

#WWDC19

# SwiftUI On All Devices

Jeff Nadeau, macOS Frameworks

Ada Turner, tvOS Frameworks

Meghna Sapre, watchOS Frameworks

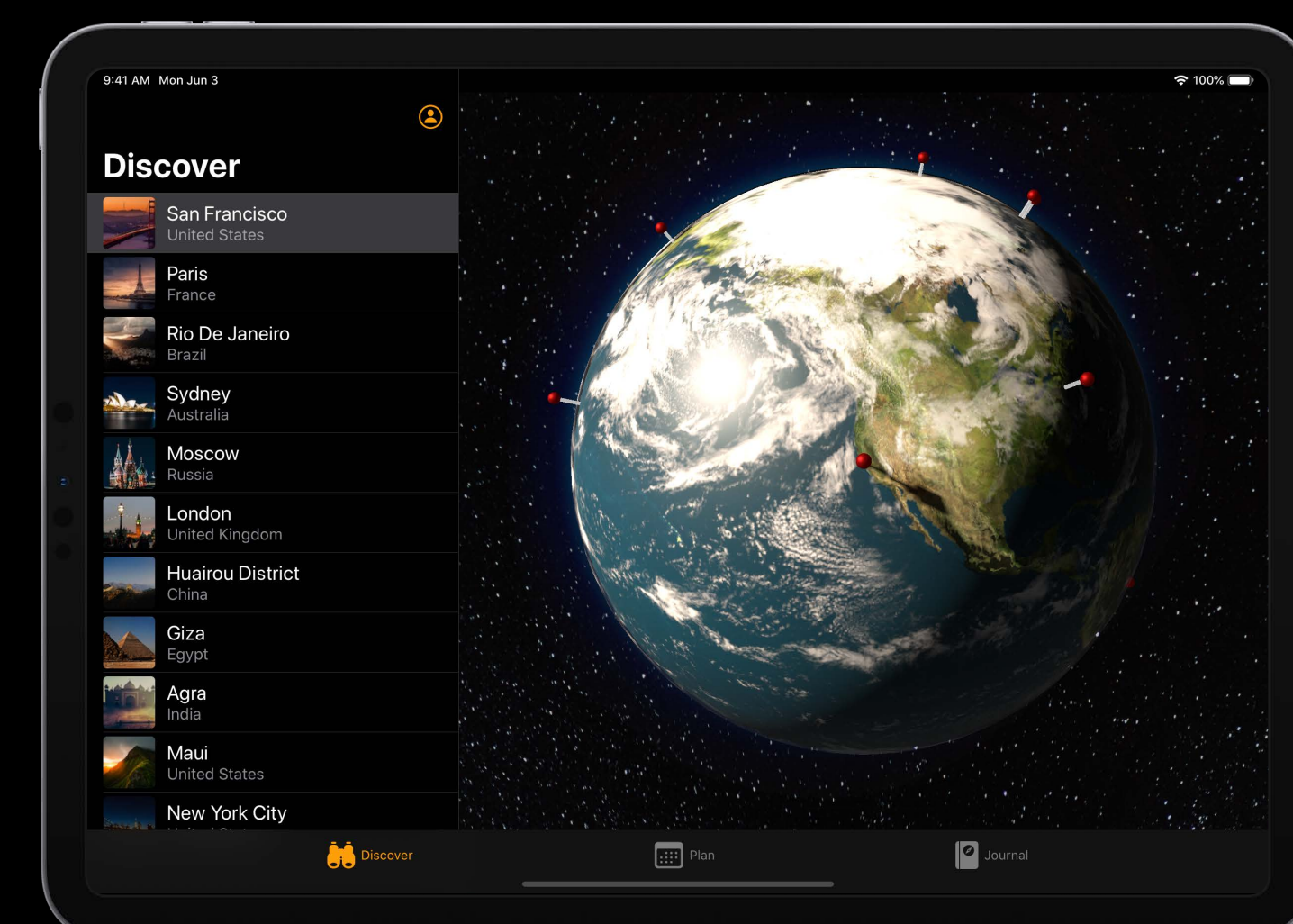
The shortest path to building great  
apps on every device

The shortest path to building great  
apps on **every** device

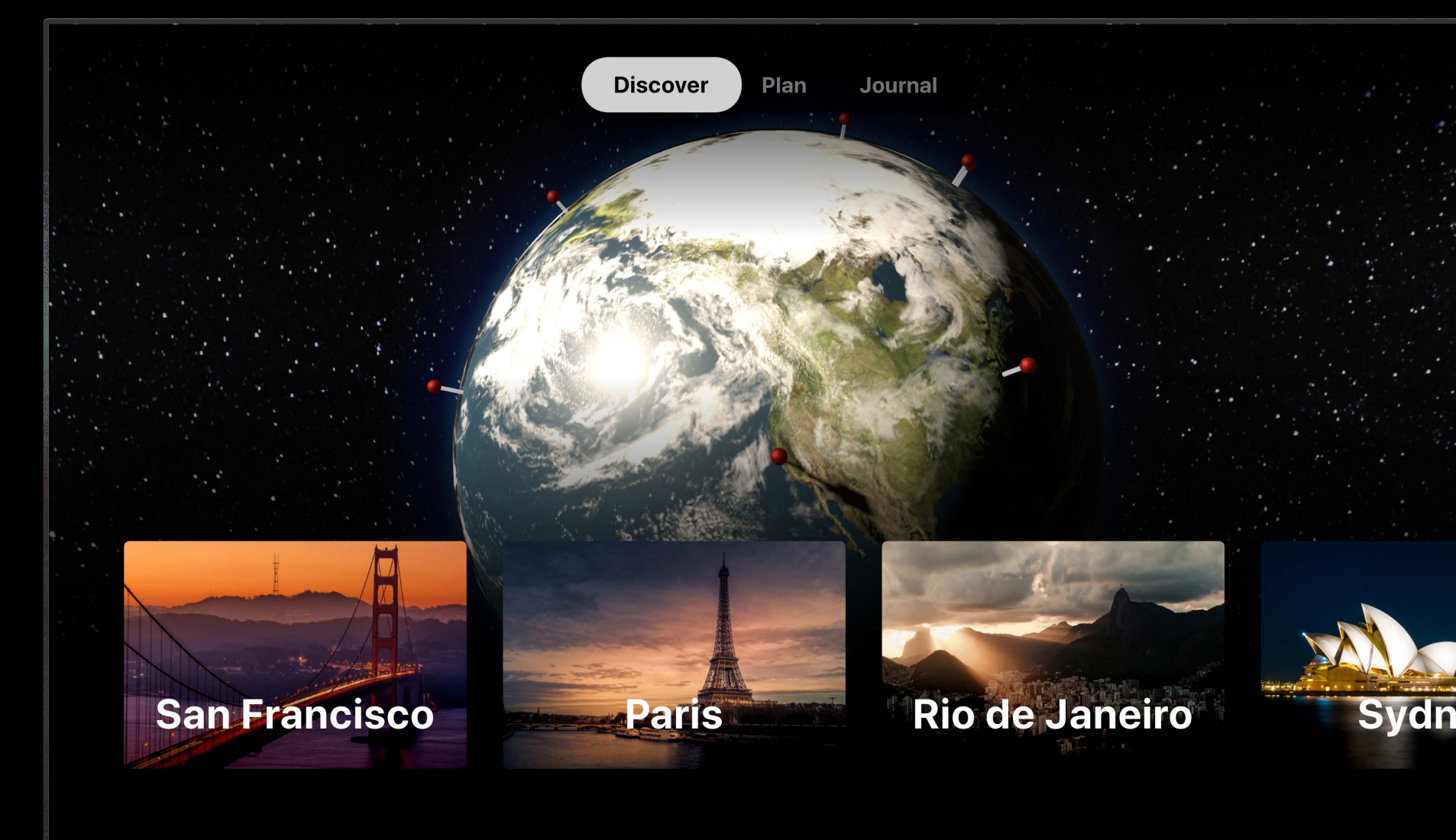
The shortest path to building great  
apps on **every** device



AppKit



UIKit



TVUIKit

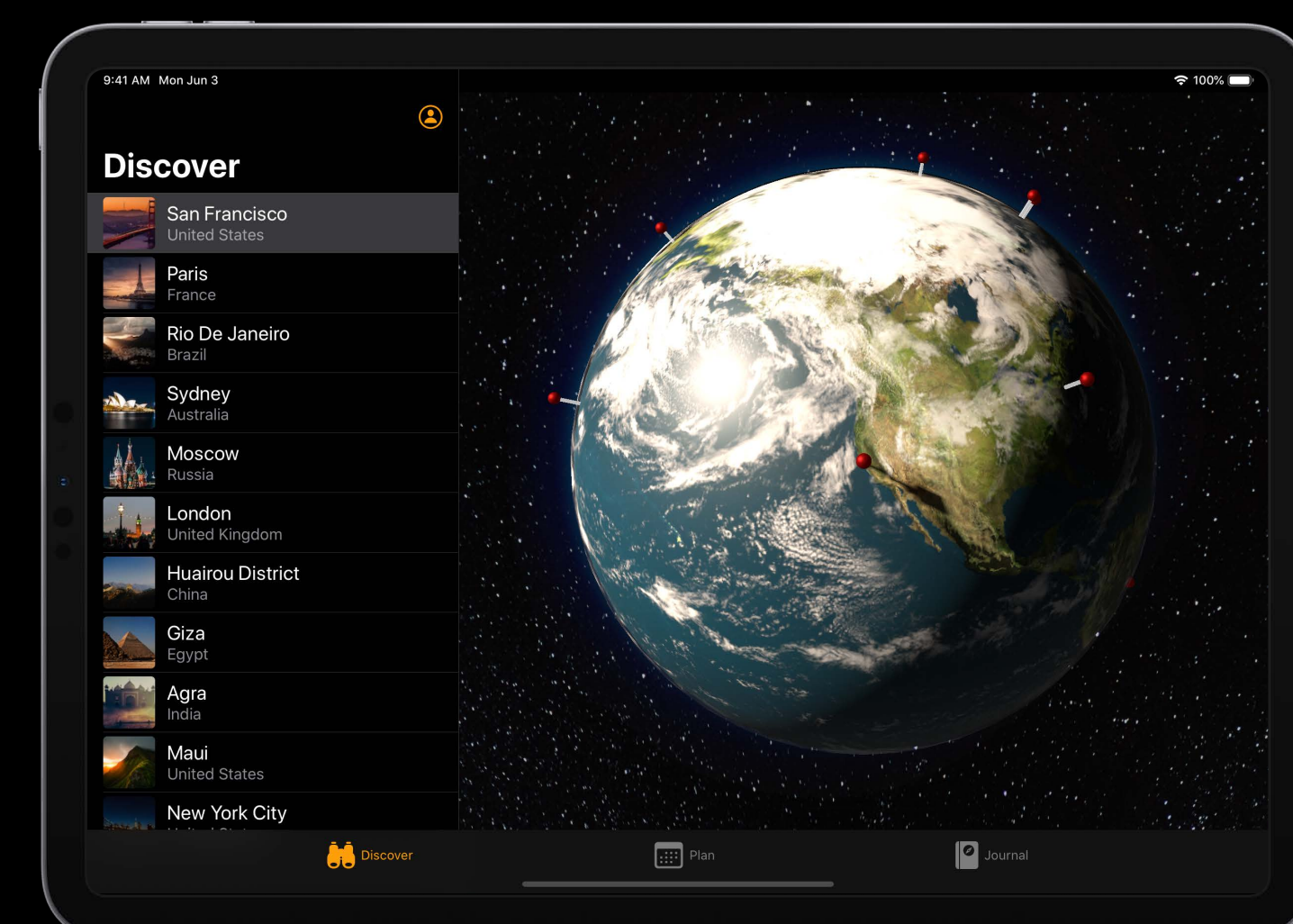
UIKit



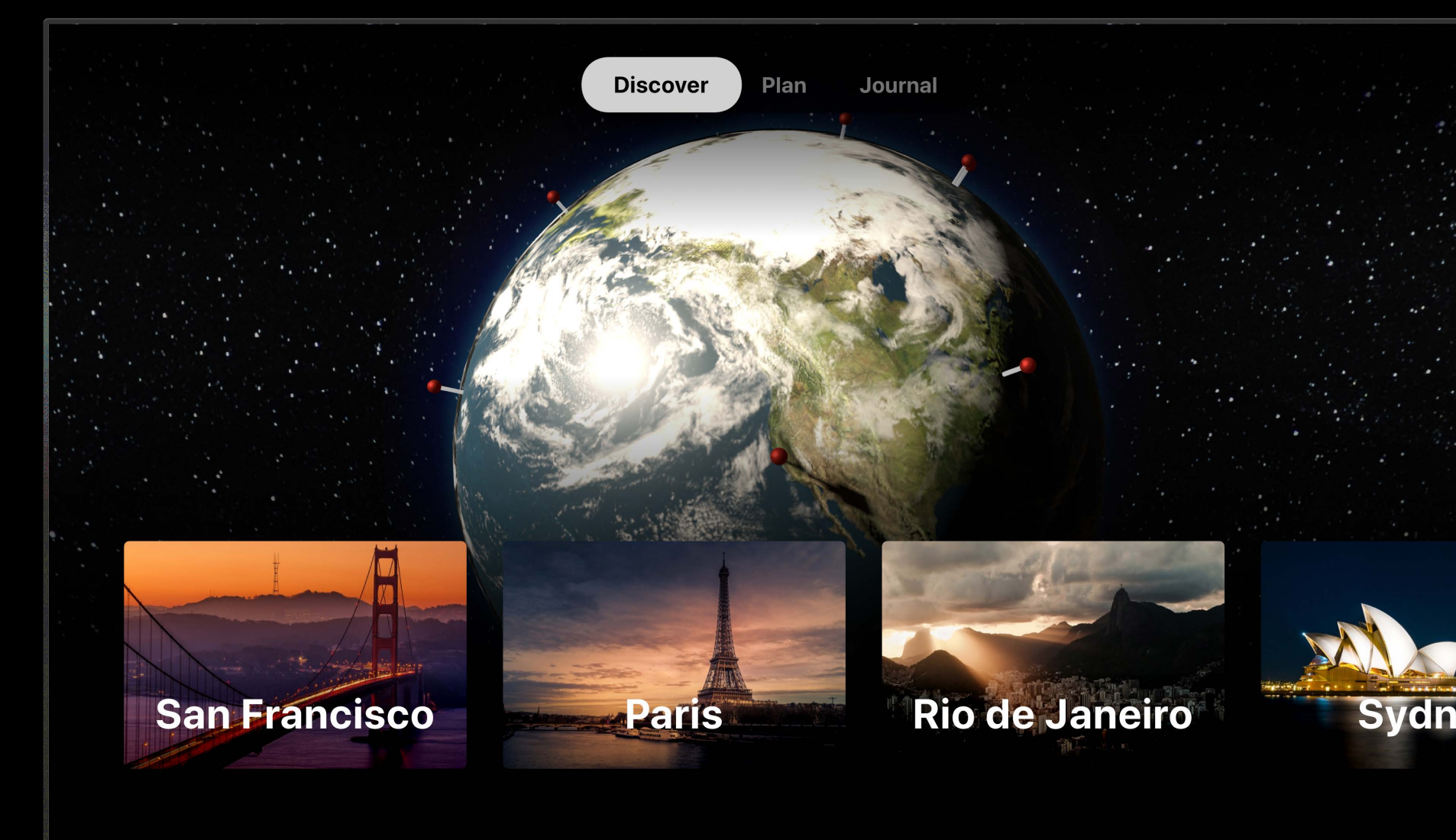
WatchKit



AppKit



UIKit

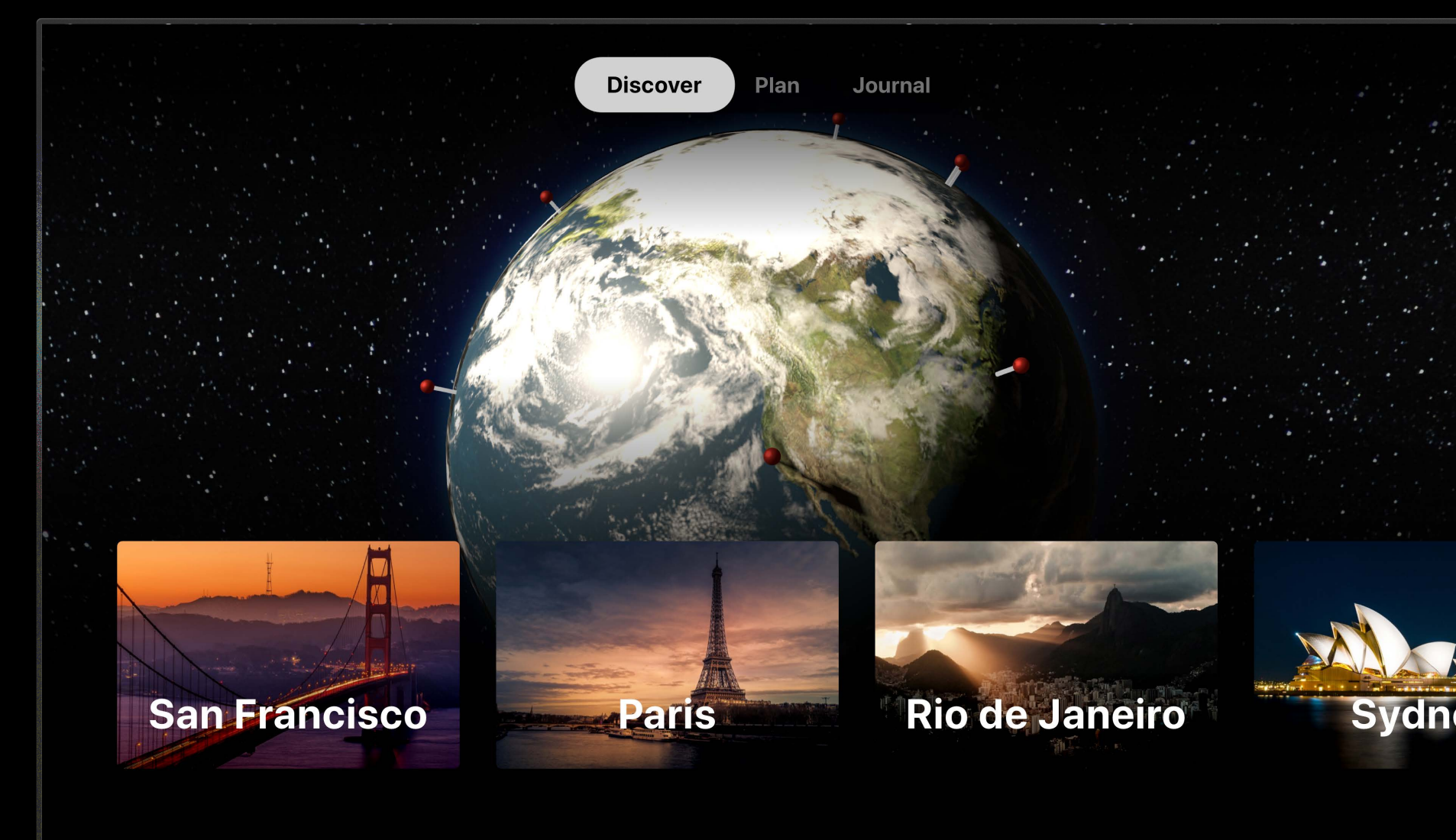
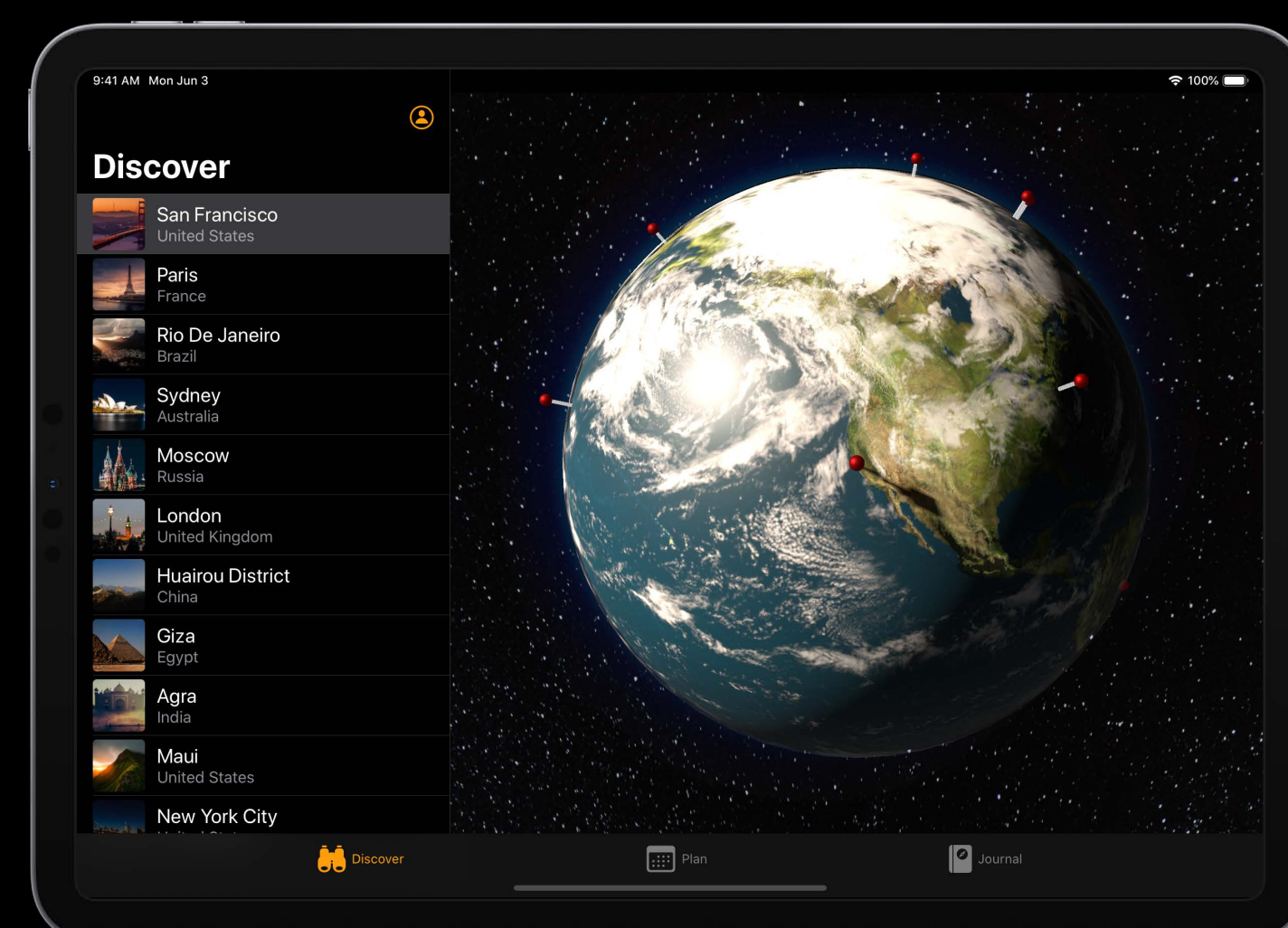


TVUIKit

UIKit



WatchKit



AppKit

UIKit

TVUIKit

WatchKit

UIKit

# Designed for Every Platform

Designed to accommodate many UI paradigms

Platform support out of the box

A common toolkit that you can learn once and use anywhere

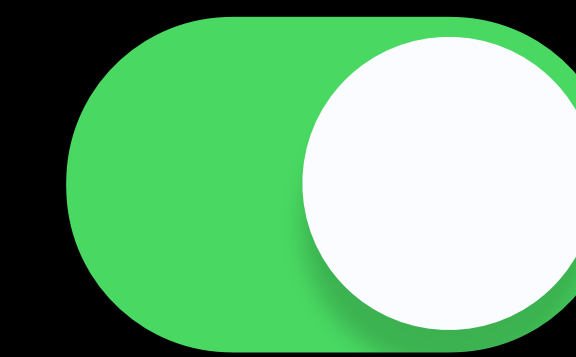


# Common Elements

## Basic controls

iOS

Bluetooth



macOS

Bluetooth

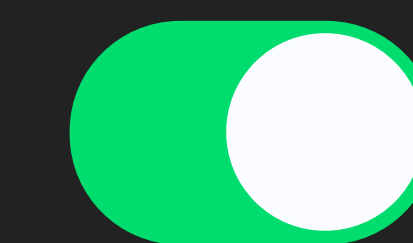
tvOS

Bluetooth

On

watchOS

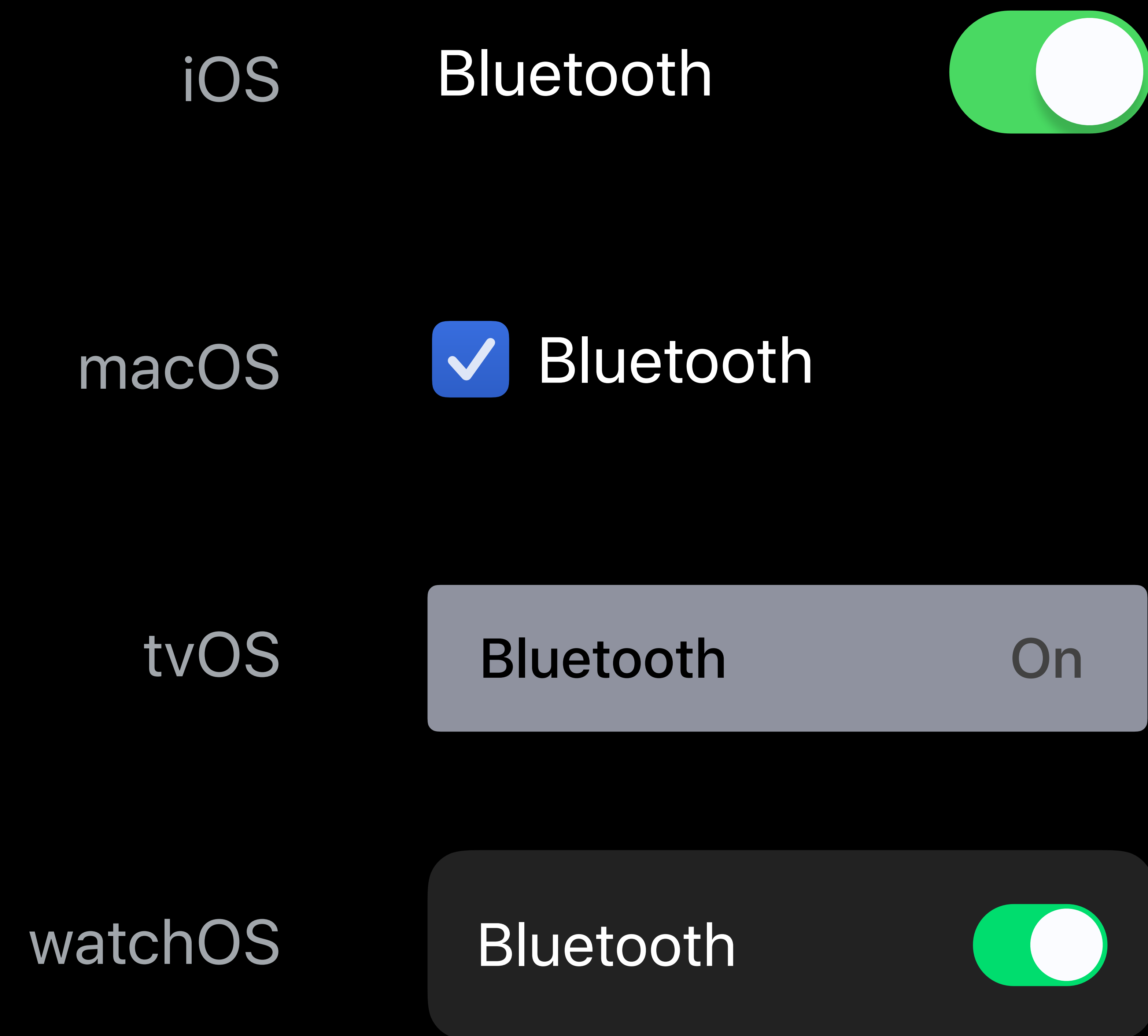
Bluetooth



# Common Elements

## Basic controls

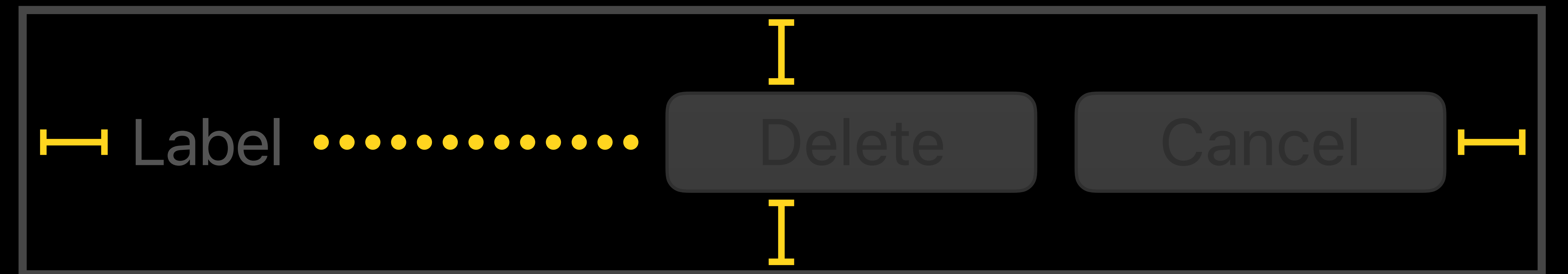
```
Toggle(isOn: $btEnabled) {  
    Text("Bluetooth")  
}
```



# Common Elements

## Layout

```
HStack {  
  Text("Label")  
  
  Spacer()  
  
  Button(action: /* */) {  
    Text("Delete")  
  }  
  
  Button(action: /* */) {  
    Text("Cancel")  
  }  
}  
.padding()
```



# Common Elements

## Advanced controls

```
Picker(selection: /* */, label: /* */) {  
    ForEach(allFruits) { fruit in  
        Text(verbatim: fruit.name)  
    }  
}
```

macOS

Blueberry



Apple  
Apricot

iOS

Banana  
Blackberry  
Blueberry

watchOS

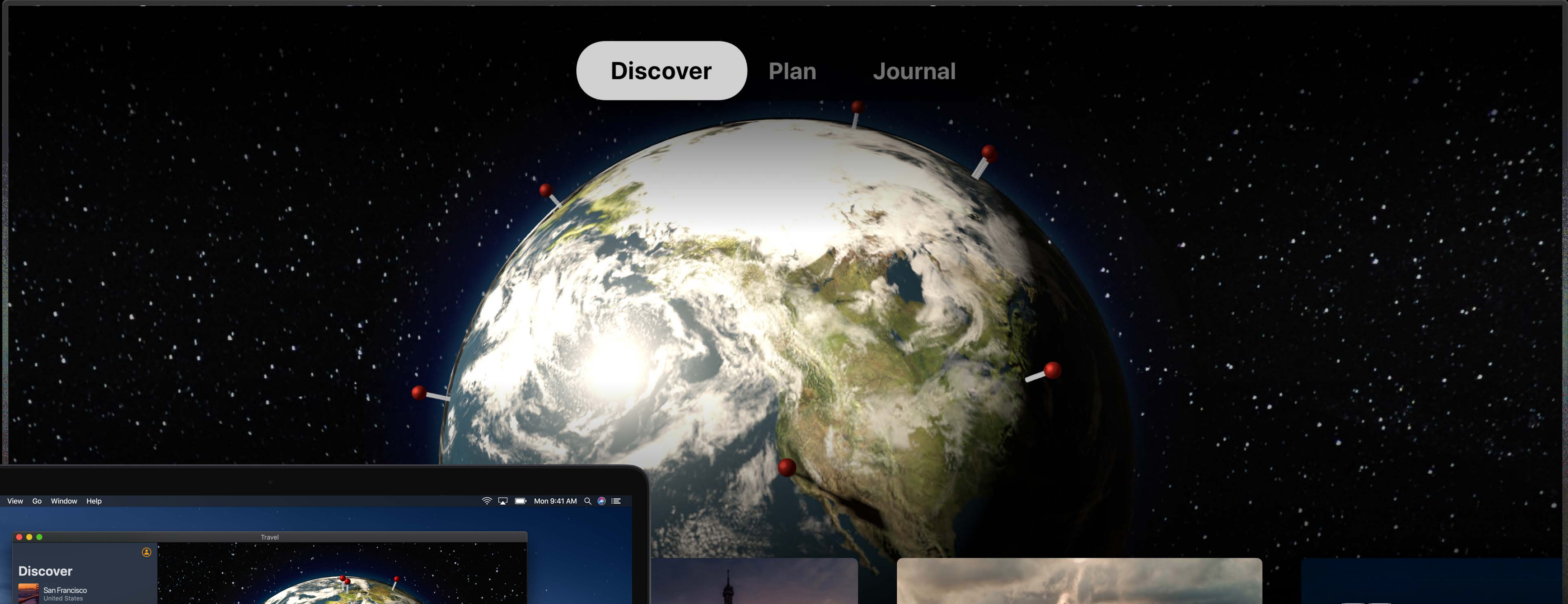
Blackberry  
Blueberry  
Dragonfruit

# Common Elements

## Advanced controls

```
Picker(selection: /* */, label: /* */) {  
    ForEach(allFruits) { fruit in  
        Text(verbatim: fruit.name)  
    }  
}
```





Of course not

**One Size Does Not Fit All**



# One Size Does Not Fit All

There's no such thing as a "one size fits all app"

# One Size Does Not Fit All

There's no such thing as a "one size fits all app"

Make the most of each platform's strengths

# One Size Does Not Fit All

There's no such thing as a "one size fits all app"

Make the most of each platform's strengths

Share skillset and toolset

# One Size Does Not Fit All

There's no such thing as a "one size fits all app"

Make the most of each platform's strengths

Share skillset and toolset

Share code where it makes sense

Write once, run anywhere

~~Write~~ once, ~~run~~ anywhere

once, anywhere

Learn once, apply anywhere



We built an app

We built four apps

# Landmarks

# Landmarks

Research and visit landmarks

# Landmarks

Research and visit landmarks

Look at photos and visitor info

# Landmarks

Research and visit landmarks

Look at photos and visitor info

Get maps and directions

# Landmarks

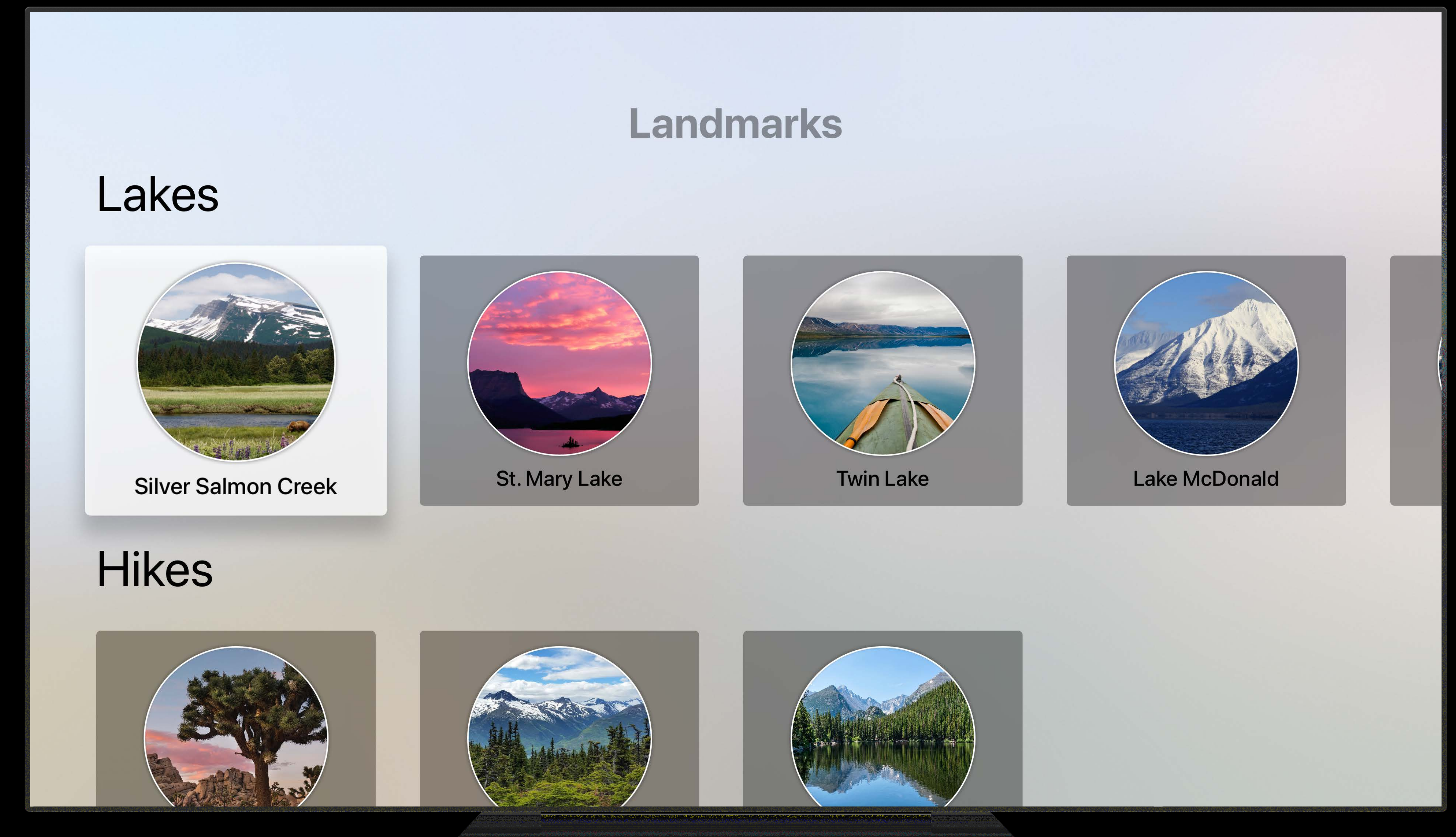
Research and visit landmarks

Look at photos and visitor info

Get maps and directions

Mark favorites

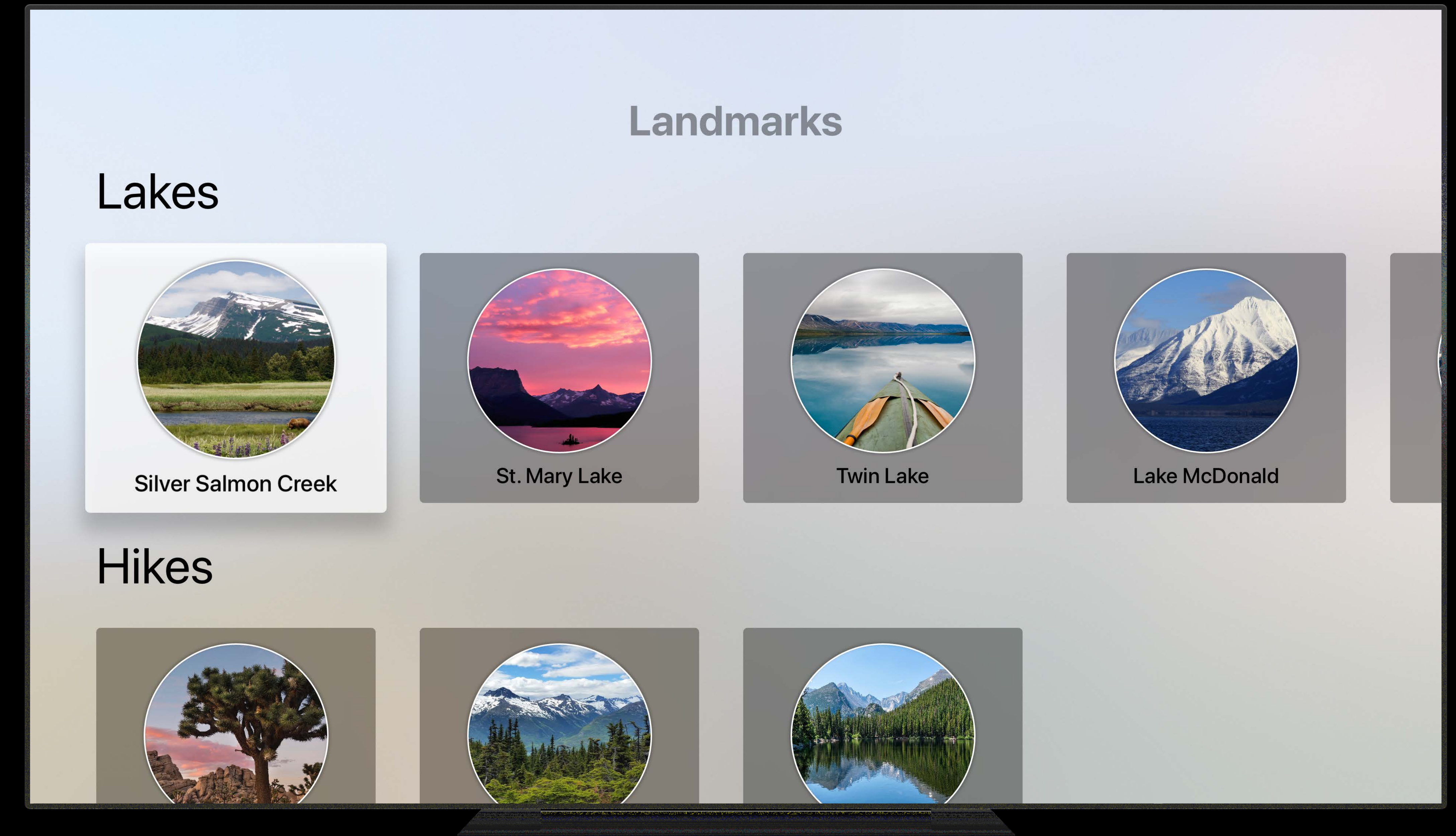
# Landmarks for Apple TV





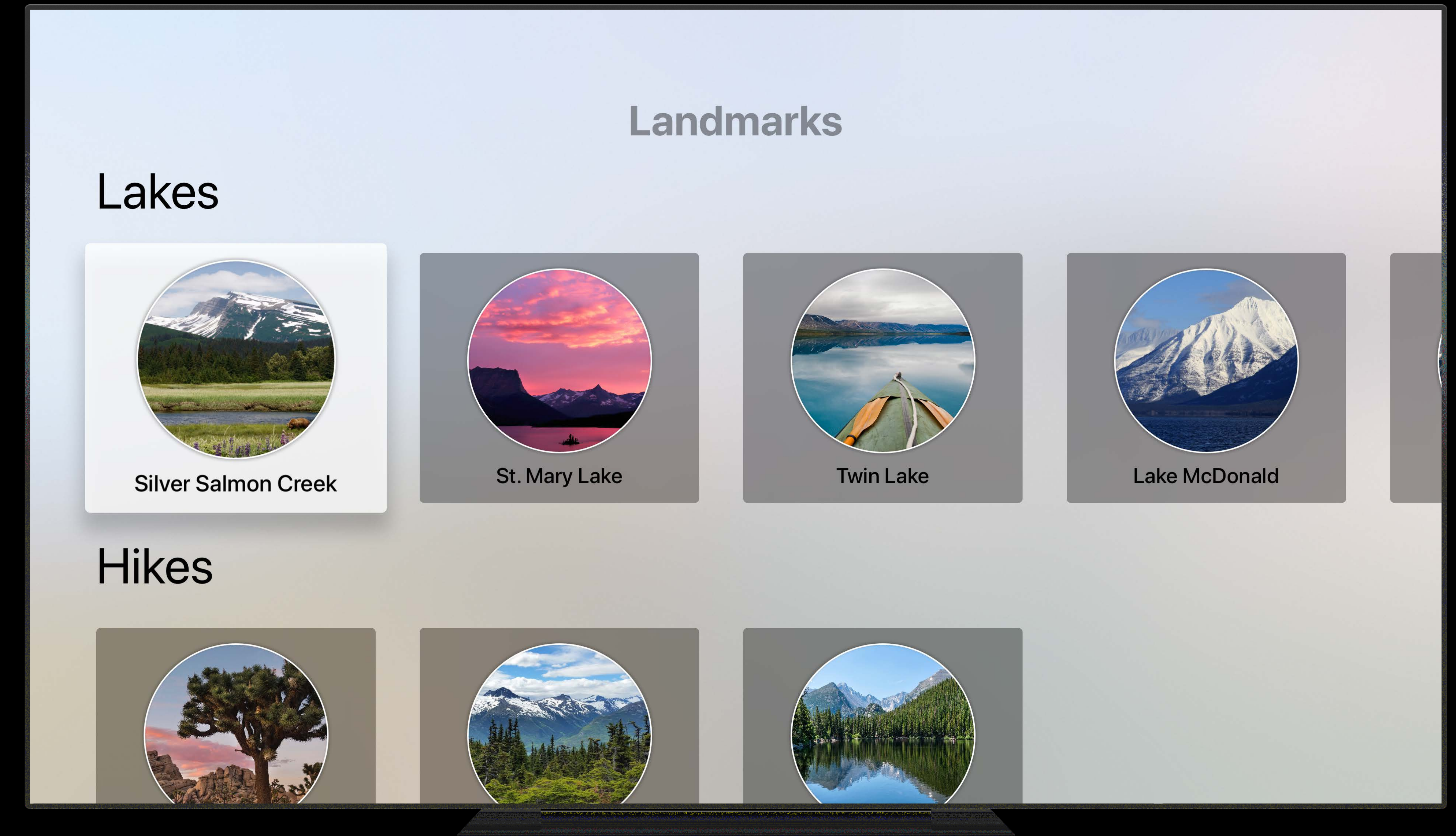
# Landmarks for Apple TV

Couch surfing for places to go



# Landmarks for Apple TV

Couch surfing for places to go  
Together with family or friends

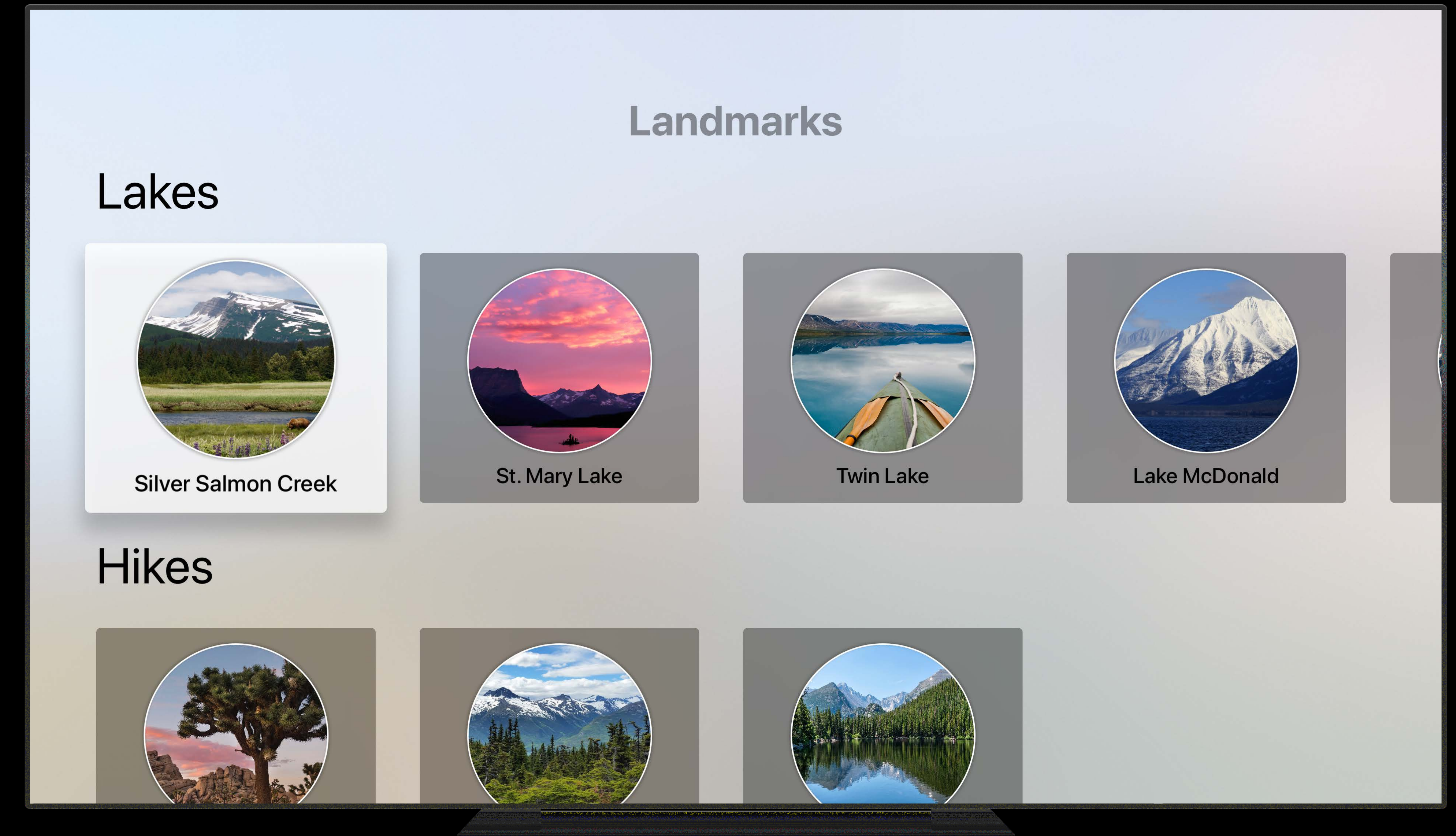


# Landmarks for Apple TV

Couch surfing for places to go

Together with family or friends

Mark favorites to research later



# Landmarks for Mac



# Landmarks for Mac

Research many options in detail



# Landmarks for Mac

Research many options in detail

Compare information



# Landmarks for Mac

Research many options in detail

Compare information

Sort and filter



# Landmarks for Mac

Research many options in detail

Compare information

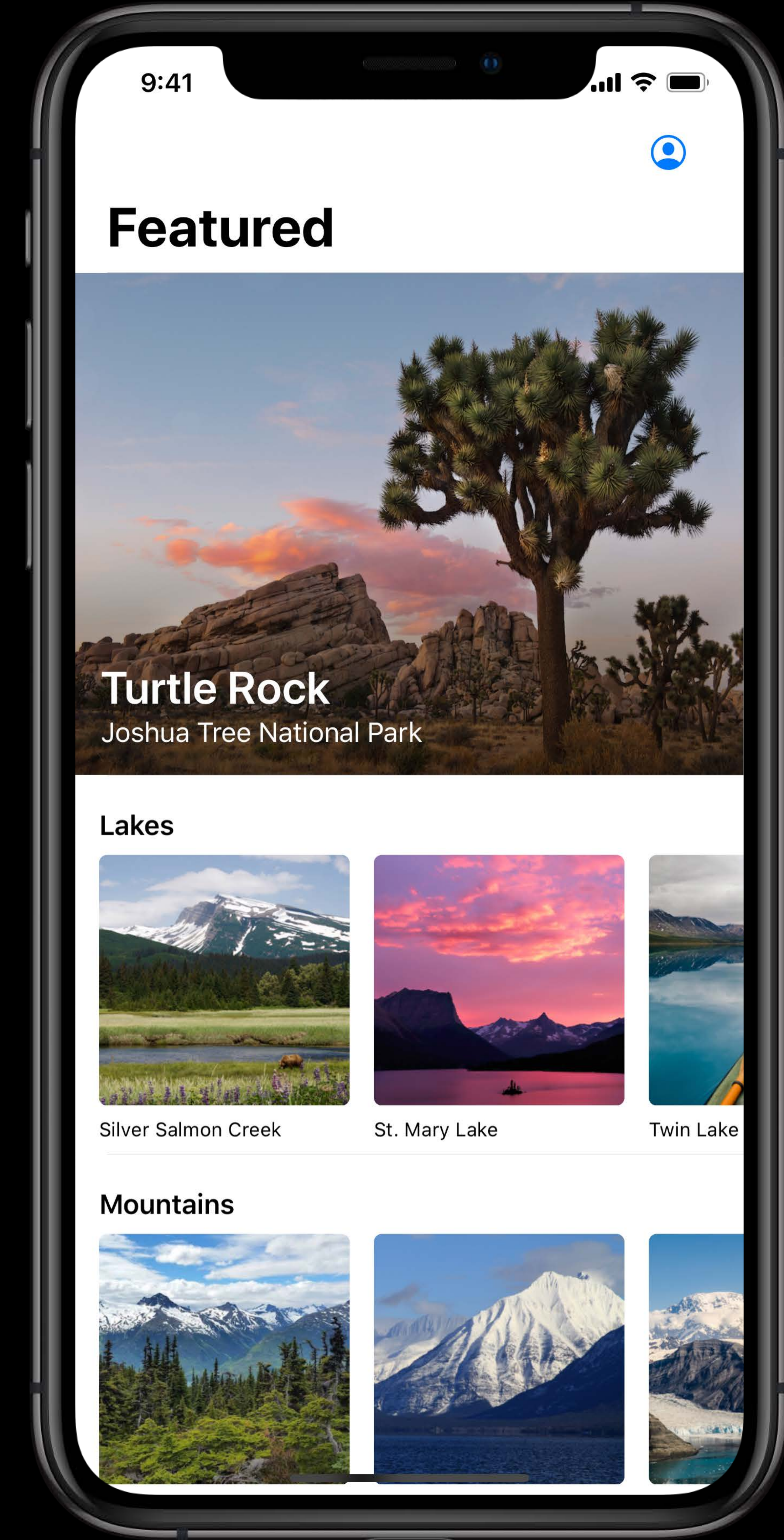
Sort and filter

Read up on the details



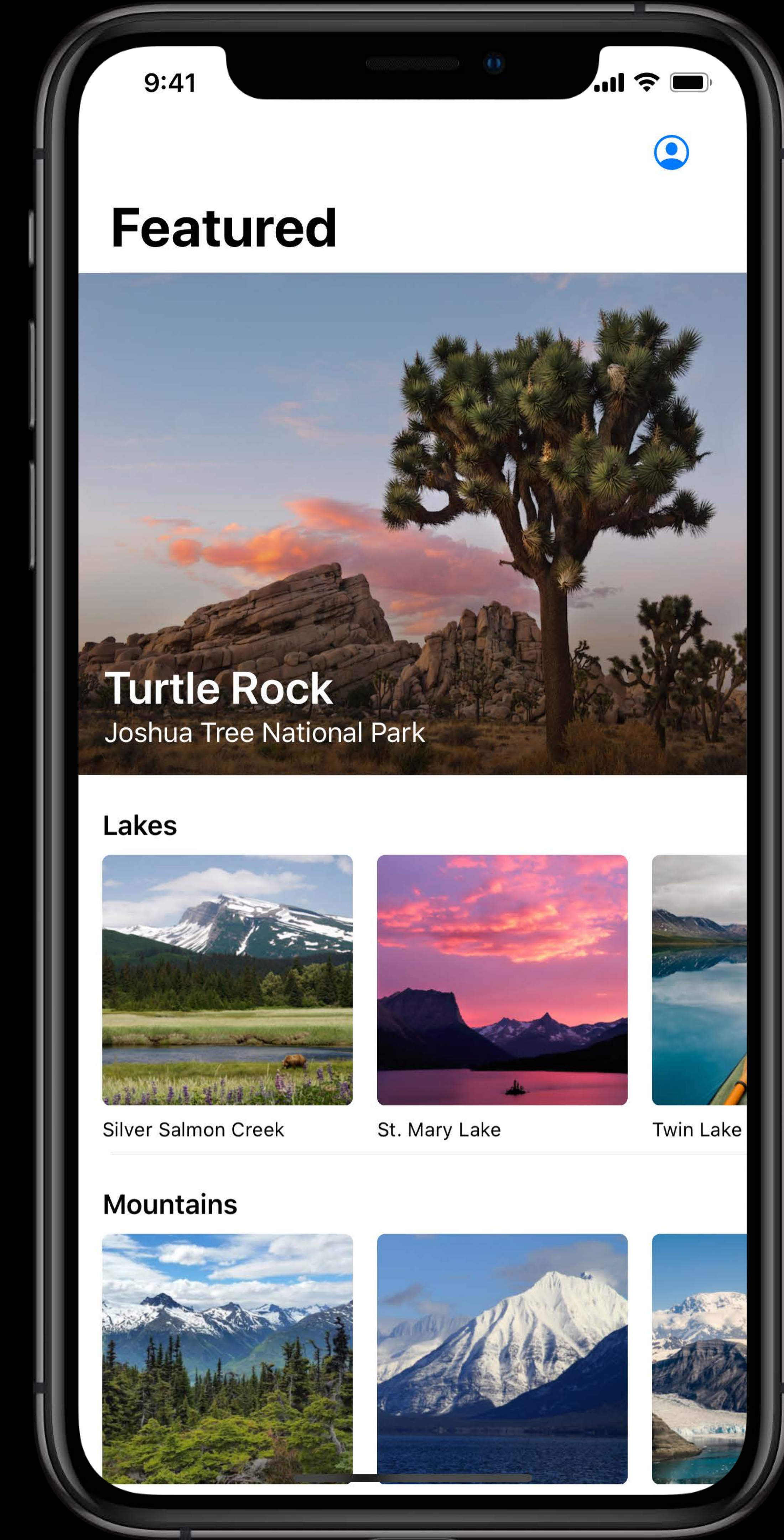


# Landmarks for iOS



# Landmarks for iOS

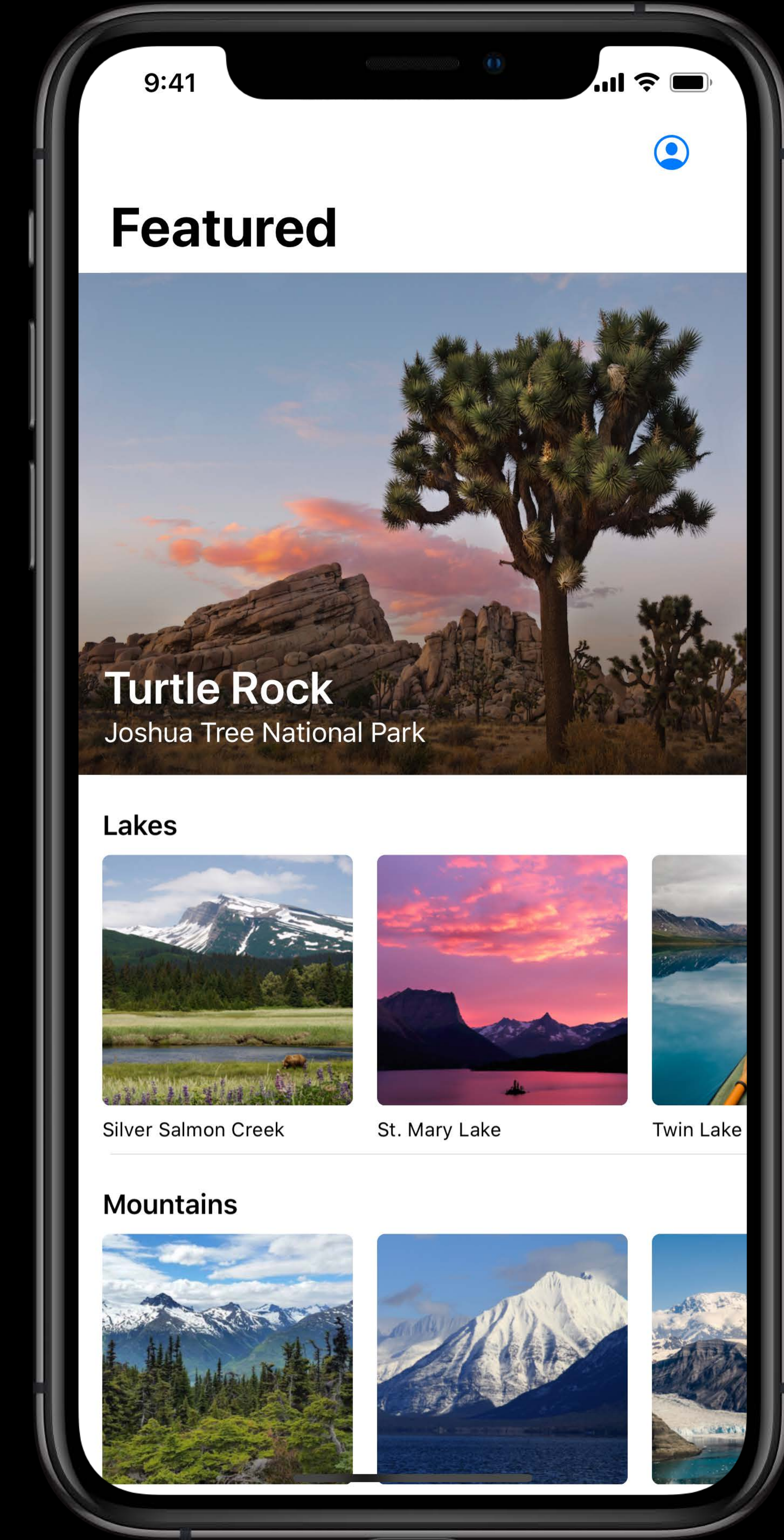
Quick information about each landmark



# Landmarks for iOS

Quick information about each landmark

Get driving directions

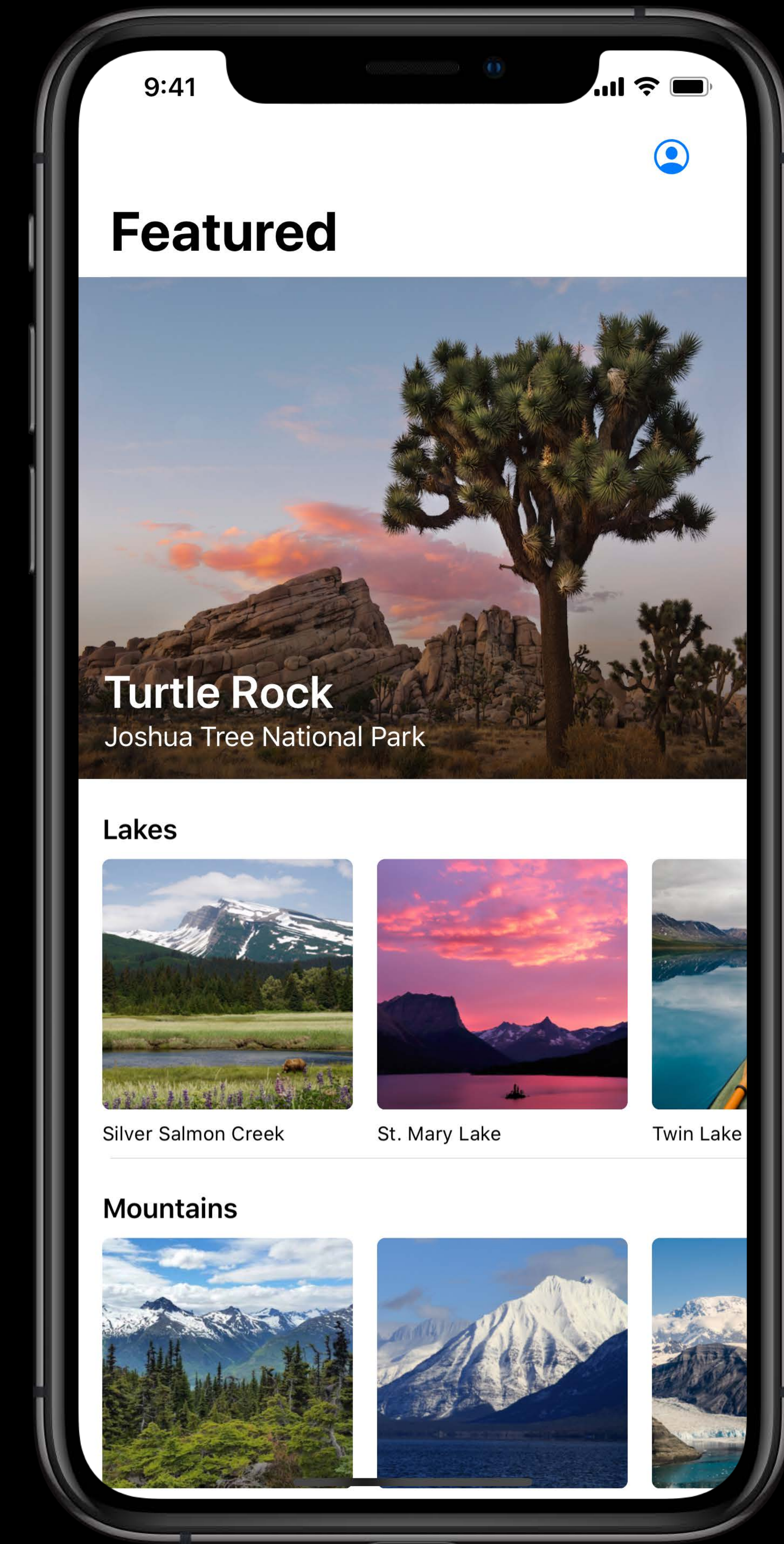


# Landmarks for iOS

Quick information about each landmark

Get driving directions

Place a phone call



# Landmarks for Apple Watch



# Landmarks for Apple Watch

Get at-a-glance info about the current location



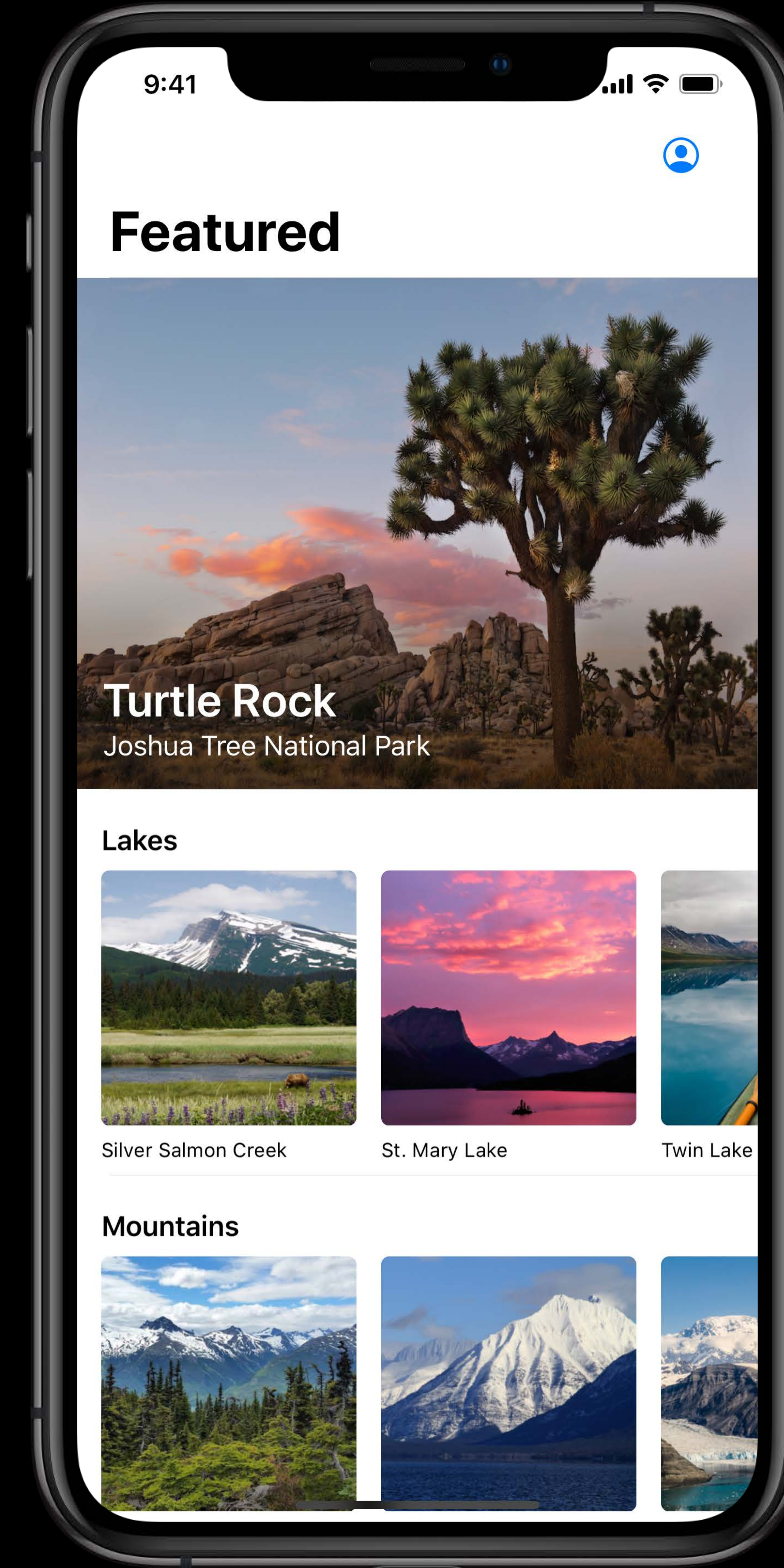
# Landmarks for Apple Watch

Get at-a-glance info about the current location

Receive important notifications



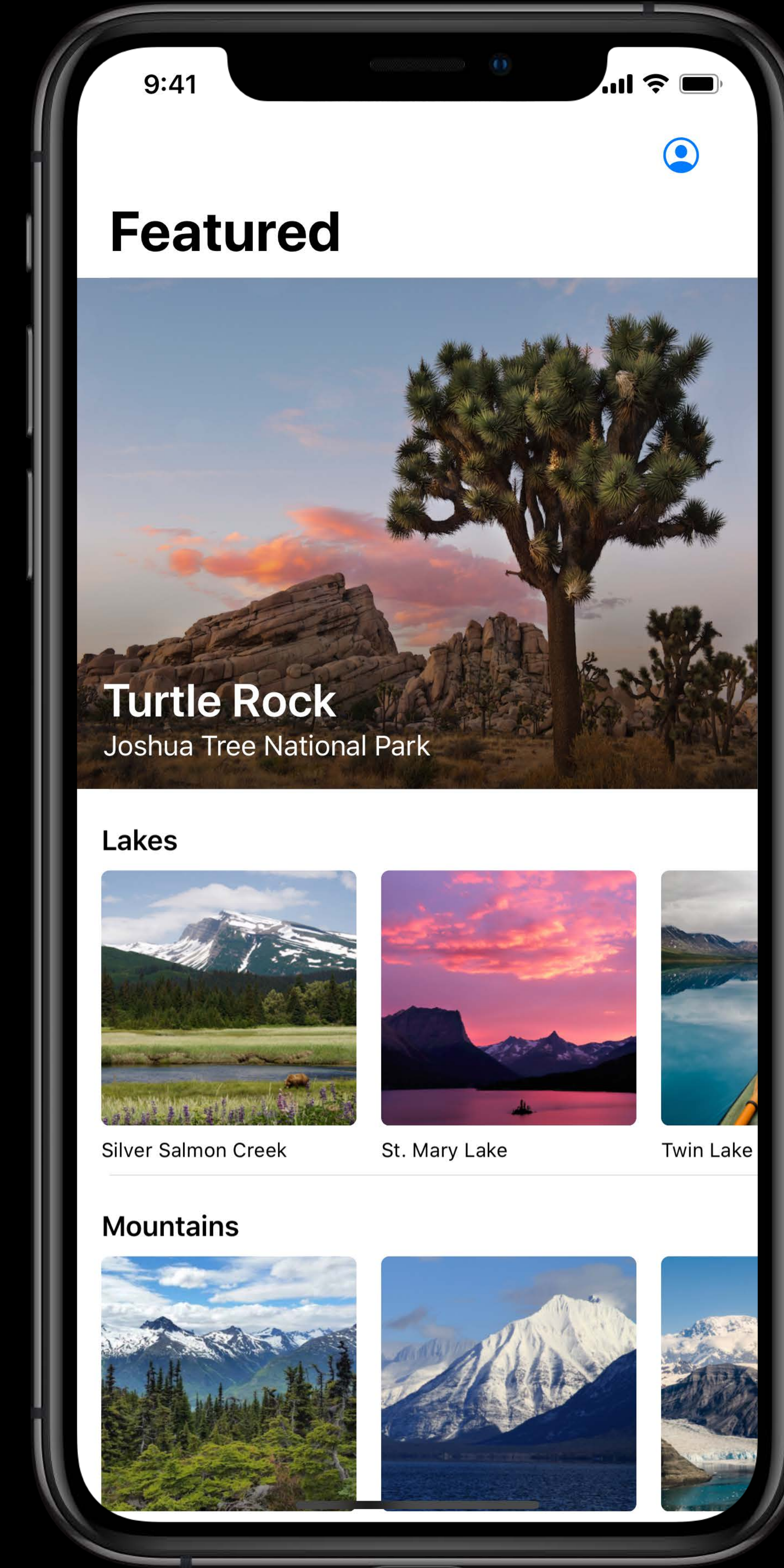
# Learning Experience





# Learning Experience

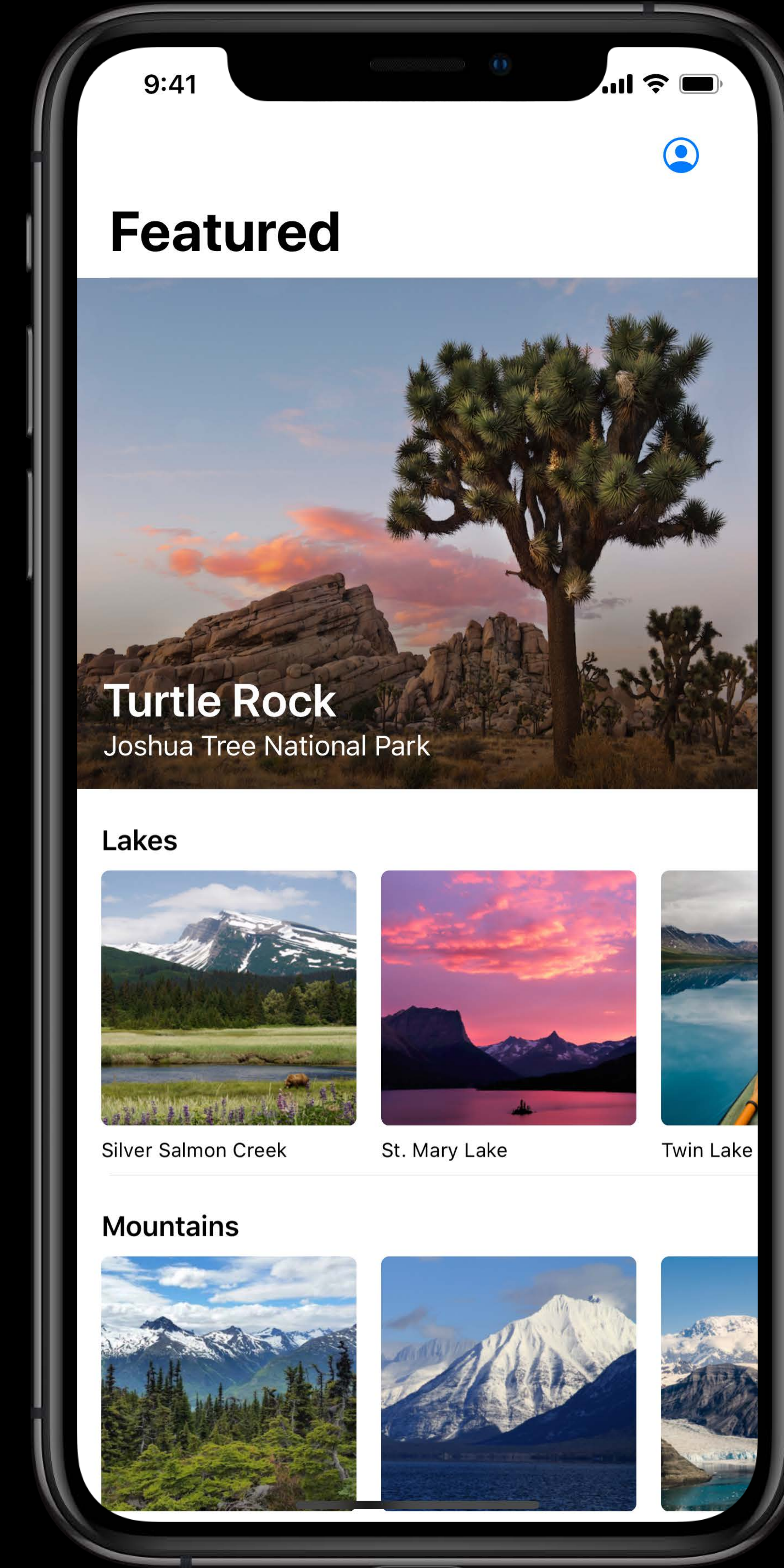
New documentation series



# Learning Experience

New documentation series

Build the app step-by-step

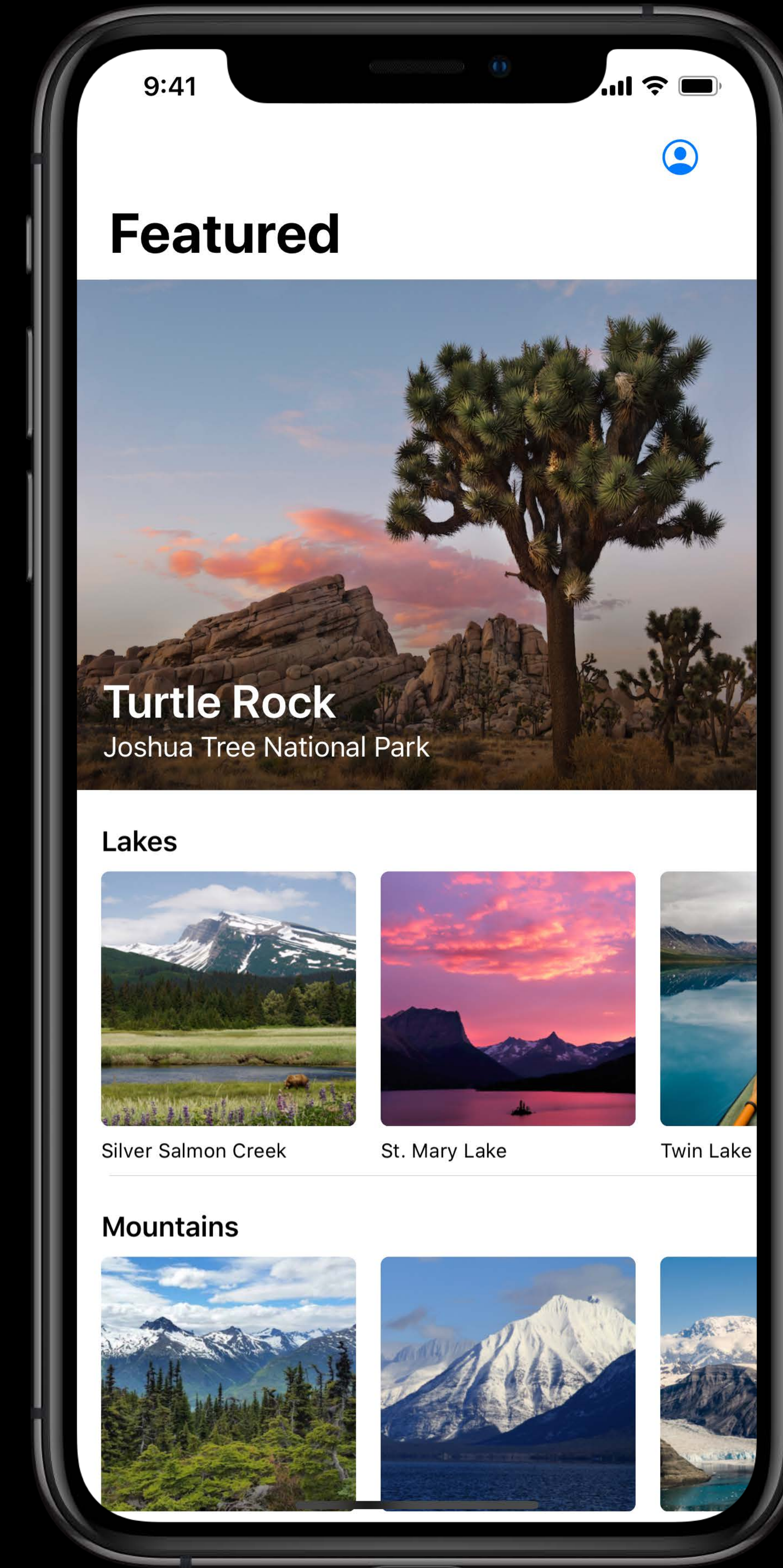


# Learning Experience

New documentation series

Build the app step-by-step

Available for download today



# SwiftUI on Apple TV

Ada Turner, tvOS Frameworks

The biggest, boldest screen

# The Biggest, Boldest Screen

# The Biggest, Boldest Screen

10-foot experience

# The Biggest, Boldest Screen

10-foot experience

Focus and the Siri Remote



# The Biggest, Boldest Screen

10-foot experience

Focus and the Siri Remote

Streamlined navigation

What is a 10-foot experience?







# 10-Foot Experience

# 10-Foot Experience

Large screen

# 10-Foot Experience

Large screen

Long viewing distance



# 10-Foot Experience

Large screen

Long viewing distance

Extended periods of use

# 10-Foot Experience

Large screen

Long viewing distance

Extended periods of use

Multiple viewers at the same time

# Landmarks — What Makes the Cut?

# Landmarks — What Makes the Cut?



Beautiful photos of landmarks

# Landmarks — What Makes the Cut?



Beautiful photos of landmarks

Adding favorites

# Landmarks — What Makes the Cut?



Beautiful photos of landmarks

Adding favorites

Basic tourism information

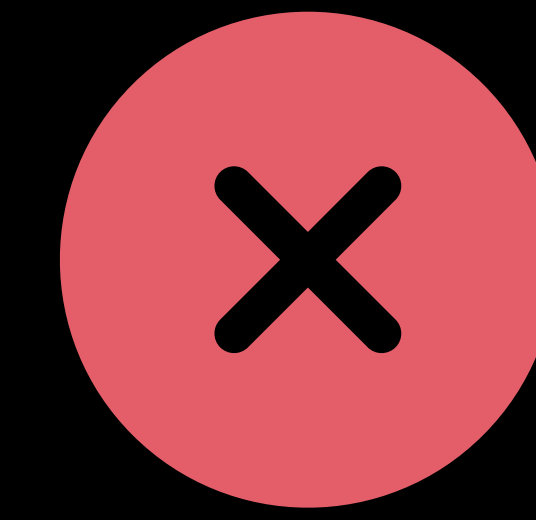
# Landmarks — What Makes the Cut?



Beautiful photos of landmarks

Adding favorites

Basic tourism information



Lengthy historical information

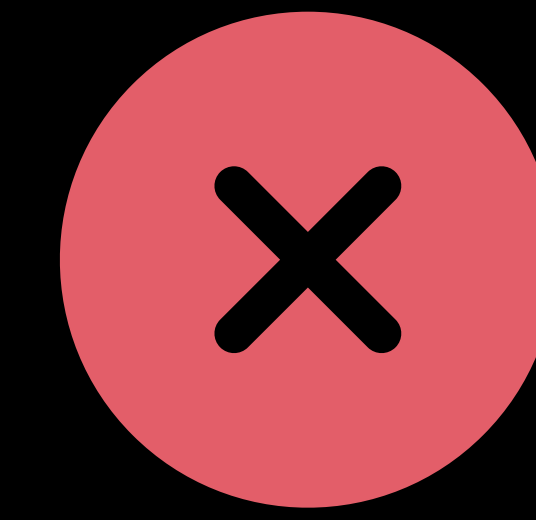
# Landmarks — What Makes the Cut?



Beautiful photos of landmarks

Adding favorites

Basic tourism information



Lengthy historical information

Advanced sorting and filtering



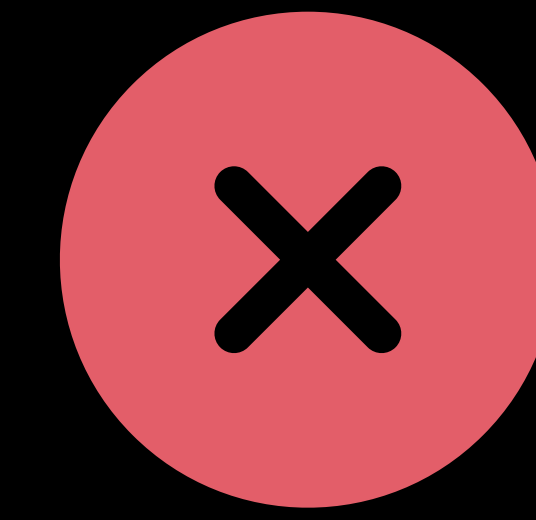
# Landmarks — What Makes the Cut?



Beautiful photos of landmarks

Adding favorites

Basic tourism information



Lengthy historical information

Advanced sorting and filtering

Location-based notifications

# Focus and the Siri Remote

# Focus and the Siri Remote

# Focus and the Siri Remote

Entire interface must support focus

# Focus and the Siri Remote

Entire interface must support focus

SwiftUI supports focus by default

```
// Custom Focusable Views

struct MyFocusableView: View {
    let canBecomeFocused: Bool
    var body: some View {
        return Text("Hello WWDC")
            .focusable(canBecomeFocused) { isFocused in
                // Focus changed
            }
            .onPlayPauseCommand {
                // Play/pause button pressed
            }
            .onExitCommand {
                // Menu button pressed
            }
        }
    }
}
```

```
// Custom Focusable Views

struct MyFocusableView: View {
    let canBecomeFocused: Bool
    var body: some View {
        return Text("Hello WWDC")
            .focusable(canBecomeFocused) { isFocused in
                // Focus changed
            }
            .onPlayPauseCommand {
                // Play/pause button pressed
            }
            .onExitCommand {
                // Menu button pressed
            }
        }
    }
}
```

```
// Custom Focusable Views

struct MyFocusableView: View {
    let canBecomeFocused: Bool
    var body: some View {
        return Text("Hello WWDC")
            .focusable(canBecomeFocused) { isFocused in
                // Focus changed
            }
            .onPlayPauseCommand {
                // Play/pause button pressed
            }
            .onExitCommand {
                // Menu button pressed
            }
        }
    }
}
```



```
// Custom Focusable Views

struct MyFocusableView: View {
    let canBecomeFocused: Bool
    var body: some View {
        return Text("Hello WWDC")
            .focusable(canBecomeFocused) { isFocused in
                // Focus changed
            }
            .onPlayPauseCommand {
                // Play/pause button pressed
            }
            .onExitCommand {
                // Menu button pressed
            }
    }
}
}
```

Streamlined navigation

Landmarks

Explore Hikes Tours

All Favorites only

- Turtle Rock** Twentynine Palms, California
- Silver Salmon Creek Port Alsworth, Alaska
- Chilkoot Trail Skagway, Alaska
- St. Mary Lake Browning, Montana
- Twin Lake Twin Lakes, Alaska
- Lake McDonald West Glacier, Montana
- Charley Rivers Eaking, Alaska
- Icy Bay Icy Bay, Alaska
- Rainbow Lake Willow, Alaska
- Hidden Lake

**Turtle Rock**  
Twentynine Palms  
California

(555) 654-3210  
7:00 AM - 7:00 PM

Favorite Call Get Directions

**About Turtle Rock:**

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Curabitur sed sollicitudin nisl, eget feugiat dolor. Donec mattis, dui vitae tincidunt ullamcorper, purus est viverra leo, vitae vehicula velit mauris non mauris. Sed eget euismod leo, a porttitor eros. Suspendisse porttitor nunc et volutpat hendrerit. Maecenas rhoncus dapibus sem, a molestie sapien feugiat vitae. Sed eget diam sed nulla c...

Landmarks

Explore Hikes Tours

All Favorites only

- Turtle Rock** Twentynine Palms, California
- Silver Salmon Creek Port Alsworth, Alaska
- Chilkoot Trail Skagway, Alaska
- St. Mary Lake Browning, Montana
- Twin Lake Twin Lakes, Alaska
- Lake McDonald West Glacier, Montana
- Charley Rivers Eaking, Alaska
- Icy Bay Icy Bay, Alaska
- Rainbow Lake Willow, Alaska
- Hidden Lake

**Turtle Rock**  
Twentynine Palms  
California  
(555) 654-3210  
7:00 AM - 7:00 PM

Favorite [Call](#) [Get Directions](#)

**About Turtle Rock:**  
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Curabitur sed sollicitudin nisl, eget feugiat dolor. Donec mattis, dui vitae tincidunt ullamcorper, purus est viverra leo, vitae vehicula velit mauris non mauris. Sed eget euismod leo, a porttitor eros. Suspendisse porttitor nunc et volutpat hendrerit. Maecenas rhoncus dapibus sem, a molestie sapien feugiat vitae. Sed eget diam sed nulla c...

# Landmarks

## Lakes



## Hikes



# Landmarks

## Lakes



## Hikes



```
// TabbedView and NavigationView on tvOS

struct MainView: View {
    enum Tab { case explore, hikes, tours }
    @State var selection: Tab
    var body: some View {
        return NavigationView {
            TabbedView(selection: $selection) {
                ExploreView().tabItemLabel(Text("Explore")).tag(Tab.explore)
                HikesView().tabItemLabel(Text("Hikes")).tag(Tab.hikes)
                ToursView().tabItemLabel(Text("Tours")).tag(Tab.tours)
            }
        }
    }
}
```

```
// TabbedView and NavigationView on tvOS

struct MainView: View {
    enum Tab { case explore, hikes, tours }
    @State var selection: Tab
    var body: some View {
        return NavigationView {
            TabbedView(selection: $selection) {
                ExploreView().tabItemLabel(Text("Explore")).tag(Tab.explore)
                HikesView().tabItemLabel(Text("Hikes")).tag(Tab.hikes)
                ToursView().tabItemLabel(Text("Tours")).tag(Tab.tours)
            }
        }
    }
}
```



```
// TabbedView and NavigationView on tvOS

struct MainView: View {
    enum Tab { case explore, hikes, tours }
    @State var selection: Tab
    var body: some View {
        return NavigationView {
            TabbedView(selection: $selection) {
                ExploreView().tabItemLabel(Text("Explore")).tag(Tab.explore)
                HikesView().tabItemLabel(Text("Hikes")).tag(Tab.hikes)
                ToursView().tabItemLabel(Text("Tours")).tag(Tab.tours)
            }
        }
    }
}
```

```
// TabbedView and NavigationView on tvOS

struct MainView: View {
    enum Tab { case explore, hikes, tours }
    @State var selection: Tab
    var body: some View {
        return NavigationView {
            TabbedView(selection: $selection) {
                ExploreView().tabItemLabel(Text("Explore")).tag(Tab.explore)
                HikesView().tabItemLabel(Text("Hikes")).tag(Tab.hikes)
                ToursView().tabItemLabel(Text("Tours")).tag(Tab.tours)
            }
        }
    }
}
```

# tvOS vs. iOS Navigation Hierarchies

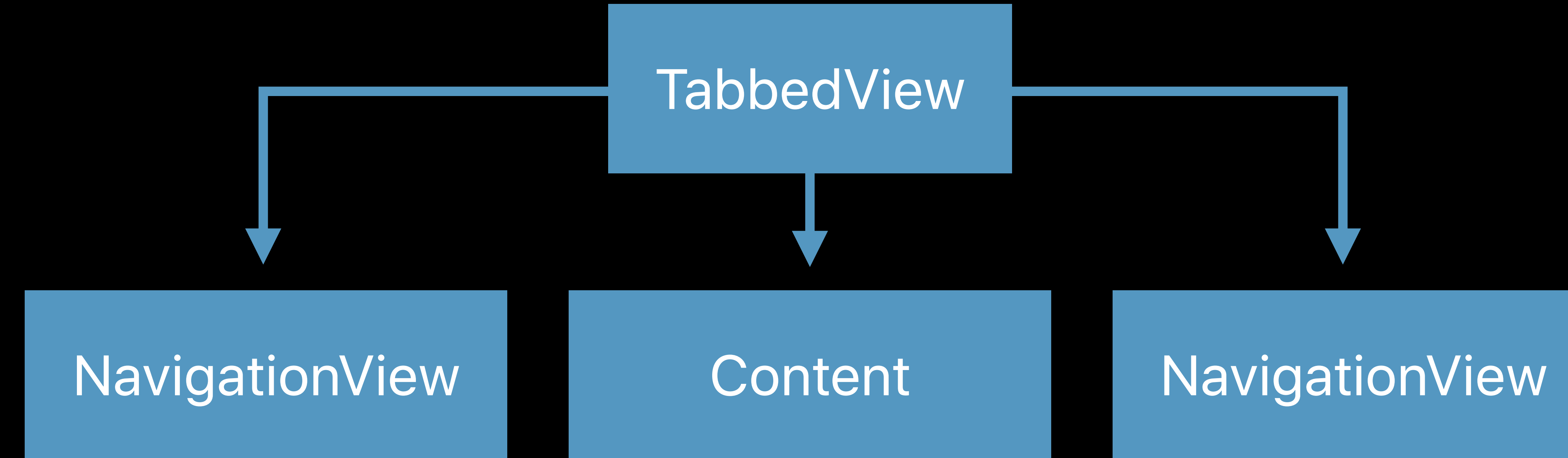
# tvOS vs. iOS Navigation Hierarchies

iOS

TabbedView

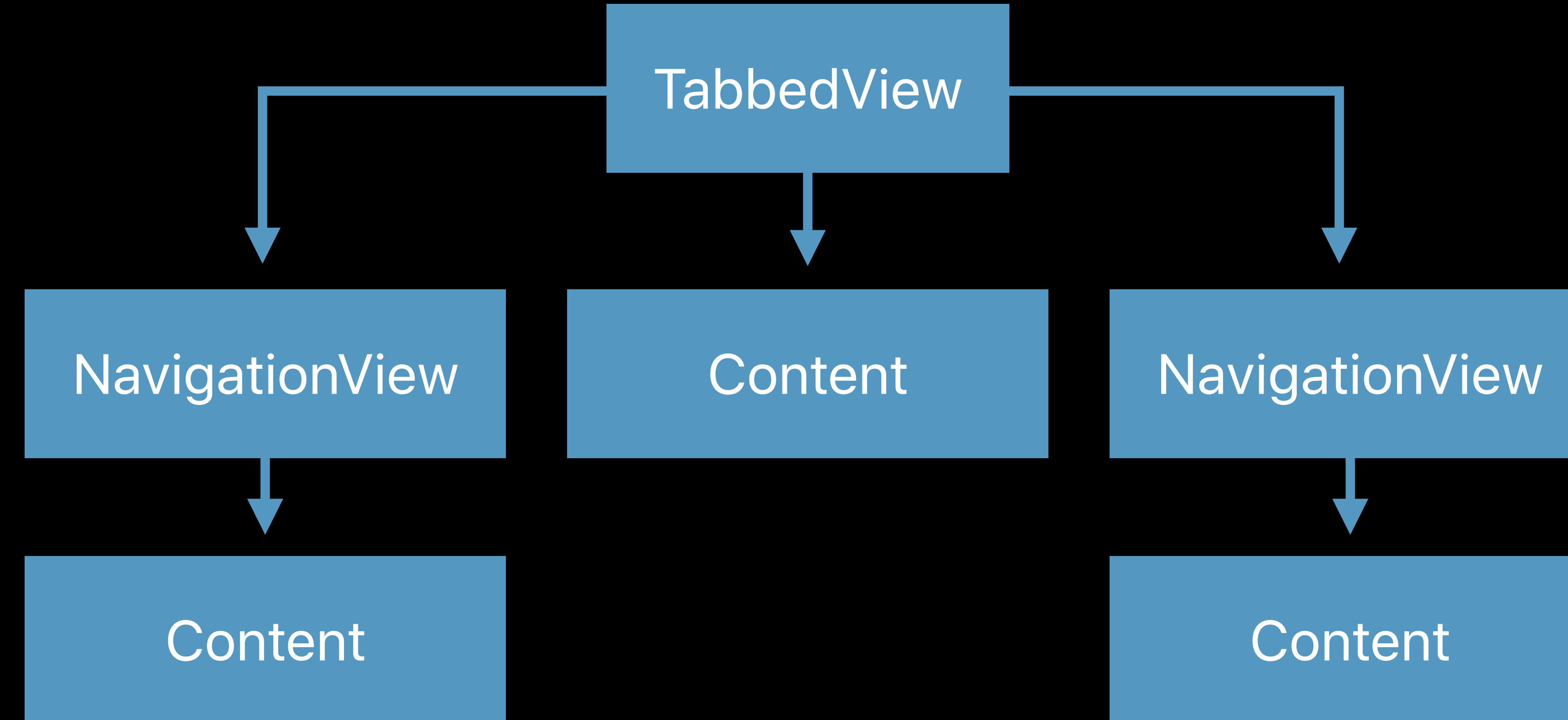
# tvOS vs. iOS Navigation Hierarchies

iOS



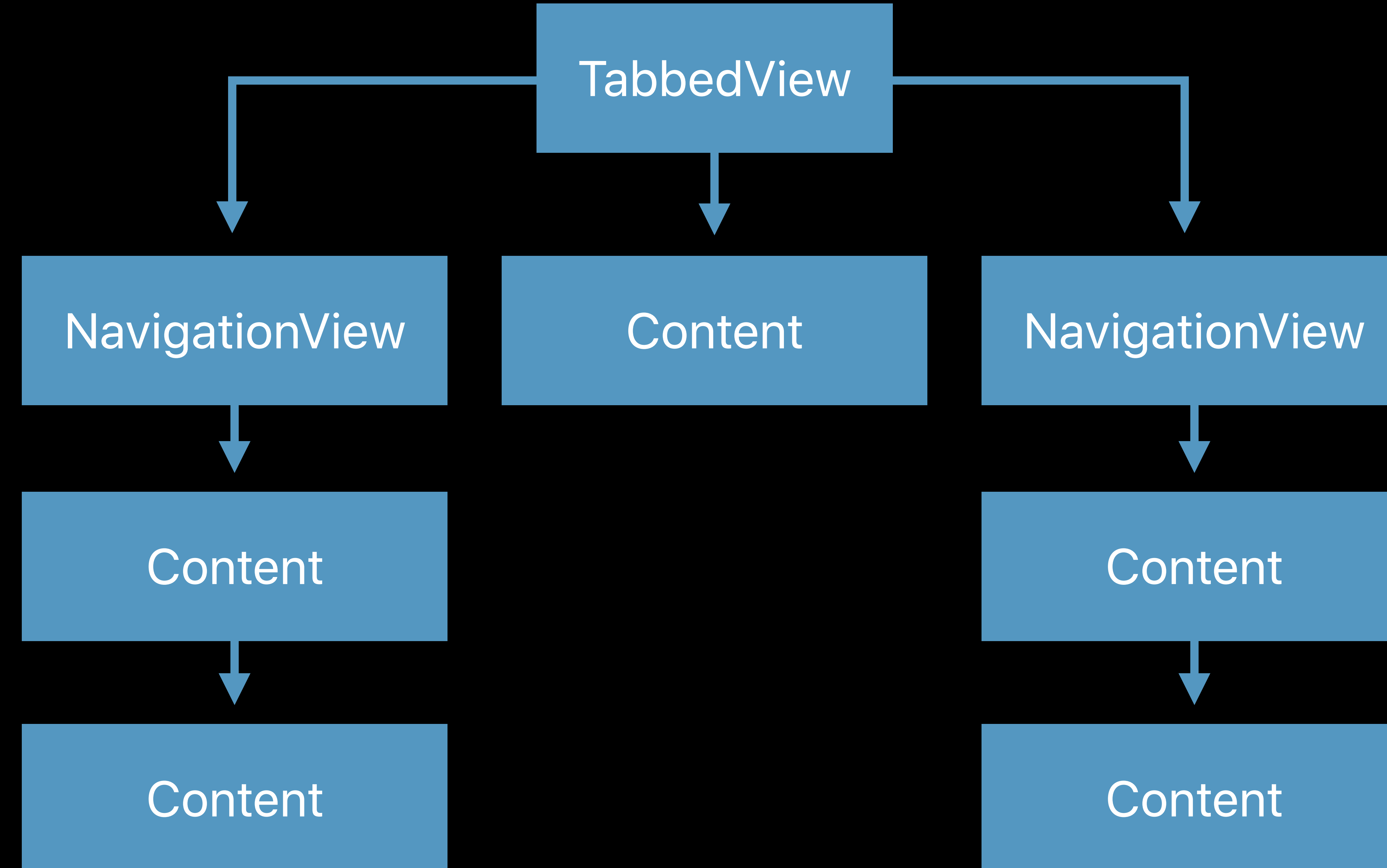
# tvOS vs. iOS Navigation Hierarchies

iOS



# tvOS vs. iOS Navigation Hierarchies

iOS



5:04



# Albums

## My Albums

[See All](#)



All Photos  
51



Beach  
5



Lake Trip  
6



Adventure  
11

## People & Places



Photos



For You



Albums



Search



5:04



# Albums

## My Albums

[See All](#)



All Photos  
51



Beach  
5



Lake Trip  
6



Adventure  
11

## People & Places



Photos



For You



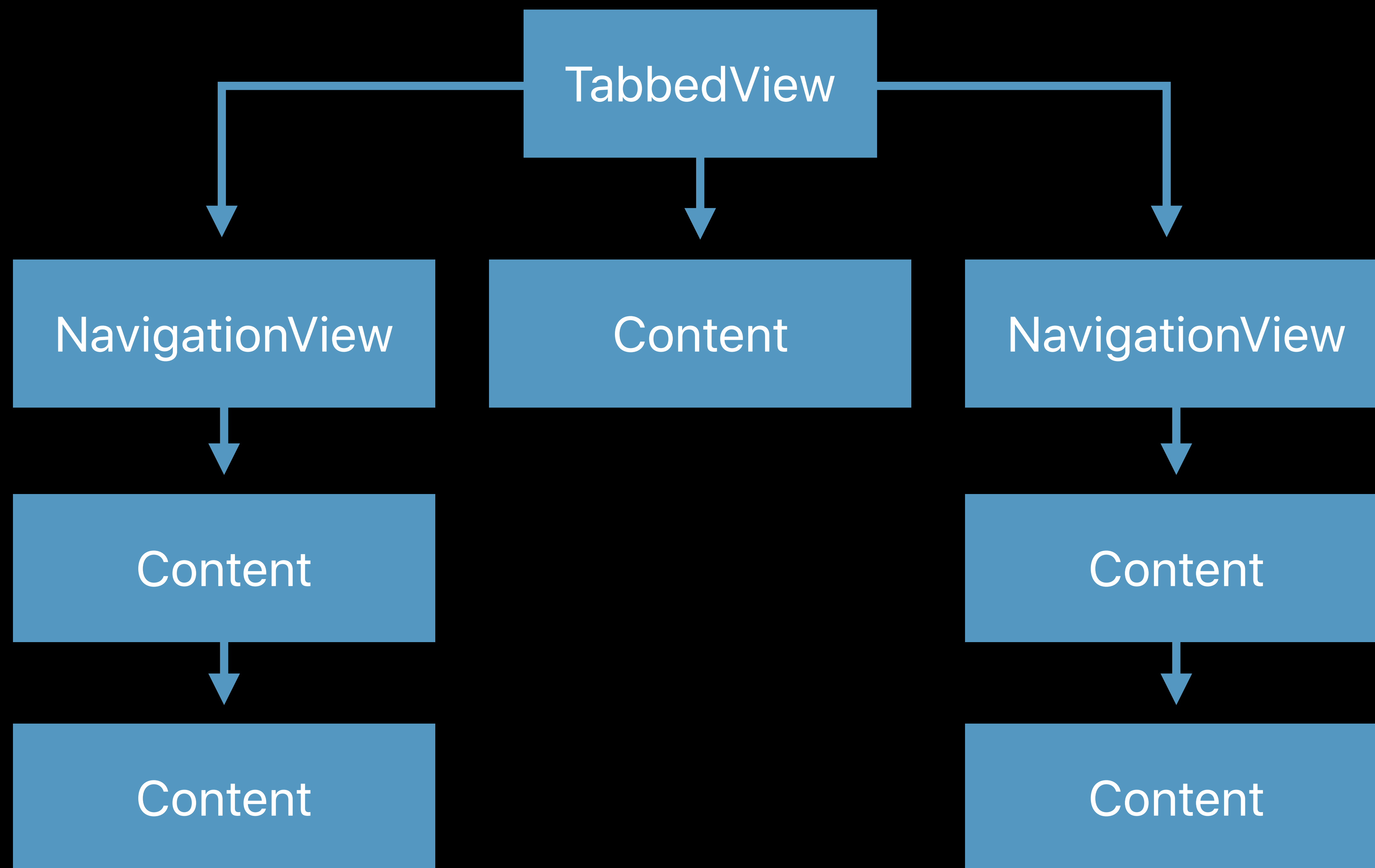
Albums



Search

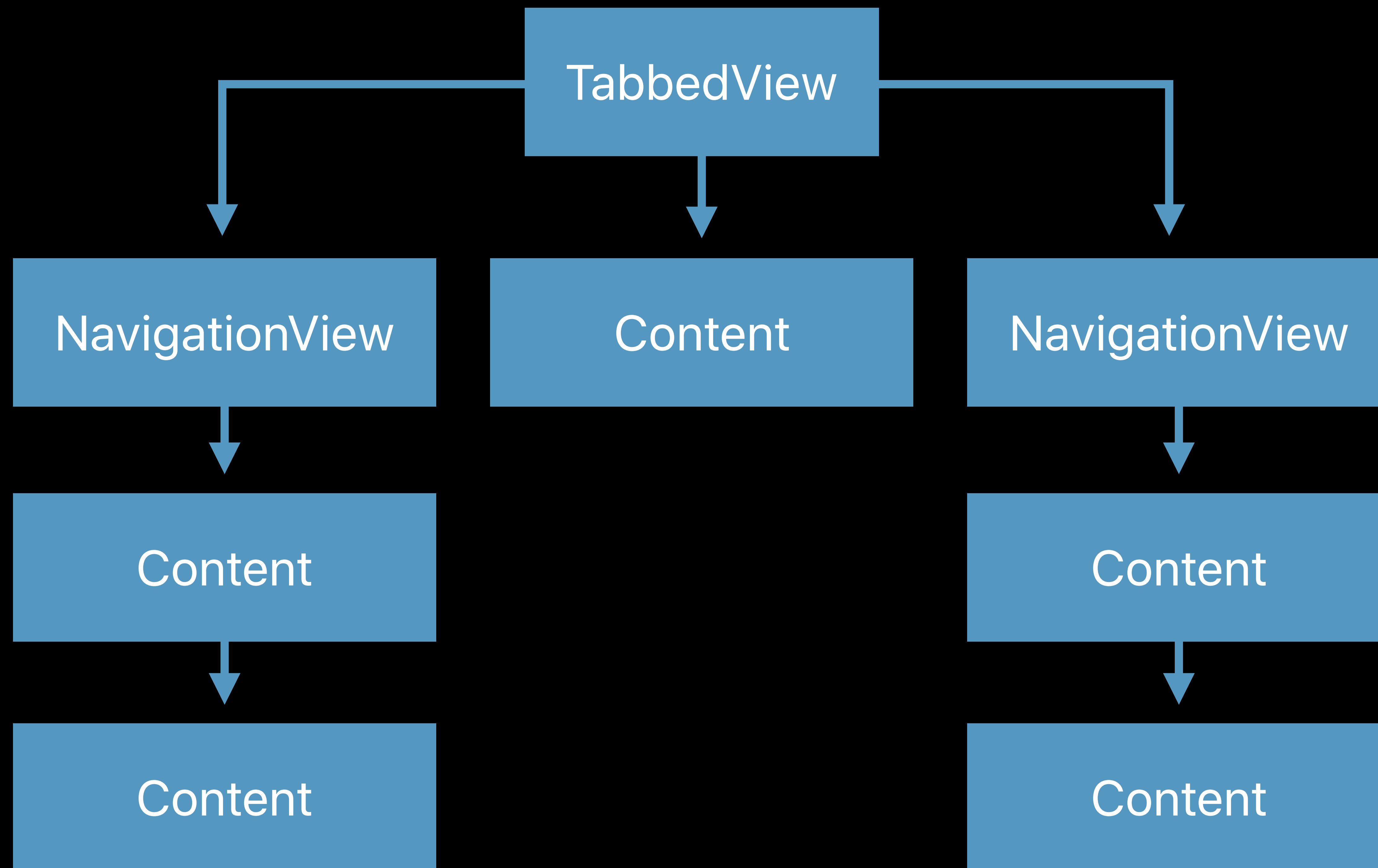
# tvOS vs. iOS Navigation Hierarchies

iOS



# tvOS vs. iOS Navigation Hierarchies

iOS

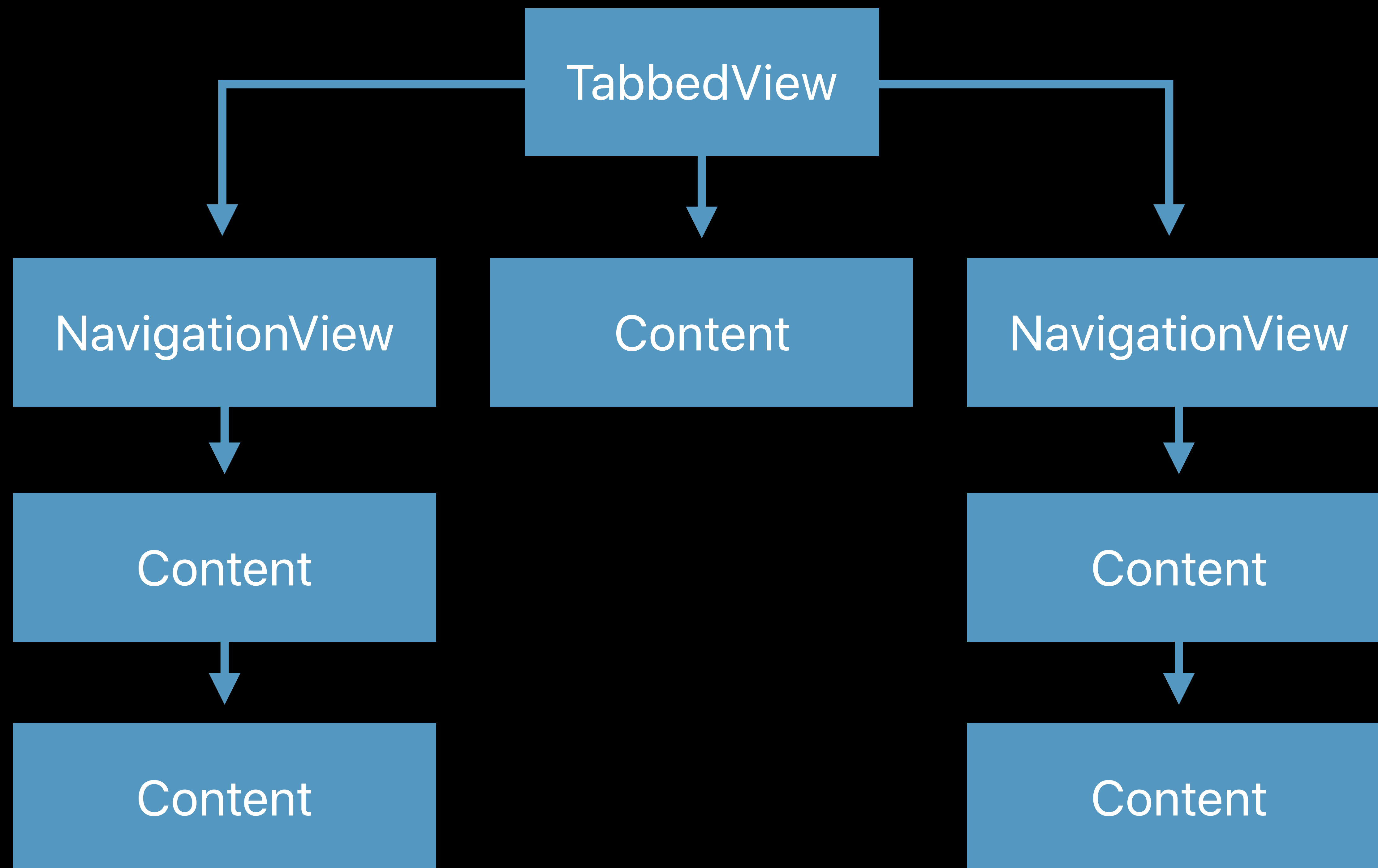


tvOS

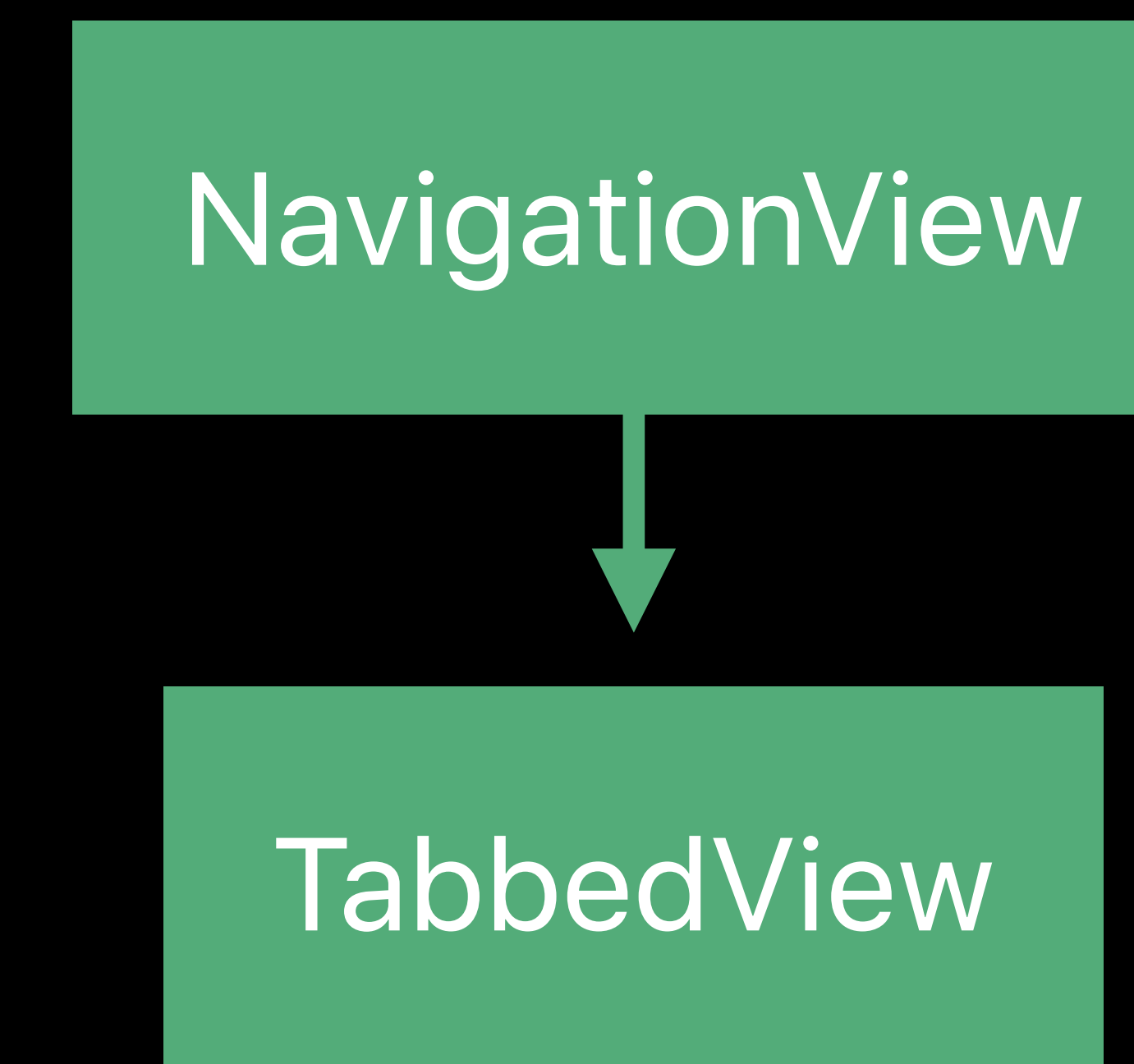


# tvOS vs. iOS Navigation Hierarchies

iOS

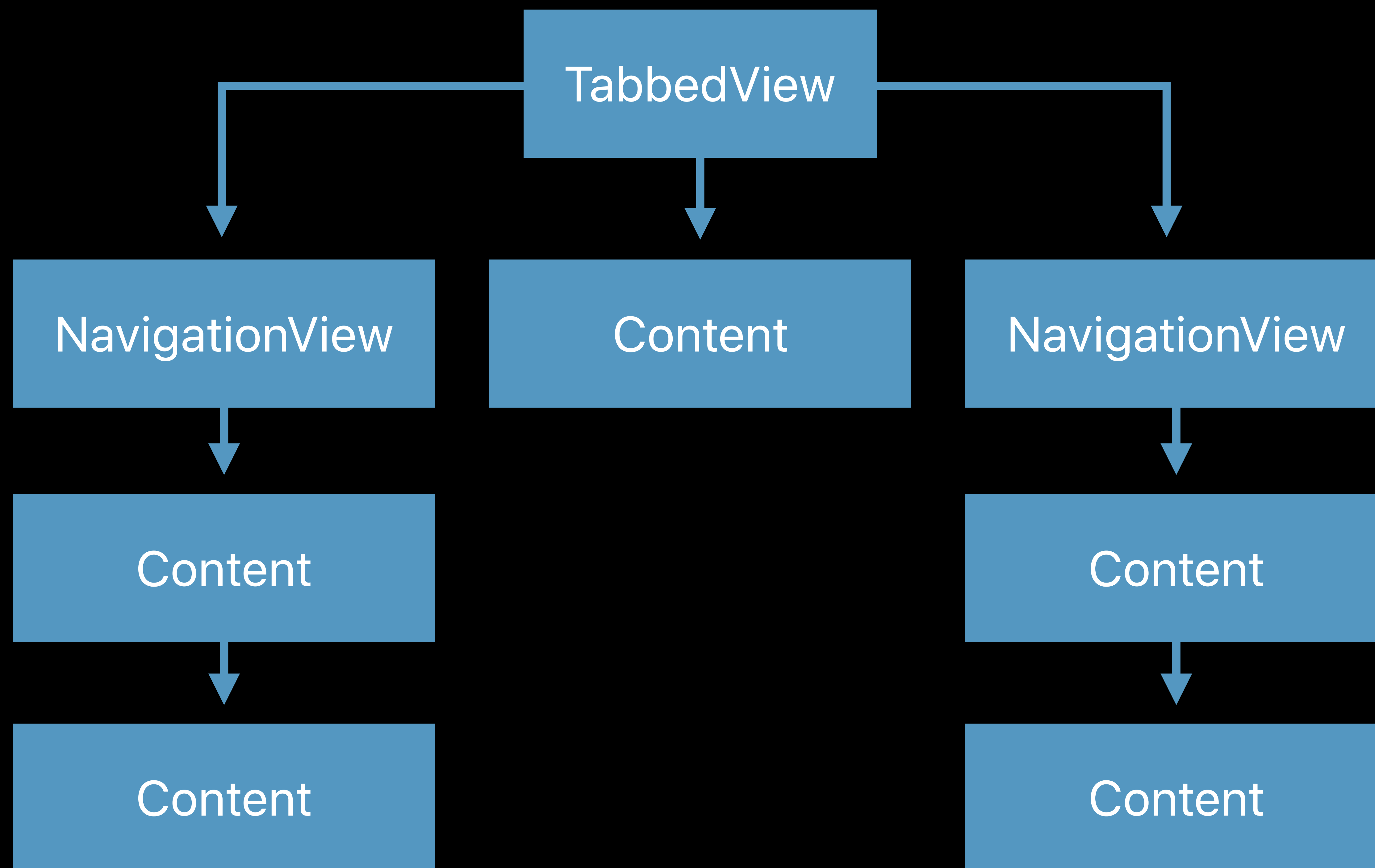


tvOS

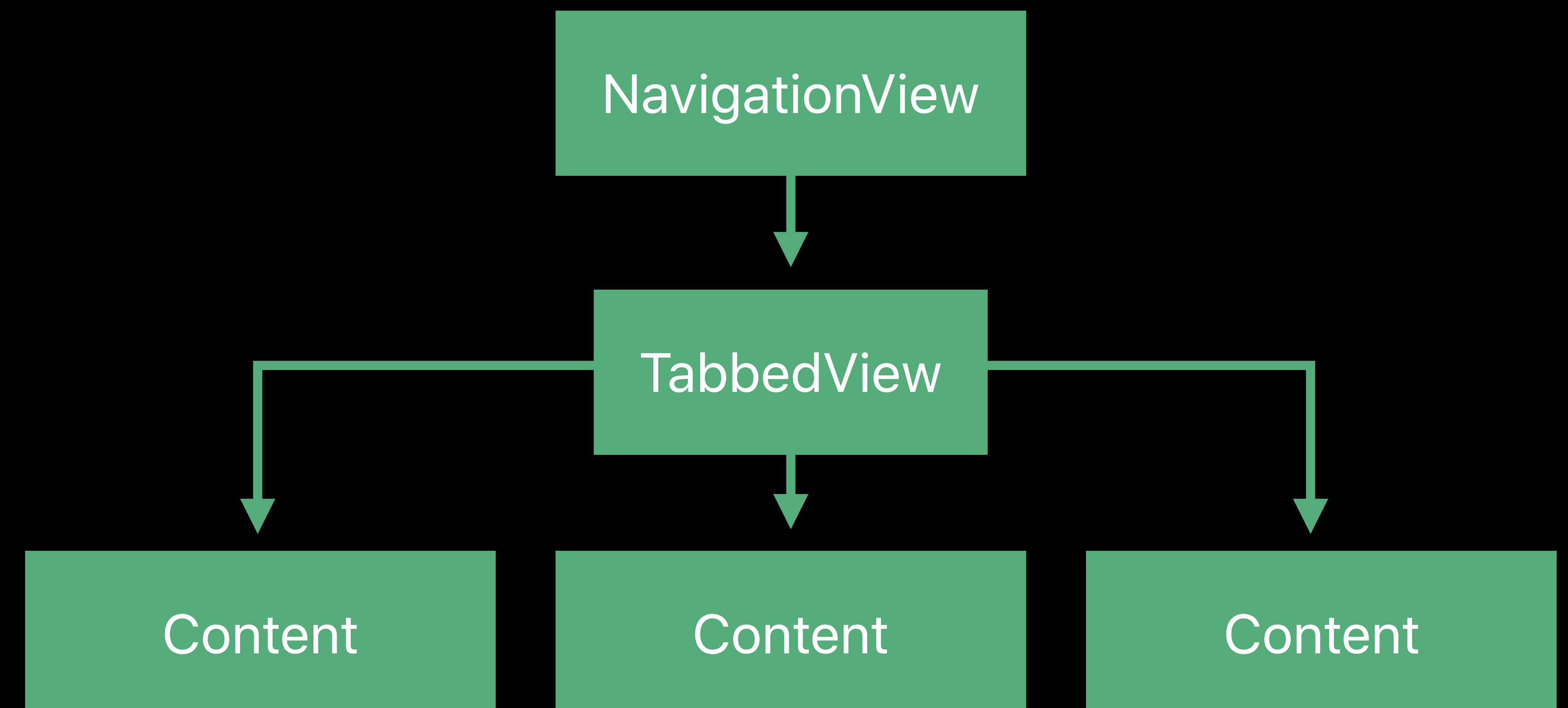


# tvOS vs. iOS Navigation Hierarchies

iOS

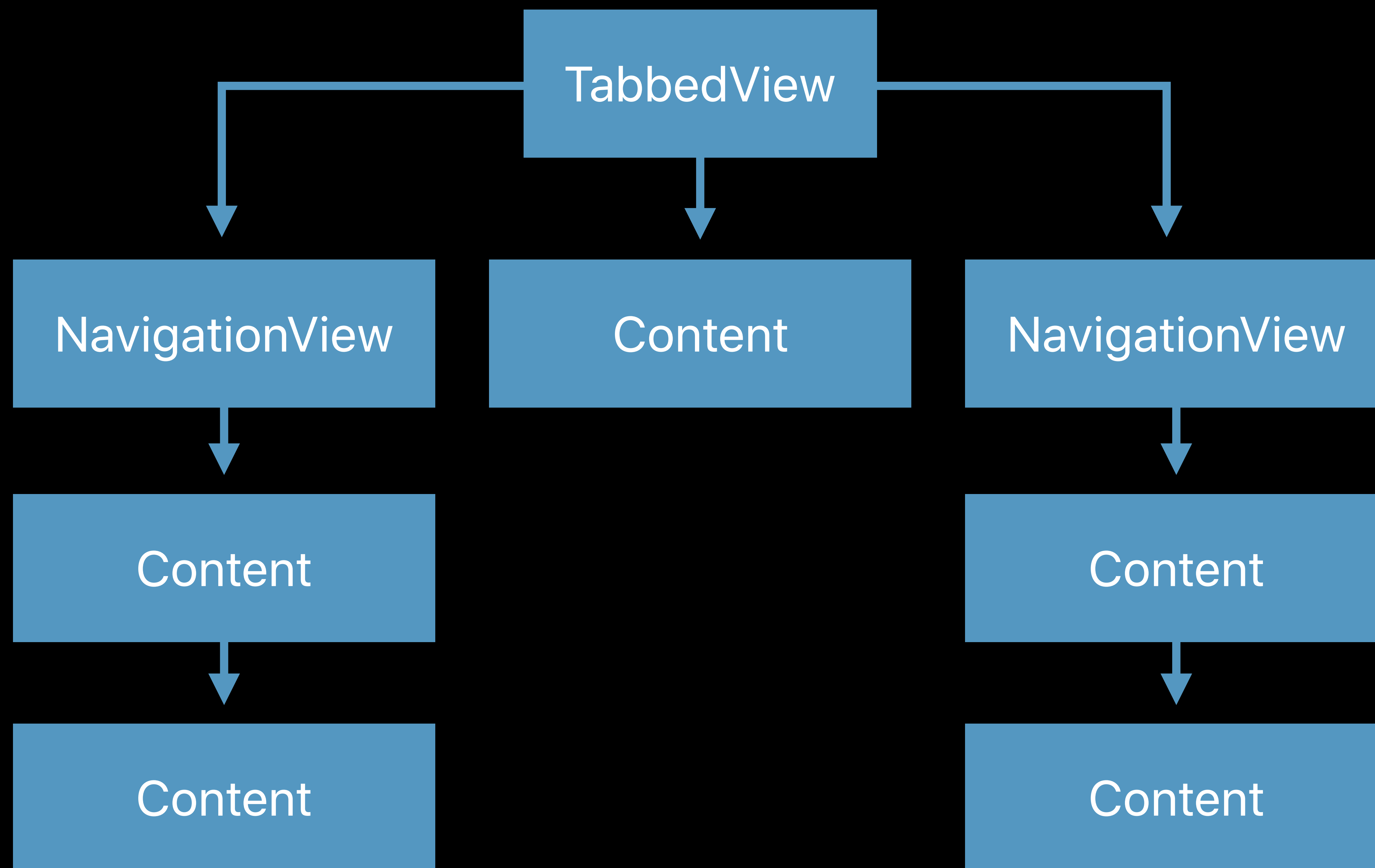


tvOS

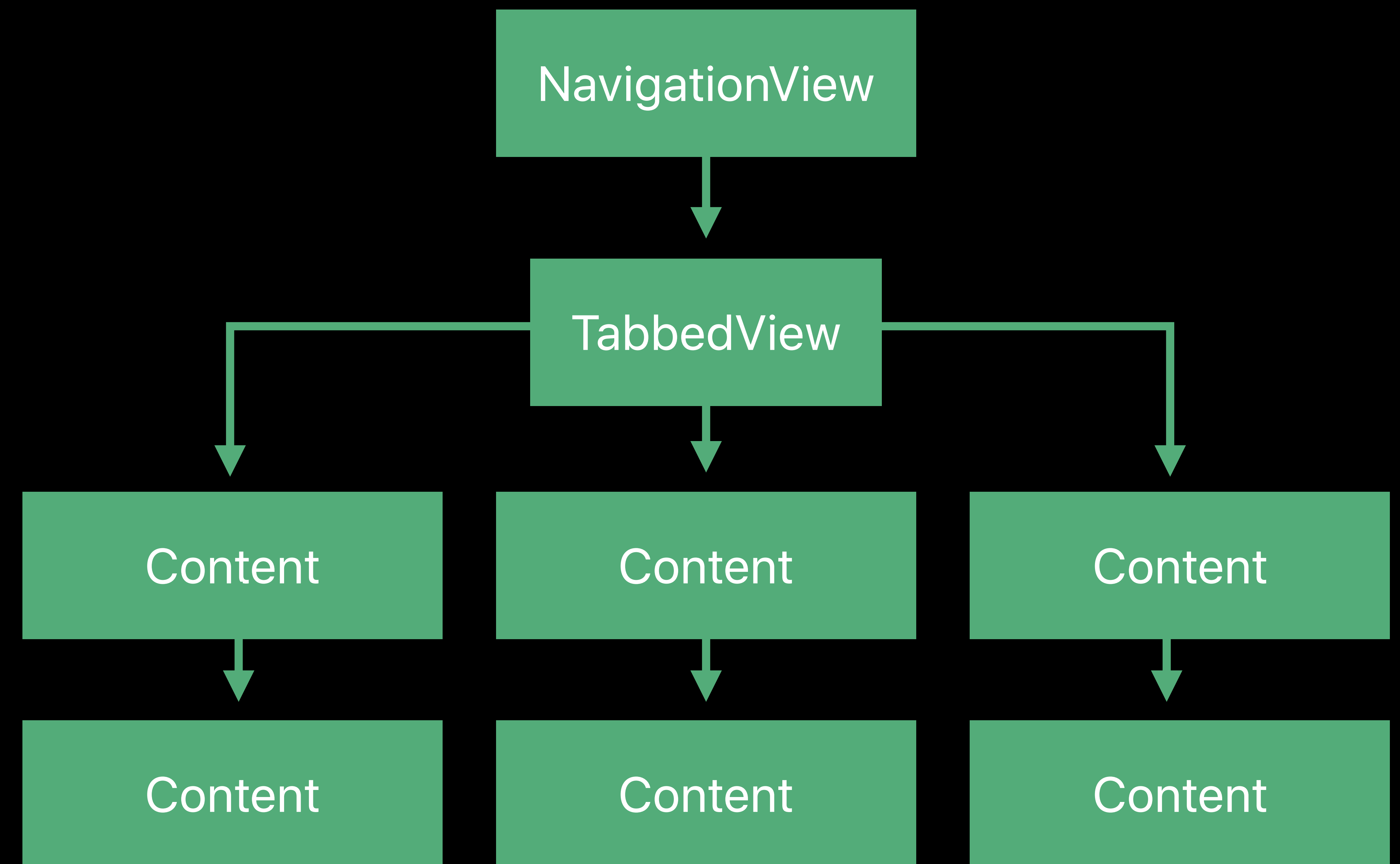


# tvOS vs. iOS Navigation Hierarchies

iOS



tvOS



Photos

Memories

Shared

Albums



All Photos



Adventure



Lake Trip



Beach



Vacation



Friends



Family

Photos

Memories

Shared

Albums



All Photos



Adventure



Lake Trip



Beach



Vacation



Friends



Family



# tvOS vs. iOS Navigation Hierarchies

iOS



tvOS





# tvOS vs. iOS Navigation Hierarchies

iOS

```
TabbedView(selection: $selection) {  
    NavigationView  
  
    NavigationView  
  
    NavigationView  
  
}
```

tvOS

```
NavigationView {  
    TabbedView(selection: $selection) {  
  
  
  
  
  
  
  
  
    }  
}
```

# tvOS vs. iOS Navigation Hierarchies

iOS

```
TabbedView(selection: $selection) {  
    NavigationView { ExploreView() }  
        .tabItemLabel(Text("Explore"))  
        .tag(Tab.explore)  
    NavigationView { HikesView() }  
        .tabItemLabel(Text("Hikes"))  
        .tag(Tab.hikes)  
    NavigationView { ToursView() }  
        .tabItemLabel(Text("Tours"))  
        .tag(Tab.tours)  
}
```

tvOS

```
NavigationView {  
    TabbedView(selection: $selection) {  
        ExploreView()  
            .tabItemLabel(Text("Explore"))  
            .tag(Tab.explore)  
        HikesView()  
            .tabItemLabel(Text("Hikes"))  
            .tag(Tab.hikes)  
        ToursView()  
            .tabItemLabel(Text("Tours"))  
            .tag(Tab.tours)  
    }  
}
```

***Demo***

# SwiftUI on Mac

Jeff Nadeau, macOS Frameworks

High information density

Multiple windows

Keyboard shortcuts

Touch Bar

High information density

Multiple windows

Keyboard shortcuts

Touch Bar



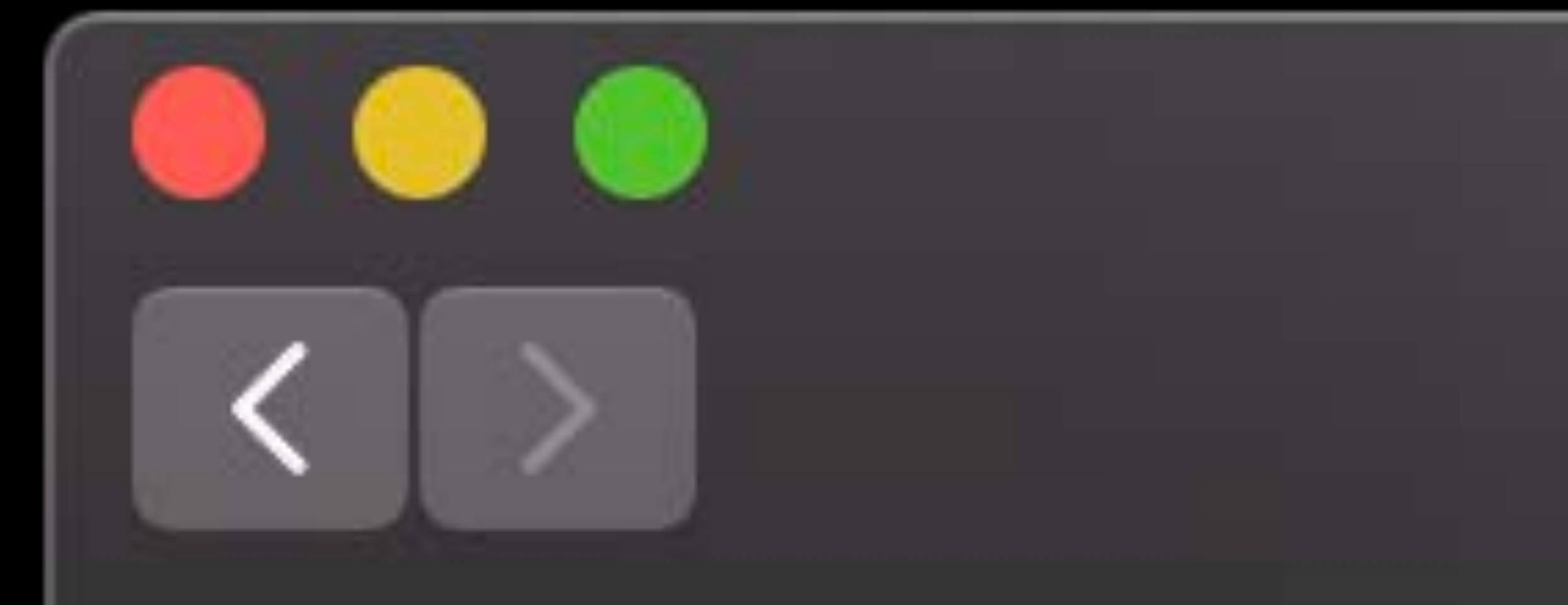
# High Information Density

Provide more information at a glance

# High Information Density

Provide more information at a glance

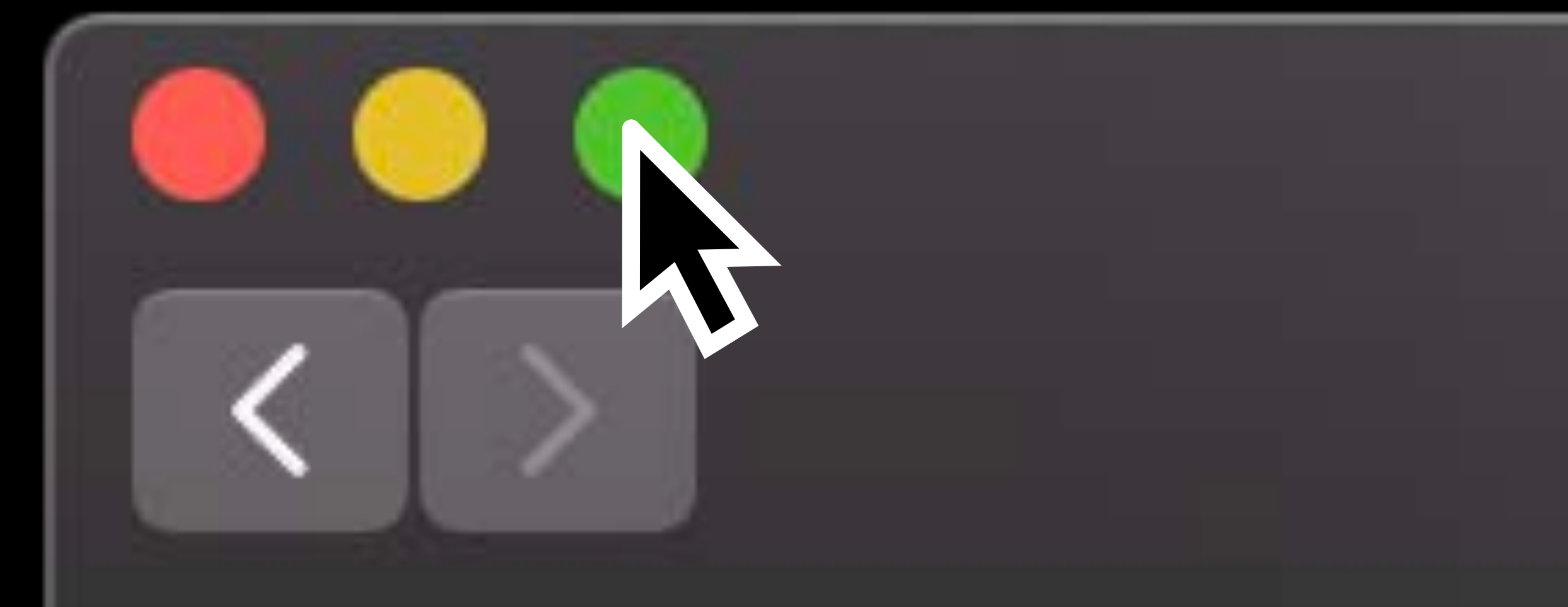
Precision pointing device allows smaller controls



# High Information Density

Provide more information at a glance

Precision pointing device allows smaller controls



# High Information Density

Provide more information at a glance

Precision pointing device allows smaller controls

Higher tolerance for large amounts of text

# High Information Density

Provide more information at a glance

Precision pointing device allows smaller controls

Higher tolerance for large amounts of text

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Curabitur consectetur tincidunt mollis. Vivamus ipsum nulla, sagittis id pellentesque ac, suscipit in dui. Donec pretium suscipit blandit. Donec volutpat mollis nulla. Proin a dapibus lorem. Morbi id tempor nunc. Mauris tempus lacinia ligula in faucibus. Quisque nec maximus augue. Nunc eu ornare nulla. Suspendisse quam est, faucibus nec imperdiet sed, sagittis at purus.

Nam mollis, lorem sed pretium efficitur, mauris leo luctus elit, volutpat consectetur turpis libero vel ante. Nulla non malesuada leo. Aenean ut interdum turpis. Nunc sit amet euismod lorem, suscipit venenatis nibh. Vestibulum euismod facilisis nisl nec tincidunt. Integer massa ex, commodo vel finibus id, cursus id erat. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae; Maecenas ligula ante, facilisis id tristique nec, eleifend vitae neque.

# High Information Density

# High Information Density

Spacing and padding automatically adapt

# High Information Density

Spacing and padding automatically adapt

Use `.controlSize()` for compact controls



High information density

**Multiple windows**

Keyboard shortcuts

Touch Bar

# Multiple Windows

# Multiple Windows

Compare content across windows side-by-side

# Multiple Windows

Compare content across windows side-by-side

Focus on a single item in its own window

# Multiple Windows

Compare content across windows side-by-side

Focus on a single item in its own window

Spatially organize windows around the Desktop and Spaces

High information density

Multiple windows

Keyboard shortcuts

Touch Bar

# Keyboard Shortcuts

# Keyboard Shortcuts

Quick access to common actions



# Keyboard Shortcuts

Quick access to common actions

Lightning-fast navigation

```
// Adding Keyboard Shortcuts

TabbedView(selection: $selectedTab) {
    ExploreView().tag(Tab.explore).tabItemLabel(Text("Explore"))

    HikesView().tag(Tab.hikes).tabItemLabel(Text("Hikes"))

    ToursView().tag(Tab.tours).tabItemLabel(Text("Tours"))
}
```

# Keyboard Shortcuts

# Keyboard Shortcuts

```
extension Command {  
    static let showExplore = Command(Selector("showExplore:"))  
    static let showHikes = Command(Selector("showHikes:"))  
    static let showTours = Command(Selector("showTours:"))  
}
```

```
// Adding Keyboard Shortcuts

TabbedView(selection: $selectedTab) {
    ExploreView().tag(Tab.explore).tabItemLabel(Text("Explore"))

    HikesView().tag(Tab.hikes).tabItemLabel(Text("Hikes"))

    ToursView().tag(Tab.tours).tabItemLabel(Text("Tours"))
}
```

```
// Adding Keyboard Shortcuts

TabbedView(selection: $selectedTab) {
    ExploreView().tag(Tab.explore).tabItemLabel(Text("Explore"))

    HikesView().tag(Tab.hikes).tabItemLabel(Text("Hikes"))

    ToursView().tag(Tab.tours).tabItemLabel(Text("Tours"))
}

.onCommand(.showExplore) { self.selectedTab = .explore }
.onCommand(.showHikes) { self.selectedTab = .hikes }
.onCommand(.showTours) { self.selectedTab = .tours }
```

```
// Adding Keyboard Shortcuts
```

```
TabbedView(selection: $selectedTab) {  
    ExploreView().tag(Tab.explore).tabItemLabel(Text("Explore"))  
  
    HikesView().tag(Tab.hikes).tabItemLabel(Text("Hikes"))  
  
    ToursView().tag(Tab.tours).tabItemLabel(Text("Tours"))  
}  
  
.onCommand(.showExplore) { self.selectedTab = .explore }  
.onCommand(.showHikes) { self.selectedTab = .hikes }  
.onCommand(.showTours) { self.selectedTab = .tours }
```

```
// Adding Keyboard Shortcuts

TabbedView(selection: $selectedTab) {
    ExploreView().tag(Tab.explore).tabItemLabel(Text("Explore"))

    HikesView().tag(Tab.hikes).tabItemLabel(Text("Hikes"))

    ToursView().tag(Tab.tours).tabItemLabel(Text("Tours"))
}

.onCommand(.showExplore) { self.selectedTab = .explore }
.onCommand(.showHikes) { self.selectedTab = .hikes }
.onCommand(.showTours) { self.selectedTab = .tours }
```



High information density

Multiple windows

Keyboard shortcuts

**Touch Bar**

Landmarks

Explore Hikes Tours

All Favorites only

- Turtle Rock** Twentynine Palms, California
- Silver Salmon Creek Port Alsworth, Alaska
- Chilkoot Trail Skagway, Alaska
- St. Mary Lake Browning, Montana
- Twin Lake Twin Lakes, Alaska
- Lake McDonald West Glacier, Montana
- Charley Rivers Eking, Alaska
- Icy Bay Icy Bay, Alaska
- Rainbow Lake Willow, Alaska
- Hidden Lake Newhalem, Washington
- Chincoteague Chincoteague, Virginia

**Turtle Rock**  
Twentynine Palms, California  
(555) 654-3210  
7:00 AM - 7:00 PM

Favorite [Call](#) [Get Directions](#)

**About Turtle Rock:**  
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Curabitur sed sollicitudin nisl, eget feugiat dolor. Donec mattis, dui vitae tincidunt ullamcorper, purus est viverra leo, vitae vehicula velit mauris non mauris. Sed eget euismod leo, a porttitor eros. Suspendisse porttitor nunc et volutpat hendrerit. Maecenas rhoncus dapibus sem, a molestie sapien feugiat vitae. Sed eget diam sed nulla condimentum finibus ut ut nun...

MacBook Pro

Keyboard function row: esc, heart icon, phone icon, Get Directions, back arrow, brightness, volume, mute, trackpad.

Keyboard alphanumeric row: ~, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, -, =, delete.

Landmarks

Explore Hikes Tours

All Favorites only

- Turtle Rock**  
Twentynine Palms, California
- Silver Salmon Creek  
Port Alsworth, Alaska
- Chilkoot Trail  
Skagway, Alaska
- St. Mary Lake  
Browning, Montana
- Twin Lake  
Twin Lakes, Alaska
- Lake McDonald  
West Glacier, Montana
- Charley Rivers  
Eking, Alaska
- Icy Bay  
Icy Bay, Alaska
- Rainbow Lake  
Willow, Alaska
- Hidden Lake  
Newhalem, Washington
- Chincoteague  
Ponchartraine, Virginia

**Turtle Rock**  
Twentynine Palms  
California

(555) 654-3210  
7:00 AM - 7:00 PM

Favorite

Call Get Directions

About Turtle Rock:  
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Curabitur sed sollicitudin nisl, eget feugiat dolor. Donec mattis, dui vitae tincidunt ullamcorper, purus est viverra leo, vitae vehicula velit mauris non mauris. Sed eget euismod leo, a porttitor eros. Suspendisse porttitor nunc et volutpat hendrerit. Maecenas rhoncus dapibus sem, a molestie sapien feugiat vitae. Sed eget diam sed nulla condimentum finibus ut ut nun...

MacBook Pro

Keyboard function row: esc, heart icon, phone icon, Get Directions, back arrow, brightness, volume, mute, touch bar icon.

Keyboard numeric row: ~, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, -, =, delete.



```
// Adding Touch Bar Support
```

```
TouchBar {
```

```
    Button(action: toggleFavorite) {
```

```
        Image(isFavorite ? "favorite" : "favorite-empty")
```

```
    }
```

```
}
```

```
// Adding Touch Bar Support
```

```
TouchBar {
```

```
    Button(action: toggleFavorite) {
```

```
        Image(isFavorite ? "favorite" : "favorite-empty")
```

```
    }
```

```
    Button(action: placeCall) {
```

```
        Image("call")
```

```
    }
```

```
}
```

```
// Adding Touch Bar Support
```

```
TouchBar {
```

```
    Button(action: toggleFavorite) {
```

```
        Image(isFavorite ? "favorite" : "favorite-empty")
```

```
    }
```

```
    Button(action: placeCall) {
```

```
        Image("call")
```

```
    }
```

```
    Button(action: getDirections) {
```

```
        Text("Get Directions")
```

```
    }
```

```
}
```

```
// Adding Touch Bar Support
```

```
MyCustomView().touchBar{
```

```
    TouchBar {
```

```
        Button(action: toggleFavorite) {
```

```
            Image(isFavorite ? "favorite" : "favorite-empty")
```

```
        }
```

```
        Button(action: placeCall) {
```

```
            Image("call")
```

```
        }
```

```
        Button(action: getDirections) {
```

```
            Text("Get Directions")
```

```
        }
```

```
    }
```

```
}
```



```
// Adding Touch Bar Support
```

```
MyCustomView().touchBar(  
    TouchBar {
```

```
        Button(action: toggleFavorite) {
```

```
            Image(isFavorite ? "favorite" : "favorite-empty")
```

```
        }
```

```
        Button(action: placeCall) {
```

```
            Image("call")
```

```
        }
```

```
        Button(action: getDirections) {
```

```
            Text("Get Directions")
```

```
        }
```

```
    }
```

```
)
```

***Demo***

# SwiftUI on Apple Watch

Meghna Sapre, watchOS Frameworks







watchOS App

Interactive Notifications

Landmarks on Apple Watch

3

Taps or fewer



# watchOS App



# watchOS App

ScrollView



# watchOS App



# watchOS App



`.digitalCrownRotation`

# watchOS App



`.digitalCrownRotation`

**watchOS App**

# watchOS App

HStack  
VStack



**watchOS App**



# watchOS App



List  
Section

watchOS App

**Interactive Notifications**

Landmarks on Apple Watch

# Interactive Notifications

# Interactive Notifications

Provide useful information

# Interactive Notifications

Provide useful information

Offer intuitive actions

# Interactive Notifications

Provide useful information

Offer intuitive actions

Deliver at the right time

watchOS App

Interactive Notifications

Landmarks on Apple Watch

# Landmarks on Apple Watch





# Landmarks on Apple Watch



# Landmarks on Apple Watch



# Landmarks on Apple Watch



# Landmarks on Apple Watch

```
ForEach(landmarks) { landmark in  
    WatchLandmarkDetails(landmark: landmark)  
}
```



# Landmarks on Apple Watch

```
// WatchLandmarkDetails

// Image
LandmarkImage(landmark: landmark)

// Details
NavigationButton(destination: WatchTourDetails(landmark:
landmark)) {
    Text("Tour: 10:00 AM")
}

// Make a Call
Button(action: call) {
    Image(systemName: "phone.fill")
        .foregroundColor(.green)
}
```



# Landmarks on Apple Watch



# Landmarks on Apple Watch



# Landmarks on Apple Watch

```
var landmarks: [Landmark] {  
    if showFavoritesOnly {  
        return landmarkData.filter(isFavorite)  
    }  
    return landmarkData  
}
```





# Landmarks on Apple Watch

```
var landmarks: [Landmark] {
    if showFavoritesOnly {
        return landmarkData.filter(isFavorite)
    }
    return landmarkData
}

Button(action: self.toggleFavoritesOnly) {
    Text(self.userData.showFavoritesOnly ?
        "Show All" : "Show Favorites")
}
```



# Landmarks on Apple Watch

```
return landmarkList
```



# Landmarks on Apple Watch

```
return landmarkList
```



# Landmarks on Apple Watch

```
return landmarkList  
    .listStyle(.carousel)
```



# Interactive Notifications



# Interactive Notifications



***Demo***

# Summary



# Summary

Take a design-first approach

# Summary

Take a design-first approach

Effortlessly share model code

# Summary

Take a design-first approach

Effortlessly share model code

Be judicious when sharing view code

# Summary

Take a design-first approach

Effortlessly share model code

Be judicious when sharing view code

Learn once, apply anywhere

# More Information

[developer.apple.com/wwdc19/240](https://developer.apple.com/wwdc19/240)

