

Accessibility: Crafting inclusive digital experiences

Aug 20, 2020

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- The fundamentals
- The Accessibility problem and solution
- Guidelines
- Our approach
- Q&A

The Fundamentals

*Practice of making a product, service or solution usable to **every user** including people with disabilities.*

Accessibility is not new!

Accessibility is almost always around us!

Examples of Accessibility



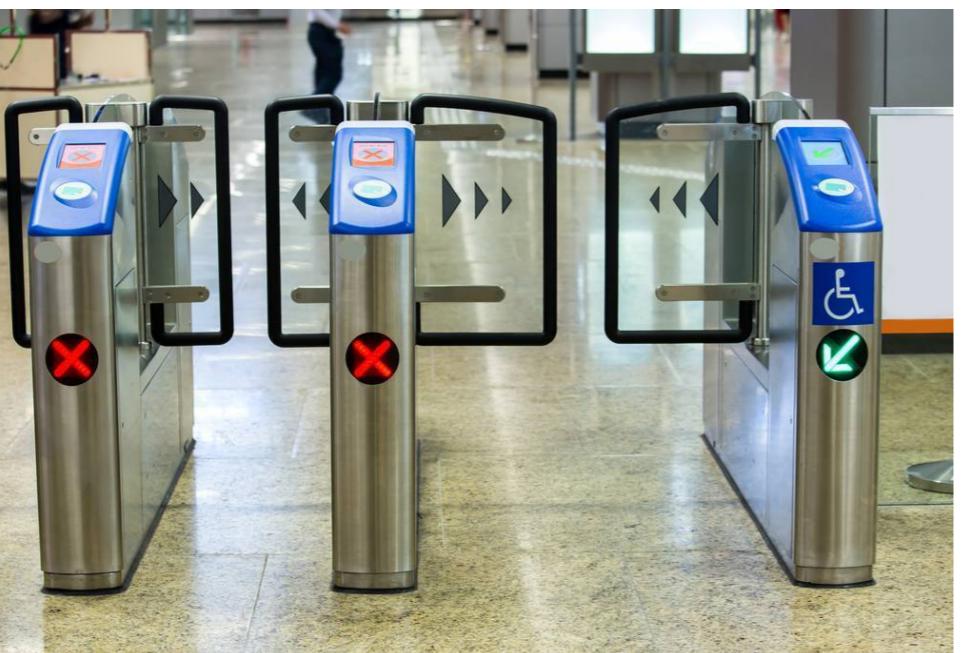
Ramp for wheelchair access

Image source: Wikipedia



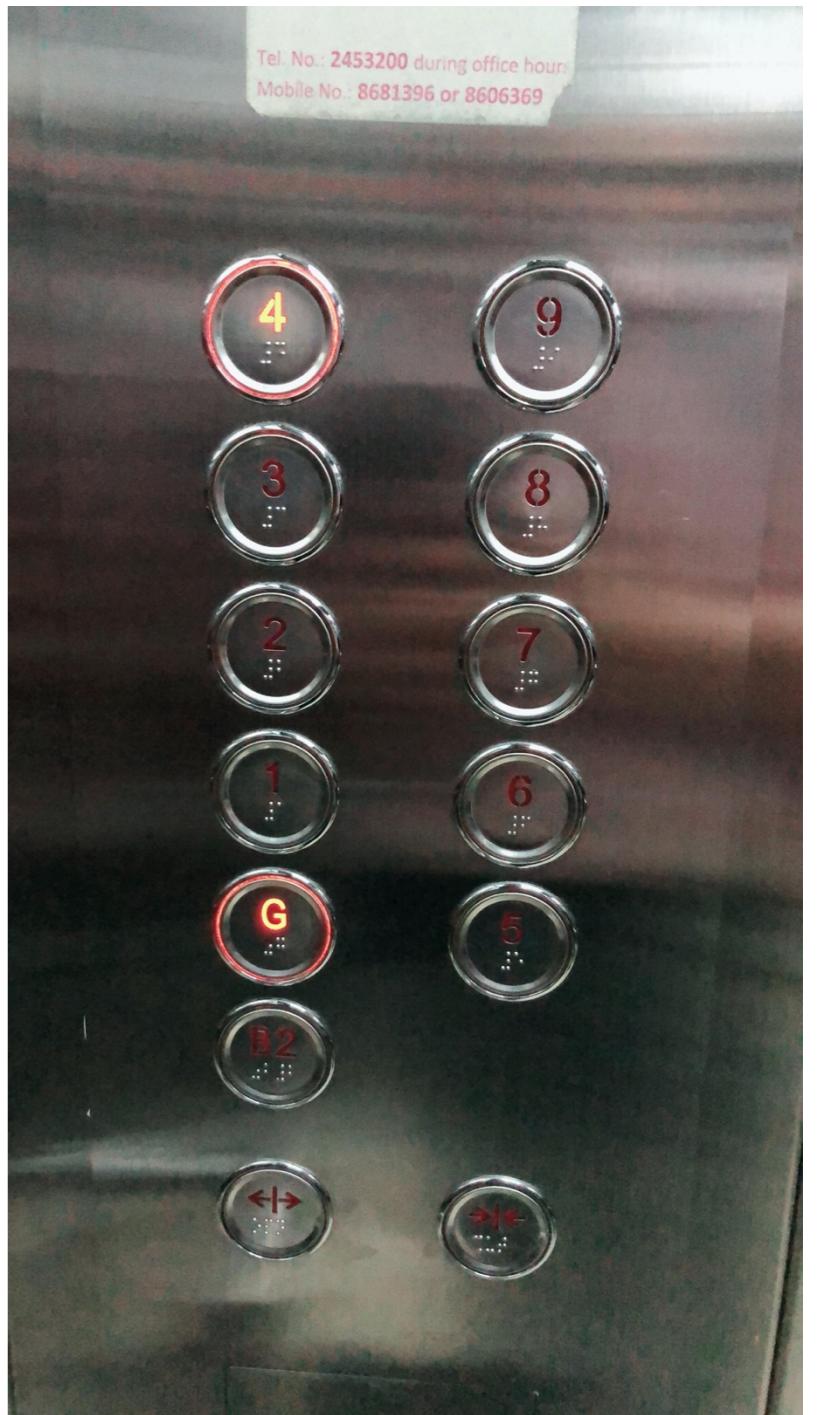
Accessible Parking

Image source: nmeda.com



Accessible turnstile for wheelchair access

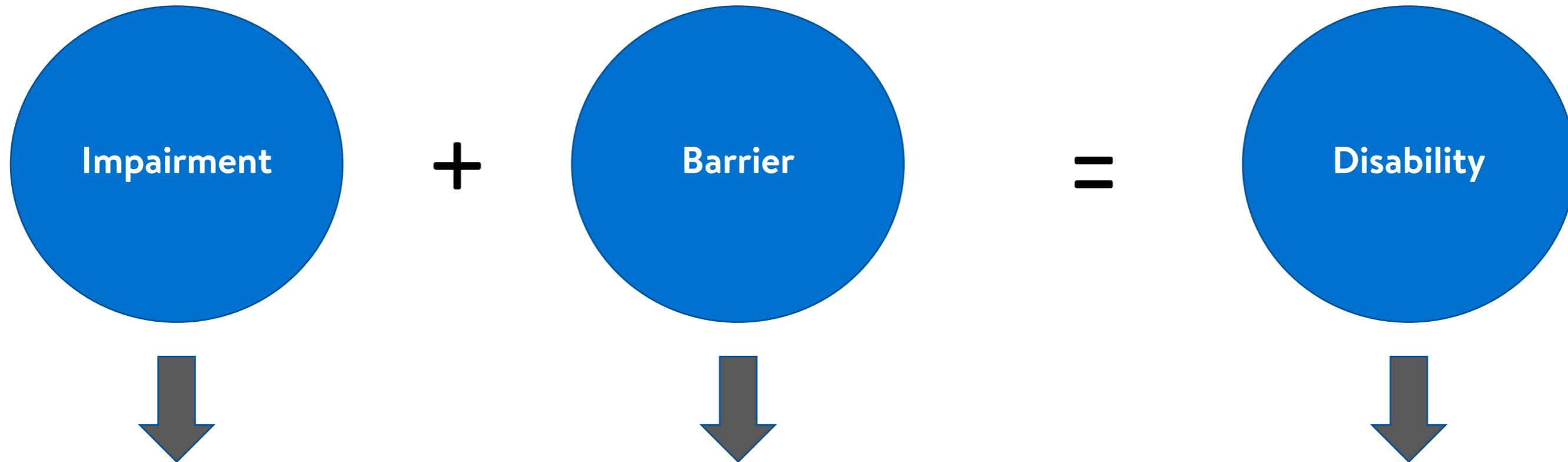
Image source: hospitalitynet.org



Elevators (with braille buttons)

Image source: reddit.com

What is a disability?



Any loss or abnormality of physiological, psychological, or anatomical structure or function, whether **permanent** or **temporary**

Obstacle that prevents access (often posed by environment/platform)

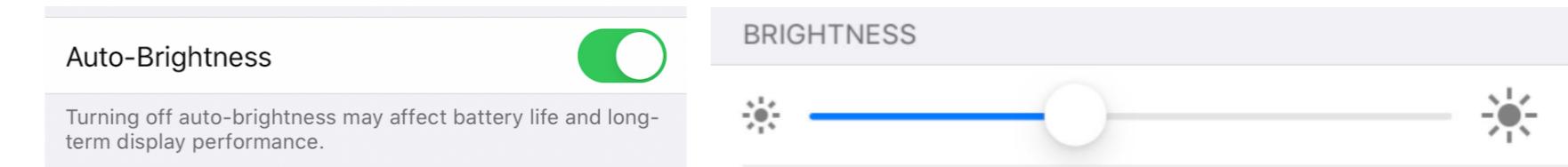
Inability to perform a task

Everyone at some point of time in human life!

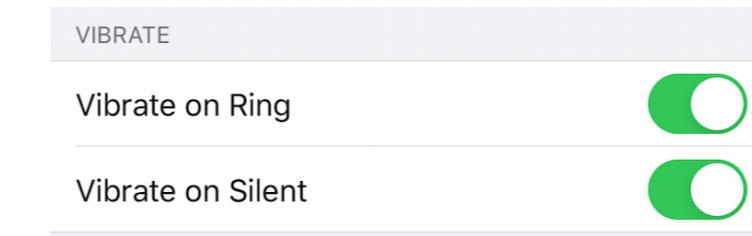
Accessible solutions have already been part of daily life for many of us!

Examples of Accessibility needs in our life

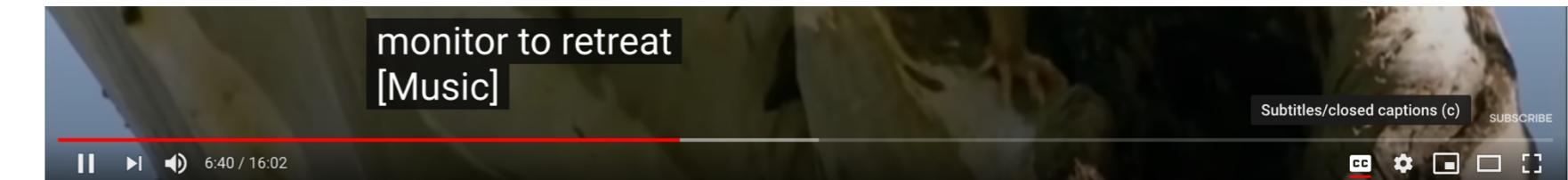
Reduced readability in outdoors/bright daylight



Vibrations for alerts/notifications/rings



Captions/sub-titles



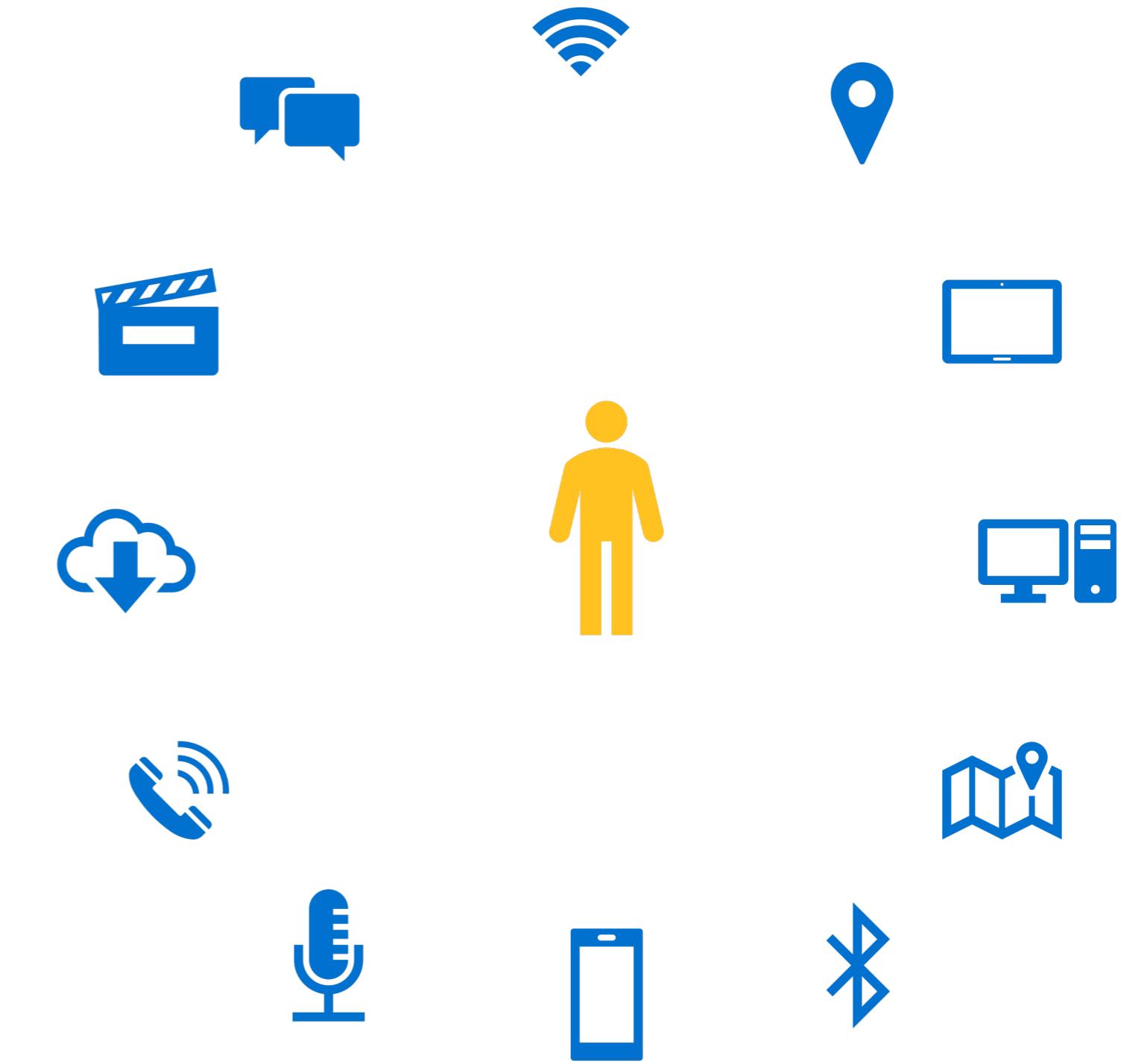
Voice access while driving



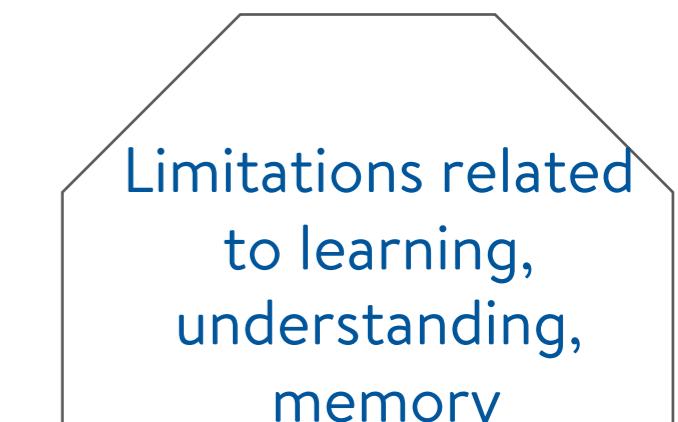
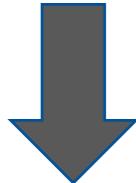
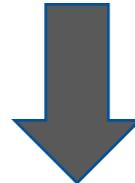
Our abilities diminish with age!



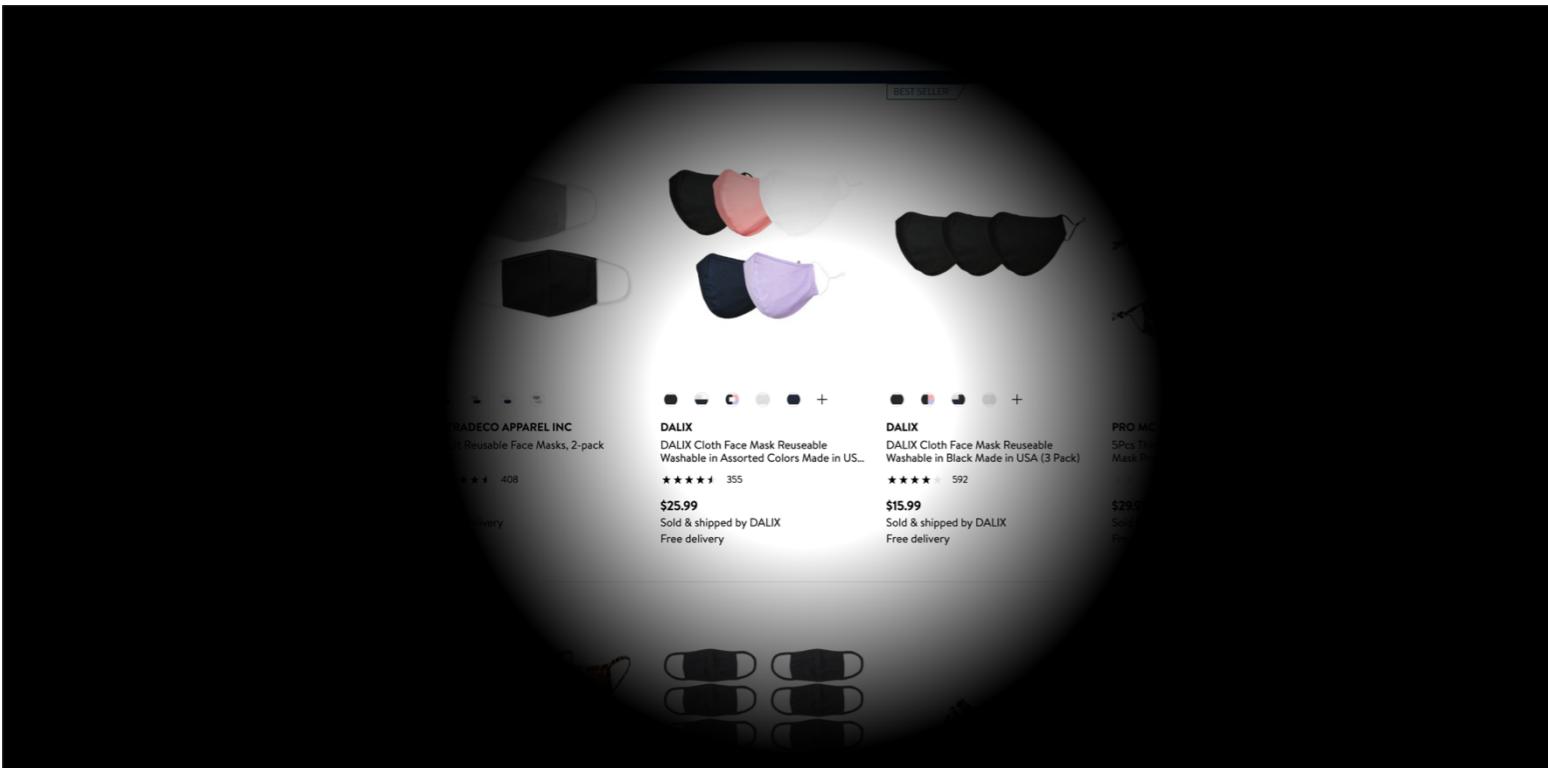
With ever-increasing dependency on and consumption of technology, how do we create a digital ecosystem that can be used by anyone with or without disabilities?



Categories of disabilities/impairments



Simulation: Loss of vision (Low vision)



Loss of peripheral vision

i Loss of peripheral or central vision affects approximately 30% of the US population aged 75 or above.



Loss of central vision

Simulation: Vision blur (Cataract & Myopia)

- i • Cataracts affects 30% of the people aged 65, and over half of all 80 year olds.
- 40% of the US population have myopia

1 - 48 of 1,000+ products

Refine by | Price ▾ Top Brands ▾ Store Availability ▾

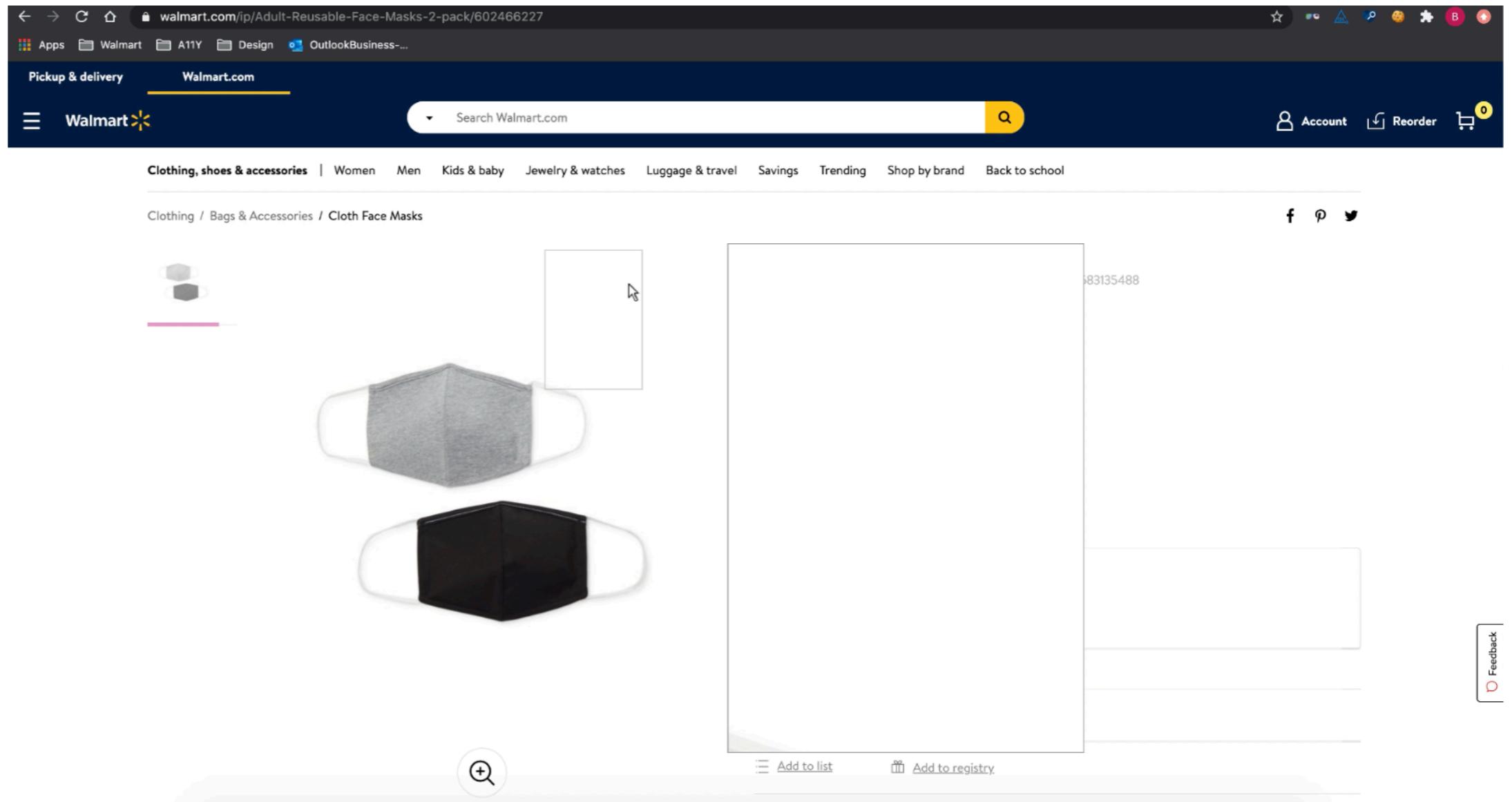
Sort by | Best Sellers ▾

Category	—	Bandanas	Balaclavas	Surgical Face Masks	Sports Fan Shop Face Coverings	Kids Cloth Face Masks
Bags & Accessories						
Cloth Face Masks						
Backpacks						
Balaclavas						
Bandanas		 BEST SELLER				
Kids		 BEST SELLER				
Luggage & Travel						
Men						
Sunglasses						
Women						
Delivery & Pickup	+					
Brand	+					
Gender	+					
Color	+					
Retailer	+	INTRADECO APPAREL INC Adult Reusable Face Masks, 2-pack ★★★★★ 408	DALIX DALIX Cloth Face Mask Reuseable Washable in Assorted Colors Made in US... ★★★★★ 355	DALIX DALIX Cloth Face Mask Reuseable Washable in Black Made in USA (3 Pack) ★★★★★ 592	PRO MC 5Pcs Thin Summer Unisex Cloth Face Mask Protect Reusable Comfy Washable... ★★★★★	
Price	+	\$3.97 2-day delivery	\$25.99 Sold & shipped by DALIX Free delivery	\$15.99 Sold & shipped by DALIX Free delivery	\$29.95 Sold & shipped by RKAPPARELUSA Free delivery	
Special Offers	+					
Customer Rating	+					
Lifestyle	+					

Simulation: Hand tremor



Hand tremors might result from an underlying condition like Cerebral Palsy which makes it almost impossible to use pointing devices like a mouse.



Simulation: Color blindness (Weak red)



Color blindness affects 8% of all men and about 0.5% of all women.

Vision with reduced red

Normal vision



- Over a billion people around the world have some kinds of disabilities. That's about 15% of the total human population (Source: WHO)
- In the US alone, 57+M people suffer from some kinds of disabilities, that's roughly 20% of the entire US population.
- Over \$8 Trillion annual disclosable income for people with disabilities (Source: Gartner)
- Over 900 Million people around the globe aged over 60 and expected to reach 2 Billion by 2050
(Source: WHO)

Inclusion is at the core of our culture. We strive to help every customer save money, and live better.



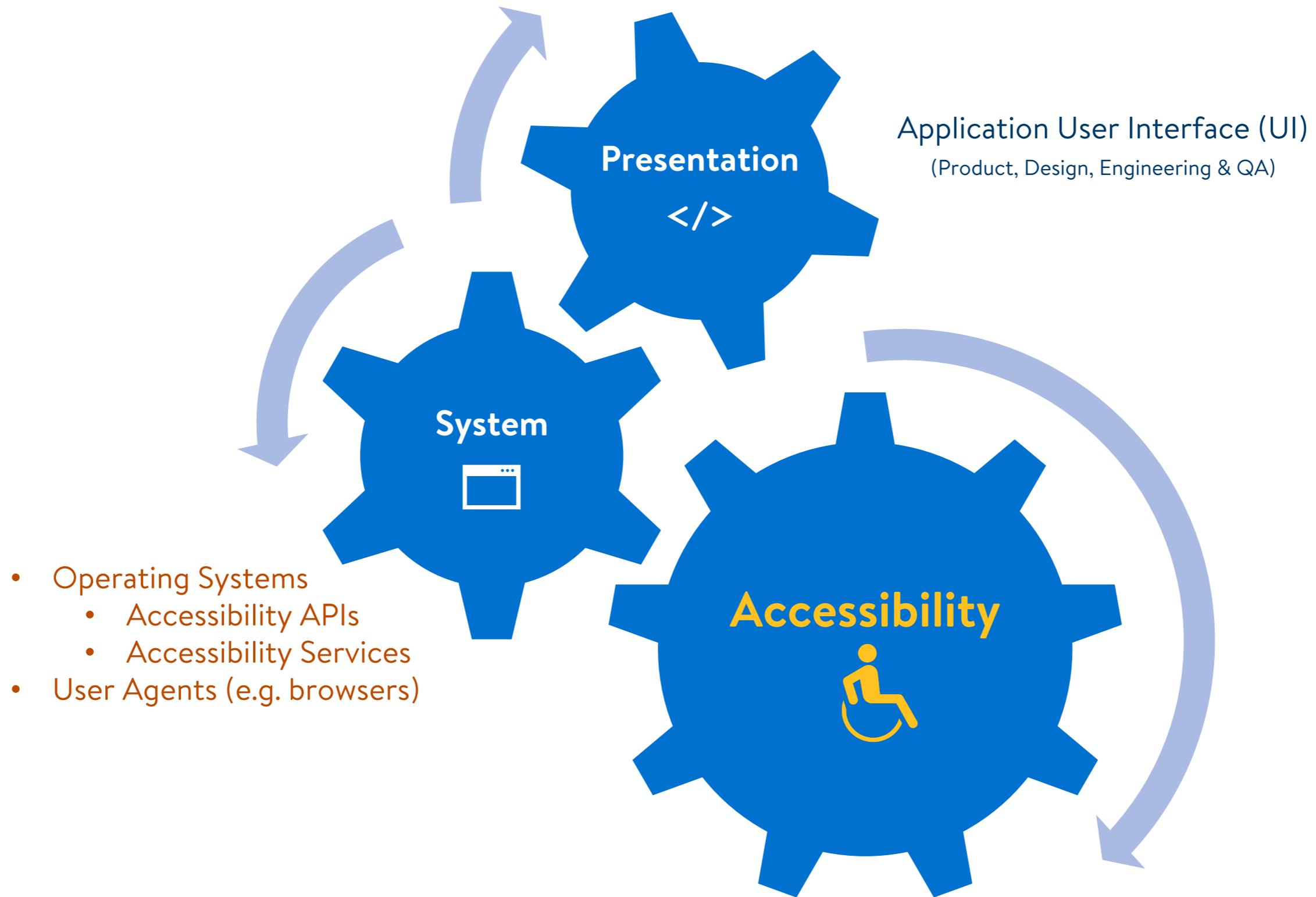
It's good for business. The more people can access our products, the better.



Meet geo-specific legal compliances.

11300 Retail Units | 57 Banners | 27 Countries | eCommerce in 10 Countries

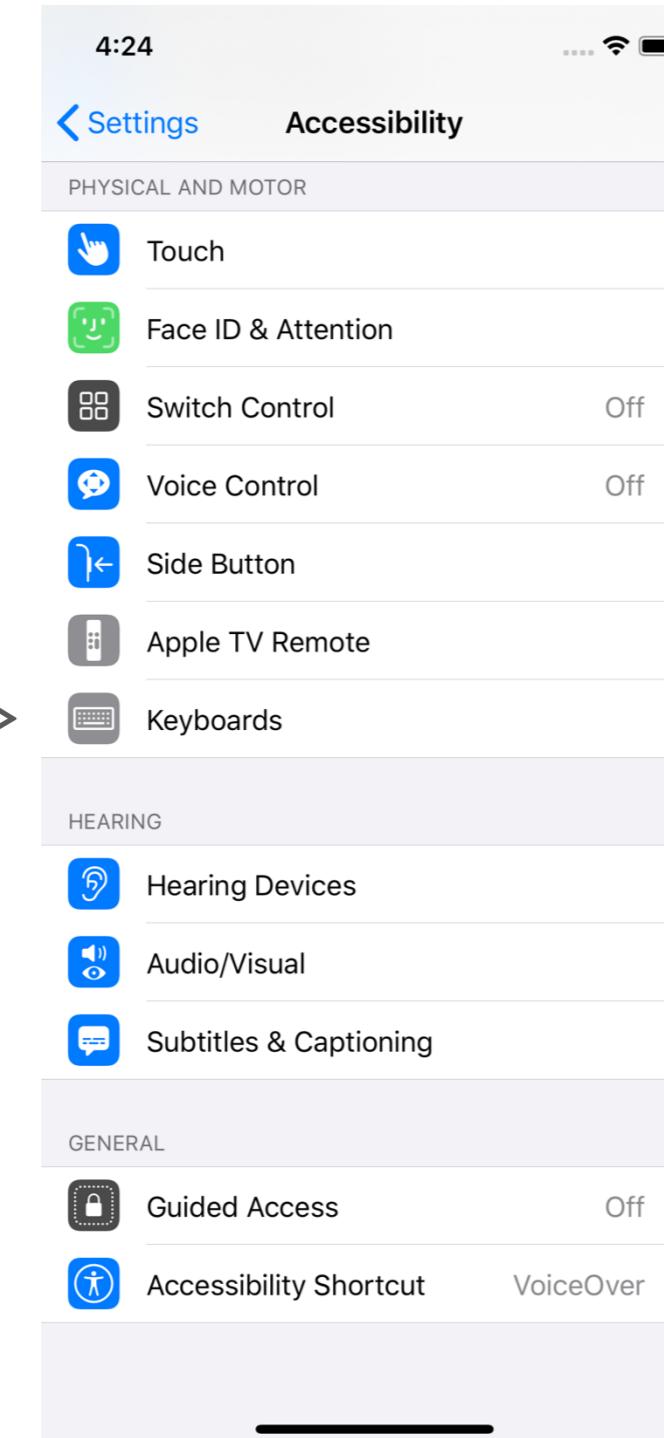




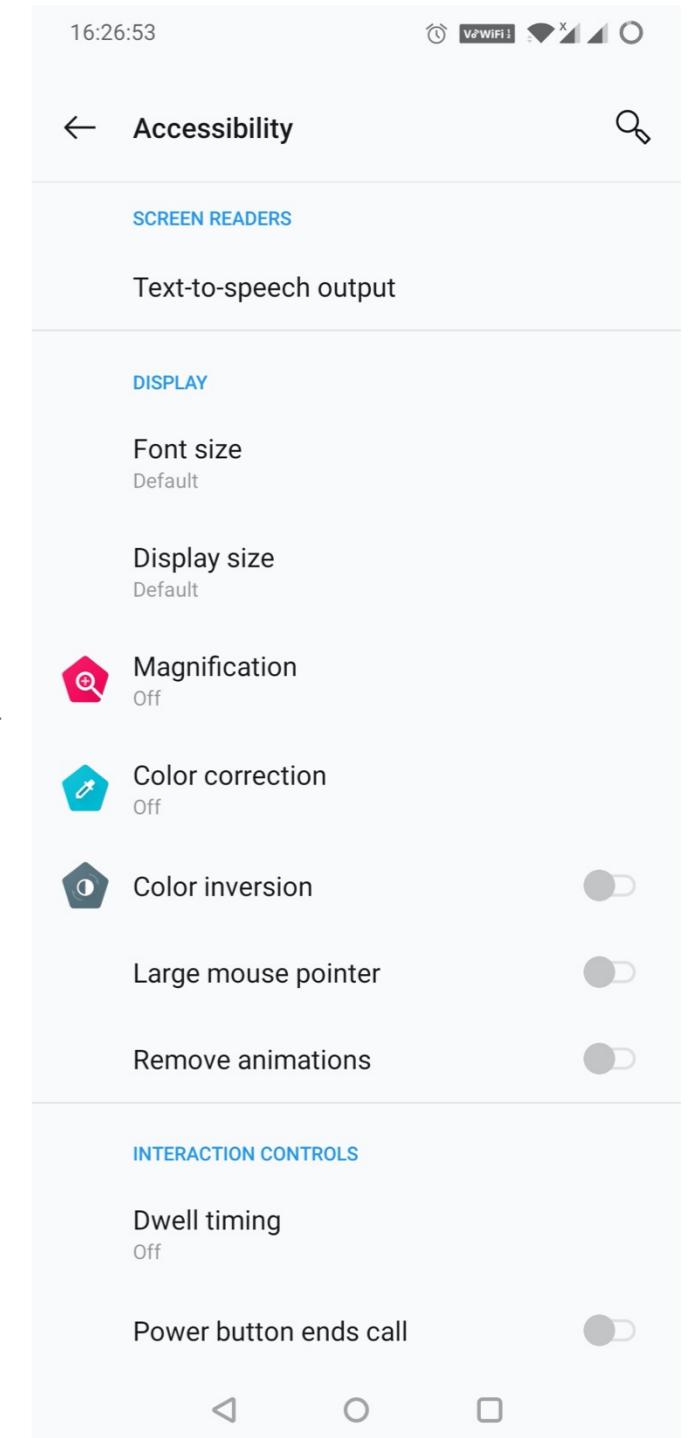
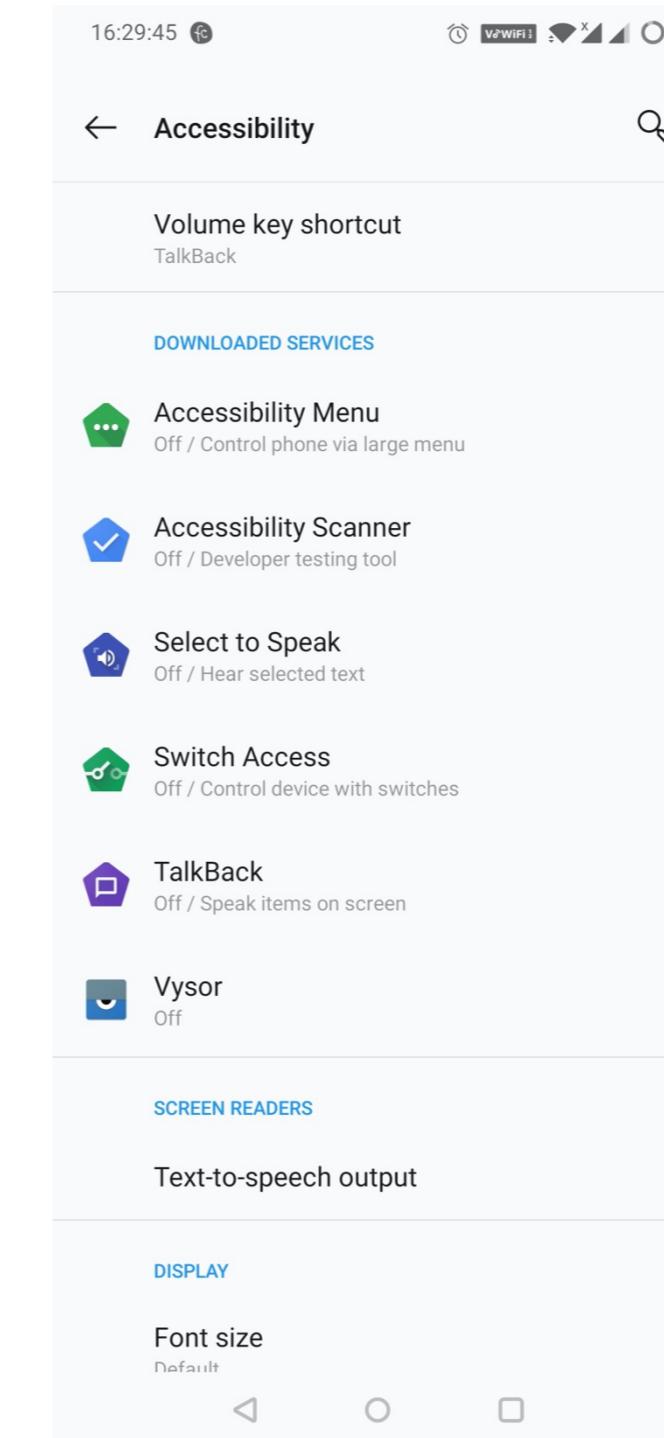
Accessibility Services (iOS & Android)



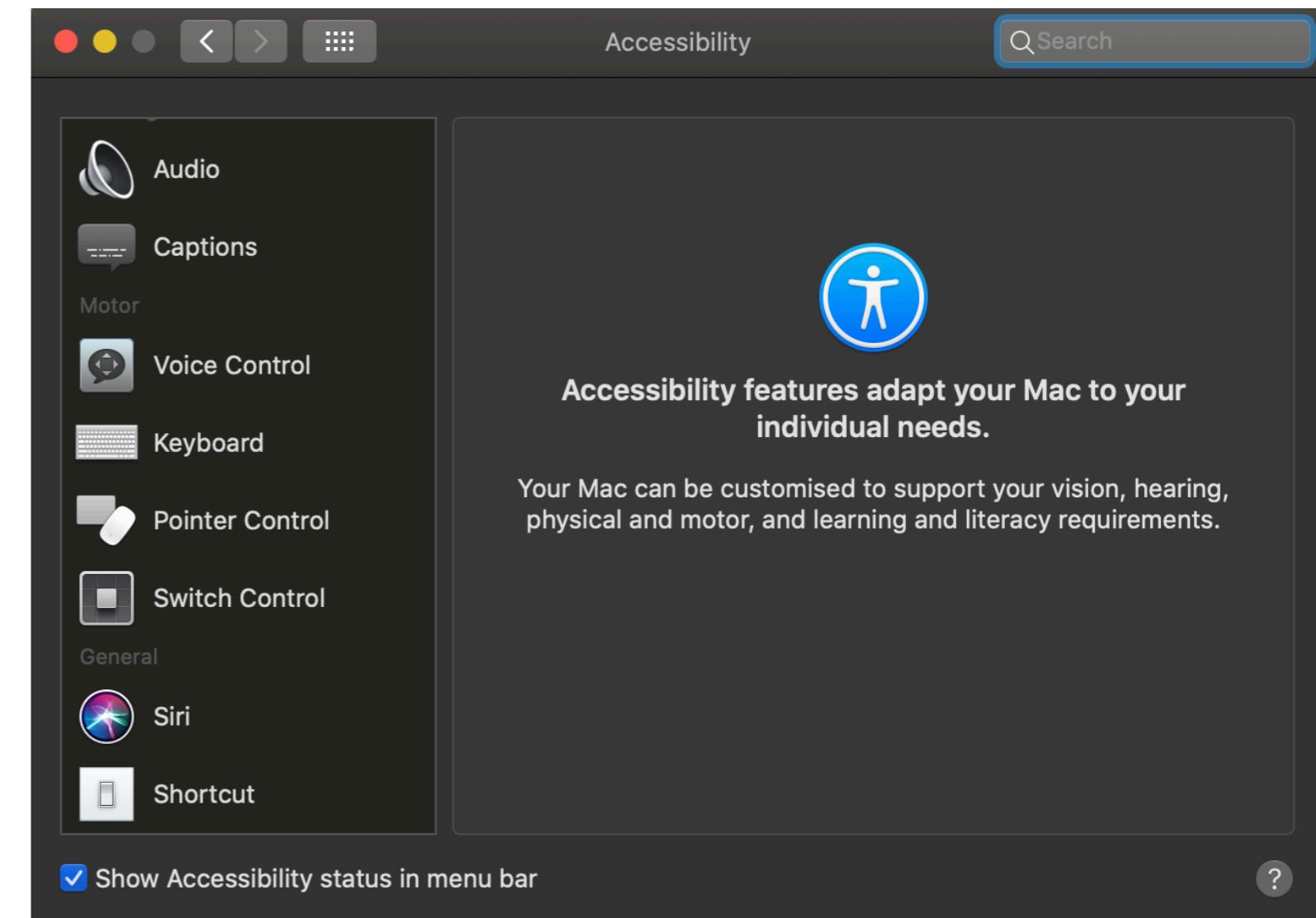
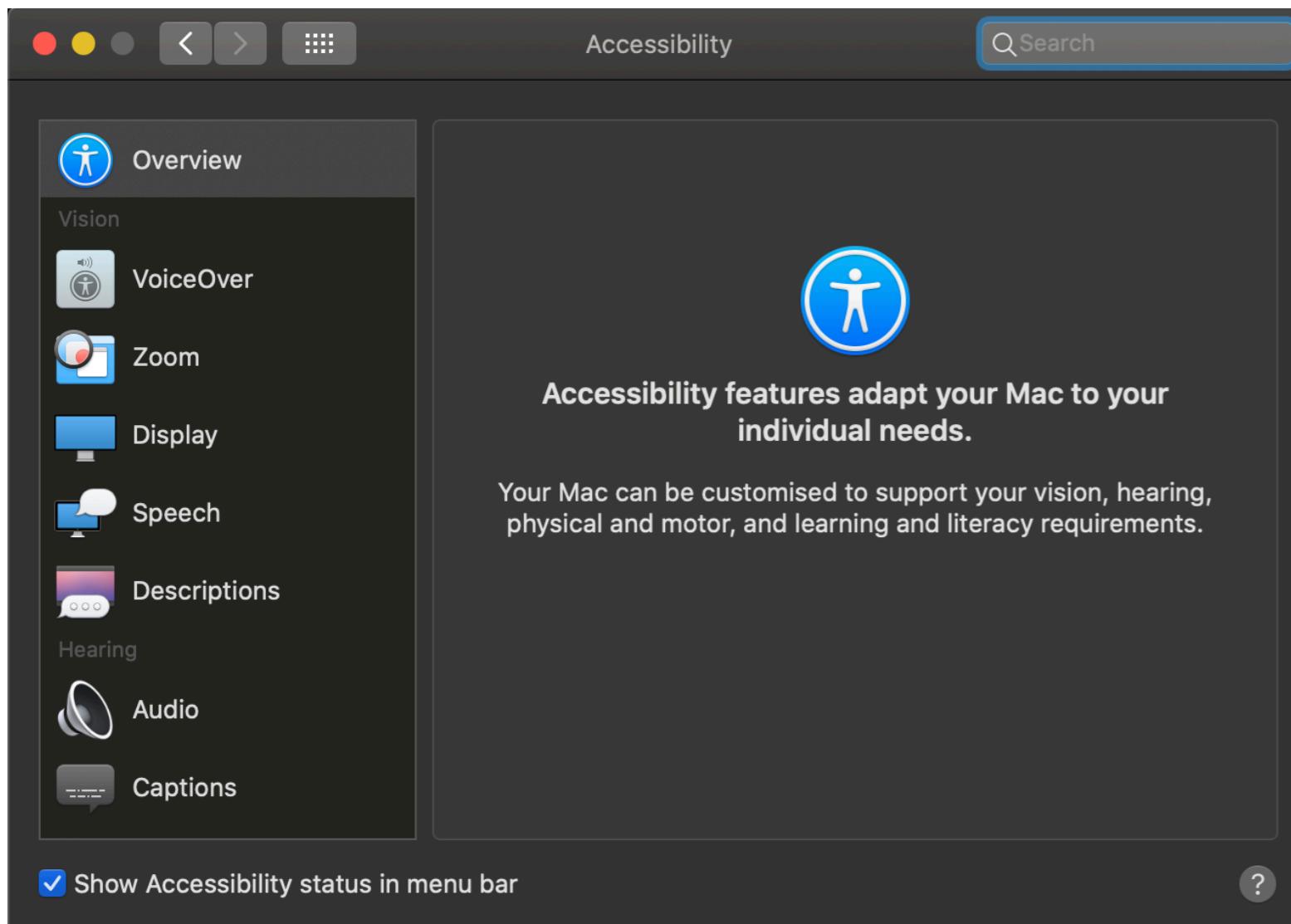
iOS (Settings > Accessibility)



Android (Settings > System > Accessibility)



Menu > System Preferences > Accessibility



Settings > Ease of Access

The screenshot shows the Windows 10 Settings app with the 'Ease of Access' category selected. The left sidebar lists various accessibility options: Vision, Display (selected), Cursor & pointer, Magnifier, Color filters, High contrast, Narrator, Hearing, Audio, Closed captions, Interaction, Speech, Keyboard, Mouse, and Eye control. The main pane displays the 'Display' settings, which include options to make text bigger, make everything bigger, and make everything brighter. It also features a 'Simplify and personalize Windows' section with toggles for show animations, transparency, and scroll bars.

Display

Make your display easier to see.

Make text bigger

Sample text

Drag the slider until the sample text is easy to read, then click Apply

A

Apply

Make everything bigger

Change the size of apps and text on the main display

100%

Change the size of apps and text on other displays

Change the size and color of your cursor and mouse pointer

Make everything brighter

Change the brightness of your built-in display

20 %

Change brightness automatically or use night light

Simplify and personalize Windows

Show animations in Windows

On

Show transparency in Windows

On

Automatically hide scroll bars in Windows

On

Type here to search

10:27 16-08-2020 ENG

Category	Disability	Minimal things to consider
Vision	Blindness	Screen reader experience (page structure, semantic information, textual information)
	Low vision	<ul style="list-style-type: none"> • Large text and zoom • Sufficient contrast • Screen reader experience
	Colorblindness	<ul style="list-style-type: none"> • Not using color alone to convey information • good contrast
Hearing	<ul style="list-style-type: none"> • Deaf • Hard of hearing 	<ul style="list-style-type: none"> • Closed captions • No audio-only cues • text transcripts
Mobility	Dexterity impairments (limited or no use of hands)	<ul style="list-style-type: none"> • Keyboard only accessibility • Speech to text (Semantics, Consistent Accessible Labels) • Sufficient touch target size
Cognitive	<ul style="list-style-type: none"> • Learning disabilities, ex. Dyslexia • Attention Deficit Hyperactivity Disorder (ADHD) • Short term memory loss • Seizures • Autism Spectrum Disorder (ASD) 	<ul style="list-style-type: none"> • Clear and simple language and user flows • Avoidance of flashing or moving content

Standards and Guidelines

Web Content Accessibility Guidelines (WCAG)

Level A | Level AA | Level AAA

Level A:

Must have (Bare minimum accessibility)

Level AA:

Industry Standard

Level AAA:

Optional

WCAG 2.0

Total Requirements: 61

Level A: 24

Level AA: 38

Level AAA: 61

extends

WCAG 2.1

Total Requirements: 78

Level A: 29

Level AA: 50

Level AAA: 78

Perceivable



Information available to the multiple senses- sight, hearing and/or touch

Operable



Multiple input & interaction methods, user control over time limits, error recovery

Understandable



Language, predictability, consistency, assistance

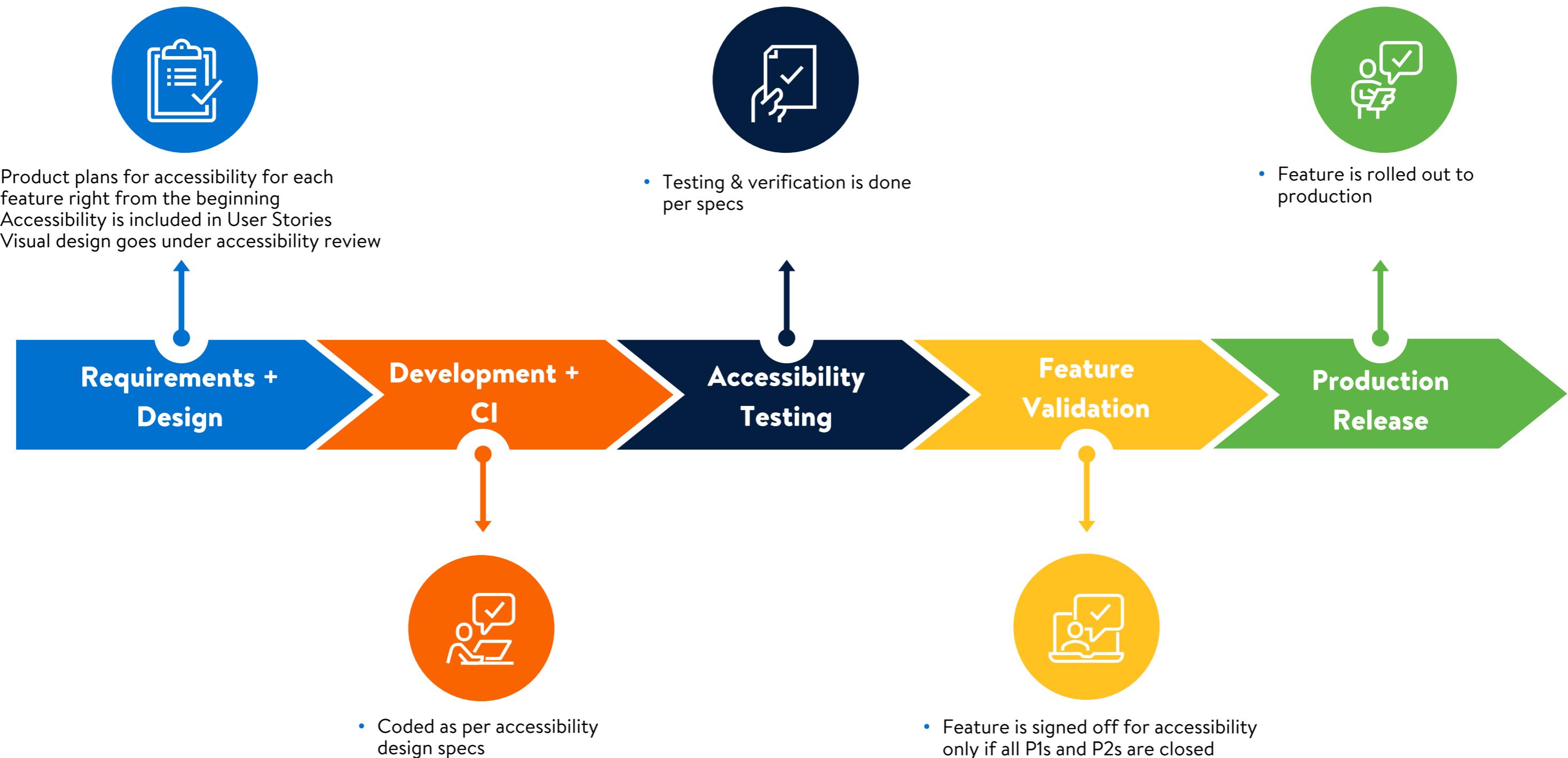
Robust

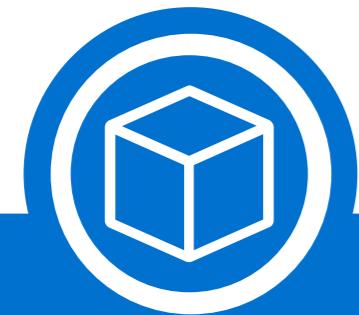


Multiple user agents and assistive technologies

Our Approach

Today's process





Product

- Customer base to include PwDs
- Include A11y in User Stories for UI Change, product Requirements, scope, sprint planning and acceptance criteria
- Ensure that delivered product meets WCAG 2.1 level AA



Design

- Design for WCAG 2.1 level AA including color, fonts, contrast, forms, alt text for images and closed captions for videos
- Provide A11y Documentation for all design hand-offs
- Innovations



Development

- Develop and code to A11y documentation criteria from design
- Use native semantics and minimise use of ARIA to the extent possible
- QE across all specified browsers and break points
- Validate code to make sure it works both with keyboard and screen reader



Accessibility

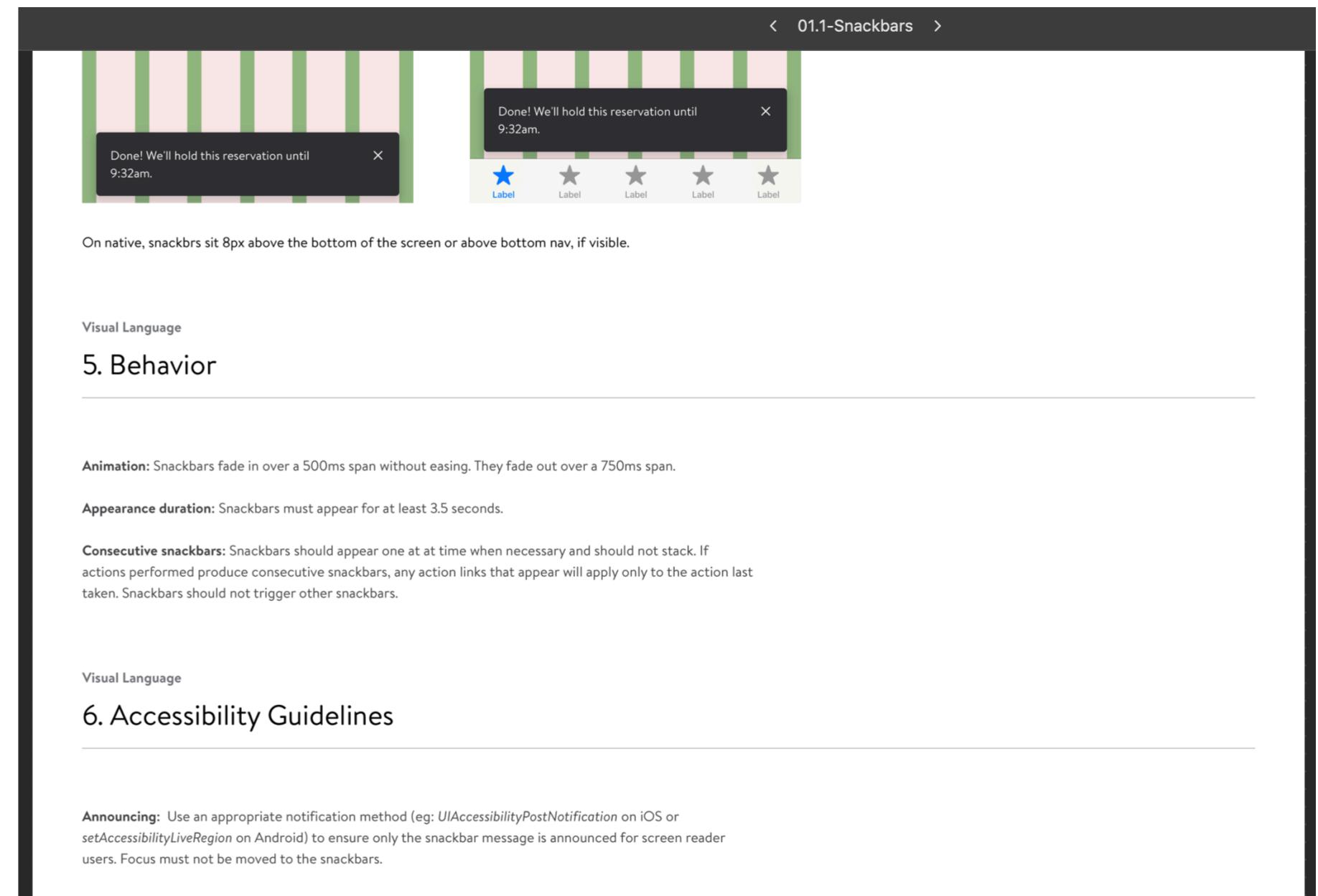
- Educate and empower product, design and engineering & QA teams to incorporate a11y int their process
- Validate a11y design and implementation.



Living Design

Living Design System Review

- Core Style elements
- Components



On native, snackbars sit 8px above the bottom of the screen or above bottom nav, if visible.

Visual Language

5. Behavior

Animation: Snackbars fade in over a 500ms span without easing. They fade out over a 750ms span.

Appearance duration: Snackbars must appear for at least 3.5 seconds.

Consecutive snackbars: Snackbars should appear one at a time when necessary and should not stack. If actions performed produce consecutive snackbars, any action links that appear will apply only to the action last taken. Snackbars should not trigger other snackbars.

Visual Language

6. Accessibility Guidelines

Announcing: Use an appropriate notification method (eg: `UIAccessibilityPostNotification` on iOS or `setAccessibilityLiveRegion` on Android) to ensure only the Snackbar message is announced for screen reader users. Focus must not be moved to the snackbars.

Holiday / Event Timer ADA Annotation

Readout Guidelines
dWeb & mWeb
dWeb modules as examples

Overview

A December Deal ends in 3 : 21 : 45 : 14 days hours min sec

B Shop deals

Event Timer
Applies to all 9 examples below

1 Time is automatically announced on every 5th minute based on timer.

2 If a user is reading the timer module, the text is readable by default.

3 0 units are not read aloud.

A Title & remaining time
Property: aria-live=assertive
e.g. "December Deals end in 3 days 21 hours 45 minutes and 14 seconds."

B Shop deals
Role: link
Label: [read text aloud]
e.g. "Shop deals"
Activation opens new page

Timer module by increments

A December Deals end in 2 : 12 : 25 : 0 days hours min sec

B December Deals end in 12 : 10 : 0 hours min sec

C December Deals end soon 0 : 5 : 0 hours min sec

D December Deals end soon 0 : 3 : 12 hours min sec

E December Deals end soon 0 : 3 : 12 hours min sec

F December Deals end soon 0 : 3 : 12 hours min sec

G December Deals end soon 0 : 3 : 12 hours min sec

H December Deals end soon 0 : 3 : 12 hours min sec

I December Deals end soon 0 : 3 : 12 hours min sec

Before start of event

A December Deals start in 1 : 18 : 35 : 0 days hours min sec

B December Deals start in 1 : 18 : 25 : 0 days hours min sec

Event ended

A December Deals have ended

B December Deals have ended

C December Deals have ended

D December Deals have ended

E December Deals have ended

F December Deals have ended

G December Deals have ended

H December Deals have ended

I December Deals have ended

If event is already described in POV - no event name in timer

A Event ends in 3 : 0 : 50 : 0 days hours min sec

B Shop deals

C Event Timer [no event name with CTA]

A Title & remaining time
Property: aria-live=assertive
e.g. "December Deals event ends in 3 days and 50 minutes."

B Shop deals
Role: link
Label: [read text aloud]
e.g. "Shop deals"
Activation opens new page

If event is already described in POV - no event name in timer

A Event ends in 3 : 0 : 50 : 0 days hours min sec

B Shop deals

C Event Timer [no event name with CTA]

A Title & remaining time
Property: aria-live=assertive
e.g. "December Deals event ends in 3 days and 50 minutes."

B Shop deals
Role: link
Label: [read text aloud]
e.g. "Shop deals"
Activation opens new page

Masked placement examples
Home page *Limit 1 timer per page

iOS

Android

mWeb / 320

dWeb / 1440

Final day
Get major deals on TVs, toys, & more before they're gone!
Shop now

Black Friday ends in 3 : 21 : 49 : 58 days hours min sec

HP Povk Friday

Title Bogle 20.
Sub next Bogle regular 15
Shop now

Free Grocery Pickup
Start an Order

Trending near Fayetteville
Fayetteville Supercenter
3910 N. Mall Ave., Fayetteville

Marc. get free 2-day delivery
On orders of \$35 or more.
See Hint

Shop all things holiday

Deals
The best deals

Toys
America's best toy shop

Home
Holiday home

Fashion
Festive fashions

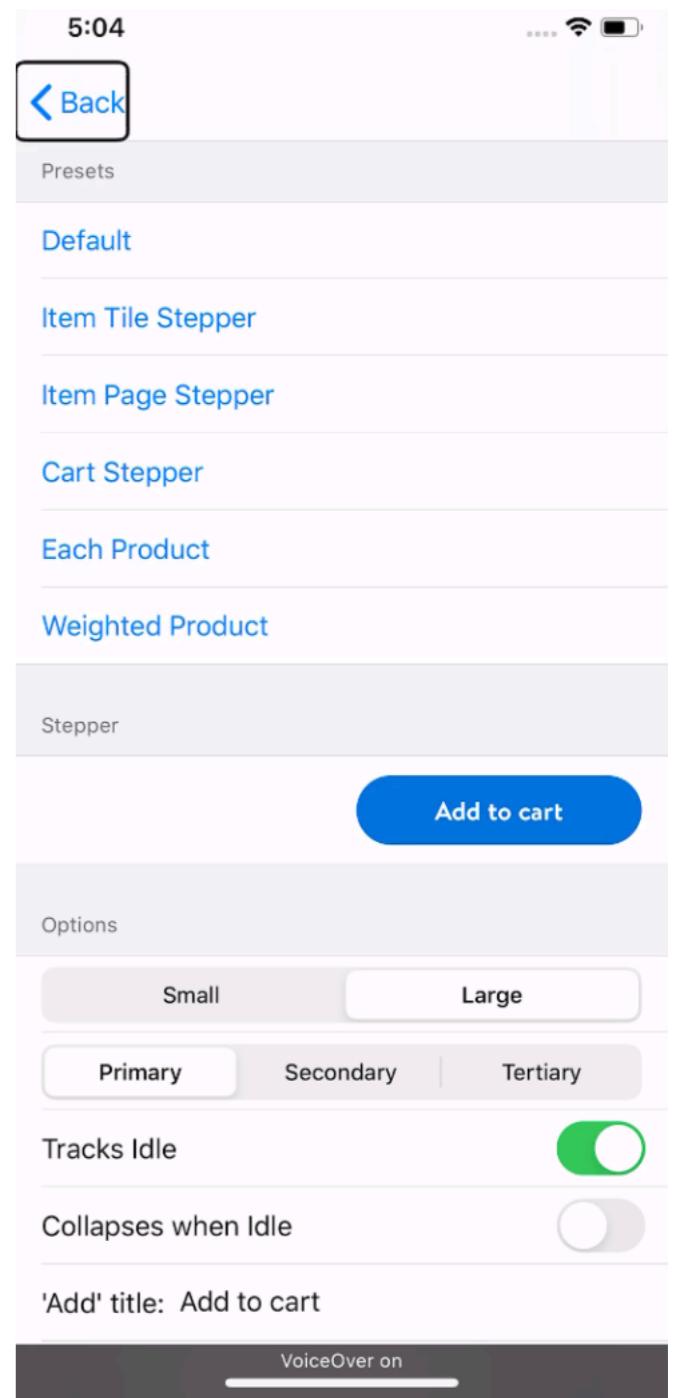
Feature Design Review

- Mostly based on LD components
- Accessibility documentations for Engineering by designers
- Design Sign off

Component Validation (A11y at scale)

- A11y engineering for core components to make them accessible by default, yet customizable by feature teams
- Leverage native accessibility capabilities and services
- Reduce a11y work for feature teams (and thus a11y bugs)

```
UIAccessibilityTraits = "adjustable"  
accessibilityIncrement()  
accessibilityDecrement()
```



Feature testing & sign-off

- Testing on physical devices
- Across platforms- Windows, Mac, iOS & Android
- No open P1 or P2 for sign off



Test Environments

- Mac OS
 - Safari + VoiceOver
- MS Windows 10
 - Chrome + NVDA
 - FF + NVDA
- iOS
 - Safari + VoiceOver
- Android
 - Chrome + TalkBack

Educate and empower teams to design and develop accessible and inclusive products.

A11y Review



- Design Reviews- Design sign off
- Tear-downs
- Office Hours- every Wednesday

Goals:

- Inclusive design
- Clear a11y documentation for dev

A11y Testing



- Testing on Windows, Mac, iOS and Android
- P1s and P2s must be fixed for release

Goals:

- Ensure quality and clean code for seamless accessible experience
- Reduce dependency on 3rd party and thus reduce cost

A11y Training



- Comprehensive Curriculum targeted for Product, Design and Engineering teams

Goal: Make teams self-sustainable for a11y

Training Curriculum				
Created by Sindhuja Xavier, last modified on Feb 05, 2020				
Name	Duration	Format	Course Details	Primary Audience
Web				
Session 1 Accessibility Awareness	30 mins	Lecture	This course includes Introduction to ADA, Introduction to WCAG, Overview of disability Types, Assistive Technologies and Accessibility at Walmart.	Product Managers, Devs, Designers and QA
Walmart's 5 Drive Bys	30 mins	Lecture & Hands on	In this session, we will go over Walmart's Accessibility 5 Drive Bys and learn quickly how to test for the 5 drive Bys under 15-20 minutes.	Product Managers, Devs, Designers and QA
Session 2 Accessibility for Designers	60 mins	Lecture	Optimal accessibility should start much earlier, as part of the visual design process. This course will help designers make sure that accessibility is incorporated during the design stage. The course will also provide Walmart's Design Accessibility Checklist.	Designers
Session 3 Screen Reader Testing	60 mins	Lecture & Hands on	A deep dive course on using VoiceOver and JAWS & NVDA screen readers. This session will also cover testing techniques, download and setup of screen readers.	QA and Developers
Session 4 Manual Testing - Part 1	60 mins	Lecture	This course will cover testing methods to test for the top 10 manual checks. These checks are also known as Quick Wins with High Impact Checks . The goal of the course is that a tester/developer should be able to test for the top 10 checks under 30 minutes.	QA and Developers
Session 5 Manual Testing - Part 2	60 mins	Lecture	A deep dive course on testing the rest of the Manual checks, understand WCAG2.1 checks. We will also be covering the tools, extensions that can be aide in automatizing this manual testing.	QA and Developers
Session 6 The Ins and Outs of ARIA	45 mins	Lecture	The session covers the best practices for building accessibility into the core of development and when to use ARIA and when not to use, implications of invalid and redundant usage of ARIA.	
Mobile Accessibility				
Session 1 iOS Mobile Accessibility	60 mins	Lecture & Hands on	This session provides instruction for testing techniques iOS native apps/mWeb content. Additionally, techniques and best practices for accessibility-related coding practices for the iOS platform.	iOS Developers and QA
Session 1 Android Mobile Accessibility	60 mins	Lecture & Hands on	This session provides instruction for testing techniques Android native apps/mWeb content. Additionally, techniques and best practices for accessibility-related coding practices for the Android platform.	Android Developers and QA
Tools				
Accessibility Testing Tools Overview (Optional course)	30 mins	Lecture	This course provides a high level overview of the testing tools used in the audit process including assistive technology.	QA and Developers
Test Armada and CI/CD Tools	30 mins	Lecture	The Tools team will onboard the team with the CI/CD Tools. This course provides documentation, setup instructions and training on usage of our Walmart's Internal Testing Tools.	QA and Developers
Prescriptive Training				
Multimedia Accessibility	60 mins	Lecture	This course will cover the WCAG requirements for Video, Audio and multimedia web content.	Product Managers or specific team members responsible for providing multimedia alternatives
Quick Wins with High Impact Tests - Manual Checks	60 mins	Lecture & Hands on	This course will cover testing methods to test for the top 10 manual checks. The goal of the course is that a tester/developer should be able to test for the top 10 checks under 30 minutes.	QA and Developers
All about Images	60 mins	Lecture	This course will cover Tips for writing an Alt Text, When and When not to write Alt Text, guidance for a meaningful Alt Text, restrictions on the usage of Images of Text.	Creative Team
Levels				
	Requirements			Outcome
LEVEL 0	No Trainings and No Tools usage			Team is not capable of performing any
LEVEL 1	Team that have completed only Prescriptive Training, or Teams that have completed only 2 or less training sessions. No Tools usage.			performed for all Test Cycles
LEVEL 2	Teams should have completed the Core Training sessions (Web Session 1 - Session 4, and mobile Session 1). Teams must also be on-boarded to our Tools.			Team is not capable of performing any
LEVEL 3	All Trainings as part of the curriculum must be completed. Teams must be on-boarded to our internal Tools. Teams must not only be on-boarded but must also use the tools as part of their daily dev and testing process.			Team is somewhat capable of performing Automa
				team can also perform some, but not al
				Team is capable of performing Automa
				testing process.

Training Curriculum

- Comprehensive
- Web & Mobile Accessibility
- Tools
- Tailored

What our customers say



“Thank you for making your app accessible to blind iPhone users More should be like Walmart Thank you” - BlueThankYouSurvey - 2020-05-22

“As a blind VoiceOver user. I have to say that I very much appreciate the improved accessibility of this app since last I visited! Keep up the good work!” - 2020-02-21

“Love layout and accessibility of it for blind people but categorization of items could be better” - 2020-05-30

“Awesome it help me because I am deaf and easy communication with service” - 2020-03-14

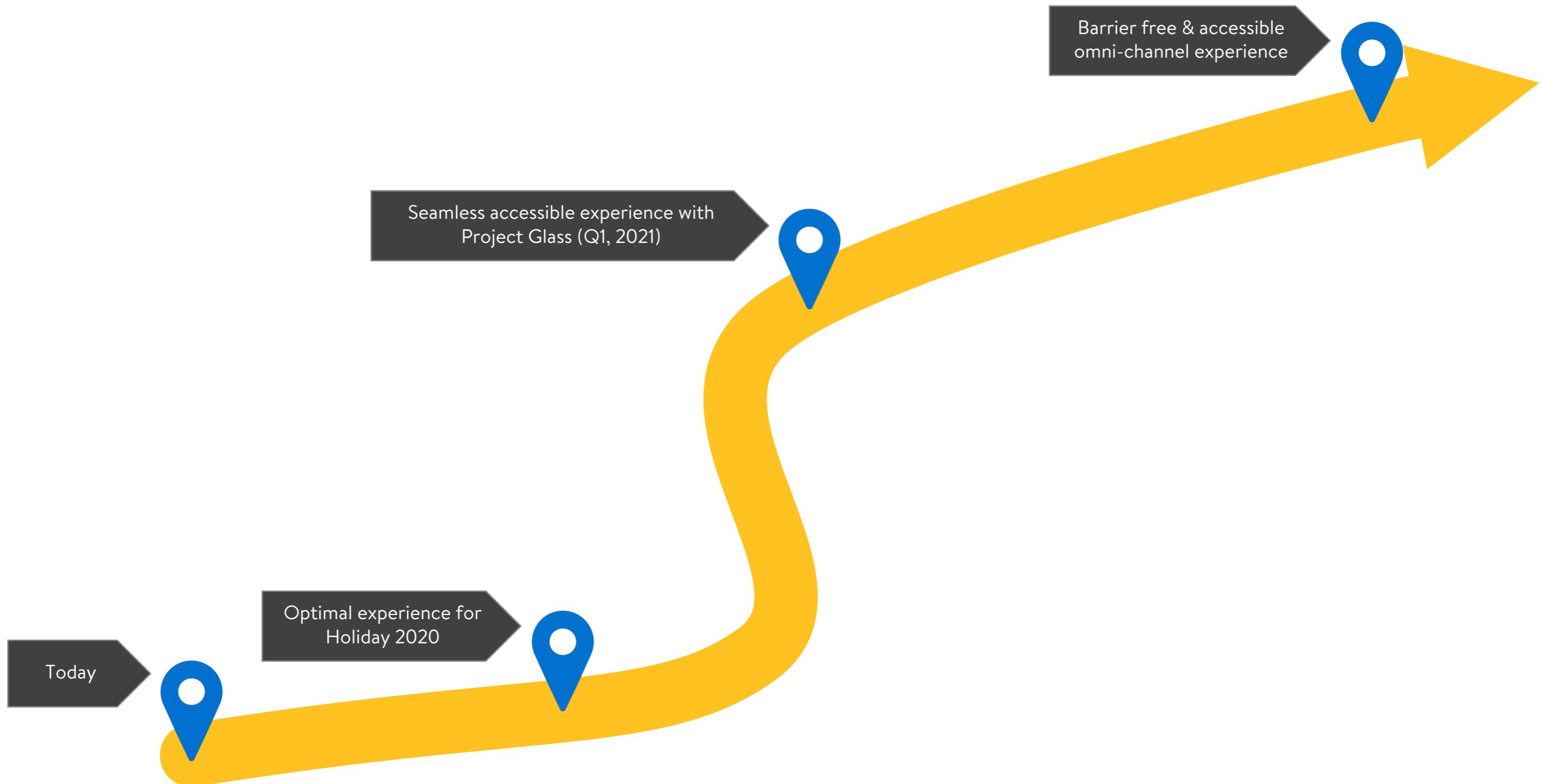


“This is a great feature for shopping but the app is not voice over friendly As a blind person who can not always get to the store the idea of my groceries being delivered is very beneficial to me” (Orange) -2020-05-23

“I prefer the look of the Walmart grocery app that is being phased out The font and images of food products are so small that it makes it difficult to shop online with a vision disability” - 2020-06-11

“Since the requirement to use the new walmart app rather than the grocery app it has become less accessible to the blind Especially the section where all the favorites are listed” - Oneapp - 2020-07-05

What's ahead...



US Core Accessibility



Carrie Farber
Director, Accessibility



Cindy Xavier
Product Manager, Accessibility



Dilpreet Singh
Technical Program Manager

IDC Accessibility



Ramesh Kozhissery
Director, Design



Bhaskari Hazarika
Accessibility Consultant



Jeevan Anupalli
Accessibility Consultant



Meharoon Kakarla
Accessibility Consultant



Anuja Hersh
Design Program Manager

Q&A

Links:

- Accessibility Confluence page: <https://confluence.walmart.com/display/CEACCESS/CE+-+Accessibility+Home>
- IDC A11y on Confluence: <https://confluence.walmart.com/pages/viewpage.action?pagId=310122736>
- Training Curriculum: <https://confluence.walmart.com/display/CEACCESS/Training+Curriculum>
- IDC A11y intake process: <https://confluence.walmart.com/display/UXUEIDC/Accessibility+Intake+Process>

Good reads:

- [Apple Accessibility](#)
- [Google Accessibility](#)
- [Microsoft Accessibility](#)

For any training ask, mail us at idca11y@email.wal-mart.com





Thank You

Get in touch 

IDC A11y Team (idca11y@email.wal-mart.com)