Deliver an Exceptional Accessibility Experience

Session 230

Skylar Peterson, Software Engineer
Bhavya Garg, Software Engineer
Making technology usable by everyone
Cognitive

Motor

Vision

Hearing
Cognitive  Motor  Vision  Hearing
Cognitive
Motor
Vision
Hearing
Cognitive  
Motor  
Vision  
Hearing
The Basics

Check out existing resources

Still lots to gain from today’s session

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<table>
<thead>
<tr>
<th>What’s New in Accessibility</th>
<th>WWDC 2017</th>
</tr>
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<tbody>
<tr>
<td>Design for Everyone</td>
<td>WWDC 2017</td>
</tr>
<tr>
<td>Media and Gaming Accessibility</td>
<td>WWDC 2017</td>
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</table>
Making technology usable by everyone
usable
usable
Visual Design

Assistive Technology Experience
Visual Design

Assistive Technology Experience
Visual Design

Transparency and Blurring

Contrast

Sizing

Motion

Complexity
// Transparency and Blurring

// iOS
extension UIAccessibility {
    public static var isReduceTransparencyEnabled: Bool { get }
}

// macOS
extension NSWorkspace {
    open var accessibilityDisplayShouldReduceTransparency: Bool { get }
}
// Transparency and Blurring

// iOS
extension UIAccessibility {
    public static var isReduceTransparencyEnabled: Bool { get }
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// macOS
extension NSWorkspace {
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// Transparency and Blurring

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extension UIAccessibility {
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Visual Design

Transparency and Blurring

Contrast

Sizing

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Complexity
Contrast
Contrast
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Contrast

Contrast

Contrast

Contrast
Minimum Contrast Ratio

Follow the WCAG 2.0 guidelines

• Minimum contrast should be 4.5:1
• https://www.w3.org/TR/WCAG20/
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Color Contrast Calculator

Text

Background

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Text Size: 13 pt

3.3:1

Passes 18pt Regular and 14pt Bold
// Increase Contrast (Darken Colors)

// iOS
extension UIAccessibility {
    public static var isDarkerSystemColorsEnabled: Bool { get }
}

// macOS
extension NSWorkspace {
    open var accessibilityDisplayShouldIncreaseContrast: Bool { get }
}
// Increase Contrast (Darken Colors)

// iOS
extension UIAccessibility {
    public static var isDarkerSystemColorsEnabled: Bool { get }
}

// macOS
extension NSWorkspace {
    open var accessibilityDisplayShouldIncreaseContrast: Bool { get }
}
// Increase Contrast (Darken Colors)

// iOS
extension UIAccessibility {
    public static var isDarkerSystemColorsEnabled: Bool { get }
}

// macOS
extension NSWorkspace {
    open var accessibilityDisplayShouldIncreaseContrast: Bool { get }
}
Visual Design

Transparency and Blurring
Contrast
Sizing
Motion
Complexity
UIContentSizeCategory

Apps that support Dynamic Type will adjust to your preferred reading size below.

extraSmall  
small  
medium  
large  
extraLarge  
extraExtraLarge  
extraExtraExtraLarge
UIContentSizeCategory

Larger Accessibility Sizes

Apps that support Dynamic Type will adjust to your preferred reading size below.

extraSmall
small
medium
large
extraLarge
extraExtraLarge
extraExtraExtraLarge
accessibilityMedium
accessibilityLarge
accessibilityExtraLarge
accessibilityExtraExtraLarge
accessibilityExtraExtraExtraLarge
Dynamic Type Resources

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extension UIAccessibility {
    public static var isBoldTextEnabled: Bool { get }
}
extension UIAccessibility { }
Visual Design

Transparency and Blurring
Contrast
Sizing
Motion
Complexity
Warning!

Vestibular motion triggers
Motion Trigger 1
Scaling and zooming
Motion Trigger 1

Scaling and zooming
Motion Trigger 1
Scaling and zooming
Motion Trigger 2
Spinning and vortex effects
Motion Trigger 2
Spinning and vortex effects
Motion Trigger 3
Plane shifting animations
Motion Trigger 3
Plane shifting animations

iPhone X
Submit your updated apps

ClassKit for Education
Help teachers get the most out of your app in the classroom.
Motion Trigger 3
Plane shifting animations
Motion Trigger 4
Multi-directional or multi-speed motion
Motion Trigger 4
Multi-directional or multi-speed motion
Motion Trigger 5
Peripheral movement
Motion Trigger 5
Peripheral movement
// Motion

// iOS
extension UIAccessibility {
    public static var isReduceMotionEnabled: Bool { get }
}

// macOS
extension NSWorkspace {
    open var accessibilityDisplayShouldReduceMotion: Bool { get }
}
// Motion

// iOS
extension UIAccessibility {
    public static var isReduceMotionEnabled: Bool { get }
}

// macOS
extension NSWorkspace {
    open var accessibilityDisplayShouldReduceMotion: Bool { get }
}
// Motion

// iOS
extension UIAccessibility {
    public static var isReduceMotionEnabled: Bool { get }
}

// macOS
extension NSWorkspace {
    open var accessibilityDisplayShouldReduceMotion: Bool { get }
}
Visual Design

- Transparency and Blurring
- Contrast
- Sizing
- Motion
- Complexity
1 in 6

Children has a developmental disability in the U.S.

https://www.cdc.gov/ncbddd/developmentaldisabilities/index.html
Easy to navigate
Quick to get started
Consistent behavior
Experience
Visual Design

Assistive Technology Experience
Wanna meet in 5 mins
Let's do it
Hey there, how are you feeling about the talk?
I feel like it's coming together pretty well!
Hopefully our developers will feel the same
How's the demo looking?
Exceptional!
No but really, I think it's gonna go well👍
Can't wait!
I feel like it's coming together pretty well!
Hopefully our developers will feel the same
How's the demo looking?
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No but really, I think it's gonna go well👍
Can't wait!
Wanna meet in 5 mins

Let's do it

Hey there, how are you feeling about the talk?

I feel like it's coming together pretty well!

Hopefully our developers will feel the same

How's the demo looking?

Delivered

Exceptional!

No but really, I think it's gonna go well 👍

Can't wait!
Hey there, how are you feeling about the talk?

I feel like it's coming together pretty well!
Hopefully our developers will feel the same
How's the demo looking?

Exceptional!

No but really, I think it's gonna go well 😊

Can't wait!
What makes an accessible experience exceptional?
It works
It works well
An Exceptional Experience

Easy to navigate

Quick and prioritized interaction

Predictable

Context
Demo

Auditing an app’s accessibility experience

Bhavya Garg, Software Engineer
<table>
<thead>
<tr>
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<tr>
<td>AGE</td>
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<td>25.0 lbs</td>
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ATITUDE: energetic, loyal

Skylar's Animal Shelter
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Skylar's Animal Shelter
Reachable
public class UIAccessibilityElement : NSObject {
    public init(accessibilityContainer container: Any)
}

extension NSObject {
    open var accessibilityElements: [Any]? 
}
// Custom Accessibility Elements

public class UIAccessibilityElement : NSObject {
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**ATTITUDE**
energetic, loyal

Skylar's Animal Shelter
// Increment and Decrement

extension NSObject {
    // Must have UIAccessibilityTraits.adjustable
    open func accessibilityIncrement()
    open func accessibilityDecrement()
}

// Increment and Decrement

extension NSObject {
    // Must have UIAccessibility Traits.adjustable
    open func accessibilityIncrement()
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Skylar's Animal Shelter
Context
Quick navigation
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ATTITUDE: energetic, loyal

Skyler's Animal Shelter
NAME: Bro  
BREED: Corgi  
AGE: 7.0 years  
WEIGHT: 25.0 lbs  
GENDER: Male  
FOSTERED: Yes  
ATTITUDE: energetic, loyal  

Skylar's Animal Shelter
NAME:  Bro  
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Skylar's Animal Shelter
Context
Quick navigation
Prioritized
// Custom Actions

extension NSObject {

    open var accessibilityCustomActions: [UIAccessibilityCustomAction]?

}

class UIAccessibilityCustomAction : NSObject {

    open var name: String
    open var target: AnyObject?
    open var selector: Selector

    public init(name: String, target: Any?, selector: Selector)

}
// Custom Actions

extension NSObject {
    open var accessibilityCustomActions: [UIAccessibilityCustomAction]?
}

class UIAccessibilityCustomAction : NSObject {
    open var name: String
    open var target: AnyObject?
    open var selector: Selector

    public init(name: String, target: Any?, selector: Selector)
}
// Custom Actions

extension NSObject {
    open var accessibilityCustomActions: [UIAccessibilityCustomAction]? = nil
}

class UIAccessibilityCustomAction : NSObject {
    open var name: String
    open var target: AnyObject?
    open var selector: Selector

    public init(name: String, target: AnyObject?, selector: Selector)
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// Custom Actions

extension NSObject {
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**ATTITUDE**: energetic, loyal

Skylar's Animal Shelter
Where am I?
extension UIView {
    open var accessibilityViewIsModal: Bool
}

// Modality
extension UIView {
    open var accessibilityViewIsModal: Bool
}

// Modality
extension UIAccessibility {
    public static func post(notification: UIAccessibility.Notification, argument: Any?)
}

extension UIAccessibility.Notification {
    public static var screenChanged: UIAccessibility.Notification
}
extension UIAccessibility {
    public static func post(notification: UIAccessibility.Notification, argument: Any?)
}

extension UIAccessibility.Notification {
    public static var screenChanged: UIAccessibility.Notification
}

// Screen Change
extension UIAccessibility {
    public static func post(notification: UIAccessibility.Notification, argument: Any?)
}

extension UIAccessibility.Notification {
    public static var screenChanged: UIAccessibility.Notification
}
Demo
Developing an exceptional experience

Bhavya Garg, Software Engineer
usable
exceptional
Summary
Summary

Design your app for accessibility from the beginning
Summary

Design your app for accessibility from the beginning

Tweak based on enabled settings when necessary
Summary

Design your app for accessibility from the beginning
Tweak based on enabled settings when necessary
Craft the accessibility experience purposefully
More Information
