

#WWDC19

SwiftUI On All Devices

Jeff Nadeau, macOS Frameworks

Ada Turner, tvOS Frameworks

Meghna Sapre, watchOS Frameworks

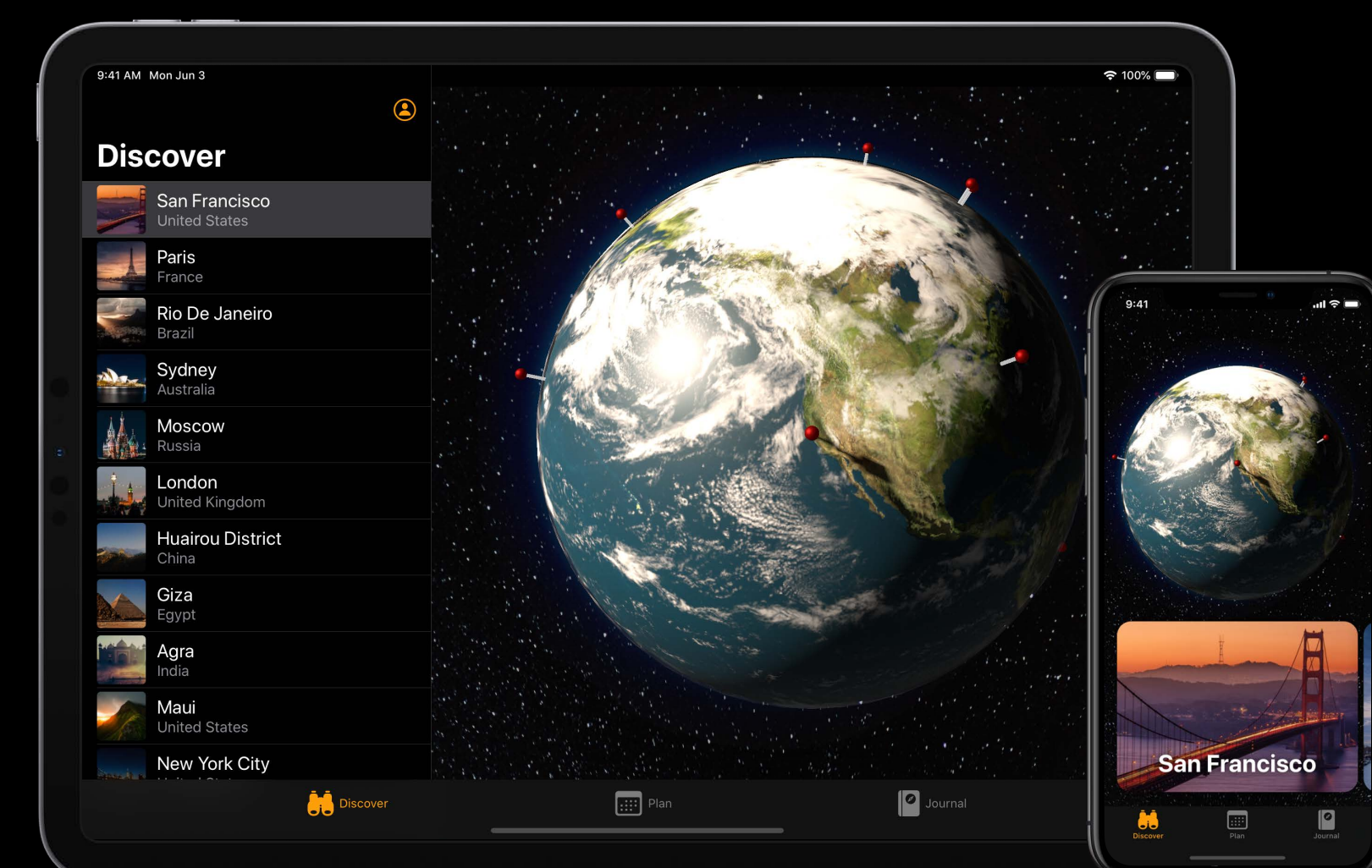
The shortest path to building great
apps on every device

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

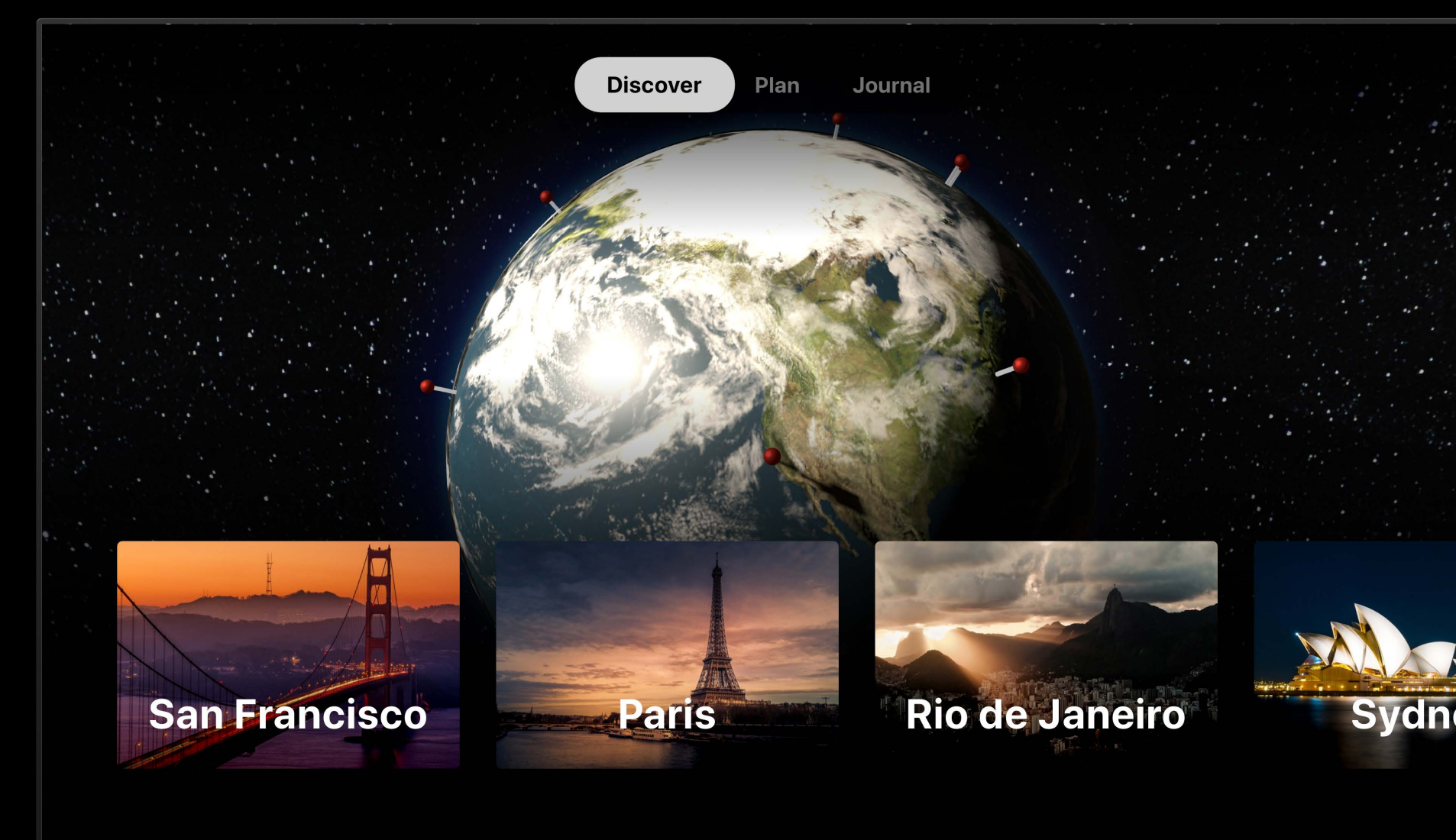
The shortest path to building great
apps on **every** device



AppKit



UIKit



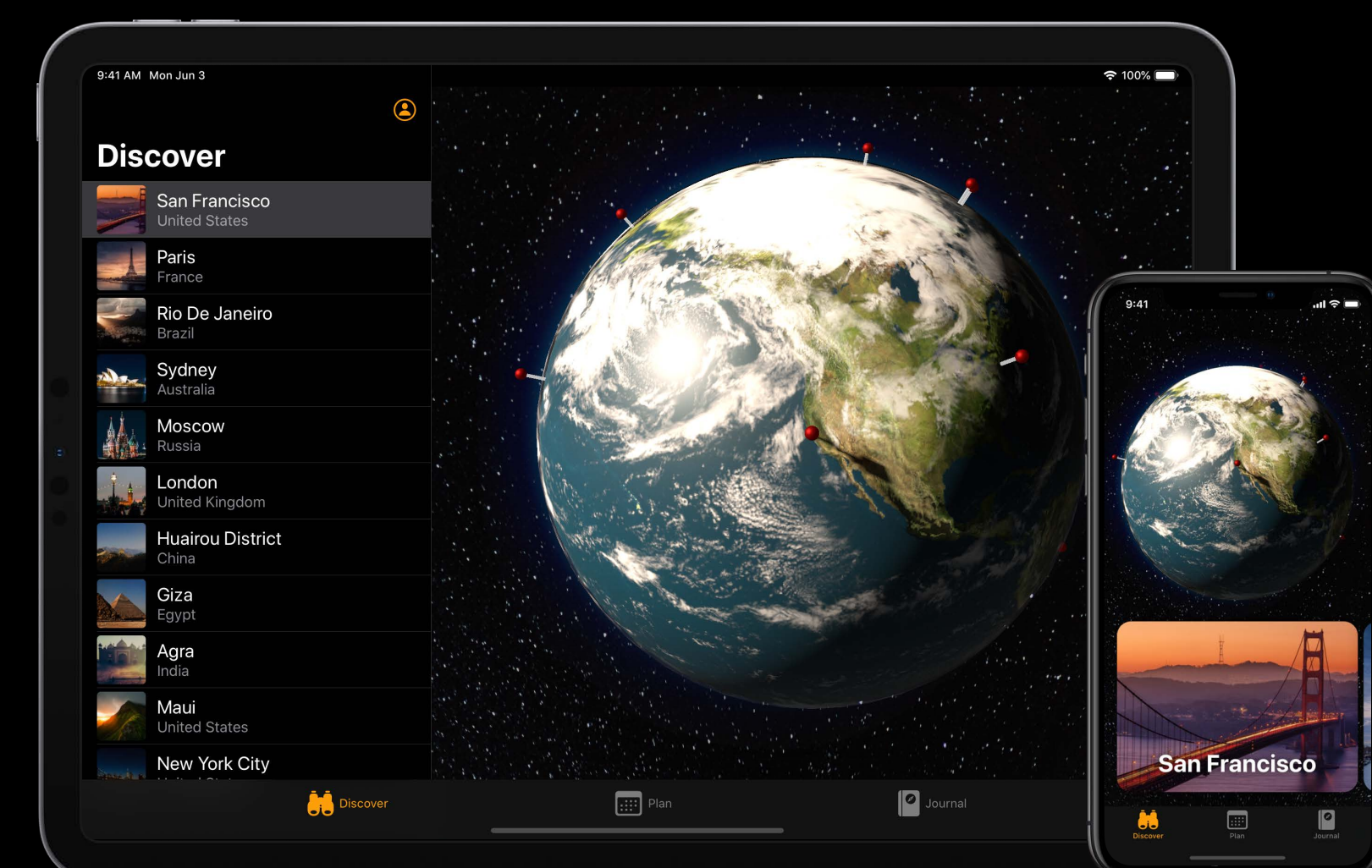
TVUIKit
UIKit



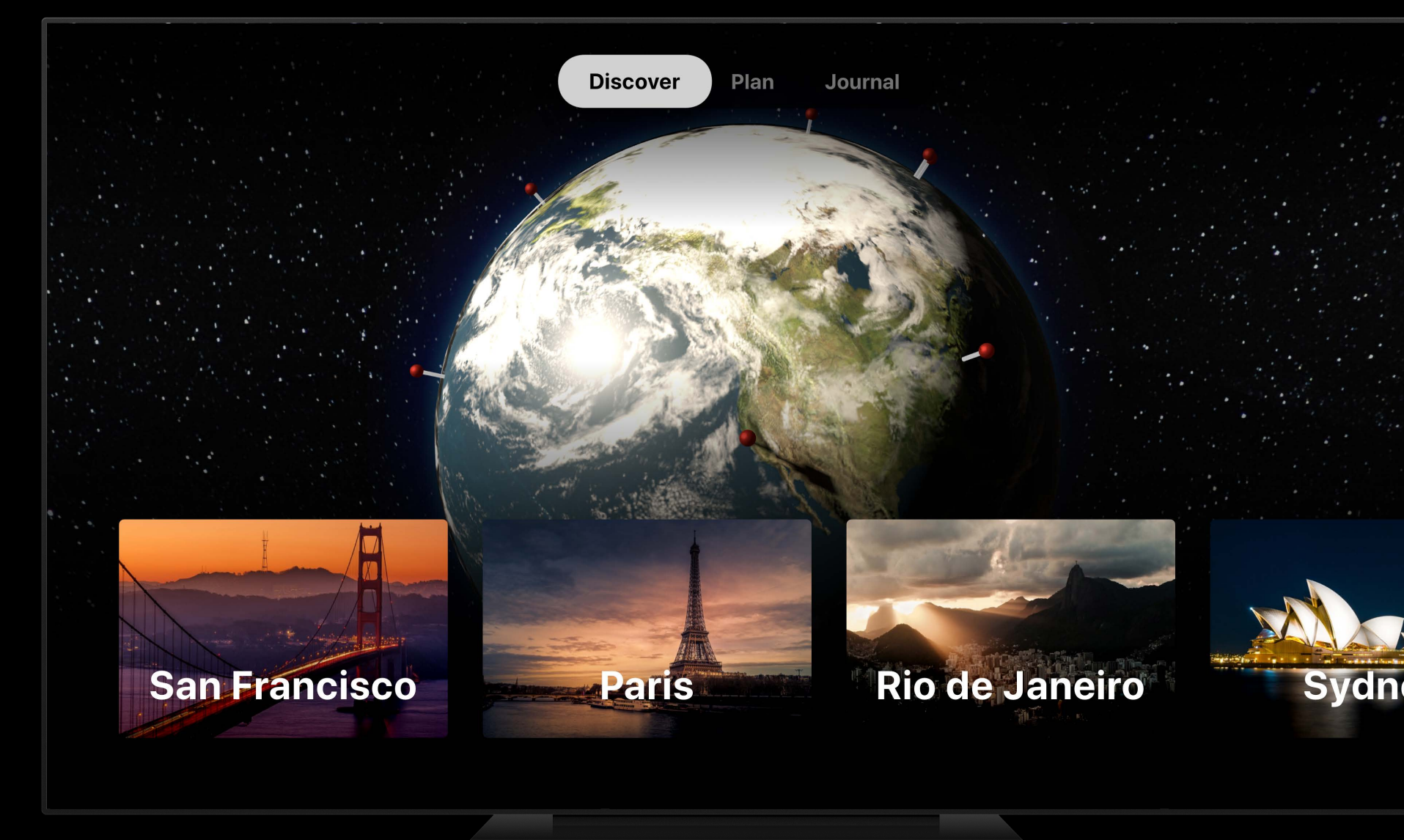
WatchKit



AppKit



UIKit

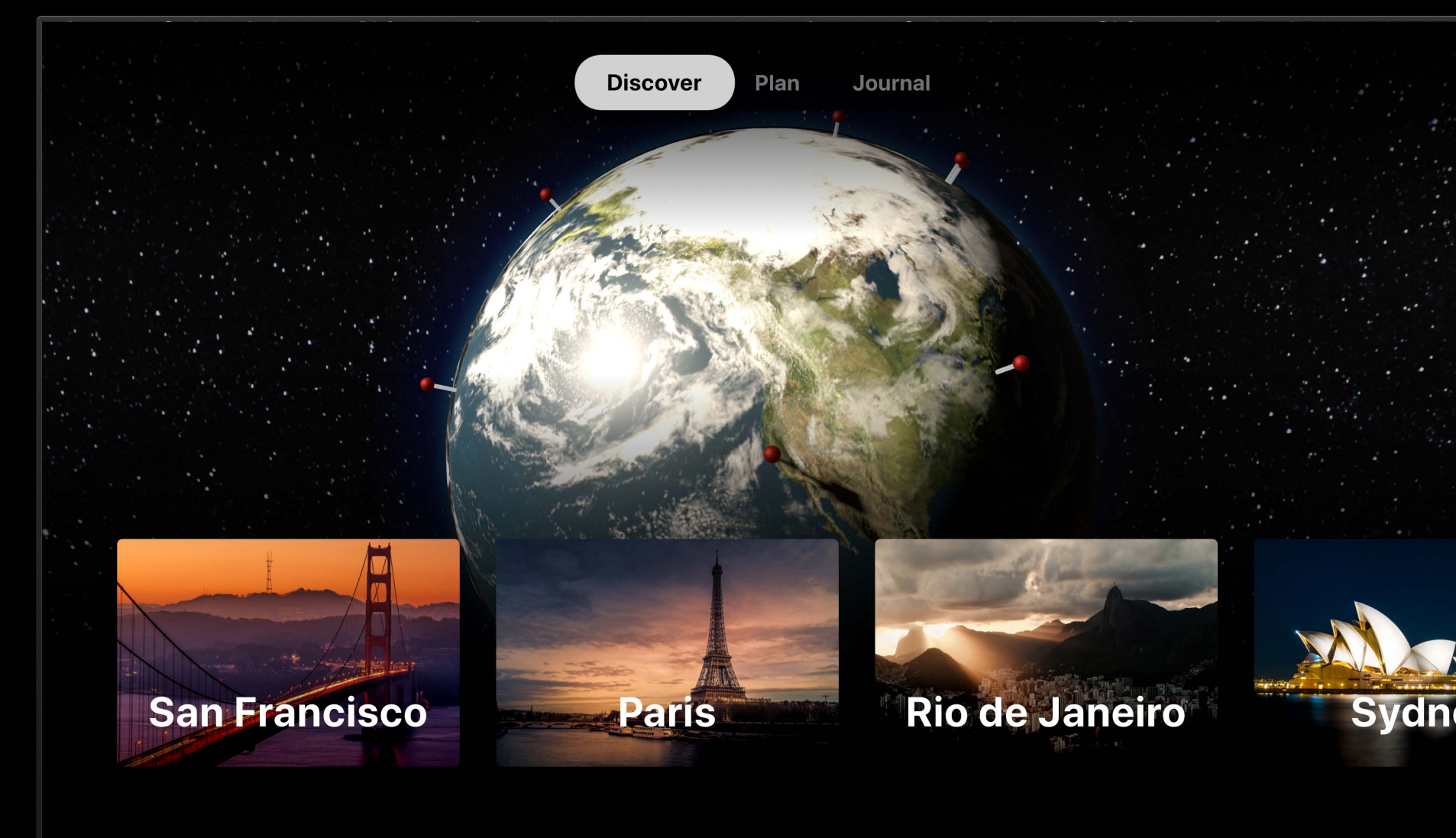
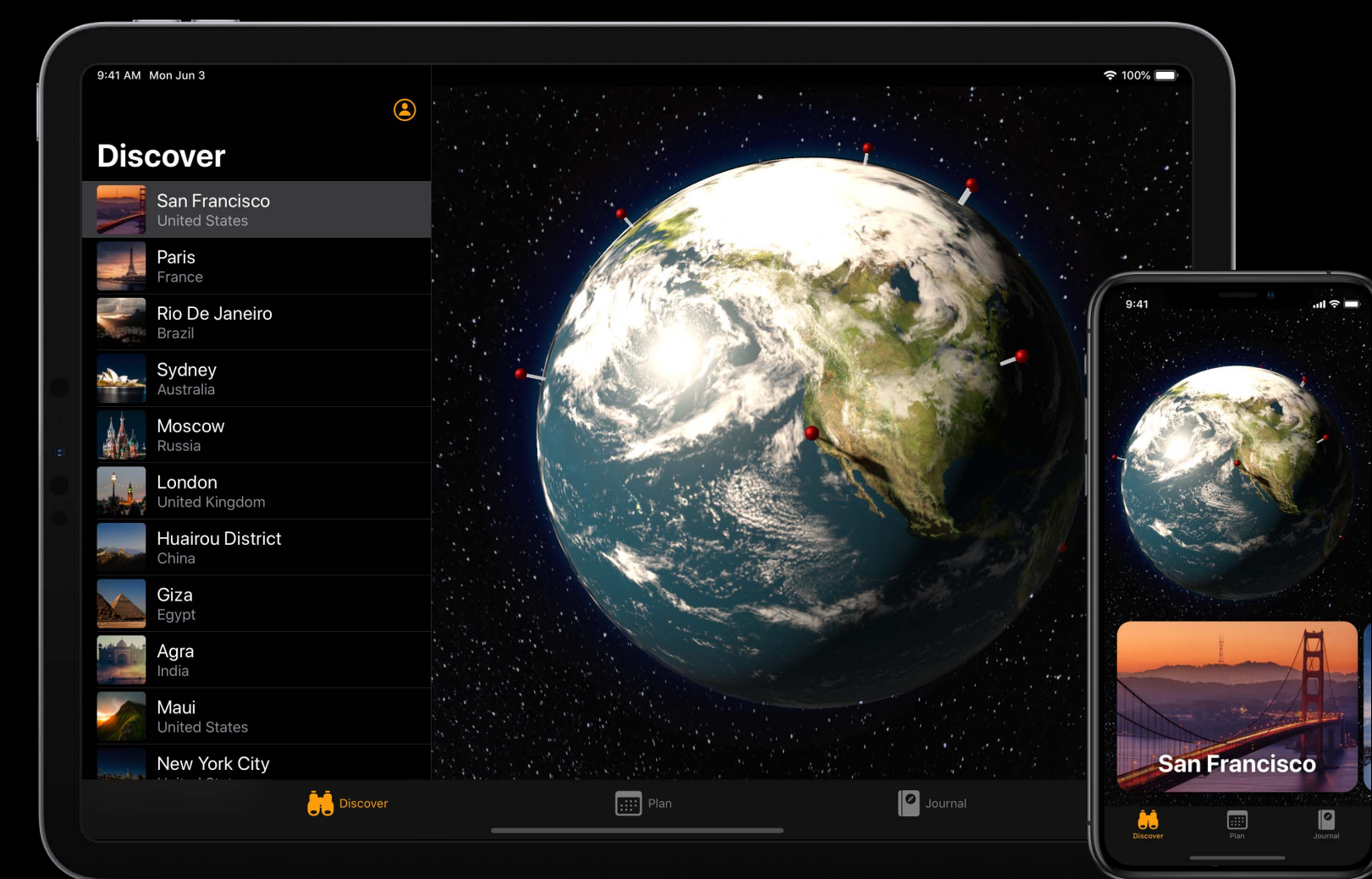


TVUIKit

UIKit



WatchKit



AppKit

UIKit

TVUIKit

WatchKit

UIKit

Designed for Every Platform

Designed to accommodate many UI paradigms

Platform support out of the box

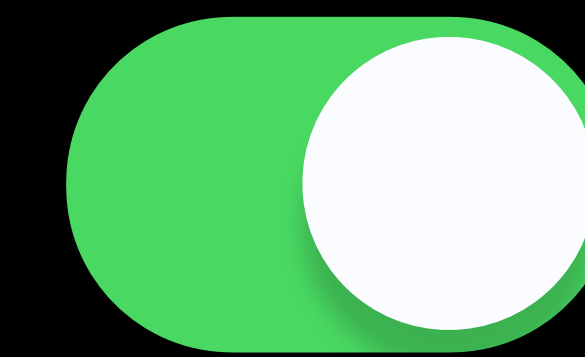
A common toolkit that you can learn once and use anywhere

Common Elements

Basic controls

iOS

Bluetooth



macOS

Bluetooth

tvOS

Bluetooth

On

watchOS

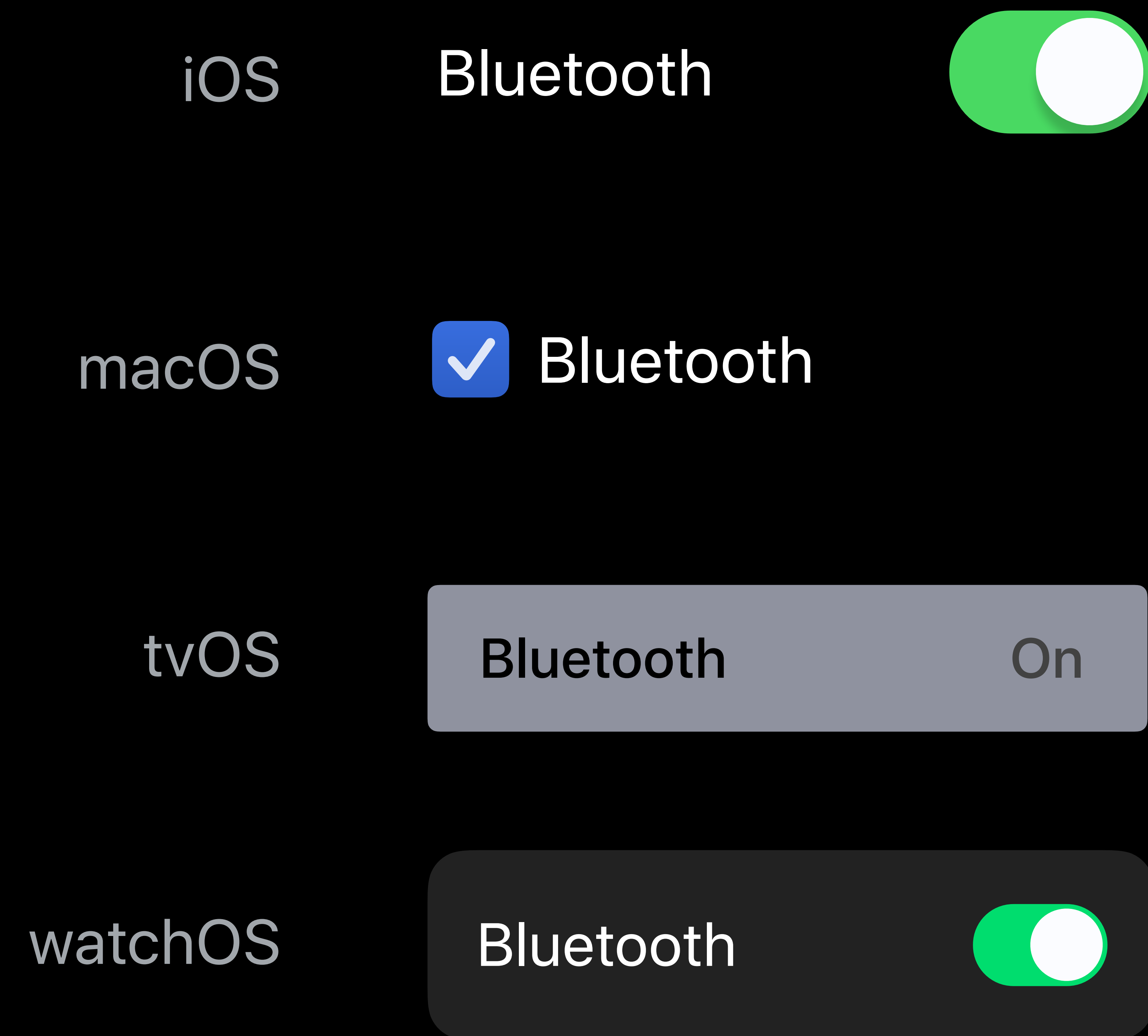
Bluetooth



Common Elements

Basic controls

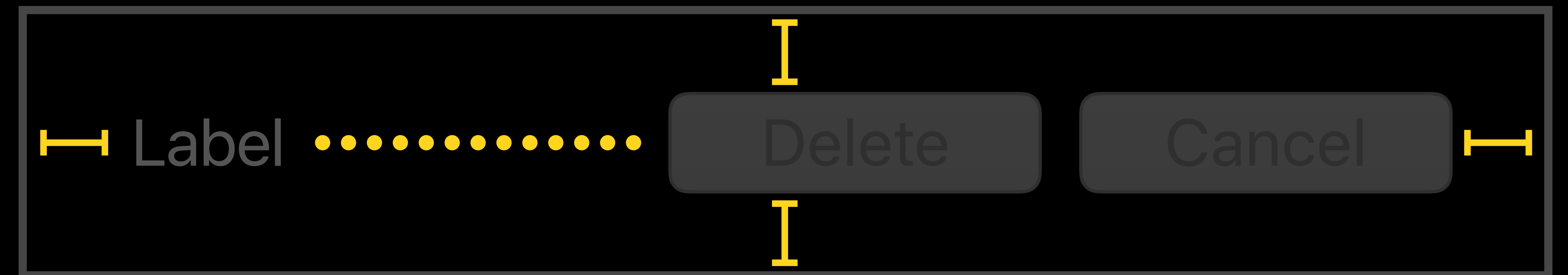
```
Toggle(isOn: $btEnabled) {  
    Text("Bluetooth")  
}
```



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

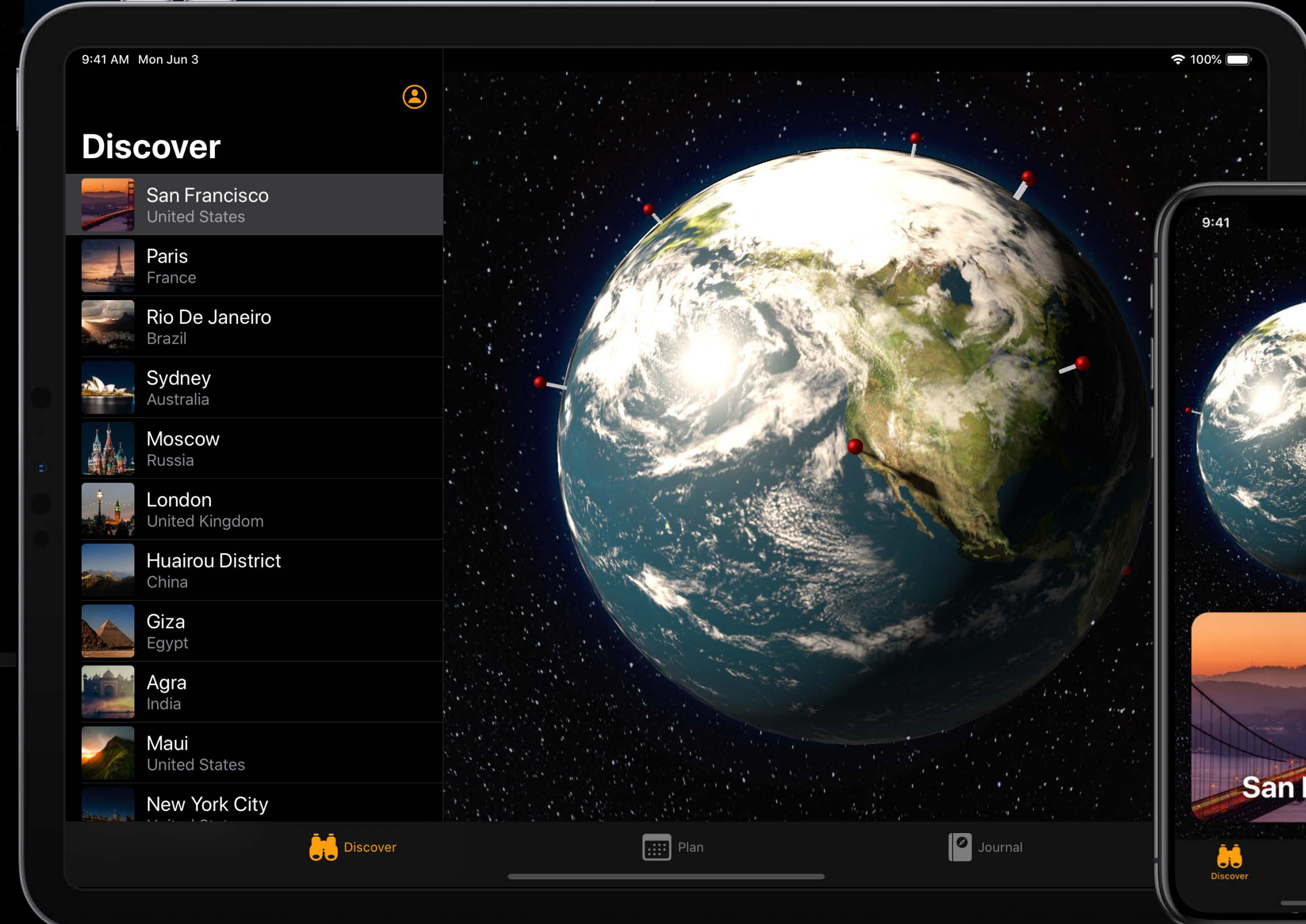
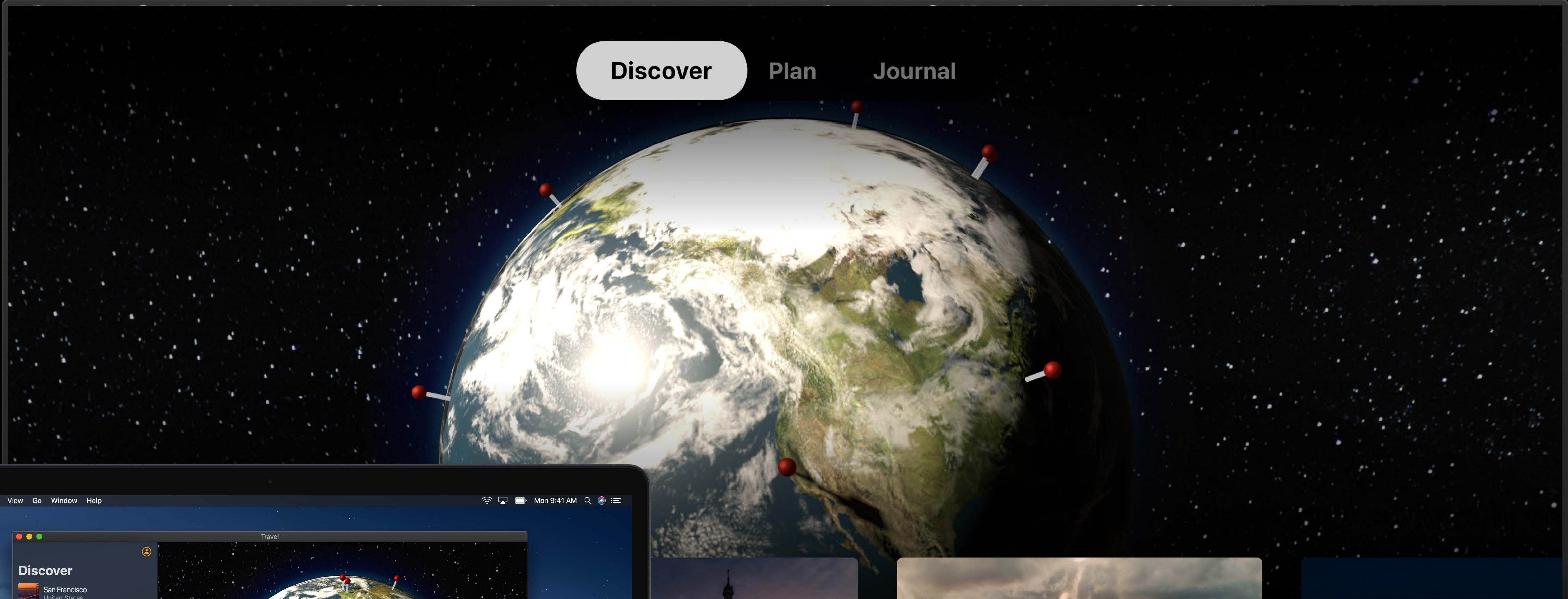
Dragonfruit

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

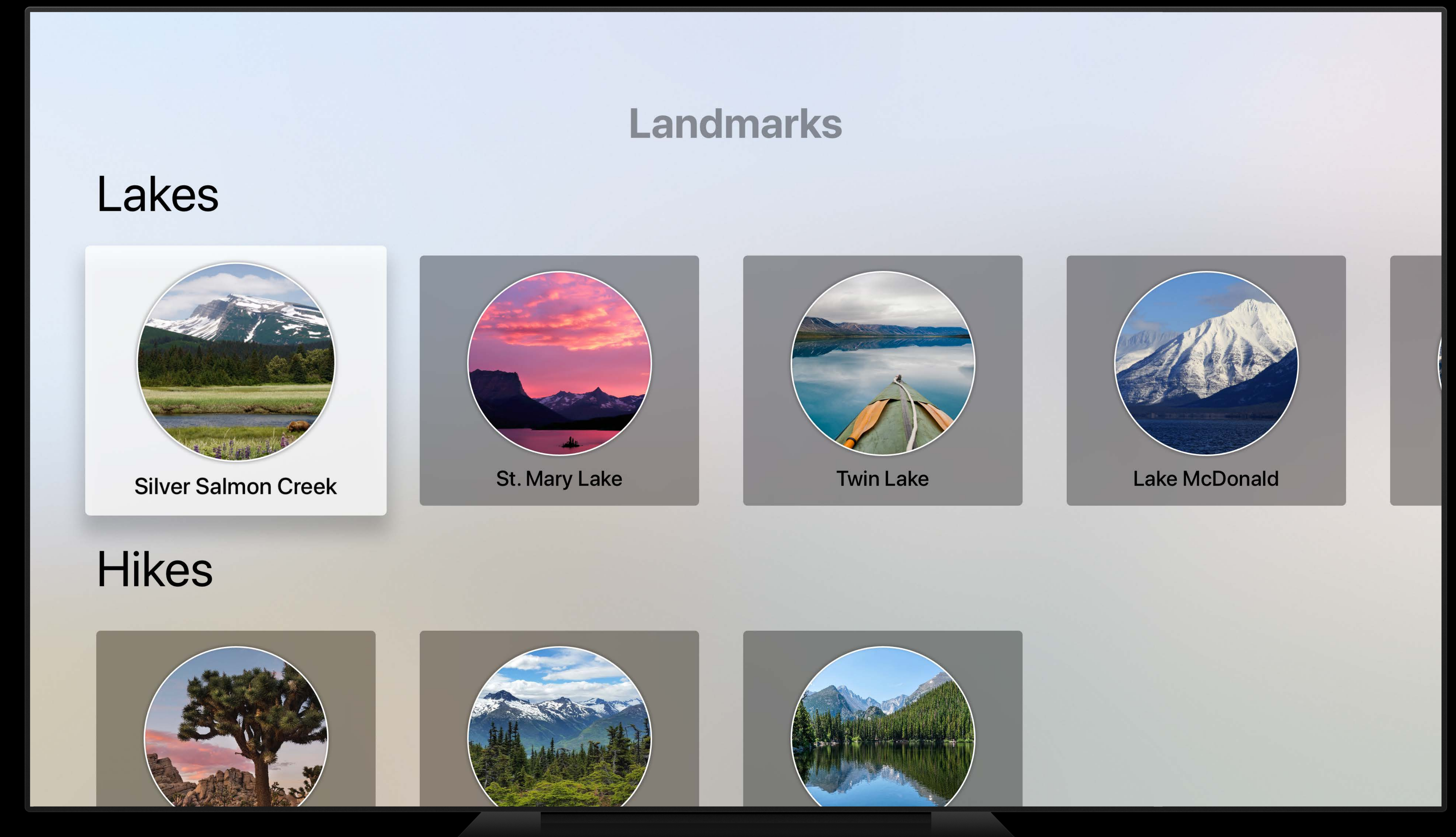
Look at photos and visitor info

Get maps and directions

Mark favorites

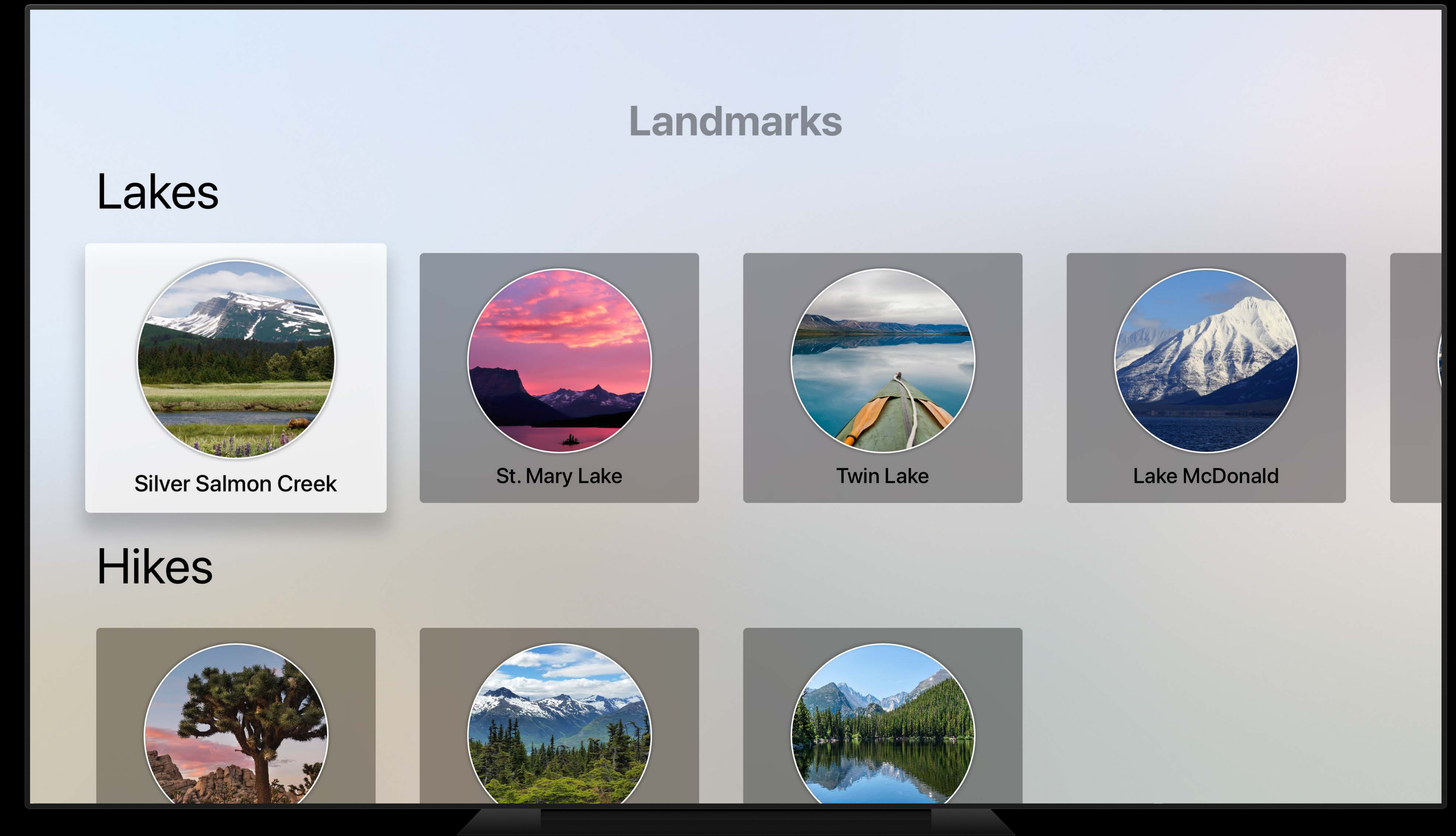


Landmarks for Apple TV



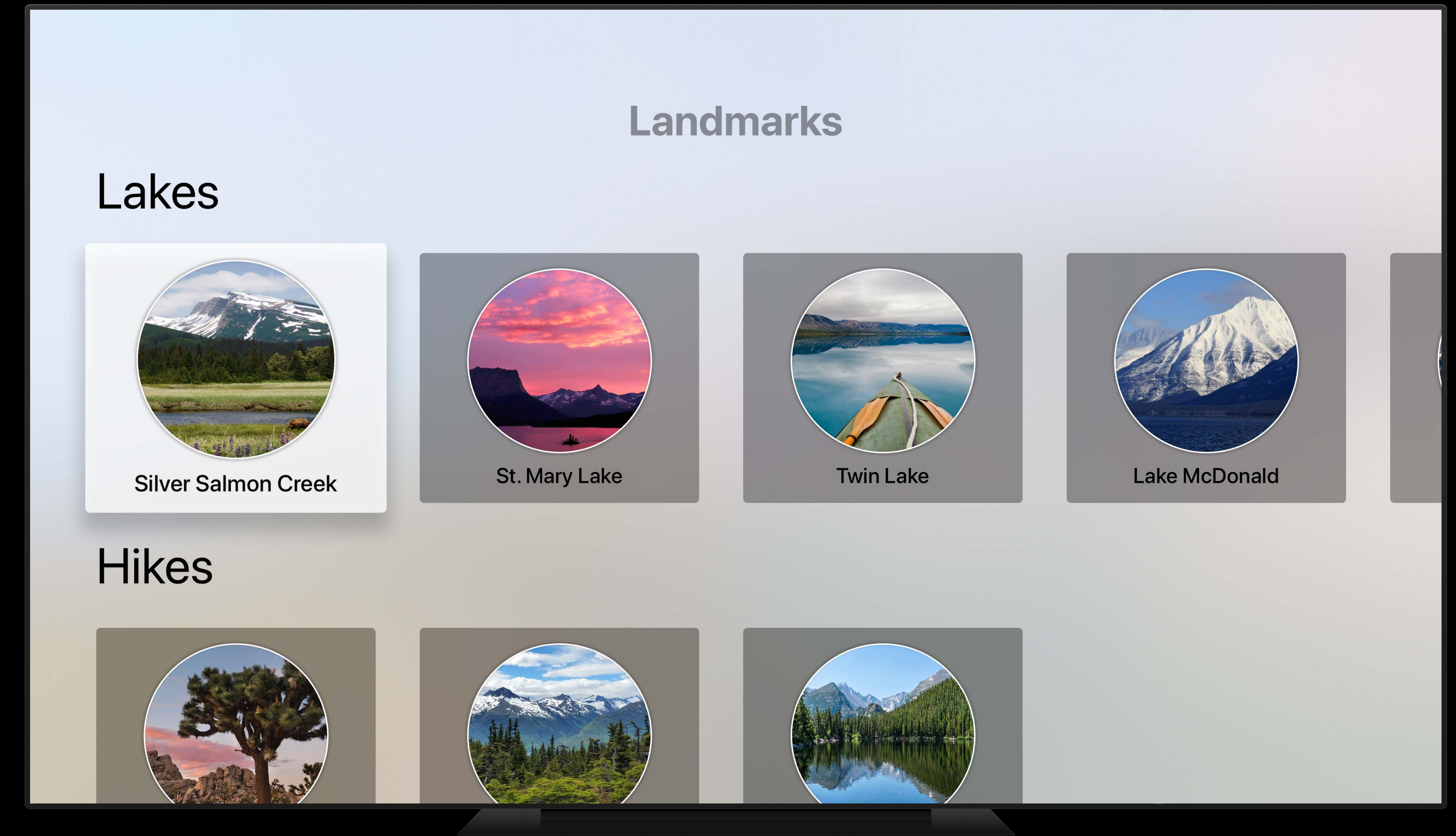
Landmarks for Apple TV

Couch surfing for places to go



Landmarks for Apple TV

Couch surfing for places to go
Together with family or friends

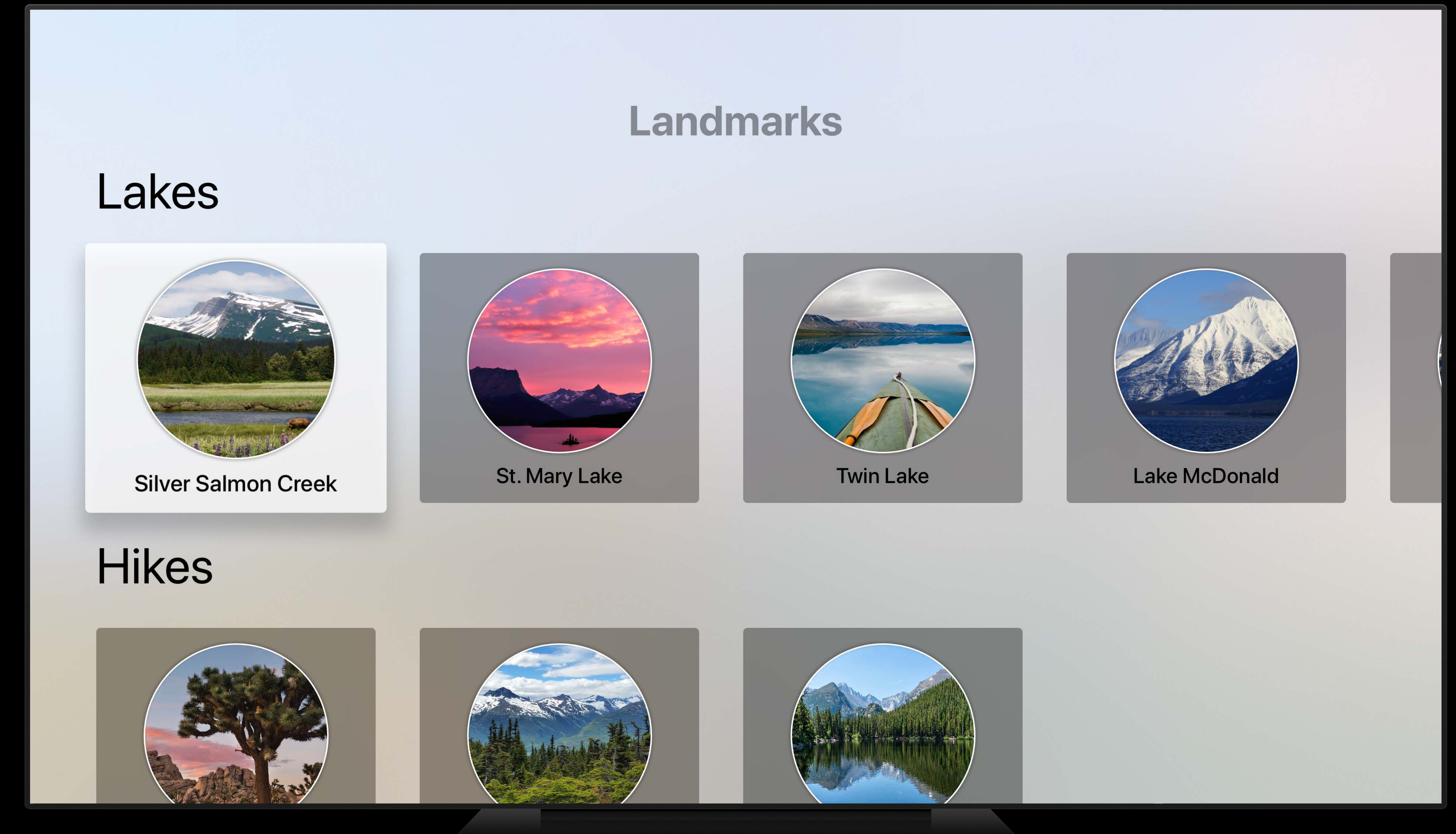


Landmarks for Apple TV

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

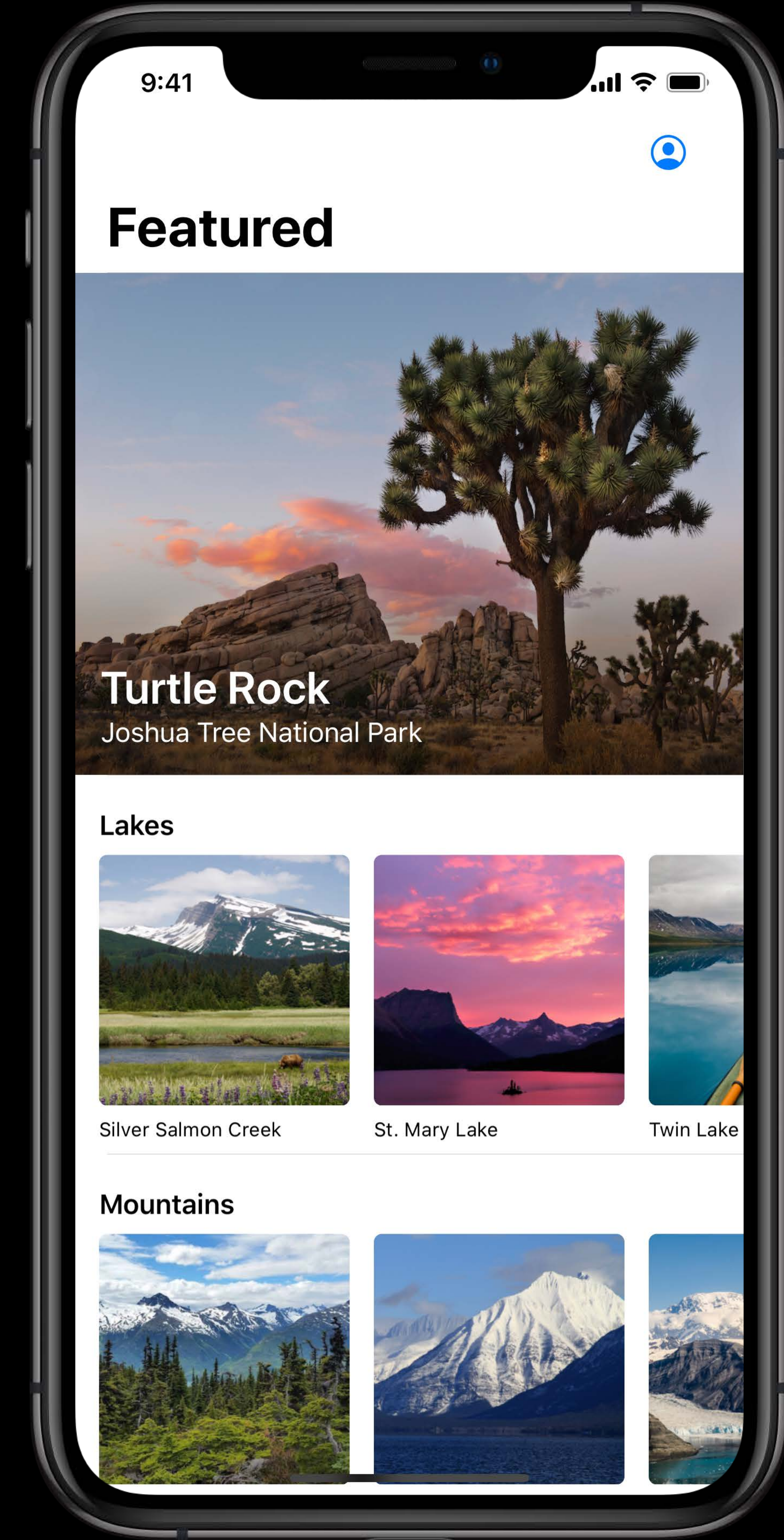
Compare information

Sort and filter

Read up on the details

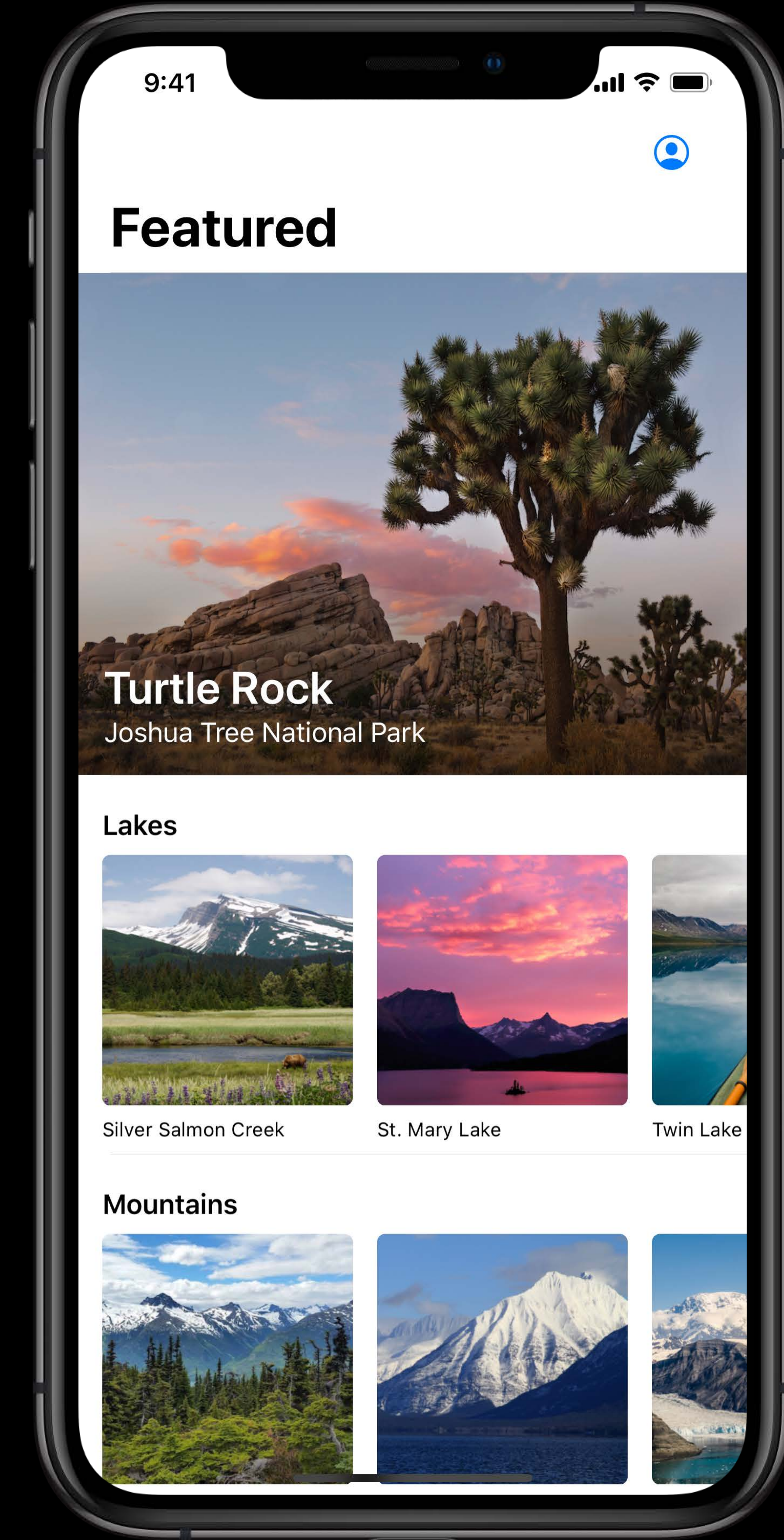


Landmarks for iOS



Landmarks for iOS

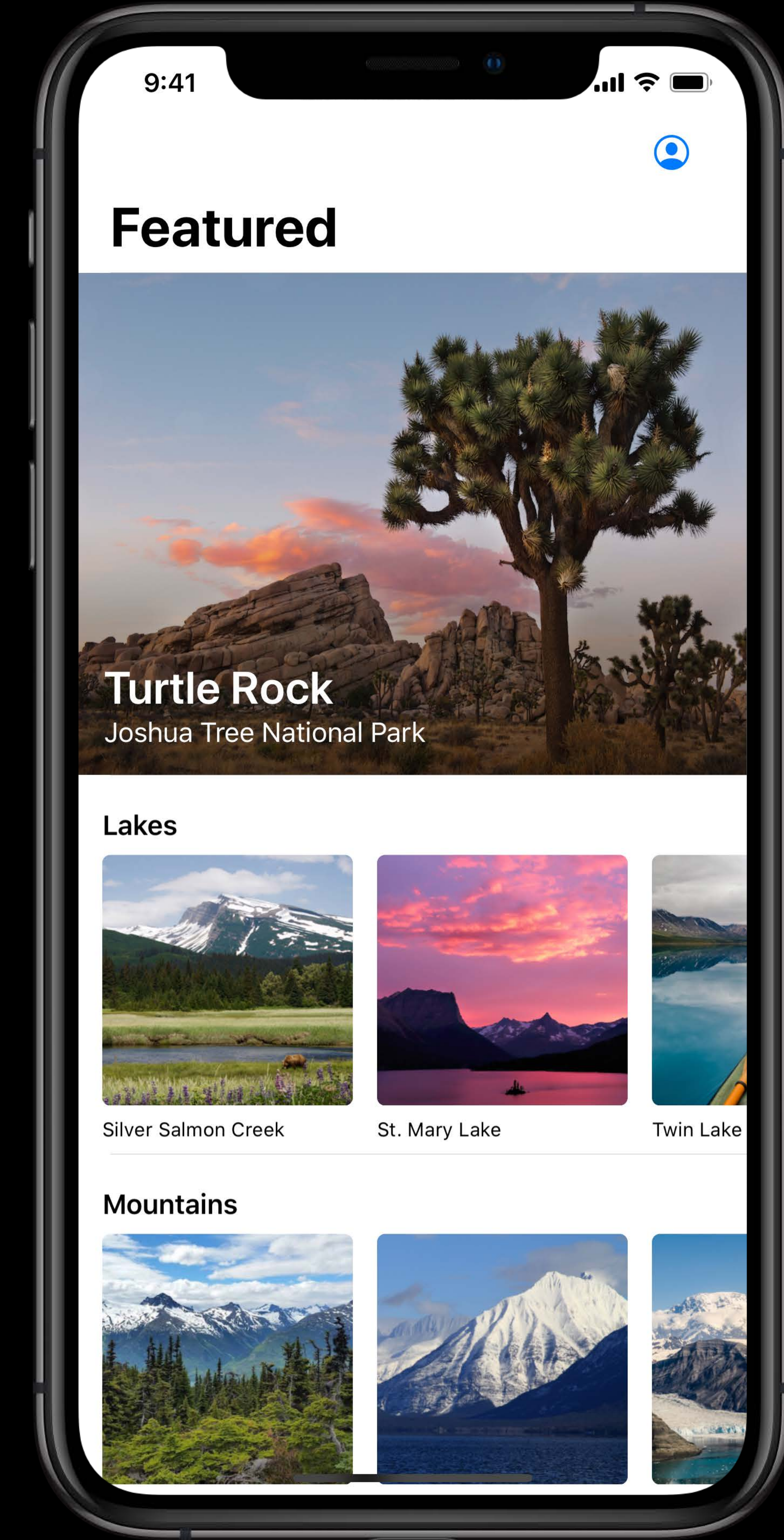
Quick information about each landmark



Landmarks for iOS

Quick information about each landmark

Get driving directions

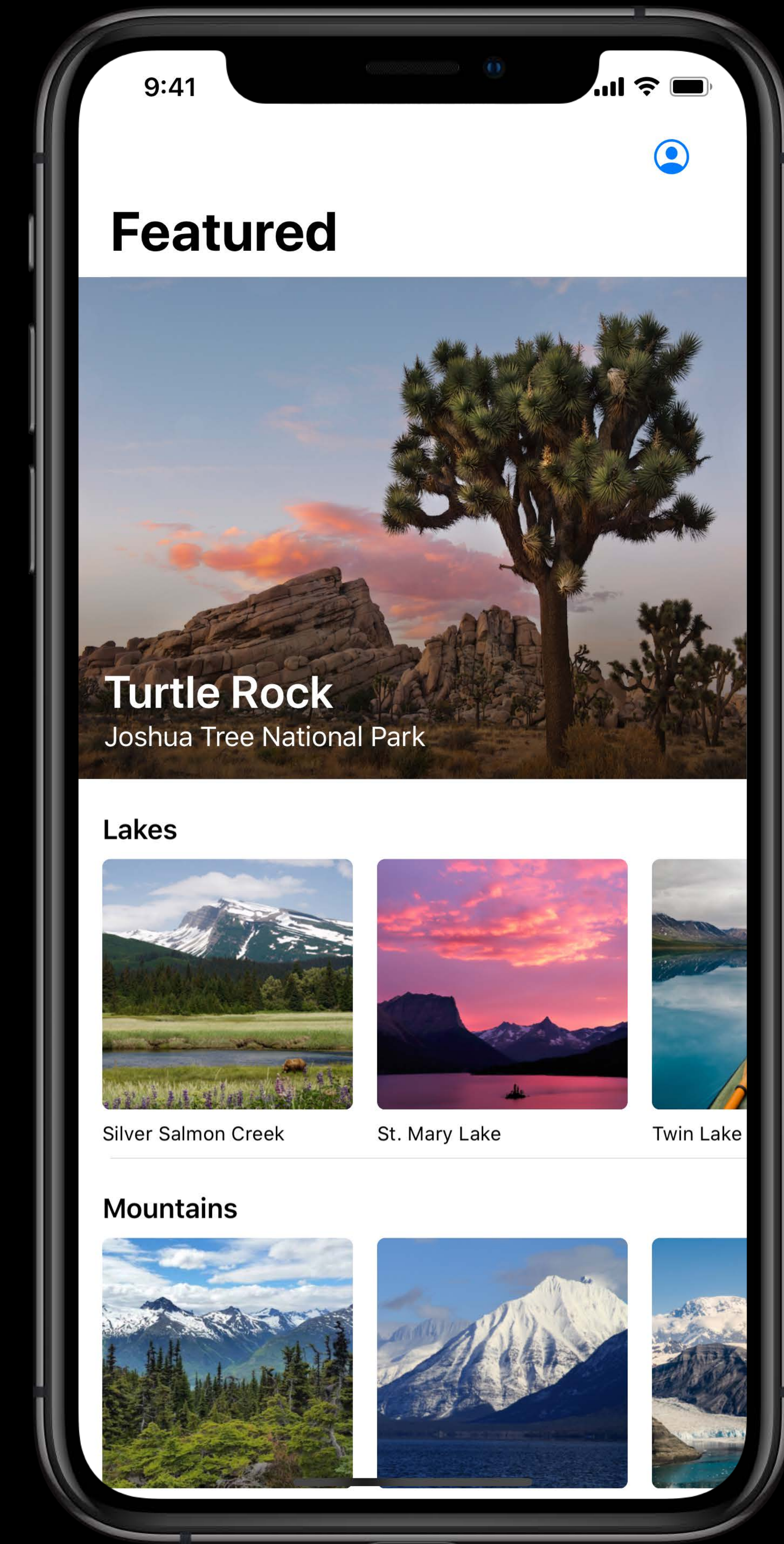


Landmarks for iOS

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



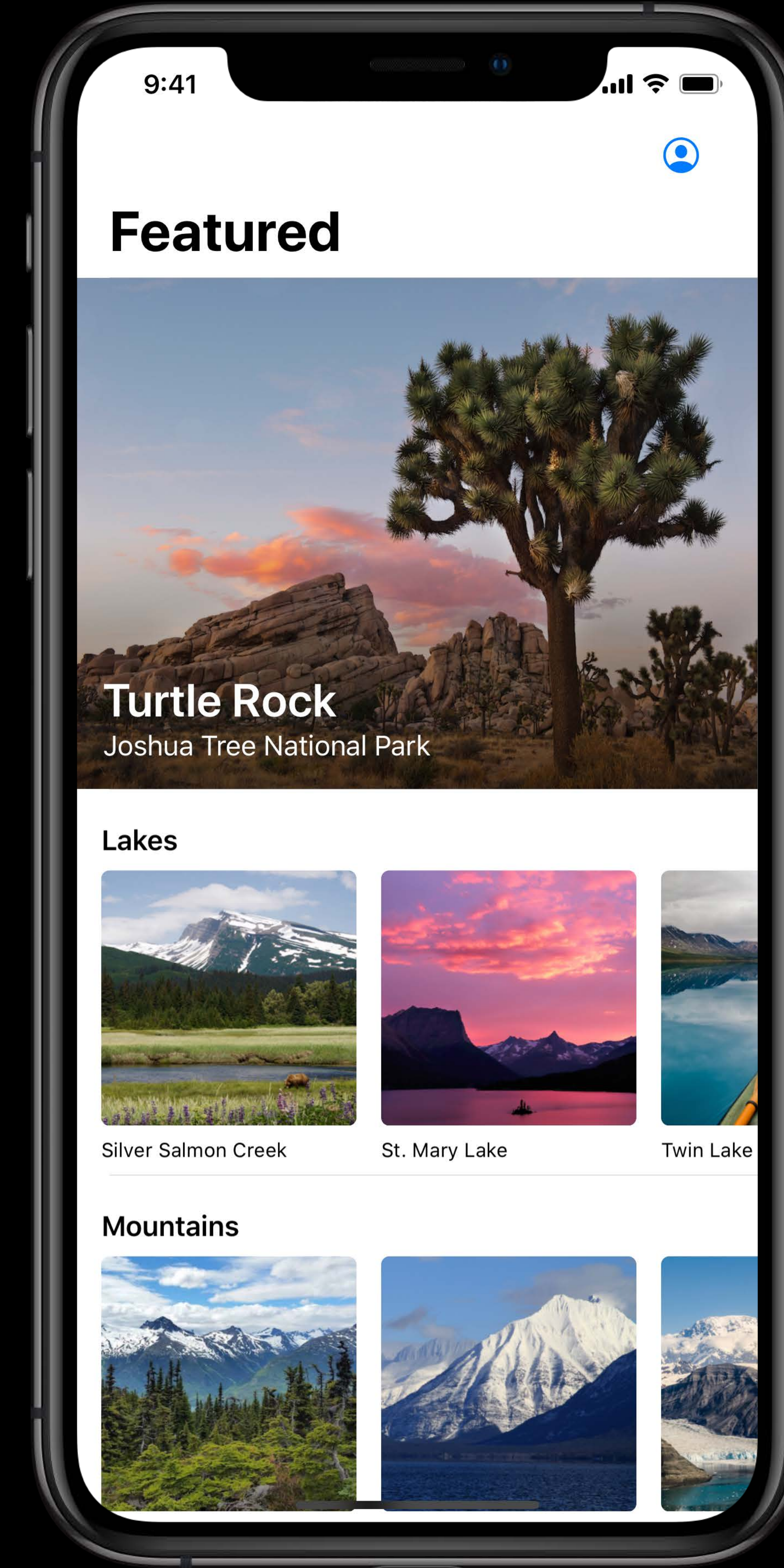
Landmarks for Apple Watch

Get at-a-glance info about the current location

Receive important notifications

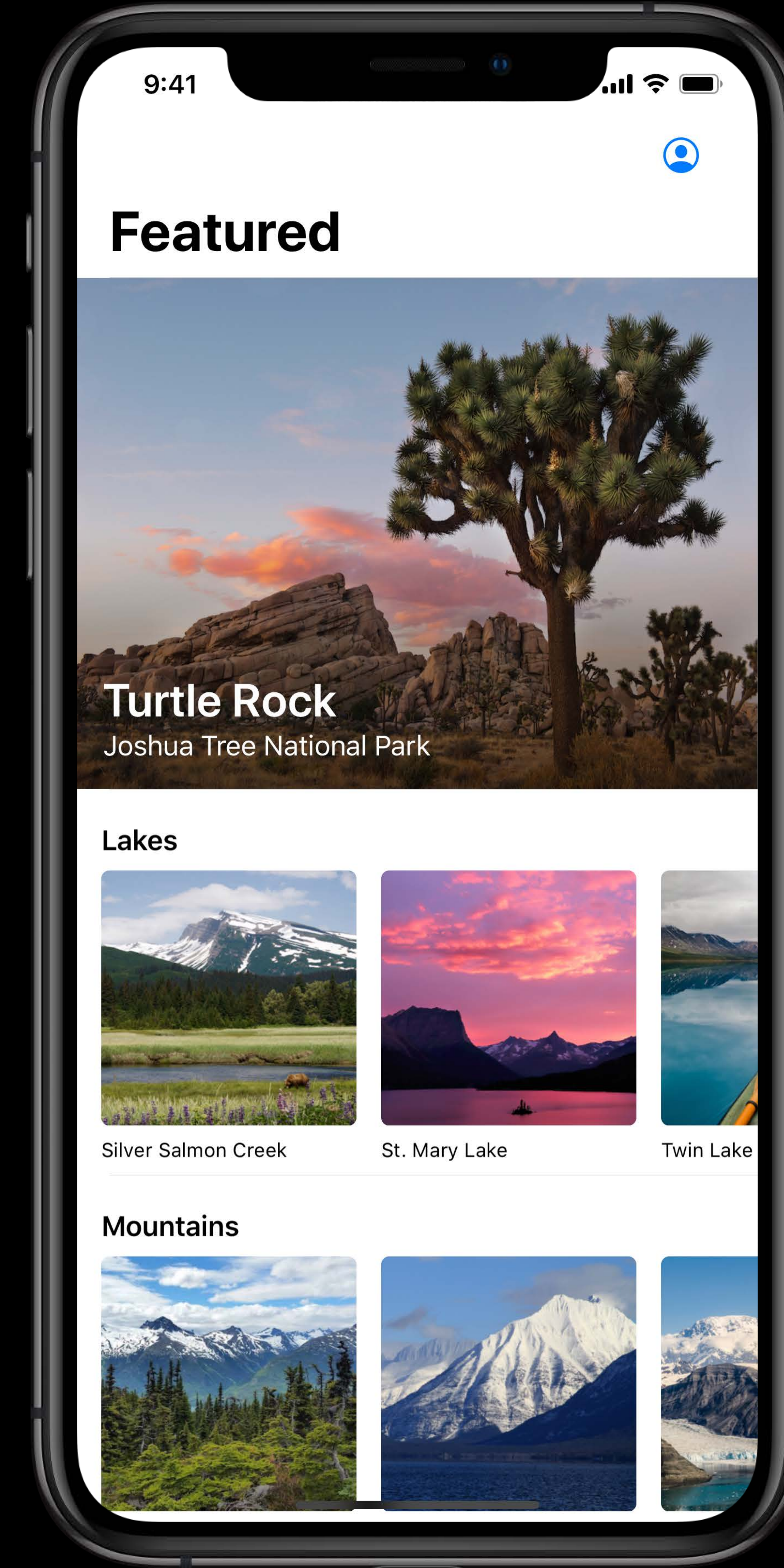


Learning Experience



Learning Experience

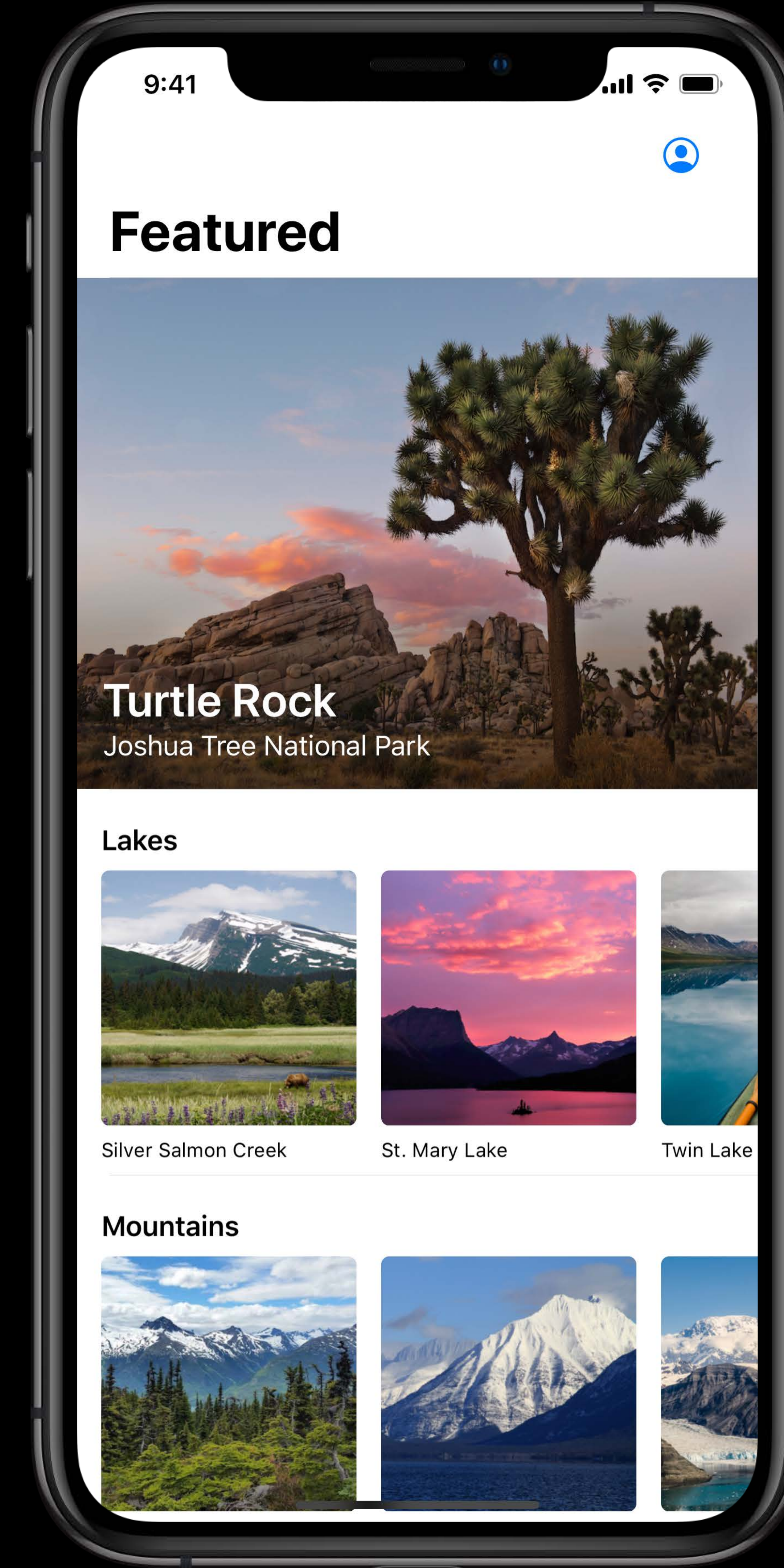
New documentation series



Learning Experience

New documentation series

Build the app step-by-step

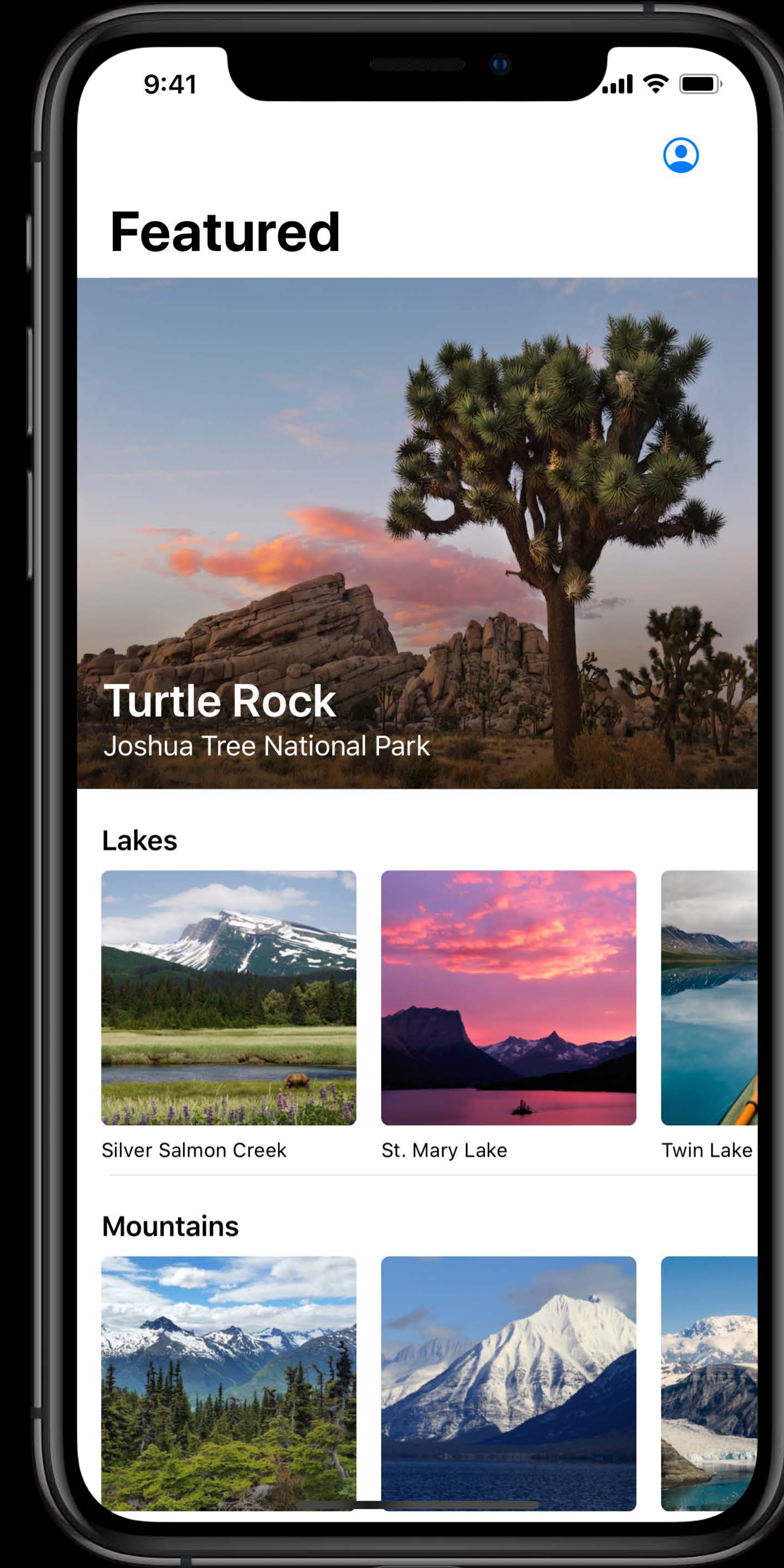


Learning Experience

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

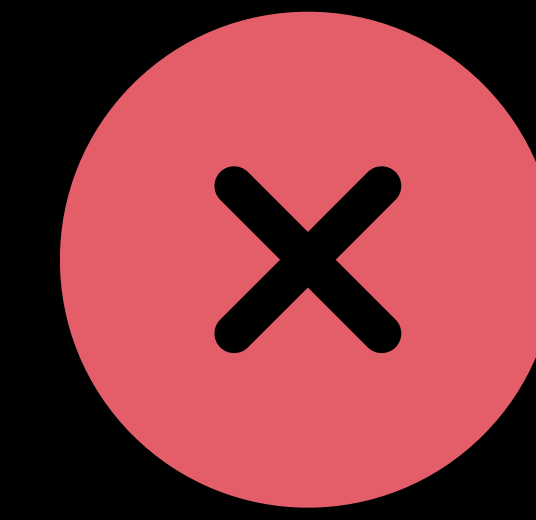
Landmarks — What Makes the Cut?



Beautiful photos of landmarks

Adding favorites

Basic tourism information



Lengthy historical information

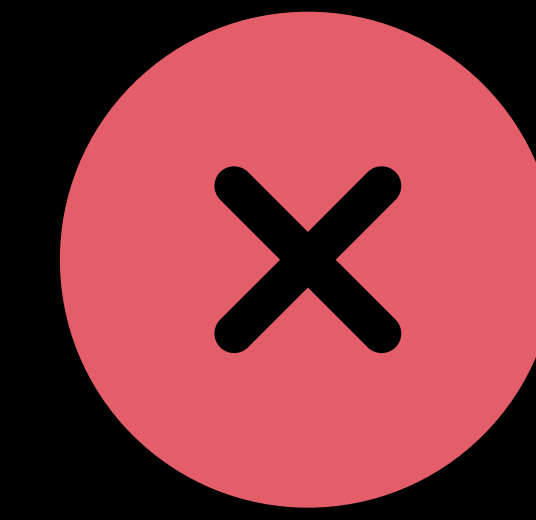
Landmarks — What Makes the Cut?



Beautiful photos of landmarks

Adding favorites

Basic tourism information



Lengthy historical information

Advanced sorting and filtering

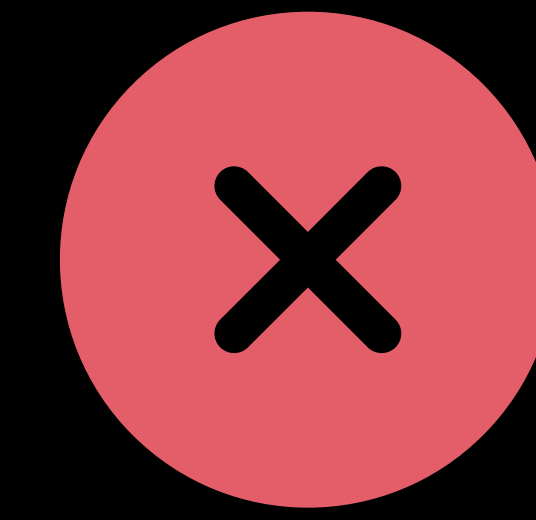
Landmarks — What Makes the Cut?



Beautiful photos of landmarks

Adding favorites

Basic tourism information



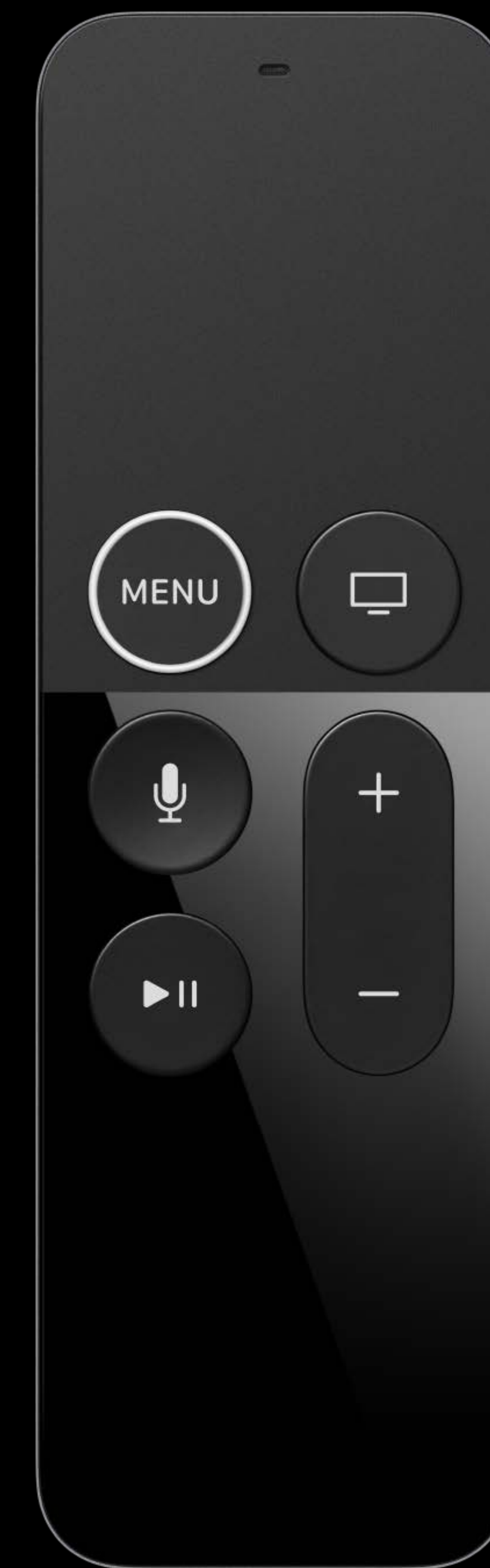
Lengthy historical information

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](#)

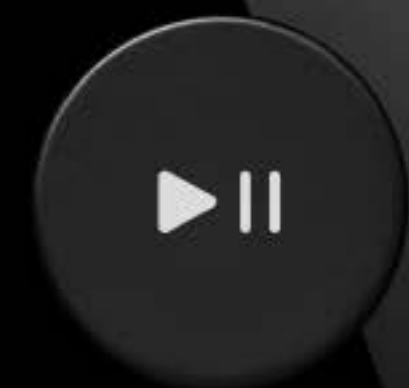
About Turtle Rock:
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Curabitur sed sollicitudin nisl, eget feugiat dolor. Donec mattis, dui vitae tincidunt ullamcorper, purus est viverra leo, vitae vehicula velit mauris non mauris. Sed eget euismod leo, a porttitor eros. Suspendisse porttitor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

Landmarks

Lakes



Hikes

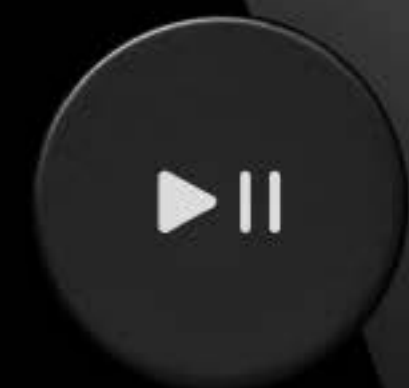


Landmarks

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

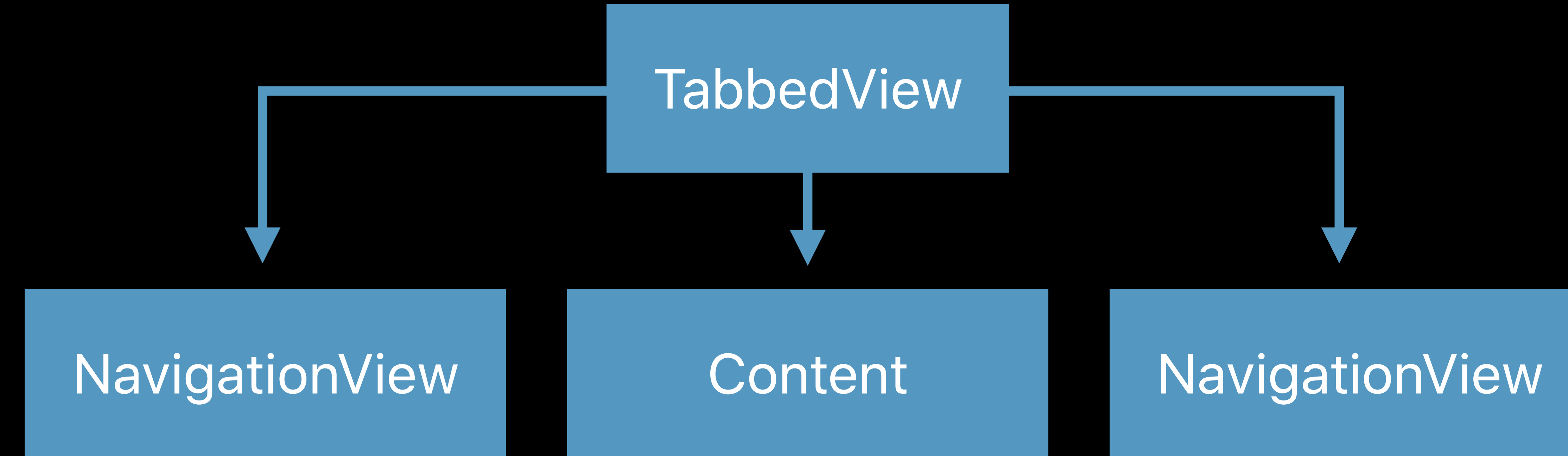
tvOS vs. iOS Navigation Hierarchies

iOS

TabbedView

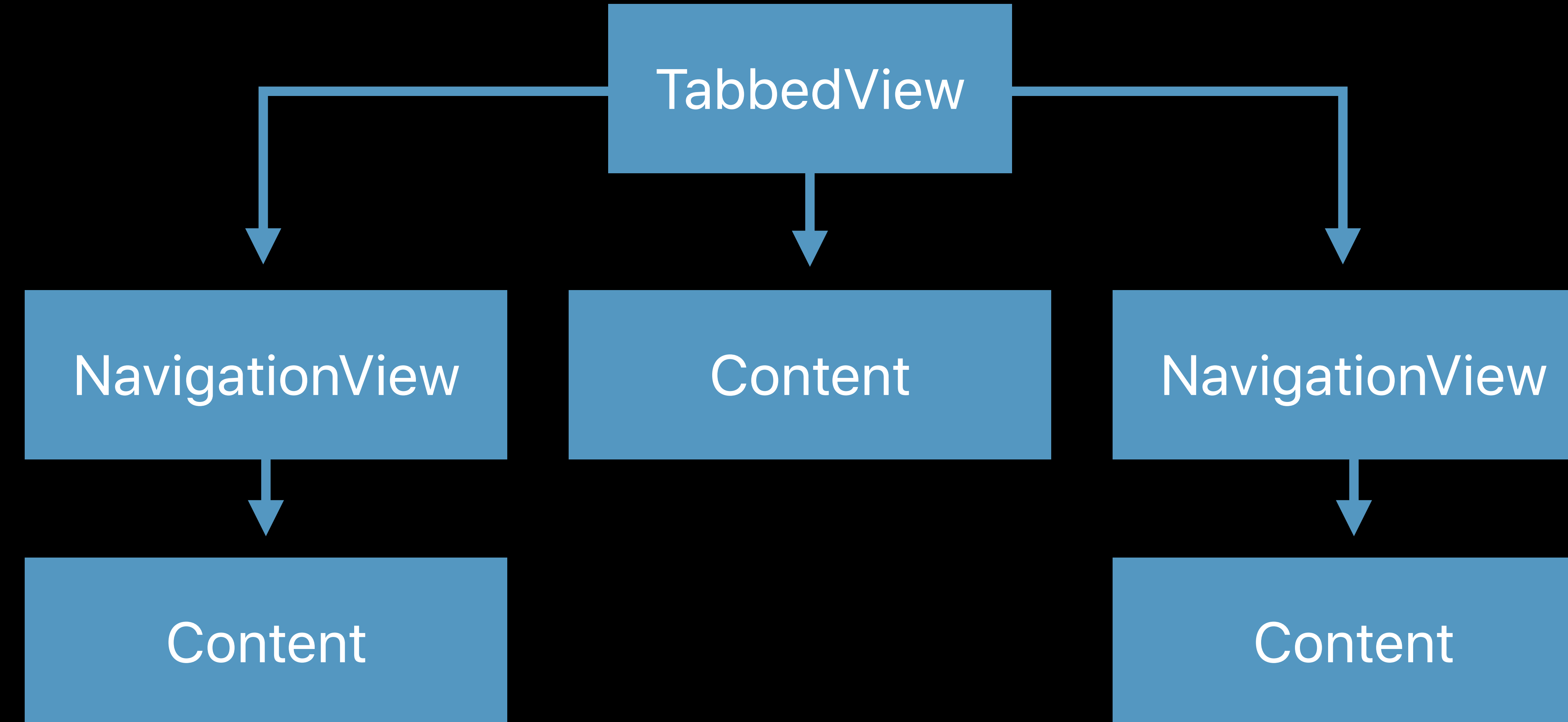
tvOS vs. iOS Navigation Hierarchies

iOS



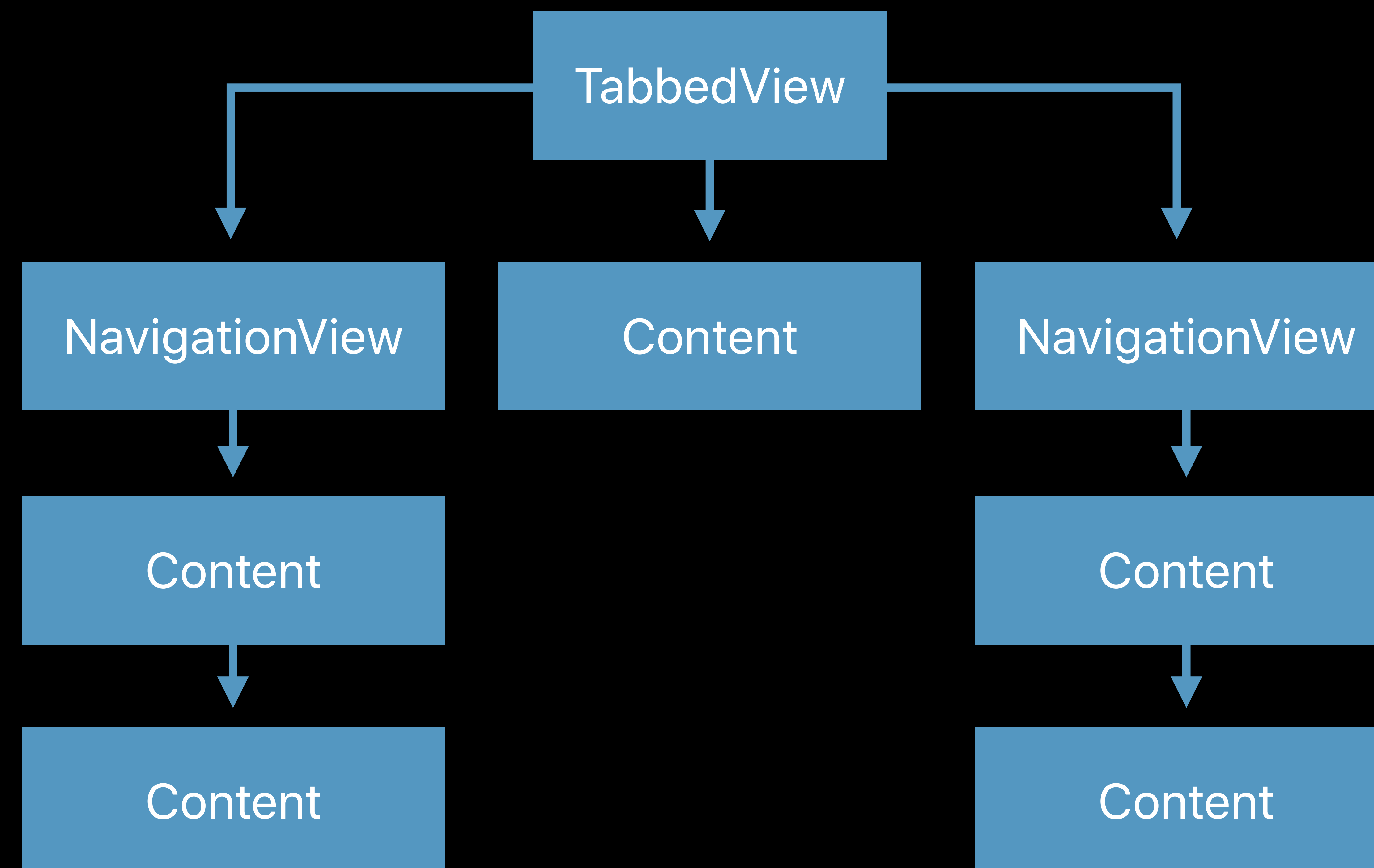
tvOS vs. iOS Navigation Hierarchies

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



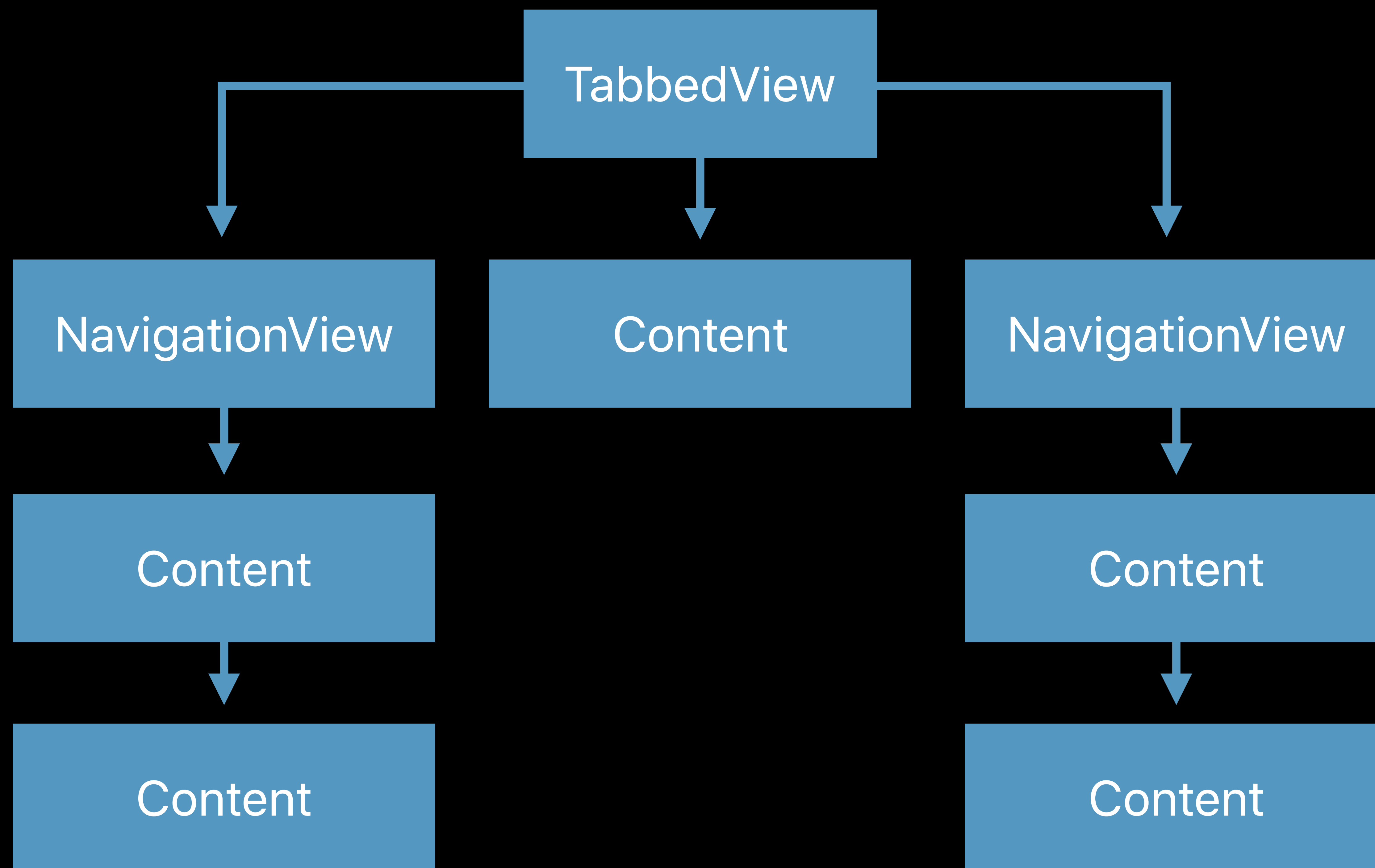
Albums



Search

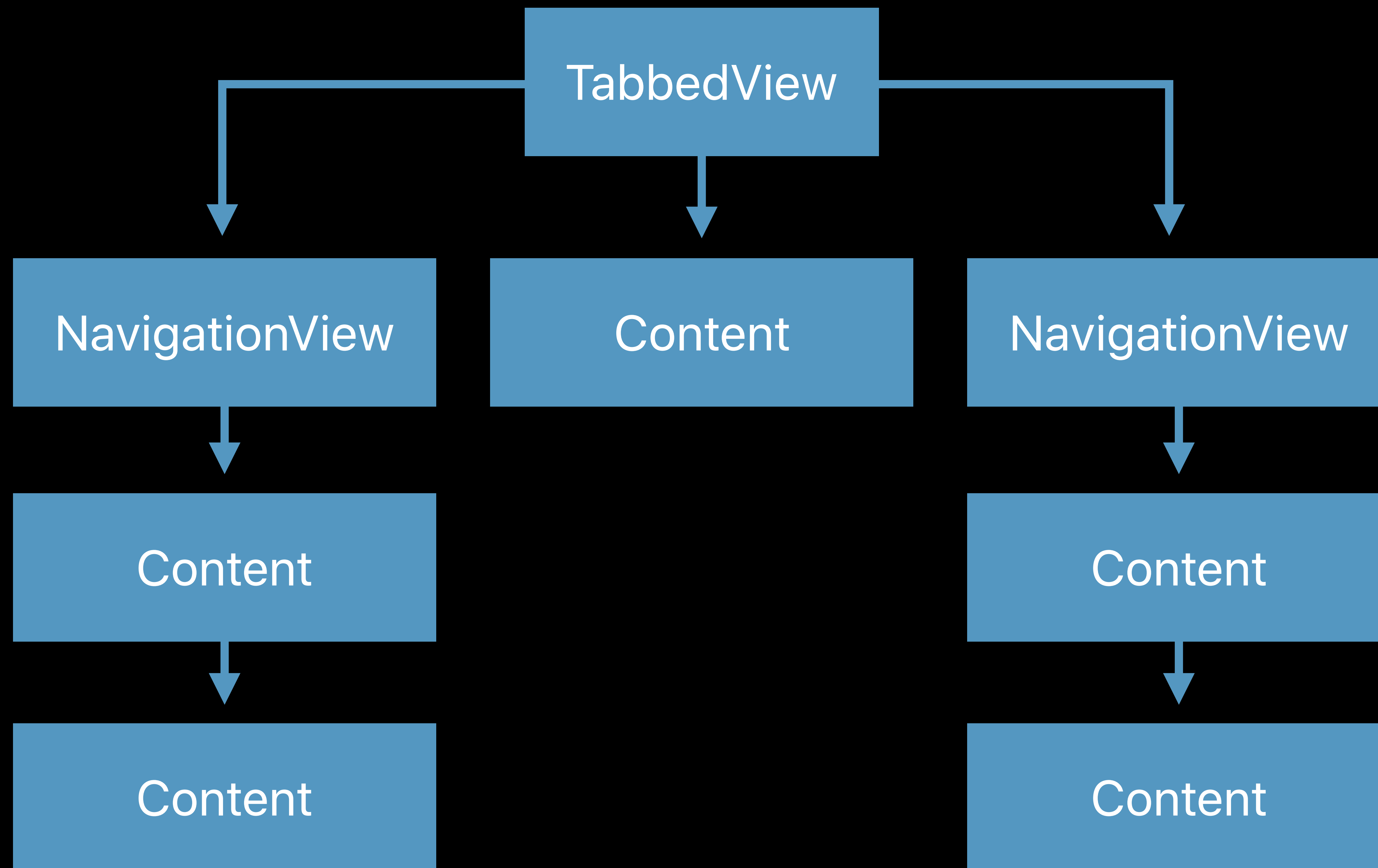
tvOS vs. iOS Navigation Hierarchies

iOS



tvOS vs. iOS Navigation Hierarchies

iOS

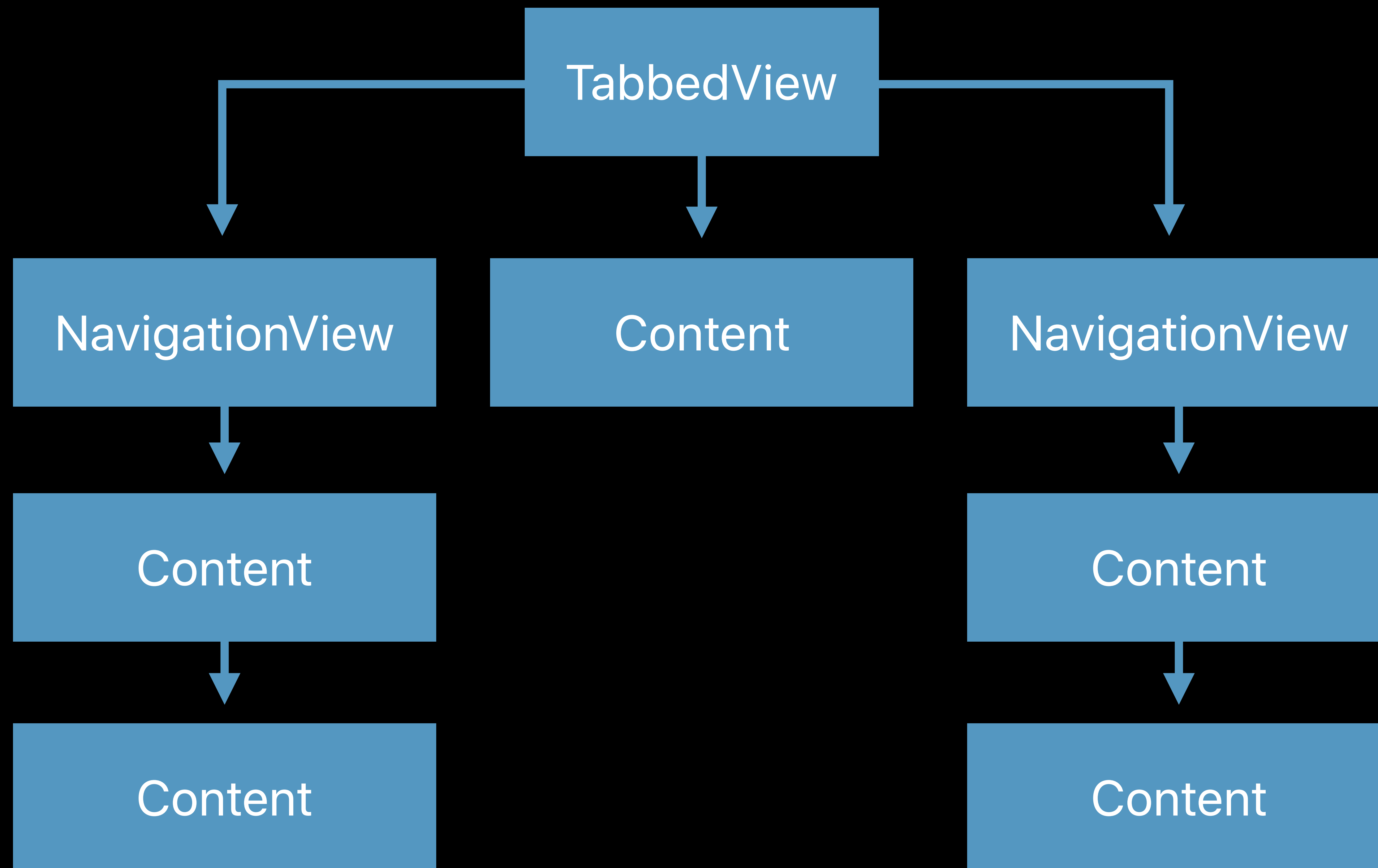


tvOS

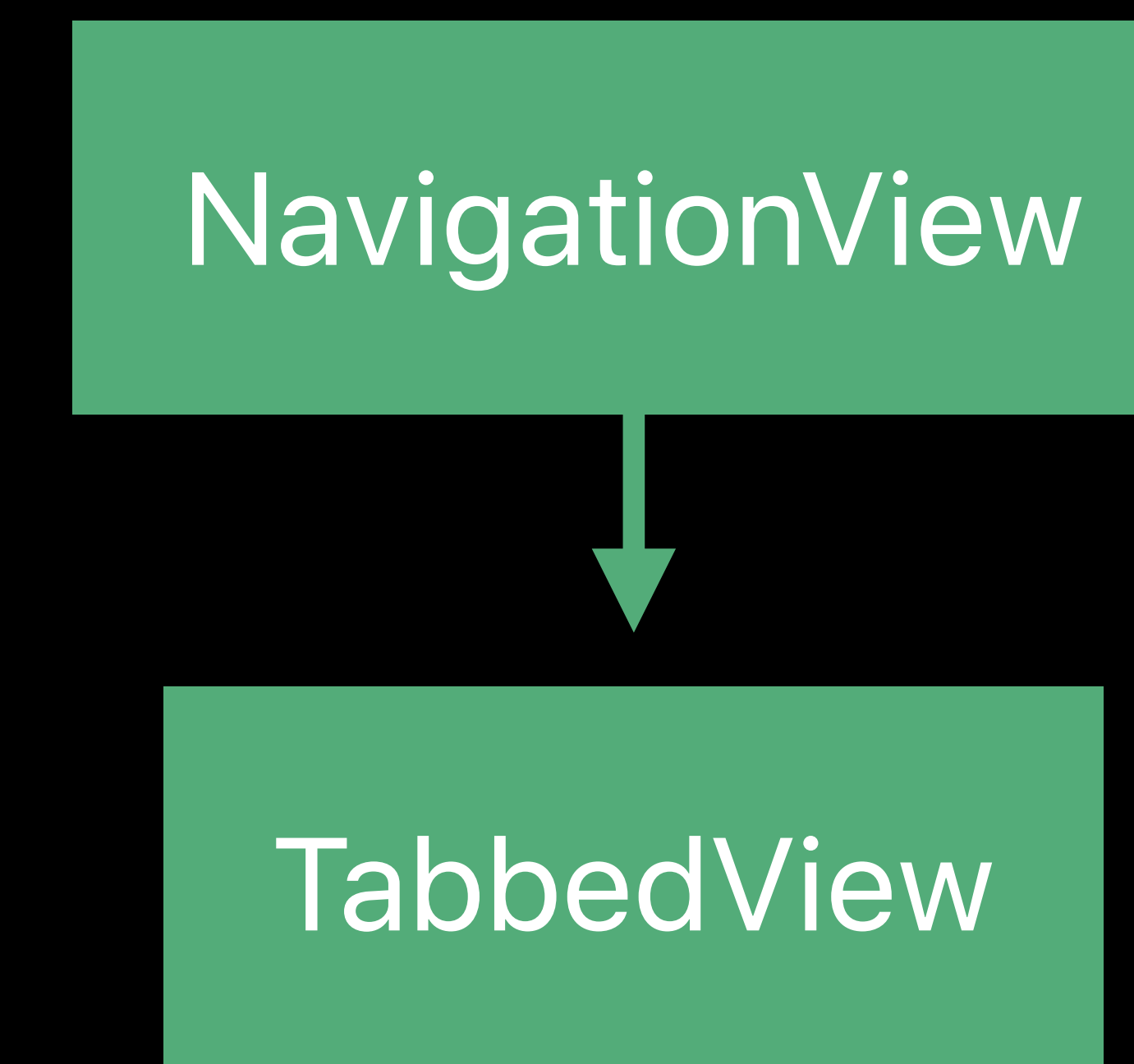


tvOS vs. iOS Navigation Hierarchies

iOS

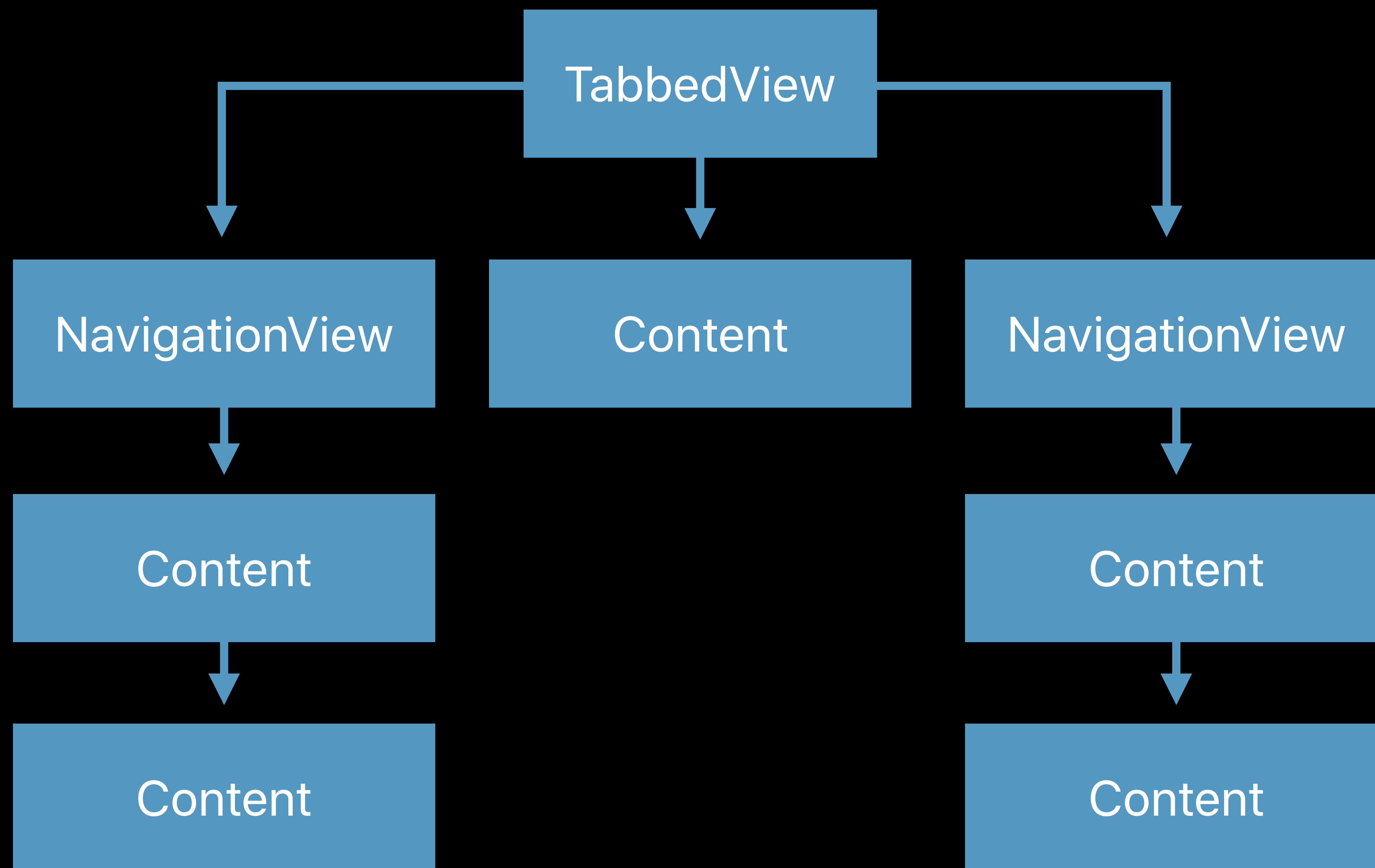


tvOS

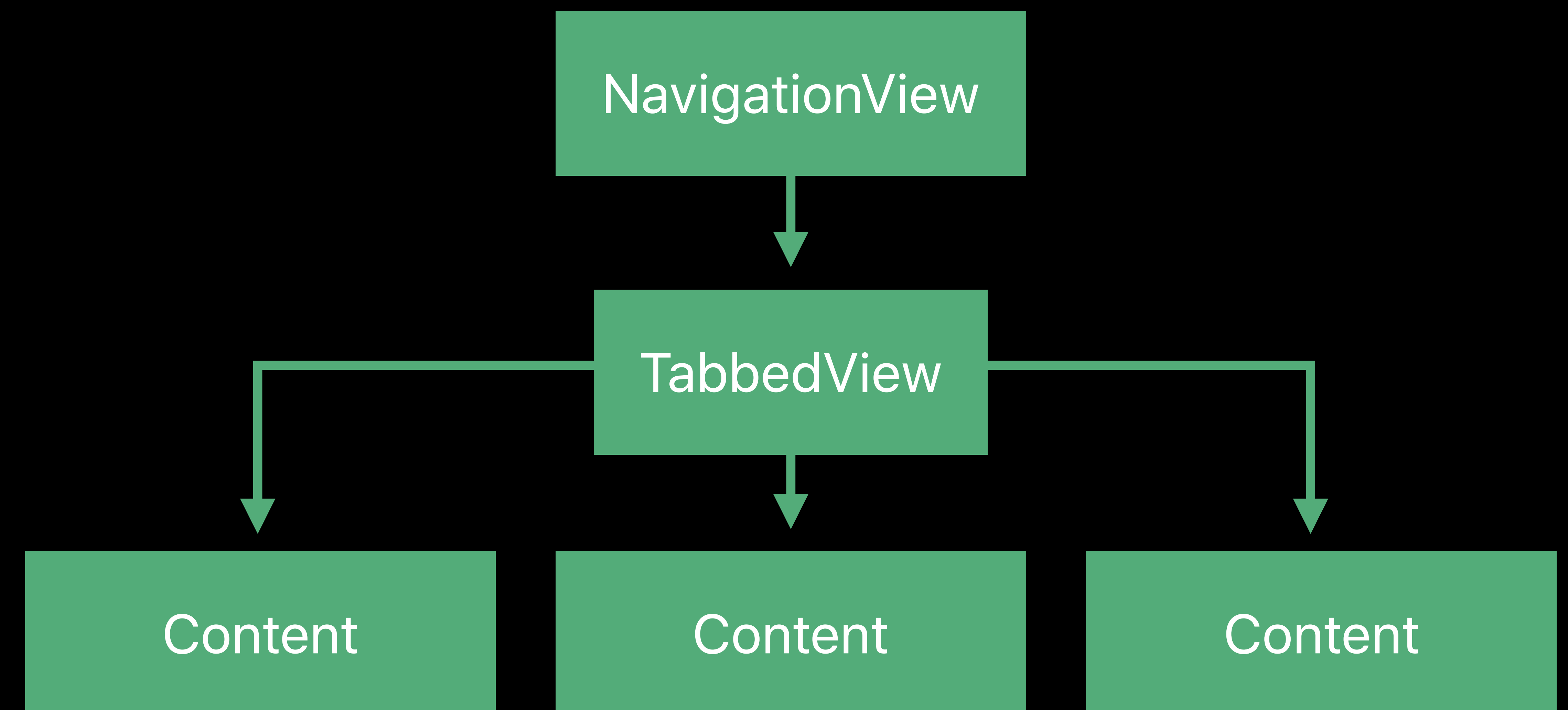


tvOS vs. iOS Navigation Hierarchies

iOS

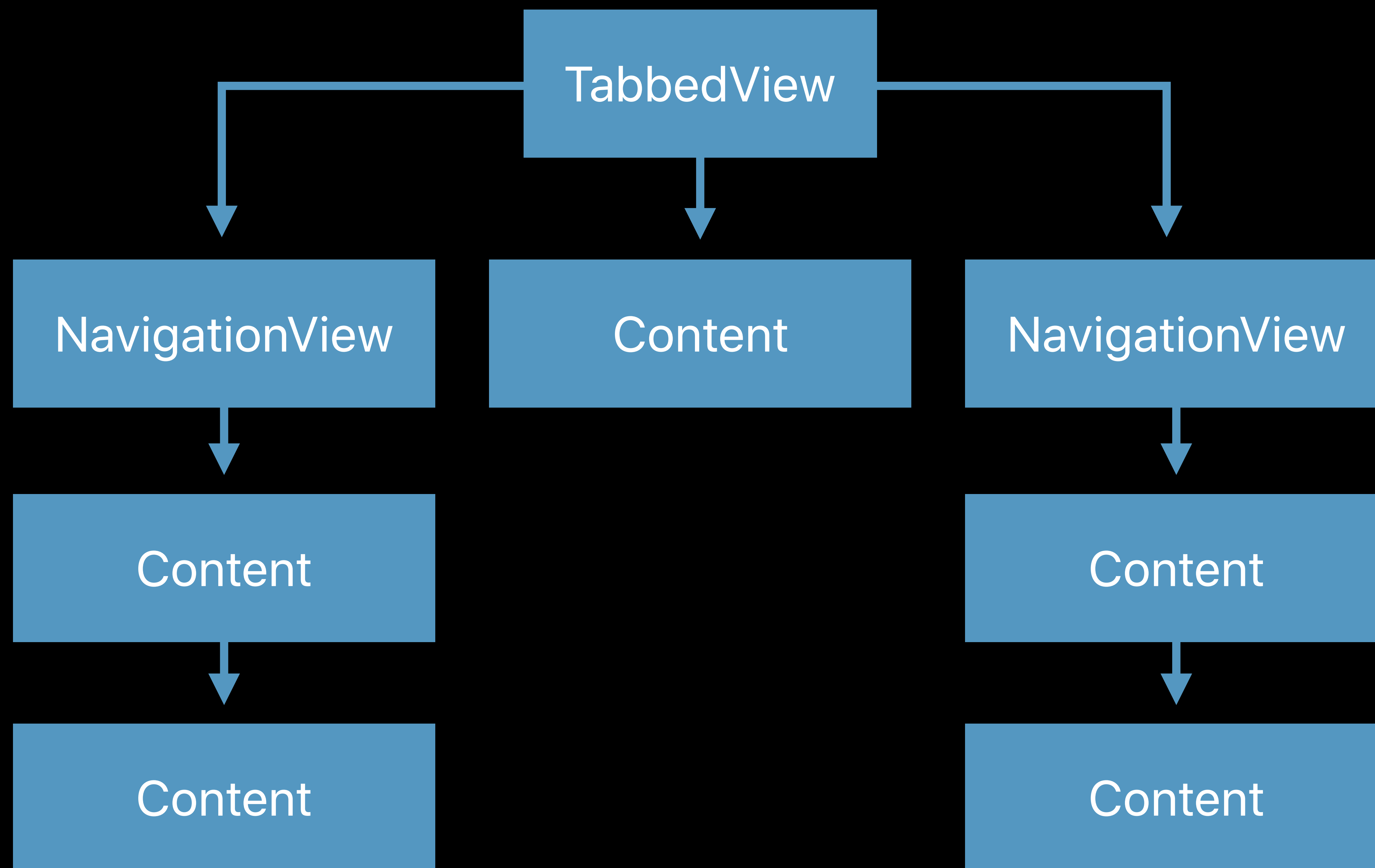


tvOS

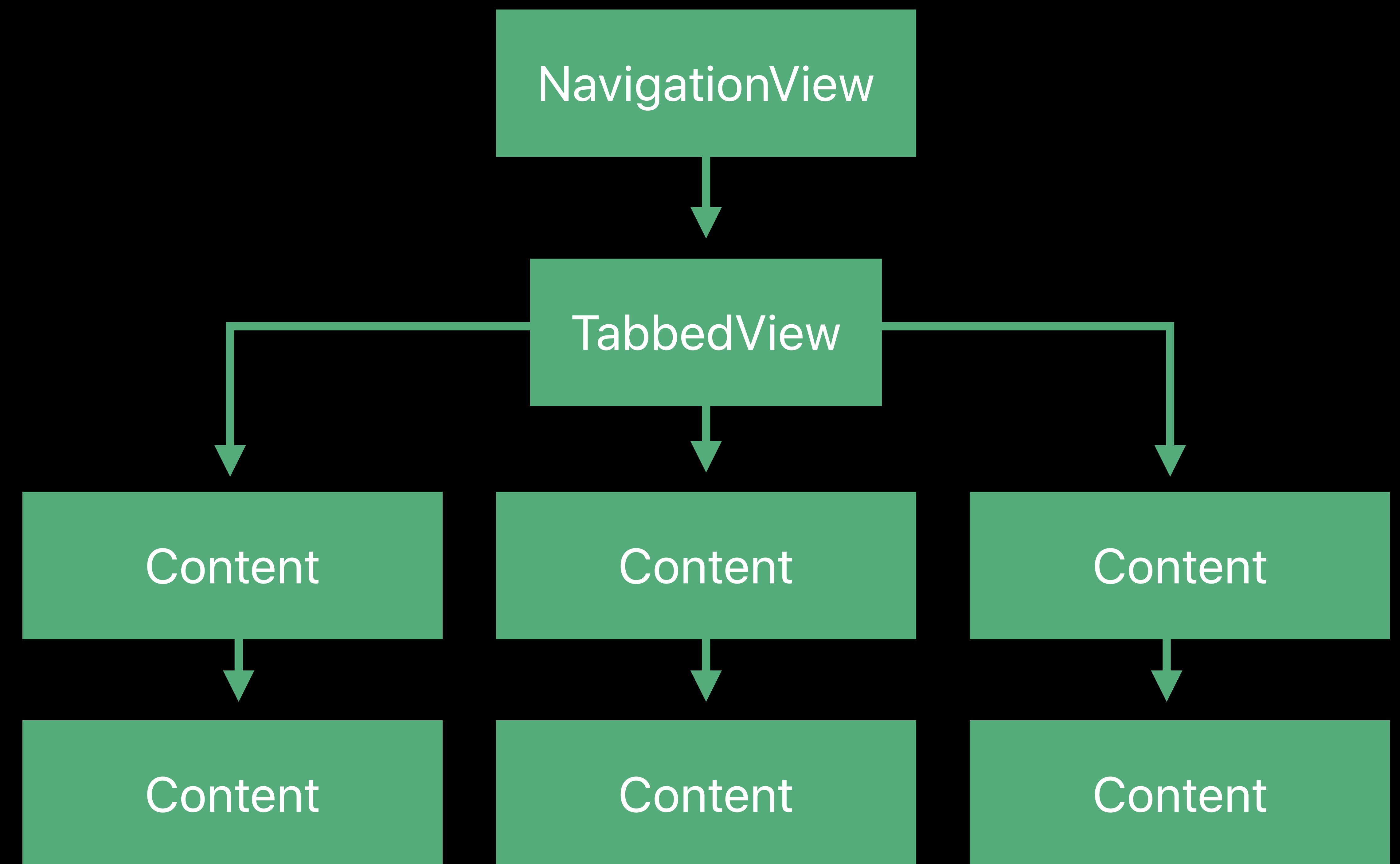


tvOS vs. iOS Navigation Hierarchies

iOS



tvOS



Photos

Memories

Shared

Albums



All Photos



Adventure



Lake Trip



Beach



Vacation



Friends



Family

MENU



Photos

Memories

Shared

Albums



All Photos



Adventure



Lake Trip



Beach



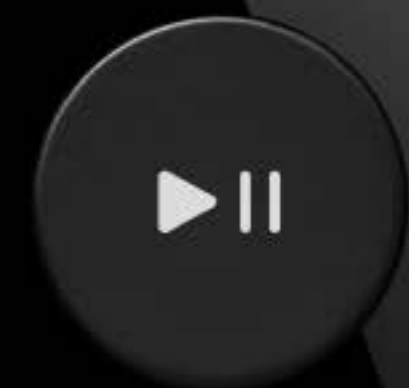
Vacation



Friends



Family



tvOS vs. iOS Navigation Hierarchies

iOS



tvOS



tvOS vs. iOS Navigation Hierarchies

iOS

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

```
}
```

tvOS

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

```
}
```

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

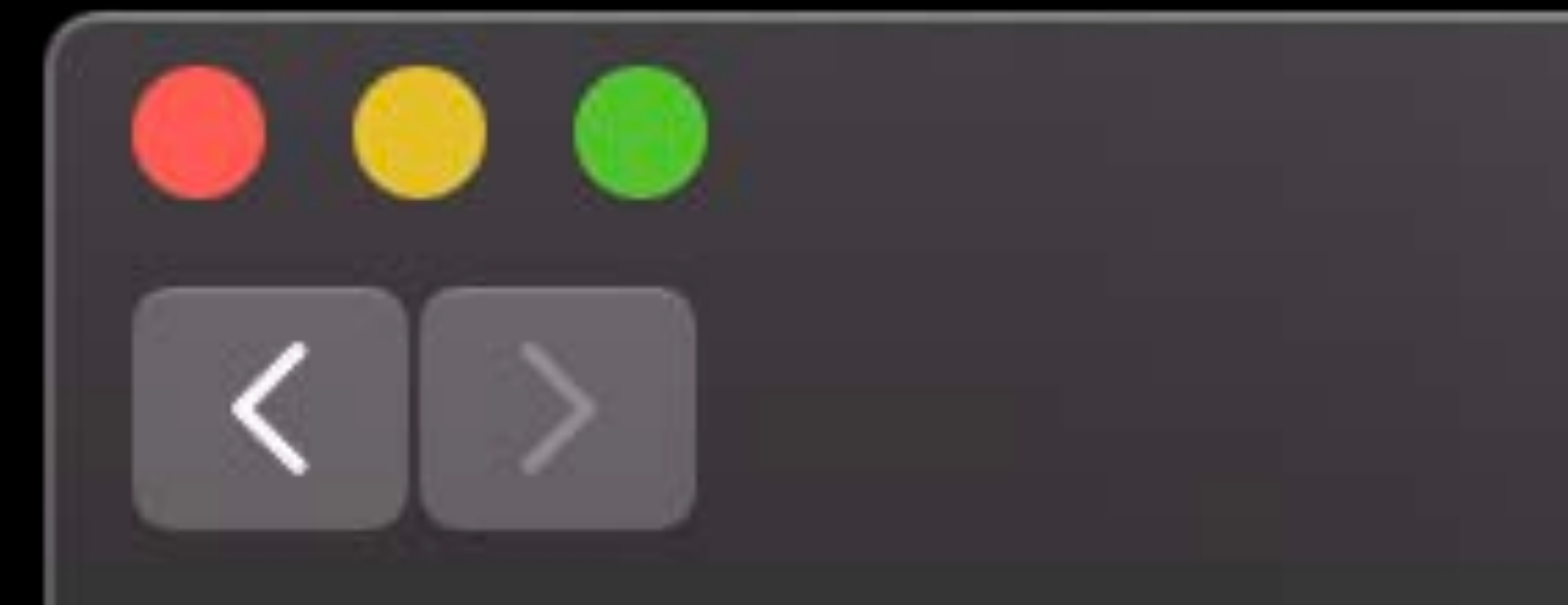
High Information Density

Provide more information at a glance

High Information Density

Provide more information at a glance

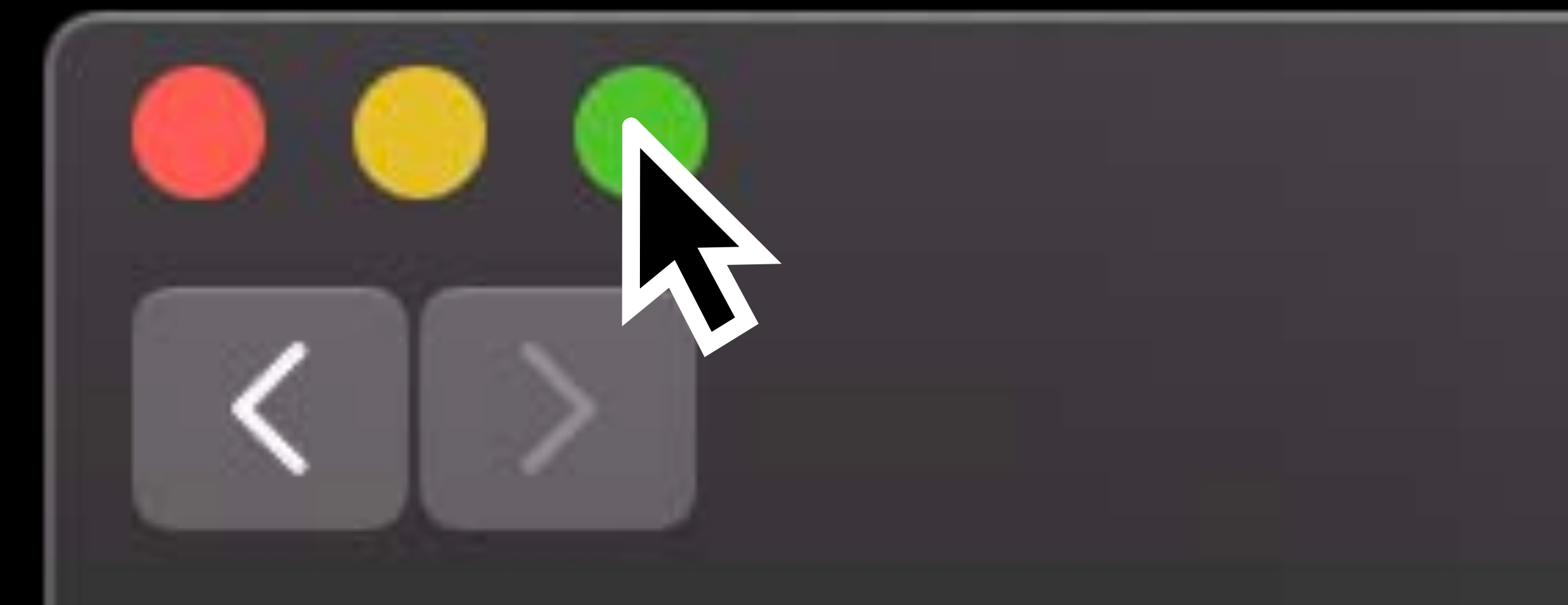
Precision pointing device allows smaller controls



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

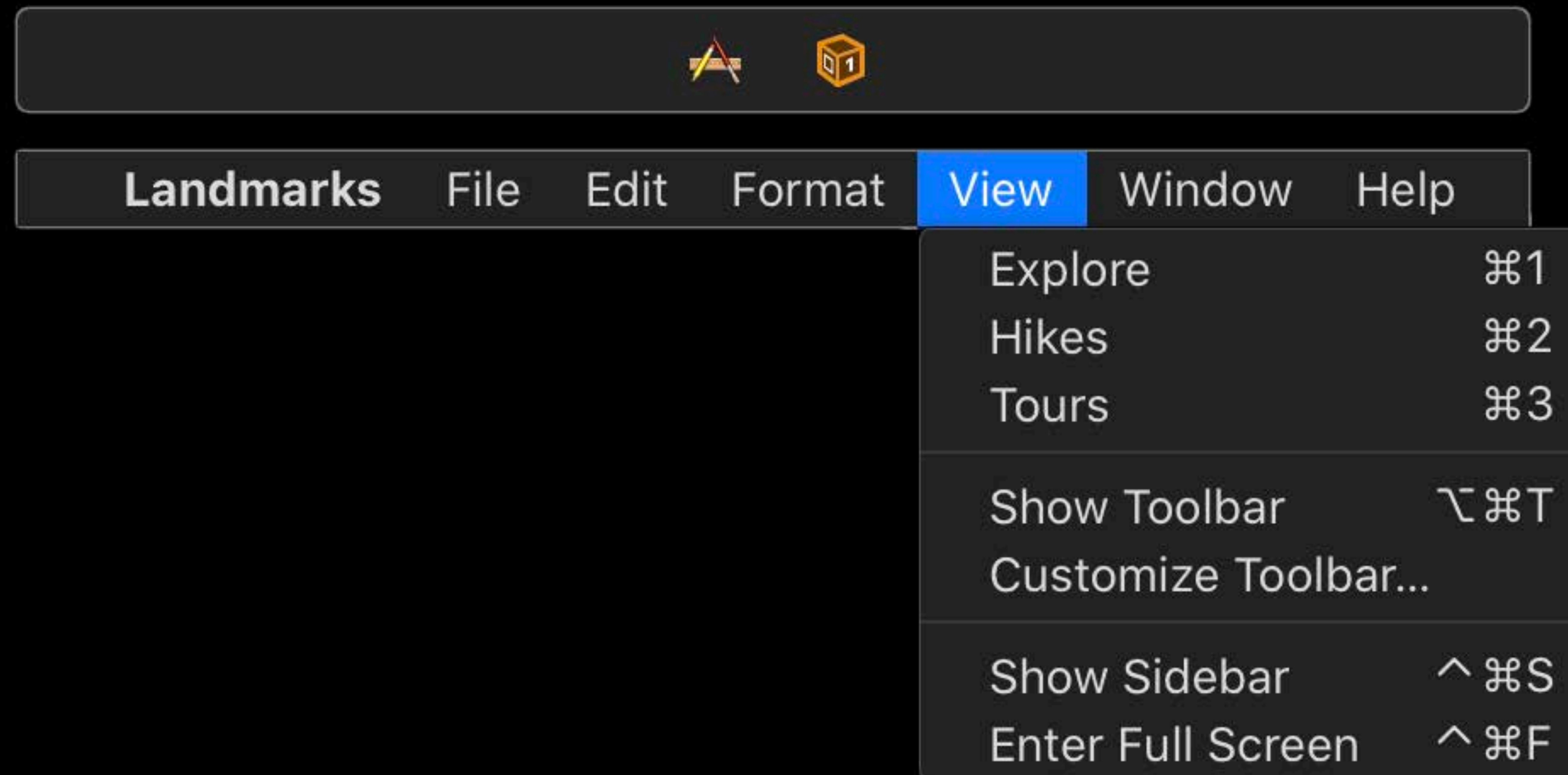
```
// Adding Keyboard Shortcuts

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

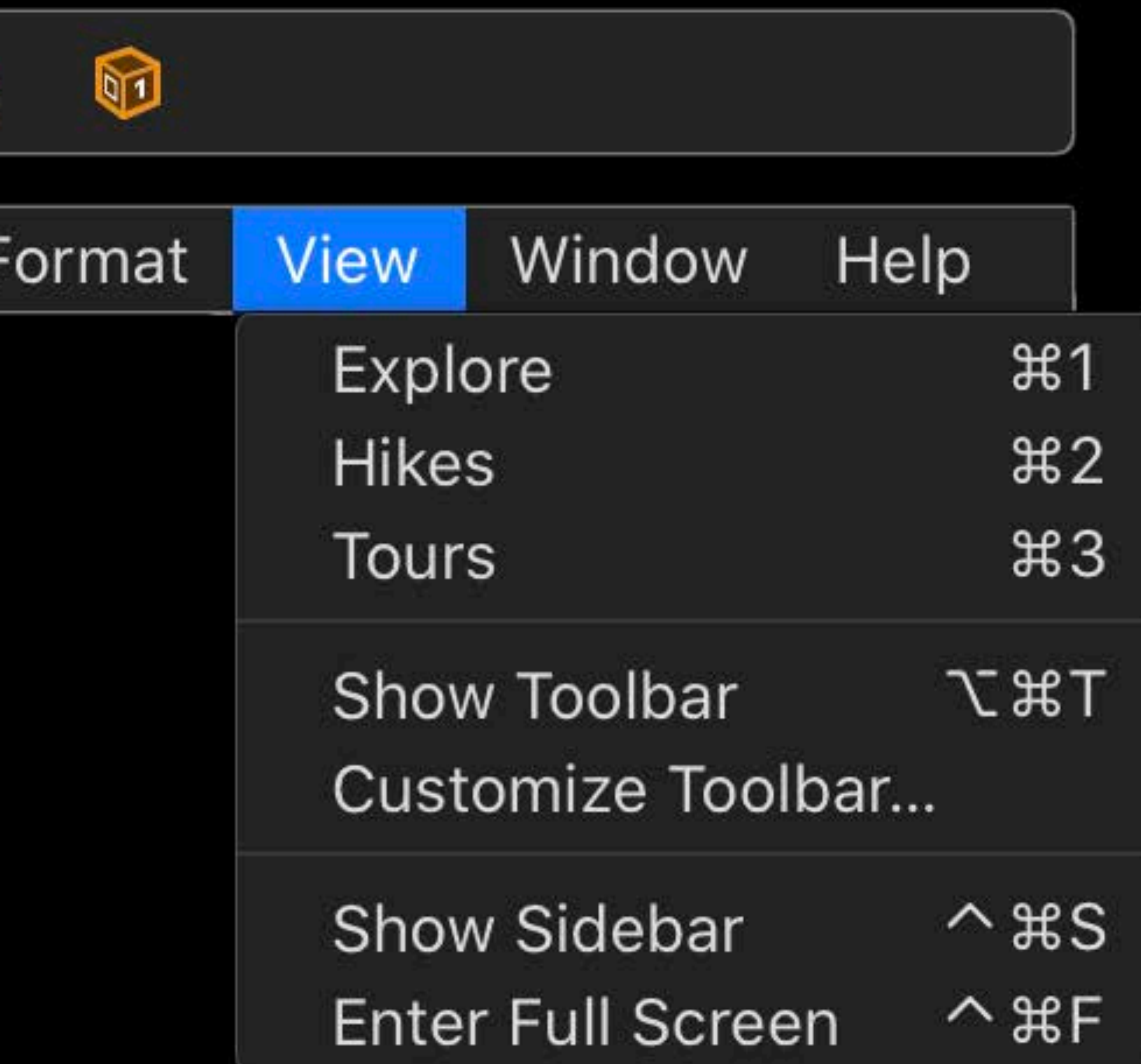
    HikesView().tag(Tab.hikes).tabItemLabel(Text("Hikes"))

    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
Ponchaix, 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 number 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

