What’s New in Accessibility

Developing for everyone

Session 202

Conor Hughes  Accessibility Engineer
Accessibility
Accessibility

Making a system usable for everyone, regardless of their needs
Accessibility

Making a system usable for everyone, regardless of their needs
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Accessibility

Making a system usable for everyone, regardless of their needs
Agenda
Agenda

New assistive features
Agenda

New assistive features

Accessibility audit
Agenda

New assistive features
Accessibility audit
App accessibility API
Agenda

New assistive features
Accessibility audit
App accessibility API
Fixing app accessibility issues
New Assistive Features
Motor
Motor
Switch Control
Motor
Switch Control
Motor
Switch Control on tvOS

Daring Rescues

The Incredibles

In Theaters Now—Pre-Order Today

PRE-ORDER MOVIES

X-MEN APOCALYPSE

THE ANGRY BIRDS MOVIE

Press Select
Scroll Down

$9.99 in HD—Limited Time

American Girl

Own It in HD for $14.99
Motor
Switch Control on tvOS
Motor
Dwell Control
Vision
Vision
Display Adjustments
Vision
Display Adjustments
Vision
Display Adjustments
Vision
Taptic Time
Vision
Taptic Time
Demo
Magnifier
Hearing
Hearing
TTY
Hearing
Software TTY
Learning
Enhanced typing feedback

"The quick brown fox jumps over the lazy dog" is an English-language pangram—a phrase that contains all of the letters of the alphabet. It is commonly used for touch-typing practice.

- Wikipedia "The Quick Brown Fox Jumps Over The Lazy Dog"
Demo
Typing feedback enhancements
Accessibility API
Auditing Your App’s Accessibility
Auditing Your App’s Accessibility

Turn on VoiceOver or Switch Control
Auditing Your App’s Accessibility

Turn on VoiceOver or Switch Control

• All items exposed
Auditing Your App’s Accessibility

Turn on VoiceOver or Switch Control

• All items exposed
• All exposed items labeled
Auditing Your App’s Accessibility

Turn on VoiceOver or Switch Control

• All items exposed
• All exposed items labeled
• All interactions supported
Auditing Your App’s Accessibility

Turn on VoiceOver or Switch Control

• All items exposed
• All exposed items labeled
• All interactions supported
• Good interface flow
Auditing Your App’s Accessibility

Turn on VoiceOver or Switch Control

• All items exposed
• All exposed items labeled
• All interactions supported
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Auditing Your App’s Accessibility

Turn on VoiceOver or Switch Control
- All items exposed
- All exposed items labeled
- All interactions supported
- Good interface flow

Accessibility Inspector
Demo
Accessibility audit
Accessibility Audit Results
Accessibility Audit Results

Route list cells

Avenue Loop

0.8 miles
Accessibility Audit Results

Route list cells

- Favorite button has bad label

Avenue Loop

0.8 miles
Accessibility Audit Results

Route list cells

• Favorite button has bad label
• Isn’t clear that table cell can be activated

Avenue Loop

0.8 miles
Accessibility Audit Results

Route list cells
- Favorite button has bad label
- Isn’t clear that table cell can be activated

Ratings graph
Accessibility Audit Results

Route list cells
• Favorite button has bad label
• Isn’t clear that table cell can be activated

Ratings graph
• Graph values inaccessible
Accessibility Audit Results

Route list cells
- Favorite button has bad label
- Isn’t clear that table cell can be activated

Ratings graph
- Graph values inaccessible

Route step list

Boys' Choir on Ridgeway
Boys' choir between Gilbert and Montgomery on Ridgeway. Continue along Ridgeway.

Careful of cars and children.
Accessibility Audit Results

Route list cells
• Favorite button has bad label
• Isn’t clear that table cell can be activated

Ratings graph
• Graph values inaccessible

Route step list
• Hazard steps not differentiated

Boys' Choir on Ridgeway
Boys' choir between Gilbert and Montgomery on Ridgeway. Continue along Ridgeway.

Careful of cars and children.
UIAccessibility
UIAccessibility

Routes

Avenue Loop
0.8 miles

Cemetery Excursion
0.8 miles

Pizza Pit Stop
0.8 miles

The Pet Store Circuit
0.8 miles
UIAccessibility

- Avenue Loop
- Cemetery Excursion
- Pizza Pit Stop
- The Pet Store Circuit
UIAccessibility

What are you?
UIAccessibility

What are you?

Button
UIAccessibility

What are you?

Button

Who are you?
UIAccessibility

What are you?

Button

Who are you?

Favorite
UIAccessibility

What are you?

Who are you?

Favorite

Where are you?

((317, 106), (50, 50))
UIAccessibility

- button.accessibilityTraits: UIAccessibilityTraitButton
- button.accessibilityLabel: “Favorite”
- button.accessibilityFrame: CGRect(x: 317, y: 106, width: 50, height: 50)
UIAccessibility
The basics

extension NSObject {
    public var isAccessibilityElement: Bool
    public var accessibilityLabel: String?
    public var accessibilityTraits: UIAccessibilityTraits
    public var accessibilityFrame: CGRect

    public var accessibilityValue: String?
}
The basics

extension NSObject {
    public var isAccessibilityElement: Bool
    public var accessibilityLabel: String?
    public var accessibilityTraits: UIAccessibilityTraits
    public var accessibilityFrame: CGRect

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UIAccessibility
extension NSObject {
    public var isAccessibilityElement: Bool
    public var accessibilityLabel: String?
    public var accessibilityTraits: UIAccessibilityTraits
    public var accessibilityFrame: CGRect
    public var accessibilityValue: String?
}

imageView.isAccessibilityElement = true
extension NSObject {
    public var isAccessibilityElement: Bool
    public var accessibilityLabel: String?
    public var accessibilityTraits: UIAccessibilityTraits
    public var accessibilityFrame: CGRect
    public var accessibilityValue: String?
}
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    public var accessibilityLabel: String?
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}
UIAccessibility

The basics

extension NSObject {
    public var isAccessibilityElement: Bool
    public var accessibilityLabel: String?
    public var accessibilityTraits: UIAccessibilityTraits
    public var accessibilityFrame: CGRect
    public var accessibilityValue: String?
}

myButton.accessibilityLabel = "New Alarm"
# UIAccessibility

## The basics

```swift
extension NSObject {
    public var isAccessibilityElement: Bool
    public var accessibilityLabel: String?
    public var accessibilityTraits: UIAccessibilityTraits
    public var accessibilityFrame: CGRect
    public var accessibilityValue: String?
}
```
The basics

```swift
extension NSObject {
    public var isAccessibilityElement: Bool
    public var accessibilityLabel: String?
    public var accessibilityTraits: UIAccessibilityTraits
    public var accessibilityFrame: CGRect
    public var accessibilityValue: String?
}
```
UIAccessibility
The basics

extension NSObject {
    public var isAccessibilityElement: Bool
    public var accessibilityLabel: String?
    public var accessibilityTraits: UIAccessibilityTraits
    public var accessibilityFrame: CGRect
    public var accessibilityValue: String?
}

myButton.accessibilityTraits |= UIAccessibilityTraitButton
extension NSObject {
    public var isAccessibilityElement: Bool
    public var accessibilityLabel: String?
    public var accessibilityTraits: UIAccessibilityTraits
    public var accessibilityFrame: CGRect
    public var accessibilityValue: String?
}
extension NSObject {
    public var isAccessibilityElement: Bool
    public var accessibilityLabel: String?
    public var accessibilityTraits: UIAccessibilityTraits
    public var accessibilityFrame: CGRect
    public var accessibilityValue: String?
}

UIAccessibility

The basics
UIAccessibility
The basics

extension NSObject {
    public var isAccessibilityElement: Bool
    public var accessibilityLabel: String?
    public var accessibilityTraits: UIAccessibilityTraits
    public var accessibilityFrame: CGRect

    public var accessibilityValue: String?
}

extension NSObject {
    public var isAccessibilityElement: Bool
    public var accessibilityLabel: String?
    public var accessibilityTraits: UIAccessibilityTraits
    public var accessibilityFrame: CGRect
    public var accessibilityValue: String?
}
UIAccessibility

The basics

extension NSObject {
    public var isAccessibilityElement: Bool
    public var accessibilityLabel: String?
    public var accessibilityTraits: UIAccessibilityTraits
    public var accessibilityFrame: CGRect
    
    public var accessibilityValue: String?
}

magControl.accessibilityValue = "\(level) times magnification"
extension NSObject {
    public var accessibilityElements: [AnyObject]?
}

public class UIAccessibilityElement : NSObject {
    public init(accessibilityContainer container: AnyObject)
}

extension NSObject {

    public var accessibilityElements: [AnyObject]?

}

public class UIAccessibilityElement : NSObject {

    public init(accessibilityContainer container: AnyObject)

}

extension NSObject {
    public var accessibilityElements: [AnyObject]?
}

public class UIAccessibilityElement : NSObject {
    public init(accessibilityContainer container: AnyObject)
}

extension NSObject {
    public var accessibilityElements: [AnyObject]?
}

public class UIAccessibilityElement : NSObject {
    public init(accessibilityContainer container: AnyObject)
}


extension NSObject {
    public var accessibilityElements: [AnyObject]?
}

public class UIAccessibilityElement : NSObject {
    public init(accessibilityContainer container: AnyObject)
    {
        @available(iOS 10.0, *)
        public var accessibilityFrameInContainerSpace: CGRect
    }
}
UIAccessibility

Takeaways
UIAccessibility

Takeaways

• The UIAccessibility protocol makes interface items accessible
UIAccessibility

Takeaways

- The UIAccessibility protocol makes interface items accessible
- UIKit controls have support baked-in
UIAccessibility

Takeaways

• The UIAccessibility protocol makes interface items accessible
• UIKit controls have support baked-in
• Set properties to customize behavior
UIAccessibility

Takeaways

- The UIAccessibility protocol makes interface items accessible
- UIKit controls have support baked-in
- Set properties to customize behavior
- Use UIAccessibilityElement for non-view elements
Demo

UIAccessibility API
Accessibility Audit Results
Accessibility Audit Results

Route map
Accessibility Audit Results

Route map
- VoiceOver users miss route order
Accessibility Audit Results

Route map

- VoiceOver users miss route order
- VoiceOver users can’t easily discover hazards
Accessibility Audit Results

Route map
- VoiceOver users miss route order
- VoiceOver users can’t easily discover hazards

Route step list
Accessibility Audit Results

Route map
- VoiceOver users miss route order
- VoiceOver users can’t easily discover hazards

Route step list
- not “skimmable” for VO users
The Rotor
extension NSObject {
    @available(iOS 10.0, *)
    public var accessibilityCustomRotors: [UIAccessibilityCustomRotor]? = nil
}

public class UIAccessibilityCustomRotor : NSObject {
    public init(name: String,
                itemSearch itemSearchBlock: UIKit.UIAccessibilityCustomRotorSearch)
}
extension NSObject {
    @available(iOS 10.0, *)
    public var accessibilityCustomRotors: [UIAccessibilityCustomRotor]?
}

public class UIAccessibilityCustomRotor : NSObject {
    public init(name: String,
                itemSearch itemSearchBlock: UIKit.UIAccessibilityCustomRotorSearch)
}

extension NSObject {
    @available(iOS 10.0, *)
    public var accessibilityCustomRotors: [UIAccessibilityCustomRotor]?
}

public class UIAccessibilityCustomRotor : NSObject {
    public init(name: String,
        itemSearch itemSearchBlock: UIKit.UIAccessibilityCustomRotorSearch)
}

Demo

UIAccessibilityCustomRotor API
A Word on tvOS
extension NSObject {
    @available(tvOS 9.0, *)
    public var accessibilityHeaderElements: [AnyObject]?
}
extension NSObject {
    @available(tvOS 9.0, *)
    public var accessibilityHeaderElements: [AnyObject]?
}

**tvOS Header Elements**

![Image of a TV interface showing new and noteworthy movies]
tvOS Header Elements
Title  Grain
Author  Vivian Li
Description  Close up of a strand of grain.  
It glistens with morning dew.

Available Works
Title: Grain
Author: Vivian Li
Description: Close up of a strand of grain. It glistens with morning dew.

Available Works
Accessibility is about everyone
Summary

Accessibility is about everyone
Design with accessibility in mind
Summary

Accessibility is about everyone
Design with accessibility in mind
UIKit helps your apps become accessible
Summary

Accessibility is about everyone
Design with accessibility in mind
UIKit helps your apps become accessible
Accessible apps make our platforms great!
More Information

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