iOS Accessibility
Developing for everyone
Session 201

Ian Fisch iOS Accessibility
Supporting All Users
Agenda
Agenda

Accessibility features on iOS
Agenda

Accessibility features on iOS
What’s new in iOS 9
Agenda

Accessibility features on iOS
What’s new in iOS 9
Accessibility audit
Agenda

Accessibility features on iOS
What’s new in iOS 9
Accessibility audit
Implement accessibility
iOS Accessibility Features
Hearing
Made for iPhone Hearing Aids
Learning
Guided Access
Learning
Guided Access

![Image of a smartphone with a game interface showing a grid with numbers 3, 6, 12, and 24, and options to play a game called "THREES".]
Vision
VoiceOver
Vision

VoiceOver
Vision
Zoom
Vision
Zoom
Vision

Vision accommodations

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

Vision accommodations

[Image showing iPhone screens with accessibility settings for larger text and other options]
Physical and Motor Switch Control
Physical and Motor Switch Control
Physical and Motor

Assistive Touch
Physical and Motor

Assistive Touch
Touch Accommodations
New in iOS 9
Demo
Touch accommodations
UIAccessibility
The bridge between your app and accessibility
UIAccessibility
The bridge between your app and accessibility
UIAccessibility
The bridge between your app and accessibility
UIAccessibility

The bridge between your app and accessibility

*Tap*
The bridge between your app and accessibility
UIAccessibility

The bridge between your app and accessibility

*Tap*

UIAccessibility

[yourElement accessibilityLabel]

@“Weather”
UIAccessibility
The bridge between your app and accessibility

*Tap*

UIAccessibility [yourElement accessibilityLabel]

@“Weather”
UIAccessibility
The bridge between your app and accessibility
UIAccessibility
The bridge between your app and accessibility

*Menu*
UIAccessibility
The bridge between your app and accessibility

*Menu*

UIAccessibility [yourElement accessibilityCustomActions]
UIAccessibility
The bridge between your app and accessibility

UIAccessibility
[yourElement accessibilityCustomActions]

Move, Pass, Trade
UIAccessibility

Do I serve a purpose?
UIAccessibility

Do I serve a purpose?

```swift
var isAccessibilityElement: Bool
```
UIAccessibility
Do I serve a purpose?

```swift
var isAccessibilityElement: Bool
```
Do I serve a purpose?

```swift
var isAccessibilityElement: Bool

self.isAccessibilityElement = true
```
UIAccessibility

What’s my name?
UIAccessibility

What’s my name?

var accessibilityLabel: String?
UIAccessibility

What’s my name?

```swift
var accessibilityLabel: String?`
```
UIAccessibility
What’s my name?

```swift
var accessibilityLabel: String? = nil

self.accessibilityLabel = "Button to add a clock"
```
What's my name?

```swift
var accessibilityLabel: String?

self.accessibilityLabel = "Button to add a clock"

self.accessibilityLabel = "Add"
```
UIAccessibility

What’s my personality?
UIAccessibility

What’s my personality?

```swift
var accessibilityTraits: UIAccessibilityTraits
```
var accessibilityTraits: UIAccessibilityTraits
UIAccessibility

What’s my personality?

```swift
var accessibilityTraits: UIAccessibilityTraits

self.accessibilityTraits = UIAccessibilityTraitButton
```
UIAccessibility
What is my value?
UIAccessibility

What is my value?

```swift
var accessibilityValue: String?
```
UIAccessibility

What is my value?

```swift
var accessibilityValue: String?
```
var accessibilityValue: String?

self.accessibilityValue = "Eleven twenty AM"
UIAccessibility

How should people interact with me?
UIAccessibility

How should people interact with me?

```swift
var accessibilityHint: String?
```
UIAccessibility

How should people interact with me?

```swift
var accessibilityHint: String?
```
UIAccessibility

How should people interact with me?

```swift
var accessibilityHint: String?

self.accessibilityHint = "Drag up or down to change the order"
```
UIAccessibility
Where am I?
UIAccessibility
Where am I?

var accessibilityFrame: CGRect
var accessibilityFrame: CGRect
UIAccessibility
Where am I?

var accessibilityFrame: CGRect

func UIAccessibilityConvertFrameToScreenCoordinates(CGRect, UIView) -> CGRect
UIAccessibility
Basic API
extension NSObject {
    var isAccessibilityElement: Bool
    var accessibilityLabel: String?

    var accessibilityHint: String?
    var accessibilityValue: String?
    var accessibilityTraits: UIAccessibilityTraits
    var accessibilityFrame: CGRect
}
UIAccessibility
Summary
UIAccessibility

Summary

We do most of the work
UIAccessibility

Summary

We do most of the work

Small investment
UIAccessibility

Summary

We do most of the work
Small investment
Large reward
Building Accessible Apps
Building Accessible Apps

Design for accessibility
Building Accessible Apps

Design for accessibility
Audit your app
Building Accessible Apps

Design for accessibility
Audit your app
Accessibility inspector
Building Accessible Apps

Design for accessibility
Audit your app
Accessibility inspector
Building Accessible Apps

Design for accessibility
Audit your app
Accessibility inspector
Accessibility features
Building Accessible Apps

Design for accessibility
Audit your app
Accessibility inspector
Accessibility features
• VoiceOver
Building Accessible Apps

Design for accessibility
Audit your app
Accessibility inspector
Accessibility features
• VoiceOver
• Switch Control
Demo

Accessibility Audit
Accessibility Audit

Results

Earthquake cell

7km NW of The Geysers, California
Jun 1, 2015, 2:50:00 PM
Accessibility Audit

Results

Earthquake cell
• Not accessible

7km NW of The Geysers, California
Jun 1, 2015, 2:50:00 PM
Accessibility Audit

Results

Earthquake cell
• Not accessible
• Text color

7km NW of The Geysers, California
Jun 1, 2015, 2:50:00 PM
Accessibility Audit

Results

Earthquake cell
• Not accessible
• Text color

Map detail

Earthquake
Location
7km WNW of Cobb, California
Felt by
0 people
Magnitude 1.72
Accessibility Audit
Results

Earthquake cell
• Not accessible

Text color

Map detail
• Labels

Earthquake
Location
7km WNW of Cobb, California
Felt by
0 people
Magnitude 1.72
Accessibility Audit

Results

Earthquake cell
• Not accessible
• Text color

Map detail
• Labels
• Button

Earthquake

Location
7km WNW of Cobb, California
Felt by
0 people
Magnitude 1.72
UIAccessibility
Basic API
UIAccessibility

Basic API

extension NSObject {
    var isAccessibilityElement: Bool
    var accessibilityLabel: String?

    var accessibilityHint: String?
    var accessibilityValue: String?
    var accessibilityTraits: UIAccessibilityTraits
    var accessibilityFrame: CGRect
}
Demo
Accessibility API
Accessibility Audit

Results
Accessibility Audit

Results

✓ Earthquake cell
  ✓ Not accessible
  ✓ Text color
Accessibility Audit

Results

✓ Earthquake cell
  ✓ Not accessible
  ✓ Text color

✓ Map detail
  ✓ Labels
  ✓ Button
Accessibility Audit

Results

✓ Earthquake cell
  ✓ Not accessible
  ✓ Text color

✓ Map detail
  ✓ Labels
  ✓ Button

Add favorite
Accessibility Audit

Results

✓ Earthquake cell
  ✓ Not accessible
  ✓ Text color

✓ Map detail
  ✓ Labels
  ✓ Button

Add favorite
Favorite graph
Accessibility Audit
Results

![Graph showing accessibility audit results]
Accessibility Audit

Results

Do I serve a purpose?
Accessibility Audit
Results

Do I serve a purpose?
Accessibility Audit

Results

Do I serve a purpose?
Where am I?
Accessibility Audit

Results

Do I serve a purpose?
Where am I?
UIAccessibility
UIAccessibilityElement
class UIAccessibilityElement : NSObject, UIAccessibilityIdentification {
    init(accessibilityContainer container: AnyObject)

    unowned(unsafe) var accessibilityContainer: AnyObject?
    var isAccessibilityElement: Bool
    var accessibilityLabel: String?
    var accessibilityHint: String?
    var accessibilityValue: String?
    var accessibilityFrame: CGRect
    var accessibilityTraits: UIAccessibilityTraits
}

UIAccessibility
Magic Tap
func accessibilityPerformMagicTap() -> Bool
UIAccessibility

Magic Tap
UIAccessibility

Magic Tap
New API

Accessibility Focus
New API

Accessibility Focus

```swift
func accessibilityAssistiveTechnologyFocusedIdentifiers() -> Set<String>?

func UIAccessibilityFocusedElement(assistiveTechnologyIdentifier: String?) -> AnyObject?
```
New API
Accessibility Focus
New API
Accessibility Focus

let UIAccessibilityElementFocusedNotification: String
let UIAccessibilityFocusedElementKey: String
let UIAccessibilityUnfocusedElementKey: String
let UIAccessibilityAssistiveTechnologyKey: String
Demo

Accessibility API
Accessibility Audit

Results
Accessibility Audit

Results

✓ Earthquake cell
  ✓ Not accessible
  ✓ Text color
✓ Map detail
  ✓ Labels
  ✓ Button
Accessibility Audit

Results

- ✓ Earthquake cell
  - ✓ Not accessible
  - ✓ Text color
- ✓ Map detail
  - ✓ Labels
  - ✓ Button
- ✓ Add favorite
Accessibility Audit

Results

✓ Earthquake cell
  ✓ Not accessible
  ✓ Text color
✓ Map detail
  ✓ Labels
  ✓ Button
✓ Add favorite
✓ Favorite graph
Summary
Summary

Accessibility is about users
Summary

Accessibility is about users
Apple embraces accessibility
Summary

Accessibility is about users
Apple embraces accessibility
Join us
More Information

Documentation
UIAccessibility

Technical Support
Apple Developer Forums
http://developer.apple.com/forums

Developer Technical Support
http://developer.apple.com/support/technical

General Inquiries
Paul Marcos, App Frameworks Evangelist
pmarcos@apple.com
## Related Session and Lab

<table>
<thead>
<tr>
<th>Session/ Lab</th>
<th>Location</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple Watch Accessibility</td>
<td>Pacific Heights</td>
<td>Tuesday 1:30PM</td>
</tr>
<tr>
<td>Accessibility and Speech Lab</td>
<td>Frameworks Lab D</td>
<td>Tuesday 2:30PM</td>
</tr>
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