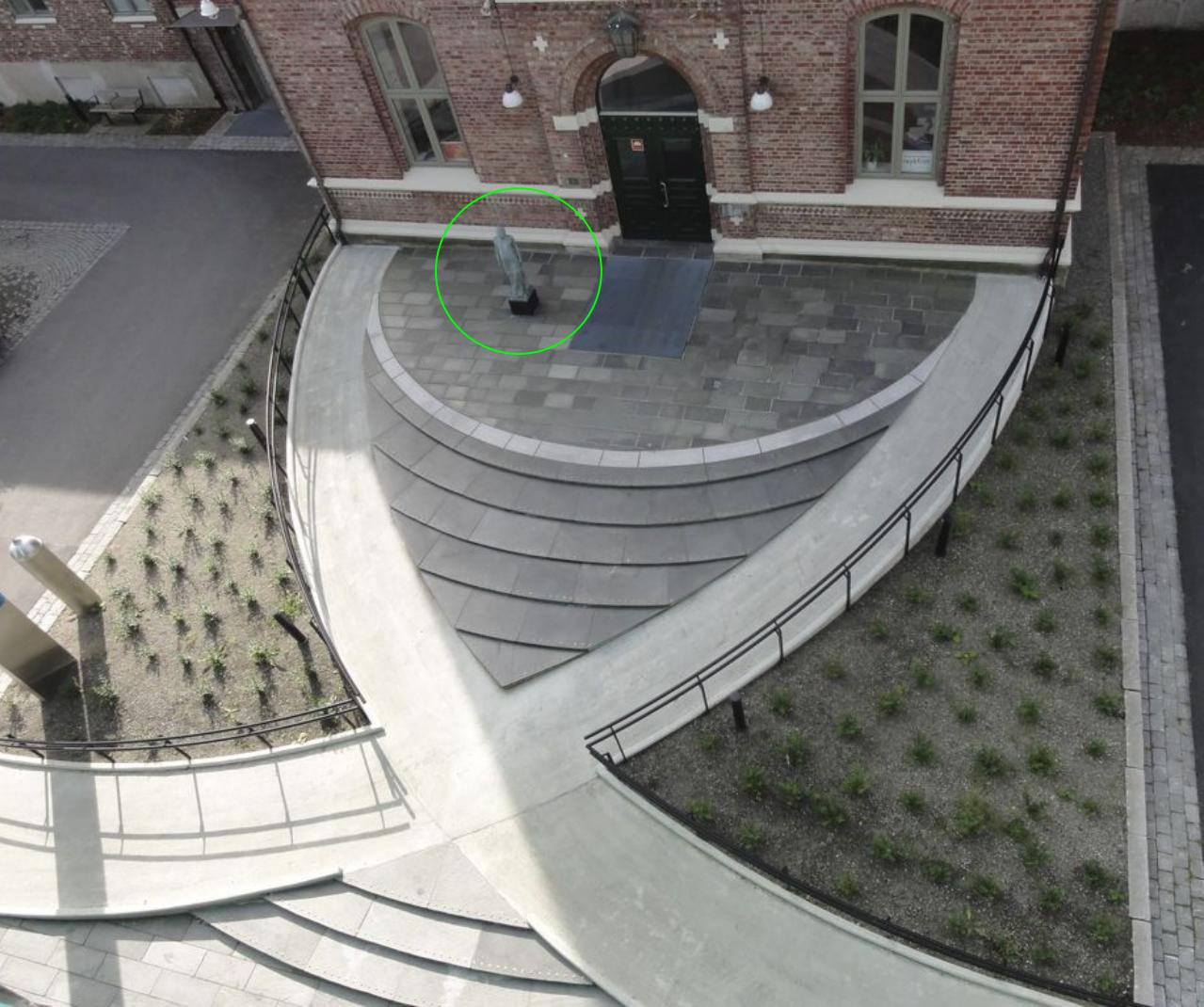


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# Digital Experiences

Post-Pandemic

# Healthcare



# Education



# Finance



Photo by Liza Summer from Pexels

# Digital Universal Design

How might we apply its principles to digital experiences?

# **7 Principles of Universal Design**

- 1: Equitable Use**
- 2: Flexibility in Use**
- 3: Simple and Intuitive Use**
- 4: Perceptible Information**
- 5: Tolerance for Error**
- 6: Low Physical Effort**
- 7: Size and Space for Approach and Use**

# 1: Equitable Use

The design is useful and marketable to people with diverse abilities

Digital Product Design includes:

- Enough color contrast
- Descriptive icons
- Proper form labels and translation

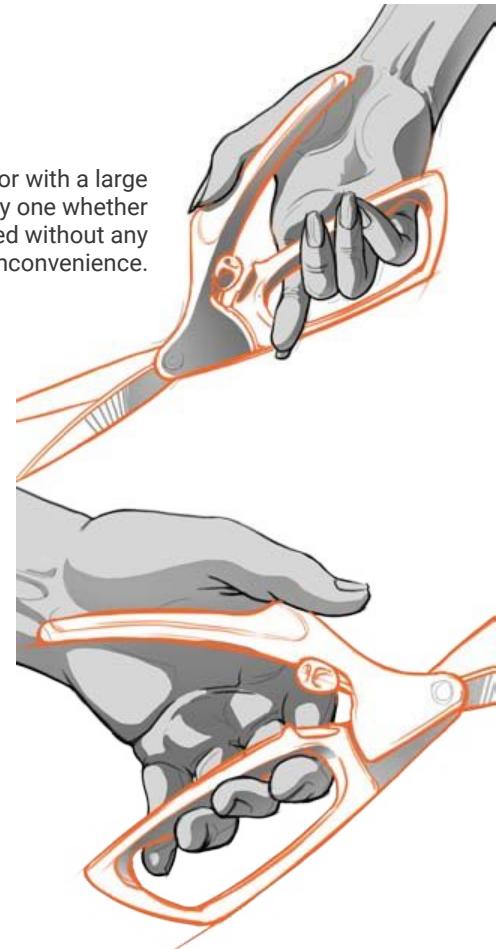


In the picture powered doors that close and open on sensors can be used both by a wheelchair user and by someone that has their hands full.

## 2: Flexible in Use

The design accommodates a wide range of individual preferences and abilities.

In the picture, a pair of scissor with a large grip handles can be used by any one whether he is left or right handed without any inconvenience.



Digital Product Design includes:

- Proper heading styles
- Ability to zoom in/out
- No autoplay for audio and video

## 3: Simple and Intuitive Use

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

### Digital Product Design includes:

- **Visible focus**
- **Minimum cognitive load**
- **Less is more**



In the picture, the fire alarm uses a push button that is standard and color red. Even a child can understand that it is a panic button.

## 4: Perceivable Information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Digital Product Design includes:

- Proper information architecture
- Wayfinding: tab and focus order
- Enough white space between content blocks



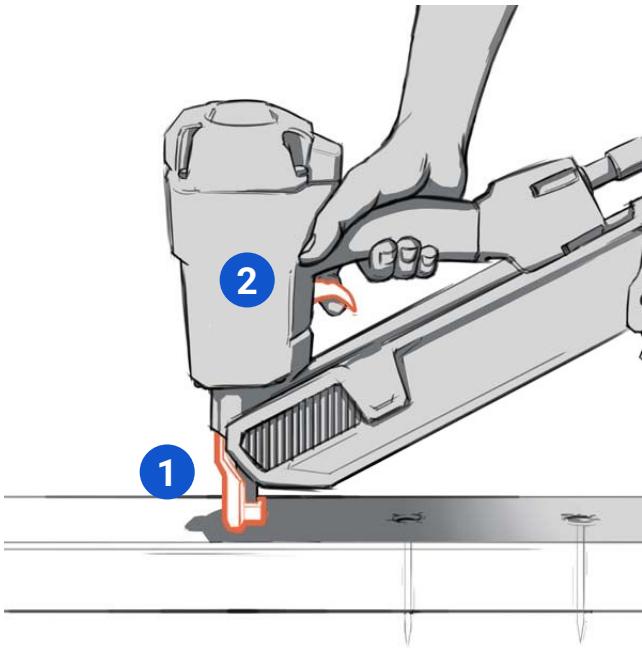
In the picture above a blind individual can use the cellphone keypad because of the bump on the pad that will enable the user without looking at the keypad.

## 5: Tolerance for Error

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

Digital Product Design includes:

- Undo, redo
- Error messages near the related elements
- No keyboard trapping



In the picture a nail gun requires a to activate the safety release before pulling the trigger thereby removing the risk of accidents while the gun is pointed somewhere else.

## 6: Low Physical Effort

The design can be used efficiently and comfortably and with a minimum of fatigue.

### Digital Product Design includes:

- No unnecessary 'required' information
- Succinct and objective instructions
- Large target areas for pointing devices, and more.



In the picture a door knob is presented that does not require grip strength. A close fist or an elbow can open the door.

## 7: Size and Space for Approach and Use

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Digital Product Design includes:

- No modal windows blocking the entry points
- Thoughtful skip-links
- Large target areas for pointing devices, and more.



In the picture subway gates are easily accessible by a person in a wheelchair or with a person carrying huge baggage or even with an obese commuter.

# Rethinking Accessibility

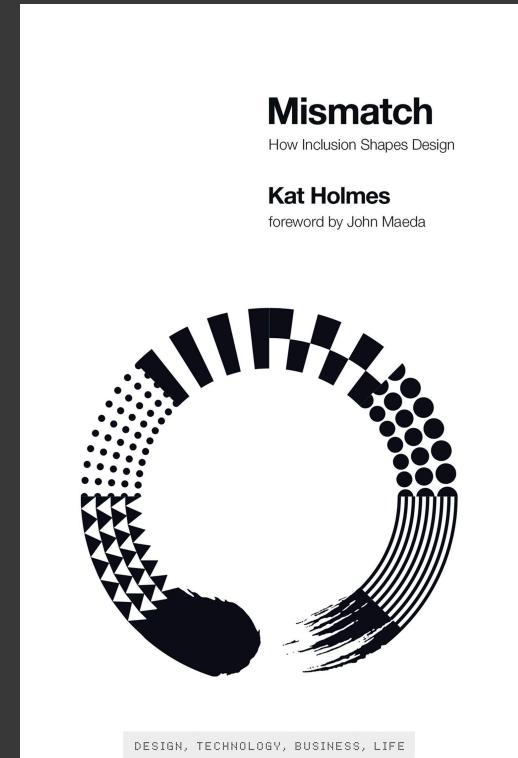
A new mental model for comprehending disabilities

Chapter 4:

# Ability Biases and Mismatched Interactions

Kat Holmes

Author, *Mismatch - How Inclusion Shapes Design*



DESIGN, TECHNOLOGY, BUSINESS, LIFE

## Chapter 4: Ability Biases and Mismatched Interactions

**"We are all born and gain abilities as we grow.**

**As we move through life,  
our abilities change as result  
of a illness or environment."**

**Kat Holmes**

Author, *Mismatch - How Inclusion Shapes Design*



**Mismatch**  
How Inclusion Shapes Design

**Kat Holmes**  
foreword by John Maeda



DESIGN, TECHNOLOGY, BUSINESS, LIFE

“**A person's capabilities and limitations are always a factor in how successful they interact with a solution.”**

**Kat Holmes**

Author, Mismatch - How Inclusion Shapes Design



# **Disability is not**

## **A personal health condition**

**Kat Holmes**

Author, *Mismatch - How Inclusion Shapes Design*



# Disability is a Mismatched Human Interaction

Kat Holmes

Author, Mismatch - How Inclusion Shapes Design



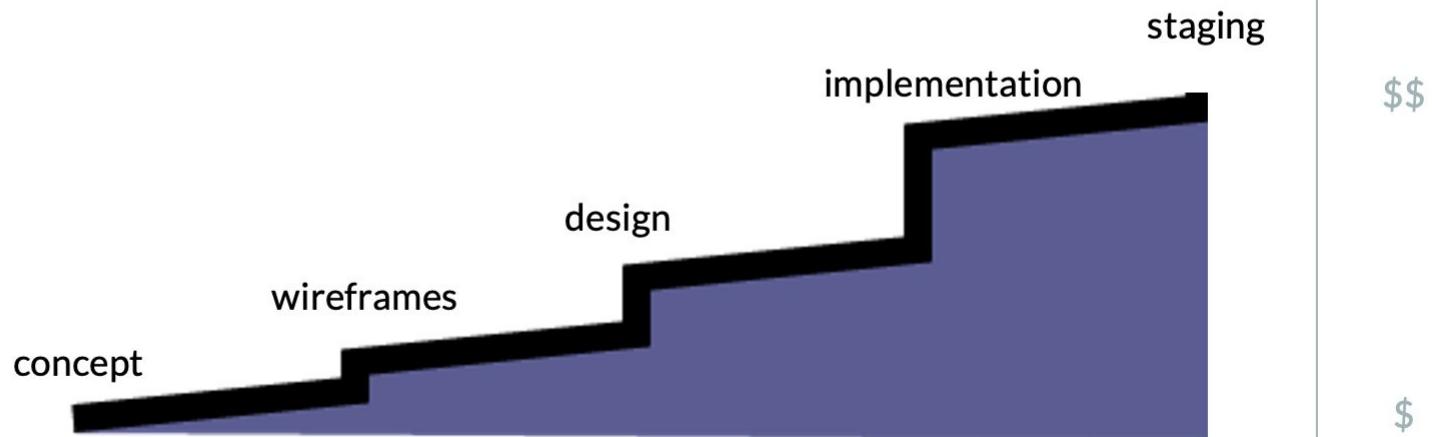
**Exclusion happens when  
we solve problems using  
our own biases**

# Accessibility by Design

Creating accessible experiences beyond compliance

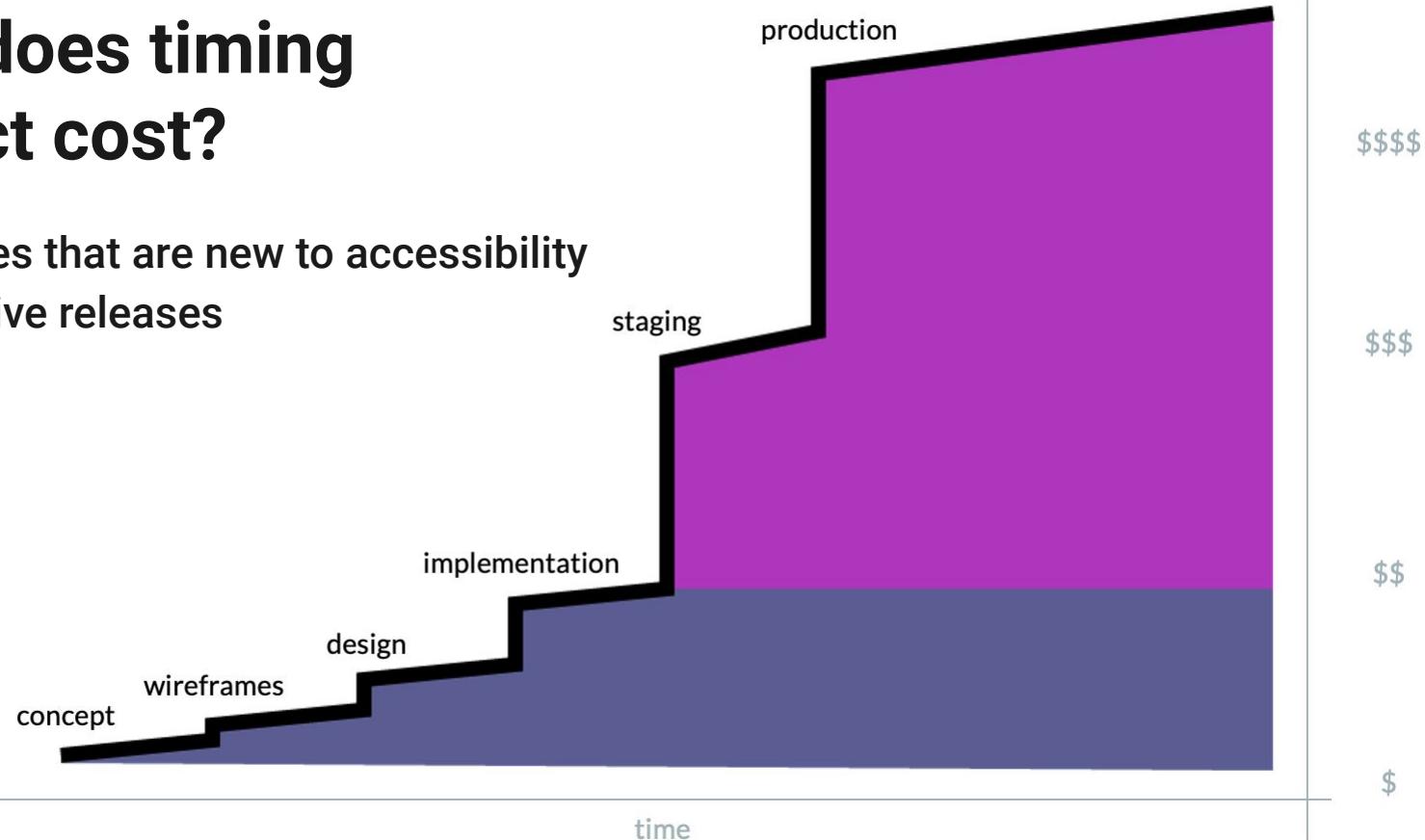
# How does timing impact cost?

Efficient organizations fix accessibility issues before release



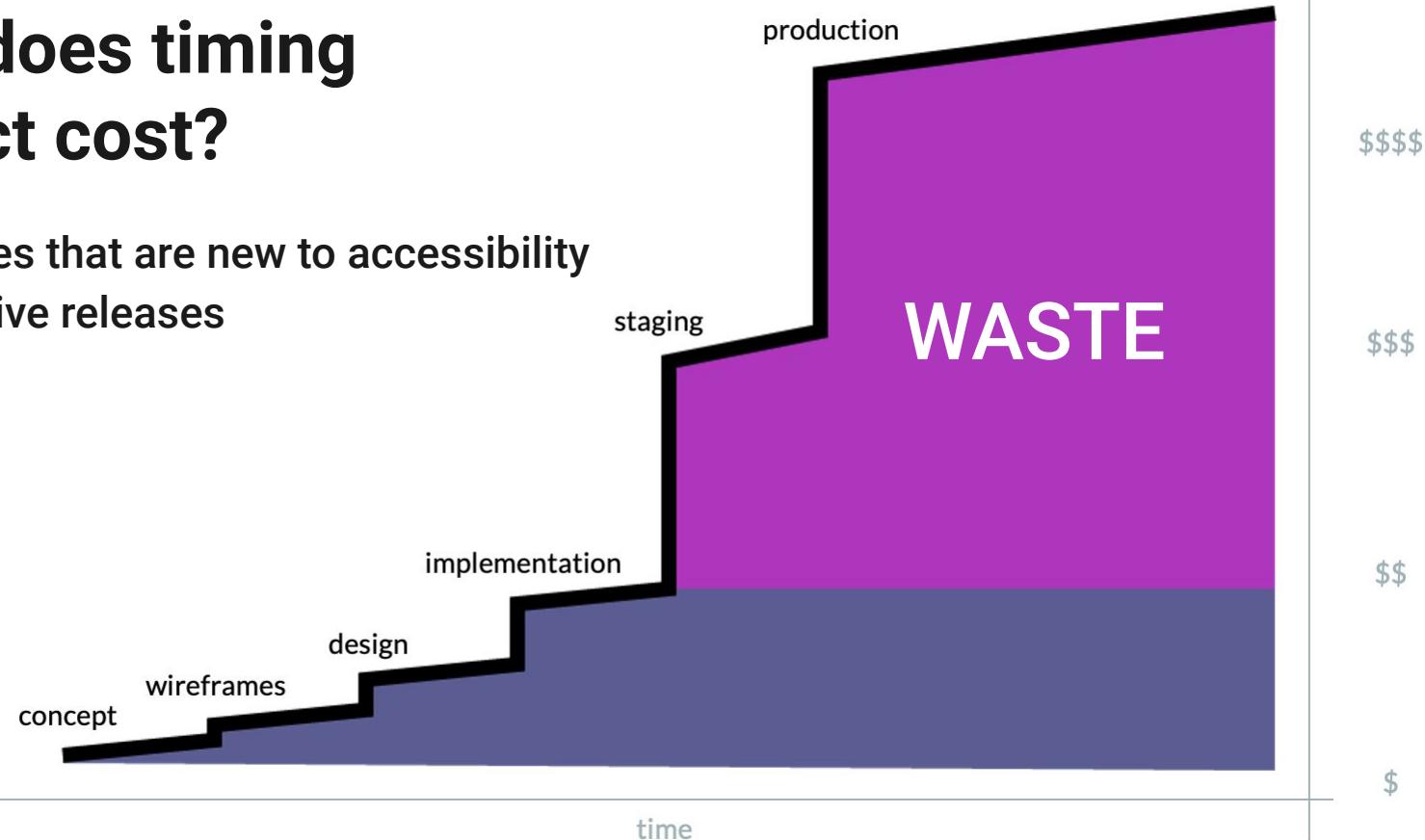
# How does timing impact cost?

Companies that are new to accessibility must fix live releases



# How does timing impact cost?

Companies that are new to accessibility must fix live releases

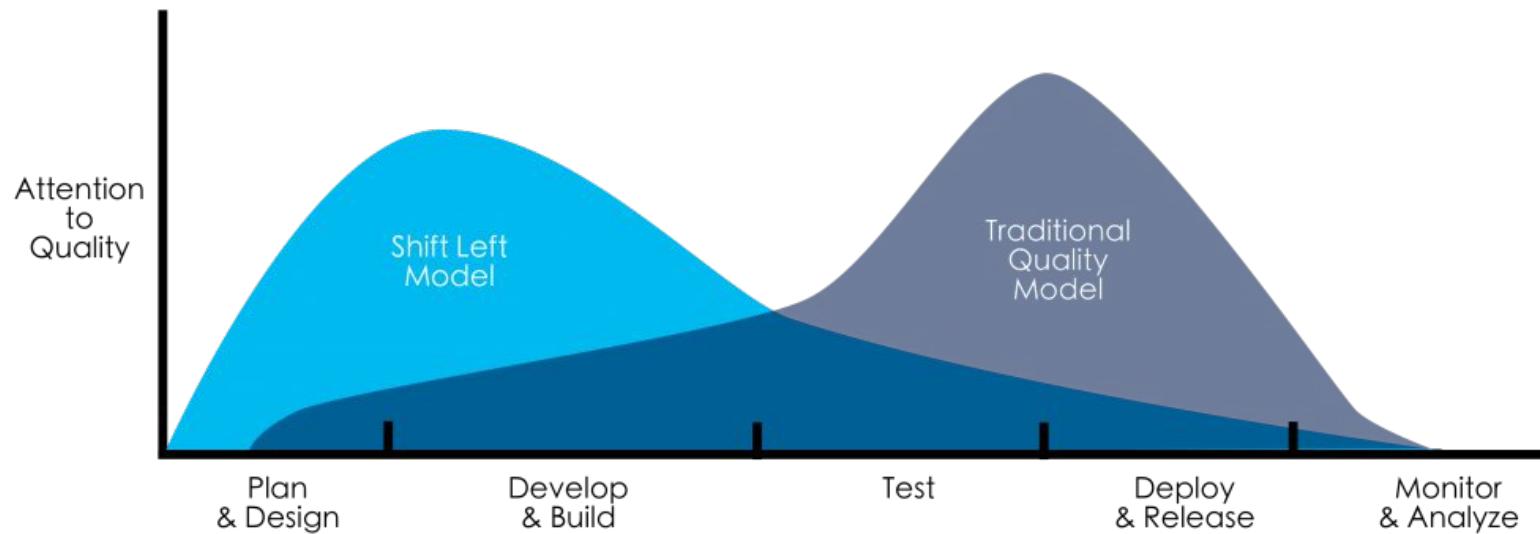


# **<< Shift Left**

**How might we bring Accessibility early in the product life cycle, so we craft more inclusive experiences?**

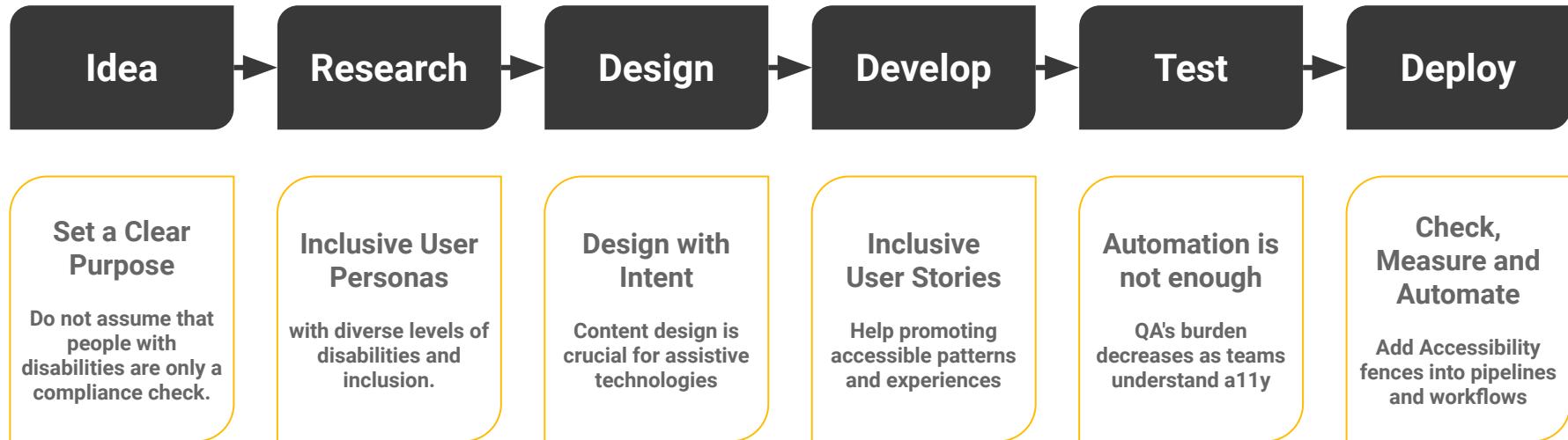
# Shift Left

Include accessibility at the beginning of your design/build process



# Accessibility as People First

## Accessibility by Design



# Inclusive Design

for professionals creating digital experiences

**"I wrote the book on user-friendly design.  
What I see today horrifies me."**

Don Norman - The New Business Of Growing Old - Fast Company article



The Design of Everyday Things  
by Don Norman, 1988

Illustration by Zachary Monteiro

“  
Do not think that thoughtful design is just for  
the elderly, or the sick, or the disabled.  
In the field of design, this is called  
“inclusive design” for a reason:  
It helps everyone.

Don Norman, 84

Fast Company - The New Business Of Growing Old



# Inclusive Design

is a field of User Experience Design that  
embraces how diverse people are beyond  
architecture and disabilities.

# Recognize Exclusion

Designing for inclusivity not only opens up our products and services to more people, it also reflects how people really are.

All humans grow and adapt to the world around them and we want our designs to reflect that.



# Solve for one, extend to many

Everyone has abilities, and limits to those abilities.

Designing for people with permanent disabilities actually results in designs that benefit people universally.

Constraints are a beautiful thing.



# Learn from diversity

Human beings are the real experts in adapting to diversity. Inclusive design puts people in the center from the very start of the process, and those fresh, diverse perspectives are the key to true insight.

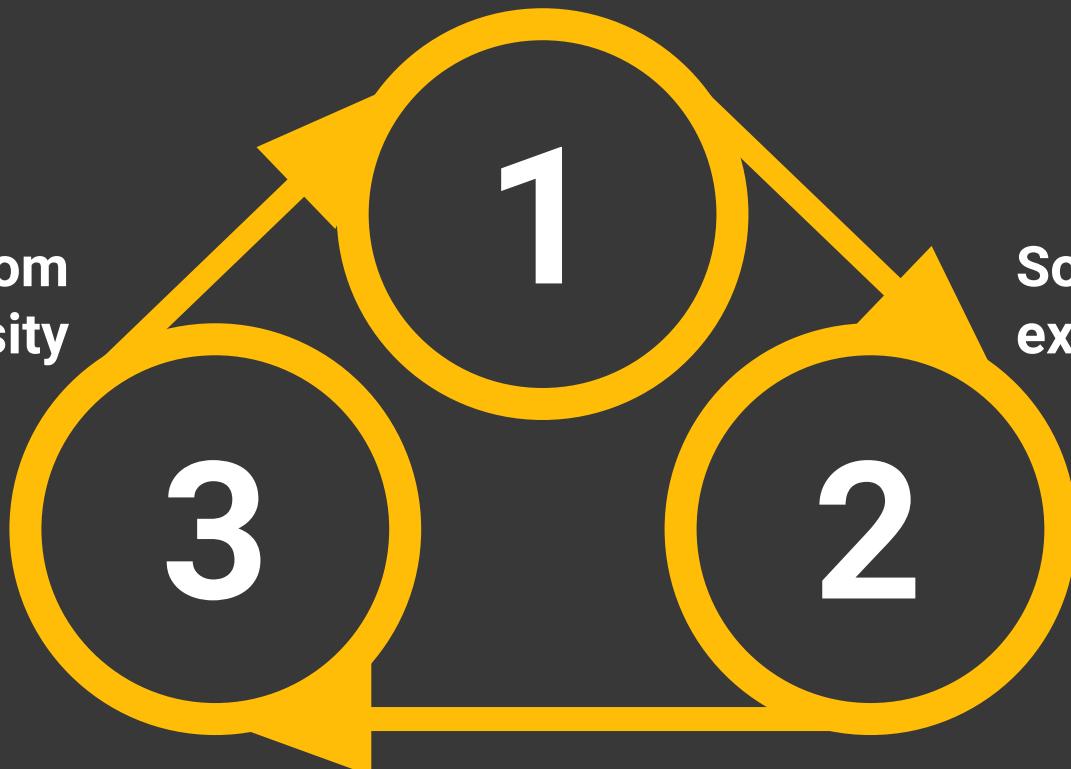


## Inclusive Design Cycle

Recognize  
Exclusion

Learn from  
diversity

Solve for one,  
extend to many

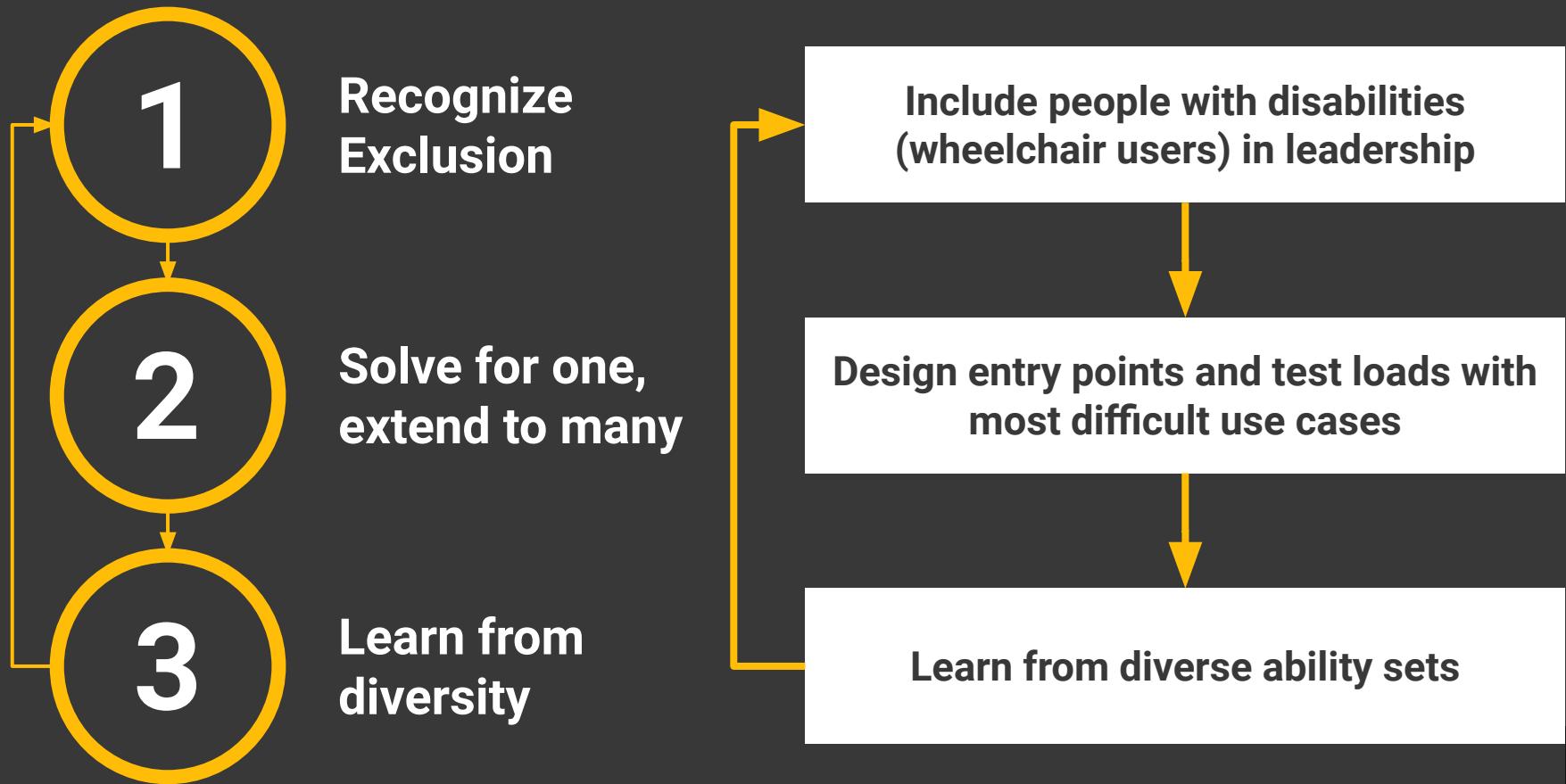


# Revisiting Hyperloop:

Learning from a  
more inclusive  
approach



## Inclusive Design Case for the Hyperloop



We need a new mindset



# An Inclusive Mindset

Photo by Kiana Bosman on Unsplash



# Racial Injustice

HEALTH

# Fitbits and other wearables may not accurately track heart rates in people of color

By RUTH HAILU / JULY 24, 2019

[Reprints](#)



ALEX HOGAN/STAT



## The Reason This "Racist Soap Dispenser" Doesn't Work on Black Skin

By [Max Plenke](#)

Sep. 9, 2015



SHARE

At a Marriott hotel in Atlanta, the soap dispensers have a little bit of a race problem.

# Racial Injustice creates challenges

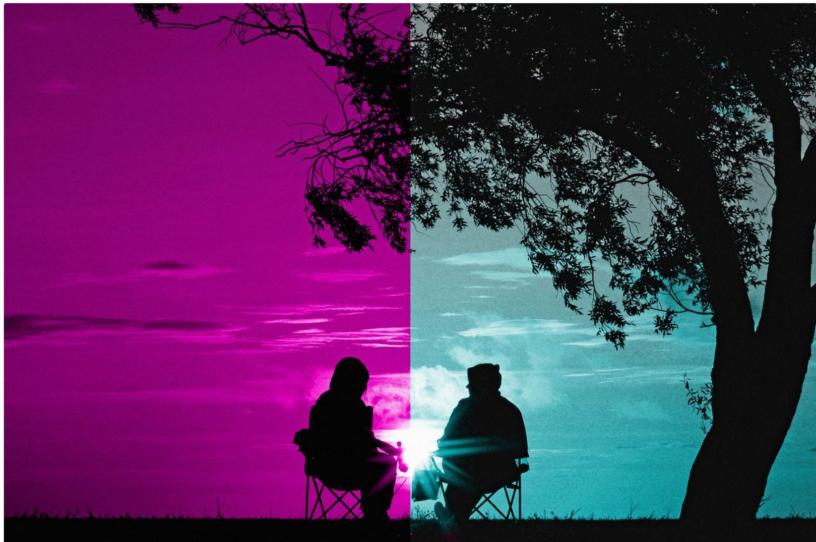
- Segregated communities
- Lack of quality living, finance and education
- Biased recruiting
- Society Stigma
- Hatred and further divide
- Products and design solutions geared towards the majority

# Gender Equity



## Women's Retirement Savings Are Way Behind Men's. Here's Why That Gender Gap Persists.

By Reshma Kapadia Nov. 18, 2019 5:00 am ET



**According to a new study from the Transamerica Center for Retirement Studies, both men and women's median estimate for what they would need in retirement savings came to \$500,000.**

**45% of women weren't confident they would be able to retire comfortably, compared with 29% of men**

**Men were nearly twice as likely as women to have accumulated \$250,000 or more.**

# **Gender Gap**

**is a function of women, on average, earning less, taking breaks during their career for caregiving, not investing as often as men and living longer, which can drive up their long-term care costs versus men.**



# Sexual Orientation

Photo by @mego-studio on Freepik

# Gender Identity



# I prefer not to say.

CNN health Food Fitness Wellness Parenting Vital Signs

## What's your gender? I prefer not to say

Text by Allison Hope; illustration by Leanza Abucayan, CNN

🕒 Updated 4:47 AM ET, Tue February 2, 2021



Some people don't fit into common pronoun categories, and others prefer not to share, notes author Allison Hope, who explains why this matters.

"When it comes to filling out a form, I can write my name and address and birth date on autopilot without pause.

But when I get to the gender question, **a wave of anxiety washes over.**"

# Generation



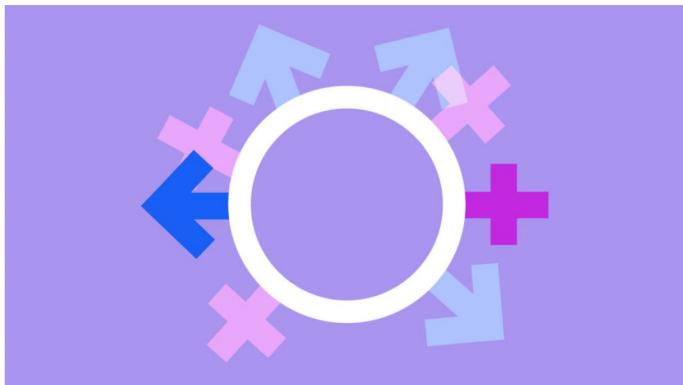
Harvard  
Business  
Review

Gender | Companies Can't Ignore Shifting Gender Norms

## Companies Can't Ignore Shifting Gender Norms

by Lisa Kenney

April 08, 2020



HBR Staff

**Over 12% of millennials identify as transgender or gender nonbinary and 25% of Generation Z expects to change their gender at least once in their lifetime.**

# Facebook's 50+ custom gender options



It is often also acceptable to use the third person plural (they, them, their, themselves) instead of the third-person singular (he/she, his/hers, him/her, himself/herself) when referring to someone who has not expressed a clear pronoun choice.

# Now that you see me, you can meet the real me.

If you go by a first name other than the one on your eligible Citi-branded consumer credit card, follow the steps below to update your profile.



Being seen is the beginning of everything. That's why we're giving our transgender and non-binary customers the choice to have account profiles and credit cards that match who they are.



Mastercard True Name - <https://youtu.be/Oq8OsHeHtvM>

# Cultural & Religious



Illustration by @kenchiro75 on Freepik



Faraz Ahmed, head of the online help platform at Google, said his portfolio for years was focused on stocks to avoid the Islamic prohibition against interest. But he worried that was too risky. Christie Hemm Klok for The New York Times

## WEALTH MATTERS

## Faith-Based Investing Makes Up Ground in Gains and Convenience

Investing according to theological beliefs “is much easier to do now,” a wealth adviser said. It’s also as profitable as investing without a religious screen, and no more risky.

By Paul Sullivan

May 14, 2021

The intersection of faith and money can be complicated.

But investing by the tenets of your faith has become easier, and in many cases it’s neither less profitable nor more risky than investing without a religious screen. There are Islamic exchange-traded funds and real estate investment trusts, Jewish venture capital funds and Catholic separately managed accounts.

# We need new tools

# The Designer's Critical Alphabet

Lesley-Ann Noel PhD

ig: @

Ethnicity

Linguistic Hegemony

Transgender Identity

Ableism

Bias

Cultural

Disabilities

# Bias

Bias is disproportionate weight in favor of or against one thing, person, or group compared with another, usually in a way considered to be unfair.

Self-correction against implicit or unconscious bias takes a lot of conscious work.

*Have you acknowledged your biases and tried to counter them by trying to understand the perspective of others?*

Inequality

Justice (Social)

Kleptocracy

Questioning Mindset

Religious

Sexual Orientation

Xenophobia

You

Zero Sum Thinking

# The Designer's Critical Alphabet

Lesley-Ann Noel PhD

ig: @lesleyannnoel / tw: @mamaazure

Ableism

Bias

Cultural

Disabilities

Ethnicity

Feminist Theory

Gender Equality

Heterosexuality

Linguistic Hegemony

Marginalization

Neo-Colonialism

Privilege

Transgender Identity

Unlearning Oppression

Values

Westernization

## Ableism

Ableism is discrimination and social prejudice against people with disabilities or who are perceived to have disabilities. Ableism characterizes persons as defined by their disabilities and as inferior to the non-disabled.

Ableism is systematic, institutional devaluing of bodies and minds deemed deviant, abnormal, defective, subhuman, less than.

**Ableism is violence.**

*Does the Voice and Tone of your product promote an inclusive language?*

# Cards for Humanity

A practical tool for inclusive design

We'll deal you two random cards, a person and a trait. Your challenge: work out how you can meet their needs.



Lucia, 55  
**is always upbeat**



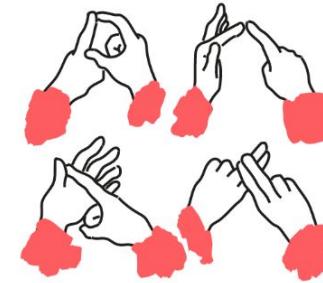
*and is blind*

## How can you meet their needs?

Lucia Petrilli, 55  
**is always upbeat**



Deal new pair



**and is deaf**

View needs

Swap card

View needs

Swap card

## How can you meet their needs?

Lucia Petrilli, 55  
**is always upbeat**



View needs

Swap card

Deal new pair

### Consider

People with hearing loss may not be able to hear verbal announcements or listen to any content.

They might not be able to communicate over the phone.

Over 360 million people across the globe have disabling hearing loss. That is about 5% of the world's population – World Health Organization

View needs

Swap card

We need new **methods**

# Accessible User Personas

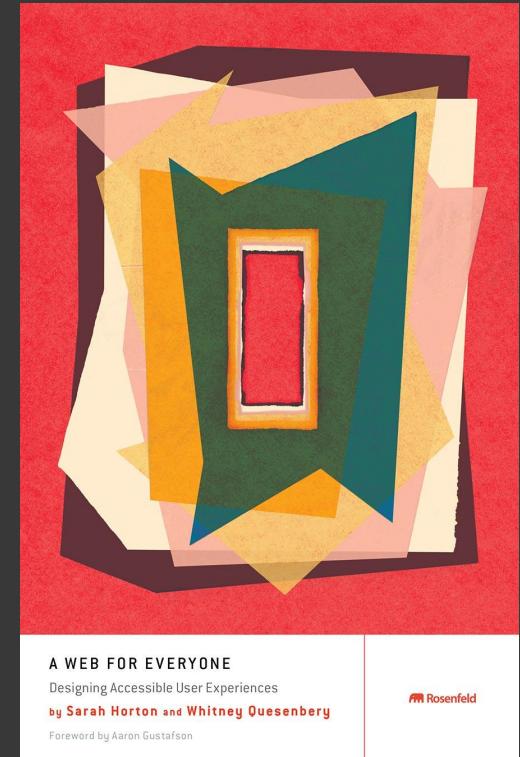
**People First: Designing for Differences**

## Chapter 2: People First: Designing for Differences

**"You have to know the people you are designing for. And that includes people with disabilities."**

**Sarah Horton**

Co-Author, A Web for Everyone: Designing Accessible Experiences



## Chapter 2: People First: Designing for Differences



**Trevor**  
High school student  
with autism



**Emily**  
Cerebral palsy, living independently



**Jacob**  
Blind, a bit of a geek



**Lea**  
Living with fatigue  
and pain



**Steven**  
Deaf, ASL speaker



**Vishnu**  
Global citizen with low vision



**Maria**  
Bilingual mobile user



**Carol**  
Grandmother with macular  
degeneration

# We need new processes

# **Accessible User Stories and Acceptance Criteria**

## Example

# Keyboarding through Search Results

As a **keyboard-only user**,  
I want to keyboard navigate and filter the search  
results for jobs near me so that I can find work  
close to home.

## Example

# Acceptance Criteria

All functionality of the content is operable through a keyboard interface.

TAB key moves through the list of search results in the natural keyboard order of the intended interface layout.

## Example

# Acceptance Criteria

With focus on a filter heading, the SPACE or ENTER key will expand the filter accordion.

## Example

# Accessible Design Requirements

Focusable elements should be in a logical order  
and display a clear indication of focus.

# Final Thoughts

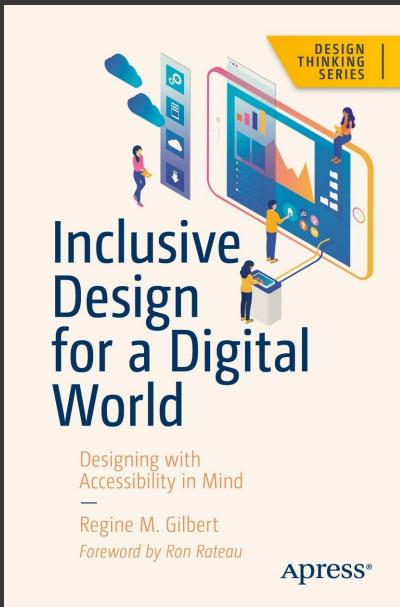
**How inclusive and diverse are your teams?**

# Inclusive Design

requires a diverse team composition

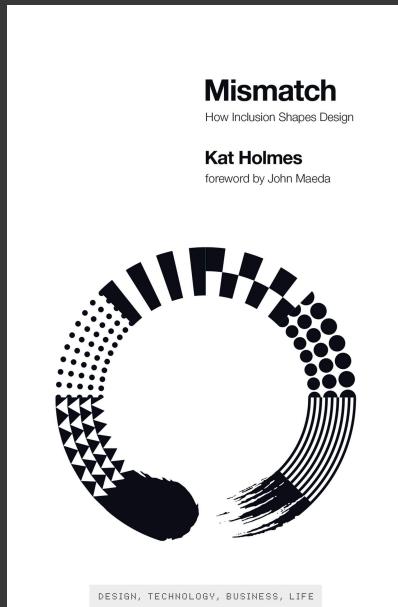


## Recommended Reading



**Inclusive Design for a Digital World**

Regine M. Gilbert



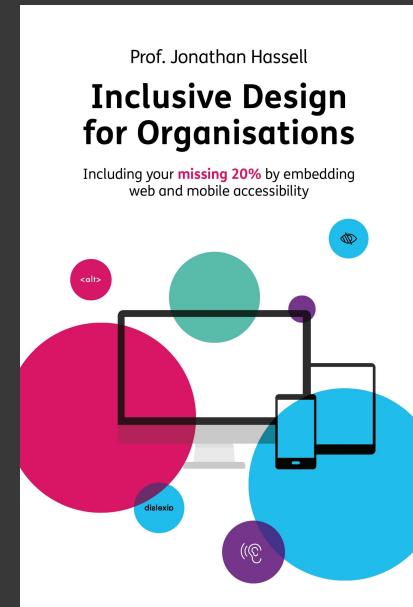
**Mismatch  
How Inclusion Shapes Design**

Kat Holmes



**A Web for Everyone  
Designing Accessible UX**

Horton, Quesenberry



**Inclusive Design for Organisations**

Jonathan Hassell

# Thank you!

Link to this presentation:

[bit.ly/vanguard-wk1](https://bit.ly/vanguard-wk1)

# List of Resources

## Downloads

**Designing for your future self (Slides)**

<http://bit.ly/idx21-futureself>

**Interview with your future self (Worksheet)**

PDF: <http://bit.ly/b2y-future-pdf>

Figma: <http://bit.ly/b2y-future-fiq>

**Design Thinking 2.0 Playlist (Spotify)**

<https://open.spotify.com/playlist/3sslNp9ZvZ7jt0A0wZpuZx?si=OM0UdWfbS7mM79EoDiJK8w>

## Books

**Inclusive Design for a Digital World**

Regine M. Gilbert

**Mismatch, How Inclusion Shapes Design**

Kat Holmes

**A Web for Everyone, Designing Accessible UX**

Horton, Quesenberry

**Inclusive Design for Organisations**

Jonathan Hassell

# List of Resources

## References

### The Designer's Critical Alphabet

Lesley-Ann Noel PhD instagram: @lesleyannnoel  
<http://criticalalphabet.com/>

### Words to Describe Different Disabilities

<http://bit.ly/describing-disabilities>

### Fitbits and other wearables may not accurately track heart rates in people of color

<https://www.statnews.com/2019/07/24/fitbit-accuracy-dark-skin/>

### What's your gender? I prefer not to say (CNN Health)

<https://www.cnn.com/2021/02/02/health/gender-question-not-always-necessary-wellness/index.html>

### Companies Can't Ignore Shifting Gender Norms (HBR)

<https://hbr.org/2020/04/companies-cant-ignore-shifting-gender-norms>

### Microsoft inclusive Design Toolkit

<https://www.microsoft.com/design/inclusive/>

### Supreme Court Declines to Review Ninth Circuit Decision in Robles v. Domino's, Exposing Businesses to More Website Accessibility Lawsuits

<https://www.adatitleiii.com/2019/10/supreme-court-declines-to-review-ninth-circuit-decision-in-robles-v-dominos-exposing-businesses-to-more-website-accessibility-lawsuits/>

Did you learn  
something new today?

# Appendix

More Goodies for Designers



[bit.ly/describing-disabilities](http://bit.ly/describing-disabilities)



## Words to Describe Different Disabilities

Aa Disability	☰ Outdated Language	☰ Respectful Language
Blind or Visually Impairment	Dumb Invalid	Person who is... Blind visually impaired
Deaf or Hearing Impairment	Invalid Deaf-and-Dumb Deaf-Mute	Person who is... Deaf Hard-of-hearing
Speech/Communication Disability	Dumb "One who talks bad"	Person with a... Speech disability Communication disability
Learning Disability	Retarded Slow Brain-Damaged "Special ed"	Person with a... Learning Disability Cognitive disability
Mental Health Disability	Hyper-sensitive Psycho Crazy Insane Wacko Nuts	Person with a... psychiatric disability mental health disability
Mobility/Physical Disability	Handicapped Physically Challenged "Special" Deformed Cripple Gimp Spastic Spaz Wheelchair-bound Lame	Person with a... physical disability mobility disability wheelchair user physically disabled
Emotional Disability	Emotionally disturbed	Person with a... emotional disability Emotionally disabled
Cognitive Disability	Retard Mentally Retarded "Special ed"	Person who is... Cognitively disabled Developmentally disabled Person with a... Cognitive disability Developmental disability
Short Stature, Little Person	Dwarf Midget	Someone of... Short stature Little person

# Accessible Typography

Minimize confusion, Maximize understanding

# Accessible Typography - What to look for?

Typically people with dyslexia experience some of the following when reading:

- Letters or words moving or spinning on the page
- Confusion around spacing between letters and individual letters such as confusing the letter '**m**' with the letters '**rn**' when written together as in: **moder**n and **modem**
- Mixing up letters with their mirror images such as: '**b**' and '**d**', '**p**' and '**q**'

# Accessible Typography - Best Practices

Here are some things you can do to make your digital communications as accessible as possible:

- Use a small number of fonts, ideally only 1 or 2 for headings and body text.
- Good color contrast between the text and the background.
- A recommended minimum font size is 12 pt.
- Use bold to add emphasis rather than italics or UPPERCASE.
- Don't animate text and avoid making the letters flash or blink.

# Accessible Typography - Examples

Hannari a11y - 1l rn m & pq bd gq + 01234567890

Menlo a11y - 1l rn m & pq bd gq + 01234567890

Georgia a11y - 1l rn m & pq bd gq + 01234567890

Open Sans a11y - 1l rn m & pq bd gq + 01234567890

# Accessible Typography - Examples

PT Serif a11y - 1l rn m & pq bd gq + 01234567890

Roboto a11y - 1l rn m & pq bd gq + 01234567890

Apple Braille a11y - 1l rn m & pq bd gq + 01234567890

Ayuthaya a11y - 1l rn m & pq bd gq + 01234567890

Courier a11y - 1l rn m & pq bd gq + 01234567890

# Accessible Typeface - FS Me by Fontsmith

FS Me - by Fontsmith

a11y - 1l rn m & pq bd gq + 01234567890

FS Me - by Fontsmith

a11y - 1l rn m & pq bd gq + 01234567890

# Wayfinding

Interaction Design for  
Assistive Technologies



Home > Women > Women's Tops

## Women's Tops

### Filters

0 filters applied

[Clear filters](#)

### Colors



### Size



### Sort

 Showing 1 to 12 of 40

#### Sort By

Newest

#### Items Per Page

12

#### View By

Grid View



Slim Sweatshirt

\$24.99



Long Sleeved T-Shirt

\$34.99



Short Sleeved Peasant Top

\$20.99



Home > Women's Tops > Women's Tops

## Women's Tops

12 Filters

0 filters applied

[Clear filters](#)

**Colors**

- Blue
- Green
- Yellow
- Red

**Size**

- Large
- Medium

13 Sort Showing 1 to 12 of 40

Sort By: Newest

Items Per Page: 12

View By: Grid View

14

15

16

Slim Sweatshirt \$24.99

Long Sleeved T-Shirt \$34.99

Short Sleeved Peasant Top \$20.99

The screenshot shows a search results page for 'Women's Tops'. On the left, there are filters for Colors (Blue, Green, Yellow, Red) and Size (Large, Medium). In the center, there are sorting options: 'Sort By' (Newest), 'Items Per Page' (12), and 'View By' (Grid View). Below these are three product cards: a red 'Slim Sweatshirt' (\$24.99), a blue 'Long Sleeved T-Shirt' (\$34.99), and a green 'Short Sleeved Peasant Top' (\$20.99).

# Accessibility Bluelines

Tab Order



Assistive Technology



Shortcuts



Regions



Notation



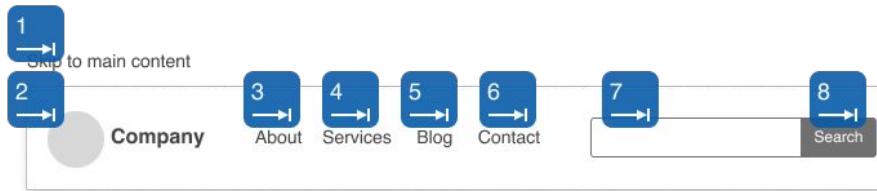
Letter Keys



Directional Arrows



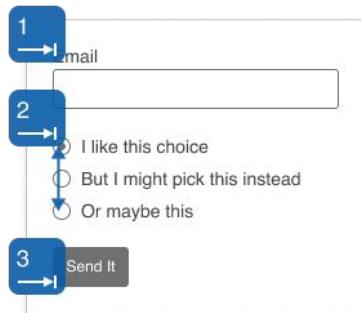
## Focus Order



### Focus Order

TAB key moves through the list of interactive items in the order of the DOM.

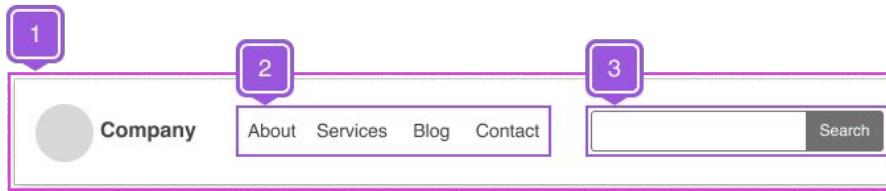
When focus is on the skip link it is visible.



TAB key moves through the list of interactive items in the order of the DOM.

When focus is on the radio group arrowing UP/DOWN/RIGHT/LEFT moves through the options.

# Landmarks



## Notes

Use native HTML elements when possible.

1 role: "banner"

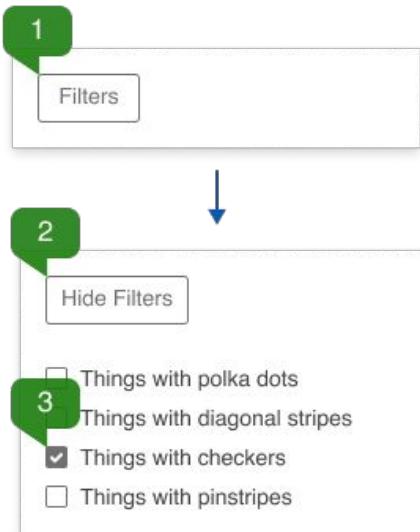
2 role: "navigation"  
label: "main navigation"

3 role: "search"

## Examples:

```
<header role="banner">  
<nav role="navigation" aria-label="main navigation">  
<form role="search">
```

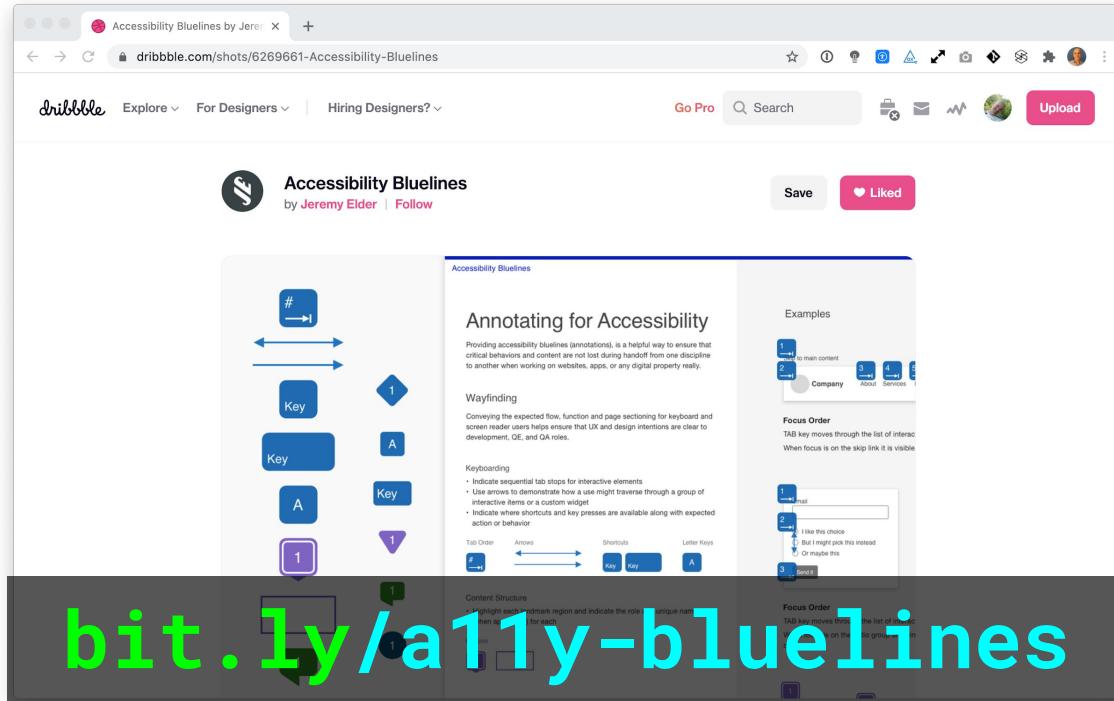
# Assistive Technologies (Screen Reader)



## Notes

- 1 name: "Filters"  
role: "button"  
state: aria-expanded="false"  
SR: "**Filters, collapsed, button**"
- 2 name: "Hide Filters"  
role: "button"  
state: aria-expanded="true"  
SR: "**Filters, expanded, button**"
- 3 name: "Things with checkers"  
role: "checkbox"  
state: "checked"  
SR: "**Things with checkers, checked, checkbox**"

# Accessibility Bluelines Design Assets

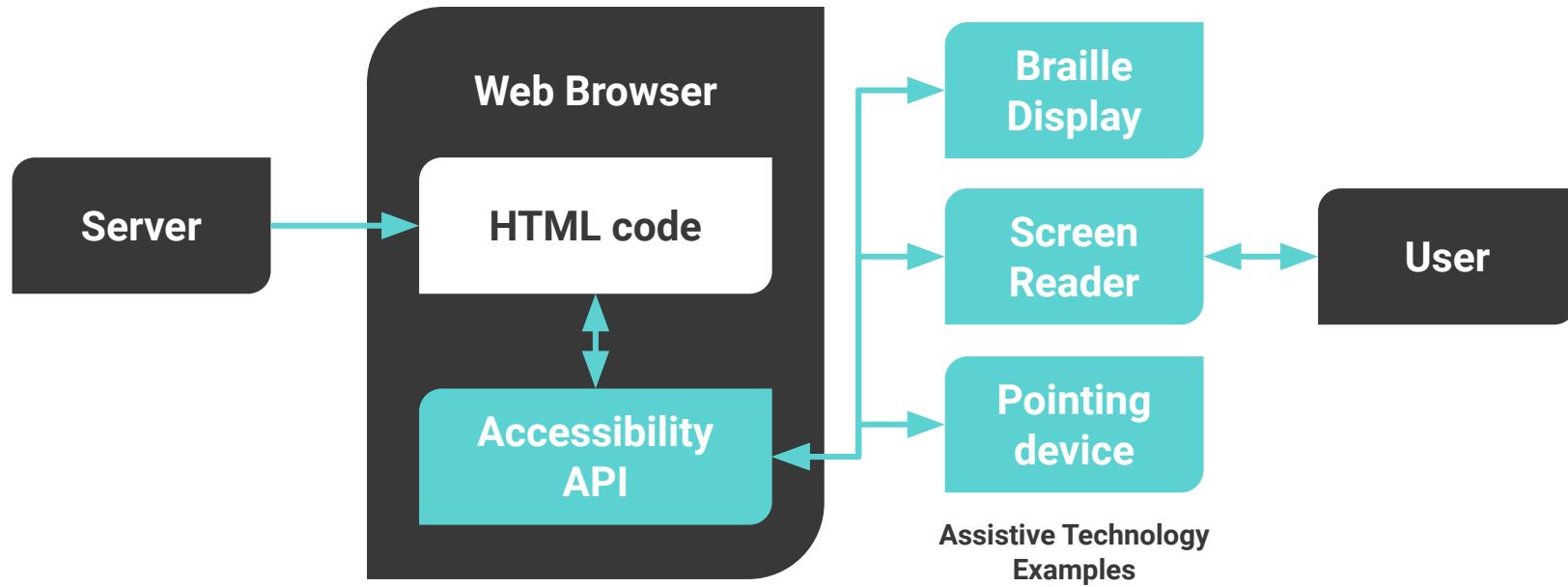


Download includes marker symbols, documentation, and example use (Sketch, Figma, Adobe XD, and InVision Studio versions).

# Screen Readers

How do they work?

# How do assistive technologies work?



# Understanding how screen readers announce

element

A Heading containing the title of the page

role

A navigation region, also known as landmark, containing navigation items

state

A link that has been visited will indicate "visited", or a select menu is "expanded"

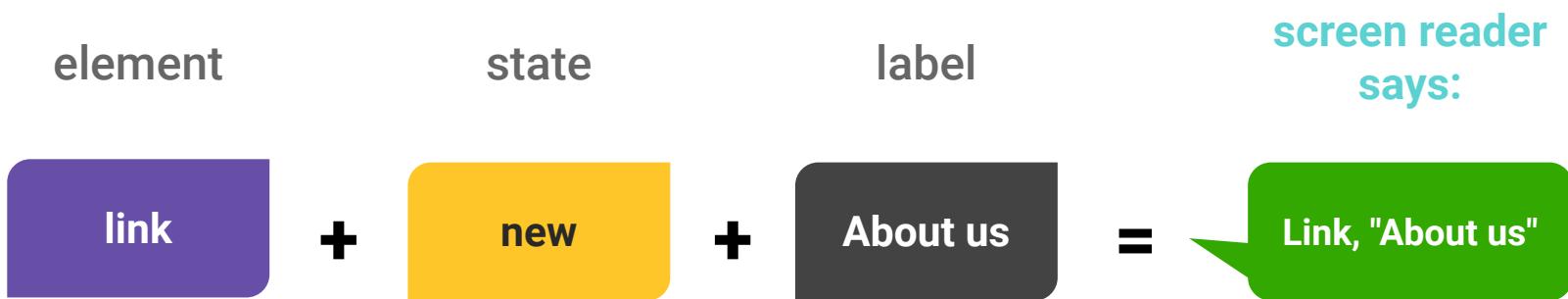
label

A button with a label called "Sign in"

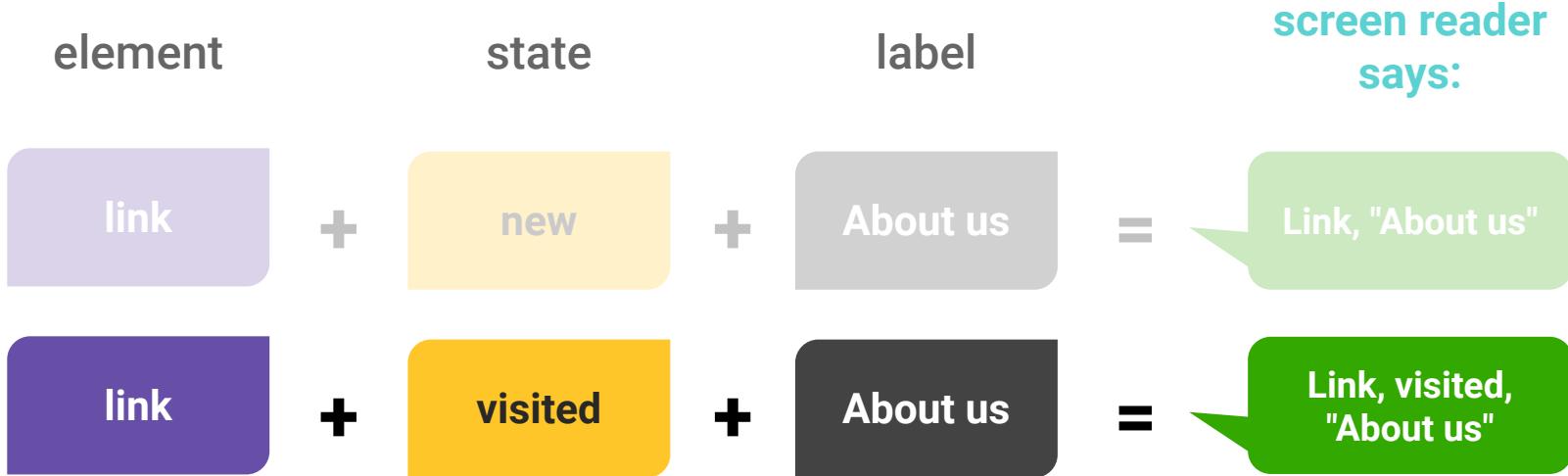
# How are things announced?



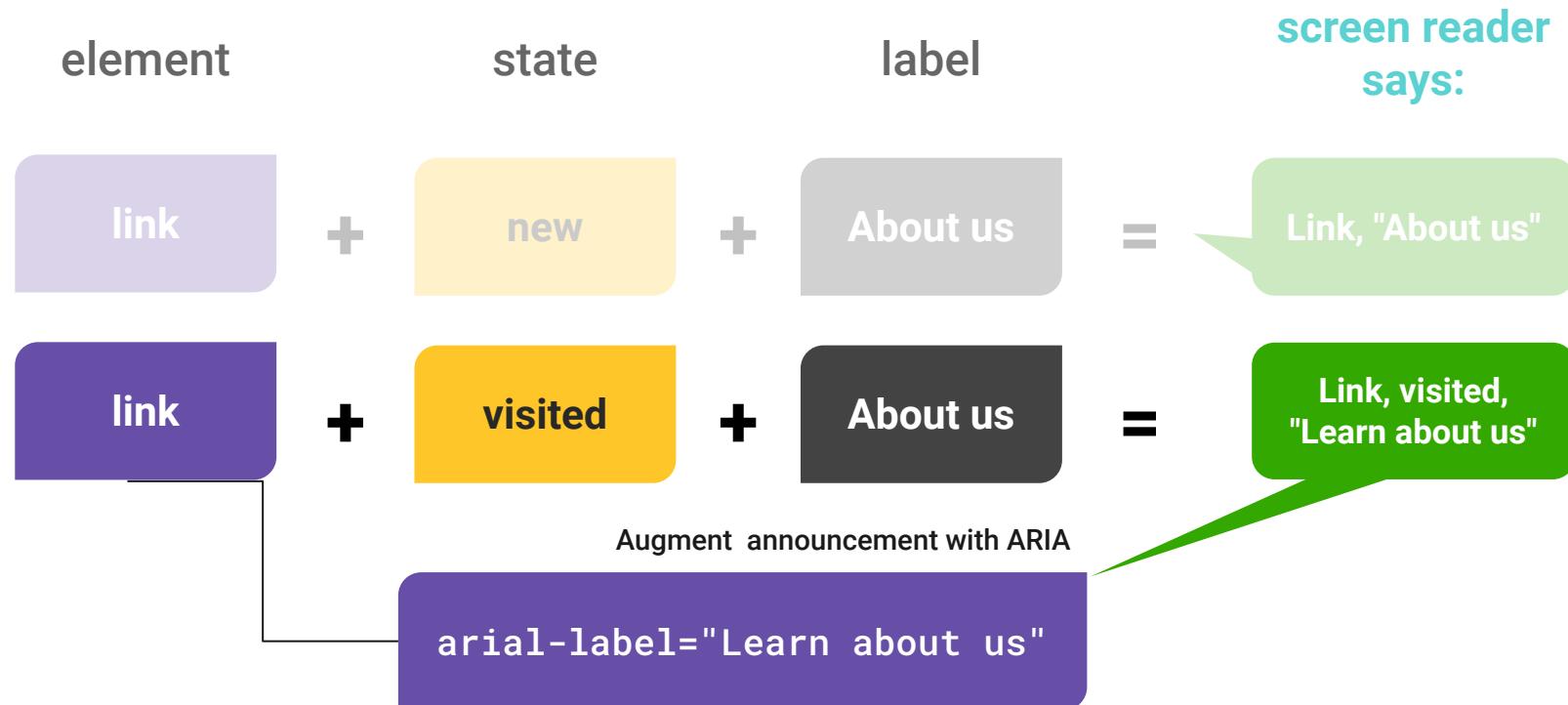
# A new link



# A visited link



# Augmenting announcements with ARIA





Home > Women > Women's Tops

## Women's Tops

### Filters

0 filters applied

[Clear filters](#)

[Colors](#)



#### Size



Large

Medium

Small

#### Price Range



From

"Colors", collapsed, button

"collapsed"

"button"



Slim Sweatshirt

\$24.99



Long Sleeved T-Shirt

\$34.99



Short Sleeved Peasant Top

\$20.99

screen reader says:



Home > Women > Women's Tops

## Women's Tops

### Filters

0 filters applied

[Clear filters](#)

[Colors](#)



#### Size



Large

Medium

Small

#### Price Range



From

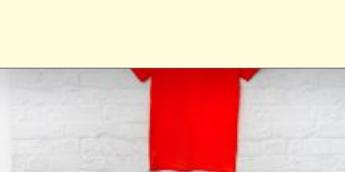
aria-label

"Colors"

"Enter to expand and  
filter our products by color"  
"collapsed"  
"button"

View By

Grid View



Slim Sweatshirt

\$24.99



Long Sleeved T-Shirt

\$34.99



Short Sleeved Peasant  
Top

\$20.99

screen reader says:

"Enter to expand and filter our  
products by color", collapsed,  
button



Home > Women > Women's Tops

## Women's Tops

### Filters

0 filters applied

[Clear filters](#)

[Colors](#)



- Blue
- Green
- Yellow
- Red

### Size



- Large
- Medium

aria-label

"Colors"

"Colors filter"  
"expanded"  
"button"

"Colors filter", expanded,  
button

View By

Grid View



Slim Sweatshirt

\$24.99



Long Sleeved T-Shirt

\$34.99



Short Sleeved Peasant  
Top

\$20.99

# When are things announced?

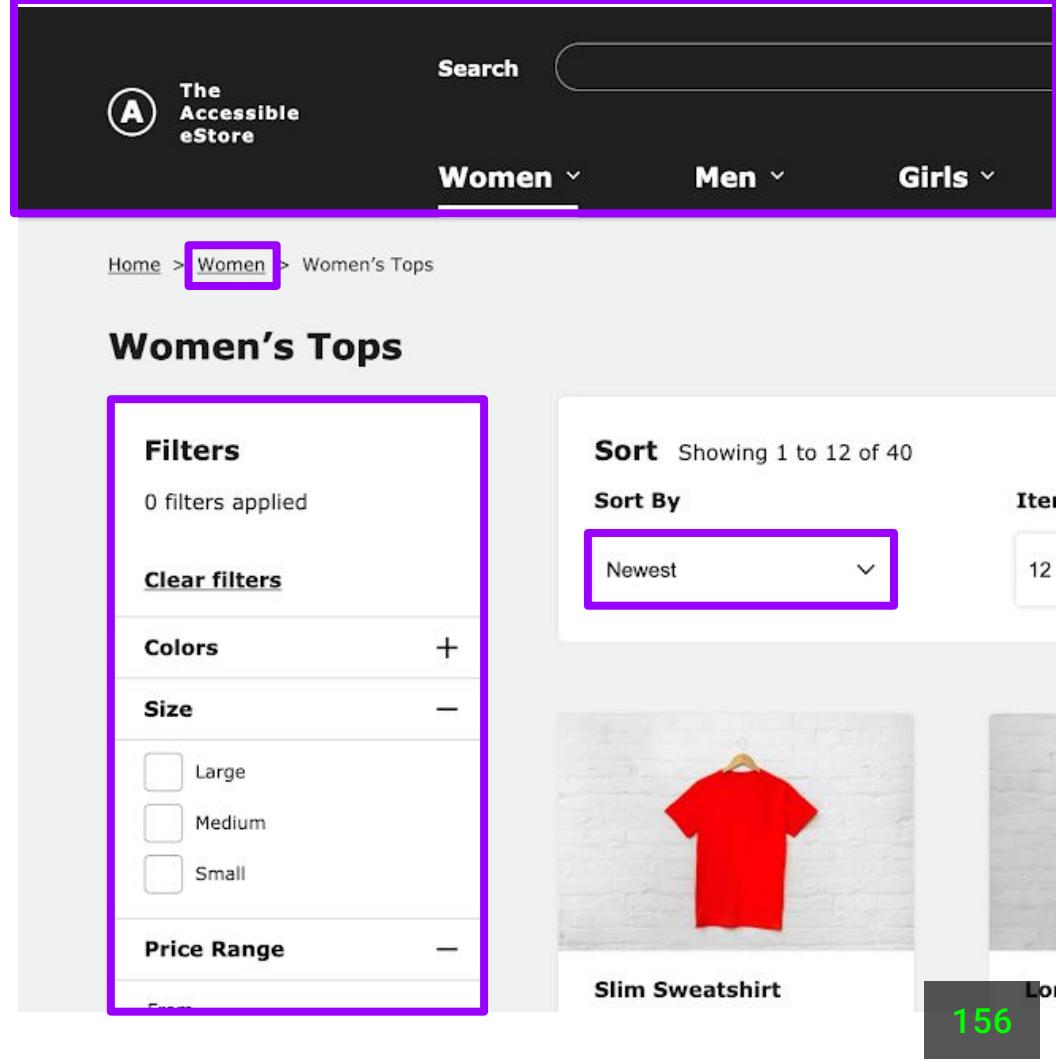
I'd like to hear:

"Hi Hellen, welcome to the Accessible Store, press Enter to skip the navigation or Tab to search our products",

when I'm on the top of the page.

# When are things announced?

Whenever a screen reader  
**stops**  
something is announced



The screenshot shows a web browser displaying 'The Accessible eStore' website. The top navigation bar includes a logo with a large 'A', a search bar, and dropdown menus for 'Women', 'Men', and 'Girls'. The current page is 'Women > Women's Tops'. On the left, a sidebar titled 'Filters' shows '0 filters applied' and a 'Clear filters' button. It has sections for 'Colors' (with a plus sign) and 'Size' (with a minus sign). Under 'Size', there are three checkboxes for 'Large', 'Medium', and 'Small', all of which are unchecked. Below this is a 'Price Range' section with a minus sign. To the right, a main content area shows a sorting section with 'Sort Showing 1 to 12 of 40' and a 'Sort By' dropdown set to 'Newest'. A product card for a red 'Slim Sweatshirt' is visible, showing a small image of the shirt on a hanger.

The Accessible eStore

Search

Women Men Girls

Home > Women > Women's Tops

## Women's Tops

**Filters**

0 filters applied

[Clear filters](#)

**Colors** +

**Size** -

- Large
- Medium
- Small

**Price Range** -

Sort Showing 1 to 12 of 40

Sort By

Newest



Slim Sweatshirt

156

# Designing with Intent

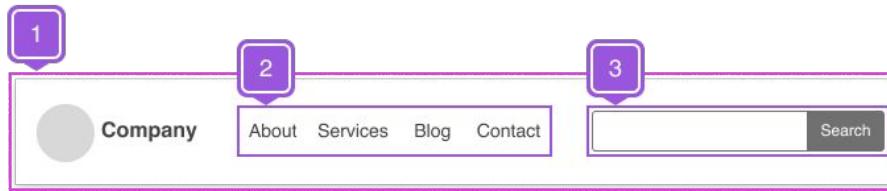
## Interface Layout Architecture

**Landmarks** (or regions)

**are important!**

Think of them as "grouping" layers

# Landmarks



## Notes

Use native HTML elements when possible.

1 role: "banner"

2 role: "navigation"  
label: "main navigation"

3 role: "search"

### Examples:

```
<header role="banner">  
<nav role="navigation" aria-label="main navigation">  
<form role="search">
```

[Home](#) > [Women](#) > [Women's Tops](#)

## Women's Tops

### Filters

0 filters applied

[Clear filters](#)

### Colors

- Blue
- Green
- Yellow
- Red

### Size

- Large
- Medium

**Sort** Showing 1 to 12 of 40**Sort By**

Newest

**Items Per Page**

12

**View By**

Grid View



Slim Sweatshirt

\$24.99



Long Sleeved T-Shirt

\$34.99



Short Sleeved Peasant Top

\$20.99

content

search

primary navigation

Girls ▾

Boys ▾

Account

Cart 3

secondary  
navigation

Stores

Contact

Home > Women > Women's Tops

## Women's Tops

### Filters

0 filters applied

[Clear filters](#)

### Colors

Blue

Green

Yellow

Red

### Size

Large

Medium

Sort Showing 1 to 12 of 40

### Sort By

Newest

### Items Per Page

12

### View By

Grid View



Slim Sweatshirt

\$24.99



Long Sleeved T-Shirt

\$34.99



Short Sleeved Peasant Top

\$20.99

content

search

primary navigation

Girls ▾

Boys ▾

Account

Cart 3

secondary  
navigation

Stores

Contact

Home > Women > Women's Tops

breadcrumbs

content

## Women's Tops

### filter

#### Filters

0 filters applied

[Clear filters](#)

#### Colors

- Blue
- Green
- Yellow
- Red

#### Size

- Large
- Medium

### sort

Sort Showing 1 to 12 of 40

Sort By

Newest

Items Per Page

12

View By

Grid View

### products

article

Slim Sweatshirt

article

Long Sleeved T-Shirt

article

Short Sleeved Peasant Top

\$24.99

\$34.99

\$20.99

"Hi Helen, welcome back to  
our Accessible e-store",  
banner

[Home](#) > [Women](#) > Women's Tops

## Women's Tops

### Filters

0 filters applied

[Clear filters](#)

### Colors



### Size



**Sort** Showing 1 to 12 of 40

### Sort By



### Items Per Page



### View By



**Slim Sweatshirt**

\$24.99



**Long Sleeved T-Shirt**

\$34.99



**Short Sleeved Peasant Top**

\$20.99



[Home](#) > [Women](#) > Women's Tops

## Women's Tops

### Filters

0 filters applied

[Clear filters](#)

### Colors

Blue

Green

Yellow

Red

### Size

Large

Medium

Sort Showing 1 to 12 of 40

### Sort By

### Items Per Page

12

### View By

Grid View

article



Slim Sweatshirt

\$24.99

"Slim Sweatshirt, 24.99",  
article



Long Sleeved T-Shirt

\$34.99



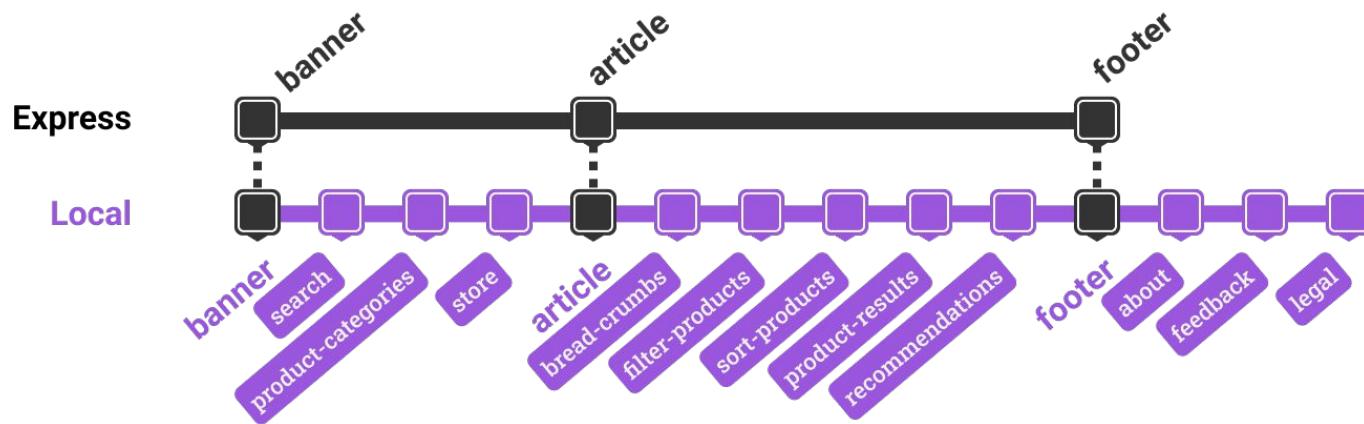
Short Sleeved Peasant  
Top

\$20.99

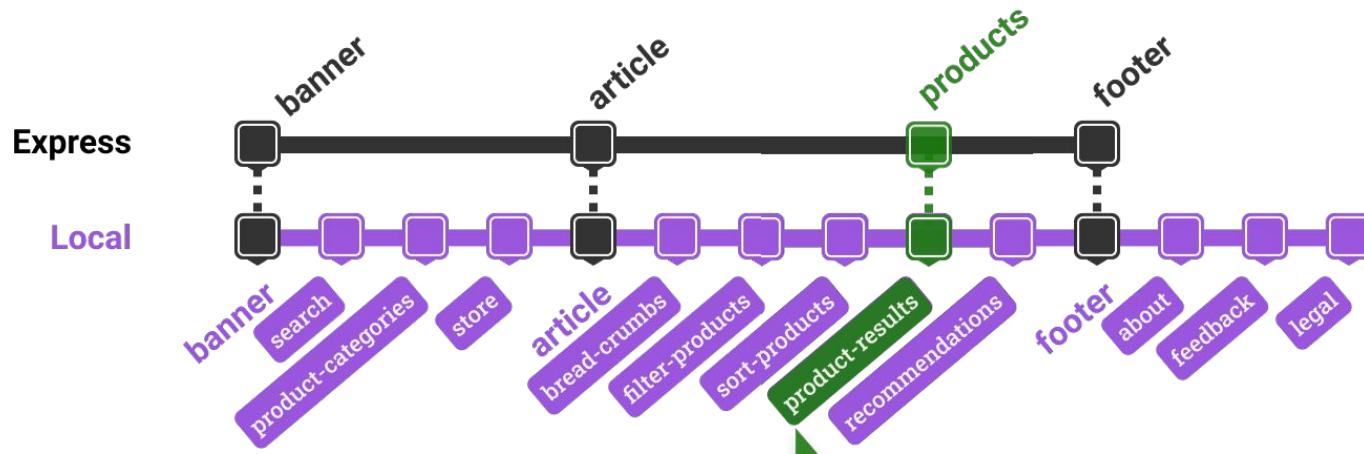


Photo by Oliver Cole on Unsplash

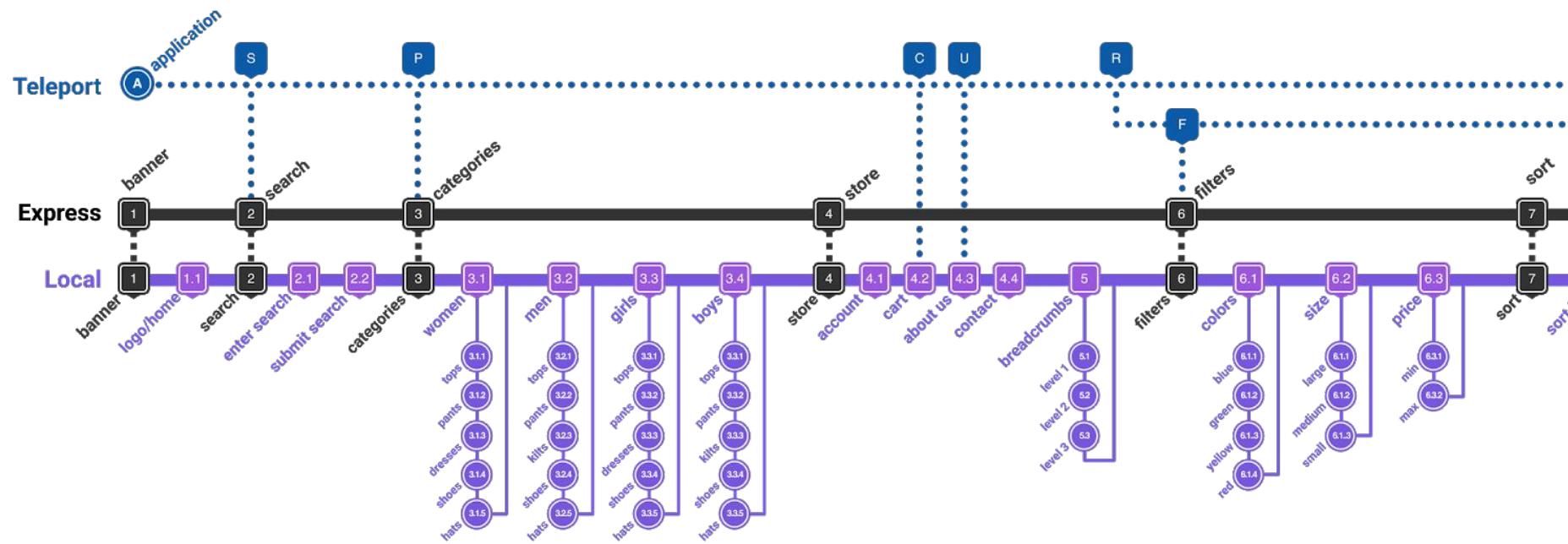
# Landmarks are like train stations



# Each stop, there's an announcement



# Wayfinding Diagram



# **Collaborating**

## **with content designers and developers**

# Accessibility Information Architecture

Accessibility Information Architecture Sheet

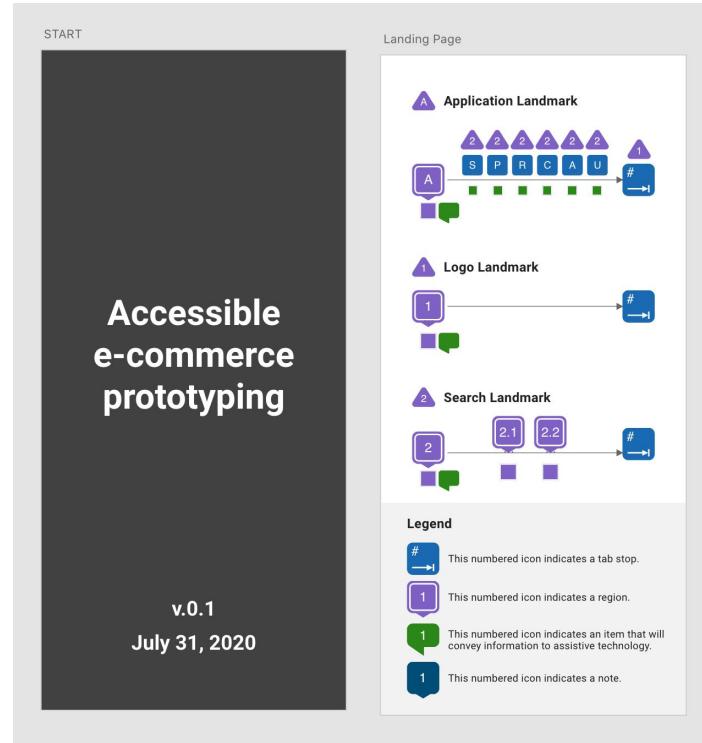
File Edit View Insert Format Data Tools Add-ons Help Last edit was seconds ago

	A	B	C	D	E	F	G	H	I	J
1	Stop ID	Stop Name	Role	Element	State	aria-labelledby	aria-label	innerText	from label	aria-describedby
2	1	banner	banner	region(header)	n/a		Site Navigation			
3	1.1	logo/home	link	link	n/a		the accessible e store	The Accessible eStore		
4	2	search region	form	region(form)	n/a		Product Search Region			Press enter to access the search and start typing
5	2.1	enter search	textbox	input	n/a				Search	
6	2.2	submit search	button	button	n/a		submit search			
7	3	categories	navigatio	region(nav)	n/a		Product Categories			Press enter to browse through the product categories
8	3.1	women	combobox	button	aria-haspopup aria-expanded			Women		
9	3.2	men	combobox	button	aria-haspopup aria-expanded			Men		
10	3.3	girls	combobox	button	aria-haspopup aria-expanded			Girls		
11	3.4	boys	combobox	button	aria-haspopup aria-expanded			Boys		
12	4	store	navigatio	region(nav)	n/a		Store Links			Press enter to browse through the store links
13	4.1	account	button	button	n/a			Account		
14	4.2	cart	combobox	button	aria-haspopup aria-expanded		Mini Cart, 0 item, estimated subtotal: \$0			
15	4.3	about us	link	link	n/a			About Us		
16	4.4	contact	button	button	n/a			Contact		
17	5	breadcrumbs	navigatio	region(nav)	n/a		Breadcrumbs	Home Women Women's Tops		

# Rapid Prototyping for Accessibility

# Adobe XD

- Keyboard triggers
- Voice command
- Voice playback
- Audio playback



# User Testing

## with People with Disabilities



Scaling accessibility so that everyone can benefit from digital products.

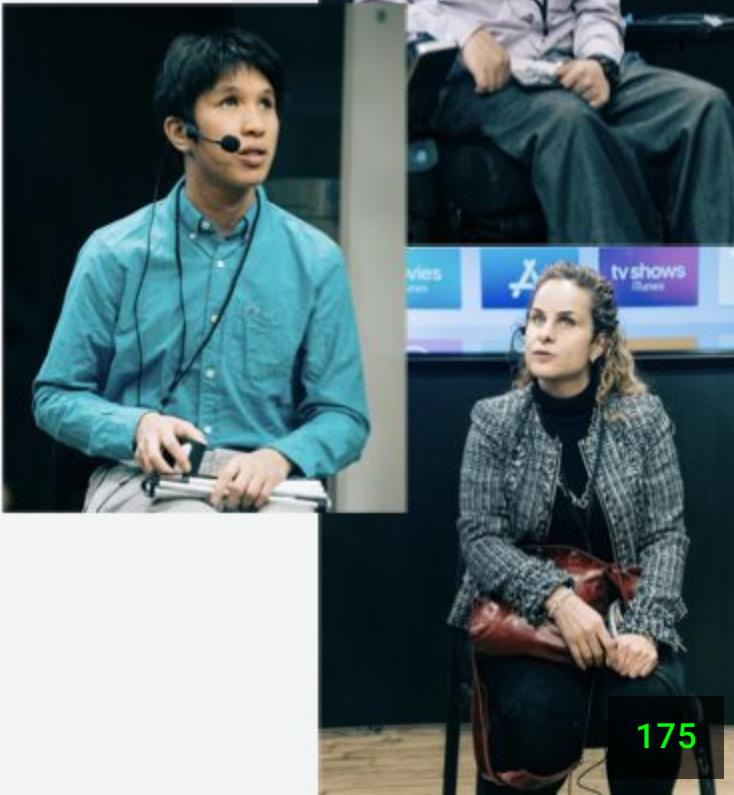
[www.makeitfable.com](http://www.makeitfable.com)



# Our workforce

Powering Fable is a workforce of people with disabilities, who are uniquely qualified to support your digital team.

- Canada & US
- 24 - 65 years old
- 10+ assistive technologies
- Varied levels of expertise
- Peer reviewed feedback



# Summary

Inclusive Design is not a technique,

It is a design philosophy

It is a mindset for Diversity & Inclusion

# **Accessibility**

**is one piece of inclusive design, but it doesn't consider many of the areas such as culture, identity, different socio-economic challenges.**

# Accessibility by Design





# Consider users with Deafness

**16%**  
of adults

**33%**  
age 65~74

**91%**  
age 50+

- Nearly 16% of adults in the U.S. report hearing trouble.
- Put another way, one of out of 5 men and one of out of 8 women report they have at least some trouble hearing.
- Hearing loss is twice as common as diabetes or cancer.
- About 11% of Americans report tinnitus, or ringing in the ears
- Approximately one in three people in the US between the ages of 65 and 74 has hearing loss, and nearly half of those older than 75 have difficulty hearing.
- Age is the strongest predictor of hearing loss among adults; 91% of adults with hearing loss are aged 50 and older.

Source: <https://www.healthyhearing.com/report/52814-Hearing-loss-statistics-at-a-glance#>

## Do...

write in  
plain language

### Do this

use subtitles  
or provide  
transcripts for  
videos



use a linear,  
logical layout



break up content  
with sub-headings,  
images and videos



let users ask for their  
preferred communication  
support when booking  
appointments



## Don't...

use complicated  
words or figures  
of speech



put content in  
audio or video  
only



make complex  
layouts and  
menus



make users  
read long blocks  
of content



make telephone  
the only means of  
contact for users





# Consider users with Low Vision

Low Vision

**2.9**

million  
Americans age 40+

Visually Impaired

**4.2**

million  
Americans age 40+

Color Blindness

**~8%**

of male population  
in the United States

- More than 2.9 million Americans age 40 and older have low vision - best-corrected visual acuity worse than 20/40; excludes those who are legally blind
- Nearly 4.2 million Americans age 40 and older are visually impaired - Best-corrected visual acuity worse than 20/40 in the better-seeing eye; includes both those with low vision and those who are legally blind
- Approximately 8% of men and 0.5% of women among populations with Northern European ancestry have the most common form of color blindness that makes it hard to see red or green

Source: <https://www.aao.org/newsroom/eye-health-statistics>

## Do...

use good colour  
contrasts and a  
readable font size

Aa

publish all information  
on web pages



HTML

use a combination  
of colour, shapes  
and text

Start

follow a linear,  
logical layout

200% magnification



put buttons and  
notifications in  
context



## Don't...

use low colour  
contrasts and small  
font size

Aa

bury information  
in downloads



only use colour to  
convey meaning



200% magnification  
spread content all  
over a page



separate actions  
from their context





# Consider users with Assistive Technologies

Significant  
Vision Loss  
**23**

million  
Americans age 40+

Significant  
Vision Loss  
**9.2**

million  
Americans age 65+

Color Blindness  
**~15%**

of adult population  
in the United States

- "Vision Loss" refers to individuals who reported that they have trouble seeing, even when wearing glasses or contact lenses, as well as to individuals who reported that they are blind or unable to see at all.
- 23.0 million American adults between the ages of 18 and 64 and 9.2 million American adults 65 years and older report experiencing significant vision loss\*.
- This represents approximately 15.4% of American adults 18 or older.
- In 2019 the entire US population of adults (18+) was 209,128,094.

\*Data Source: IPUMS NHIS database: Blewett, L. A., Rivera Drew, J. A., King, M. L., and Williams, K. C. (2019). IPUMS health surveys: National Health Interview Survey (Version 6.4) [dataset]

## Do...

describe images  
and provide  
transcripts  
for video



follow a linear  
logical layout



structure content  
using HTML5



build for keyboard  
use only



write descriptive  
links and headings



## Don't...

only show  
information in an  
image or video



spread content  
all over a page



rely on text size  
and placement  
for structure



force mouse or  
screen use



write uninformative  
links and headings





## Consider users with Dyslexia

U.S.  
Population

**20%**

living with  
Dyslexia

Over

**40**

million  
Americans with  
Dyslexia

Only

**2**

million  
Americans  
know it

- Dyslexia affects 20 percent of the population and represents 80–90 percent of all those with learning disabilities.
- Dyslexia is the most common of all neurocognitive disorders.
- Dyslexia occurs at all levels of intelligence — average, above average and highly gifted.
- Many gifted people at the top of their fields are dyslexic.
- While people with dyslexia are slow readers, they often are very fast and creative thinkers.
- Over 40 million American Adults are dyslexic - and only 2 million know it

The Yale Center for Dyslexia & Creativity  
<https://dyslexia.yale.edu/dyslexia/dyslexia-faq/>

American Dyslexia Association, The International Dyslexia Association, The Dyslexia Center, The Dyslexia Foundation, The Child Mind Institute

## Consider users with Dyslexia

# Do...

use images and  
diagrams to  
support text



align text to the  
left and keep a  
consistent layout



consider producing  
materials in other  
formats (for example  
audio or video)



keep content  
short, clear  
and simple



let users change the  
contrast between  
background and text



# Don't...

use large  
blocks of  
heavy text



underline words,  
use italics or  
write in capitals

**DON'T  
DO THIS**

force users to remember  
things from previous  
pages - give reminders  
and prompts



rely on accurate  
spelling - use  
autocorrect or  
provide suggestions



put too much  
information in  
one place





# Consider users with Physical or Motor Disabilities

U.S.  
Population

**16%**

difficulties with their  
physical functioning

Over

**39**

million  
difficulties with their  
physical functioning

Only

**17**

million  
can't walk unassisted  
for a ¼ mile

- 16 percent of people in the US (39 million people) have difficulties with their physical functioning. 17.1 million would find it very difficult or impossible to walk unassisted for a quarter mile.\*
- Conditions That Impair Gross and Fine Motor Skills\*\*

## TRAUMATIC INJURIES

- Spinal cord injury
- Loss or damage of limb(s)

## MOTOR DISABILITIES

- Cerebral palsy
- Muscular dystrophy
- Multiple sclerosis
- Spina bifida
- ALS (Lou Gehrig's Disease)
- Arthritis
- Parkinson's disease
- Essential tremor

\*Source: <https://www.cdc.gov/nchs/fastats/disability.htm>

\*\*Source: <https://webaim.org/articles/motor/motordisabilities>

## Do...

make large clickable actions

Yes 

give clickable elements space


design for keyboard or speech only use



design with mobile and touchscreen in mind



provide shortcuts

Postcode

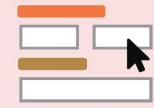
Find address

## Don't...

demand precision

No 

bunch interactions together



make dynamic content that requires a lot of mouse movement



have short time out windows



Your session has timed out

tire users with lots of typing and scrolling

Address



# Consider users with Anxiety

**40**

million adults  
with Anxiety

**19**

million adults  
experience phobias

**7.7**

million  
Adults with PTSD

- Anxiety is the most common mental disorder in the U.S., affecting 40 million adults (ADAA, 2020)
- The majority of adults with anxiety have a mild impairment (43.5%), 33.7% have a moderate impairment, and 22.8% have a serious impairment (NIMH, 2017)
- 19 million adults experience specific phobias, making it the most common anxiety disorder in America (ADAA, 2020)
- 15 million adults have social anxiety (ADAA, 2020)
- 7.7 million adults have PTSD (ADAA, 2020)
- 6.8 million adults have generalized anxiety disorder (GAD) (ADAA, 2020)
- 6 million adults have panic disorders (ADAA, 2020)

Source: <https://www.singlecare.com/blog/news/anxiety-statistics/>

## Do...

give users enough  
time to complete  
an action



explain what  
will happen after  
completing a  
service



make important  
information clear



give users the  
support they  
need to complete  
a service



let users check  
their answers  
before they  
submit them



## Don't...

rush users or set  
impractical time  
limits



leave users  
confused about  
next steps or  
timeframes



leave users  
uncertain about  
the consequences  
of their actions



make support  
or help hard to  
access



leave users  
questioning what  
answers they gave





# Consider users with Neurodivergent Conditions

**17%**

million adults  
with Anxiety

**29%**

ADD/ADHD pop.  
with Depression

**12%**

ADD/ADHD pop.  
with Bipolar Disorder

Neurodivergent conditions include Autism Spectrum Disorder (ASD), Attention Deficit Hyperactivity Disorder (ADHD) and Dyslexia. It has been reported that up to 17 percent of the population have been diagnosed with a neurodivergent condition:

- Four percent have ADD/ADHD
- One percent have Autism
- 10 percent have Dyslexia
- One percent have Dyspraxia
- One percent have Tourette Syndrome

When you consider that many conditions go undiagnosed, 17 percent is therefore likely to be conservative at best. The World Health Organization noted that the prevalence of neurological conditions is one of the greatest threats to public health.

Source: <https://www.workdesign.com/2019/12/designing-for-neurodiversity-and-inclusion/>

## Do...

use simple colours



write in plain language

## Do this

use simple sentences and bullets



make buttons descriptive

Attach files

build simple and consistent layouts



## Don't...

use bright contrasting colours



use figures of speech and idioms



create a wall of text



make buttons vague and unpredictable

Click here!

build complex and cluttered layouts





# Emily

## Cerebral palsy, living independently

# Wants to do everything for herself

- 24 years old
- Works part-time at a local community center

## Overview

- Difficult to use hands and has some difficulty speaking clearly; uses a motorized wheelchair
- Uses the computer well, with the right input device; good at finding efficient search terms
- Wants to do everything for herself; can be impatient.

## Assistive Technology

- Augmented & Alternative Communication (AAC) with speech generator.
- Scooter with joystick control, iPad attached



## Lea

### Living with fatigue and pain

**No one gets that this  
really is a disability.**

- 35 years old
- Masters degree
- Writes for a trade publication; works from home

#### Overview

- Fatigue from fibromyalgia, trackball, and special keyboard
- Average user
- Wishes people would understand how hard it can be for her to make it through the day

#### Assistive Technology

- Split keyboard for less strain on her wrists
- Keyboard controls to minimize arm movement
- Dragon Naturally Speaking (speech recognition)



# 5 million

**people in the U.S. live with fibromyalgia,  
80–90% of them are women**

People with fibromyalgia and related diseases like lupus, ankylosing spondylitis, and rheumatoid arthritis have increased sensitivity to pain.

Source: National Institute of Arthritis and Musculoskeletal and Skin Diseases

- Keyboard controls to minimize arm movement
- Dragon Naturally Speaking (speech recognition)