



Accessible Design Systems

Sarah Massengale
Marcelo Paiva

About this event



This is an
introversion-friendly
workshop

Submit your questions



Slack channel:

#workshop-a11y-2024



bit.ly/a11y-slack-0924



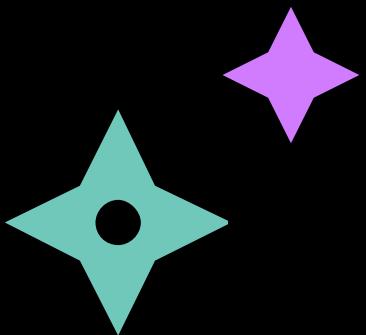
Our hosts



Sarah Massengale
She/Her/Hers
Accessibility Specialist



Marcelo Paiva
He/Him/His
UX + Accessibility



Who we are influences what we do.

Positionality

is understanding how your background, identity, and experiences shape your views and actions.

It helps you see how these factors influence your work and interactions with others.



Sarah's positionality on Accessibility:



I'm a blind, queer, neurodivergent white woman, and my identities deeply influence my approach to inclusive design.

My advocacy extends beyond work, as I live the inequities I fight against every day.

I challenge 'best practices' often created by non-disabled, straight, white people, to ensure digital experiences are accessible and equitable for all.

Marcelo's positionality on Accessibility:



My positionality as diabetic, hard of hearing, and as a Brazilian immigrant, in the U.S. since 1992, shapes my understanding of exclusion and inclusion.

My experiences across cultures, language barriers, and diverse roles shape my approach to accessible, inclusive design.

I'm aware of how my identity influences my perspective and privilege in the industry. This drives me to create digital spaces that are welcoming and accessible for all.

Invited speaker



Claudio Luis Vera, MBA, CPWA

is a certified accessibility consultant with over 20 years of experience.

Claudio brings an extensive experience and expert analysis of the different dimensions of accessibility.



Day-1 Agenda

What does it take to create
accessible experiences?

Today, we will:

Empathize

Recognize our own
biases when designing
products

Learn

Accessible Experiences
versus
Equitable Experiences

Make

Fill the gaps in the
conventional design
process



Questions and Comments

Ask

Find your preferred way or channel to ask.

All questions are equally important.

Comment

Your comments are also important.

Help us improve and continue to learn.



Day-2 Agenda

Hands-on activities for
designing components and
patterns.



Tomorrow, we will:

Advocate

Identify accessibility requirements gaps.

Include people with disabilities.

Make

Accessibility-first:
- Tokens
- Components
- Patterns

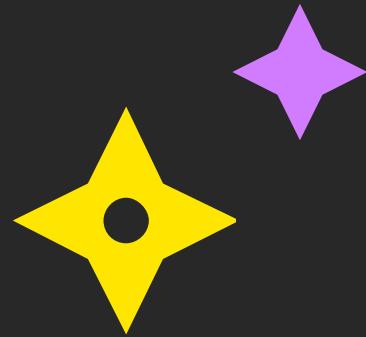
Common inaccessible patterns
Accessibility Settings
Component





Empathize

What barriers might users with cognitive disabilities face when interacting with our components and patterns?



Designers aren't as
empathetic as we say
we are. If we were,
our products would
be **accessible**.

- Tregg Frank, Divinate



True Empathy Principles

Embrace true empathy

Strive to understand and consider the diverse experiences of all users, especially those with disabilities.

Elevate disability inclusion

Actively involve people with disabilities in our design and development processes, ensuring they receive fair compensation for their contributions.

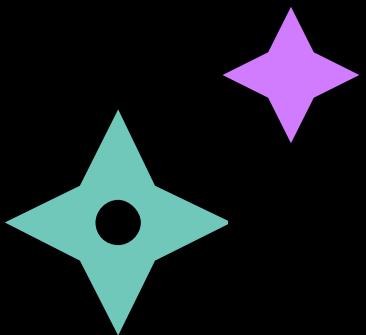
It's about people, not compliance

Aim for the highest standards of accessibility in every product we create. It's about people, not compliance.

Create equitable experiences

Craft products that offer equitable experiences for all users, removing barriers and ensuring equal access.

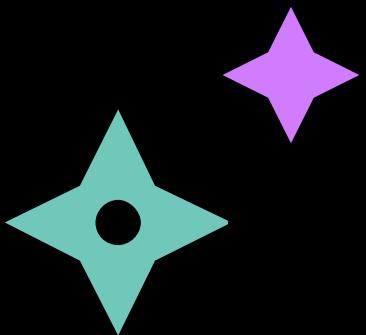




Activity 1: No mouse for you!

How do you collaborate with a
blind team member
on a **FigJam** board?





Activity 1.1 Link

bit.ly/figjam-0901



Reflecting on True Empathy

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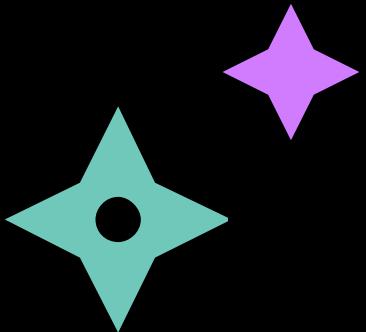
Craft products that offer equitable experiences for all users, removing barriers and ensuring equal access.





What are the challenges you or your team face when practicing some of these principles?

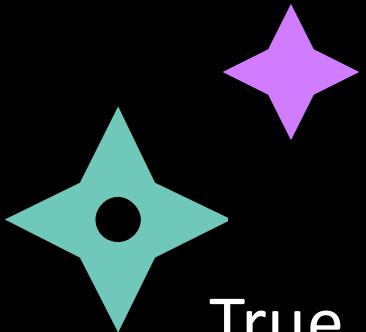
If you feel comfortable expressing your thoughts,
Please raise your hands and unmute your microphones.



Design Systems Challenge #1

User research often focuses on typical users, neglecting those with disabilities.





True Empathy opportunity #1 Inclusive User Research

Involve people with disabilities early in the design process to ensure the system meets a broader range of needs.

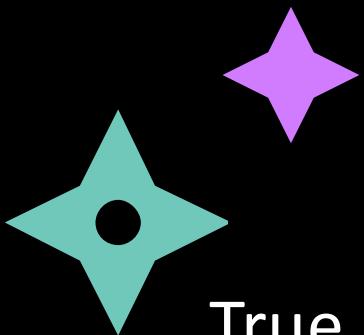




Design Systems Challenge #2

**Accessibility is often an afterthought,
added late in the design process or
retrofitted into components.**

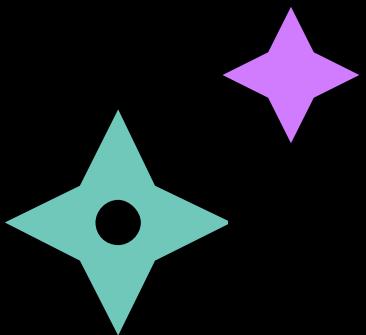




True Empathy opportunity #2 Accessible Components by Default

**Make accessibility a default consideration,
ensuring that components and patterns are
designed to be usable by everyone from the
start.**

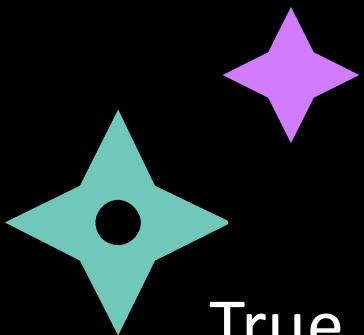




Design Systems Challenge #3

Design systems may not be consistently tested with screen readers, keyboard navigation, or other assistive/access technologies.

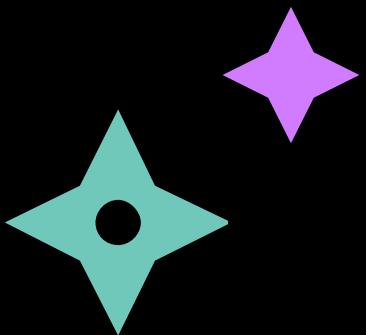




True Empathy opportunity #3 Testing with Assistive/Access Technologies

Regularly test and refine components and patterns with these technologies to ensure they work seamlessly for all users.

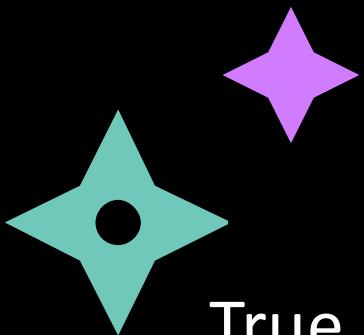




Design Systems Challenge #4

Documentation often lacks detailed guidance on how to implement accessible designs or fails to explain the importance of accessibility.

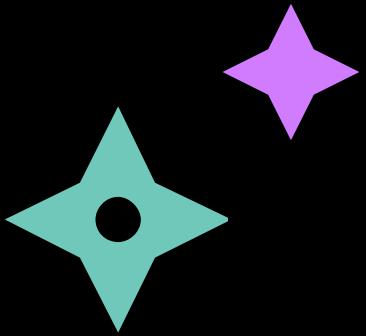




True Empathy opportunity #4 Comprehensive Documentation

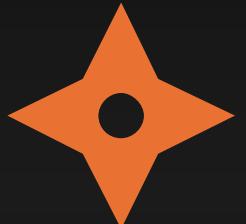
Include clear, actionable guidelines on accessibility in the documentation, along with examples that highlight why and how certain design decisions support all users.

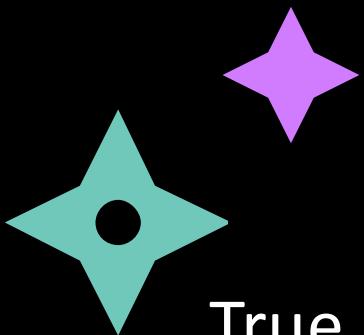




Design Systems Challenge #5

Decisions are frequently driven by aesthetics, trends, or business goals, sometimes at the expense of accessibility.

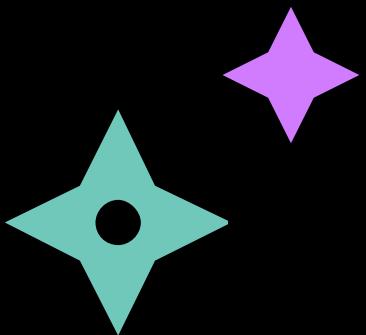




True Empathy opportunity #5 Empathy-driven Decision Making

Prioritize the needs of all users, especially those with disabilities, in every design decision. Let empathy guide you to create inclusive designs that serve everyone.

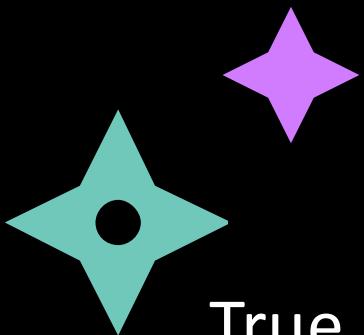




Design Systems Challenge #6

Teams may work in silos, leading to accessibility gaps in the final product.

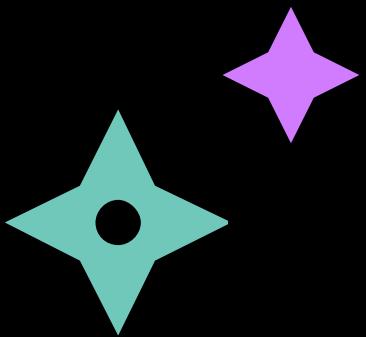




True Empathy opportunity #6 Cross-functional Collaboration

Foster better collaboration between designers, developers, accessibility specialists, and end-users to create more holistic and inclusive design systems.

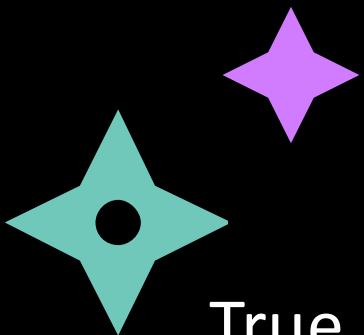




Design Systems Challenge #7

Once a design system is created, there may be little ongoing effort to **keep up with new accessibility standards or user needs.**

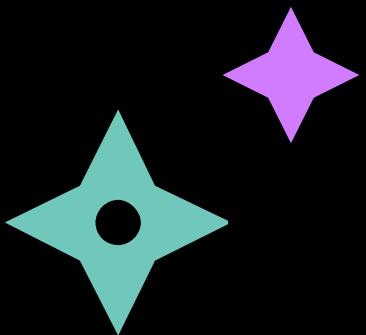




True Empathy opportunity #7 Continuous Learning and Adaptation

Continuously learn and adapt by regularly updating design systems to align with the latest accessibility standards and user feedback.





Be careful with the 80/20 rule:

**It's about People,
not compliance.**



It's about **People**, not compliance.

Typical barriers based on
Unconscious Bias



Common Barriers to Accessibility

Assumptions about disability types

Assuming visible disabilities matter most overlooks the needs of those with invisible conditions.

Inadequate communication or context

Using jargon or unclear language excludes users who rely on simple, direct communication.

Unintentional exclusion

Excluding users based on perceived limits can lead to cutting features instead of making them accessible.

Unsolicited assistance

Offering unsolicited help assumes dependence and may undermine the user's autonomy.



The failure to provide accessible content is a form of **ableism**.

Ableism is a set of assumptions and practices promoting the differential or unequal treatment of people because of actual or presumed body or mind difference.



Explicit Bias

Line of consciousness

Implicit Bias
ableism



Explicit Bias

Attitudes and beliefs that we have about a person or group on a conscious level. We are fully aware of these, so they can be self-reported.

Implicit Bias

Unconscious attitudes that lie below the surface but may influence our behaviors.



Implicit bias:

Data Visualizations

How we want users to visualize the data.



Explicit intention:

Data Visualizations

How we want users to visualize the data.

Data Representation

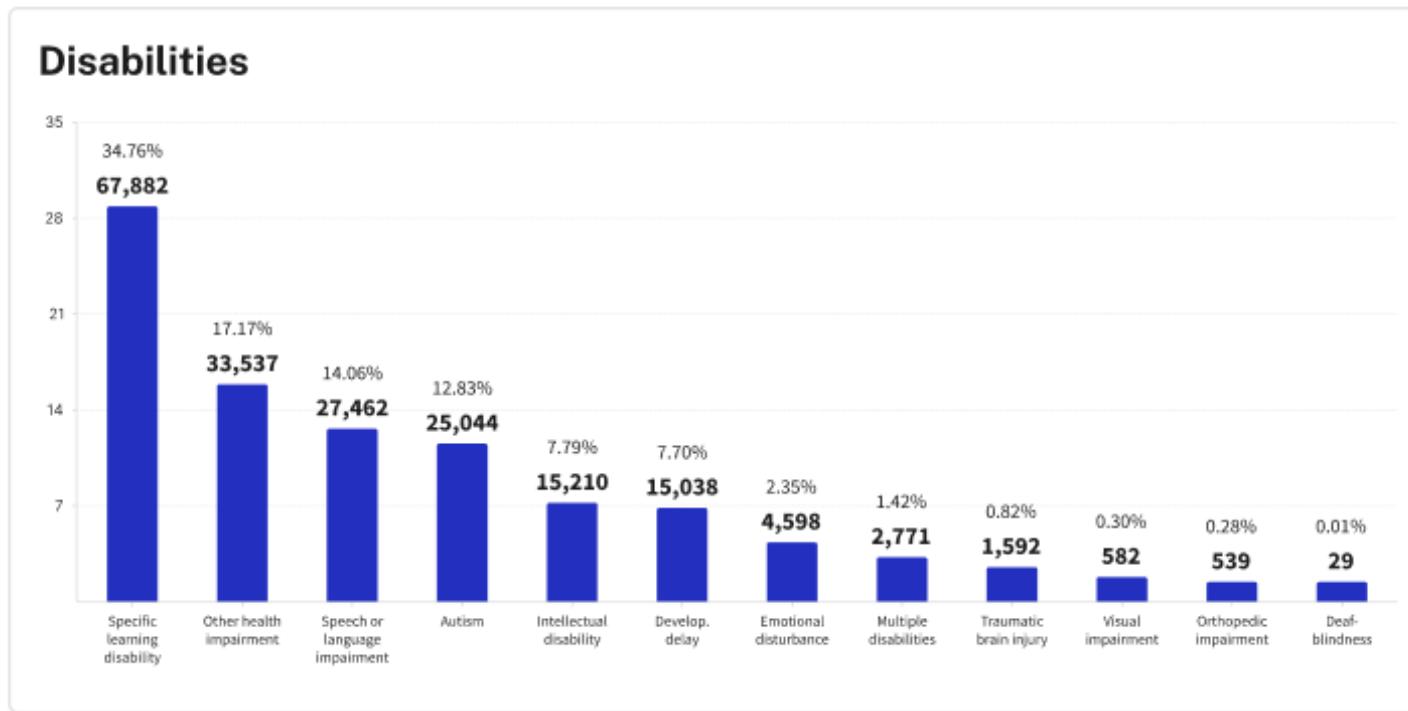
How the data is represented to all users.



Data Visualization as we know creates barriers

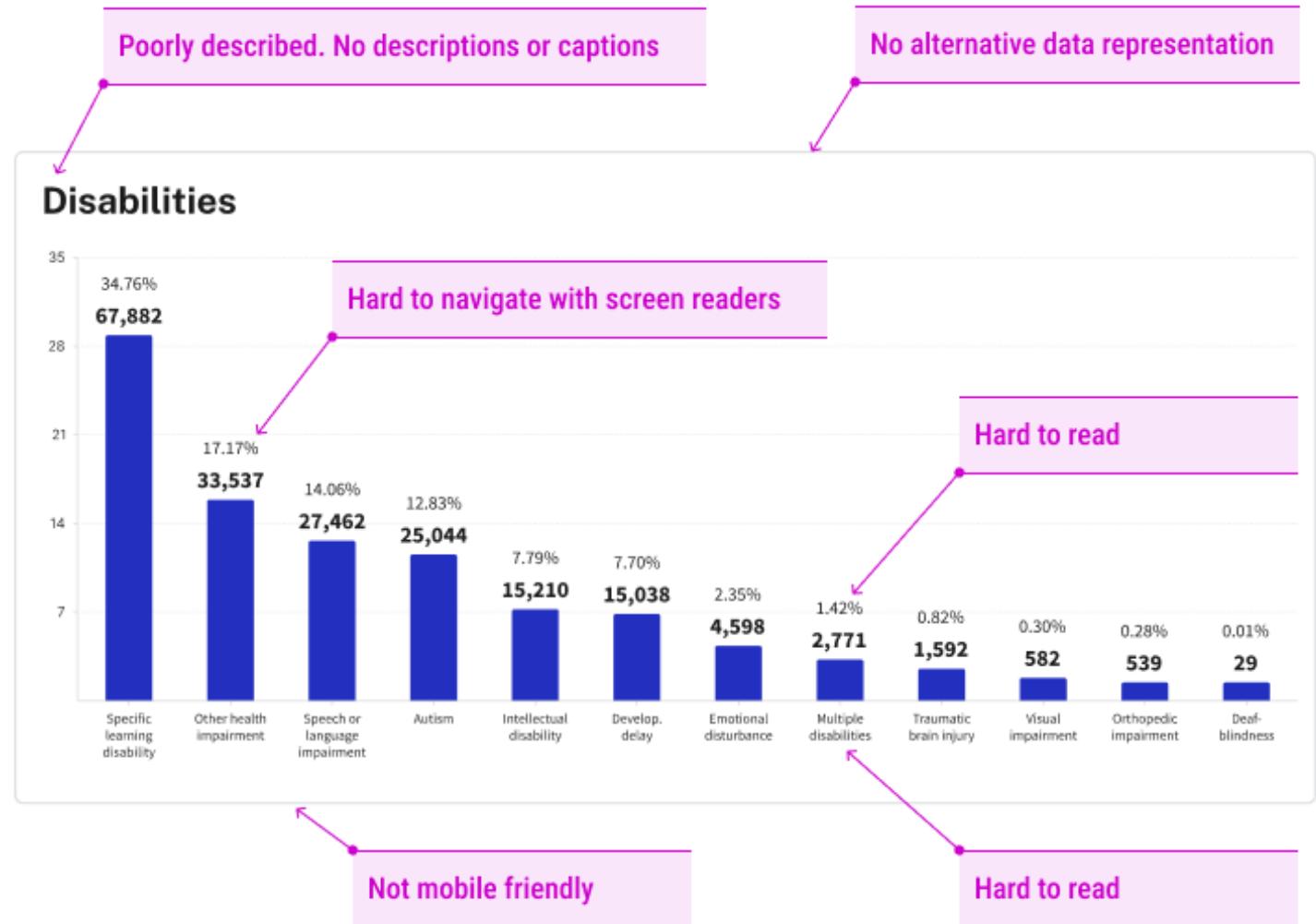
Data visualization is the default approach for most content creators.

Unfortunately, it reflects an implicit bias towards sighted users.



Data Visualization unconscious bias

When data is not properly represented to all users, it leaves people feeling excluded from accessing and understanding important information.



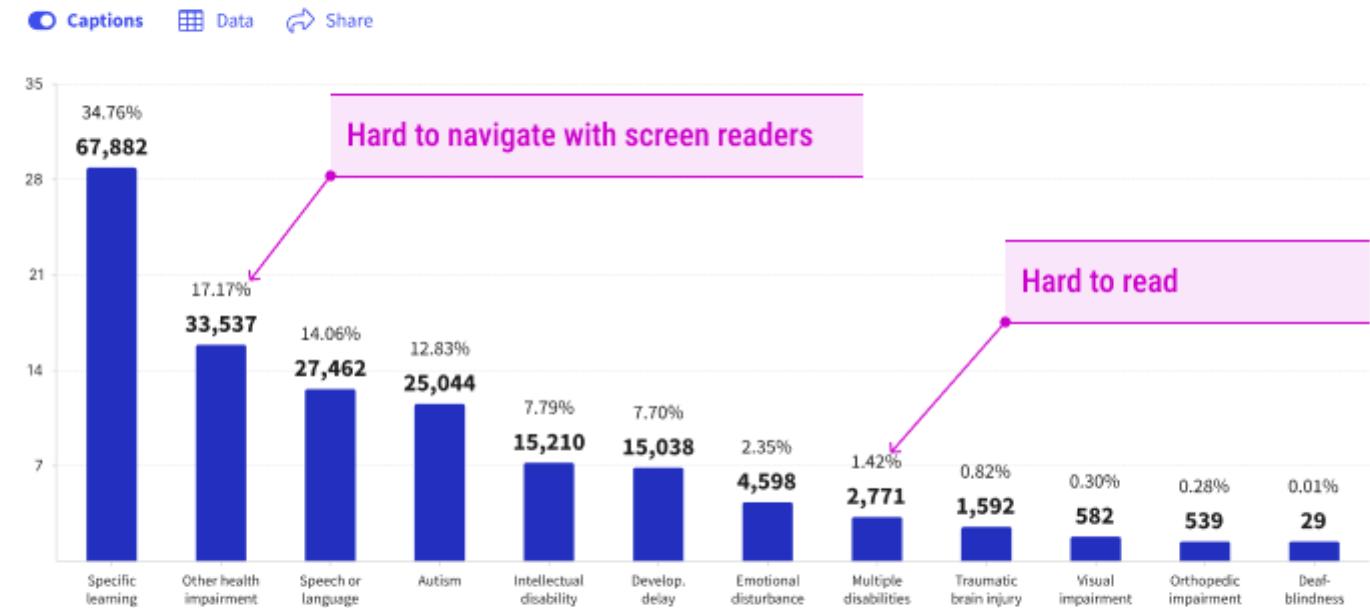
Data Visualization needs a reset

It's about time we think
about people with
disabilities when creating
reports.

A proper term is needed.

Students with Disabilities

There are 195,269 children with various disabilities ranging from 3 to 21 years of age.



In the reported data, Specific Learning Disability (34.76%), Other Health Impairment (17.17%), and Speech or Language Impairment (14.06%) are the most prevalent disabilities among the children.



Data Representation for all users

Data representation should consider users with multiple disabilities or access limitations.

Including those with data bandwidth limitations or intermittent connectivity.

Students with Disabilities

There are **195,269** children with various disabilities ranging from 3 to 21 years of age.

Captions

Data

Share

Specific learning disability

34.76%

67,882

Other health impairment

17.17%

33,537

Speech or language impairment

14.06%



Data Representation multi-modalities

Data representation considers users with multiple disabilities, including:

Learning and cognitive challenges, visual, hearing and motor impairment.

Mobile friendly - 1 column layout

Students with Disabilities

There are **195,269** children with various disabilities ranging from 3 to 21 years of age.

Captions

Data

Share

Specific learning disability

Easier to read labels

34.76%

67,882

Other health impairment

17.17%

33,537

Focusable elements

Speech or language impairment

14.06%

Linear and scrollable



Data Representation beyond good enough

Captions and audio transcription features provide an important element to non-visual users.

Including those that find hard to read complex data.

Students with Disabilities

There are **195,269** children with various disabilities ranging from 3 to 21 years of age.

Captions

Data

Share

Descriptive summary of the data



Read

Auditory support

In the reported data, Specific Learning Disability (34.76%), Other Health Impairment (17.17%), and Speech or Language Impairment (14.06%) are the most prevalent disabilities among the children.

Specific learning disability

34.76%

67,882



Data Representation also includes visual representation

Visual representation is still very important.

But should not be the only way to represent data nor be the most important.

Students with Disabilities

There are **195,269** children with various disabilities ranging from 3 to 21 years of age.

Captions Data Share

In the reported data, Specific Learning Disability (34.76%), Other Health Impairment (17.17%), and Speech or Language Impairment (14.06%) are the most prevalent disabilities among the children.

Specific learning disability



Other health impairment



Speech or language impairment



Autism



Intellectual disability



Developmental delay



Emotional disturbance



Race and ethnicities

Distribution of children with disabilities by race and ethnicity, ages 3-21.

Captions Data Share

White



Black or African American



Hispanic or Latino



Two or more races



Asia



American Indian or Alaskan Native



Native Hawaiian or other Pacific Islander



Disability:

Medical Diagnosis or
Social Empowerment



Perspective on Disability:

Medical

Disability is an individual's health condition that can and should be cured/fixed.

Social

Disability is a mismatch or result of societal barriers.



Responsibility on Disability:

Medical

The responsibility lies with the individual to gain independence and healthcare providers to cure/fix the disability.

Social

The responsibility lies with society to create inclusive environments.



Solution Focus on Disability:

Medical

Emphasis on medical treatment and rehabilitation.

Social

Emphasis on societal change and removal of barriers.





Disability: Medical and Social Differences

These differing perspectives shape how policies, services, and interventions are designed and implemented, influencing everything from healthcare and social services to accessibility standards and anti-discrimination laws.



Design Systems:

Compliant

or

Equitable?



Design System Approach

Compliance-Driven

Address the disability as a problem to be managed or fixed, often through specialized or assistive designs.

Equity-Driven

View designing components as a tool for achieving equity, ensuring that all people can fully participate in society.



Design System Focus

Compliance-Driven

Solutions comply with standards and provide adaptations for individuals with disabilities.

Equity-Driven

Solutions are universally accessible, remove barriers, and promote social inclusion.



Design System Goals

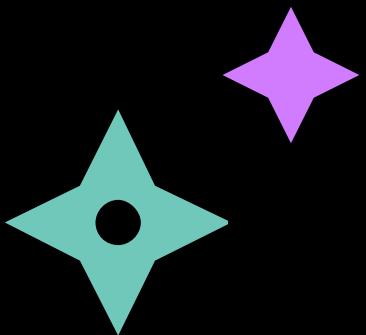
Compliance-Driven

Meet specific needs and regulatory requirements for accessibility.

Equity-Driven

Create an inclusive environment where everyone has equal access and opportunity.





True Empathy Principle:

**It's about People,
not compliance.**



Assistive and Access Technology





What Is Assistive Technology?

Assistive technology (AT) is any tool, device, or software that helps people with disabilities do things more easily or effectively.



Access Technologies for blindness or low vision

Screen Readers

Software that transforms a computer from a visual to an audio-visual experience, enabling full interaction, not just reading text aloud.

Screen Magnifiers

Tools that enlarge the content on the screen, making it easier for people with low vision to see details.

Color Contrast Tools

Software or browser extensions that enhance color contrast or adjust color schemes, helping colorblind users distinguish between colors.

Braille Displays

Devices that convert on-screen text to braille, enabling deaf-blind users to read by touch. Also helpful for blind users in proofreading.



Disability Types:

Visual

Auditory

Motor

Cognitive

Blind, partial/low vision, or are colorblind.

Deaf or hard of hearing.

Trouble with fine motor skills, muscle movements, tremors and spasms.

Learning disabilities, memory problems, attention issues, or difficulty with problem-solving.



Worldwide Disability Stats

According to the World Health Organization (2011)

1.3

Billion

people with
disabilities worldwide

2.2

Billion

people living with
visual impairment

1.5

Billion

people living with
hearing loss

75

Million

people relying on
wheelchairs

Diagnosed with a
significant disability

Visual impairment:

At least 2.2 billion people
have a near or distance
vision impairment

Hearing impairment:

1.5 billion people
experience some degree
of hearing loss

Mobility:

75 million people require
a wheelchair for mobility



Worldwide Accessibility Business Case

by the Return on Disability Group

1.3

Billion

people with
disabilities worldwide

\$1.9

Trillion

size of Disability Market

3.4

Billion

additional people
emotionally connected

\$13

Trillion

in annual
disposable income

Nearly equal to the
combined population of
China and the European
Union.

Annual global spending
power of people with
disabilities.

People that are
emotionally connected to
people with disabilities.

Annual spending potential
of families and friends
emotionally connected to
people with disabilities.



Cognitive Disabilities in the United States



**Approximately 13.9% of U.S. adults
have a cognitive disability with serious
difficulty concentrating, remembering,
or making decisions.**

Assistive and Access Technology Examples



Visual: Making it equitable



Screen magnification software increases the size of the text and graphics displayed on the screen of a computer or mobile device. Essentially, they act as magnifying glasses, enabling better visibility of a particular area of a screen.

Assistive Tech for Deaf, deaf or hard of hearing

Captioning Software

Tools that produce accurate captions with precise timing and detailed context.

Hearing Aids

Devices that amplify sound can be used in conjunction with assistive listening systems to improve access to audio content.

Sign Language

Add sign language interpreters in videos or live streams to ensure that Deaf users can rely on their primary language.

Visual Alert Systems

Tools that convert audio alerts into visual notifications on the screen.



Auditory: Making it equitable



Realtime captions are created, and the work involved in bringing captions to the screen, whether it be television, tablet, computer, or mobile phone.

Assistive Tech for Motor disabilities

Switch Devices

Single-button tools that allow users to control a computer or other devices, providing an easier alternative to traditional keyboards or mice.

Foot Pedals

Devices that allow users to control a computer or other equipment with their feet, useful for those who have difficulty using their hands.

Head Mounted Pointer

A device worn on the head that allows users to control a computer by pointing with head movements, often used with on-screen keyboards.

Sip and Puff

A device that allows users to control a computer or wheelchair by sipping or puffing on a straw, translating these actions into commands.



Motor: Making it equitable



Tyler Schrenk controls his iPhone hands-free, using a sip-and-puff system, providing greater independence being a quadriplegic.

Assistive Tech for Cognitive disabilities

Reading Assistants

Tools that help users with reading comprehension by highlighting text and reading it aloud.

Voice Recorders

Compact devices that allow users to record and playback important information, aiding those with memory difficulties in recalling details later.

Interactive Storyboards

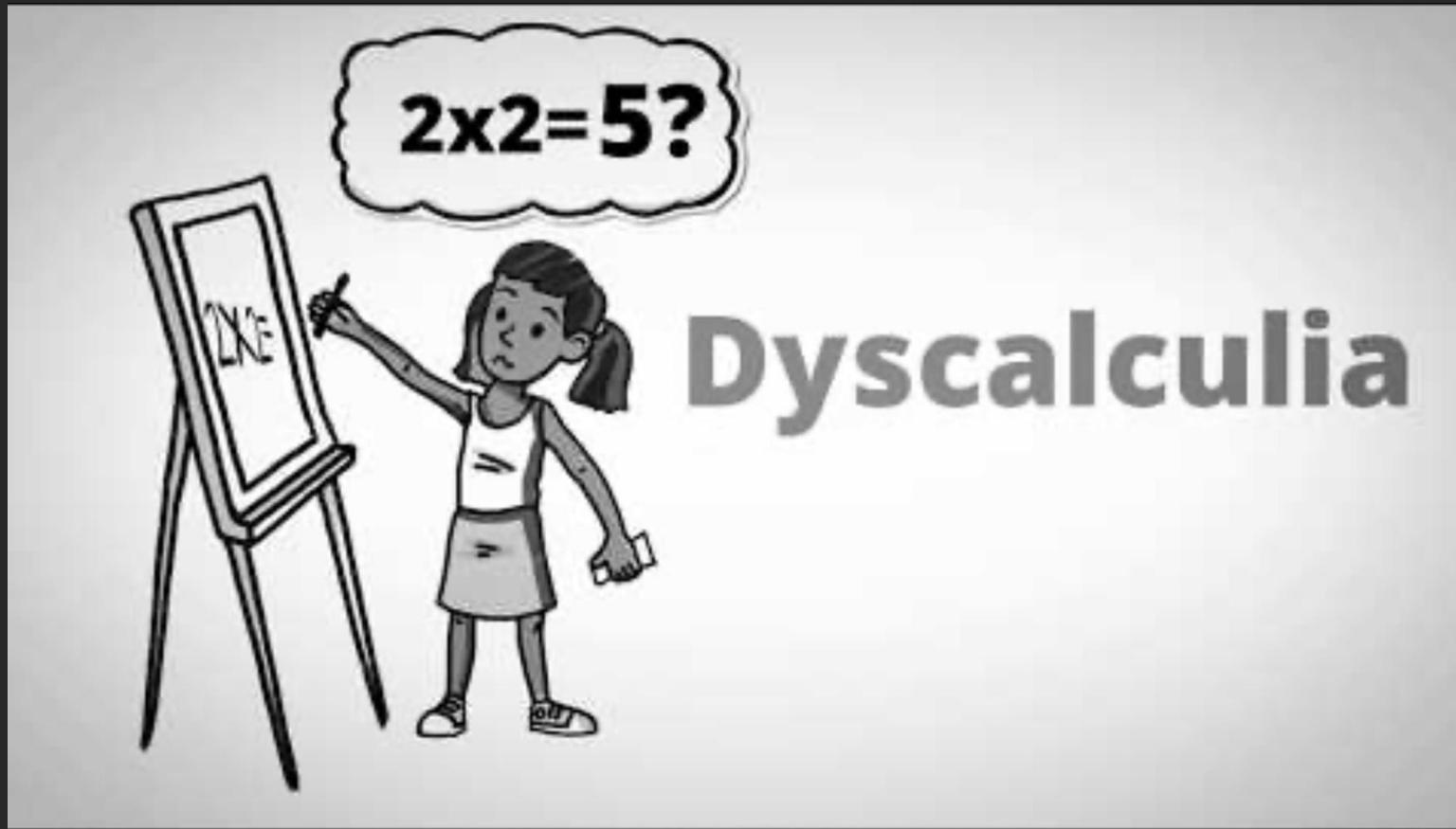
They provide step-by-step guidance through tasks using visual cues and simple instructions.

Smart Pens

Record audio while writing notes on special paper, allowing the user to replay the recorded session by tapping on the notes.



Cognitive: Making it equitable



This animated video gives a brief look at some of the most common signs and symptoms of learning disorders in children:

- Dyslexia
- Dysgraphia
- Dyscalculia
- Dyspraxia



What about Neurodiversity?

Not all people identify as disabled.

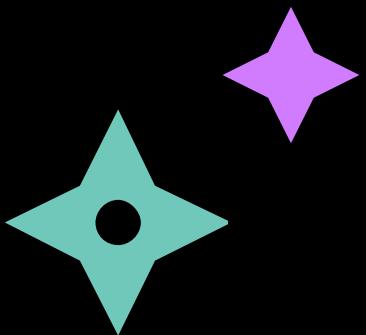
Some view their neurodivergence as a different way of thinking that comes with unique strengths and challenges, rather than a disability.



“Don’t be afraid to talk about it.”



Neurodiverse HSBC employees share their experiences and the distinct skills they bring to the bank.



Our approach is clear:

Design for Neurodiversity

Expect end-users will perceive and understand your content differently.





Disability Sensitivity

Sarah's Stories

Ask Me Anything





Break 1

10 minutes



Learn

How can we ensure that updates to our design system reflect the latest changes in accessibility laws and standards?

The Web Content Accessibility Guidelines – WCAG



Web Content Accessibility Principles:

Perceivable

Operable

Understandable

Robust

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

User interface and navigation components are functional to all users, including those who do not use a standard keyboard and mouse.

Users understand the content, how to find the information they want, and how to use any tools or features offered.

Content can be accessed from multiple devices, including assistive technologies, and remain accessible as technology and user agents evolve.



WCAG Principle:

Perceivable

Text Alternatives

Provide text alternatives for any non-text content so that it can be transformed to large print, braille, speech, symbols or simpler language.

Time-based Media

Provide alternatives for time-based media:

- audio-only
- video-only
- audio-video

Adaptable

Create content that can be presented in different ways (for example simpler layout) without losing information or structure.

Distinguishable

Make it easier for users to see and hear content including separating foreground from background.





“A picture may be worth a thousand words, but for me, it's worth zero if you don't describe it!”

Disability: Blindness ♦

Text Alternative – 1.1.1:Non-text Content



A character wearing dark glasses and using a screen reader, puzzled by an image with no alt text.



“So you're saying there was an epic war battle scene in the city, and I missed it?

Unbelievable!”

Disability: Deaf-blindness



Time-based Media – 1.2.4:Captions (Live)



An example of an action-packed movie scene, full of details that are often missed by a visually impaired user listening to a video without proper audio description.



“Hey, I didn't tilt the world, so why are you forcing me to tilt my screen?”

Disability: Tetraplegia ♦

Adaptable – 1.3.1: Info and Relationships



A blind visitor to Spain's Prado Museum runs his fingers across a 3-D copy of the Mona Lisa, painted by an apprentice to Leonardo da Vinci.



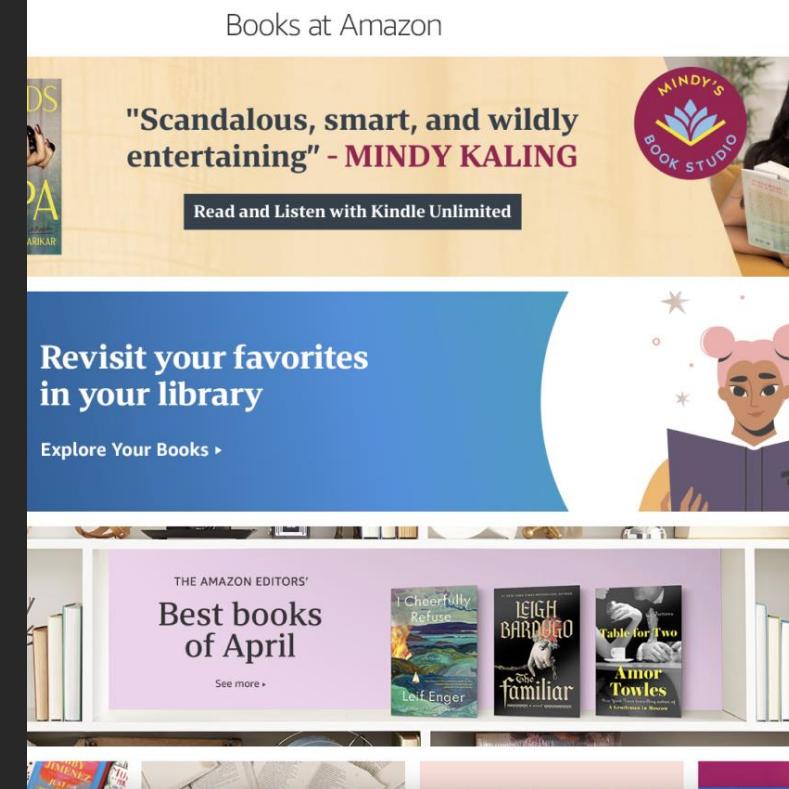
“Is that a book title or a ransom note?

Text in images are a no-go for me!”

Disability: Low-vision



Distinguishable - 1.4.5:Images of Text



Ads and promotional banners are often displayed as images of text, which can be a barrier to people with visual and cognitive disabilities who rely on the ability to customize font, size, color and background.



“I asked for readable text,
not a jigsaw puzzle of
fonts and spacing!”

Disability: Dyslexia ♦

Distinguishable - 1.4.8:Visual Presentation



It's always hard to find anything in a cluttered layout with multiple fonts and tight spacing.



WCAG Principle: Operable

Keyboard
Accessible

Enough Time

Seizures and
Physical
Reactions

Navigable

Input
Modalities

Make all functionality
available from a
keyboard.

Provide users enough
time to read and use
content.

Do not design content
in a way that is known
to cause seizures.

Provide ways to help
users navigate, find
content, and determine
where they are.

Make it easier for users
to operate functionality
through various inputs
beyond keyboard.





“Mouse? Who needs a mouse when you've got keyboard kung fu skills?”

Disability: Blindness



Operable – 2.1.1:Keyboard



The image features a serious-looking man typing on a keyboard, with a bold and dynamic composition that includes angular shadows and red brushstrokes, set against a background with Chinese characters.



“If you log me out every 5 minutes, I swear I'll start writing my passwords on sticky notes!”

Disability: Memory Impairment



Operable – 2.2.5:Re-authenticating



The illustration shows a frustrated character shouting, surrounded by an explosion of sticky notes with passwords, symbolizing the chaos and frustration of frequent login prompts.



“I feel like I'm playing
'Where's Waldo?' with
my keyboard focus.”

Disability: Low vision



Operable – 2.4.7:Focus Visible



The illustration depicts a young boy looking lost and overwhelmed in a crowded carnival, surrounded by colorful rides and people.



“If you label a button
'Submit' visually, why on
Earth does it announce
'Go' to my screen reader?”

Disability: Blindness



Operable – 2.5.3:Label in Name



The illustration depicts a person wearing headphones, yelling in frustration due to an accessibility barrier where a button labeled "Submit" visually announces "Go" to their screen reader, bathed in intense red and purple lighting to symbolize their anger and confusion.

WCAG Principle:

Understandable

Readable

Make text content
readable and
understandable.

Predictable

Make Web pages
appear and operate in
predictable ways.

Input Assistance

Help users avoid and
correct mistakes.





“Tell me it’s pouring rain,
not an animal parade!

Clear words for clear
skies ahead.”

Neurodiversity ♦

Understandable – 3.1.3:Unusual Words



The idiomatic expression “it’s raining cats and dogs,” which is used to describe very heavy rain, might be confusing or misleading for those with autism spectrum disorders (ASD) or others who tend to interpret language more literally.



“Why move the search bar just when I’ve mastered where it is?

Keep things consistent; it’s comforting, not confusing!

Disability: Blindness



Predictable – 3.2.3:Consistent Navigation



A user at a cluttered desk, covered with maps and compasses, visibly confused as they navigate through a maze-like website on their computer screen.



Contextual help? Yes, please!
It's like reading a recipe
while cooking rather than
having to guess the
ingredients.



Disability: Cognitive



Input Assistance – 3.3.5:Help

This image highlights the importance of contextual help, like clearly labeled spices or step-by-step recipes, which can empower individuals with cognitive challenges to navigate daily tasks more independently and confidently.

WCAG Principle:

Robust

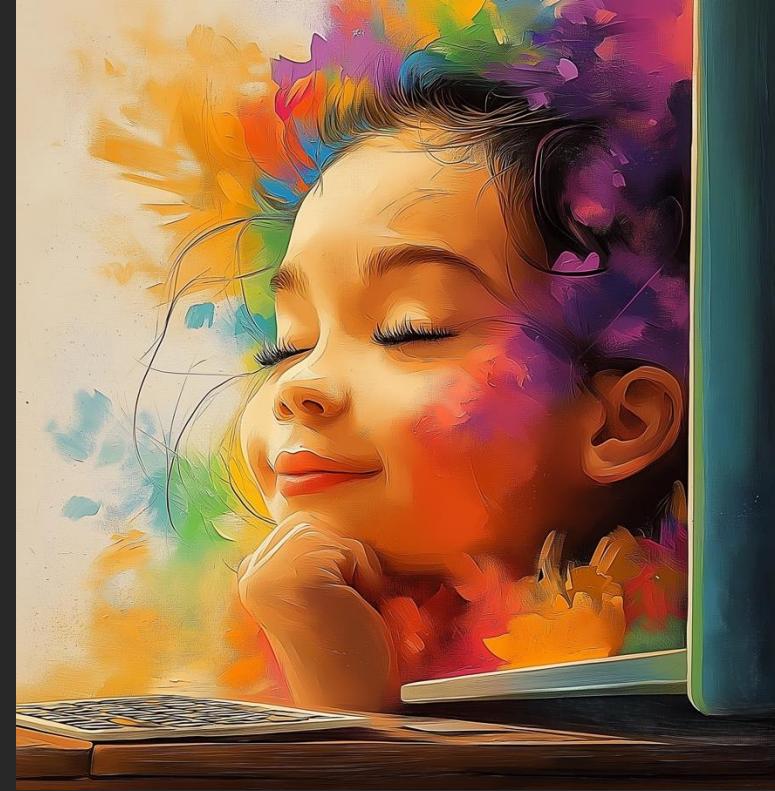
Compatible

Maximize compatibility with current and future user agents, including assistive technologies.





“When I submit a form, a little whisper from my screen reader telling me ‘Submission successful’ feels like a pat on the back.”



Disability: Blindness



Compatible – 4.1.3:Status Messages

This image mirrors the joy of seamless UX design, where intuitive interactions turn everyday use into a vibrant, delightful experience.

WCAG – Levels of Conformance

AAA

Takes UX to the most equitable and detailed accessibility solutions for diverse needs.

AA

While better than basic, it lacks the depth needed to ensure full equitable access for every user.

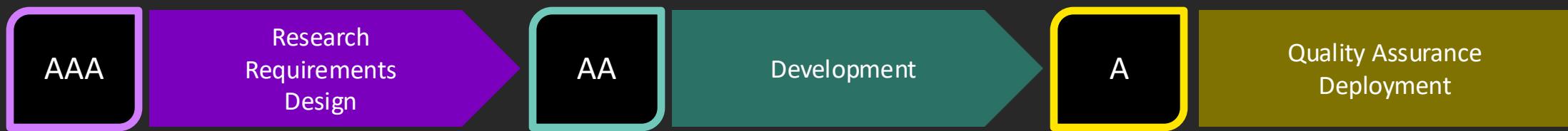
A

Basic accessibility to ensure all users can navigate and understand content.



Reaching the highest accessibility

Addressing accessibility early in the product life cycle leads to higher UX quality and more cost-effective implementation.



Inclusive Innovation

User needs are addressed early in the research, requirements and design stages.

Smart Compliance

Accessibility knowledge is present and is considered by engineers early in the development stage.

Expensive Remediation

Playing catch up and addressing WCAG violations from user complaints or litigations.





AAA

for Inclusive Design

Inclusive Design must integrate accessibility and involve people with disabilities in the design process to create products that benefit everyone.



Inclusive Design means:

Nothing about us, without us.

Two boys share a joyful moment as one pushes the other in a wheelchair, both beaming with happiness in a warm, energetic outdoor setting.



Inclusion as personal growth:

**Create methodologies and
tools for testing solutions
with users with disabilities.**



Inclusion as mindset shift:

**Take WCAG criteria
as [L]
[SEP] design challenges.**

One guideline at the time.





WCAG 2.3.2 (AAA)

“Living with epilepsy means never knowing when normalcy will be interrupted by chaos.”

Disability: Photosensitive Epilepsy



Operable – 2.3.2:Three Flashes



The image depicts a person experiencing a seizure, with their eyes closed and electric-like, chaotic energy radiating from their head, symbolizing the intense and overwhelming nature of the seizure.



Three Flashes WCAG 2.3.2 (AAA)

Web pages do not contain anything that flashes more than three times in any one-second period or the flash is below the general flash and red flash thresholds.

2 - Operable

2.3 - Seizures and Physical Reactions

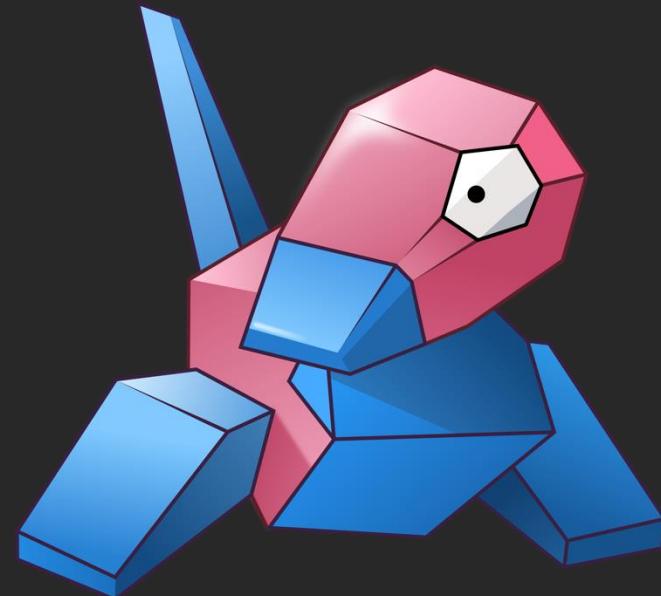


The image depicts a person experiencing a seizure, with their eyes closed and electric-like, chaotic energy radiating from their head, symbolizing the intense and overwhelming nature of the seizure.

Polygon: The Pokémon episode that caused seizures

On December 16, 1997, the episode in "Dennō Senshi Porygon" (Electric Soldier Porygon) aired in Japan.

Pikachu stops missiles with his Thunderbolt attack, resulting in an explosion that rapidly flashes red and blue lights causing a widespread adverse reactions among viewers





Three Flashes

User Story 1

As a person with epilepsy,
I want web content presented without flashing
or fast blinking,
so that I can access the information without
the potential of triggering a seizure.



2 - Operable



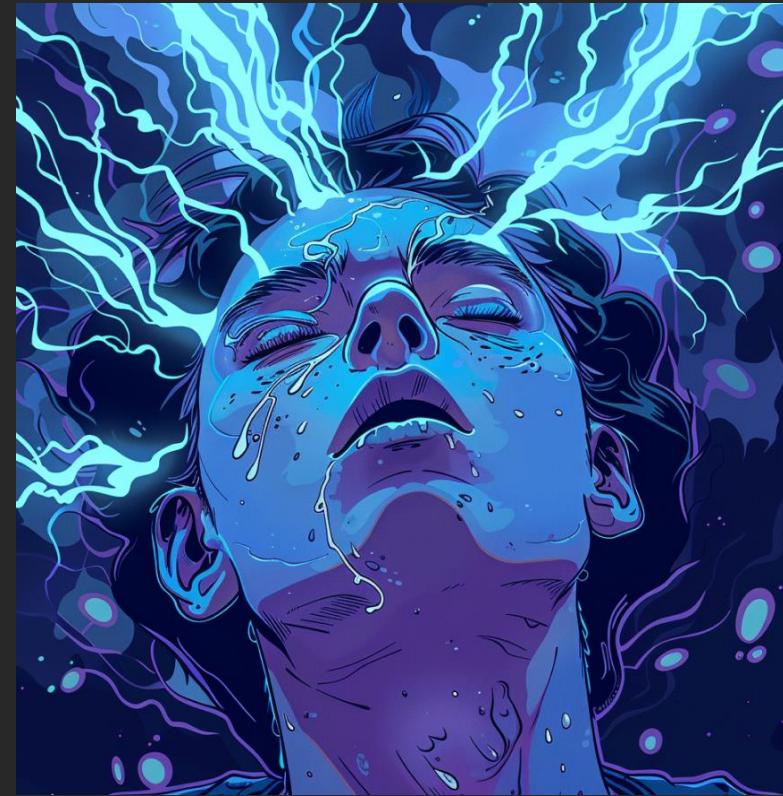
2.3 - Seizures and Physical Reactions



Three Flashes

User Story 2

As a student with an attention deficit disorder,
I want information presented without
unnecessary distractions,
so that I can concentrate and focus on the
assignment at hand.



2 - Operable



2.3 - Seizures and Physical Reactions





Three Flashes Team Recommendations

Do not design content that flashes.

While WCAG allows for content that flashes under certain, very strict parameters, it is strongly suggested to refrain from using flashing content at all.

Adding any sort of flashing content could be hazardous and of very little gain for the end users.



Accessibility Regulations Worldwide





Accessibility Laws by Country (1 of 3)

Country	Law Name	Referenced Standards	WCAG Version	Effective Date
Australia	Disability Discrimination Act (DDA)	WCAG (recommended by Australian Human Rights Commission)	WCAG 2.0/2.1	Ongoing updates, no specific date
Brazil	Lei Brasileira de Inclusão (Brazilian Inclusion Law)	WCAG (not explicitly mentioned but aligned)	WCAG 2.0/2.1	January 2, 2016
Canada	Accessible Canada Act (ACA), AODA (Ontario)	WCAG 2.0/2.1 (mandatory for federal and provincial websites)	WCAG 2.0/2.1	ACA: July 11, 2019; AODA: January 1, 2021
China	China Accessibility Standards for Information and Communication Products	Local technical standards based on WCAG principles	WCAG 2.0/2.1	Ongoing updates, no specific date
European Union	European Accessibility Act (EAA)	WCAG 2.1 (mandatory for digital products and services)	WCAG 2.1	June 28, 2025





Accessibility Laws by Country (2 of 3)

Country	Law Name	Referenced Standards	WCAG Version	Effective Date
Hong Kong	Disability Discrimination Ordinance (DDO)	WCAG (encouraged for public sector websites)	WCAG 2.0/2.1	Ongoing updates, no specific date
India	Rights of Persons with Disabilities Act, 2016	WCAG 2.0, Guidelines for Indian Government Websites (GIGW)	WCAG 2.0	June 15, 2017
Indonesia	Law No. 8 of 2016 on Persons with Disabilities	WCAG (growing alignment)	WCAG 2.0/2.1	January 18, 2016
Japan	Act on the Elimination of Discrimination against Persons with Disabilities	JIS X 8341-3 (based on WCAG)	WCAG 2.0	April 1, 2016
Malaysia	Persons with Disabilities Act 2008	WCAG (encouraged, not mandatory)	WCAG 2.0/2.1	July 19, 2008
Norway	Anti-Discrimination and Accessibility Act	WCAG 2.0 (mandatory)	WCAG 2.0	January 1, 2014
Philippines	Republic Act No. 7277 (Magna Carta for Disabled Persons)	WCAG (in ongoing discussions)	WCAG 2.0/2.1	Ongoing updates, no specific date

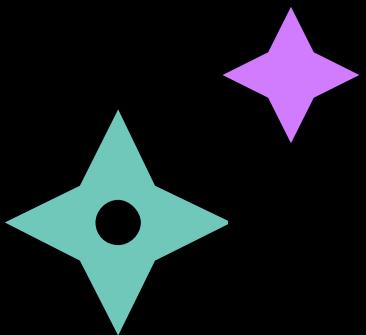




Accessibility Laws by Country (3 of 3)

Country	Law Name	Referenced Standards	WCAG Version	Effective Date
Singapore	Code on Accessibility in the Built Environment	WCAG (encouraged by IMDA)	WCAG 2.0/2.1	Ongoing updates, no specific date
South Korea	Anti-Discrimination Against and Remedies for Persons with Disabilities Act	WCAG-based guidelines issued by National Information Society Agency (NIA)	WCAG 2.0/2.1	May 21, 2008
Thailand	Persons with Disabilities Empowerment Act, B.E. 2550 (2007)	WCAG (particularly for government websites)	WCAG 2.0/2.1	July 21, 2008
United Kingdom	Equality Act 2010	WCAG 2.1 (mandatory for public sector websites and mobile apps)	WCAG 2.1	September 23, 2020
United States	Americans with Disabilities Act (ADA), Section 508 of the Rehabilitation Act	WCAG 2.0 (Section 508), WCAG 2.1 (increasingly referenced in ADA lawsuits)	WCAG 2.0/2.1	Section 508: January 18, 2018; ADA Title II: June 24, 2026

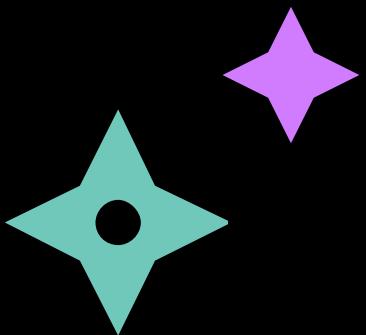




Question about WCAG:

**Should I design for WCAG
2.1?**





Our recommendation:

Design for WCAG 2.2

The **WCAG 2.2** introduces several new success criteria aimed at improving accessibility, particularly for people with **cognitive and learning disabilities**, users of **mobile devices**, and individuals with **low vision**.



WCAG 2.2

The latest W3C recommendation

Published on October 5, 2023



Focus Not Obscured - 2.4.11

The level AA requirement says that at least some of the element with focus is visible.

At level AAA all of the component and its focus indicator must be visible.

Sticky headers, cookie popup and non-modal dialogues may cover up the part of the page that has current keyboard focus.

Hey!
Stop hiding my
keyboard focus!



Focus Appearance - 2.4.13

Requires a clearly visible “focus indicator” that shows the current point of focus of the keyboard.

Sighted users who depend on a keyboard to navigate the web page will be able to visually tell where their keyboard focus is.

Use a focus indicator of sufficient size and contrast.

Where in the
world is my
keyboard
focused?





WCAG as design challenge:

wtfoc.us



The image shows a user interface for customizing focus styles, with options to adjust width, offset, color, style, and background. A live preview on the right displays the selected focus style applied to various form elements, along with WCAG conformance indicators for accessibility.

Focus Styles

Width:

4px

Offset:

4px

Color:



Style:



Background:



Prefers reduced motion

Apply

Preview

Input

Select

Checkbox

Checkbox

Radio button

Radio button

[Link](#)

[Button](#)

SC 2.4.11

AAA

AA



Dragging Movements - 2.5.7

Drag and drop actions require a fairly precise motion and the ability to keep pressure on the mouse button or touch screen without accidentally releasing.

This can be challenging for some folks with motor or blindness disabilities.

Drag and drop should not be the only way that an action can be achieved.

Oh crap!
It's drag and
drop!



Consistent Help - 3.2.6

Make it easy for users to find help.

Place help features like contact info or self-help options on multiple pages.

Ensure this information is in the same place on each page.

This requirement will enable some people with cognitive disabilities to be able to get the help they need to complete their intended task.

What the heck!
Where do I find
help on this
website?



Redundant Entry - 3.3.7

Some forms require the user to input the same information more than once, for example a shipping and billing address.

Completing redundant forms can be straining for some users, especially those with motor disabilities or cognitive disabilities.

Avoid redundant entry or make it easy to reuse data already entered.

This feels like going to a doctor's office... Don't make me enter the same info twice!



Accessible Authentication-3.3.8/9

This helps people with motor or cognitive disabilities like memory issues, dyslexia, and dyscalculia.

People forget passwords, and typing in codes from your phone can lead to errors.

Authentication should be possible without cognitive tests, such as by allowing copy-paste from a password manager.

They want me to click on pictures of traffic lights to login. It's really confusing for me.





Break 2

10 minutes



Designing for Neurodiversity





Understanding Neurodiversity Needs

It is essential to recognize that neurodiverse users, such as those with ADHD, autism, dyslexia, or anxiety, **perceive and process information differently.**



A person with ADHD:

May struggle with focus and attention, often
feeling overwhelmed by too much information at
once.



A person with ADHD wants:

Interfaces that use step-by-step processes, clear navigation, and progressive disclosure—only showing relevant content as needed.



A person on the autism spectrum:

Typically prefers consistency and predictability.

They may experience anxiety or confusion when faced with sudden changes, inconsistent layouts, or ambiguous elements.



A person on the autism spectrum wants:

Clear structures, predictable layouts, and unambiguous content.

Avoid sensory overload, such as excessive animations or bright colors.



A person with dyslexia:

Finds reading challenging, especially when text is cluttered, fonts are decorative, or there is insufficient contrast.



A person with dyslexia wants:

Avoid walls of texts, breaking down long paragraphs.

Good text spacing, readable fonts (sans-serif is preferred), and customizable text options (size, spacing, contrast) to comfortably engage with content.



A person with depression:

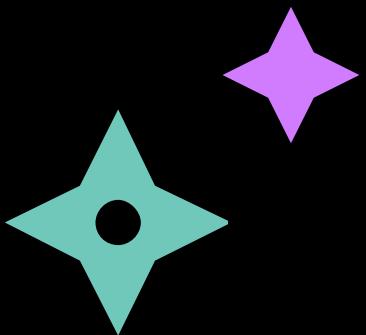
Might have reduced focus or energy
and may find it difficult to maintain concentration,
process information,
or engage in complex tasks.



A person with depression wants:

Simple navigation that doesn't require unnecessary effort to complete tasks.

Avoid overwhelming them with too many options or excessive cognitive load.



Practical Checklist for UX Designers:

Designing for Neurodiversity

bit.ly/ux-neurodiversity





Make

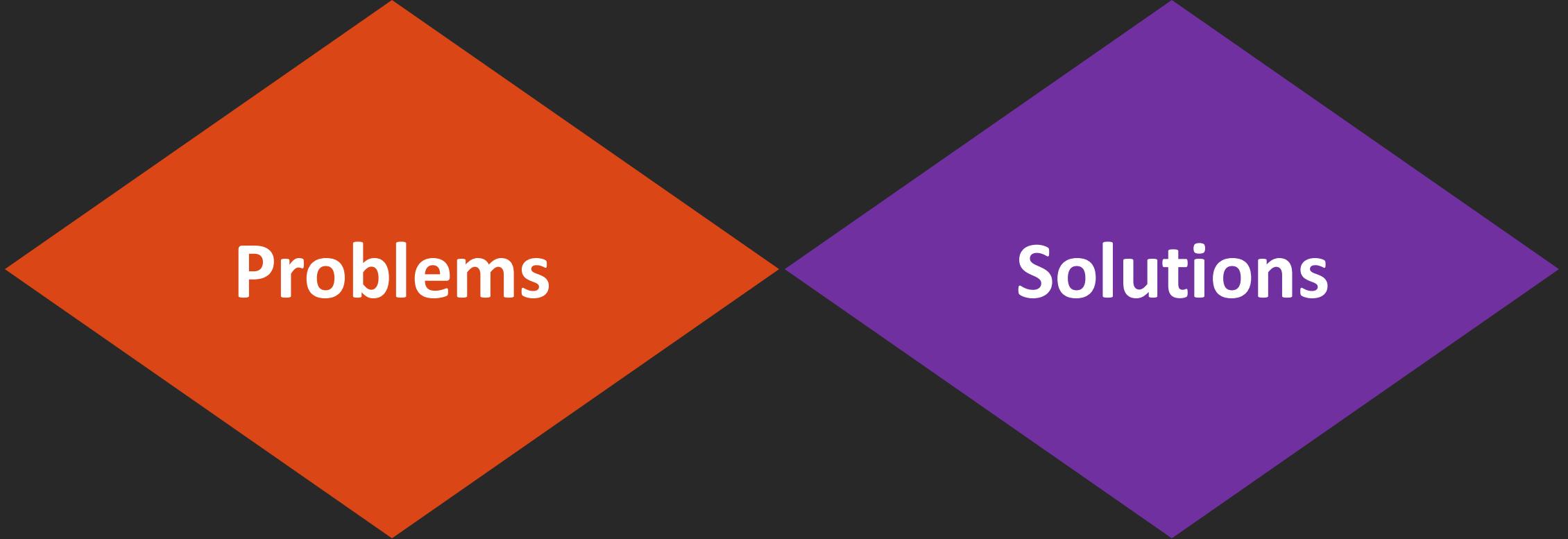
How can we effectively involve people with disabilities in the initial stages of our design process?

Inclusive Design Process

Shifting Accessibility Left



Typical Design Process

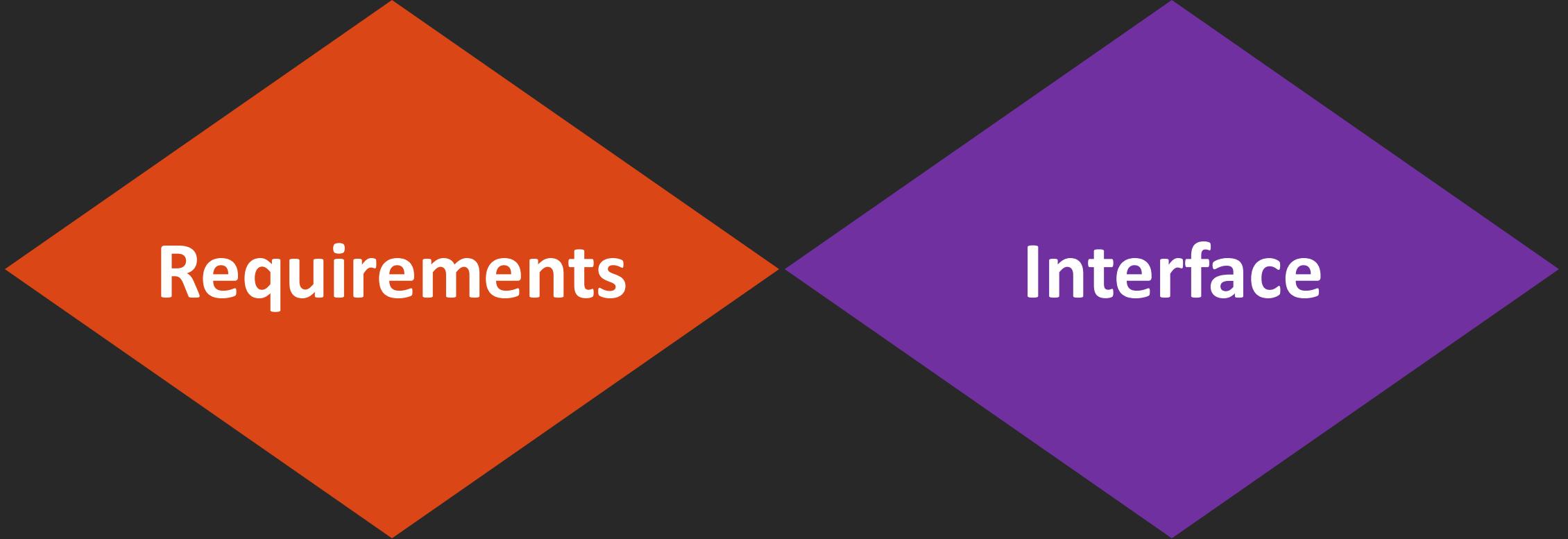


Problems

Solutions



Typical Design Process Motivation



Requirements

Interface



Typical User Experience Artifacts

Requirements

Interface

User Stories

Wireframe

Visual Prototype

Visual Design

To Dev



How many times
have you seen Latin
script placeholders
in interface design?

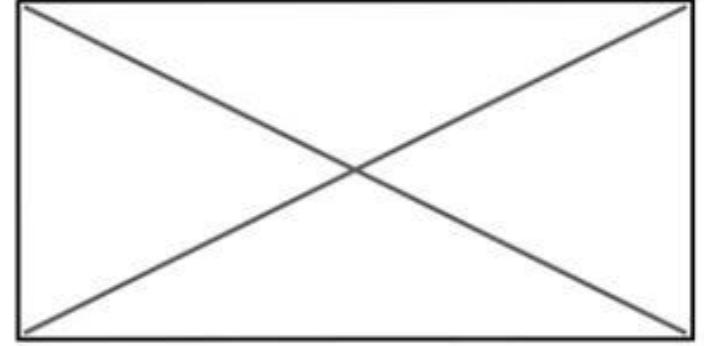
This is a common practice
that creates barriers
Even if applied early in the
process

The New Thing

https://thenewthing.com

Product Name

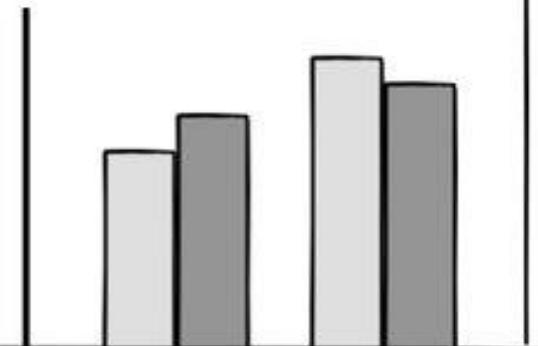
Placeholder text: Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.



Overview Features Design Specs

Overview

Placeholder text: Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.



The later the relevant content is addressed, the higher the cost of addressing accessibility violations.

Late content delays the opportunity to test with people with disabilities.

The earlier the better and more cost-effective.

Agency

[Home](#) [About](#) [Store](#) [Blog](#) [Contact](#)

Aliquam dictum est nec urna posuere porta. Ut at eros pellentesque, venenatis nisi ut, suscipit ligula. Pellentesque a ex gravida, aliquet nisl vel, convallis ligula.

Volutpat

In convallis vel justo eu ultrices.
Suspendisse viverra nisi non laoreet.

Imenaeos arcu

Maecenas ipsum arcu, pulvinar in nisi id, pulvinar ultricies nisl.

Dolor sit amet

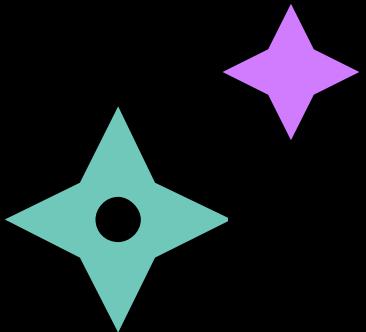


Sed Hapien Semper

Proin aliquam nulla ultricies, suscipit odio sed, nibh. Pellentesque facilisis orci non felis rutrum, nec,

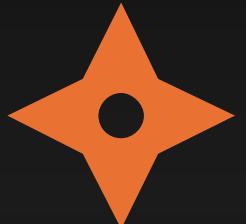
[Click Here](#)

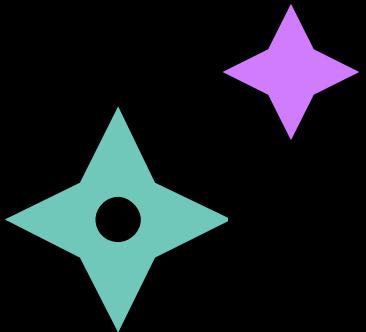




Lorem ipsum create barriers

**Poor Content
leads to
Poor Accessibility**

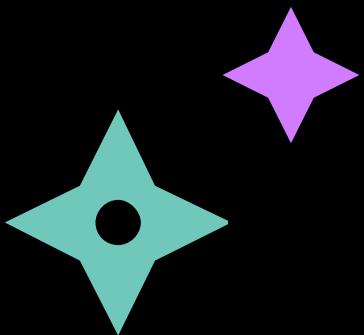




Visual bias create barriers

**Content and Accessibility
as an afterthought
is an exclusionary practice.**





The business case for accessibility

100x

**the cost of fixing a defect in production than
addressing it in design.**



Source: <https://www.deque.com/blog/the-business-case-for-accessibility/>



Content & Accessibility as *afterthought*

Requirements

Interface

User
Stories

Wireframe

Visual
Prototype

Visual
Design

Content &
Accessibility



Shifting left is crucial

Requirements

Interface

Content &
Accessibility

Shift Left



Inclusive from day-1

Requirements

Include people with disabilities

Do not assume Accessibility as a compliance check.

Research

Diversify your target users

with diverse levels of disabilities and inclusion.

Design

Design with intent

Content design is crucial for assistive technologies.

Development

Inclusive Stories & Criteria

Promote accessible patterns and experiences.

Testing

Automation is not enough

QA's burden decreases as teams learn and understand digital accessibility

Deployment

Create additional Safeguards

Add Accessibility fences into pipelines and workflows.



Adapting Mental Models

Content

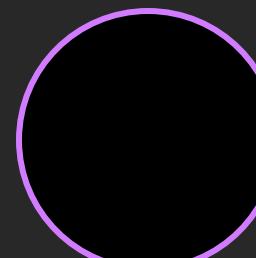
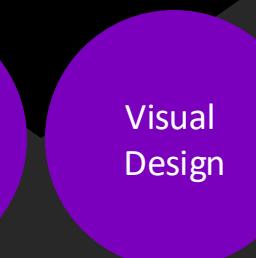
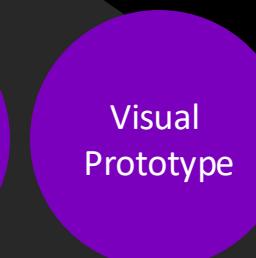
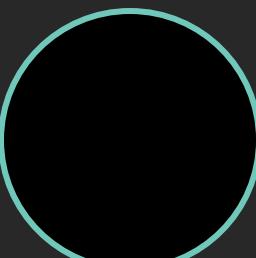
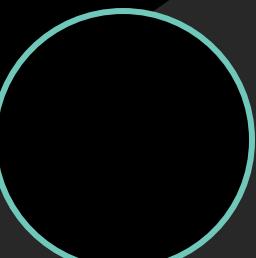
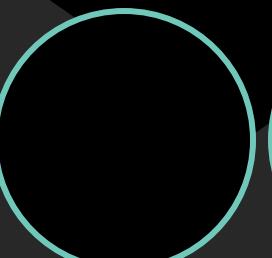
Interface



Opportunity Gaps

Content

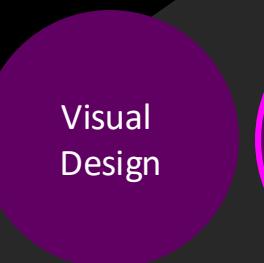
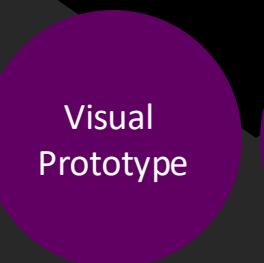
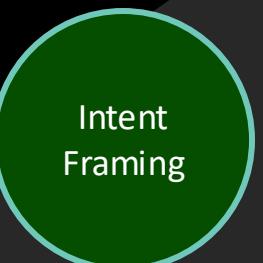
Interface



Inclusive Artifacts

Content

Interface



Inclusive Artifacts – Explained.

Gherkin Stories

Gherkin stories provide clear and concise descriptions of features and behaviors, making it easier for teams to understand requirements.

Priority guides

Priority Guides help organize and prioritize design elements based on user needs, focusing on content importance over visual layout.

Intent Framing

Structured interactions to clarify the purpose behind actions or features to align with user needs.

Content Prototyping

An early version of digital content that are designed to be tested by screen reader users before designing visual interfaces.

Accessibility Notations

Markings or notes added to designs to indicate accessibility features or requirements for inclusive use.



Gherkin Stories



What is Gherkin? (1 of 2)

Gherkin is a domain-specific language used in **Behavior-Driven Development** (BDD) to describe software behaviors in a human-readable, structured format.



What is Gherkin? (2 of 2)

It uses simple language to define features and scenarios in the form of **Given-When-Then** statements, which specify the context, action, and expected outcome.



Gherkin Example: (1 of 2)

Feature: User login

Scenario: Successful login with valid credentials

Given the user is on the login page

When the user enters valid credentials

And clicks the "Login" button

Then the user should be redirected to the dashboard

And see a welcome message



Gherkin Example: (2 of 2)

Feature: User login

Scenario: Unsuccessful login with invalid credentials

Given the user is on the login page

When the user enters invalid credentials

And clicks the "Login" button

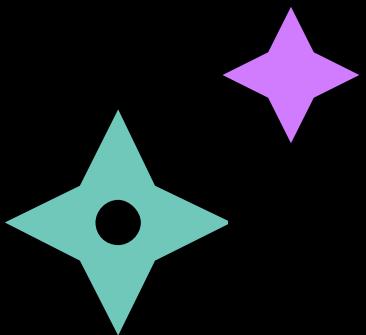
Then the user should see an error message

And remain on the login page



What about Accessibility?





Activity 2 – Screen Share

ChatGPT for Gherkin Stories



ChatGPT for Accessible Gherkin Stories

1. Enter the following prompt:

Write a gherkin story for a login page with a AAA level accessibility in mind.

<Project title>

Sign in Access your account

Email address

Password

[Show password](#)

[Sign in](#)

[Forgot password?](#)

Don't have an account? [Create your account now.](#)

Are you a federal employee?

If you are a federal employee or <other secondary user>, please use <secondary Single Sign On (SSO)>.

[Launch secondary SSO](#)



Does Gherkin replace User Stories?



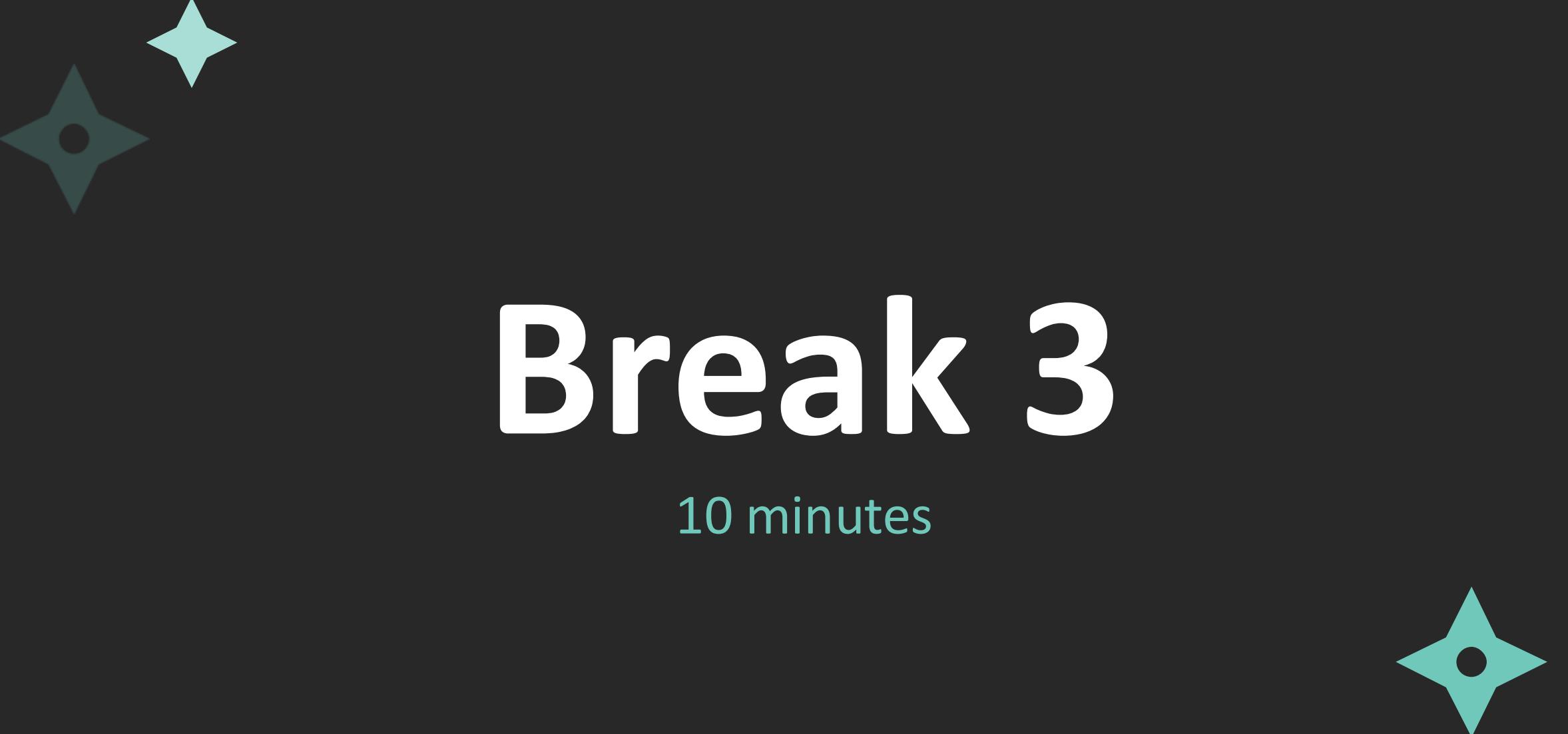
Converting Complex User Stories



Often, you will get one of those very long and complex user stories.

Convert them into Gherkin statements.

bit.ly/a11y-user-story



Break 3

10 minutes

User Personas with Disabilities

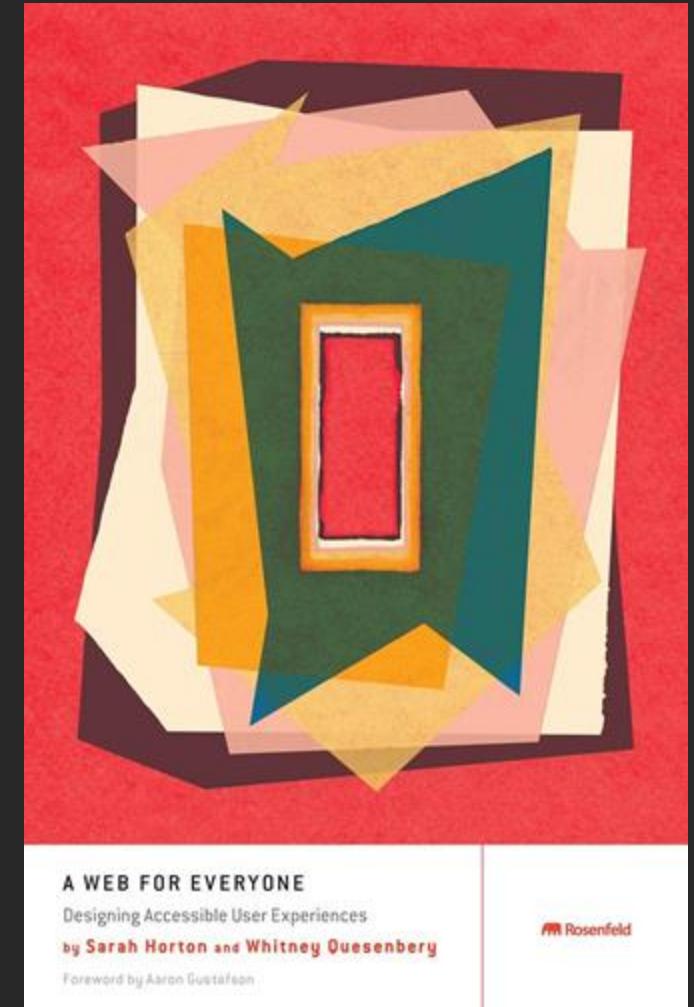


Chapter 2: People First: Designing for Differences

"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



Representing disabilities in User Personas



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

Illustrations by Tom Biby



Emily, 24 years old

Cerebral palsy



“I want to live independently”

- Works part-time at a local community center
- 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, 35 years old

Living with fatigue and pain



“No one understands my disability.”

Writes for a trade publication and works from home

- 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)

Jacob, 32 years old

Blind, in love with technology



“The right technology lets me do anything.”

When technology is in place, he can work just as fast and just as effectively as anyone in his office.

- Blind since birth with some light perception
- Skilled technology user
- Digital native, early adopter, persists until he gets it

Assistive Technology

- Screen reader (JAWS on his laptop, VoiceOver on his phone)
- Audio recorder (to take notes)
- Braille display

User persona with disabilities - Jacob

Jacob

Blind in love with technology

Github page

<https://bit.ly/a11y-jacob>



Priority Guides

Designing with words



A List Apart - May 03, 2018

Priority Guides: A Content-First Alternative to Wireframes

by Heleen van Nues, Lennart Overkamp

<https://alistapart.com/article/priority-guides-a-content-first-alternative-to-wireframes/>



What is content-first?

The practice of designing with words before jumping into visual layout design.



The Sequence of Priority and Intent

Priority Guide with Intent: Alignment through Content Early

By Simone Ehrlich

User Flow Diagram

Understand and organize initial user needs

Priority Guides

Propose the hierarchy of information and the intent of each element.

Intent Framing

Propose the layout based on the priority and intent of each element

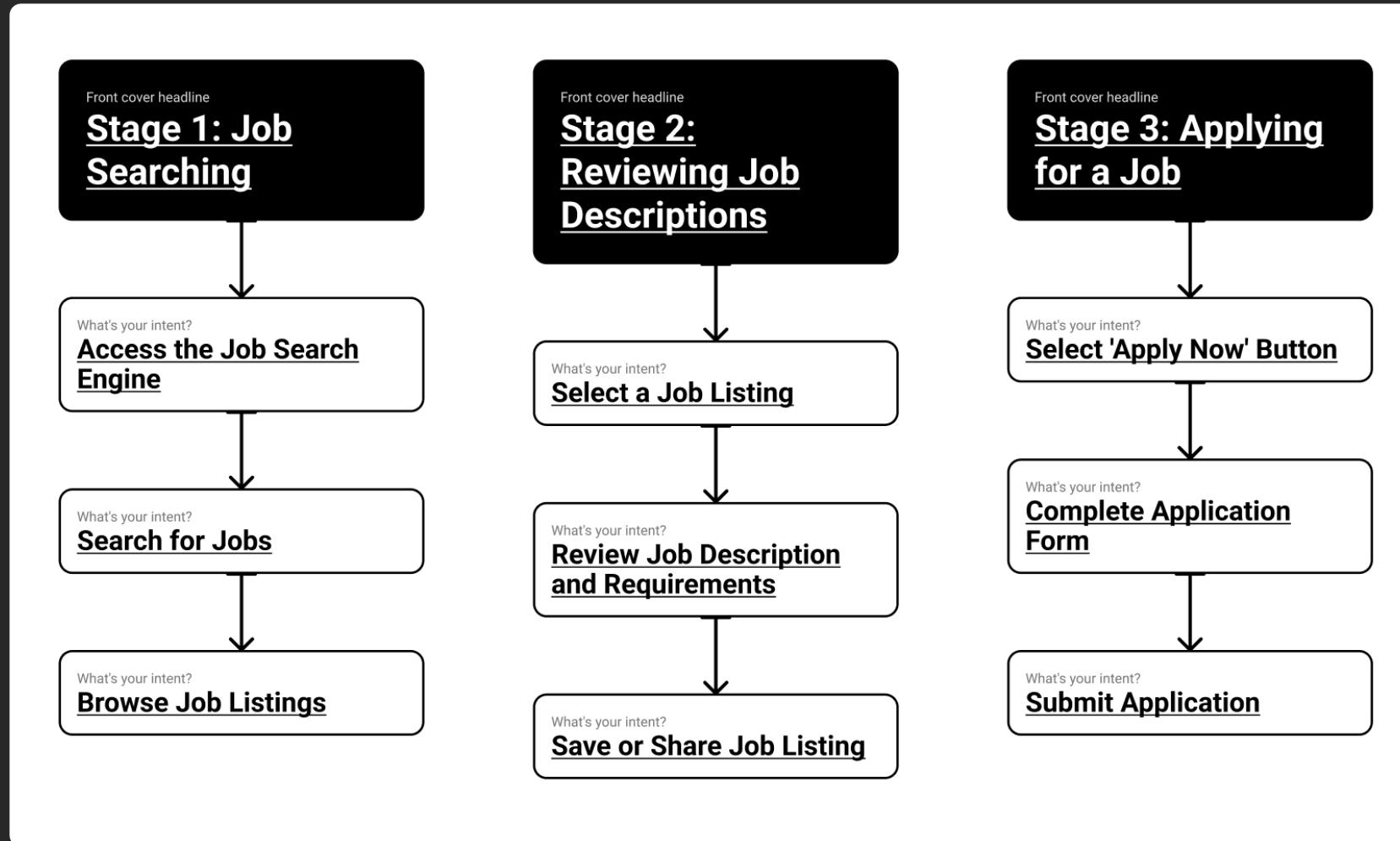
Wire Framing

Integrate real content into the prioritized layout



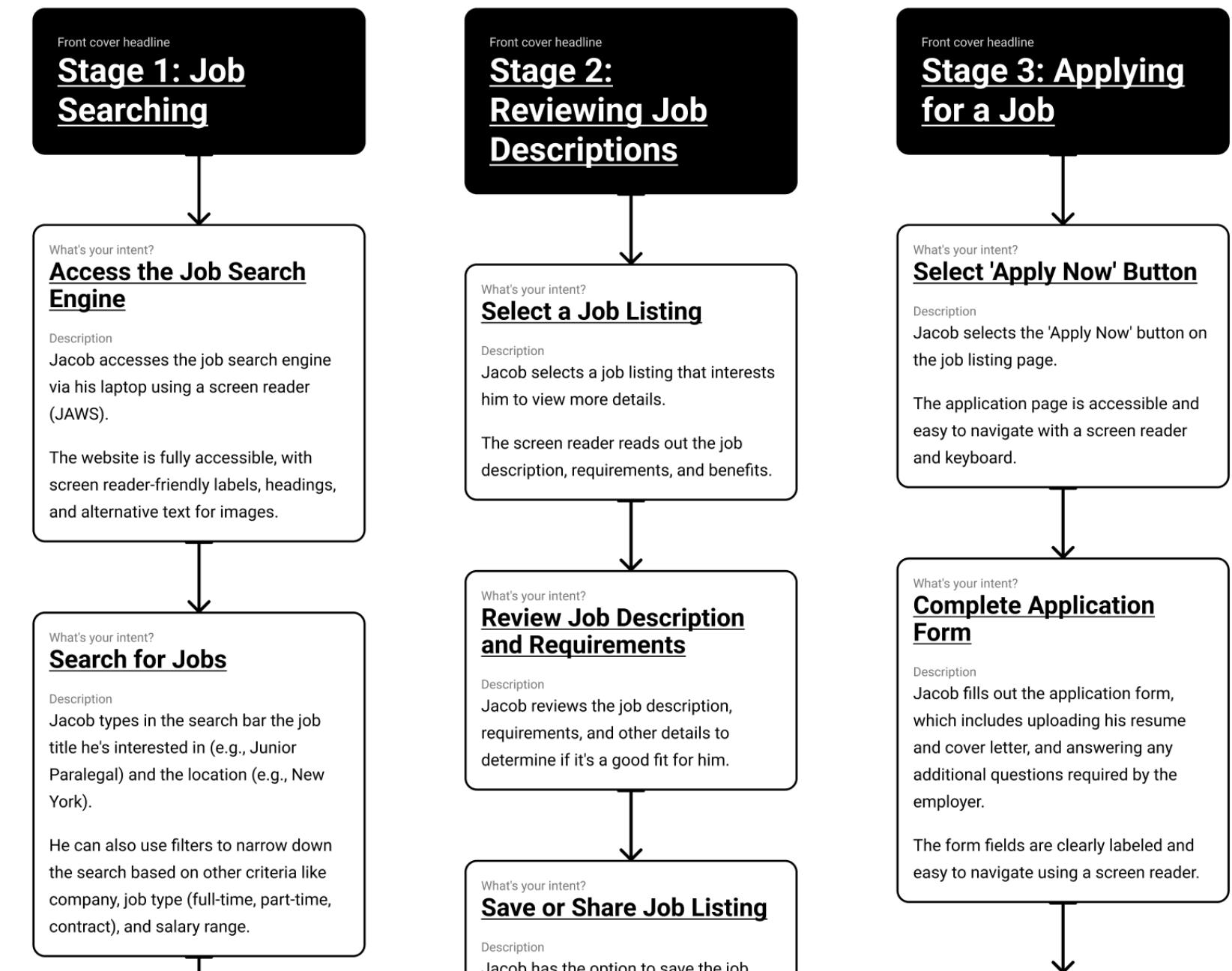
Step 1: User Flow Diagram

A flow diagram of the end-user's high-level motives when using a product or website.



Step 2: Detailed Journey Steps

Describe each step of the user journey with additional details.



What are priority guides?

Content headlines prioritized by user needs and intentions.



Priority Guides Example

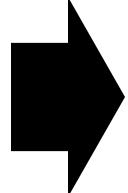
Guide Template

Name
Headline

Description
What's the user's expectation? Please describe.

Role
Is it a group of items, a heading, a form input, a button or an image?

Expected action
How do you think the user will react?



Guide Example

Name
Search for jobs

Description
Search for keywords, company name, job title.

Role
Search input

Expected action
User keyboard input or dictation. Search action upon pressing submit button.



From Priority guides To Intent Framing

Guide Template

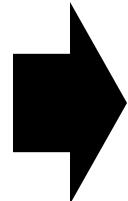
Name
Headline

Description
What's the user's expectation? Please describe.

Role
Is it a group of items, a heading, a form input, a button or an image?

Expected action
How do you think the user will react?

Guide Example

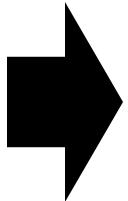


Name
Search for jobs

Description
Search for keywords, company name, job title.

Role
Search input

Expected action
User keyboard input or dictation. Search action upon pressing submit button.



Section Title
Search

Requirements
Job search section with two inputs for entering search string and location.

Name
Search for jobs

Description
Search for keywords, company name, job title.

Role
Search input

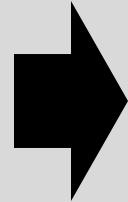
Expected action
User keyboard input or dictation. Search action upon pressing submit button.

Name
Location

Description
Enter a specific location or "remote". Enable your current location for sorting results by distance.

Role
Input

Expected action
If geo-location is enabled, user will need to allow browser permission.



Page Title
Jobs at Great Places To Work

Description
Find your next job at one of the Top 100 Great Place to Work company.

Section Title
Search

Requirements
Job search section with two inputs for entering search string and location.

Name
Search for jobs

Description
Search for keywords, company name, job title.

Role
Search input

Expected action
User keyboard input or dictation. Search action upon pressing submit button.

Name
Location

Description
Enter a specific location or "remote". Enable your current location for sorting results by distance.

Role
Input

Expected action
If geo-location is enabled, user will need to allow browser permission.

Section Title
Search Results

Requirements
List of results, sorted by distance if geo-location is enabled.

Fields:

- Job title
- Company name
- Full time, part-time, contract
- Date posted
- Job ID
- Description

Navigation:

- Results
 - Pagination for every 10 results
 - List item
 - Link to job description (JD)
 - Quick apply to skip JD
 - Share a position with others
 - Save for later

Name
Be confident! One of the [888] jobs we found can be yours.

Description
Number of results with an inspiring and uplifting message.



Intent Framing Activity

Designing with Words



Designing with Words Activity



This activity will help you outline a user-friendly, accessible interface for Jacob's job search journey.

bit.ly/a11y-prompts

No Latin

Rapid Prototyping with
Accessibility in Mind



Rapid Prototyping with Accessibility in mind



Stop using
Lorem Ipsum
It creates barriers

<https://nolatin.com>

No Latin Activity



This activity will showcase a quick tutorial on creating accessible interface for Jacob's job search journey.

bit.ly/a11y-prompts

UX Protocols

for Inclusive Usability Studies



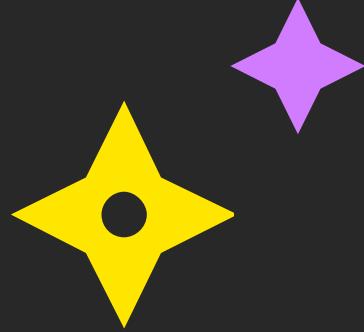
No Latin Usability Study (Showcase)



Demo of an accessible prototype evaluated early in the design process by Sarah Massengale.

bit.ly/weiss-ux002





"This is delicious!"

Sarah Massengale
Blind user, Accessibility Specialist





Testing with Screen Reader Users:

- ❖ Test with screen readers (JAWS, NVDA, VoiceOver) to ensure buttons, images (with alt text), and forms are announced properly.
- ❖ Use semantic HTML and ARIA roles to ensure that interactive elements are accessible to assistive technologies.





Get familiar with Screen Readers:

- ❖ Familiarize yourself with screen readers (JAWS, NVDA, VoiceOver) to understand the user perspective and troubleshoot issues.
- ❖ Test the prototype with different screen readers beforehand to catch major problems.
- ❖ Check out Deque's [Screen Reader Shortcuts and Gestures](#) for guidance.





Prepare Clear Testing Scenarios:

- ❖ Design clear, real-world tasks that reflect how screen reader users would interact with the prototype.
- ❖ Avoid guiding the user. Let them navigate naturally, mirroring their everyday interactions.



Conduct a Pre-Test Briefing:

- ❖ Brief participants on the test process and understand their experience with their preferred screen reader.
- ❖ Ask about their settings (e.g., voice speed, verbosity) to ensure testing aligns with their typical usage.



Gather Qualitative Feedback:

- ❖ Pay close attention to screen reader users' verbal feedback and observe how they navigate and interact with the prototype.
- ❖ With permission, record the session to capture screen reader audio, helping developers identify specific challenges.

Testing for multiple disabilities



UX protocol for teams conducting accessible, inclusive usability studies for all users with multiple disabilities.

bit.ly/a11y-protocols



Questions & Answers

20 minutes



Day-1 Recap

20 minutes



Today, we learned:

Empathize

True empathy

Unconscious Bias

Case for Accessibility

Compliance vs. Equity

Learn

Laws and Guidelines

WCAG as Design Challenges

WCAG Quotes

WCAG 2.2

Make

Design process

Gherkin Stories, Personas,
Journeys and Priority Guides

Designing with Words

Accessible Prototyping





Day-2 Preview

Creating accessible components



What to expect for Day-2?

Advocate

Identify accessibility requirements gaps.

Include people with disabilities.

Make

Accessibility-first:
- Tokens
- Components
- Patterns

Common inaccessible patterns
Accessibility Settings
Component





Bonus

Future of inclusive design systems

