

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



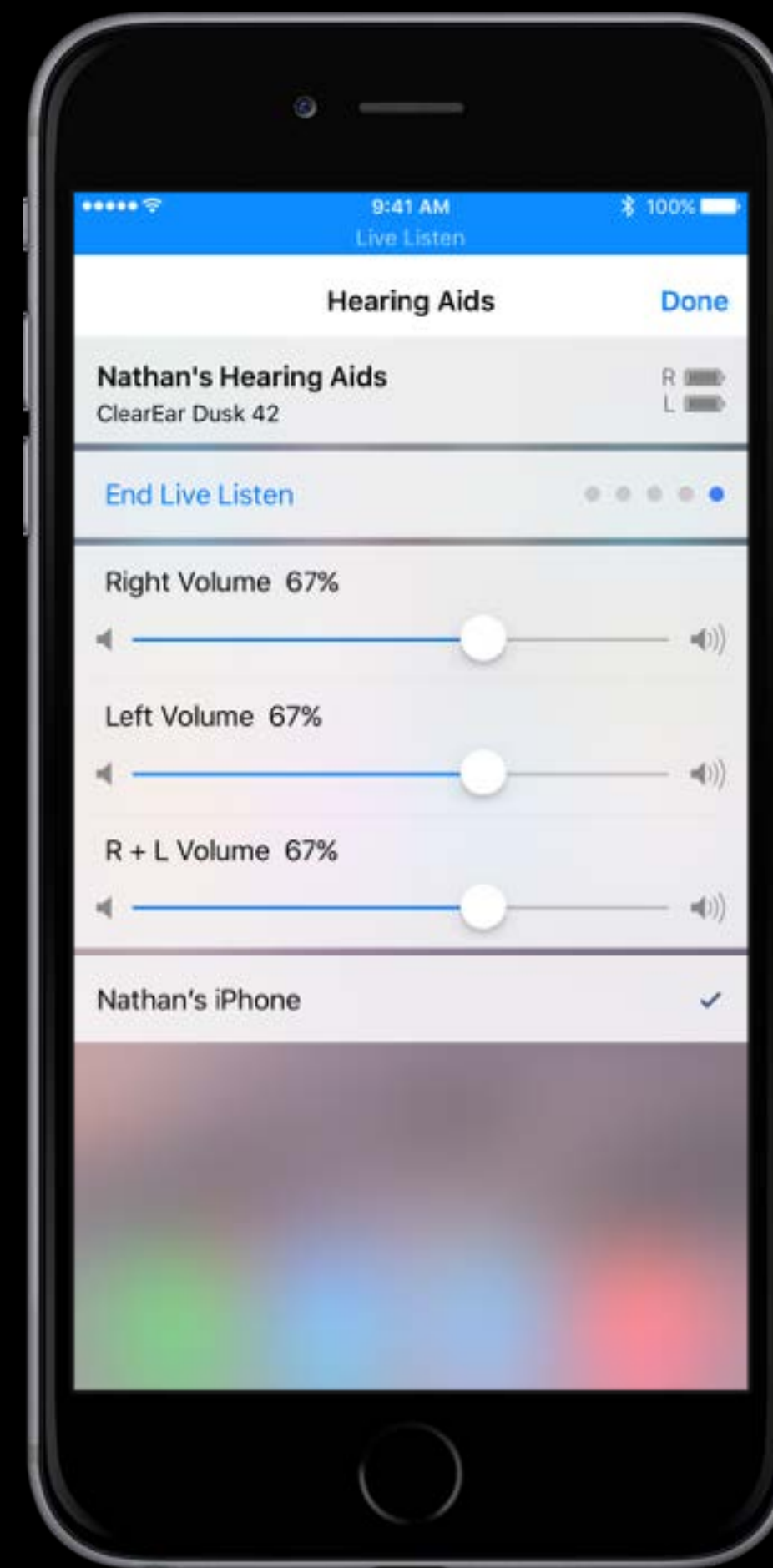
Aa





Hearing

Made for iPhone Hearing Aids



Learning

Guided Access

Aa



Learning

Guided Access

Aa



Vision

VoiceOver



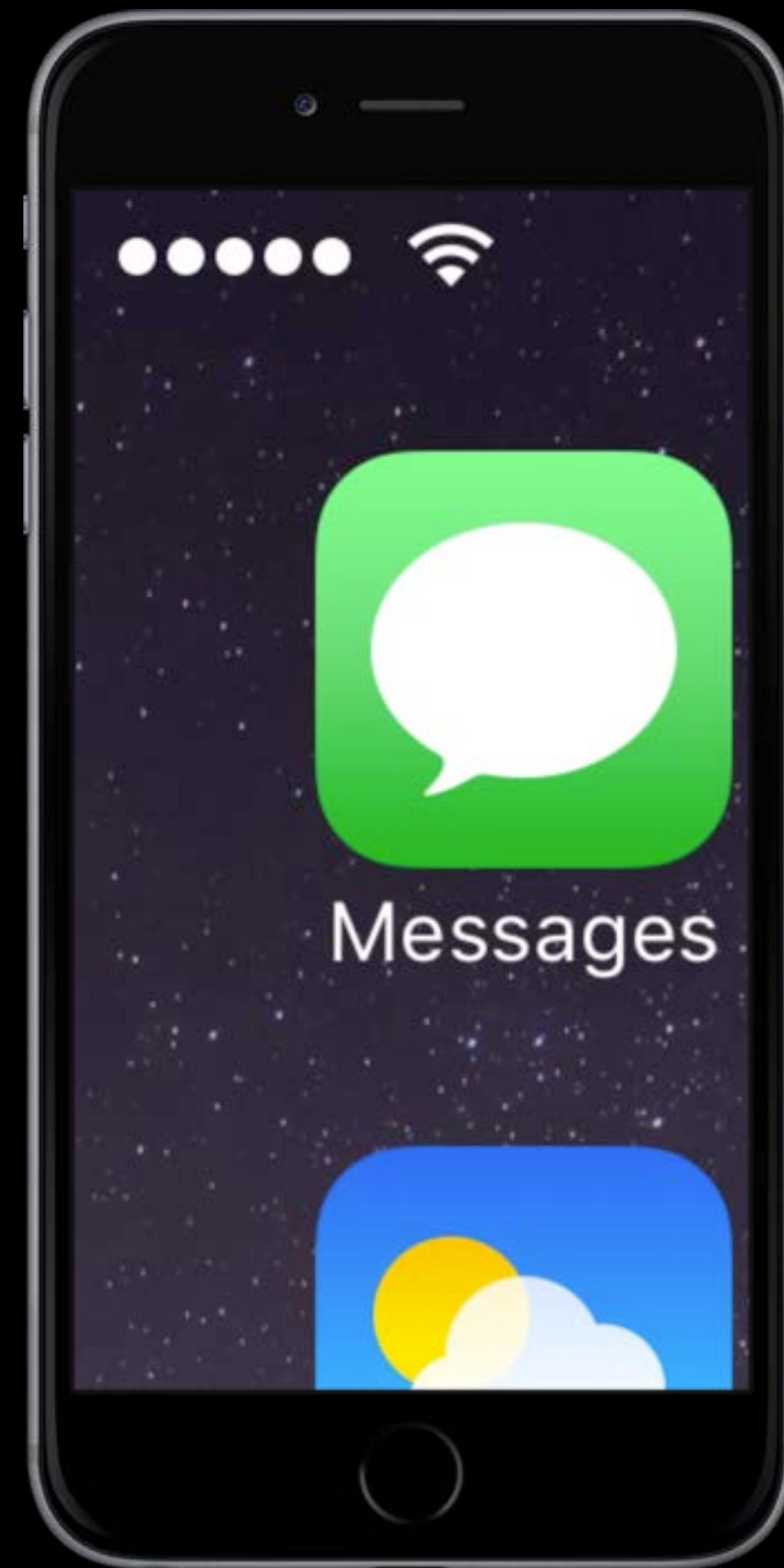
Vision

VoiceOver



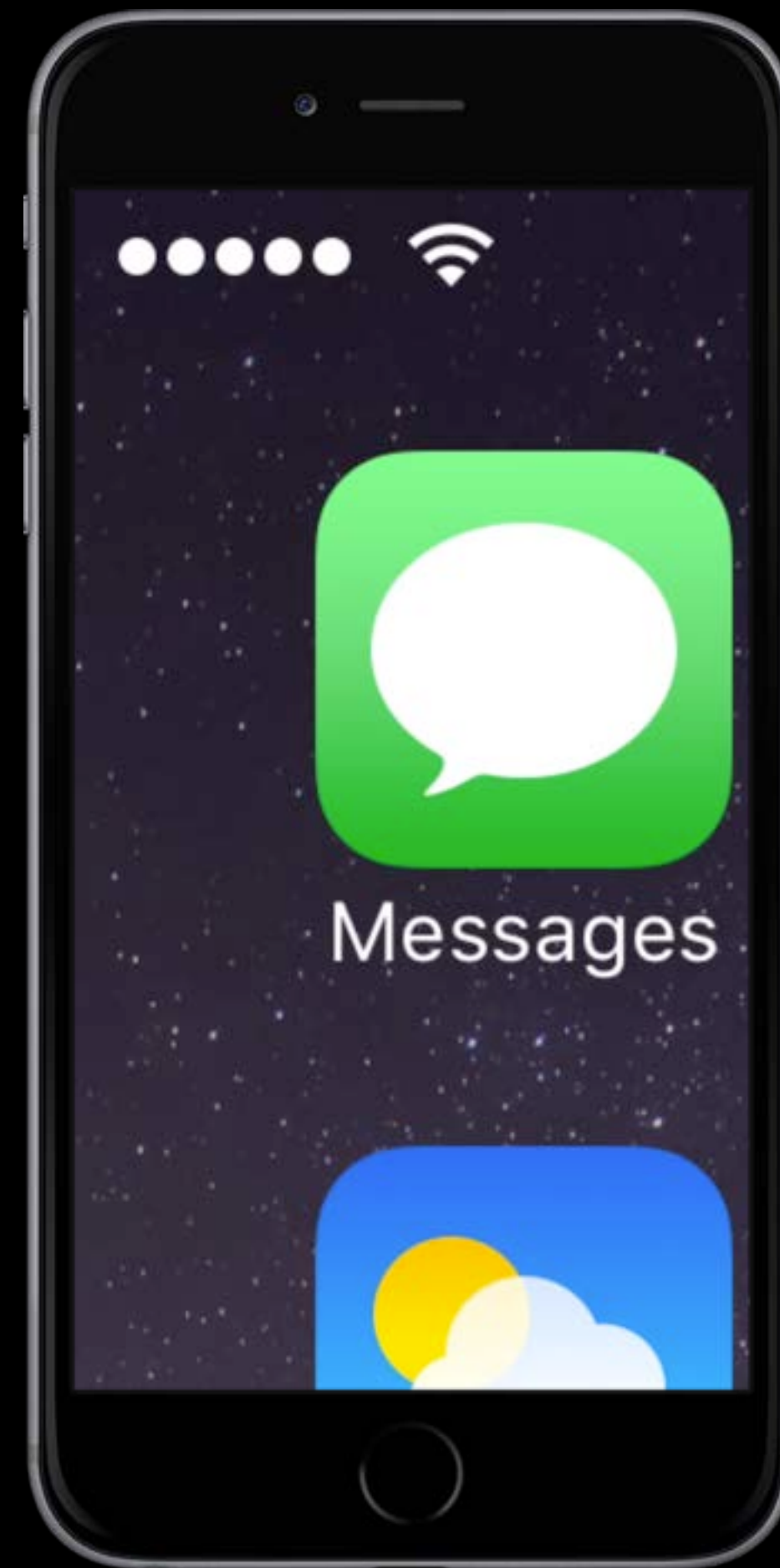
Vision

Zoom



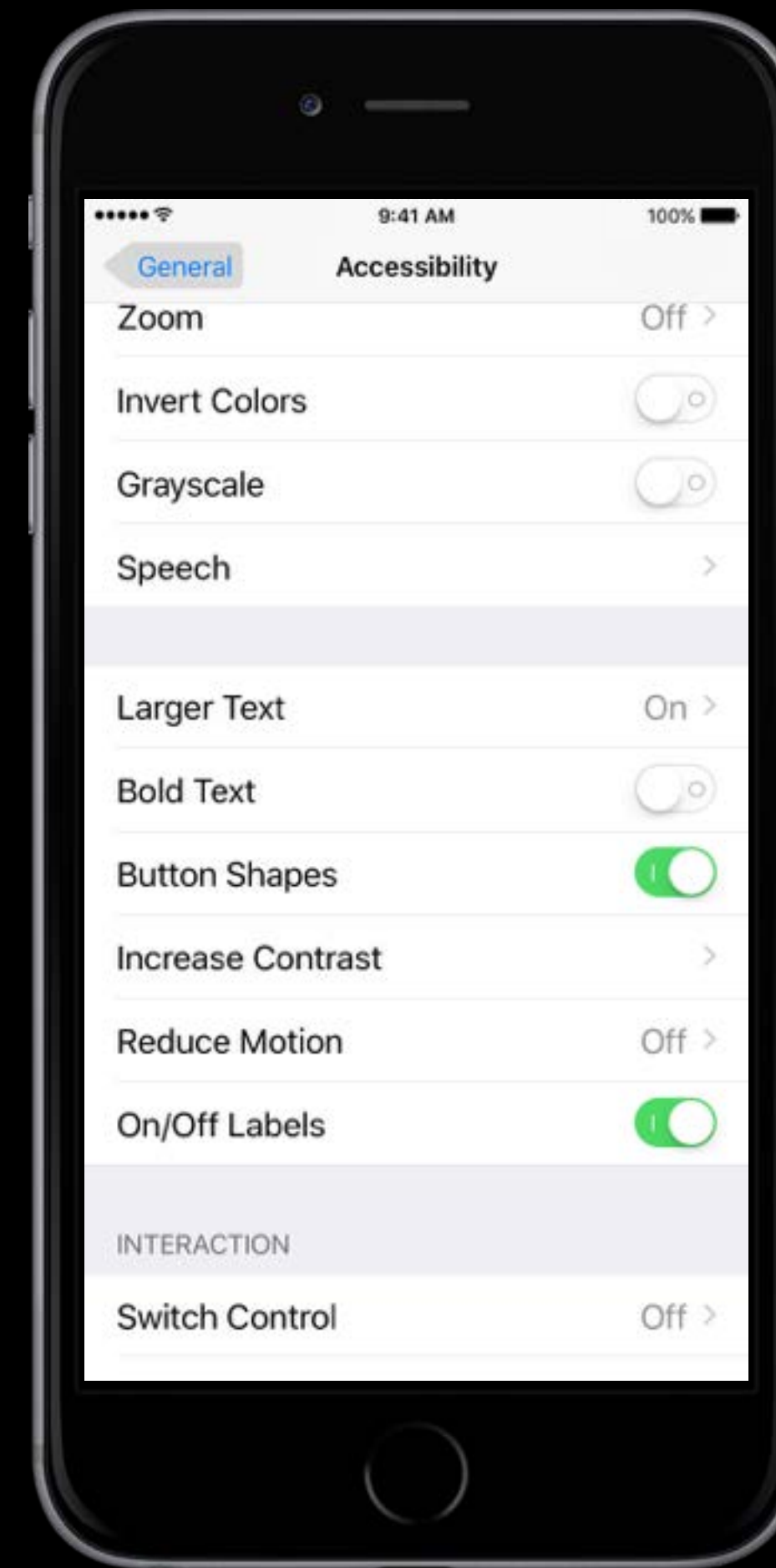
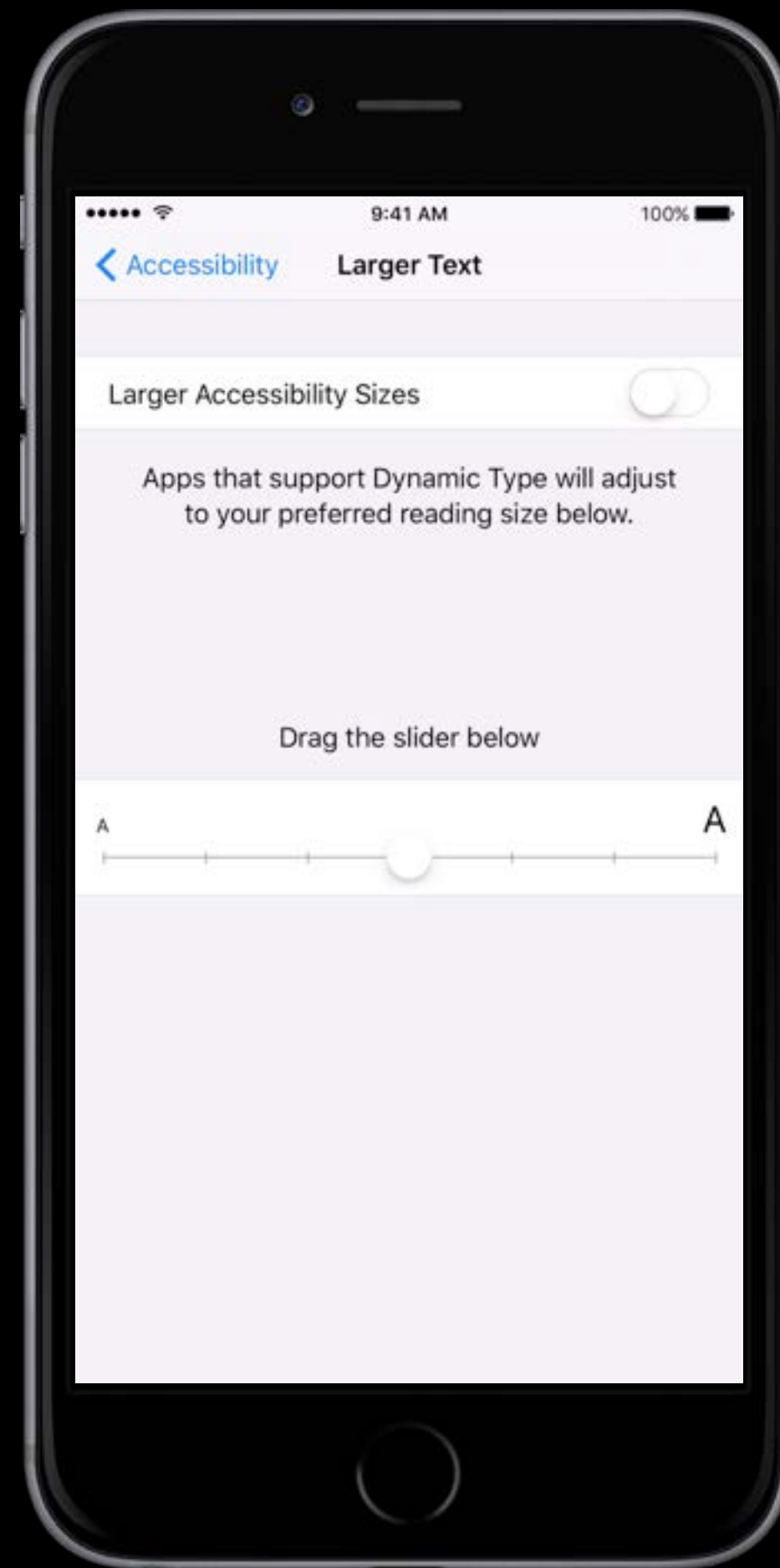
Vision

Zoom



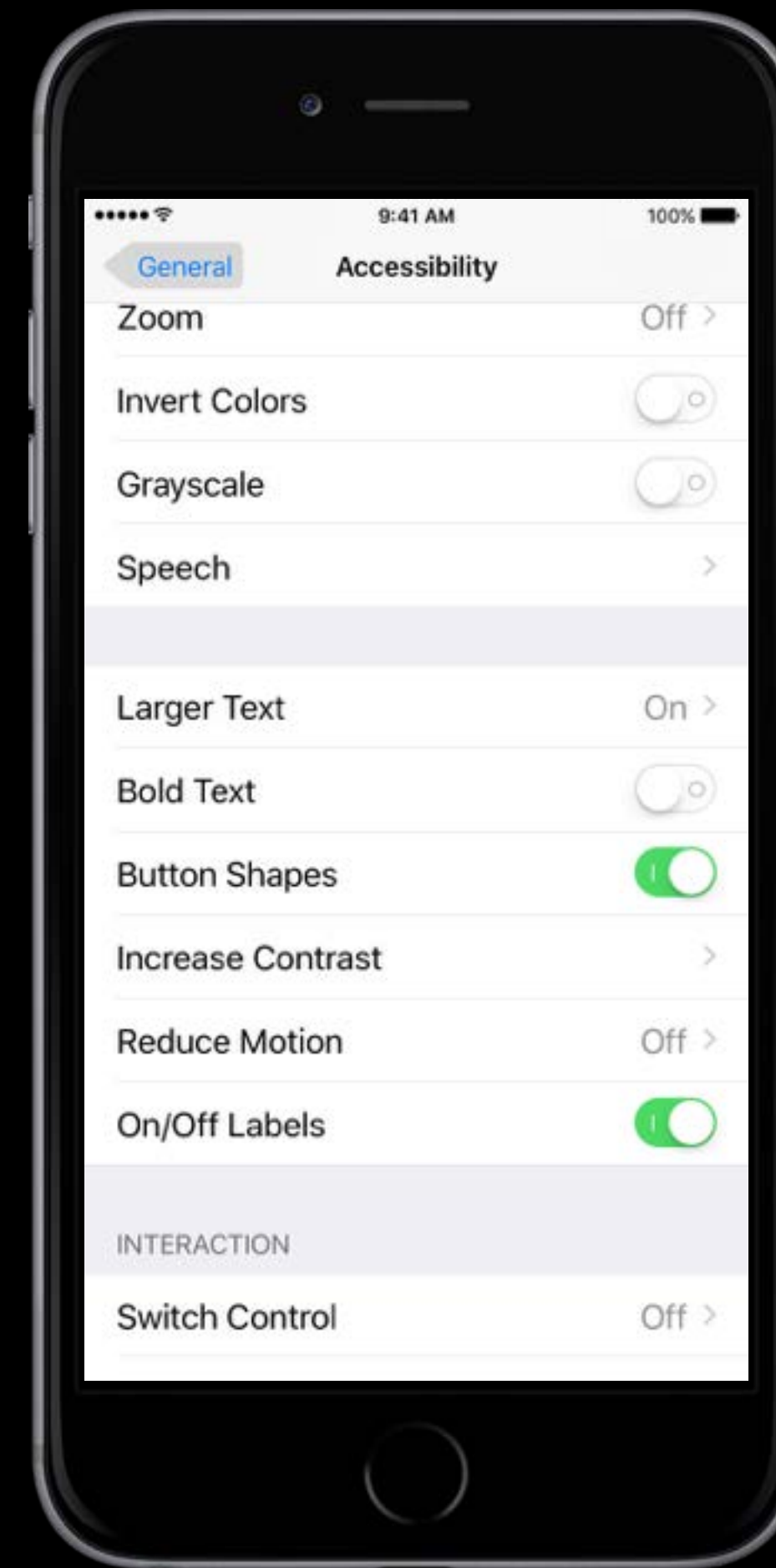
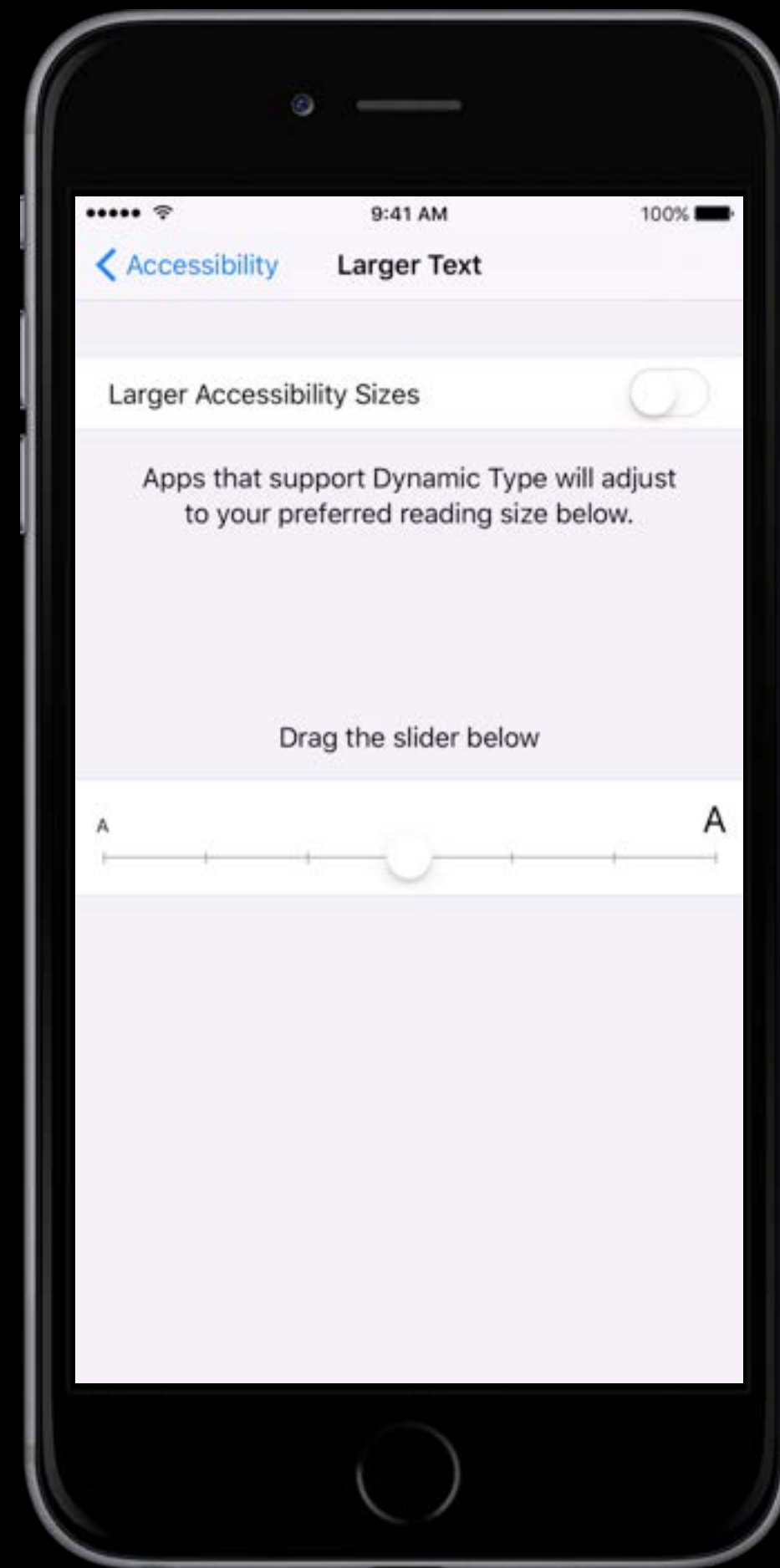
Vision

Vision accommodations



Vision

Vision accommodations





Physical and Motor

Switch Control



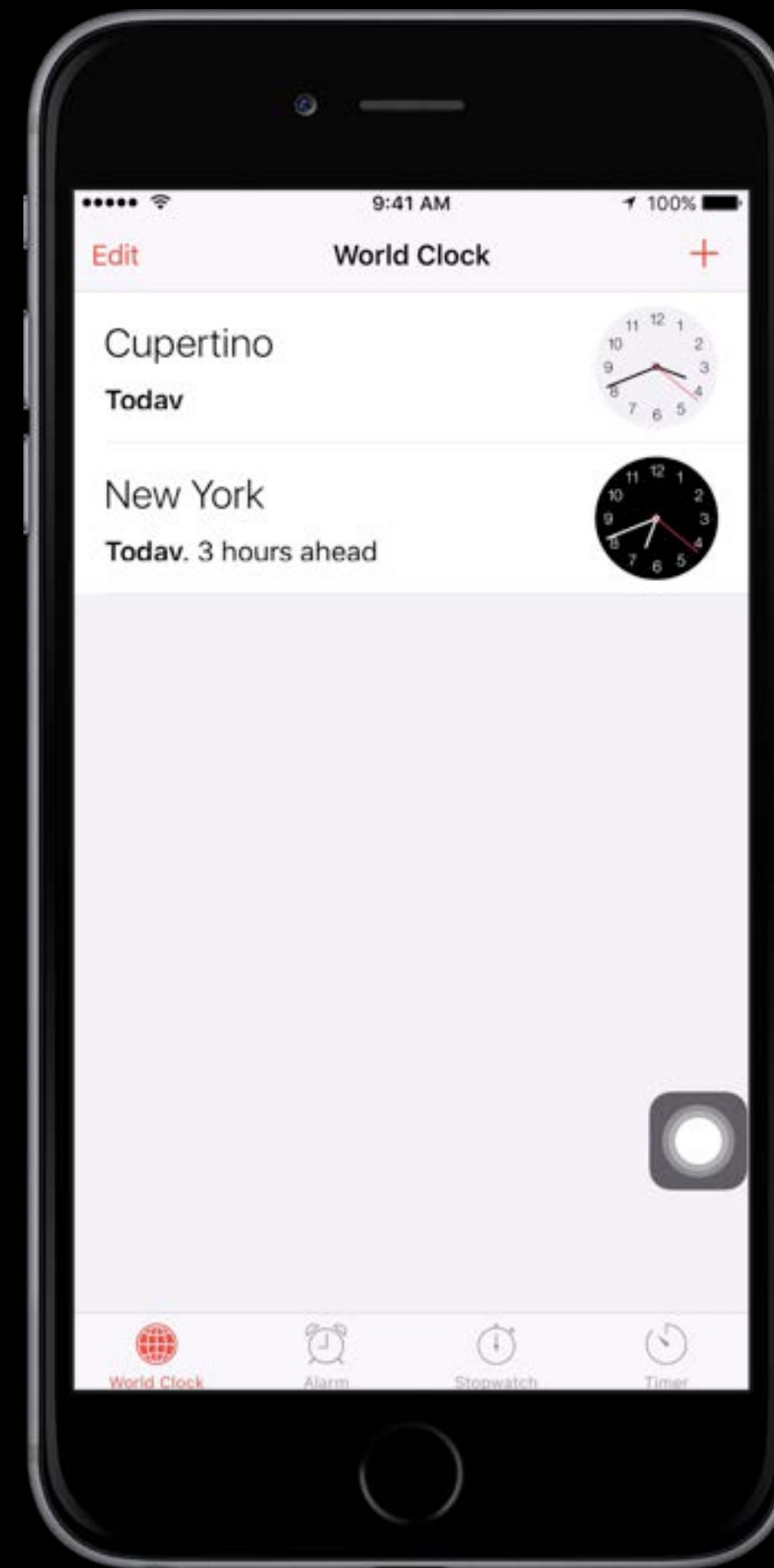
Physical and Motor

Switch Control



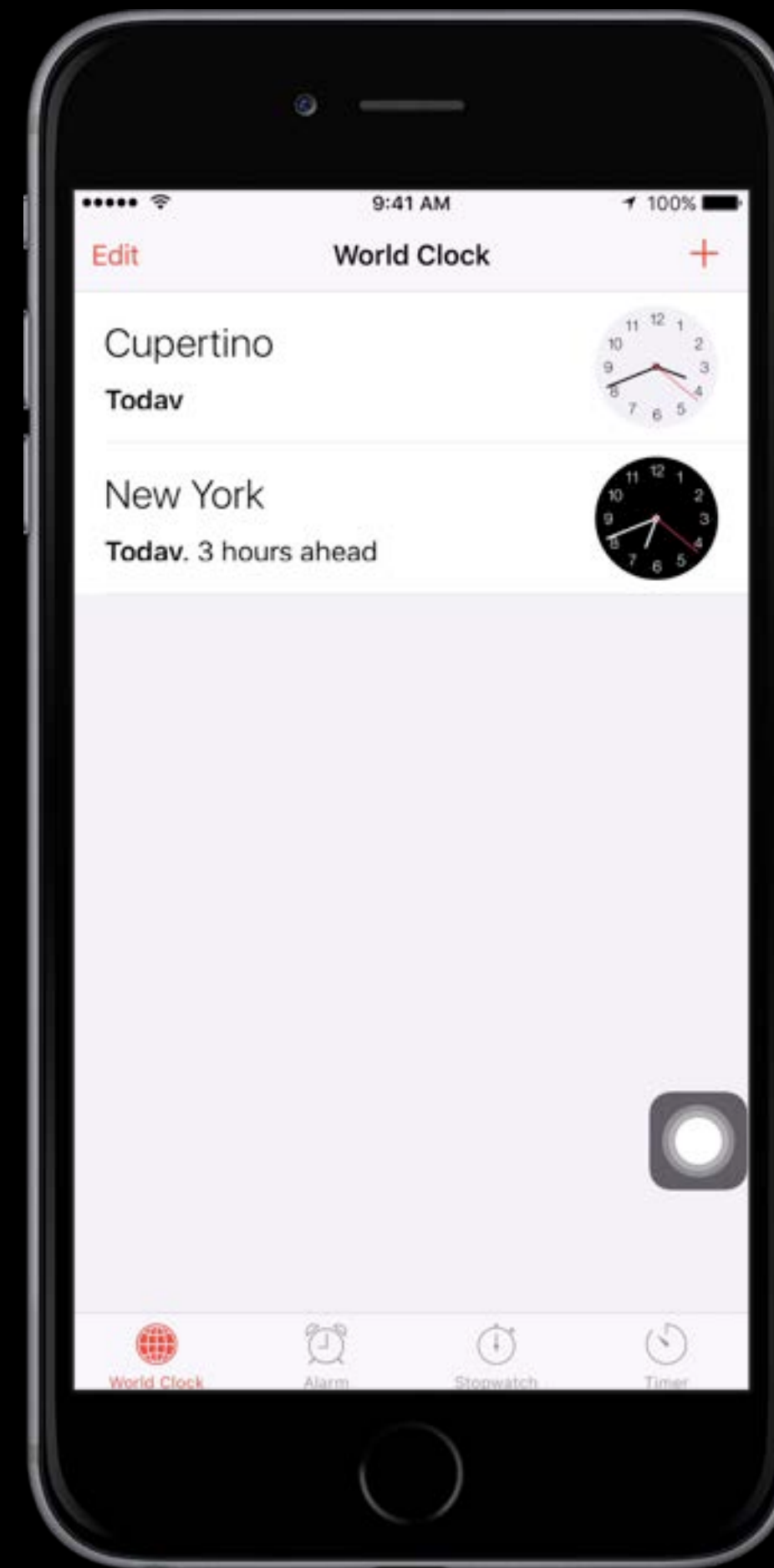
Physical and Motor

Assistive Touch



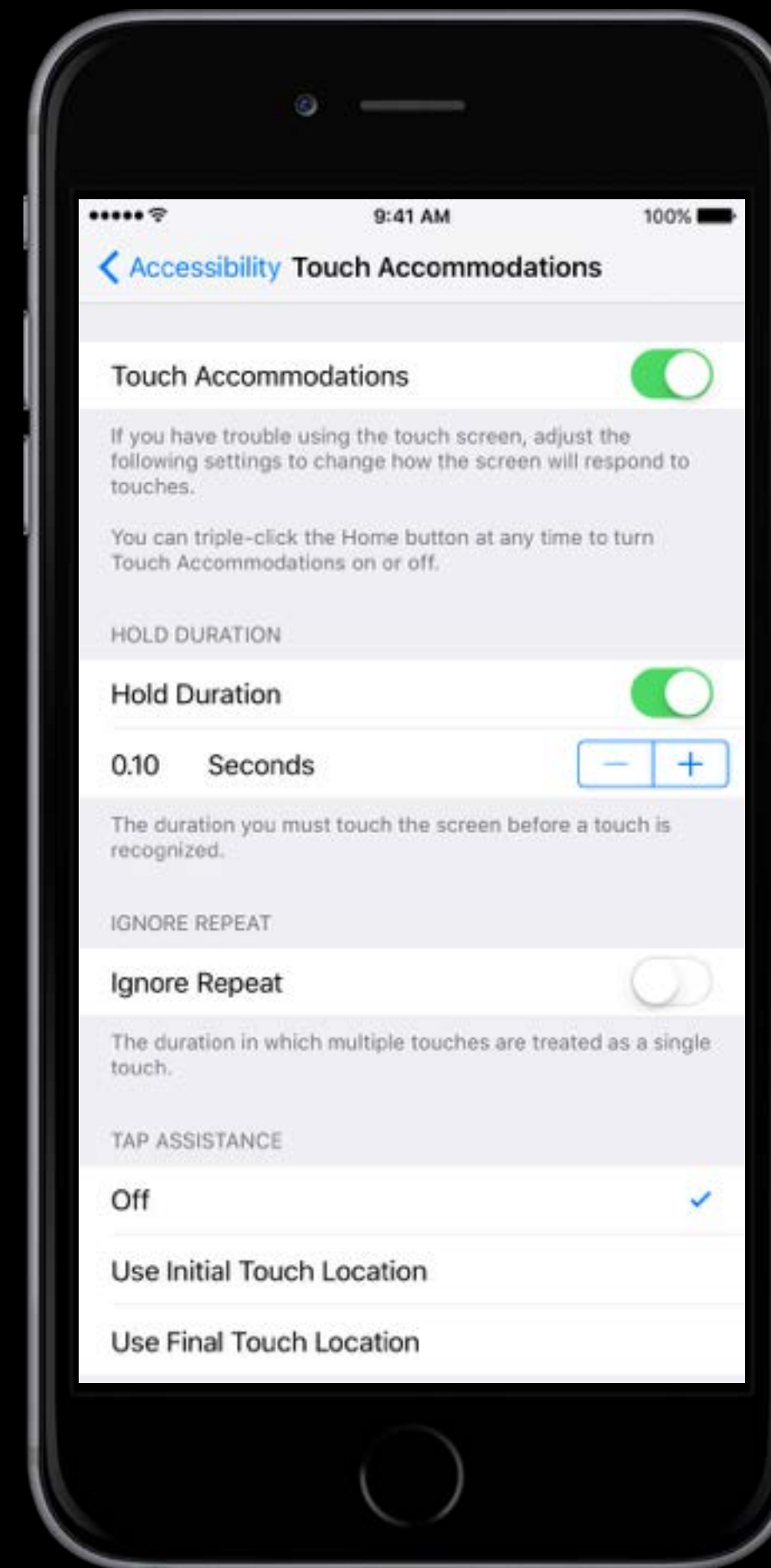
Physical and Motor

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



UIAccessibility

The bridge between your app and accessibility



UIAccessibility



UIAccessibility

The bridge between your app and accessibility



Tap

UIAccessibility



UIAccessibility

The bridge between your app and accessibility



Tap

UIAccessibility

[yourElement accessibilityLabel]



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



UIAccessibility

The bridge between your app and accessibility



Menu

UIAccessibility



UIAccessibility

The bridge between your app and accessibility



Menu

UIAccessibility

[yourElement accessibilityCustomActions]



UIAccessibility

The bridge between your app and accessibility



Menu

UIAccessibility

[yourElement accessibilityCustomActions]



<Move>, <Pass>, <Trade>

UIAccessibility

The bridge between your app and accessibility



Menu



Move



Pass



Trade

UIAccessibility

[yourElement accessibilityCustomActions]



<Move>, <Pass>, <Trade>

UIAccessibility

Do I serve a purpose?



UIAccessibility

Do I serve a purpose?

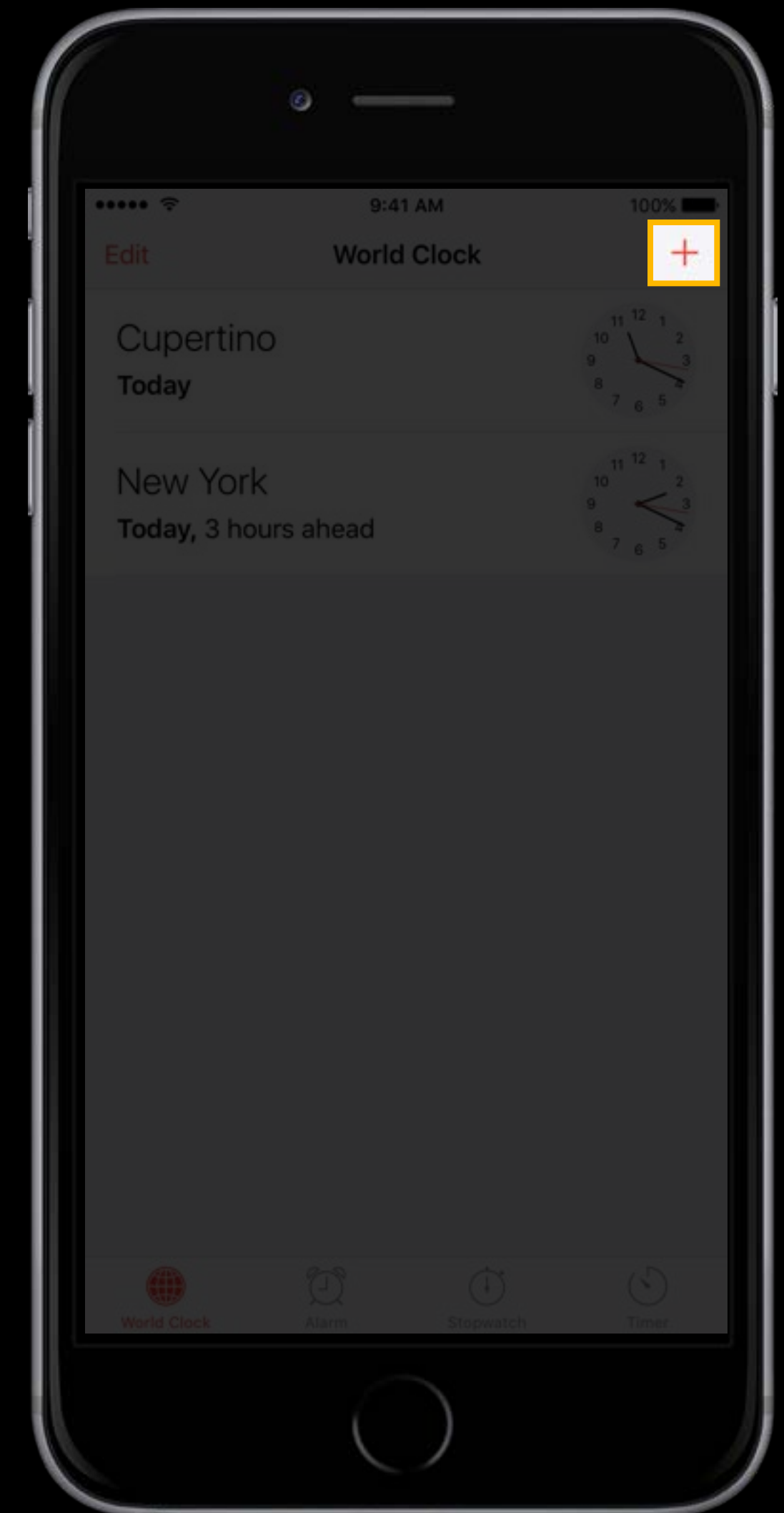
```
var isAccessibilityElement: Bool
```



UIAccessibility

Do I serve a purpose?

```
var isAccessibilityElement: Bool
```



UIAccessibility

Do I serve a purpose?

```
var isAccessibilityElement: Bool
```

```
self.isAccessibilityElement = true
```



UIAccessibility

What's my name?



UIAccessibility

What's my name?

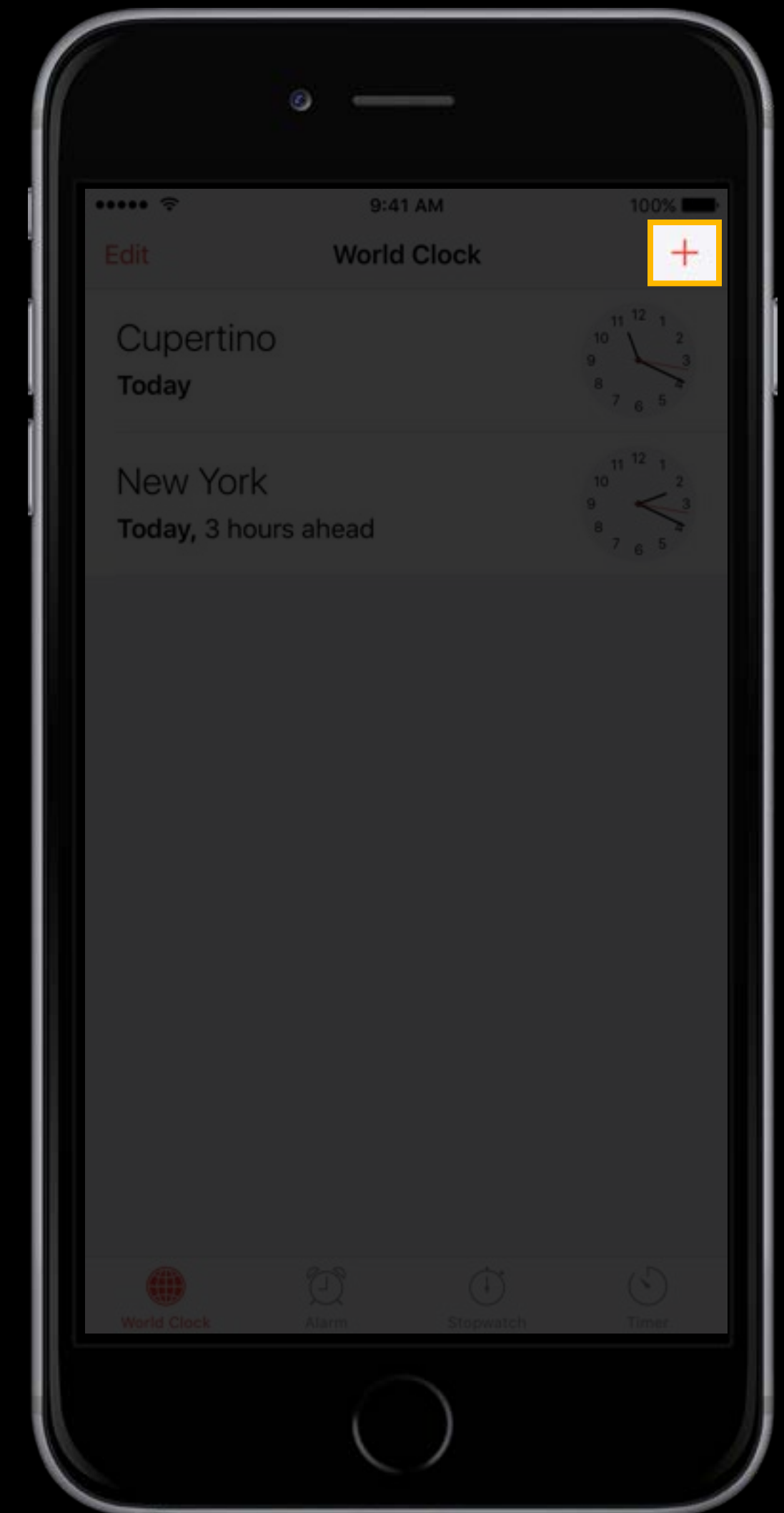
```
var accessibilityLabel: String?
```



UIAccessibility

What's my name?

```
var accessibilityLabel: String?
```

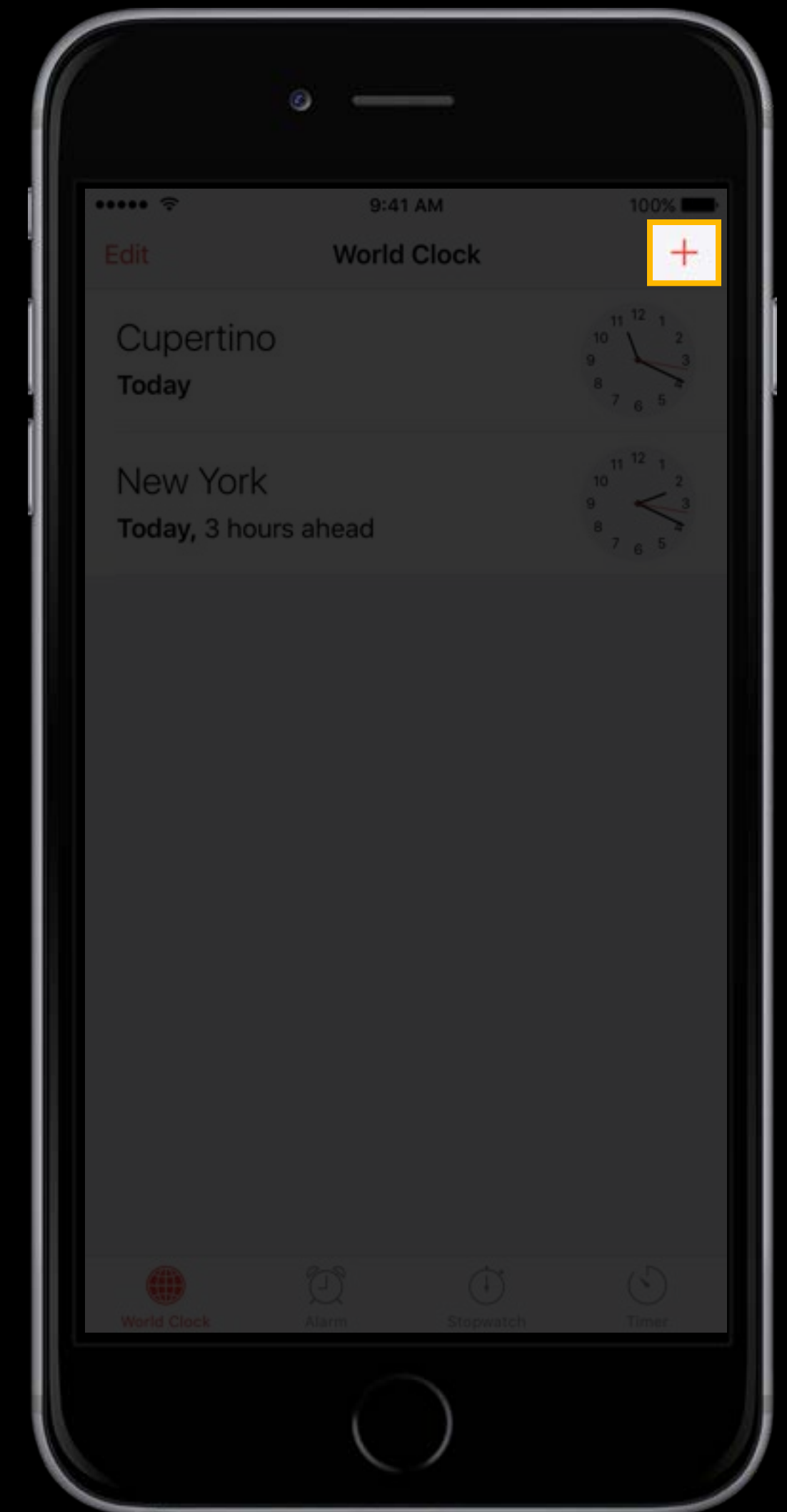


UIAccessibility

What's my name?

```
var accessibilityLabel: String?
```

```
self.accessibilityLabel = "Button to add a clock"
```



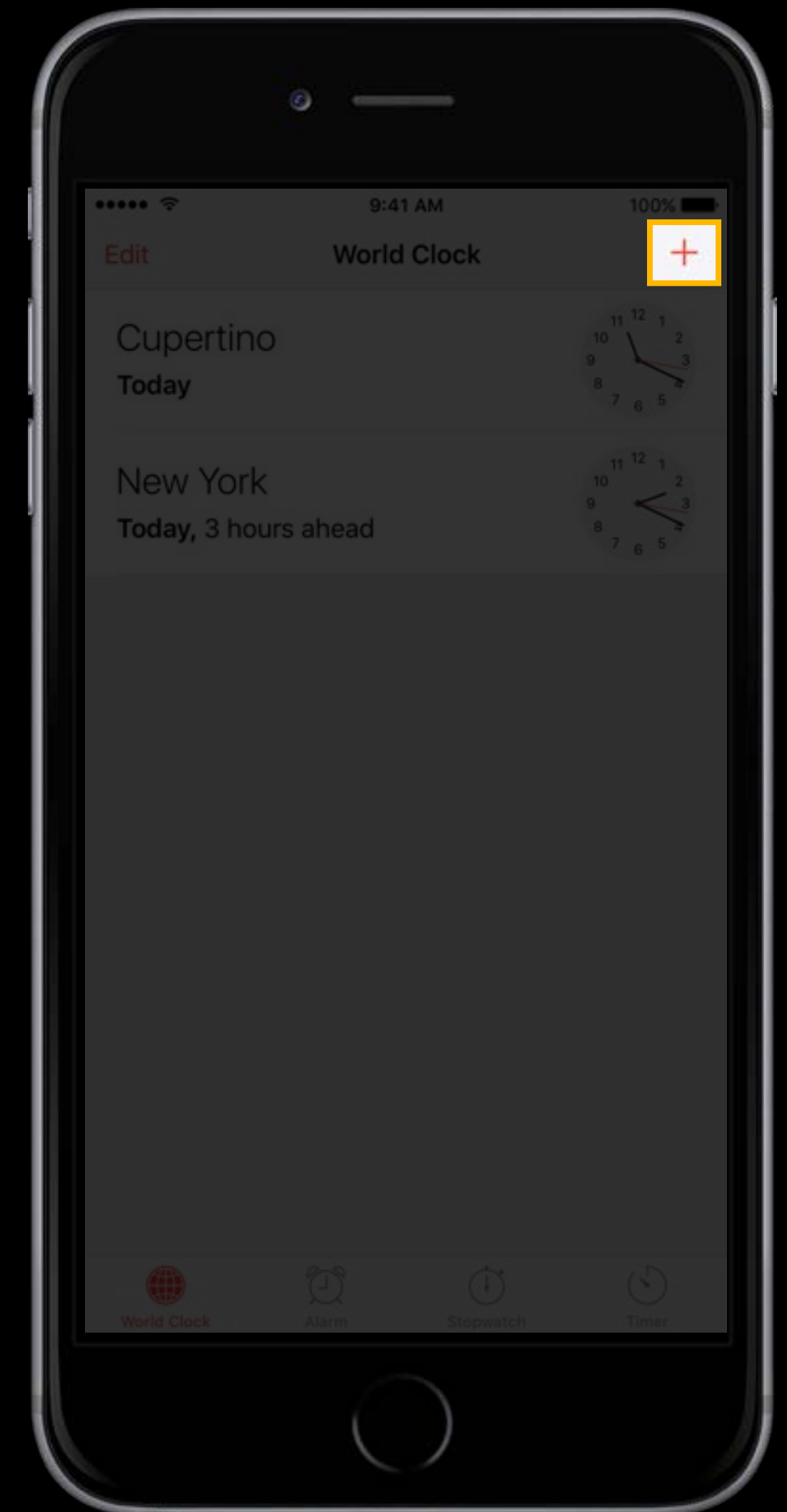
UIAccessibility

What's my name?

```
var accessibilityLabel: String?
```

```
self.accessibilityLabel = "Button to add a clock"
```

```
self.accessibilityLabel = "Add"
```



UIAccessibility

What's my personality?



UIAccessibility

What's my personality?

```
var accessibilityTraits: UIAccessibilityTraits
```



UIAccessibility

What's my personality?

```
var accessibilityTraits: UIAccessibilityTraits
```

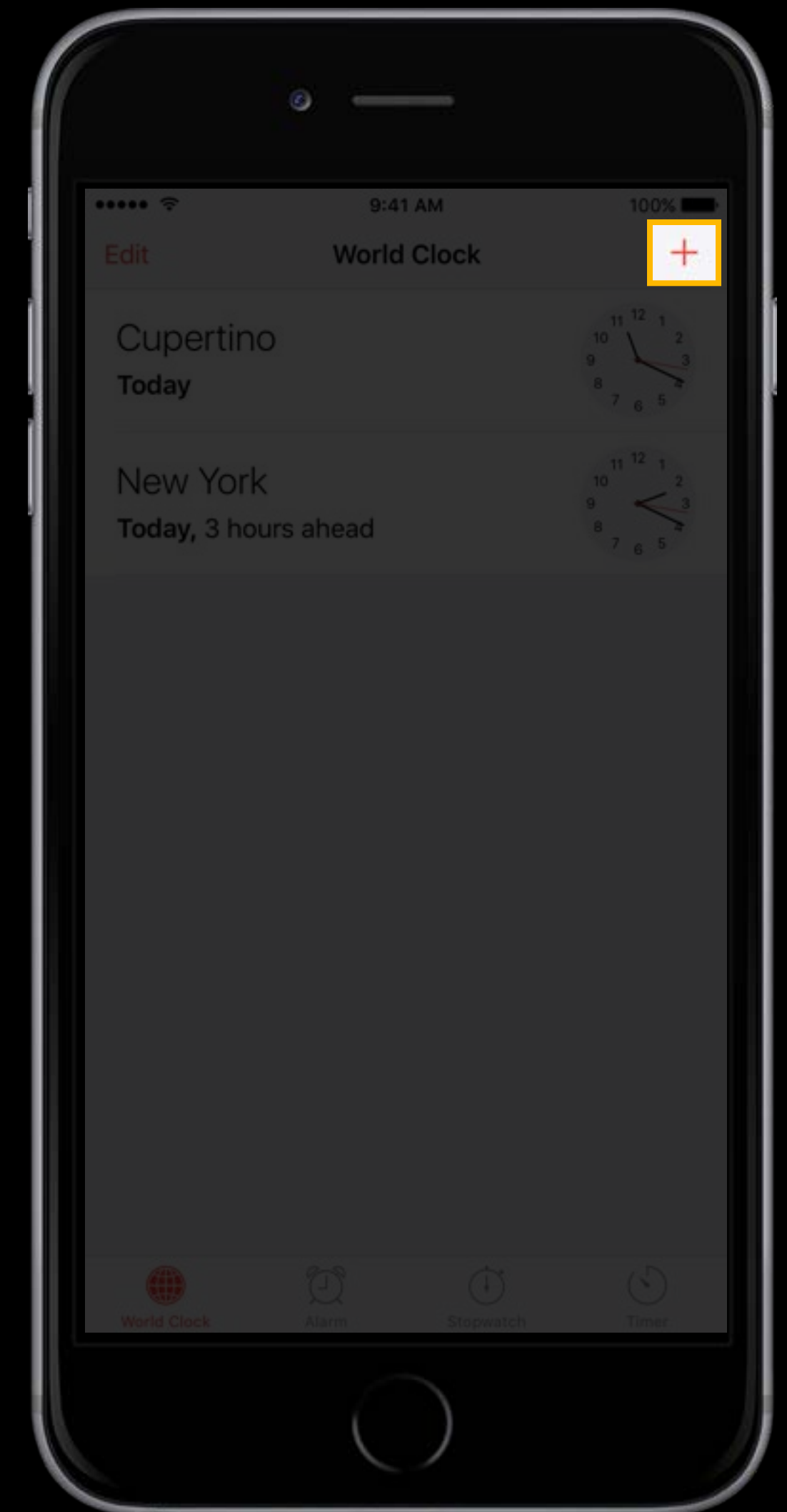


UIAccessibility

What's my personality?

```
var accessibilityTraits: UIAccessibilityTraits
```

```
self.accessibilityTraits = UIAccessibilityTraitButton
```



UIAccessibility

What is my value?



UIAccessibility

What is my value?

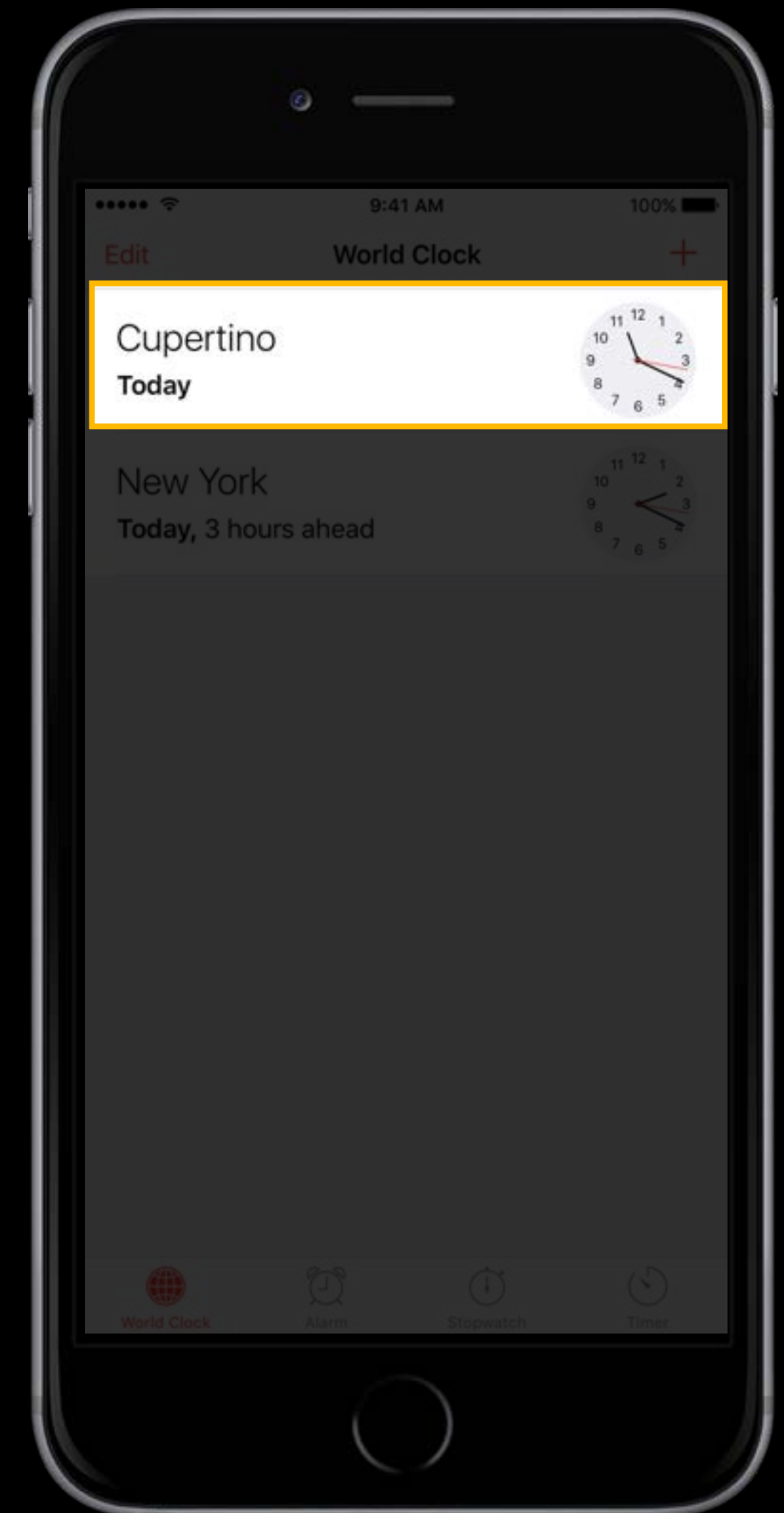
```
var accessibilityValue: String?
```



UIAccessibility

What is my value?

```
var accessibilityValue: String?
```

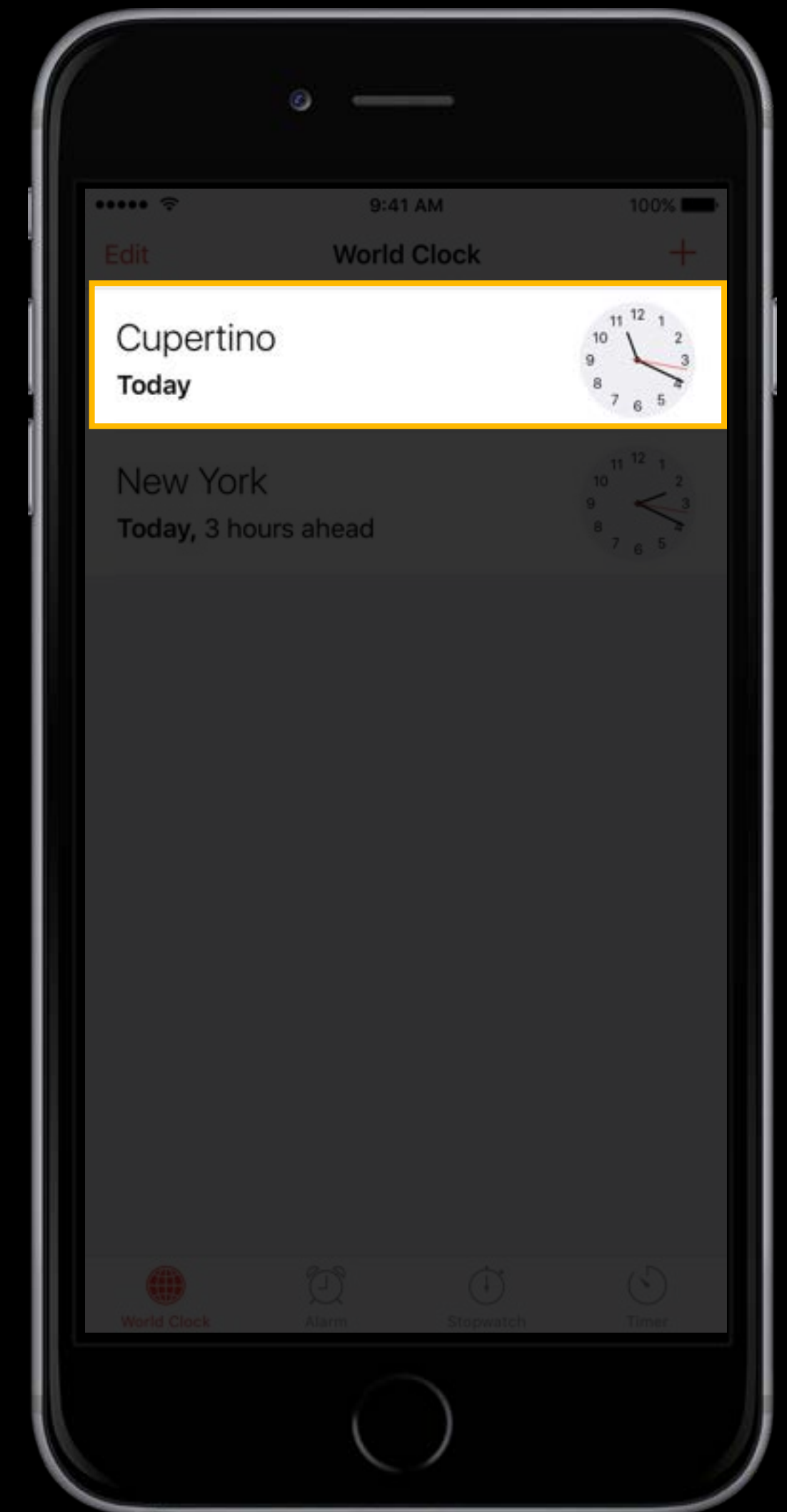


UIAccessibility

What is my value?

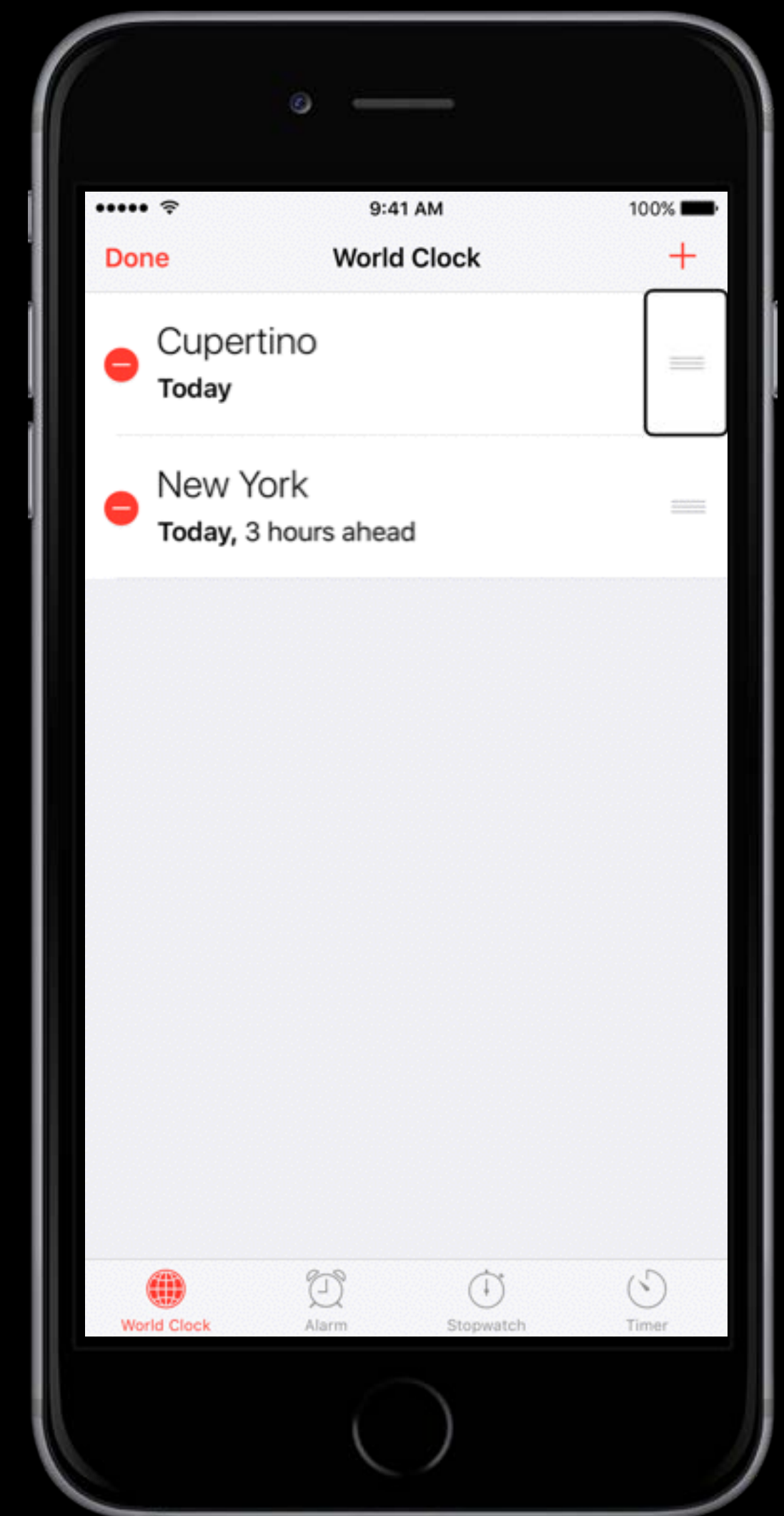
```
var accessibilityValue: String?
```

```
self.accessibilityValue = "Eleven twenty AM"
```



UIAccessibility

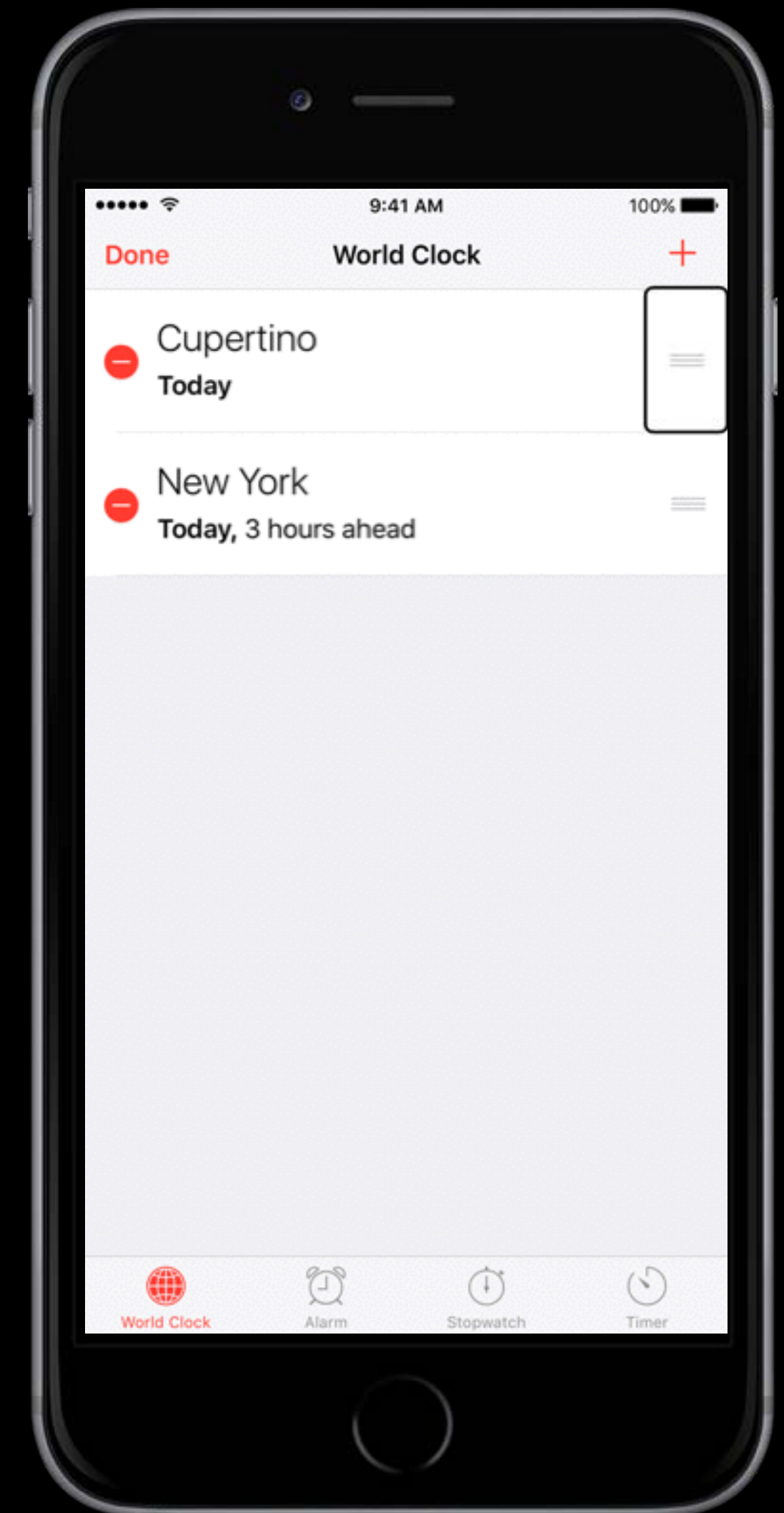
How should people interact with me?



UIAccessibility

How should people interact with me?

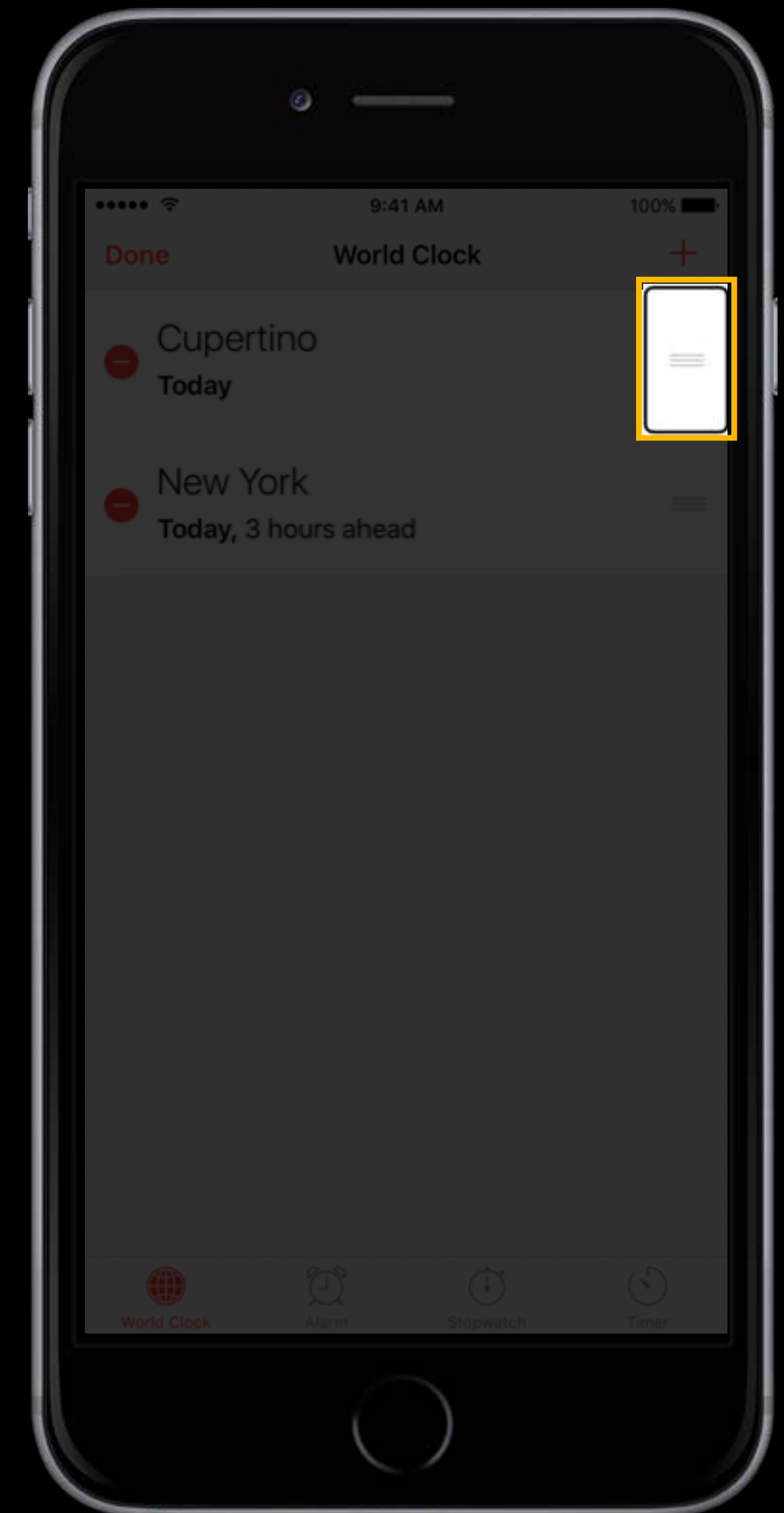
```
var accessibilityHint: String?
```



UIAccessibility

How should people interact with me?

```
var accessibilityHint: String?
```

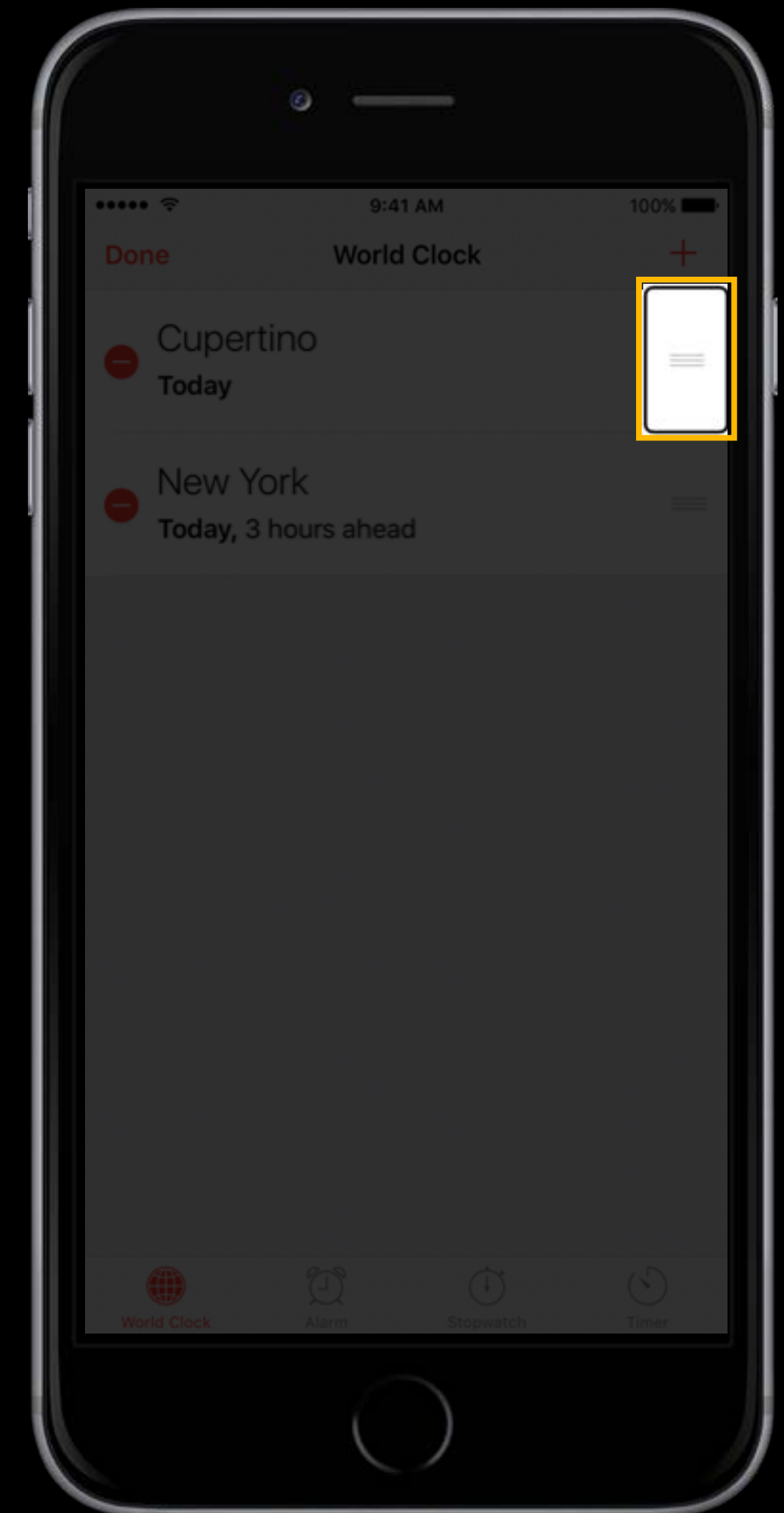


UIAccessibility

How should people interact with me?

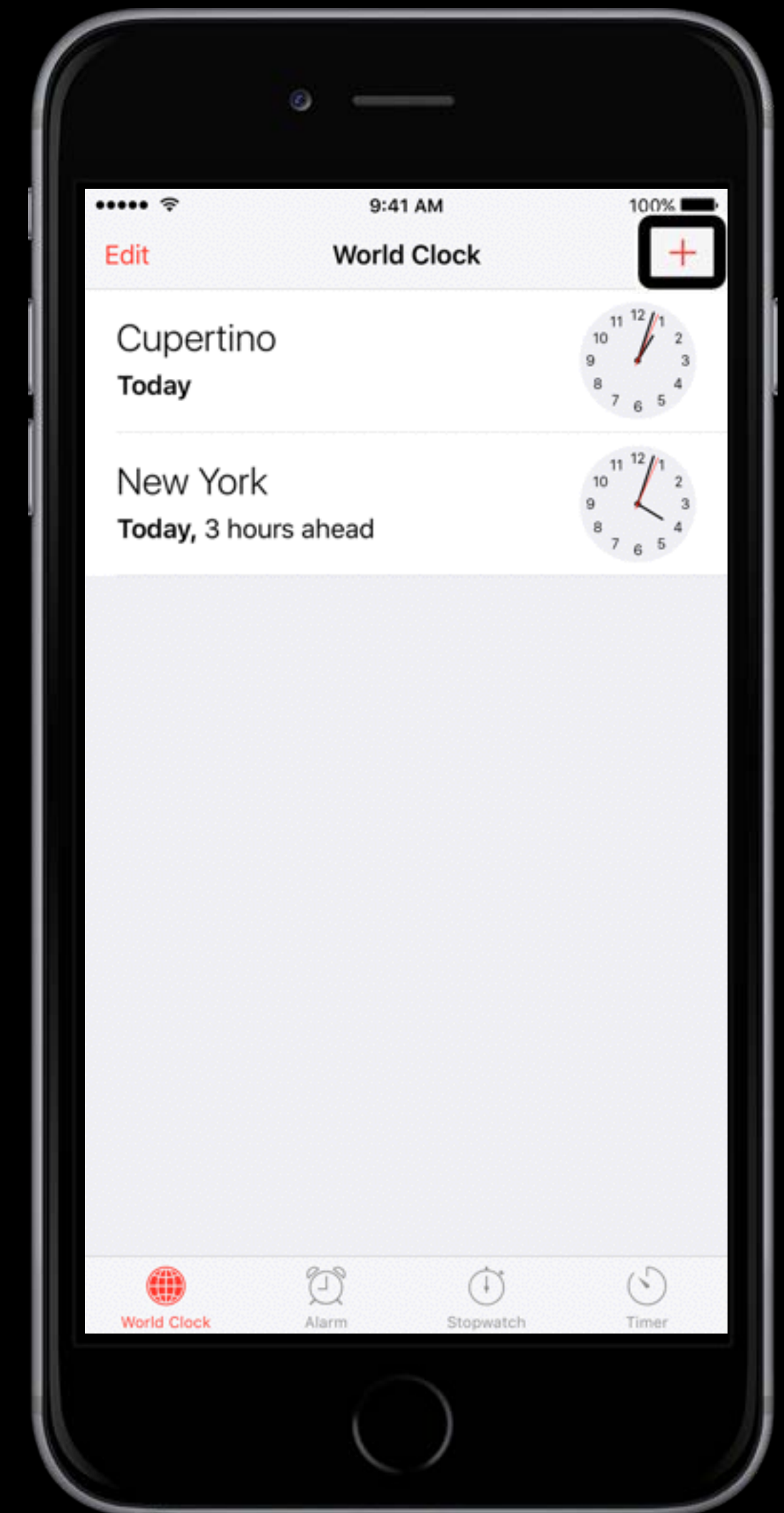
```
var accessibilityHint: String?
```

```
self.accessibilityHint = "Drag up or down to change  
the order"
```



UIAccessibility

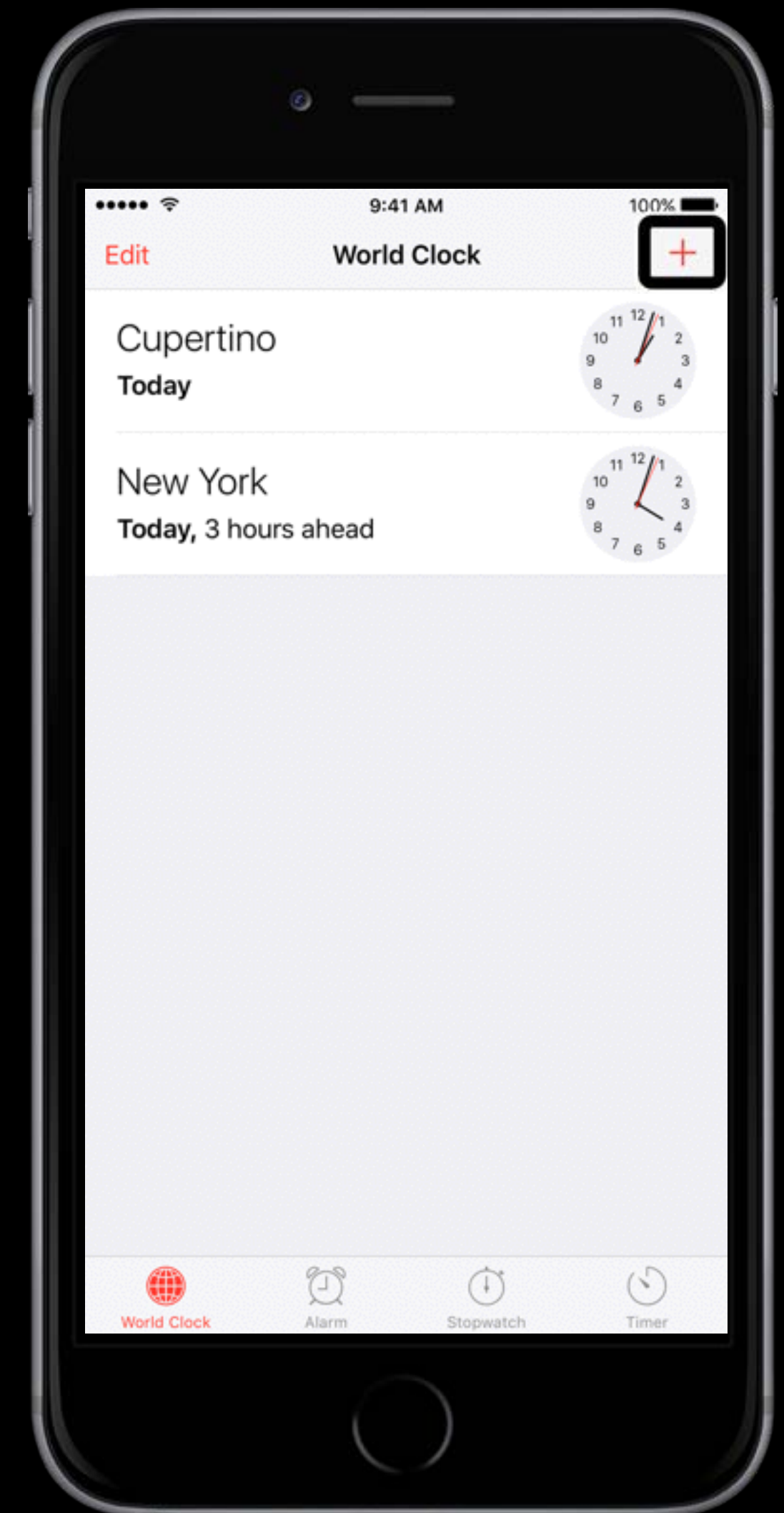
Where am I?



UIAccessibility

Where am I?

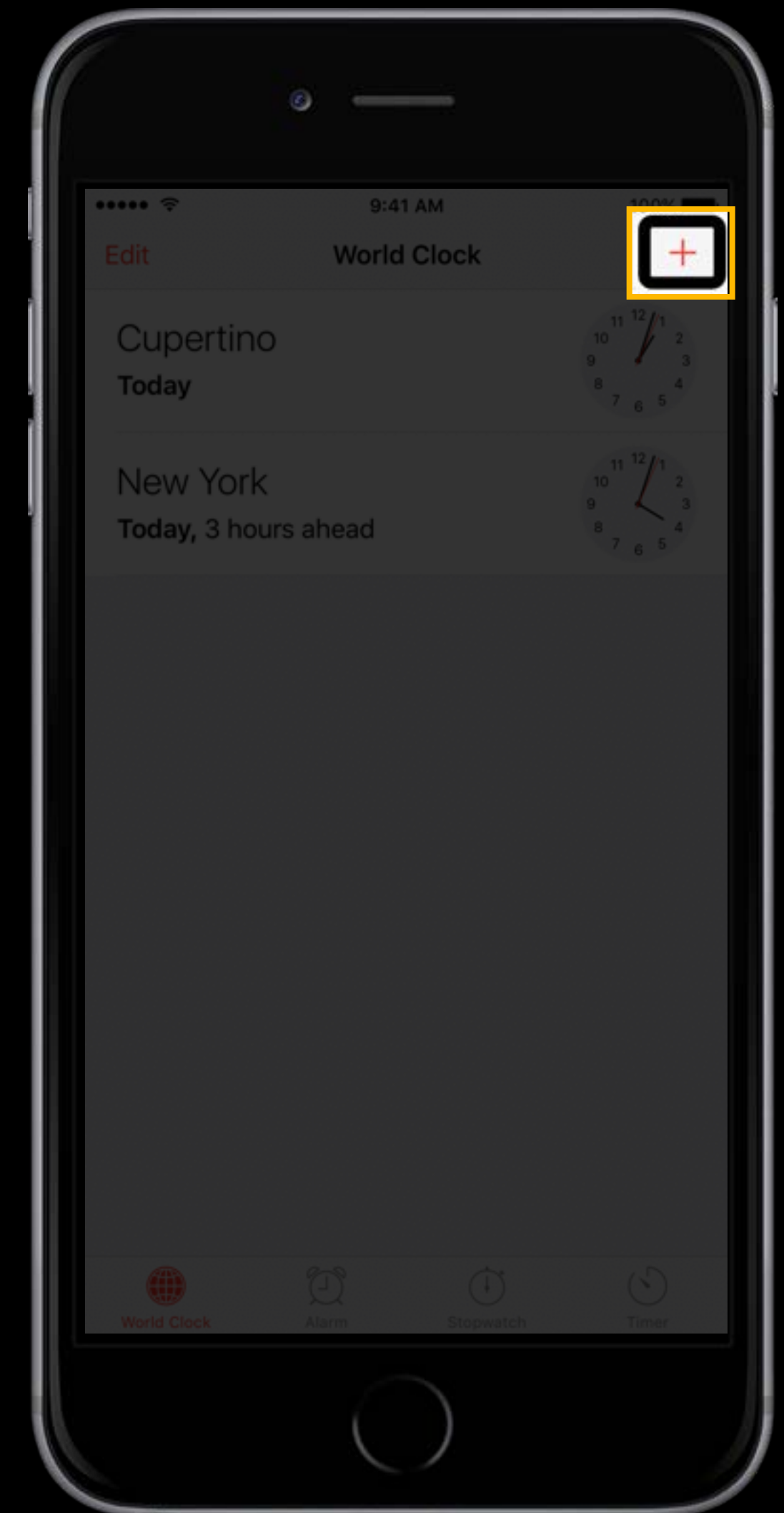
```
var accessibilityFrame: CGRect
```



UIAccessibility

Where am I?

```
var accessibilityFrame: CGRect
```

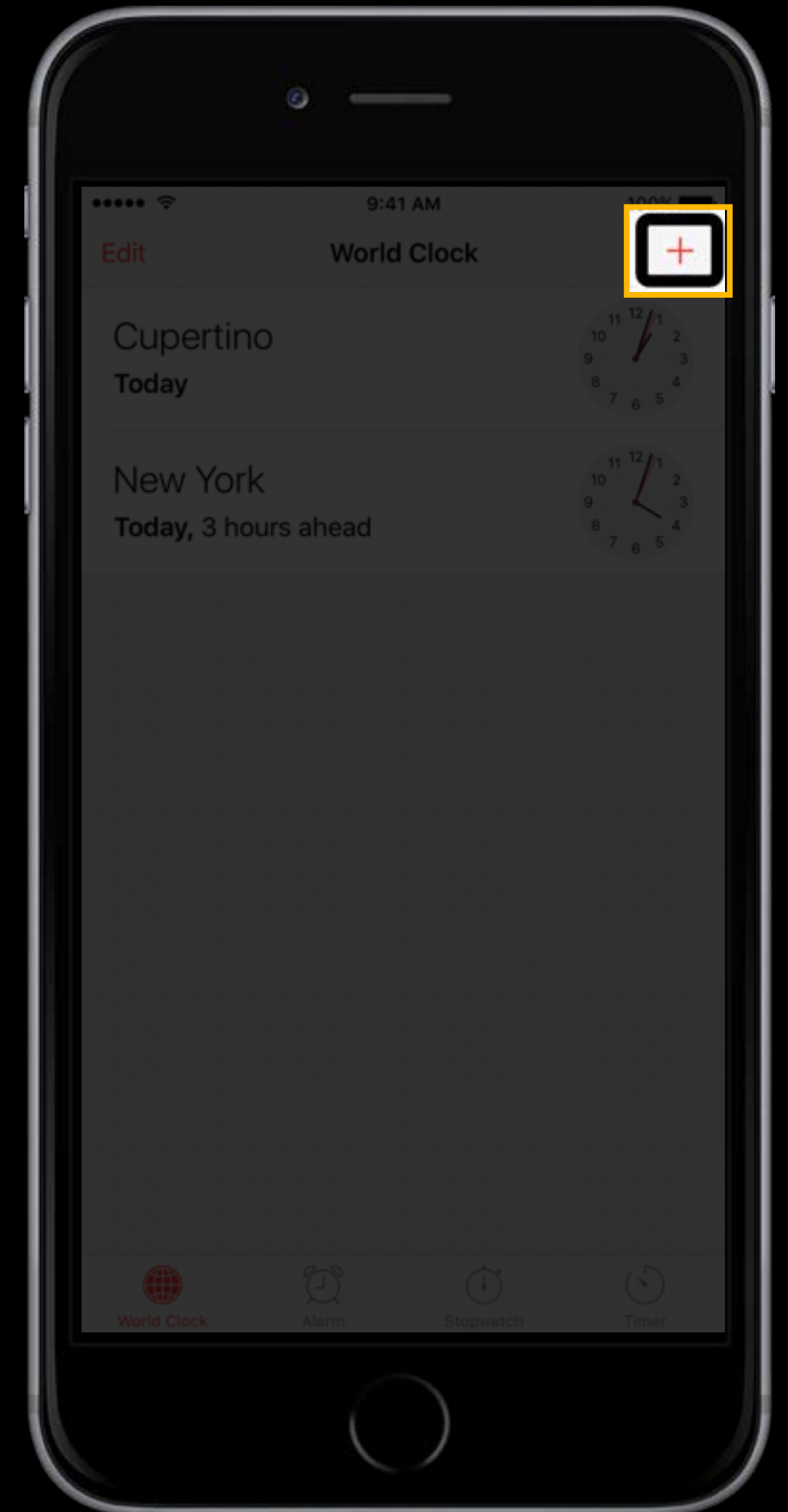


UIAccessibility

Where am I?

```
var accessibilityFrame: CGRect
```

```
func UIAccessibilityConvertFrameToScreenCoordinates(CGRect,  
UIView) -> CGRect
```



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  
}
```

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

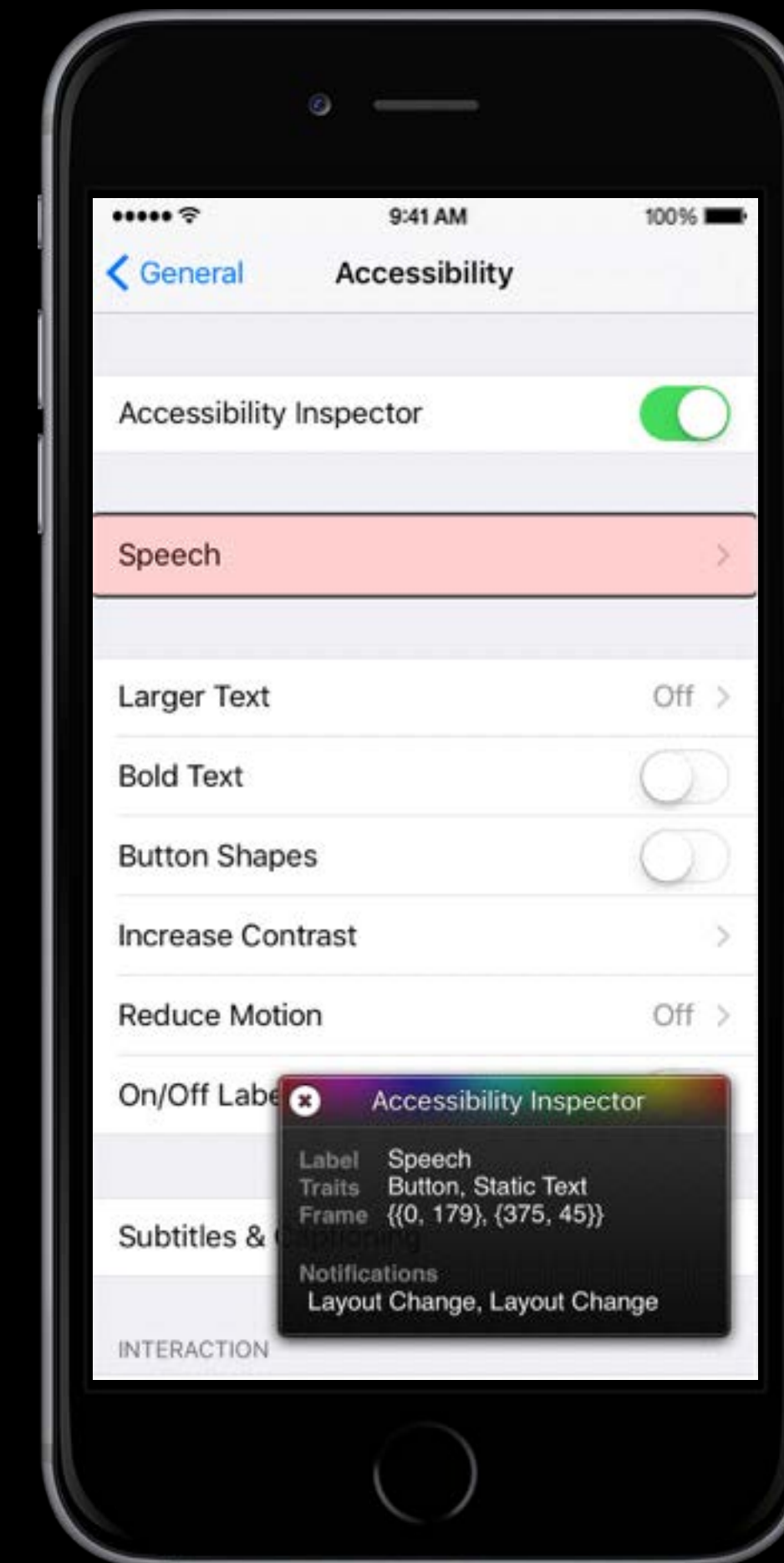
Accessibility inspector

Building Accessible Apps

Design for accessibility

Audit your app

Accessibility inspector



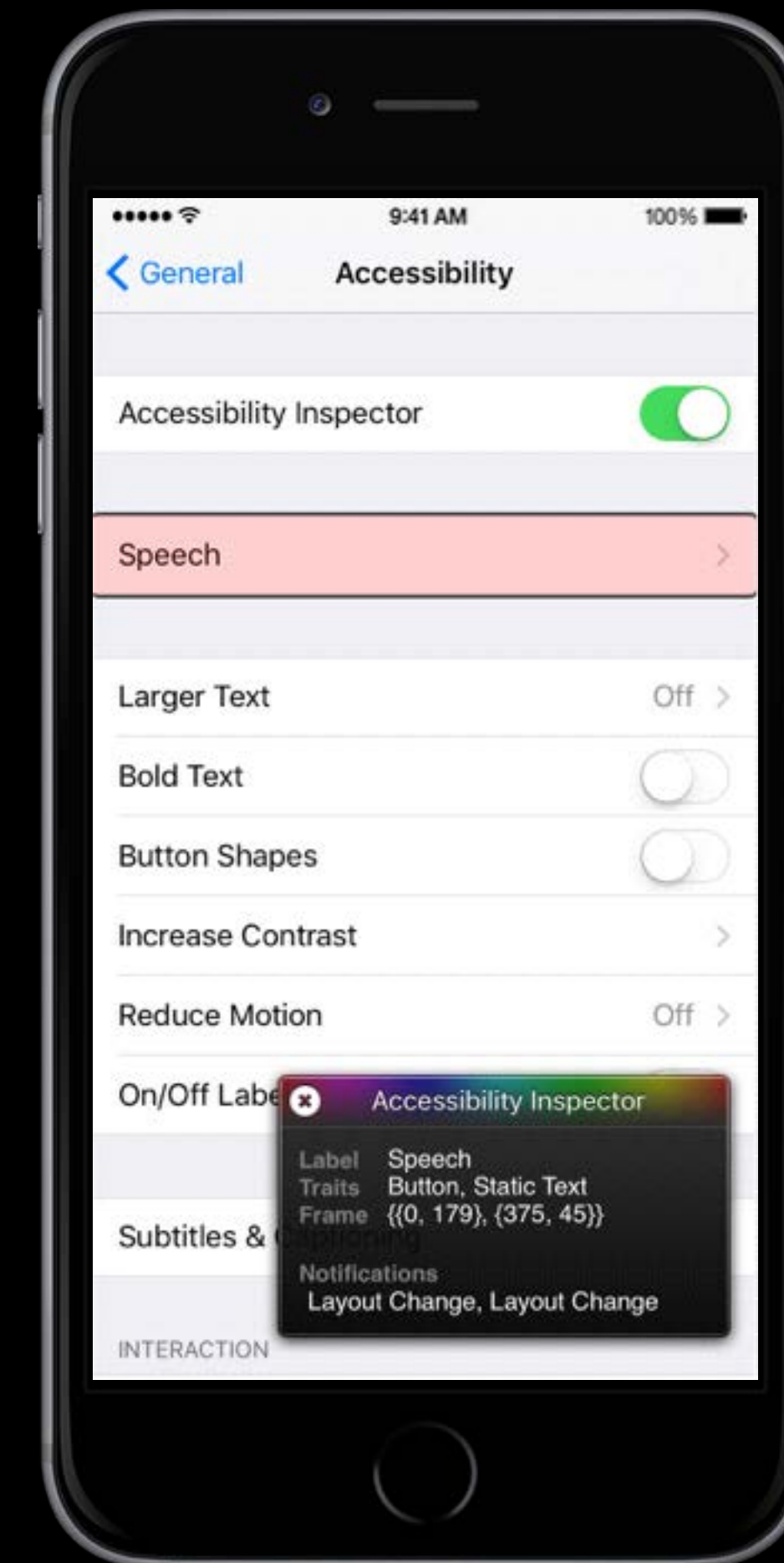
Building Accessible Apps

Design for accessibility

Audit your app

Accessibility inspector

Accessibility features



Building Accessible Apps

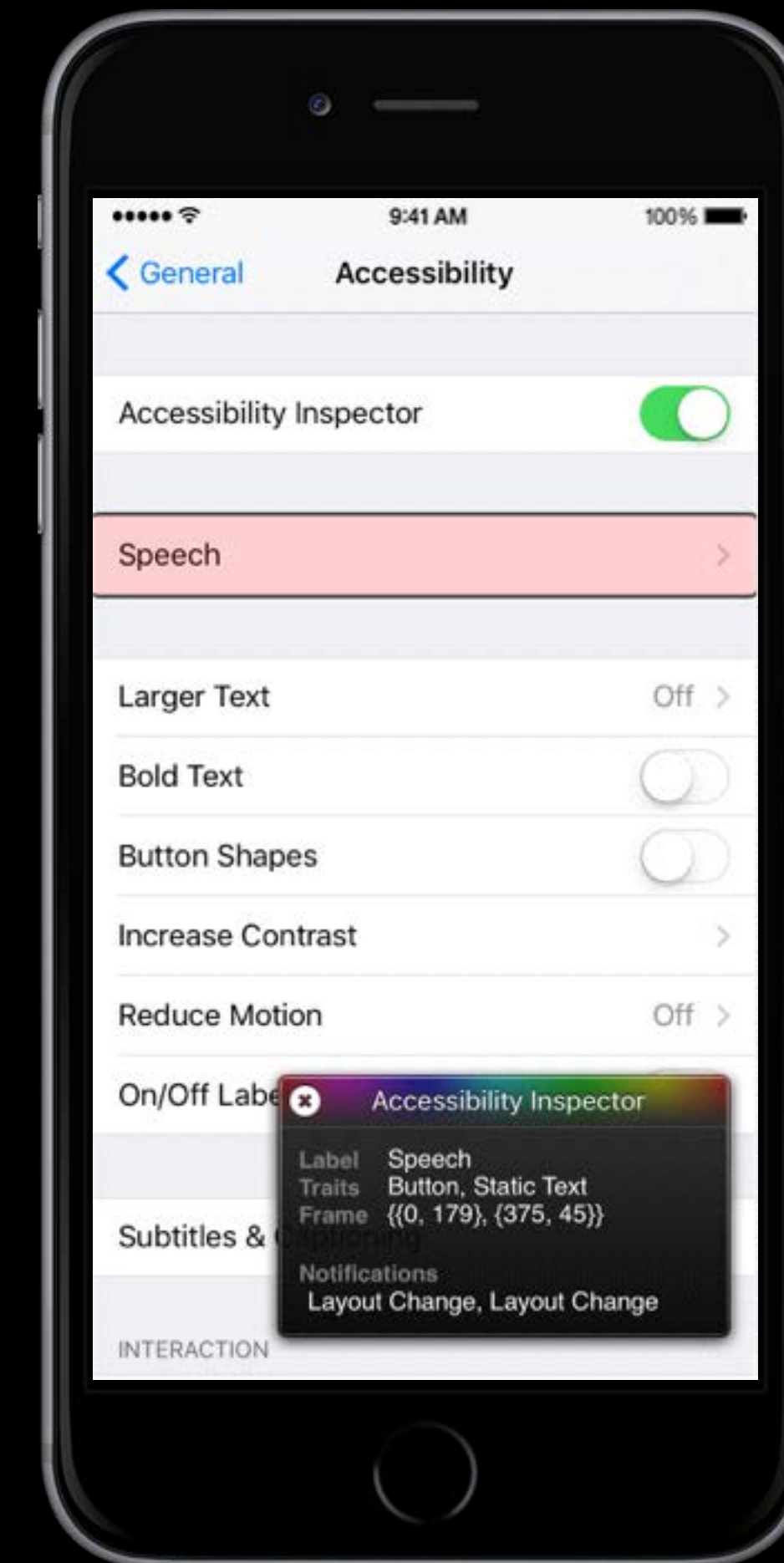
Design for accessibility

Audit your app

Accessibility inspector

Accessibility features

- VoiceOver



Building Accessible Apps

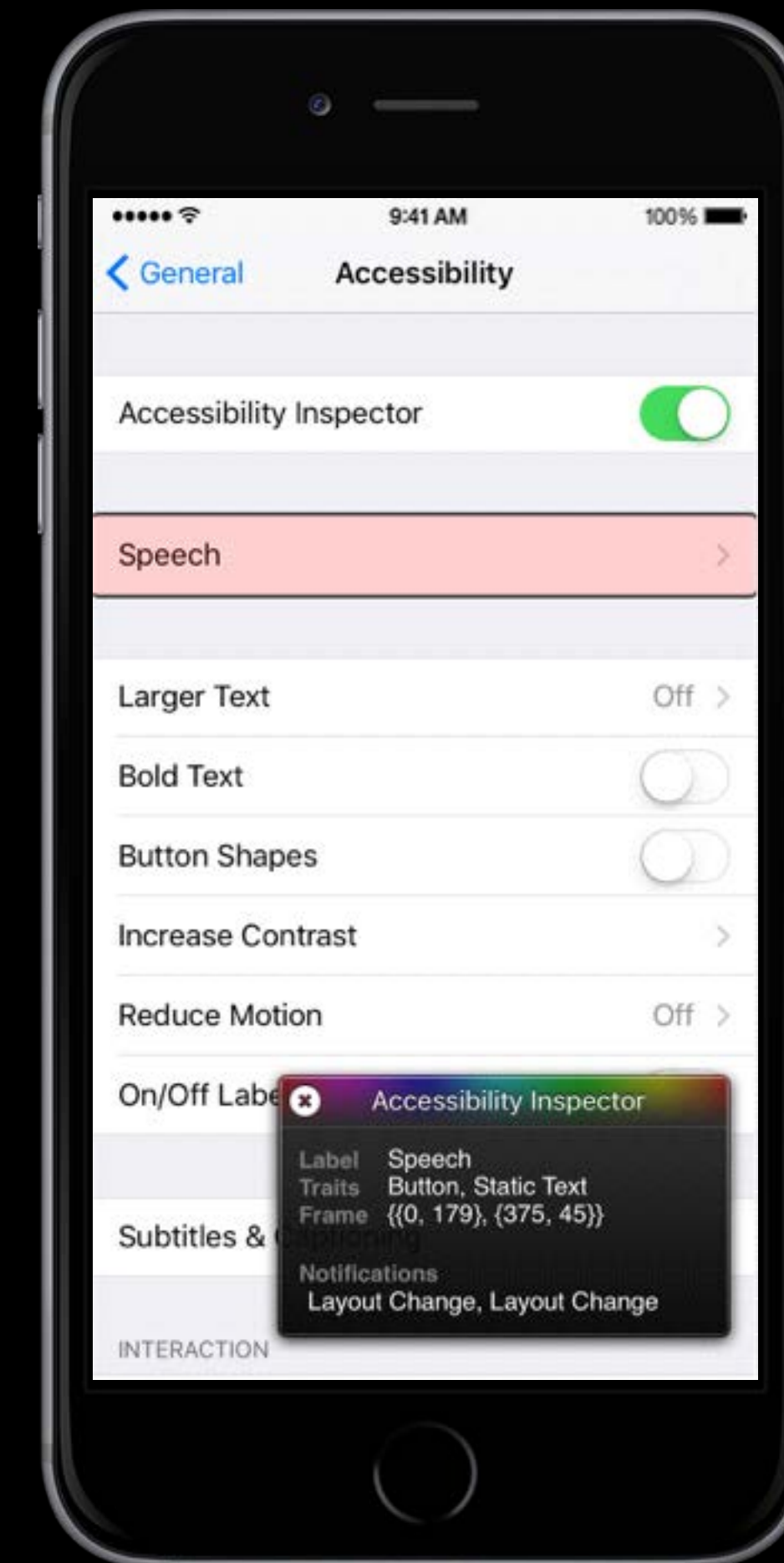
Design for accessibility

Audit your app

Accessibility inspector

Accessibility features

- VoiceOver
- Switch Control



Demo

Accessibility Audit

Accessibility Audit

Results

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

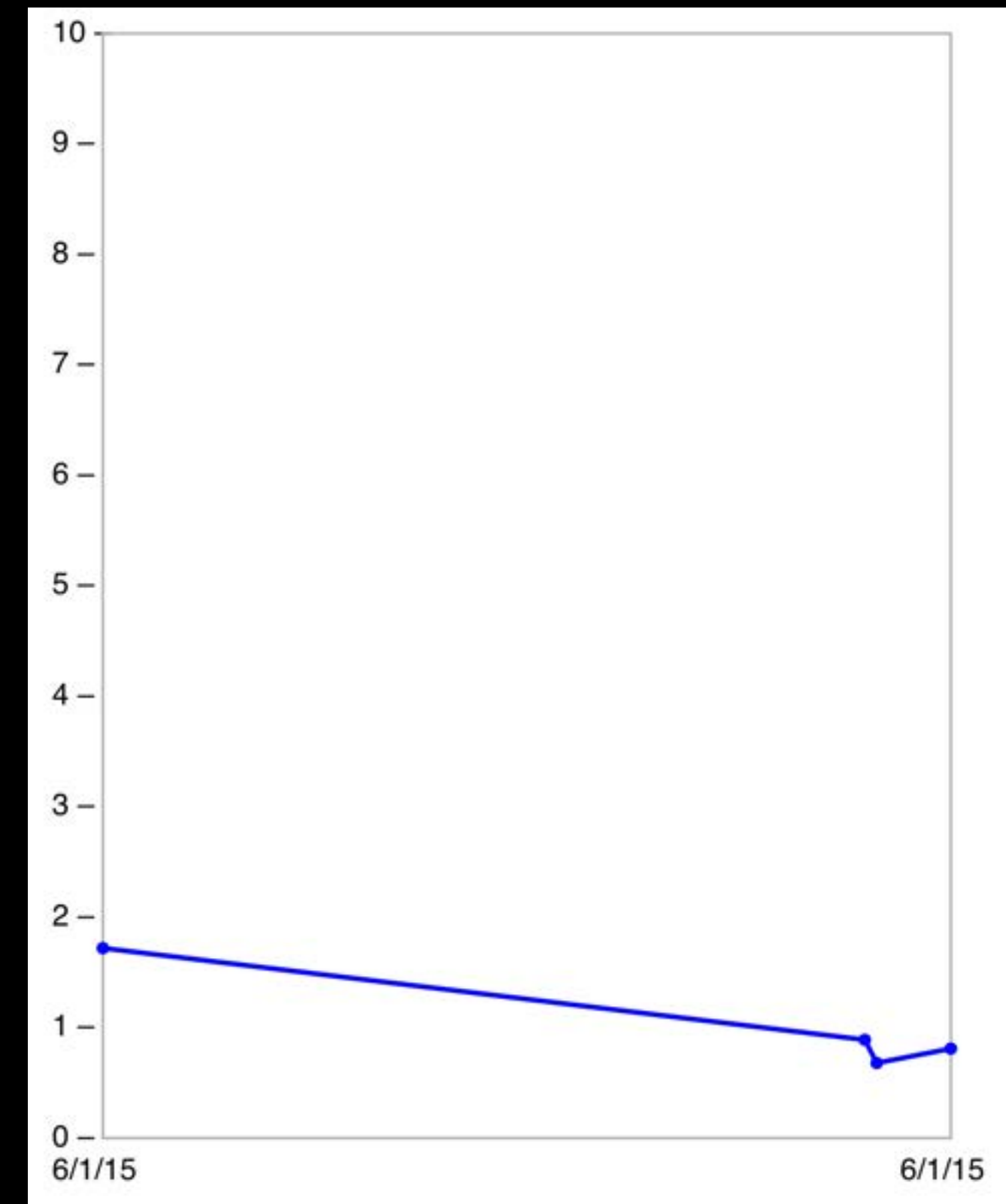
Results

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

Accessibility Audit

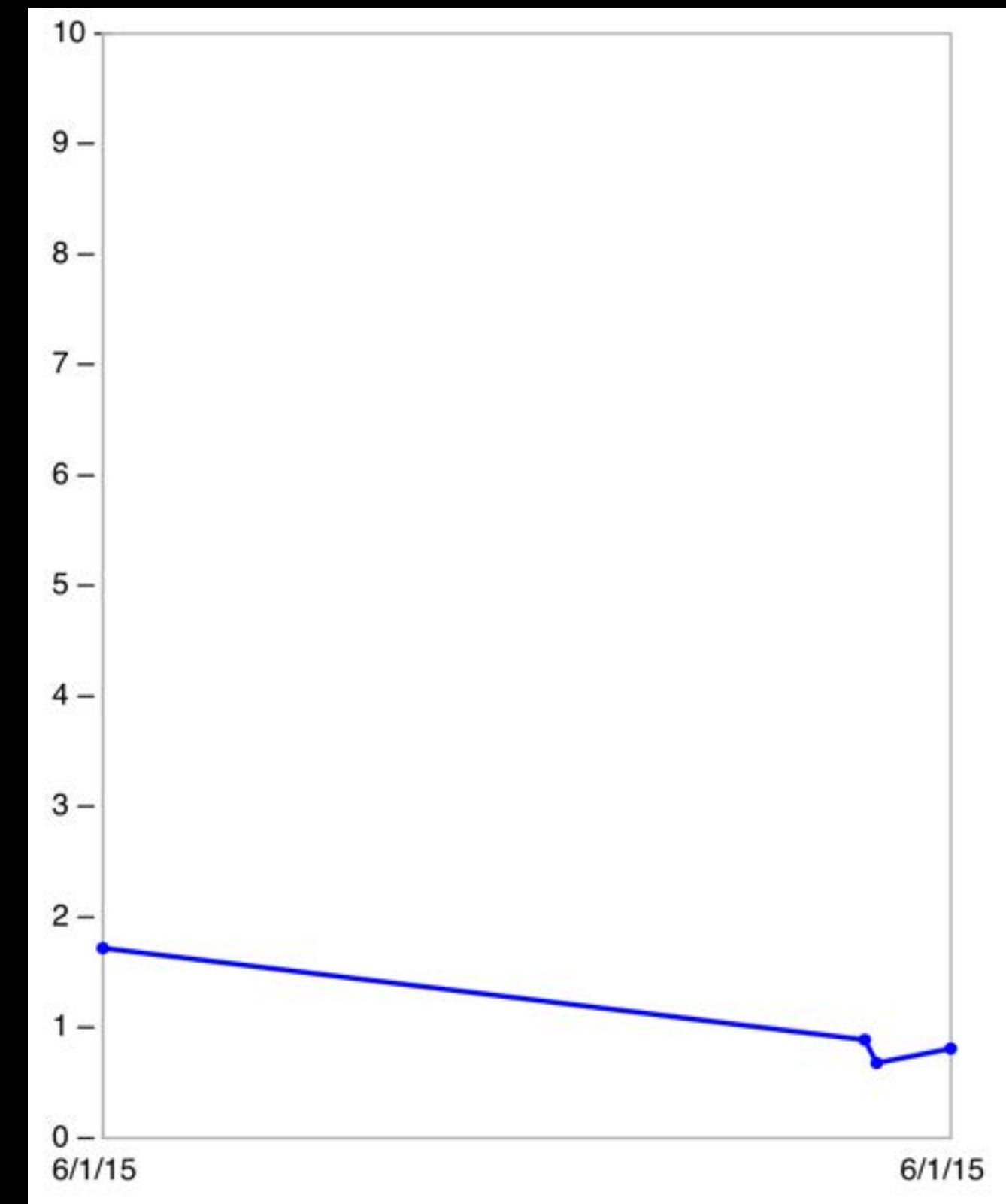
Results

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



Accessibility Audit

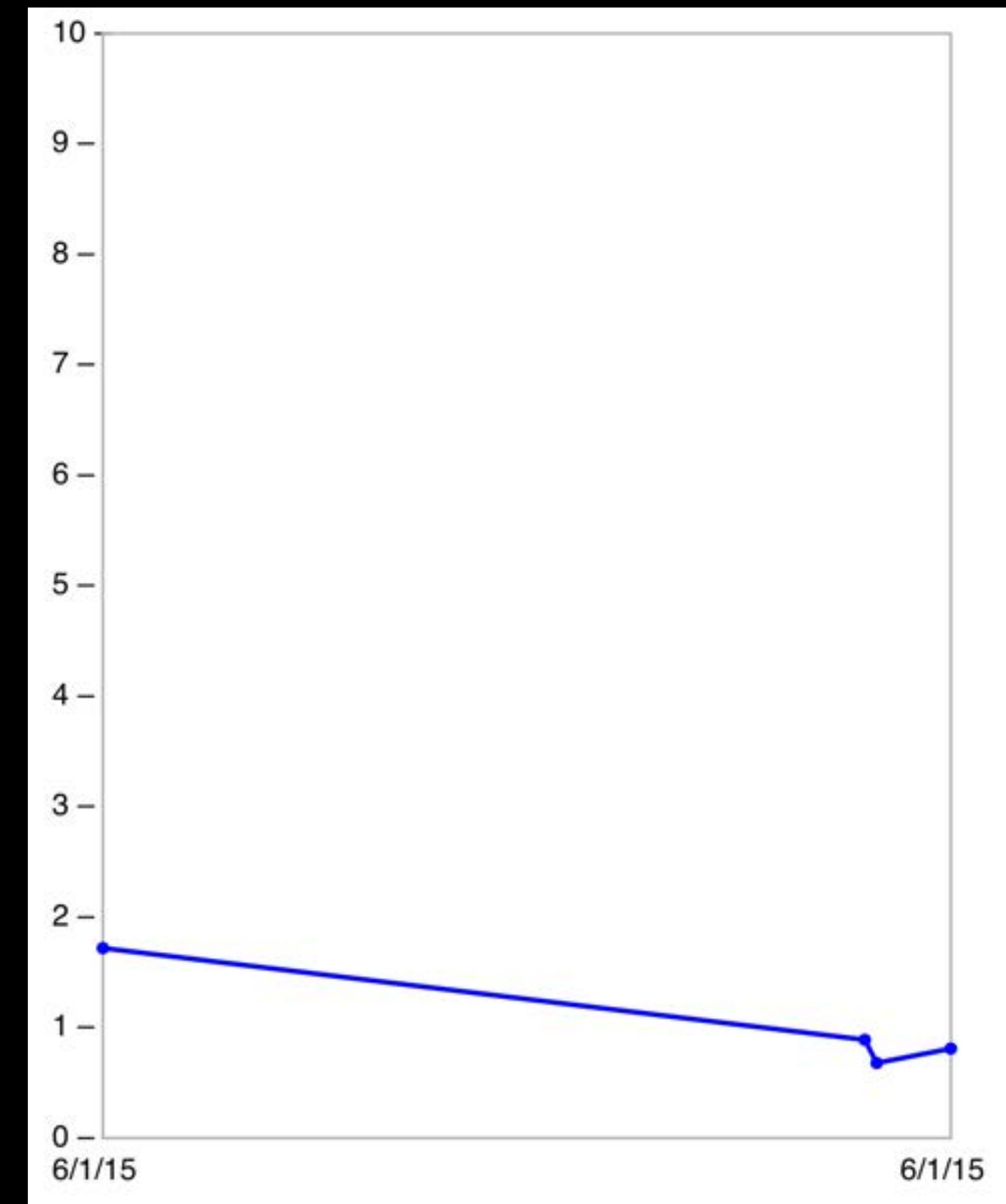
Results



Accessibility Audit

Results

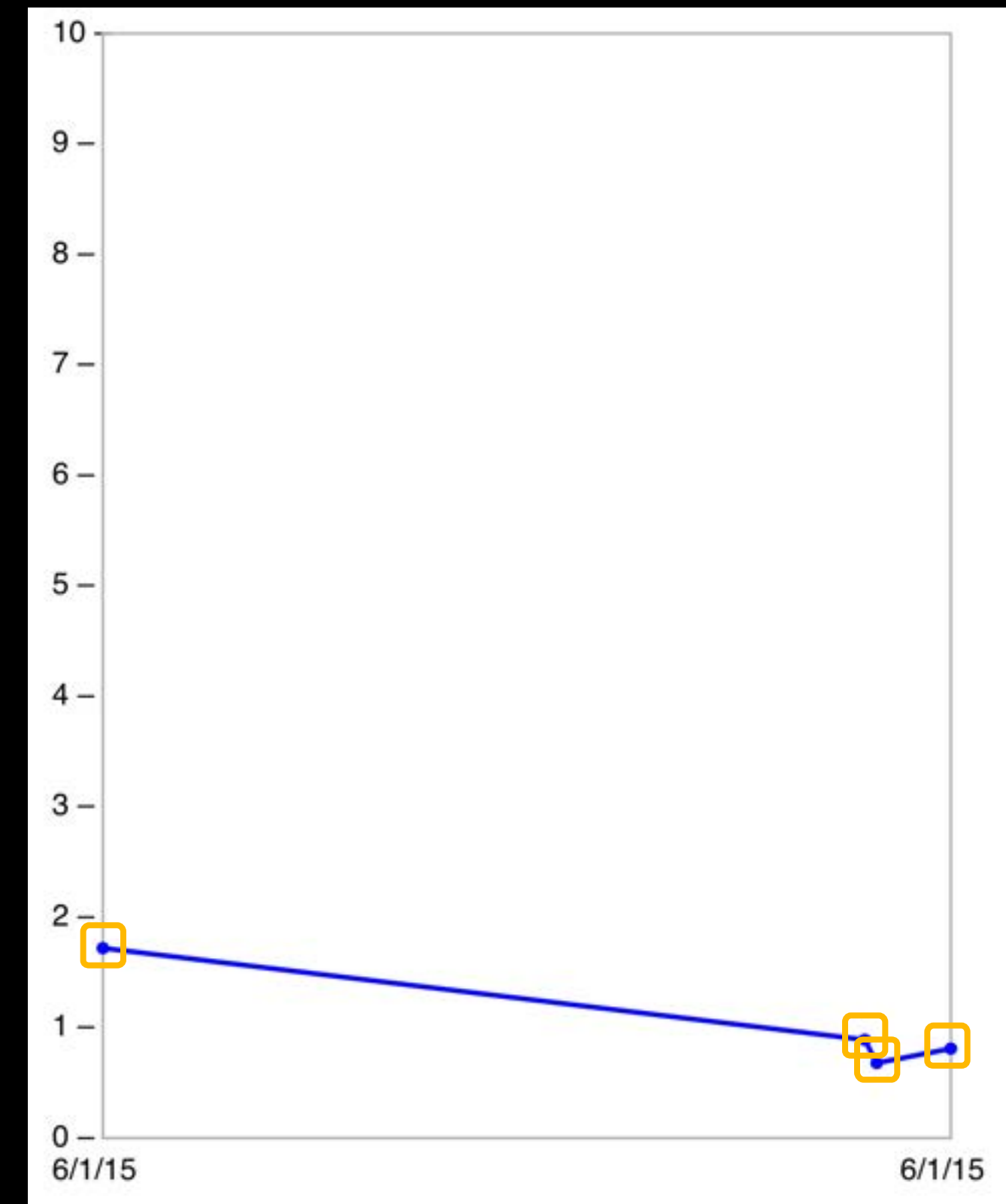
Do I serve a purpose?



Accessibility Audit

Results

Do I serve a purpose?

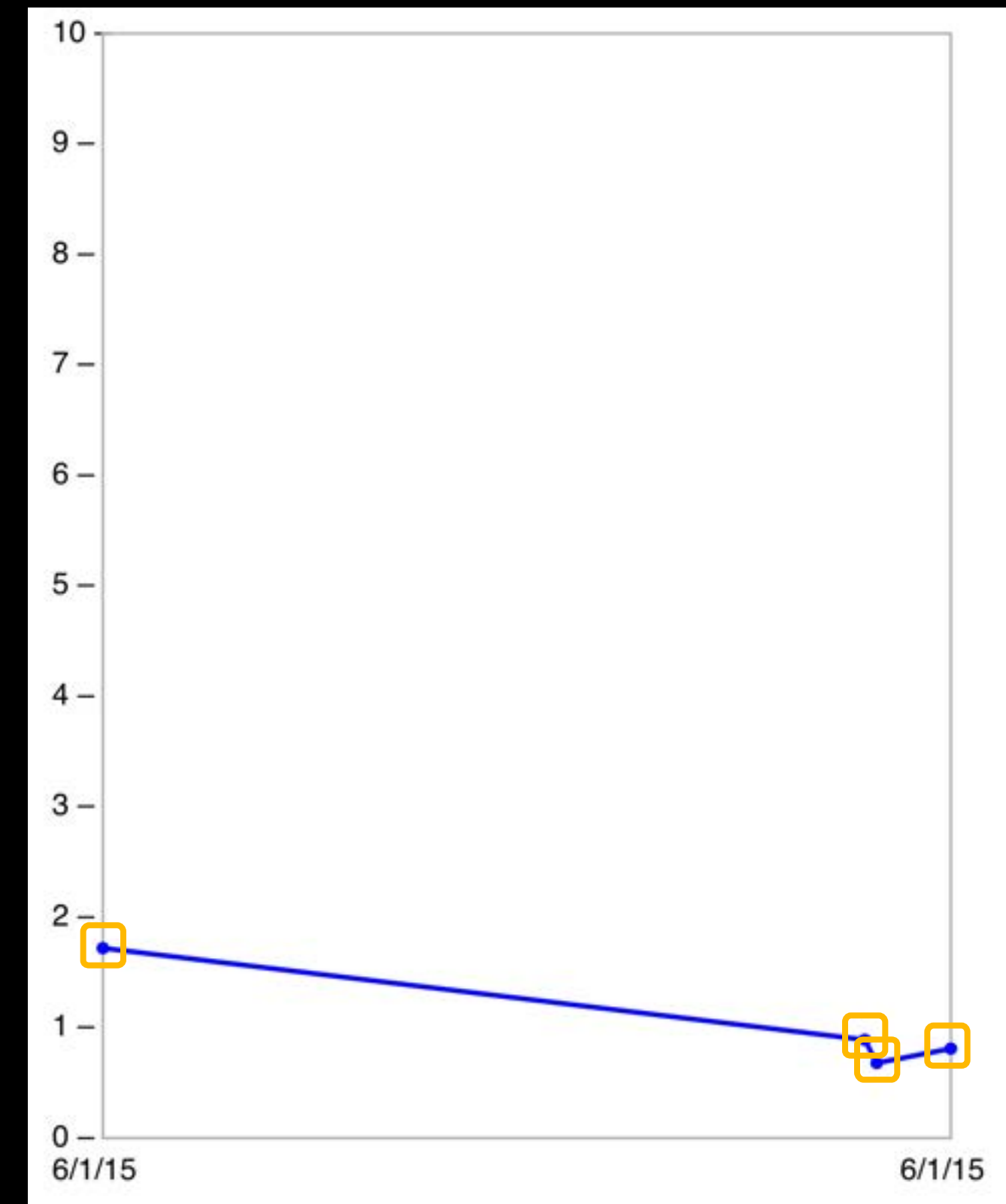


Accessibility Audit

Results

Do I serve a purpose?

Where am I?

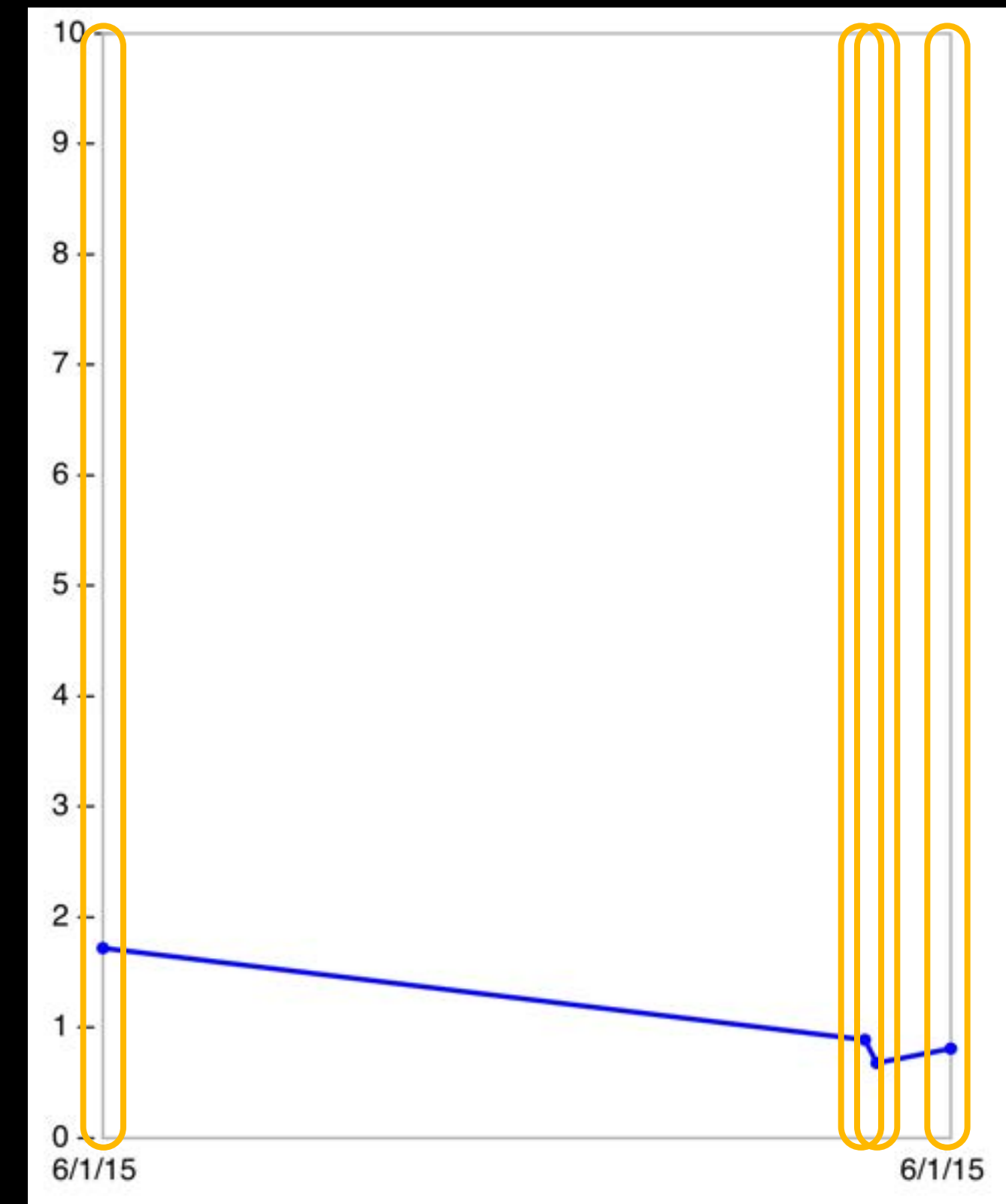


Accessibility Audit

Results

Do I serve a purpose?

Where am I?



UIAccessibility

UIAccessibilityElement

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

UIAccessibility

Magic Tap

```
func accessibilityPerformMagicTap() -> Bool
```

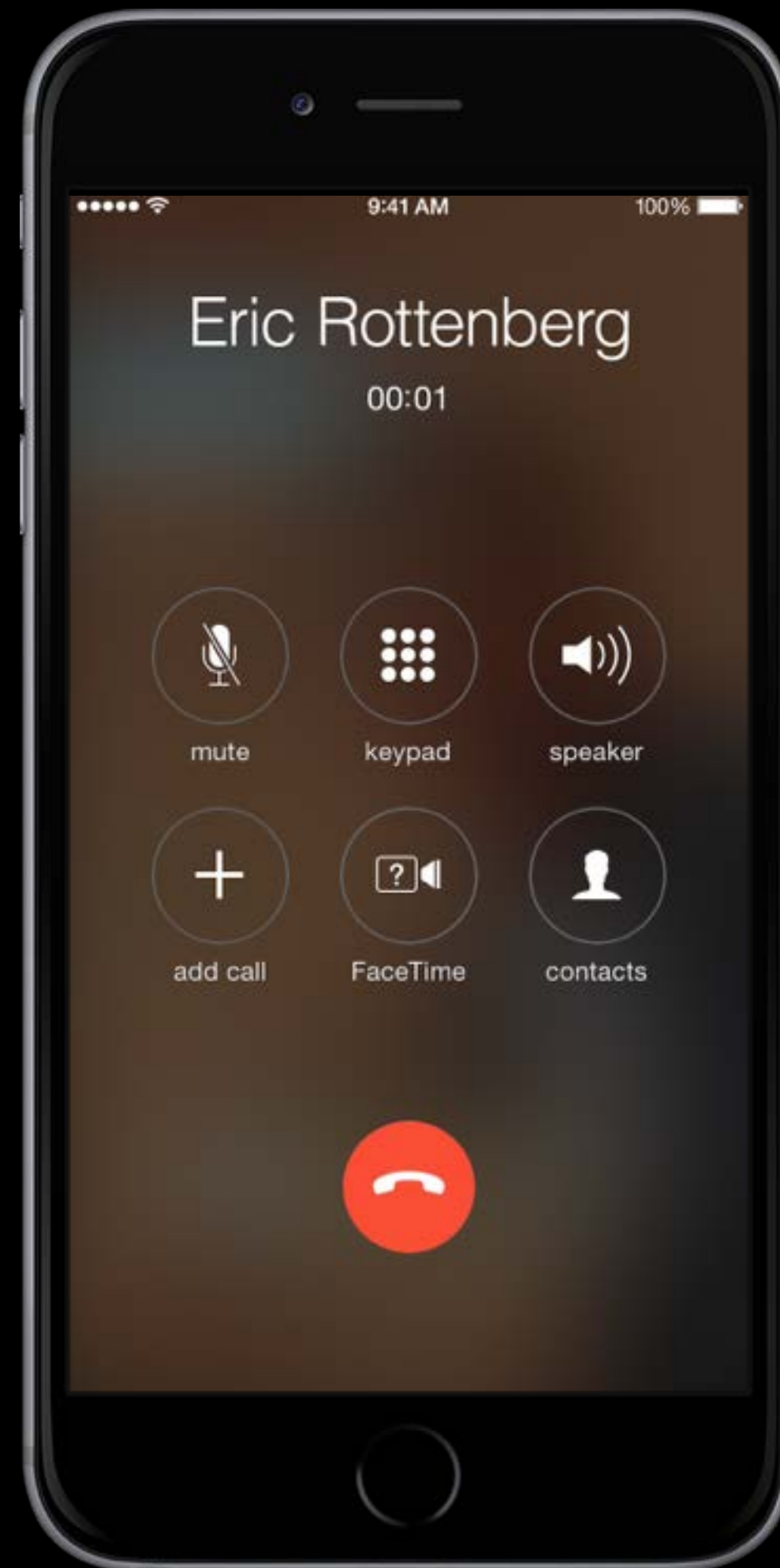
UIAccessibility

Magic Tap



UIAccessibility

Magic Tap



New API

Accessibility Focus

NEW

New API

Accessibility Focus

NEW

```
func accessibilityAssistiveTechnologyFocusedIdentifiers() -> Set<String>?  
  
func UIAccessibilityFocusedElement(assistiveTechnologyIdentifier: String?) ->  
AnyObject?
```

New API

Accessibility Focus

NEW

New API

Accessibility Focus

NEW

```
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

<http://developer.apple.com/library/>

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

Apple Watch Accessibility	Pacific Heights	Tuesday 1:30PM
Accessibility and Speech Lab	Frameworks Lab D	Tuesday 2:30PM

