Accessibility: Crafting inclusive digital experiences

Aug 20, 2020

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Agenda

- 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

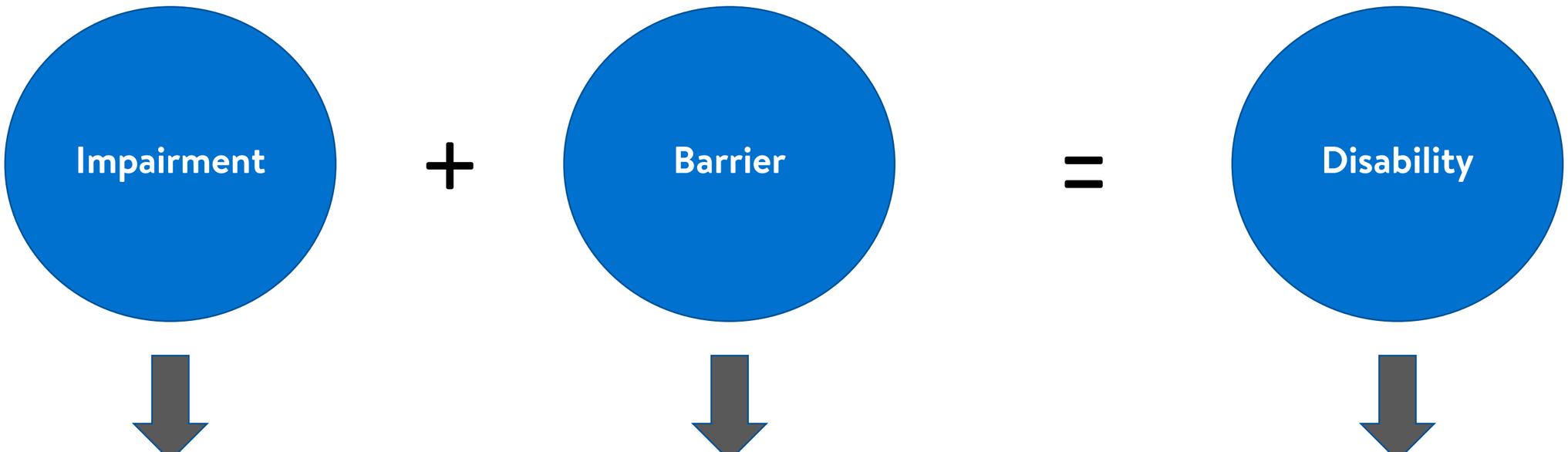
Elevators (with braille buttons)

Image source: reddit.com

Accessible turnstile for wheelchair access

Image source: hospitalitynet.org

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)

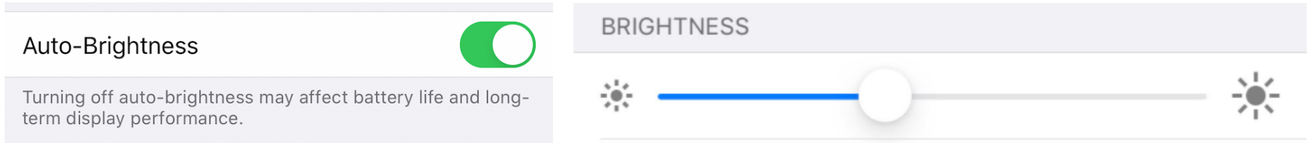
Inability to perform a task

Everyone *at some point of time in human life!*

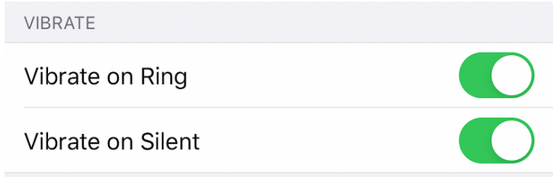
Accessible solutions have already been part of daily life for many of us!

Examples of Accessibility needs in our life

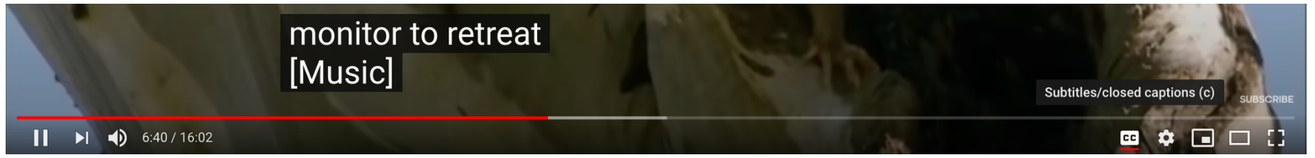
Reduced readability in outdoors/bright daylight



Vibrations for alerts/notifications/rings



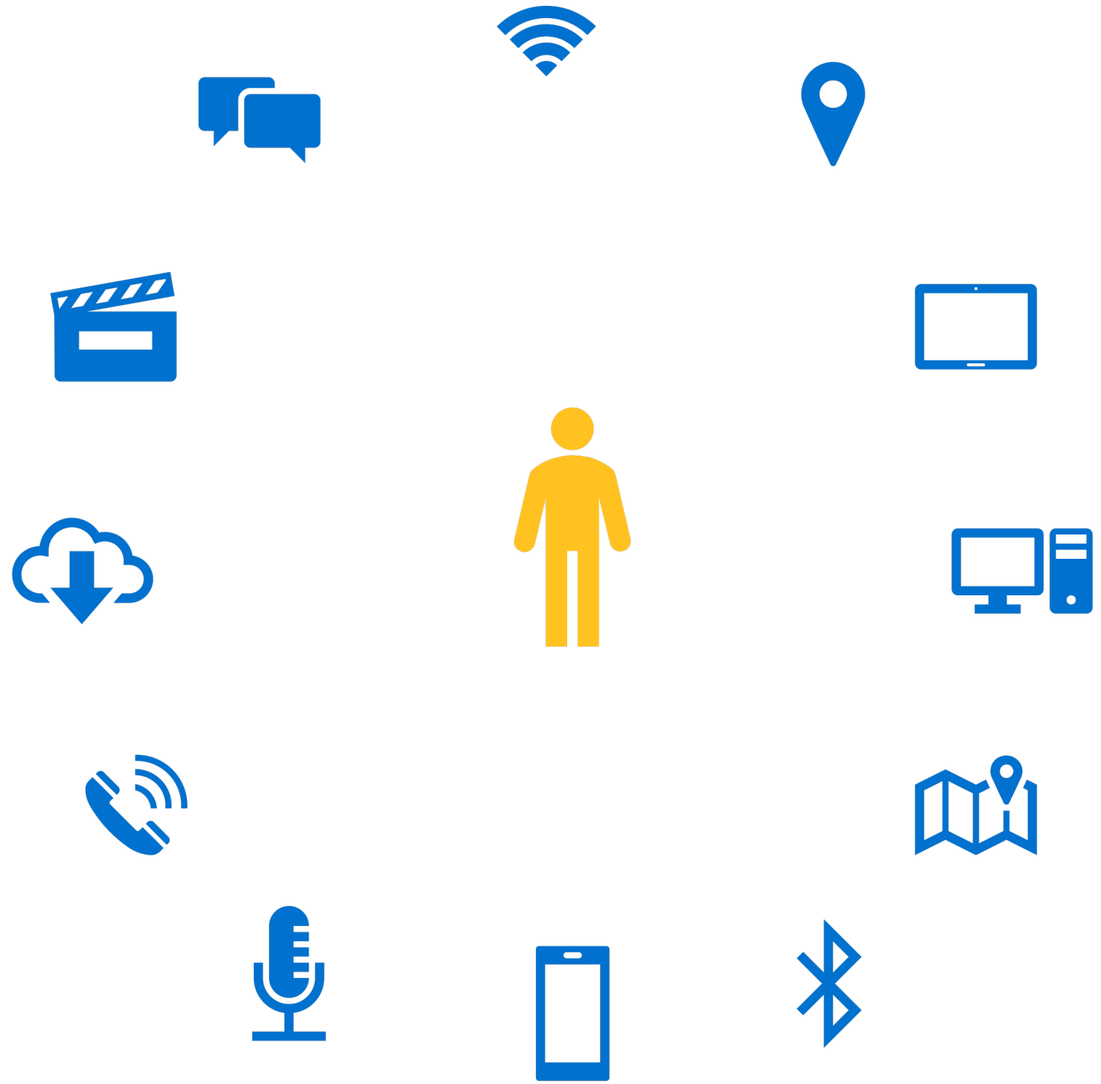
Captions/sub-titles



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

Walmart

Vision

Blindness,
Low vision,
Colorblindness

Hearing

Deafness,
Hard of hearing

Mobility

Limited mobility/
dexterity,
Hand tremors

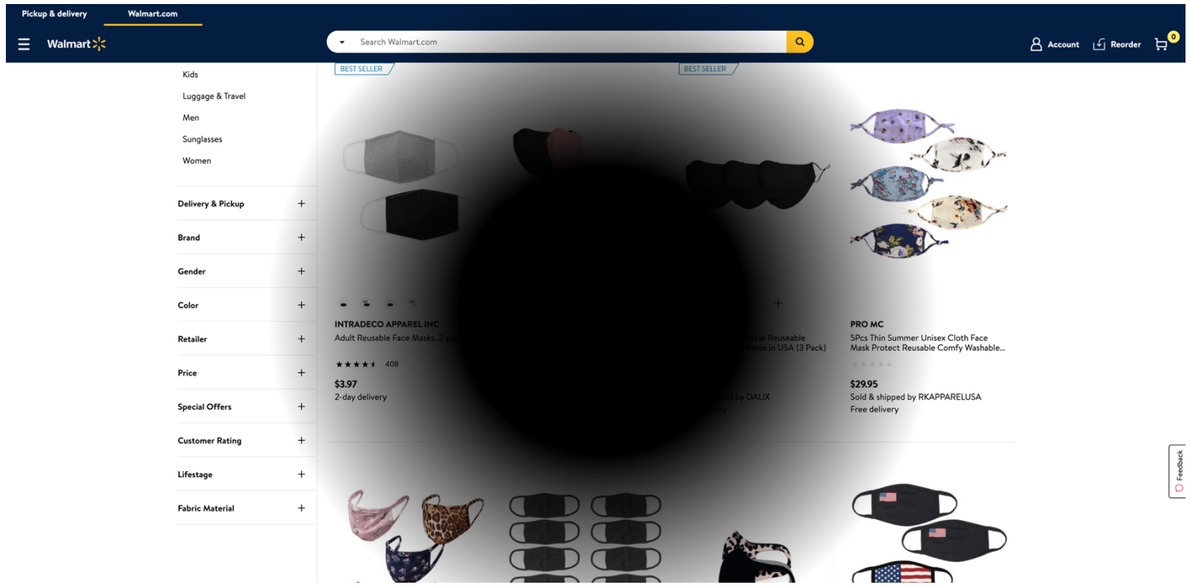
Cognition

Limitations related
to learning,
understanding,
memory

Simulation: Loss of vision (Low vision)

Loss of peripheral vision

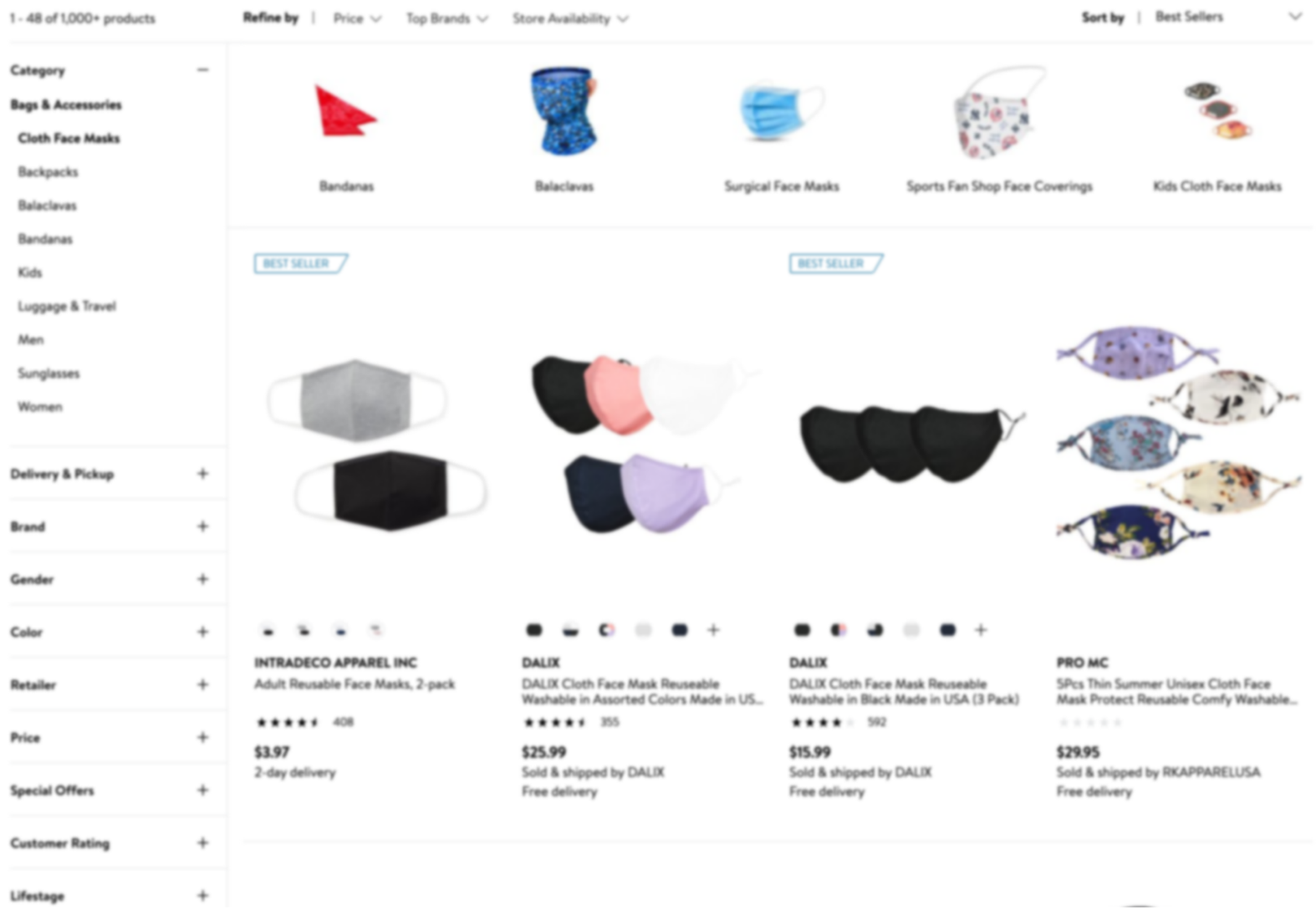
Loss of peripheral or central vision affects approximately 30% of the US population aged 75 or above.



Loss of central vision

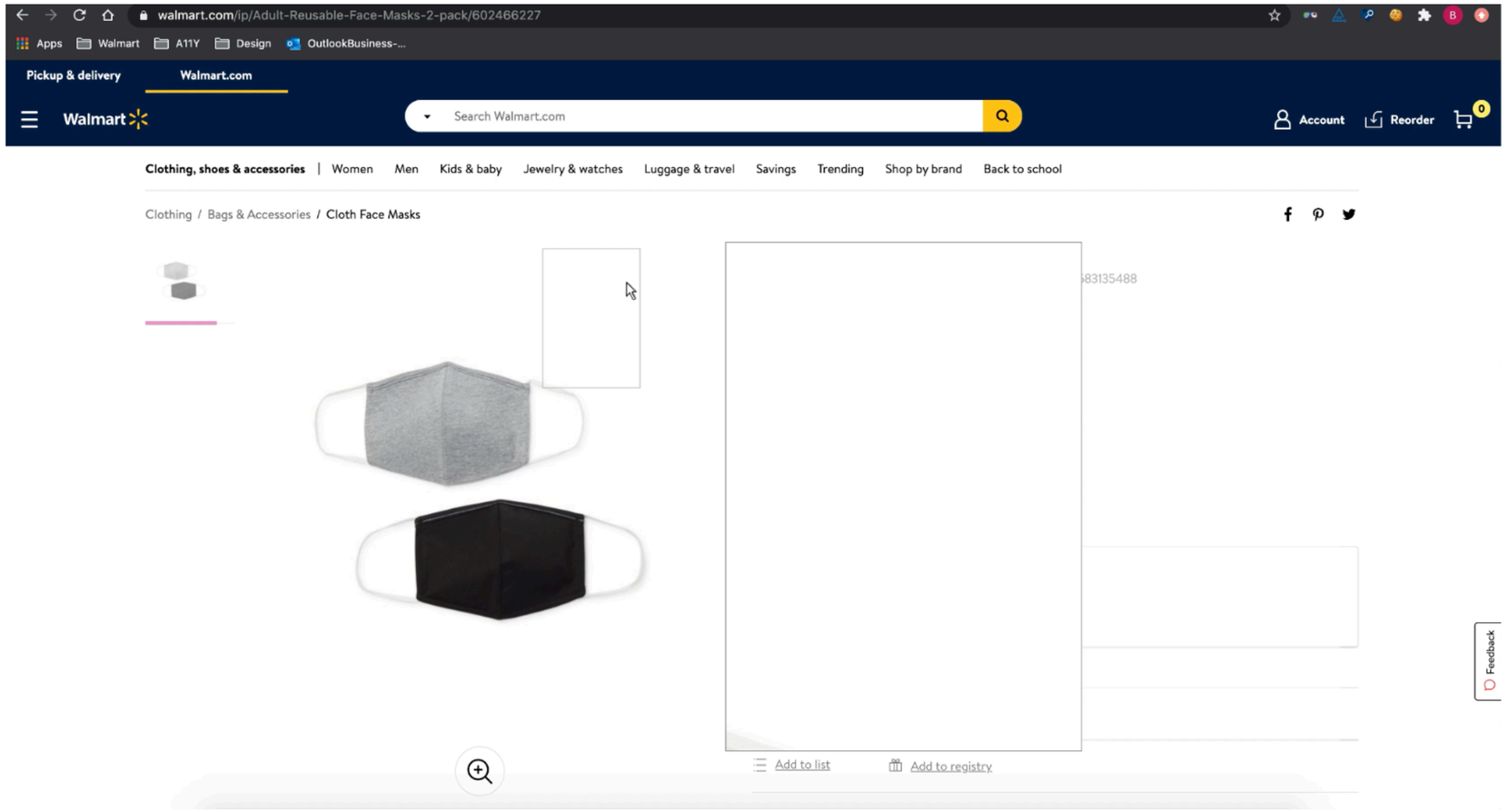
Simulation: Vision blur (Cataract & Myopia)

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



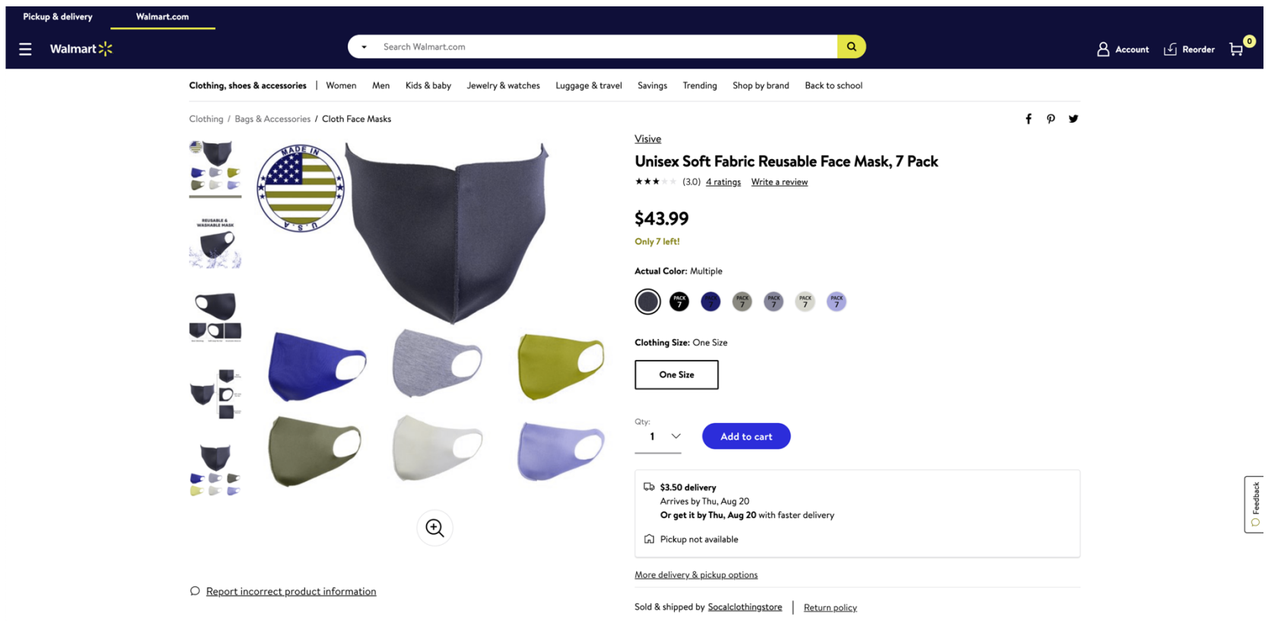
Simulation: Hand tremor

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

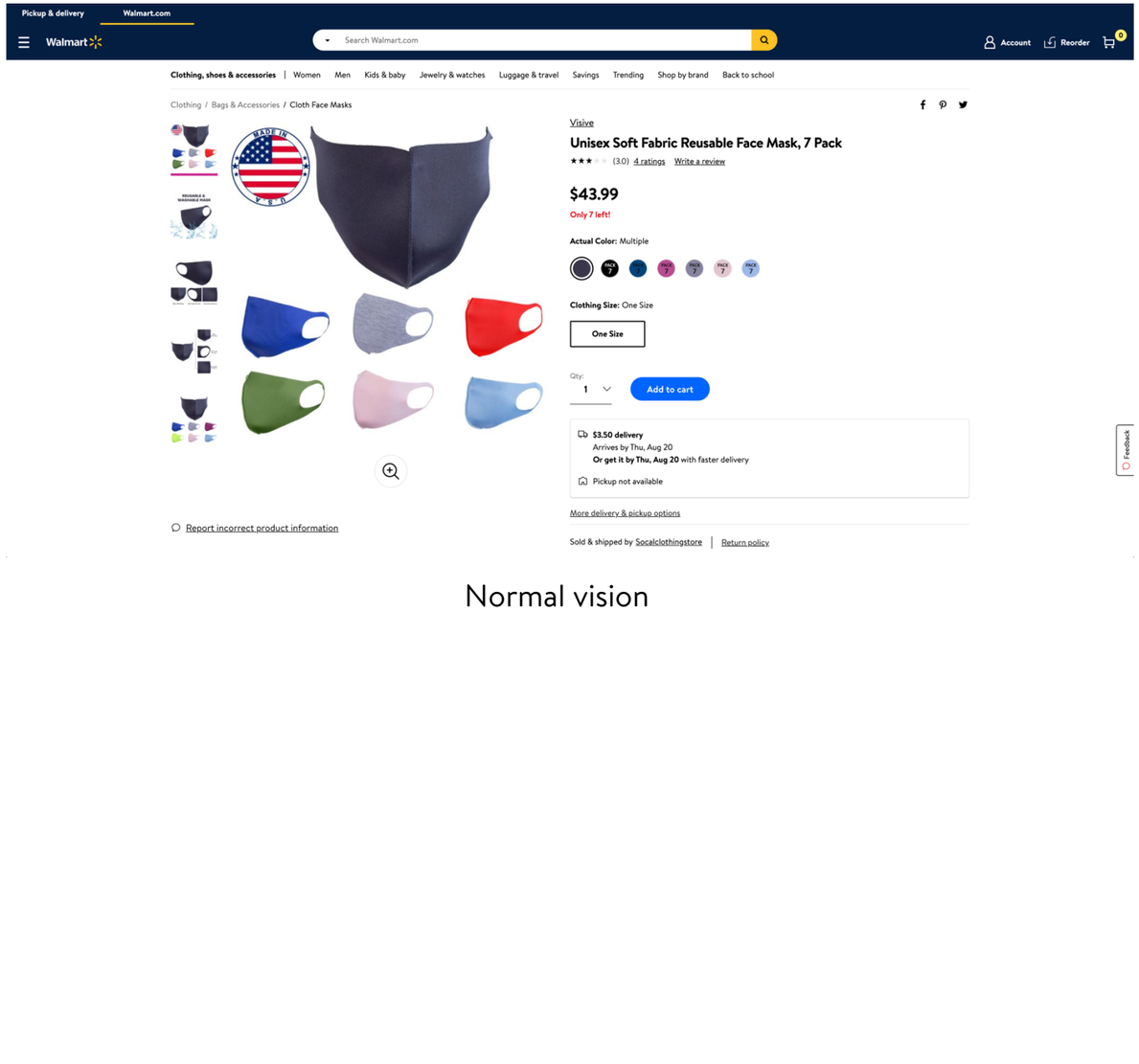


Simulation: Color blindness (Weak red)

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



Vision with reduced red



Normal vision

Legal

Compliance to geo-specific laws

Accessibility

Social & Commercial

- Social responsibility
- Public relations
- Competitive advantage

Some striking statistics

- 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)

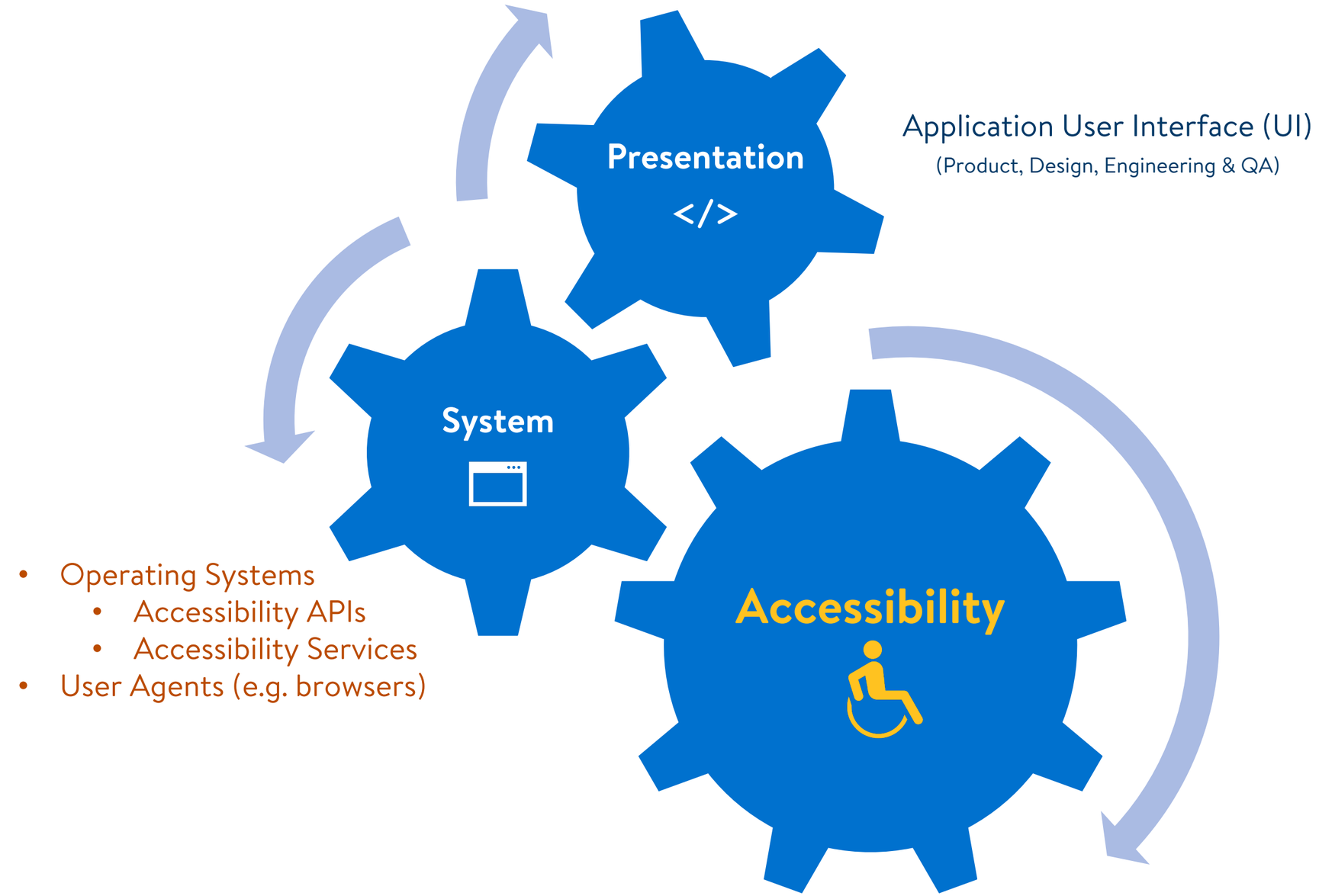
Inclusion is at the core of our culture. We strive to help every customer save money, and live better.

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

The solution



Application User Interface (UI)

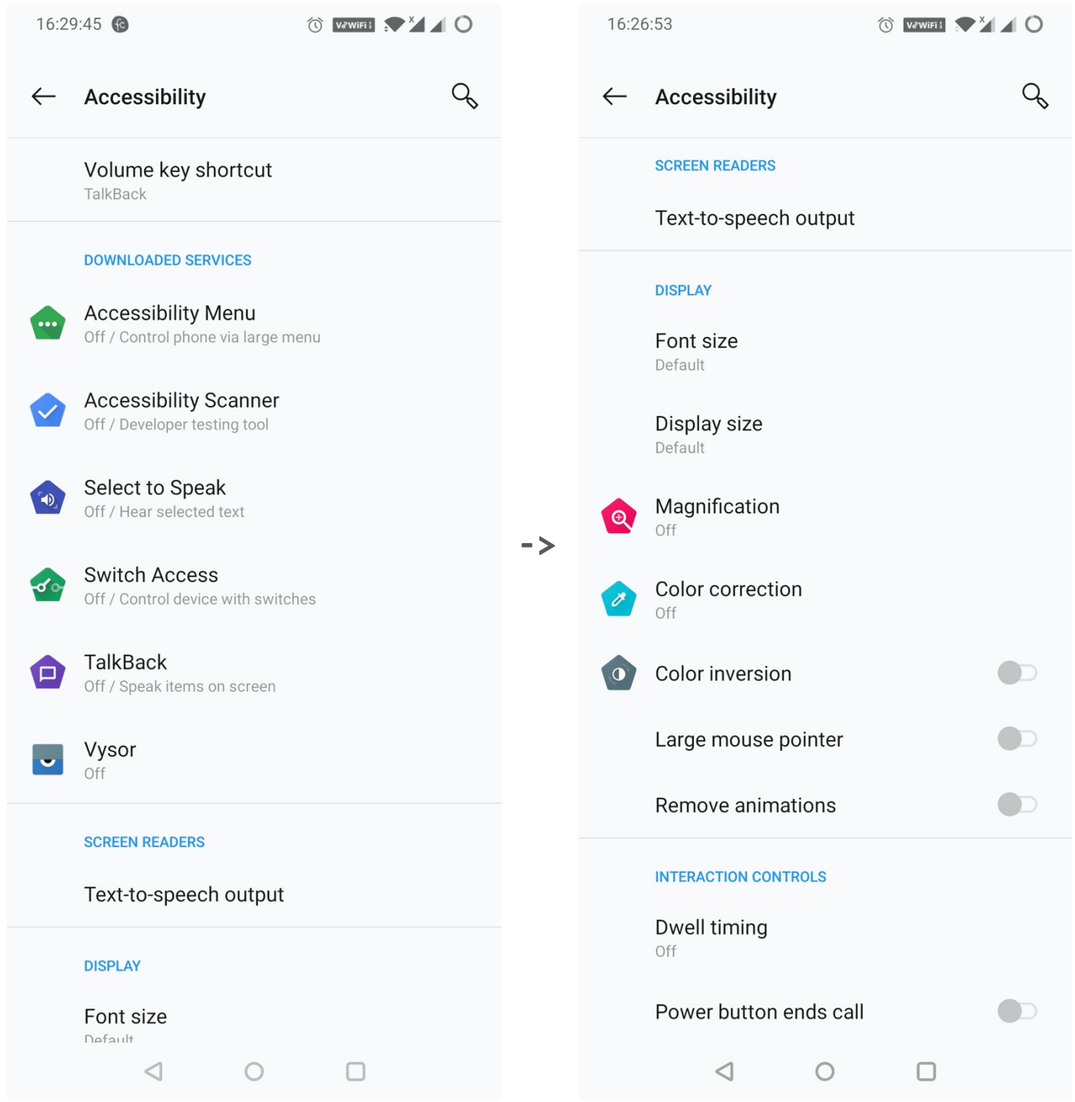
(Product, Design, Engineering & QA)

- Operating Systems
  - Accessibility APIs
  - Accessibility Services
- User Agents (e.g. browsers)

Accessibility Services (iOS & Android)

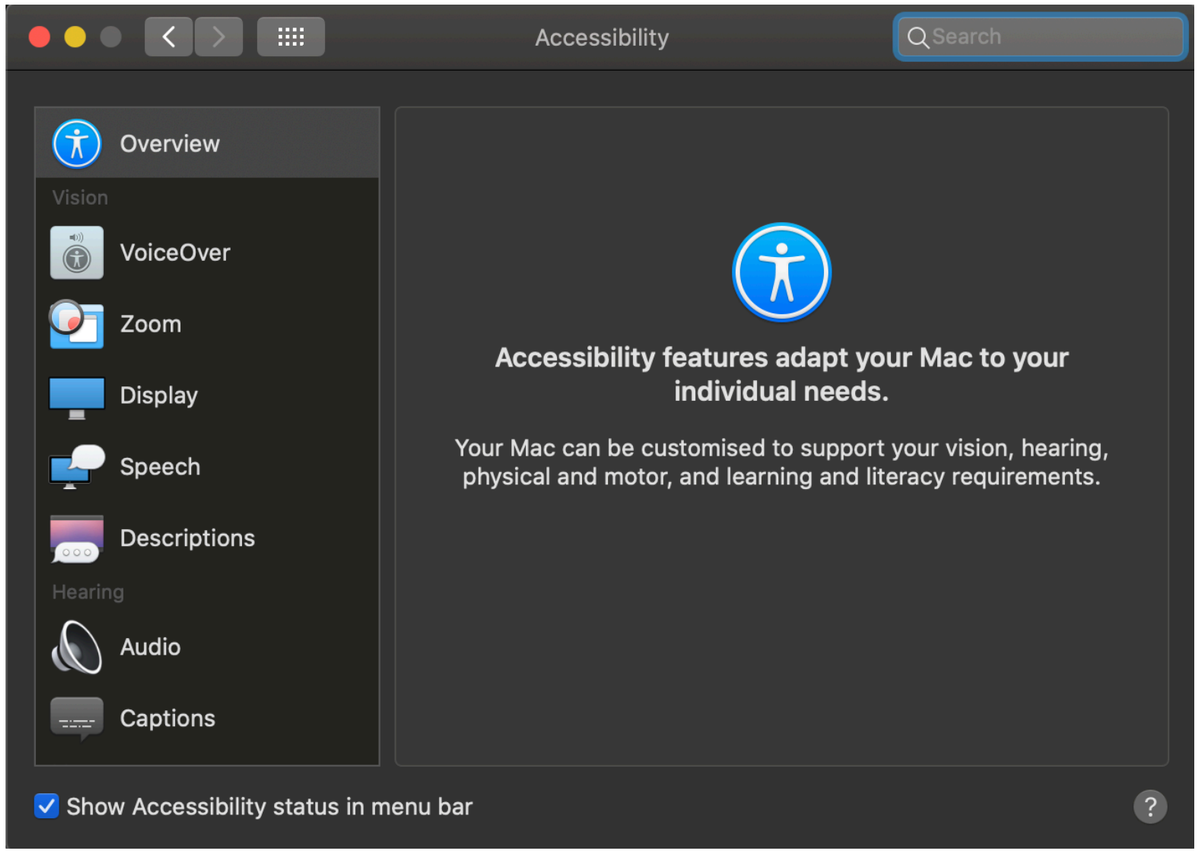
iOS (Settings > Accessibility)

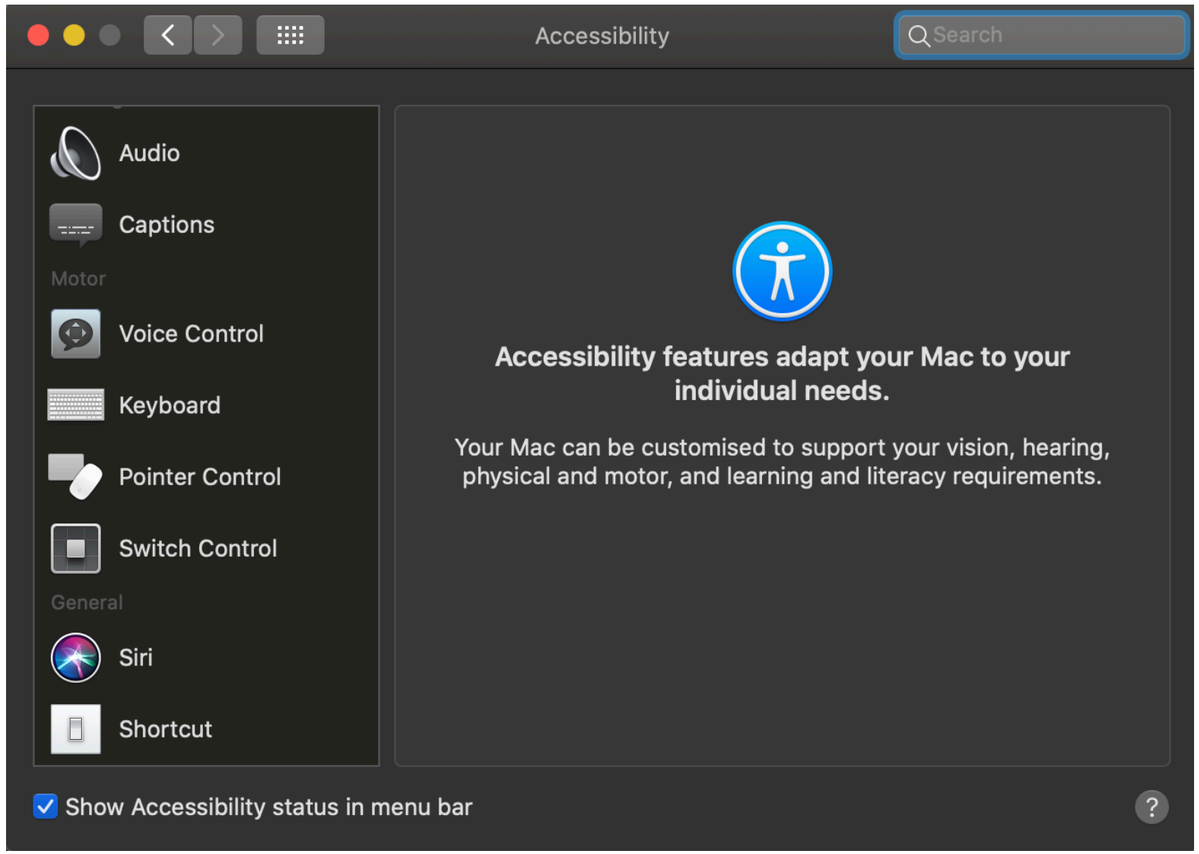
Android (Settings > System > Accessibility)



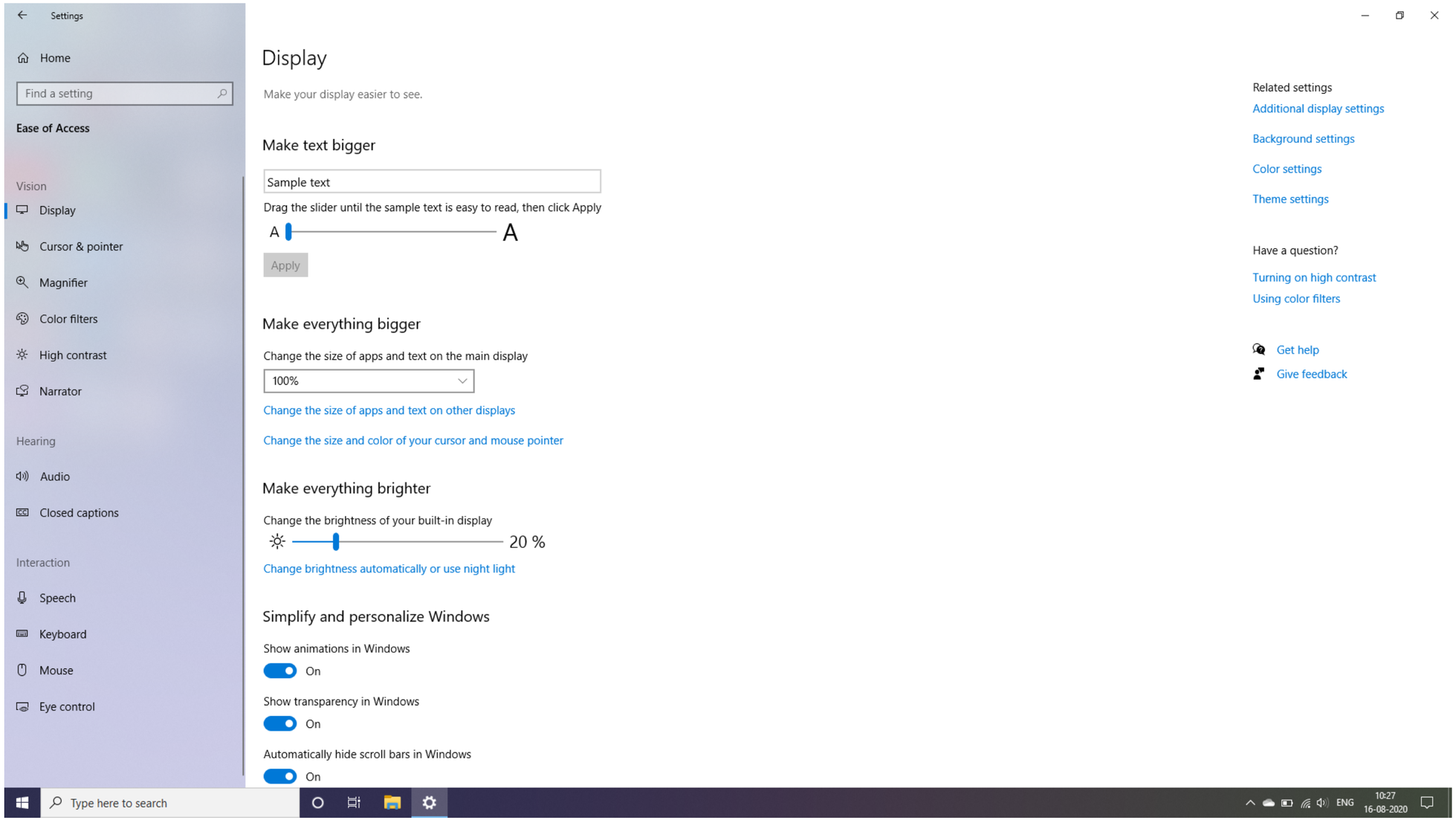
Accessibility Services (Mac)

Menu > System Preferences > Accessibility





Settings > Ease of Access



Presentation layer: Things to consider

Category	Disability	Minimal things to consider
Vision	Blindness	Screen reader experience (page structure, semantic information, textual information)
	Low vision	• Large text and zoom • Sufficient contrast • Screen reader experience
	Colorblindness	• Not using color alone to convey information • good contrast
Hearing	• Deaf • Hard of hearing	• Closed captions • No audio-only cues • text transcripts
Mobility	Dexterity impairments (limited or no use of hands)	• Keyboard only accessibility • Speech to text (Semantics, Consistent Accessible Labels) • Sufficient touch target size
Cognitive	• Learning disabilities, ex. Dyslexia • Attention Deficit Hyperactivity Disorder (ADHD) • Short term memory loss • Seizures • Autism Spectrum Disorder (ASD)	• 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

WCAG Principles

Walmart

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

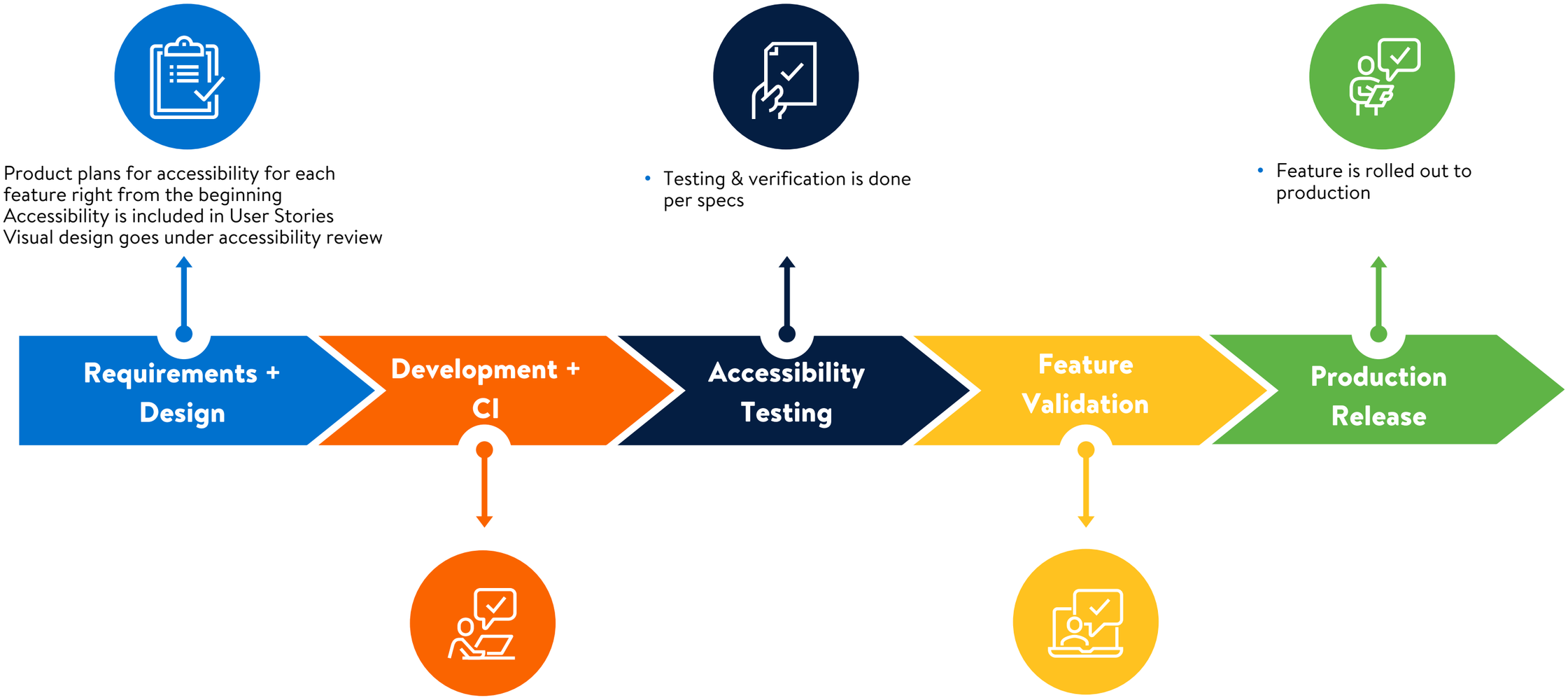
Language, predictability, consistency, assistance

Robust

Multiple user agents and assistive technologies

Our Approach

Today's process



- Product plans for accessibility for each feature right from the beginning
- Accessibility is included in User Stories
- Visual design goes under accessibility review

- Coded as per accessibility design specs

- Testing & verification is done per specs

- Feature is signed off for accessibility only if all P1s and P2s are closed

- Feature is rolled out to production

Who owns accessibility

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

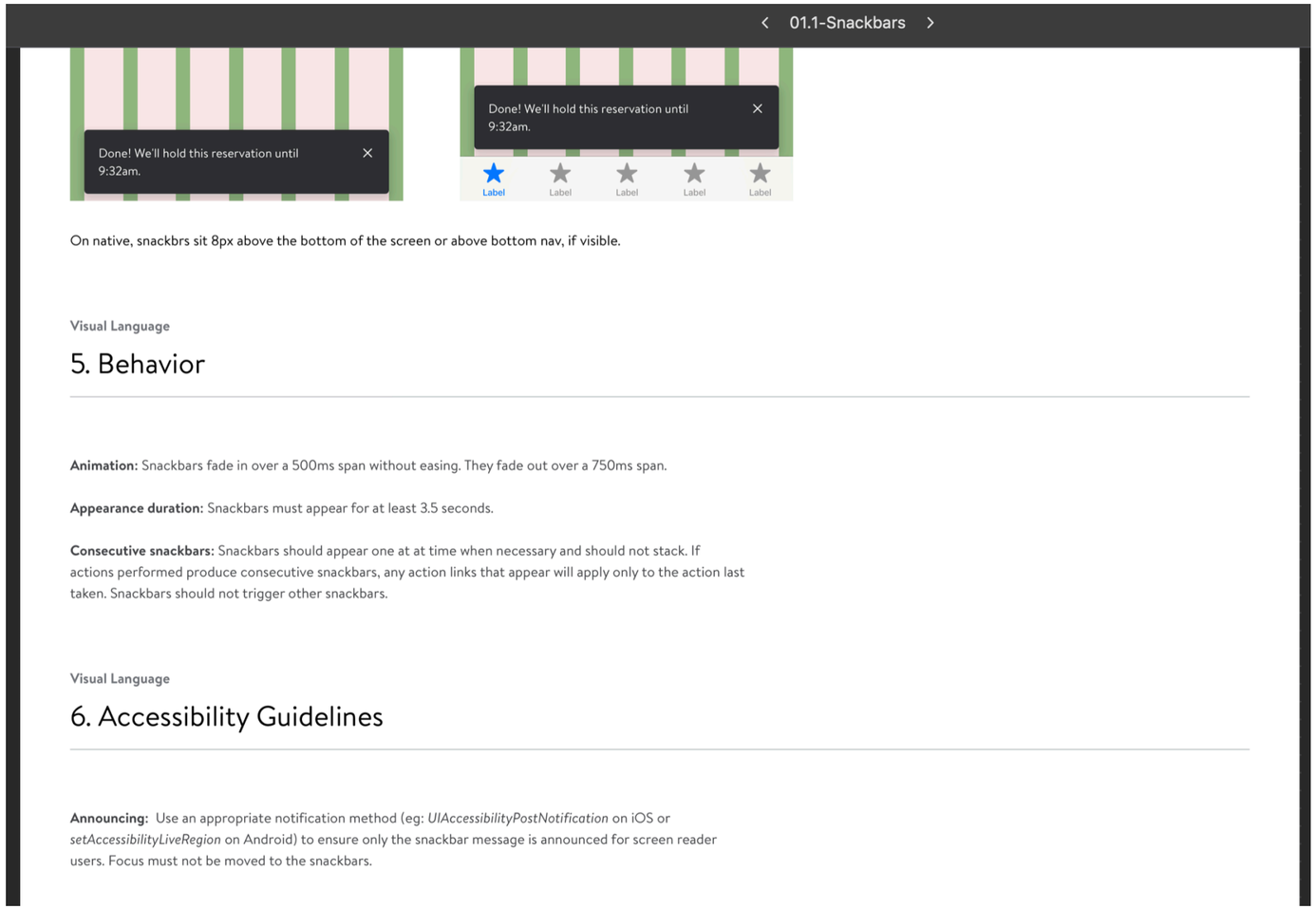
Accessibility

- 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

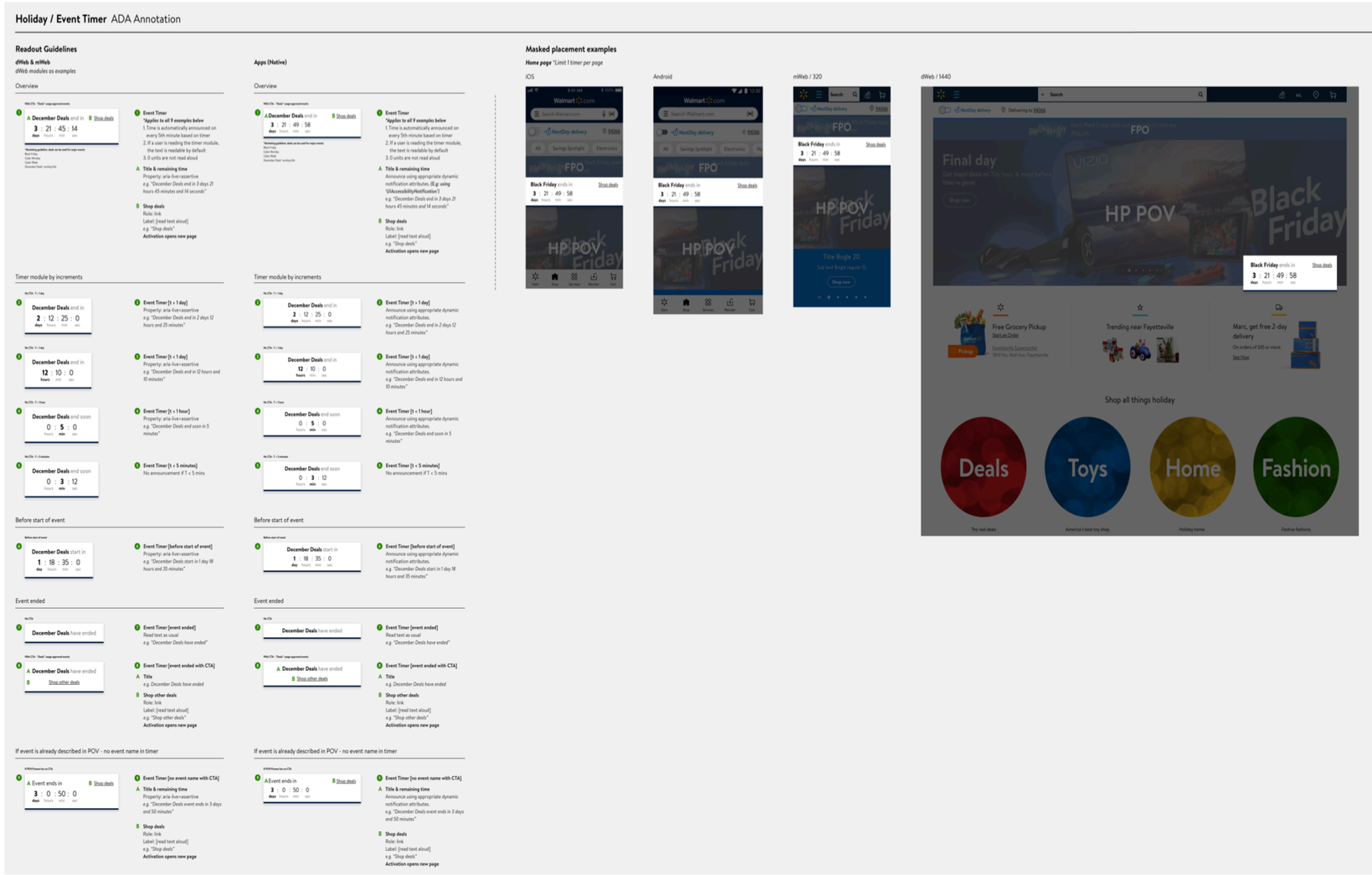
- Core Style elements
- Components



Design Review

Feature Design Review

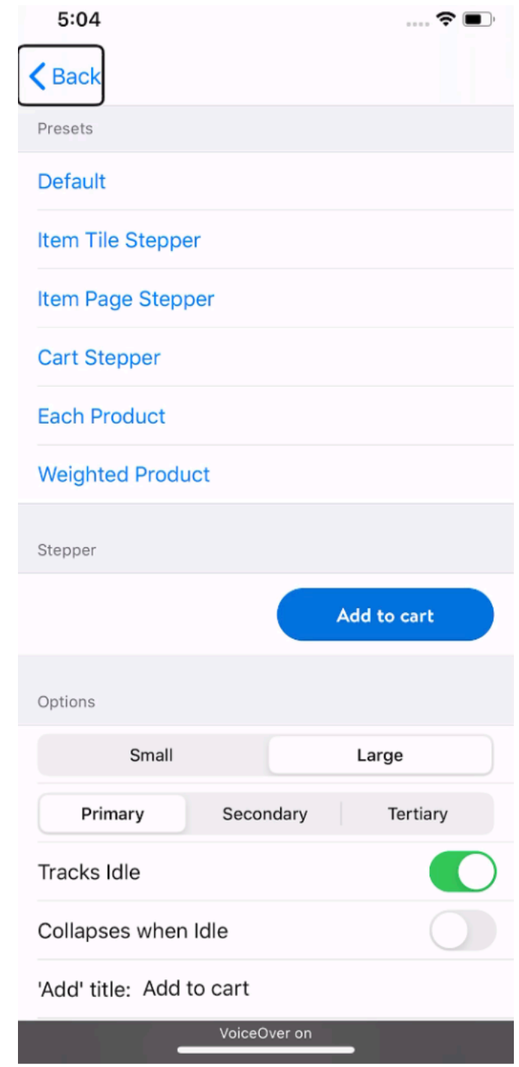
- Mostly based on LD components
- Accessibility documentations for Engineering by designers
- Design Sign off



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

Our training program

Training Curriculum

- Comprehensive
- Web & Mobile Accessibility
- Tools
- Tailored

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 performed for all Test Cycles
LEVEL 1	Team that have completed only Prescriptive Training, or Teams that have completed only 2 or less training sessions. No Tools usage.	Team is **not** capable of performing any
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 **somewhat** capable of performi team can also perform some, but not al
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 capable** of performing Automa testing process.

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

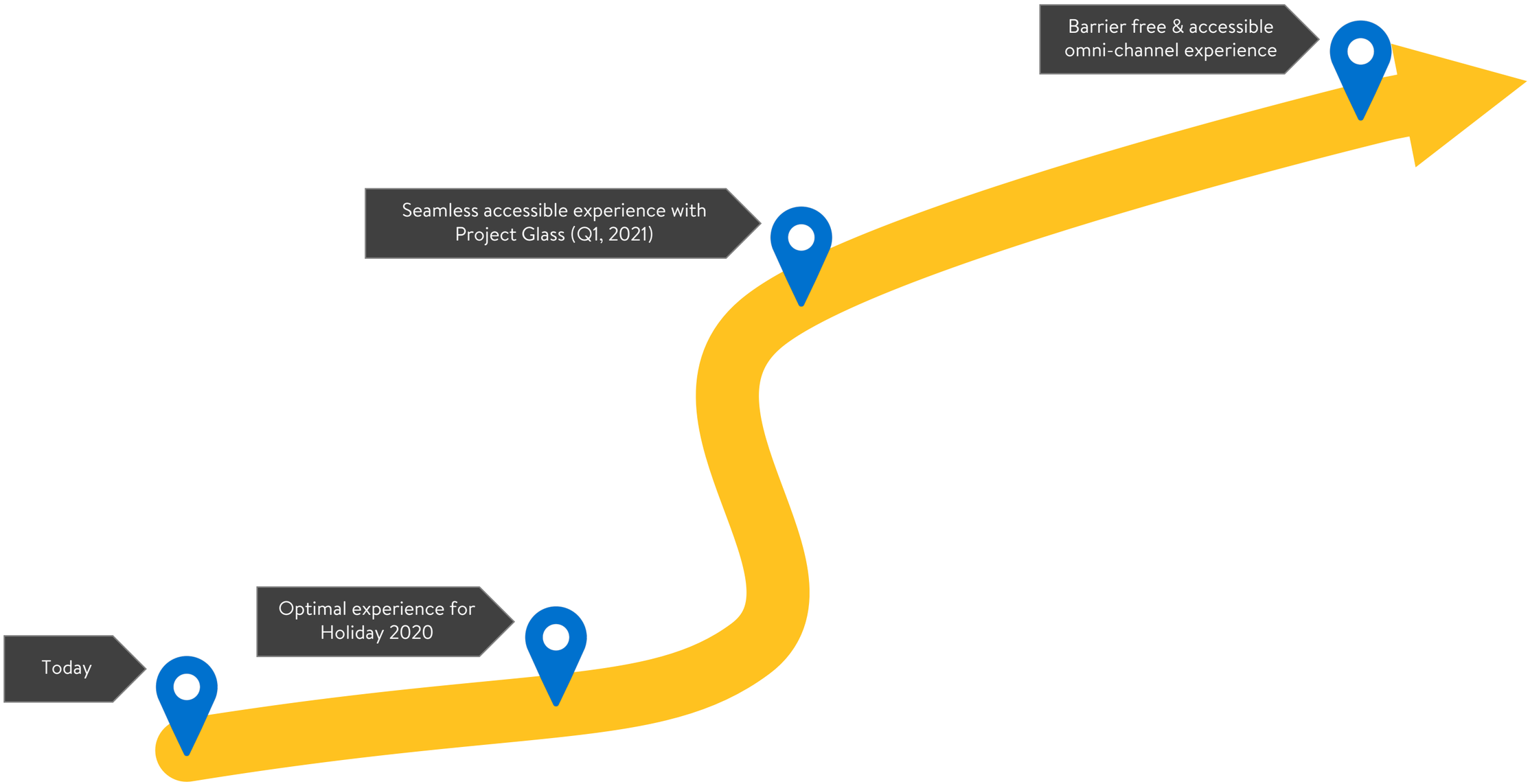
"Awesome it help me because I am deaf and easy communication with service" - 2020-03-14

"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...


Barrier free & accessible omni-channel experience
Seamless accessible experience with Project Glass (Q1, 2021)
Optimal experience for Holiday 2020
Today

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

Resources/links

Links:

- Accessibility Confluence page: https://confluence.walmart.com/display/CEACCESS/CE+-+Accessibility+Home
- IDC A11y on Confluence: https://confluence.walmart.com/pages/viewpage.action?pageId=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)