



Bonus

Accessibility Resources and Tools



Accessibility Resources & Tools

For Designers and Developers

<http://bit.ly/mp-a11y>





Accessibility Auditing Ideas

- Put your mouse away, just use your keyboard
- Try to fill out a form without using your mouse
- Watch a presentation with your monitor turned off
 - Or use this chrome extension to [turn off the lights](#)
- Watch a video with the sound down
- Remove the CSS styles from the page you are testing
 - <https://techstacker.com/how-to-remove-all-css-from-site-with-javascript/>





Accessibility Checkers

Sitelimprove

<https://chrome.google.com/webstore/detail/siteimprove-accessibility/djcglbm begflehmbfleechkjhm edcogn>

IBM Equal Access

<https://chrome.google.com/webstore/detail/ibm-equal-access-accessib/lkcagbfjnkomcinoddgooolagloogehp>





Automating Accessibility Testing

Automating the accessibility tests with GitHub Actions

<https://www.adrianbolonio.com/blog/accessibility-github-actions>

Fix accessibility and compatibility bugs while you code

<https://dev.to/hxInt/these-vs-code-extensions-help-you-fix-accessibility-and-compatibility-bugs-while-you-code-2196>





Auditing Tools

SkipTo Chrome Extension

<https://chrome.google.com/webstore/detail/skipto-landmarks-headings/fjkpbfcodhfldildjbmdhhmcoplghgf/related>

Landmarks Chrome Extension

<https://chrome.google.com/webstore/detail/landmark-navigation-via-k/ddpokpbjopmeeiiolheejjpkonlkklgp>





Design Support Tools

Contrast App for MacOS

<https://apps.apple.com/us/app/contrast-color-accessibility/id1254981365?mt=12>

Color Blindness (Mac/Windows/Linux)

<https://colororacle.org/>

Focus Appearance web app

<https://wtfoc.us/>

Chrome DevTools

Ctrl+Shift+P > Rendering



Visual Studio Code Extensions



- [Axe Accessibility Linter](#) - Accessibility linting for HTML, Angular, React, Markdown, and Vue.
- [Error Lens](#) - ErrorLens turbo-charges language diagnostic features by making diagnostics stand out more prominently, highlighting the entire line wherever a diagnostic is generated by the language and also prints the message inline.
- [Webhint](#) - provides hints and parsers for HTML and template-making systems (JSX/TSX, Angular, and so on), JavaScript/TypeScript, common pitfalls, and more.
- [Web Accessibility](#) - This extension is here to help you get feedback on what parts need some more attention for it to be accessible, this is just the basics and doesn't cover all the rules but will help with making your project more accessible.



Screen Reader Keyboard Shortcuts



Desktop

[Desktop Screen Readers Survival Guide - Basic Keyboard Shortcuts](#)

[Desktop Screen Readers Forms Guide](#)

Windows

[NVDA Keyboard Shortcuts](#)

[JAWS Keyboard Shortcuts](#)

[Narrator Keyboard Shortcuts](#)

[JAWS Keyboard Shortcuts for Word](#)

Mac

[VoiceOver Keyboard Shortcuts on a Mac](#)

[Enabling Keyboard Accessibility on a Mac](#)

[Using Windows Screen Readers on a Mac](#)

Mobile

[TalkBack Gestures on Android](#)

[VoiceOver Gestures on iOS](#)



Inclusive Design

for the Global Citizen + Accessibility

Inclusive Design Series



Product Designer and Web Developer

-  - Learning something new every day is my school.
-  - Sharing what I learn drives me to succeed.
-  - Bridging design with development is my passion.
-  - Practicing Accessibility is top of mind.
-  - Inclusive Design practices is my beacon.

Agenda

- **Hope that you will feel inspired**
- **Universal / Accessible / Inclusive Design**
- **Creating Inclusive Experiences**
 - **Inclusive Profiles**
 - **Narratives and User Stories**
 - **Bluelines and Screen Reader Atoms**
 - **Train Stations Mental Model**
 - **Delivering Accessibility Requirements**
- **Sharing Resources**

Designer's Critical Alphabet

Lesley-Ann Noel PhD

Ableism

Bias

Cultural

Disabilities

Ethnicity

Feminist Theory

Gender Equality

Heterosexism

Inequality

Justice (Social)

Kleptocracy

Linguistic Hegemony

Marginalization

Neo-Colonialism

Privilege

Questioning Mindset

Religious

Sexual Orientation

Transgender Identity

Unlearning Oppression

Values

Westernization

Xenophobia

You

Zero Sum Thinking

bit.ly/dc20-win

Agenda

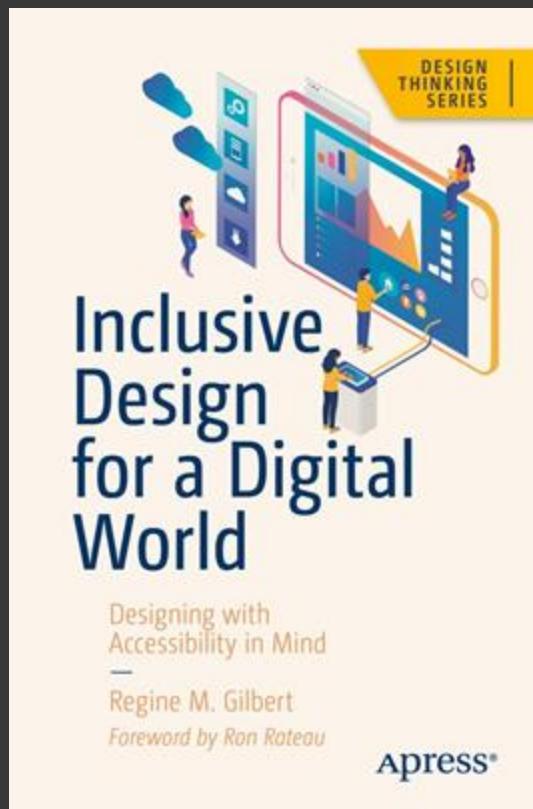
- **Hope that you will feel inspired**
- **Universal / Accessible / Inclusive Design**
- **Creating Inclusive Experiences**
 - **Racial Injustice**
 - **Gender Equality + Women Safety**
 - **Sexual Orientation**
 - **Gender Identity**
 - **Awareness of Cultural & Religious Behaviors**
 - **Socio-economic Challenges**

Have you ever felt left out?



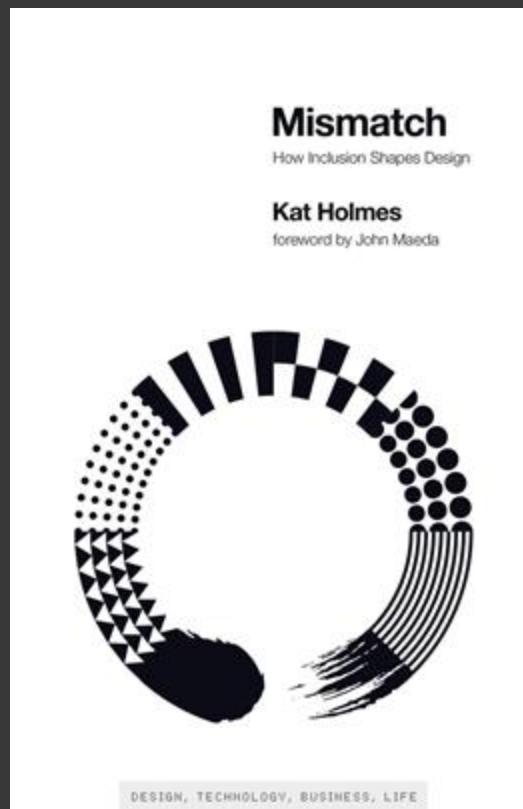


Results of my study based on:



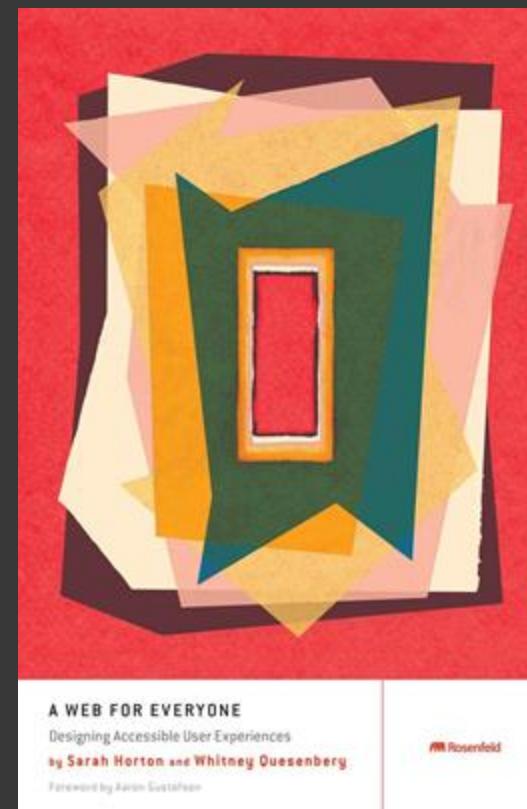
Inclusive Design for a Digital World

Regine M. Gilbert



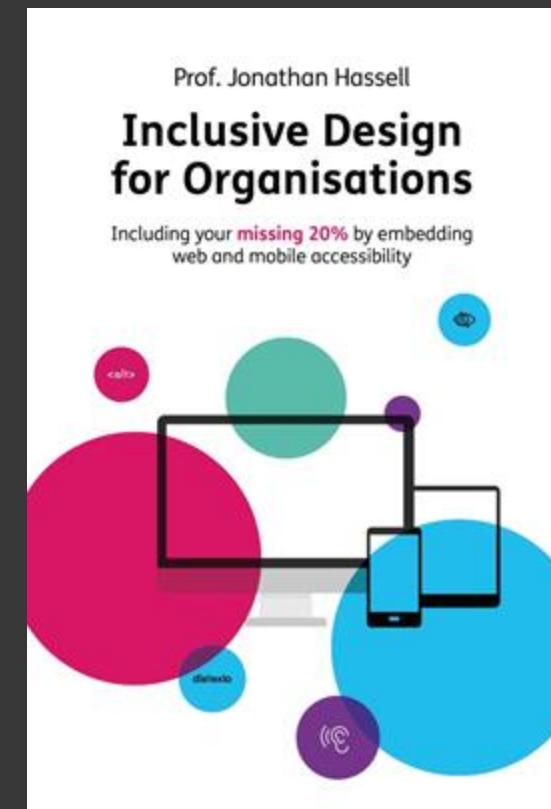
Mismatch
How Inclusion Shapes Design

Kat Holmes



A Web for Everyone
Designing Accessible UX

Horton, Quesenberry



Inclusive Design for Organisations

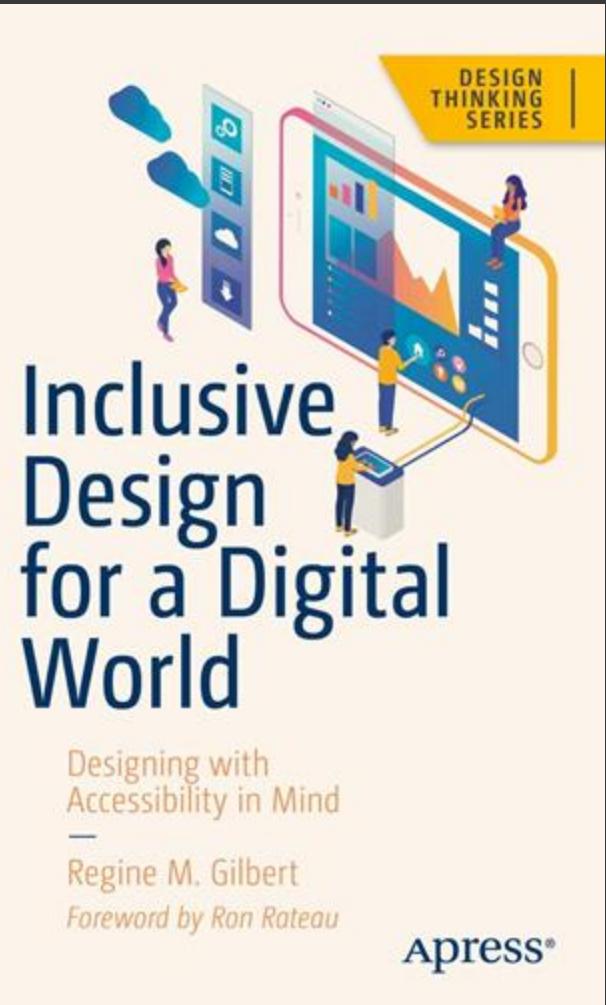
Jonathan Hassell

True story

A designer meets a blind person and they talk about what they do for a living...

Regine Gilbert

Designer, NYU Professor, Author



Designer

I'm a UX Designer,
I make websites more usable.

Do the companies and
people you work with
ever think about
people like me?

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



Ronald Lawrence Mace

The Center for Universal Design, 1991

The term "universal design" was coined by the architect Ronald Mace, in 1991, to describe the concept of designing all products and the built environment to be aesthetic and usable to the greatest extent possible by everyone, regardless of their age, ability, or status in life.

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.



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

In Digital Product Design means:

- 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.

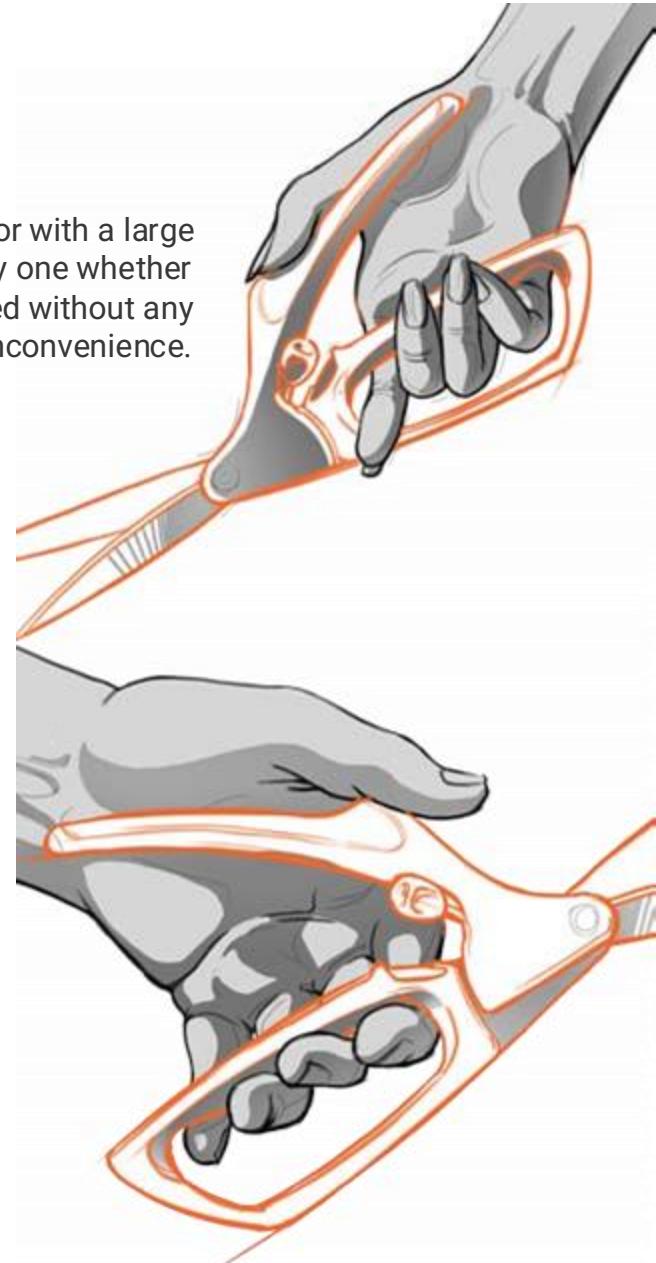
2: Flexible in Use

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

In Digital Product Design means:

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

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.



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.

In Digital Product Design means:

- **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.

In Digital Product Design means:

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



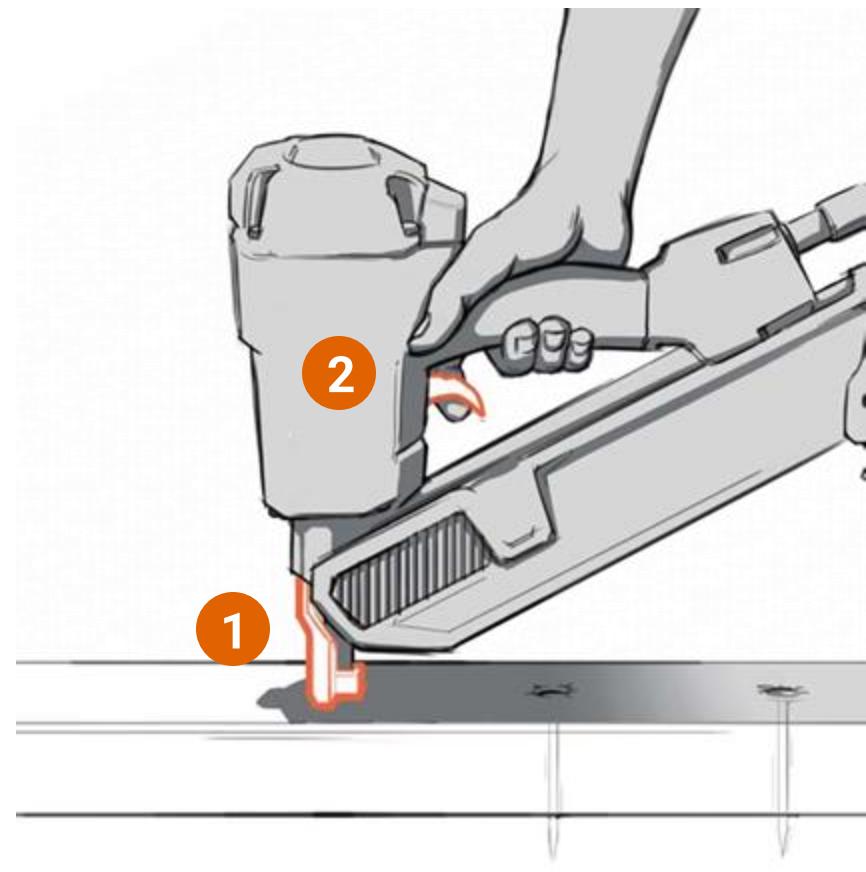
In the picture above a blind individual can use the cellphone keypad because of the bump on the pad that will enable the user without looking at the keypad.

5: Tolerance for Error

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

In Digital Product Design means:

- 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.



In Digital Product Design means:

- 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.

In Digital Product Design means:

- 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.

Accessibility

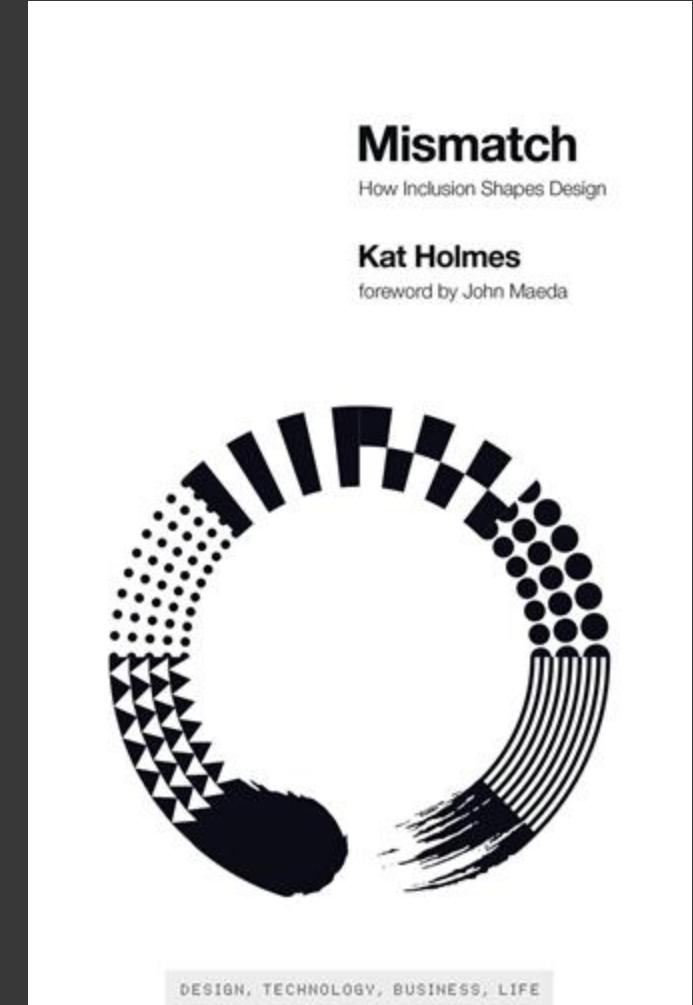
focus on specific accommodations for all levels of disabilities.

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*



“

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 Mismatched human interactions

Kat Holmes

Author, Mismatch - How Inclusion Shapes Design



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

**"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



An Interview with your future-self



I travelled back in time and I met myself in Sep/2000

I didn't know...

- Diabetes
- Hard of hearing

I'd tell myself...

- To exercise
- Learn how to type

I'd tell my team...

- To abstract styles
- Be more efficient

Yourself

Your health

Your Family

Your Career

The World

Environment

Hardships

Moral

Technology

Economy

Cultural

Proj Reunion

Inclusive Design

is a design philosophy 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.



Inclusive Design Principle

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.



Inclusive Design Principle

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.

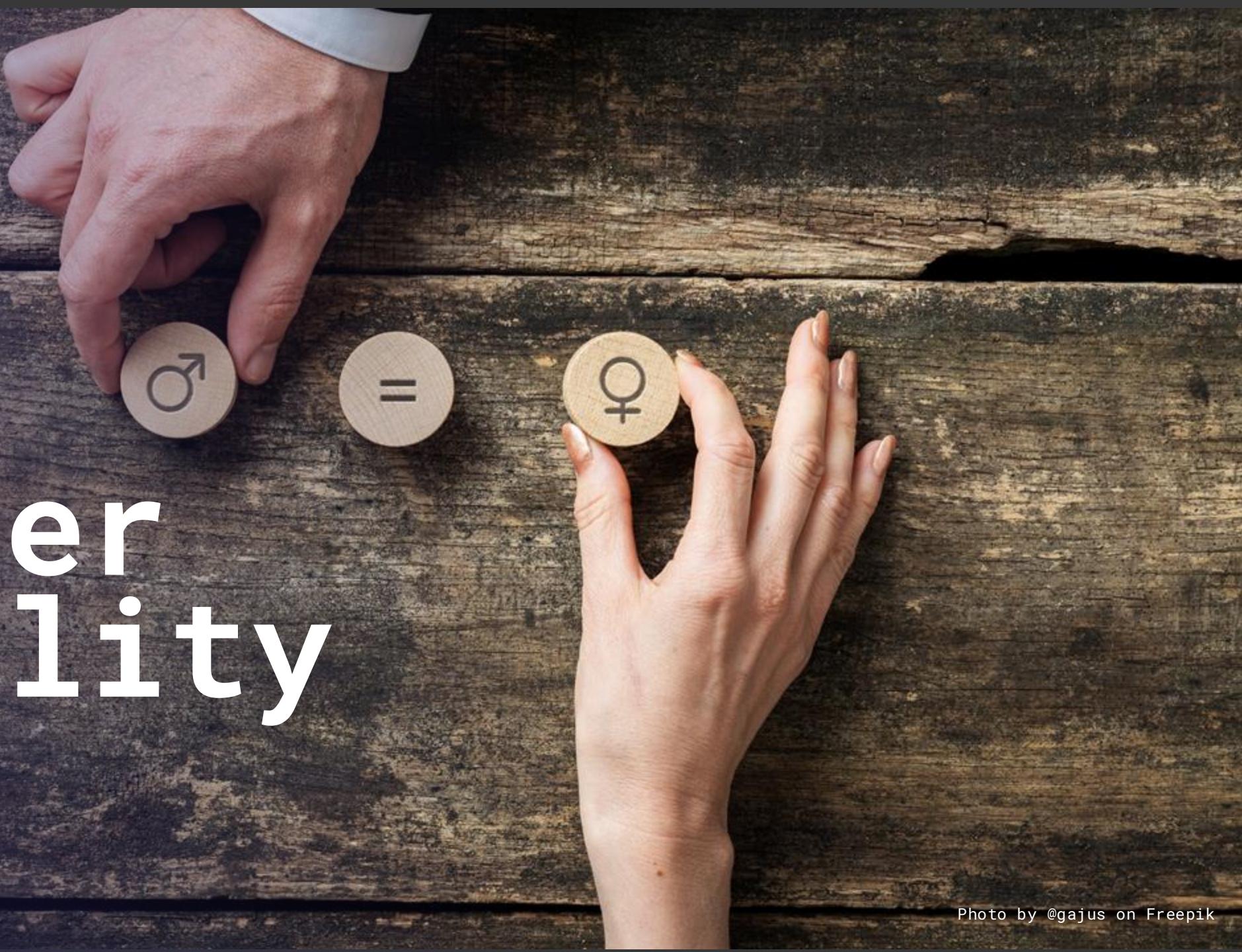


Expanding Disabilities Spectrum



Ethnic Discrimination

Gender Equality





Sexual Orientation



Gender Identity

They/them/their
she/her/hers he/him/his

Do you know anyone who wants to be called **they** instead of **she** or **he**?

It may be because they identify as **non-binary**.

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.

Cultural & Religious



Japan Falls Into Recession, Still Has 3.6 Percent Unemployment and a 300 MPH Train

By JORDAN WEISSMANN

NOV 17, 2014 • 11:39 AM



Eh, could be worse.

Photo by Yoshikazu Tsuno/AFP/Getty Images



NBU

The Next Billion Users
and socio-economic challenges

80%

**of the world population
living with disabilities**

Live in the Southern Hemisphere.

Accessibility will continue to
be in high demand globally.

source: design.google.com

We need new tools

and mental models that help us break
the current mold.

The Designer's Critical Alphabet

Lesley Ann Noel PhD

ig: @

Bias

Ableism

Bias

Cultural

Disabilities

Ethnicity

Inequality

Justice
(Social)

Kleptocracy

Linguistic
Hegemony

Questioning
Mindset

Religious

Sexual
Orientation

Transgender
Identity

Xenophobia

You

Zero Sum
Thinking

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?

The Designer's Critical Alphabet

Lesley-Ann Noel PhD

ig: @lesleyannnoel / tw: @mamaazure

Ableism

Bias

Cultural

Disabilities

Ethnicity

Feminist Theory

Gender Equality

Hetero-sexism

Linguistic Hegemony

Marginalization

Neo-Colonialism

Privilege

Transgender Identity

Unlearning Oppression

Values

Westernization

Hetero-sexism

Heterosexism is a system of attitudes, bias and discrimination in favor of opposite-sex sexuality and relationships. It can include the presumption that other people are heterosexual or that opposite-sex attractions and relationships are the only norm and therefore superior.

How does a design change if people are not presumed to be heterosexual?

The Designer's Critical Alphabet

Lesley-Ann Noel PhD

ig: @lesleyannnoel / tw: @mamaazure

Ethnicity

Feminist Theory

Gender Equality

Heterosexuality

Linguistic Hegemony

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Ableism

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Disabilities

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?

While we are increasingly aware of the need to address racist, sexist, homophobic, ageist and classist language,

Ableist language is
too often disregarded

Common Ableist Terms

Deaf to... / turn a deaf ear to...

Refers to Deaf or hard of hearing people. Often used as a metaphor.

Consider instead:

*willfully ignorant, deliberately ignoring, turning their back on,
had every reason to know, feigned ignorance*

<http://bit.ly/ableist-terms>

Common Ableist Terms

Crazy

Refers to people with mental or psychiatric disabilities

Consider instead:

wild, confusing, unpredictable, impulsive, reckless, fearless, lives on the edge, thrill-seeker, risk-taker, out of control

<http://bit.ly/ableist-terms>

Common Ableist Terms

Idiot(ic)

Refers to people with intellectual disabilities.

Consider instead:

Uninformed, reckless, impulsive, ignorant, risk-taking, risky and dangerous

<http://bit.ly/ableist-terms>

Common Ableist Terms

Insane or Insanity

Refers to people with mental or psychiatric disabilities. Often used as a metaphor.

Consider instead:

wild, confusing, unpredictable, impulsive, reckless, fearless, lives on the edge, thrill-seeker, risk-taker, out of control

<http://bit.ly/ableist-terms>

Common Ableist Terms

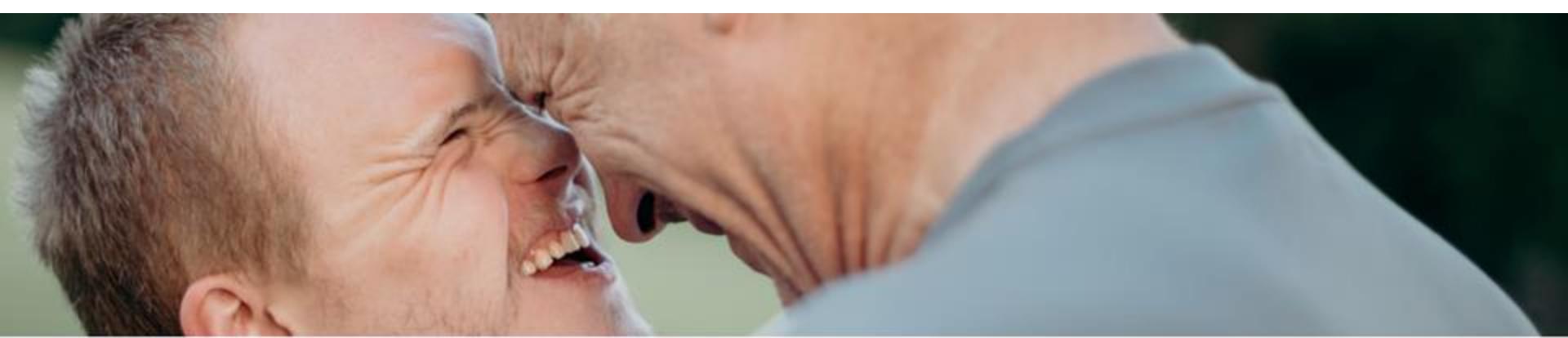
Special Needs

Usually refers to people with learning, intellectual, or developmental disabilities, but can mean any person with a disability. Usually a euphemistic phrase to avoid saying "disability" or "disabled."

Consider instead:

Disabled person, person with a disability

<http://bit.ly/ableist-terms>



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

bit.ly/describing-disabilities

Inclusive Design Principle

Recognize exclusion

Remember the first principle



The Designer's Critical Alphabet

Lesley-Ann Noel PhD

@mamaazure
@lesleyannnoel

Assumptions

Our inferences and ideas are often based on assumptions that we haven't thought about critically. A critical thinker is attentive to assumptions because they are sometimes incorrect or misguided.

What are your assumptions about the people and the context that you are researching? Have you double-checked the truth of your assumptions?

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 perspectives of others?

Critical Race Theory

CRT proposes that white supremacy and racial power are maintained over time, and in particular, that the law may play a role in this process.

How does your design solution change if it were developed for a user of a different race?

Deficit Thinking

In deficit-based thinking differences are seen as negative and factors that can retard progress. Designers sometimes frame design challenges through a deficit-based lens e.g. when they focus on the problems of a community.

Do you assume that the people that you're designing for have a "problem"? Do they also think they have a problem? How does your solution change if you focus on strengths instead of deficits?

Emancipatory Research

Emancipatory research or transformative research is about including the perspective of people who are traditionally excluded from research.

What is the perspective of marginalized people on the work that you are doing? How does your design work shift power? Who does your work shift power to? How does your work do this?

Feminist Theory

Feminist theory aims to understand the nature of gender inequality. It examines women's and men's social roles, experiences, interests, choices, and feminist politics in a variety of fields.

How would a design concept change if it aimed to reduce gender inequality?

Geography

Geography is an all-encompassing discipline that seeks an understanding of Earth and its human and natural complexities, not merely where objects are, but also how they have changed and come to be. Geography is often defined in terms of two branches: human geography and physical geography.

How do physical and human geography enhance or limit your design?

Heterosexism

Heterosexism is a system of attitudes, bias, and discrimination in favor of opposite-sex sexuality and relationships. It can include the presumption that other people are heterosexual or that opposite-sex attractions and relationships are the only norm and therefore superior.

How does a design change if people are not presumed to be heterosexual?

Intersectionality

Intersectionality considers that various forms of social stratification, such as class, race, sexual orientation, age, religion, creed, disability and gender, do not exist separately from each other but are woven together.

What are the multiple forms of oppression that affect the stakeholders in your design challenge?

Justice (Social)

Social justice is concerned with the just relationship between individuals and their society, often considering how privileges, opportunities, and wealth ought to be distributed among individuals.

How can you use your design concept to advance a social justice agenda?

Kleptocracy

Kleptocracy is a government with corrupt leaders that use their power to exploit the people and natural resources of their own territory in order to extend their personal wealth and political powers. Typically, this system involves embezzlement of funds at the expense of the wider population.

The solutions we design for one system may not work for others. Have you considered the contextual nature of the solutions that you develop?

Linguistic Hegemony

The dominance of English can cause prejudices and stereotypes which, in turn, create discrimination against those who do not or can not speak English.

Do you assume that all of your stakeholders speak the dominant language? How could your design improve if you did not have this assumption?

Marginalization

Marginalization is the process where something or someone is pushed to the edge of a group and is treated as insignificant or peripheral.

How does your design disrupt the marginalization of people? If you work with marginalized groups, how will you ensure that the work is developed from their perspective and not your own?

Neocolonialism

Neocolonialism is the control of less-developed countries by developed countries through indirect means, including economic, political, cultural, or other pressures.

How can you ensure that the power dynamics in your cross-cultural design collaborations don't mimic colonial power structures and hierarchies?

Objectivity

Objectivity is a belief that personal prejudices, preferences of the researcher do not contaminate the collection of or analysis of data.

Some researchers, however, believe that objectivity is impossible to achieve and therefore we must acknowledge and declare our bias to produce better research.

Do you think objectivity is achievable in the design work you do?

Privilege

Privilege is a special right, advantage, or immunity granted or available only to a particular person or group. The term is often used to describe social inequality, particularly in regard to race, ethnicity, age, disability, gender identity, sexual orientation, religion, and social class.

Have you acknowledged your privilege and how that impacts the work that you do?

Do you think the role that you design for?

Questioning Mindset

Questions help us to explore, to challenge and to gain deeper insights into societal problems, and this can lead to better problem framing and more innovative solutions.

How can you use questions to identify opportunities, review underlying needs, and consider your user context?

Resilience

Resilience is the process of adapting well in the face of adversity, trauma, tragedy, threats or significant sources of stress - such as family and relationship problems, serious health problems or workplace and financial stressors. It means "bouncing back" from difficult experiences.

How can you use resilience to view the world from a stakeholder's perspective?

Self Awareness

Self Awareness is having a clear perception of your personality, including strengths, weaknesses, thoughts, beliefs, motivation, and emotions. Self Awareness allows you to understand how other people perceive you, your attitude and your responses to them in the moment.

To become more self-aware you have to be self-aware enough to realize how self-aware you are not.

Transformative Research

Transformative research is a synonym for emancipatory research. It is a research framework that centers the experiences of marginalized communities, includes analysis of power differentials that have led to marginalization, links research findings to actions intended to mitigate disparities and has an agenda for change. How is your work transformative?

Unlearning Oppression

Some everyday practices seem normal and go unquestioned but discriminate against minorities. Many well-intended people are unaware that their actions are oppressive. Oppression affects both the oppressed and the oppressors. To unlearn oppression, we must acknowledge our everyday oppressive practices and engage in critical self-reflection with the aim of becoming actively anti-oppressive. What will you do to unlearn oppressive behaviors?

Lesley-Ann Noel PhD | instagram: @lesleyannnoel | twitter: @mamaazure

Values

Values reflect a person's sense of right and wrong or what "ought" to be. Values influence attitudes and behavior. One's value system develops from one's lived experiences, upbringing and culture among other factors. Your design solution or analysis of a problem space may be influenced by your own value system.

Do you and the people you are working with live in the same value system? How does this affect your approach?

Westernization

The West is often assumed to be the center of power, and Western views on development and modernity often are pervasive in design analyses of problems.

How would your design concept change if you de-westernised it by exploring these Western concepts of modernity and development or Eurocentric or American-centric biases?

Xenophobia

Xenophobia is the fear and distrust of that which is perceived to be foreign or strange. Xenophobia can manifest itself in suspicion of the activities of others, and a desire to eliminate their presence to secure a presumed purity. It is related to a fear of losing national, ethnic or racial identity.

How does xenophobia (your own, or of other stakeholders) in the design analysis of a problem, or the proposed solutions?

You

You play an active role in change and transformation. You have the agency to question what is happening around you and to take action as a response. Design may be one form of response.

As a designer, you may play many different roles. What are the attitudes needed to be a manager, change agent, facilitator or researcher? How can you facilitate collaboration and co-creation across multi-disciplinary and multi-cultural teams?

Zero Sum Thinking

Zero-sum thinking is a binary way of thinking where one person's gain is another's loss. In the zero sum approach there is the idea that things are 'either/or' and no understanding that things can be 'both/and' instead. To counter a zero-sum approach, encourage stakeholders to analyze a situation more deeply and to generate and consider more than two options.

Querido Marcelo,
Aproveite!
Lesley

Designing with Intent

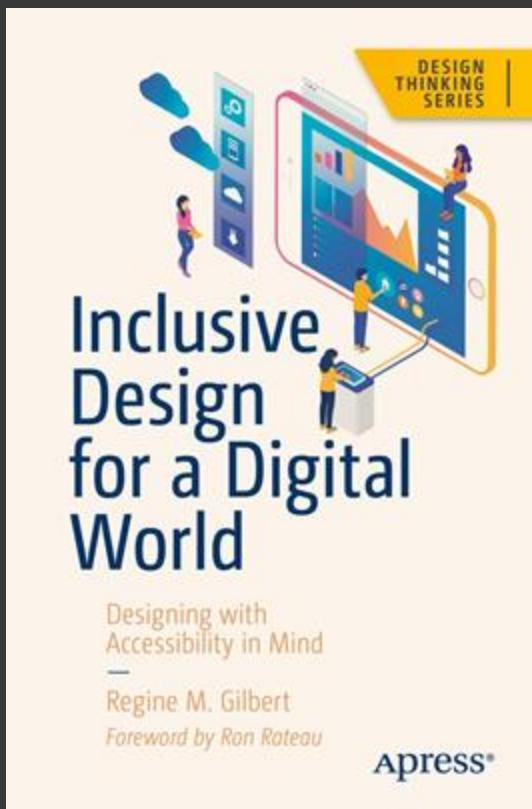
Interface Layout Architecture

Inclusive Design

requires a diverse team composition

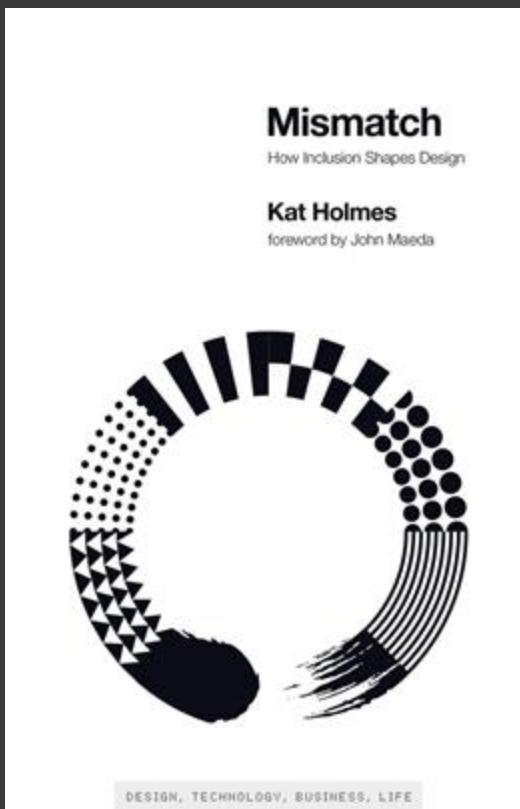


Recommended Reading



Inclusive Design for a Digital World

Regine M. Gilbert



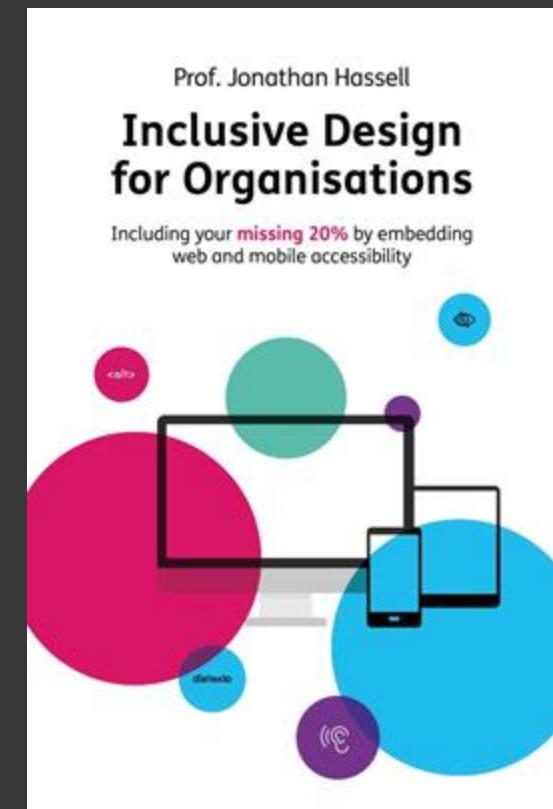
Mismatch
How Inclusion Shapes Design

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/dc20-paiva

Time to win Books

Tell us if you learn something new today and win a book.

The first 2 people.

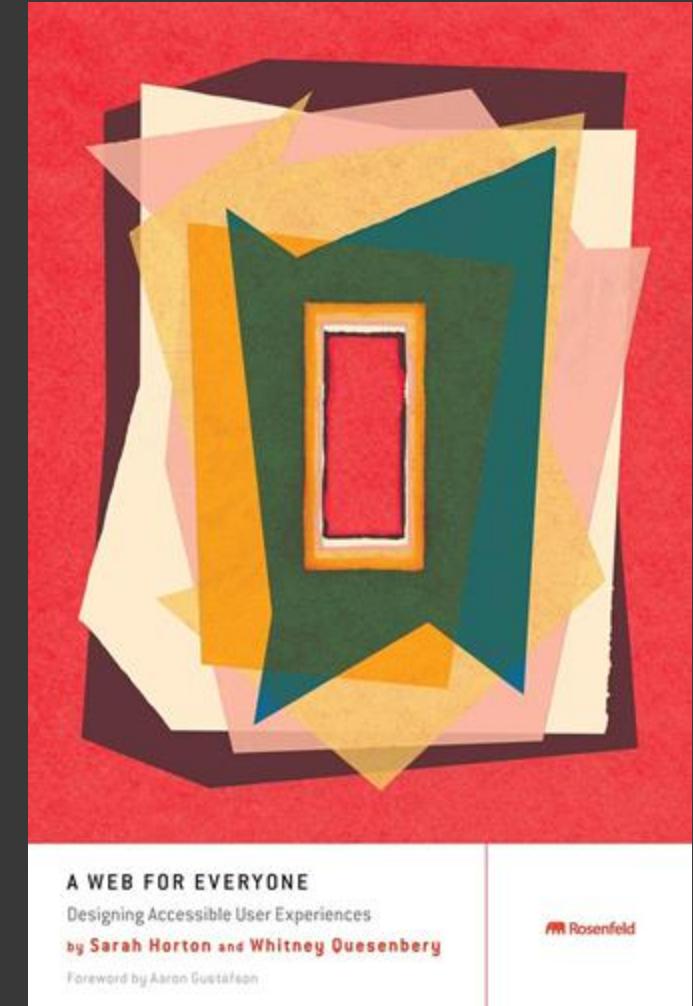


Chapter 2: People First: Designing for Differences

"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



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.

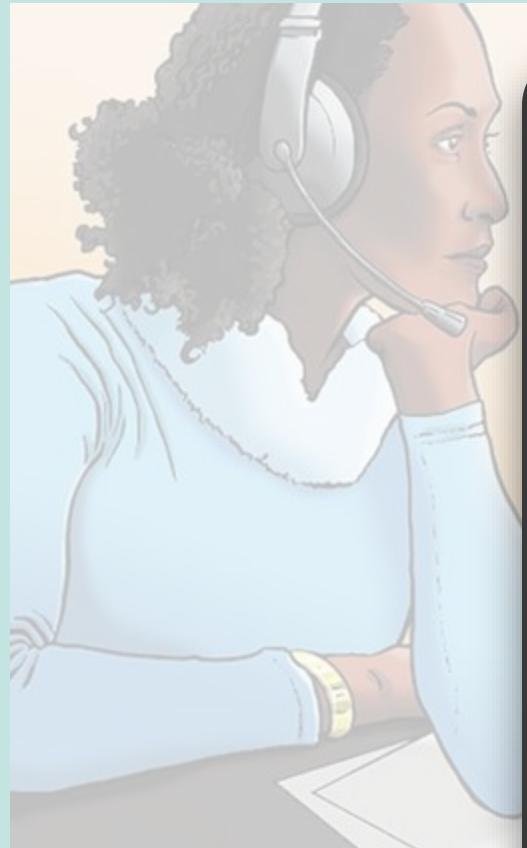
- 35 years old
- Masters degree
- Writes for a trade publication; works from home

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)



Living with fibromyalgia

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)

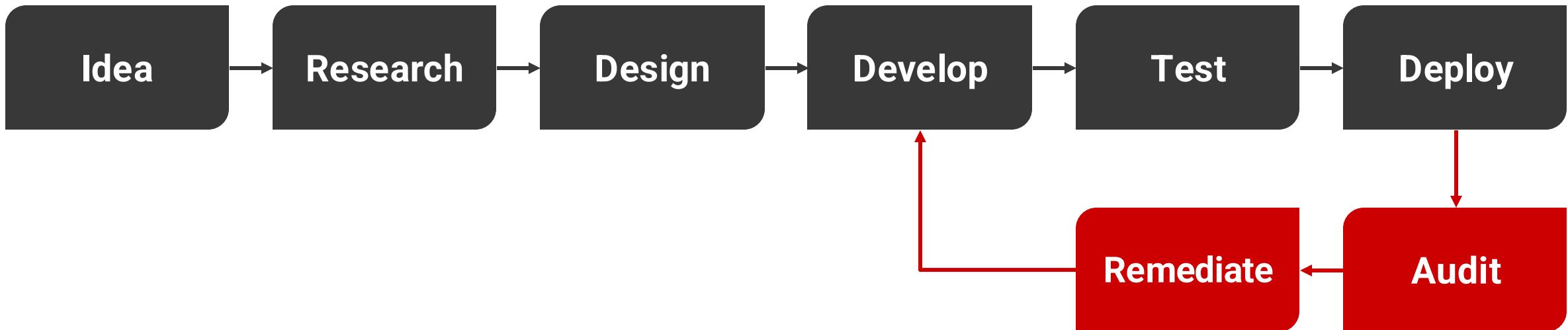
Accessibility

promotes inclusive experiences?

Shift Left

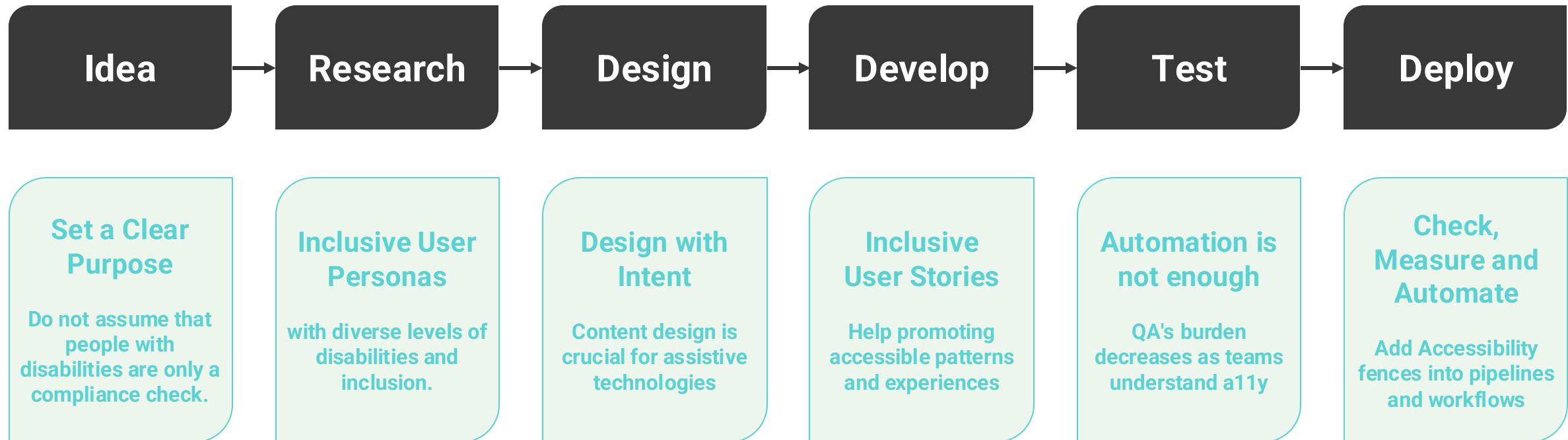
How might we bring Accessibility early in the product life cycle, so we craft more inclusive experiences?

Accessibility as Compliance



Accessibility as People First

Accessibility by Design



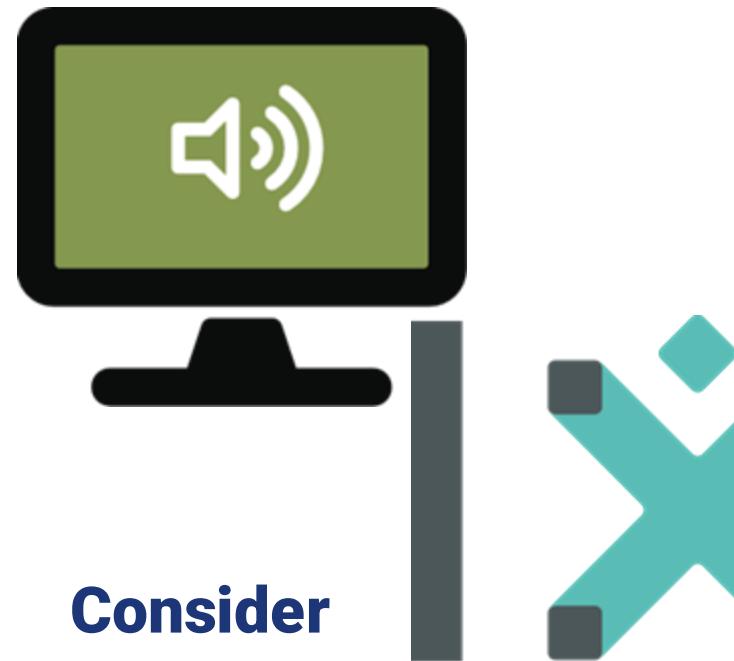
Accessibility

by Compliance

by Design

Design Best Practices

Consider Assistive Technologies



Do...

describe images
and provide
transcripts
for video

<alt>

follow a linear
logical layout



structure content
using HTML5

<h1>
<nav>
<label>

build for keyboard
use only



write descriptive
links and headings

[Contact us](#)

Don't...

only show
information in an
image or video



spread content
all over a page



rely on text size
and placement
for structure

36pt, bold
Header



force mouse or
screen use

[Click here](#)

write uninformative
links and headings

Consider Low Vision



Do...

use good colour contrasts and a readable font size



publish all information on web pages



use a combination of colour, shapes and text

Start

follow a linear, logical layout

200% magnification



put buttons and notifications in context



Submit

Don't...

use low colour contrasts and small font size



bury information in downloads



only use colour to convey meaning



200% magnification



spread content all over a page



separate actions from their context

Consider Physical Disabilities



Do...

make large
clickable actions



give clickable
elements space



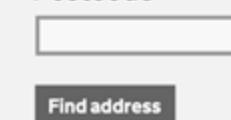
design for
keyboard or
speech only
use



design with mobile
and touchscreen
in mind



provide shortcuts



Don't...

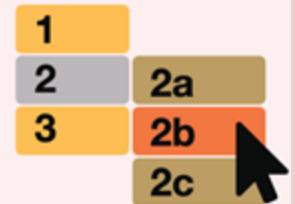
demand
precision



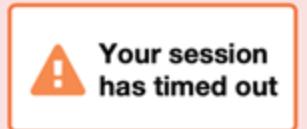
bunch
interactions
together



make dynamic
content that
requires a lot of
mouse movement



have short
time out
windows



tire users
with lots of
typing and
scrolling



Consider Anxiety



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 Dyslexia

The logo consists of the lowercase letters 'das' stacked above 'xyle'. The 'd' and 'A' are pink, while 's', 'x', 'y', and 'L' are red. To the right of the text is a stylized teal 'X' shape composed of several intersecting lines.

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



Autism



Consider

Do...

use simple colours



Do this

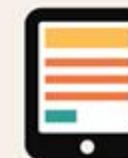
write in plain language



use simple sentences and bullets

Attach files

make buttons descriptive



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

Deafness



Consider

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



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: modern and mode**m**
- 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

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.

Wayfinding

Interaction Design for
Assistive Technologies



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

A

The
A-
eStore

Search

2



Women's Tops

3

4

5

6

7

8

3

Home > Women 11 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



Slim Sweatshirt

\$24.99

15



Long Sleeved T-Shirt

\$34.99

16



Short Sleeved Peasant
Top

\$20.99

Accessibility Bluelines

Tab Order



Assistive Technology



Shortcuts



Regions



Notation



Letter Keys



Directional Arrows



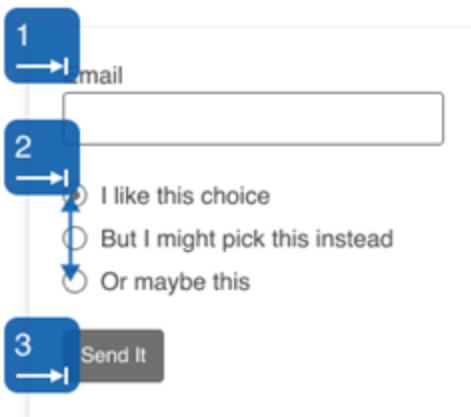
Focus Order



Focus Order

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

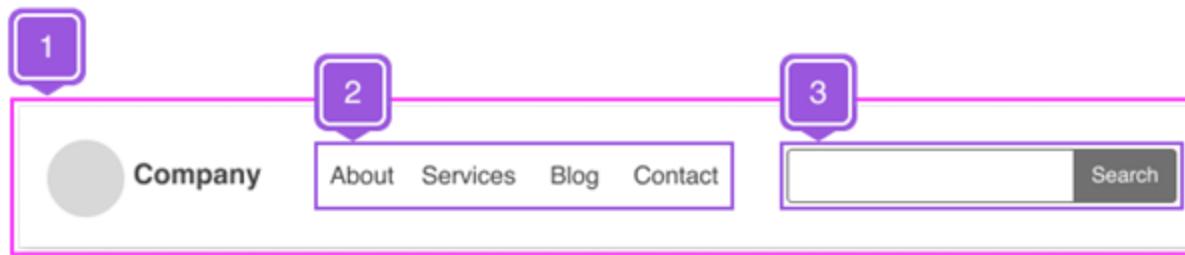
When focus is on the skip link it is visible.



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"

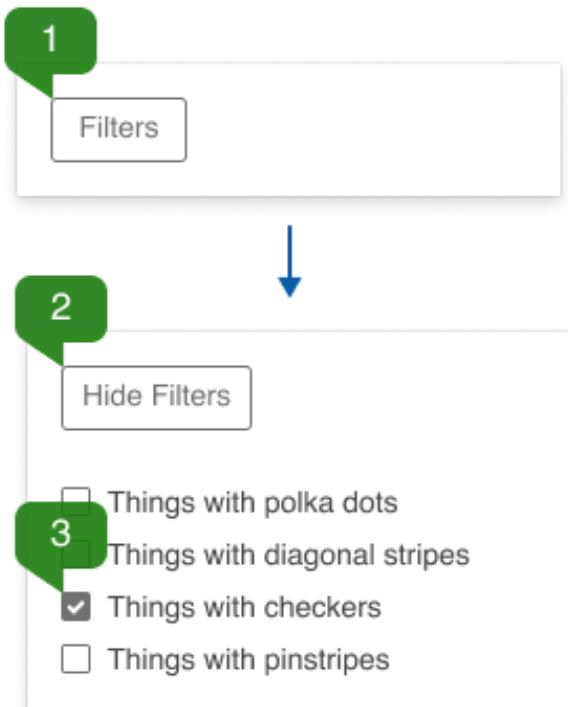
2 role: "navigation"
label: "main navigation"

3 role: "search"

Examples:

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

Assistive Technologies (Screen Reader)



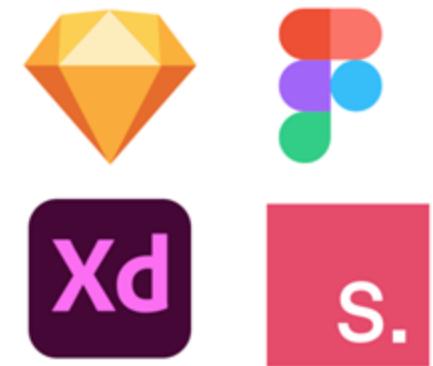
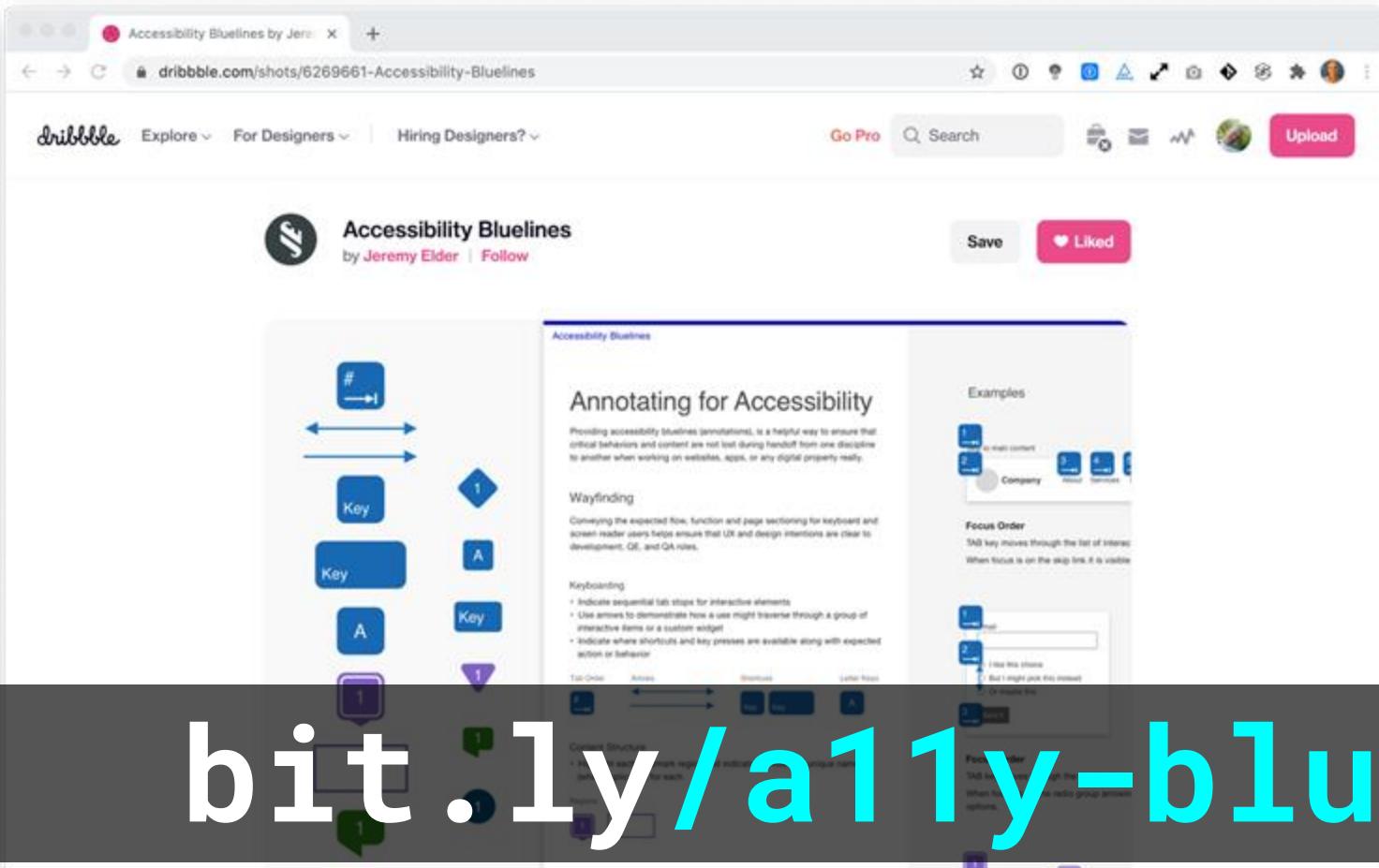
Notes

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



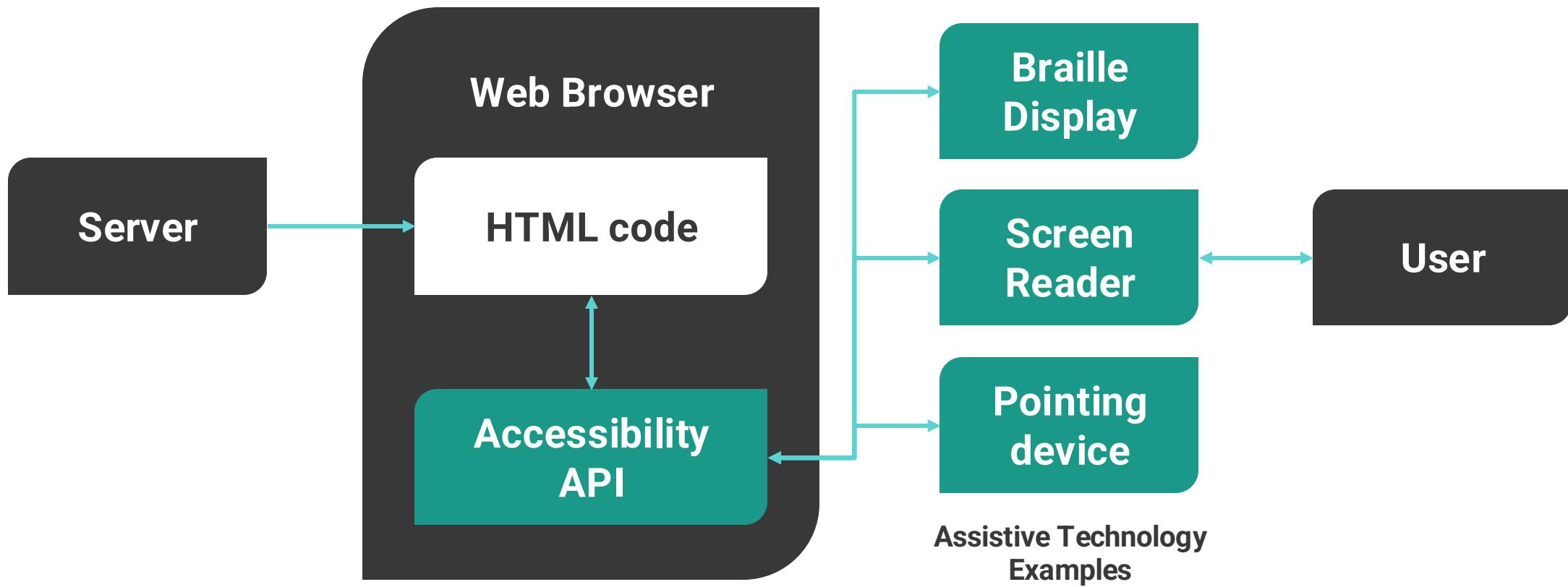
Download includes marker symbols, documentation, and example use (Sketch, Figma, Adobe XD, and InVision Studio versions).

bit.ly/a11y-bluelines

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"

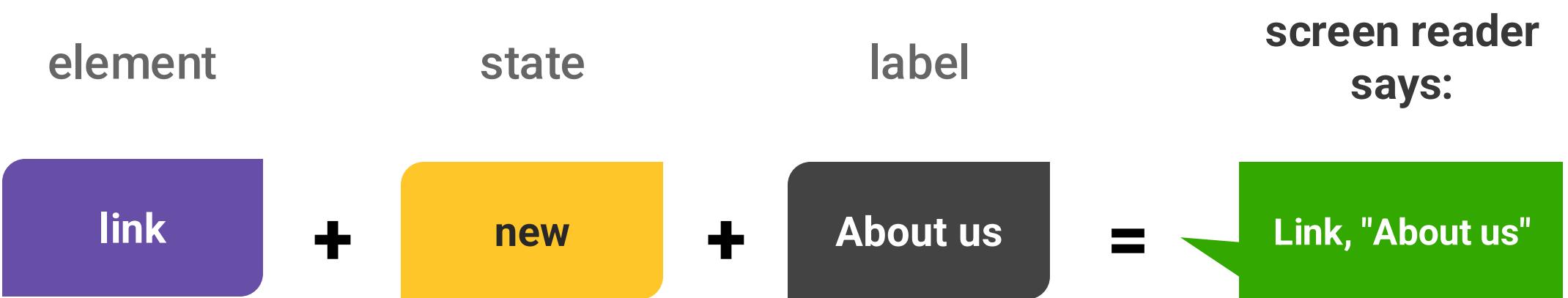
label

A button with a label called "Sign in"

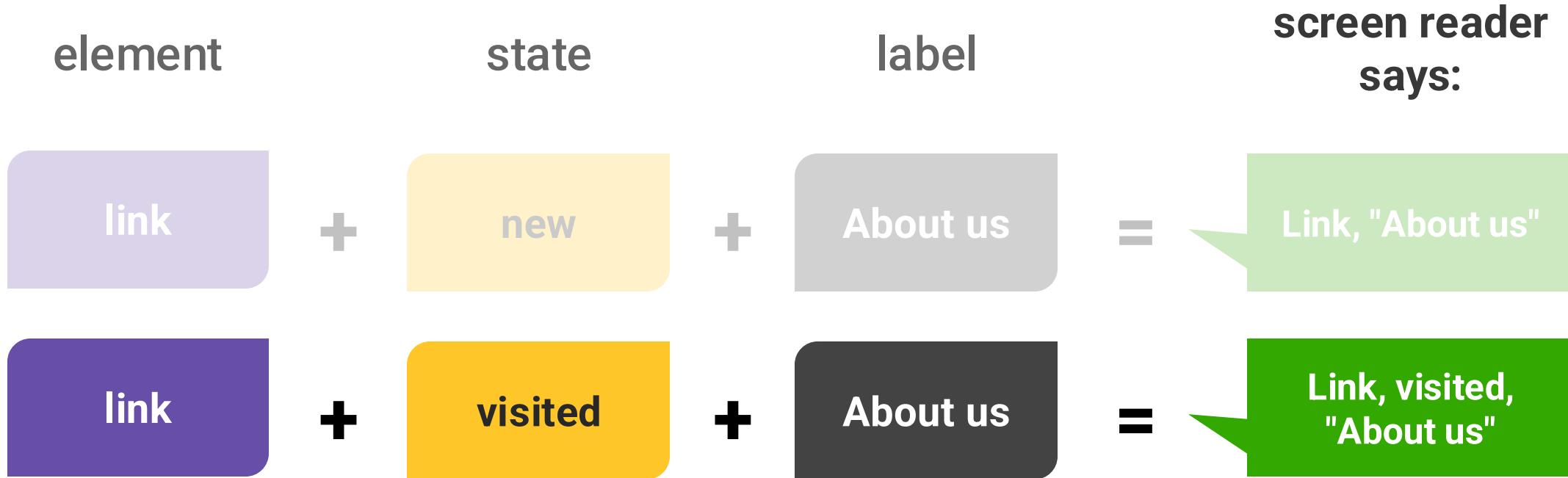
How are things announced?



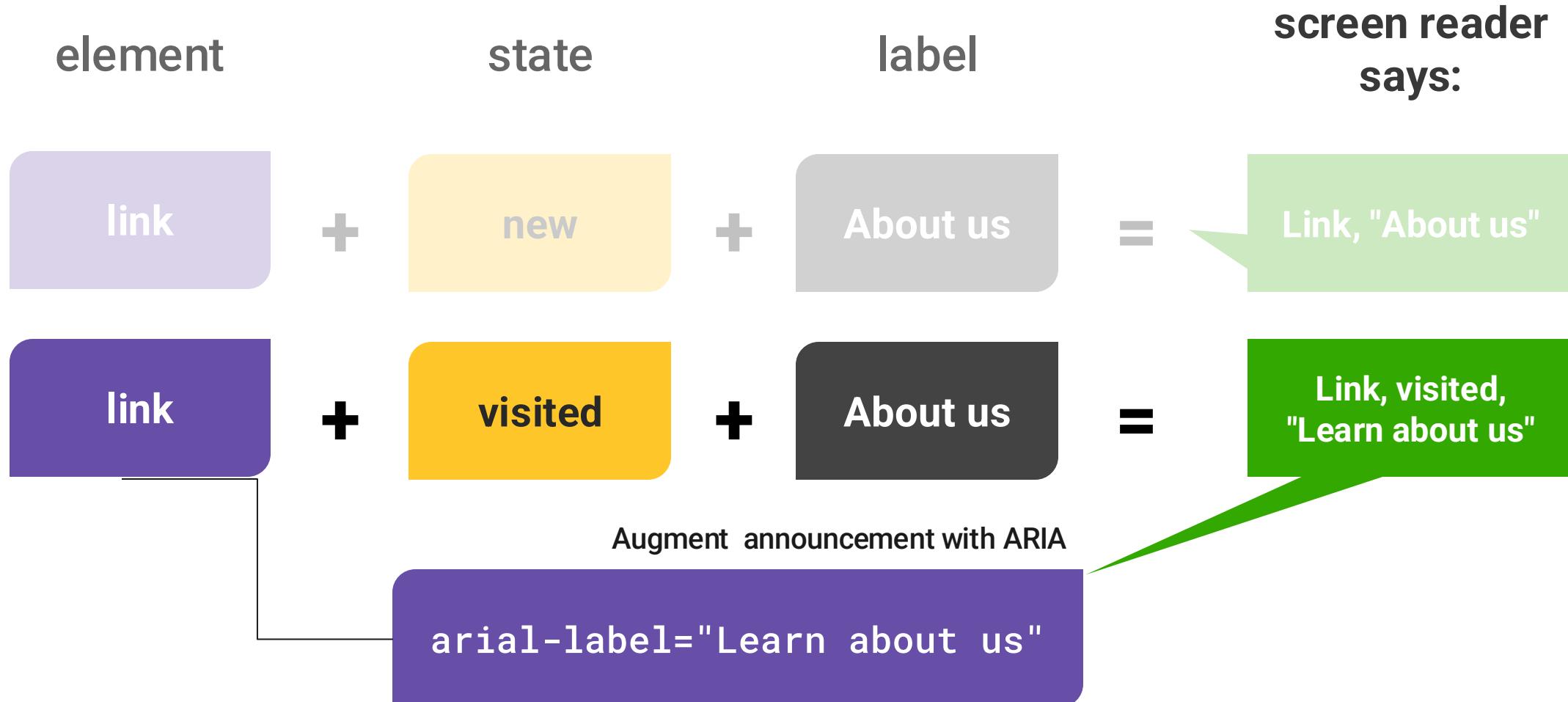
A new link



A visited link



Augmenting announcements with ARIA





Search



Account

Cart 3

The
Accessible
eStore

Women

Men

Girls

Boys

Stores

Contact

Home > Women > Women's Tops

Women's Tops

Filters

0 filters applied

[Clear filters](#)

Colors + (highlighted with a purple border)

Size -

Large

Medium

Small

Price Range -

From

"Colors", collapsed, button

"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:



Search



Account

Cart 3

The
Accessible
eStore

Women

Men

Girls

Boys

Stores

Contact

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"



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 filter expanded button"

"Colors"
"Colors filter"
"expanded"
"button"

View By

Grid View



Slim Sweatshirt

\$24.99



Long Sleeved T-Shirt

\$34.99



Short Sleeved Peasant Top

\$20.99

screen reader says:

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 stylized 'A', a search bar, and categories for 'Women', 'Men', and 'Girls'. A purple box highlights the 'Women' category in the breadcrumb trail: 'Home > Women > Women's Tops'. The main content area is titled 'Women's Tops' and features a sidebar with 'Filters' (Colors, Size, Price Range) and a sorting section ('Sort By: Newest'). Below the filters, there are product cards for items like a red sweatshirt and a long-sleeved shirt.

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

Long-Sleeved

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

content

Filters

0 filters applied

[Clear filters](#)

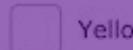
Colors



Blue



Green



Yellow

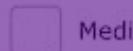


Red

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

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

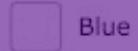
Women's Tops

Filters

0 filters applied

[Clear filters](#)

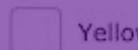
Colors



Blue



Green



Yellow

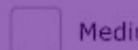


Red

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



Home > Women > Women's Tops

breadcrumbs

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

Items Per Page

View By

Newest

12

Grid View

products**article**

Slim Sweatshirt

\$24.99

article

Long Sleeved T-Shirt

\$24.99

article

Short Sleeved Peasant Top

\$20.99

content

"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

- 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



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

article



Slim Sweatshirt

\$24.99

"Slim Sweatshirt, 24.99",
article



Long Sleeved T-Shirt

\$34.99



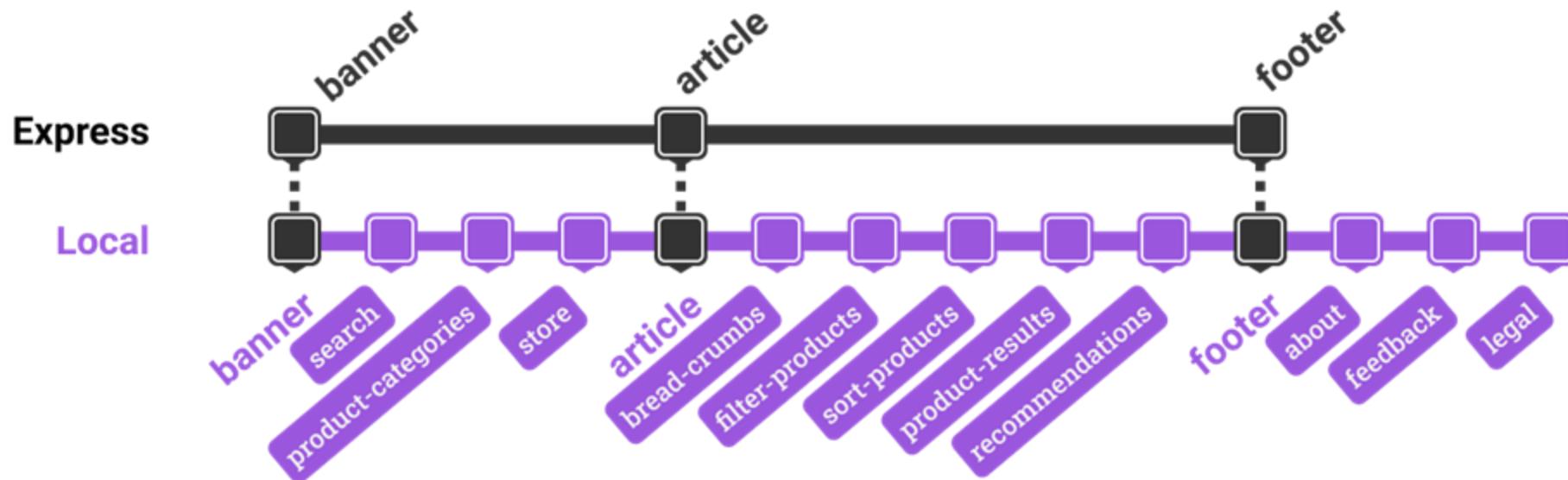
Short Sleeved Peasant
Top

\$20.99

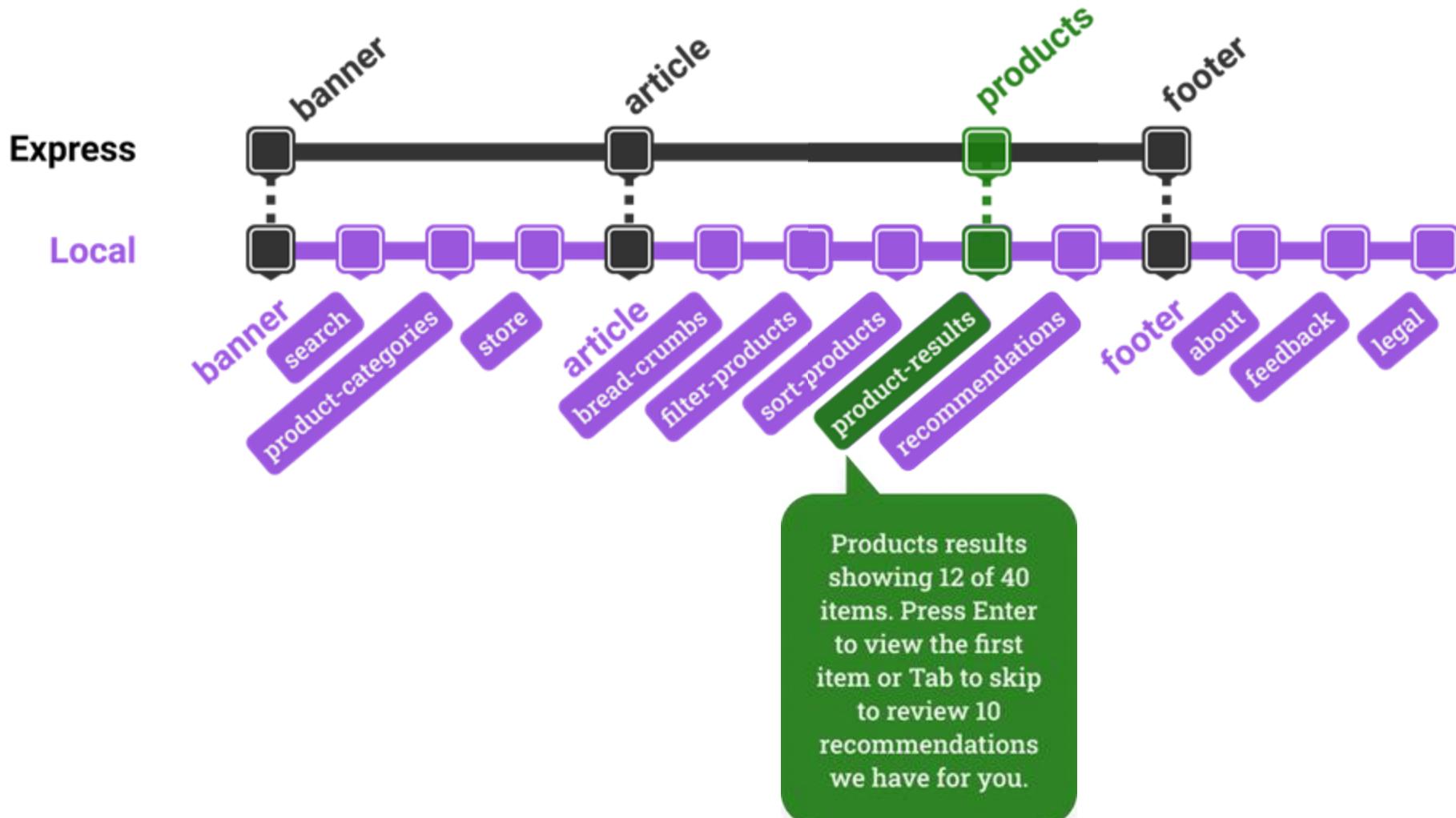


Landmarks are like train stations

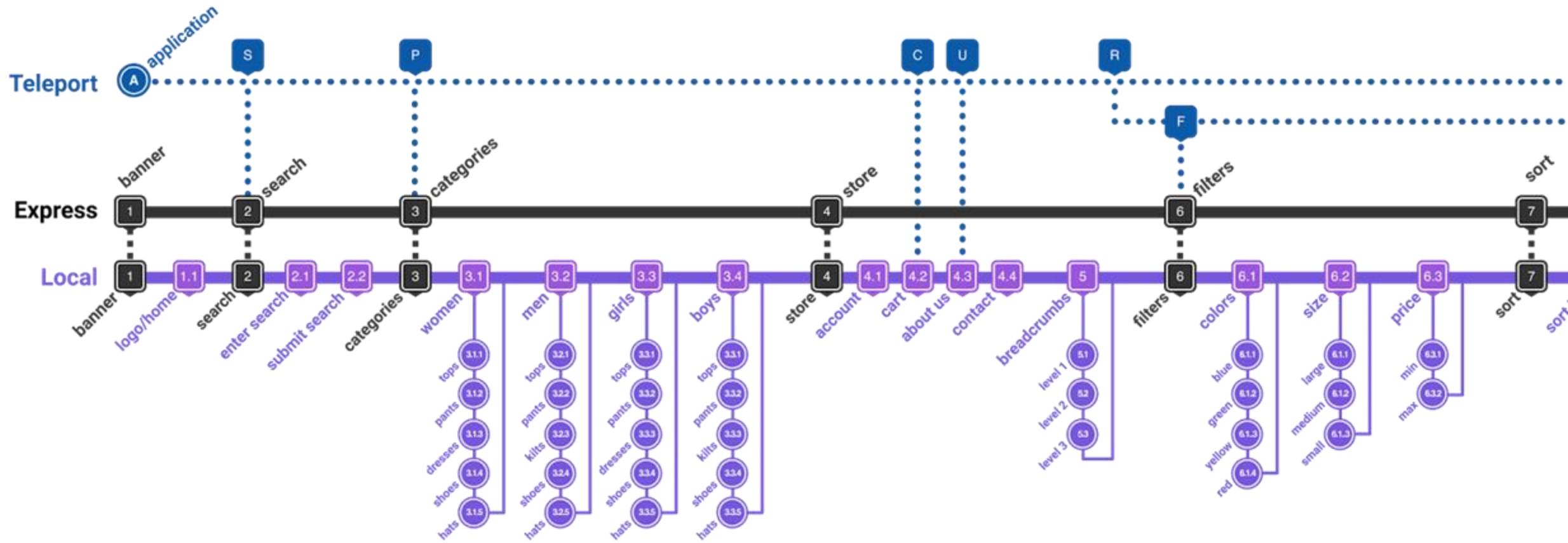
Landmarks are like train stations



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

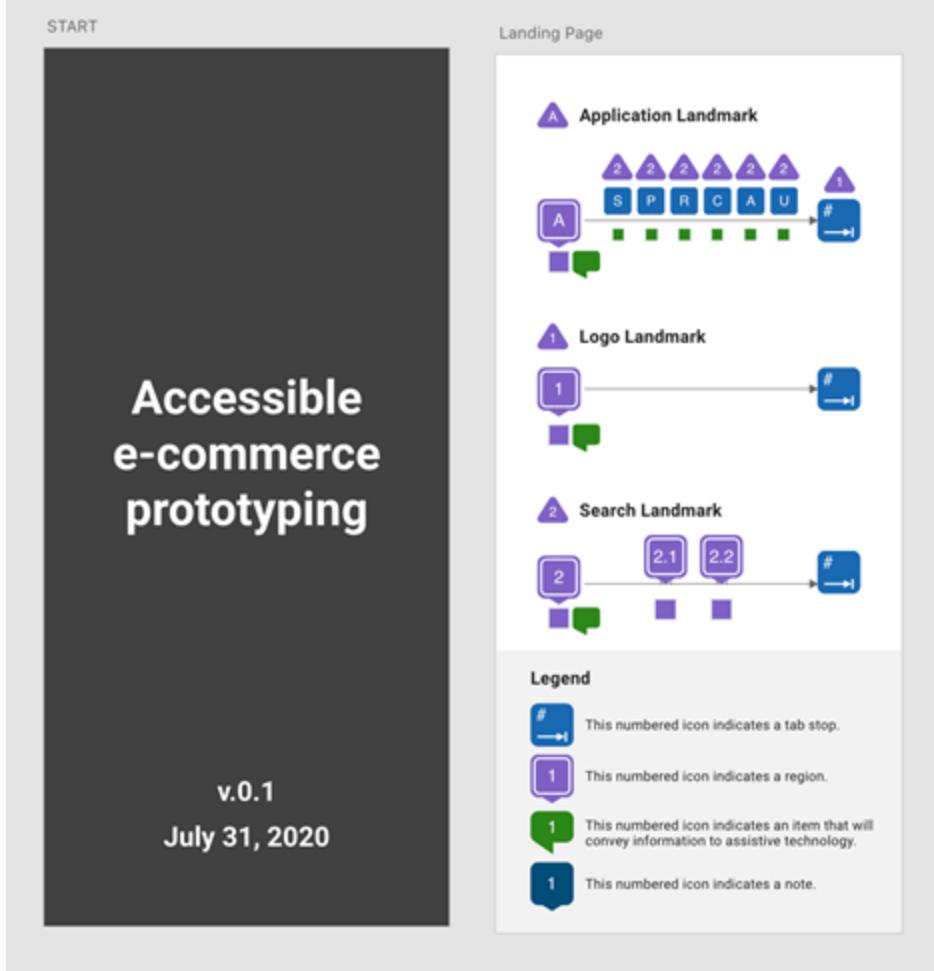
Share

	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 n	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 n	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 n	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



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.

Practice Accessibility

by Design