#WWDC19

Introducing SwiftUI

Building Your First App

Jacob Xiao, SwiftUI Engineer
Kyle Macomber, SwiftUI Engineer

Demo

The Way Views Work

Kyle Macomber, SwiftUI Engineer

```
struct RoomDetail : View {
    let room: Room

    var body: some View {
        Image(room.imageName)
            .resizable()
            .aspectRatio(contentMode: .fit)
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A View Defines a Piece of UI

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A View Defines its Dependencies


9:41
Rooms
Observation Deck


9:41
Rooms
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Rooms
Observation Deck

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struct RoomDetail : View {
    let room: Room
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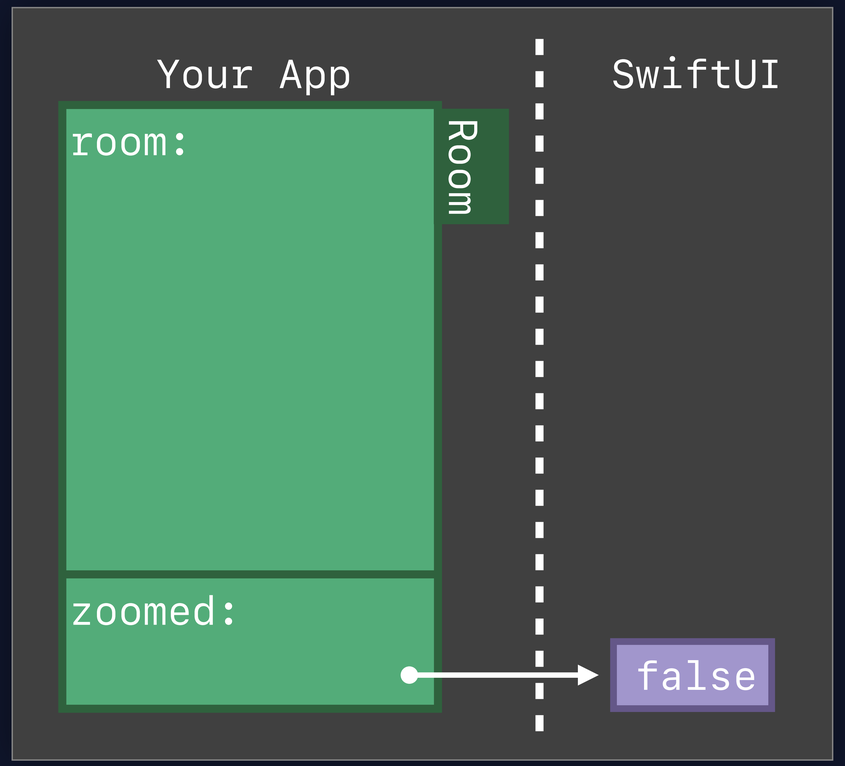

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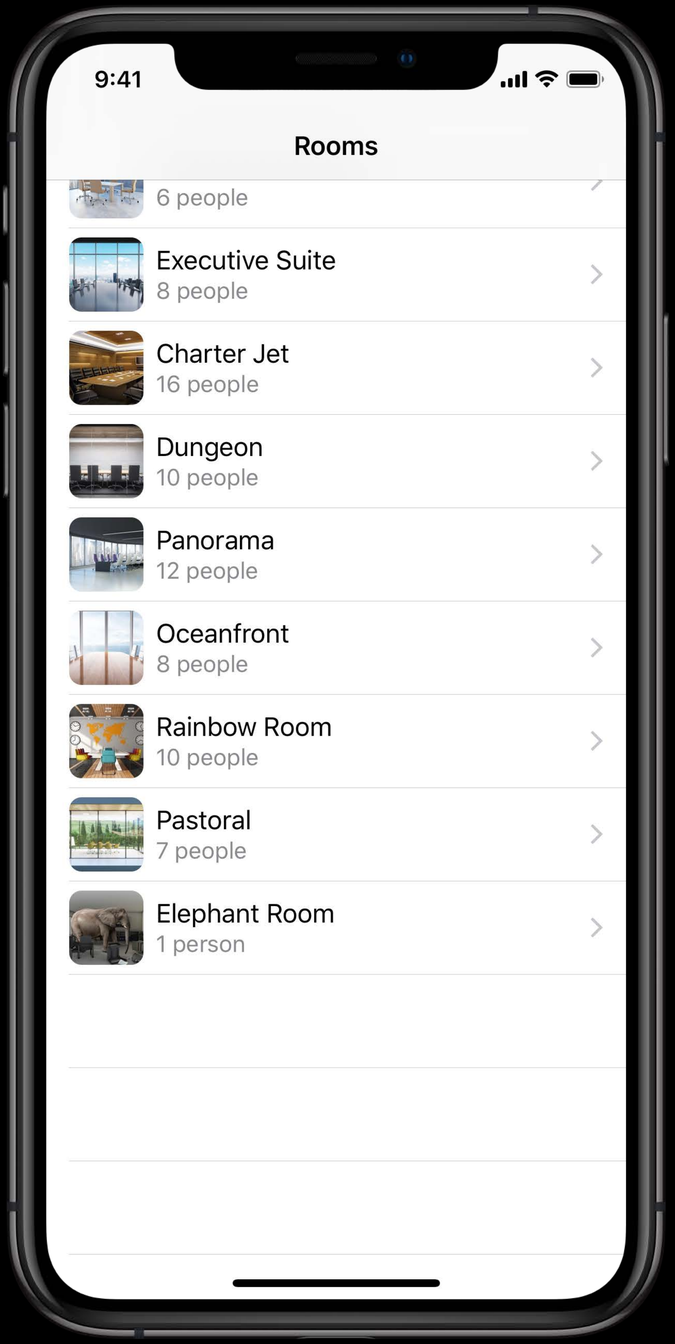
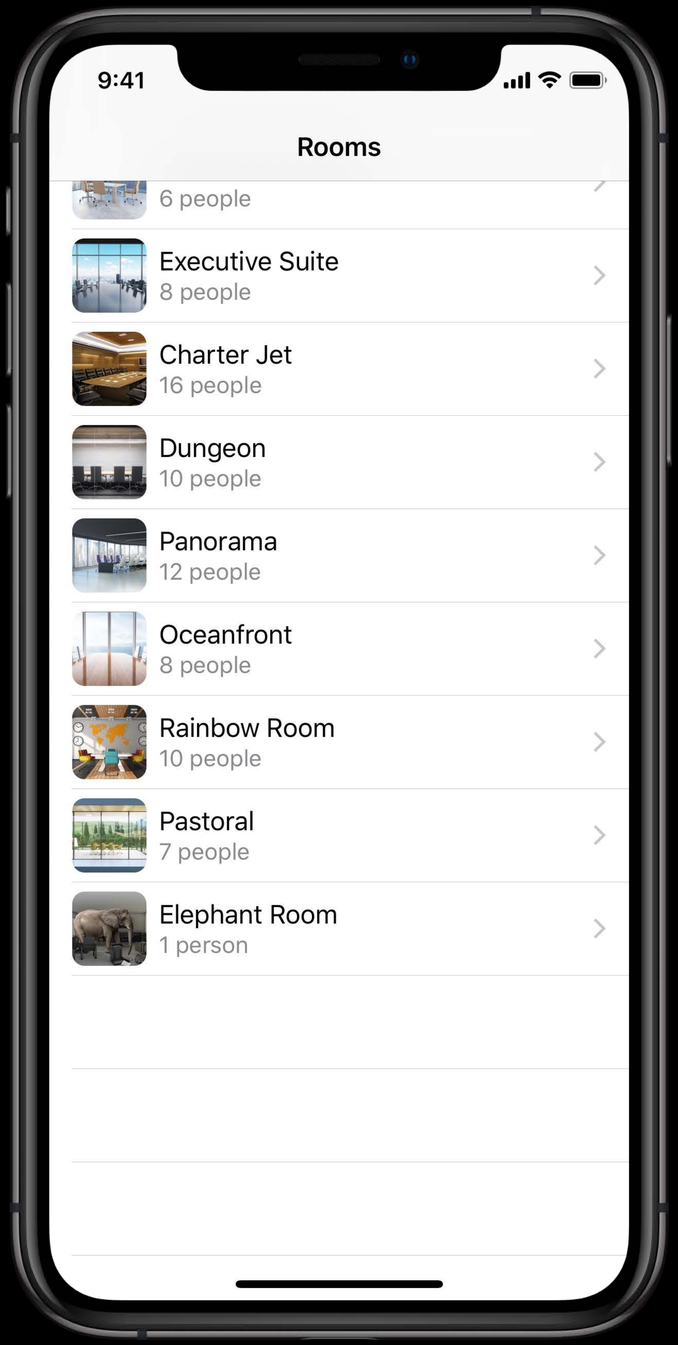
Where Is Truth?


9:41
Rooms
6 people
Executive Suite
8 people
Charter Jet
16 people
Dungeon
10 people
Panorama
12 people
Oceanfront
8 people
Rainbow Room
10 people
Pastoral
7 people
Elephant Room
1 person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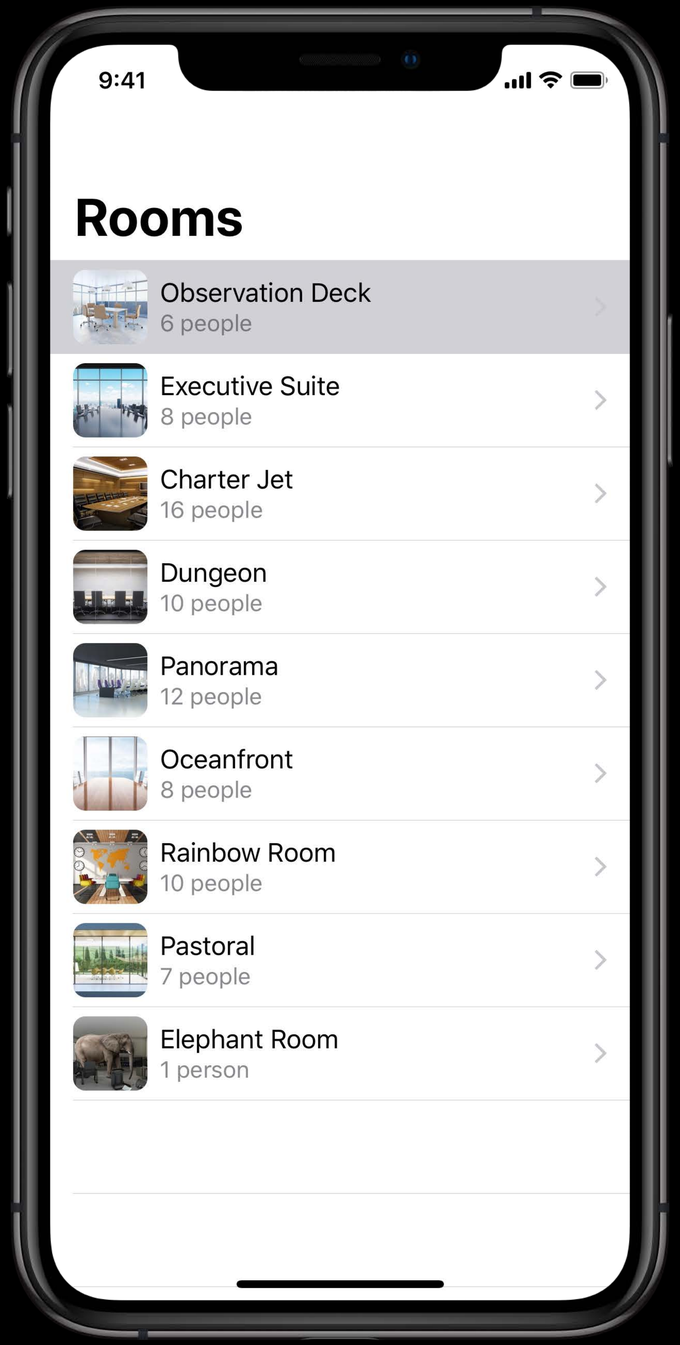
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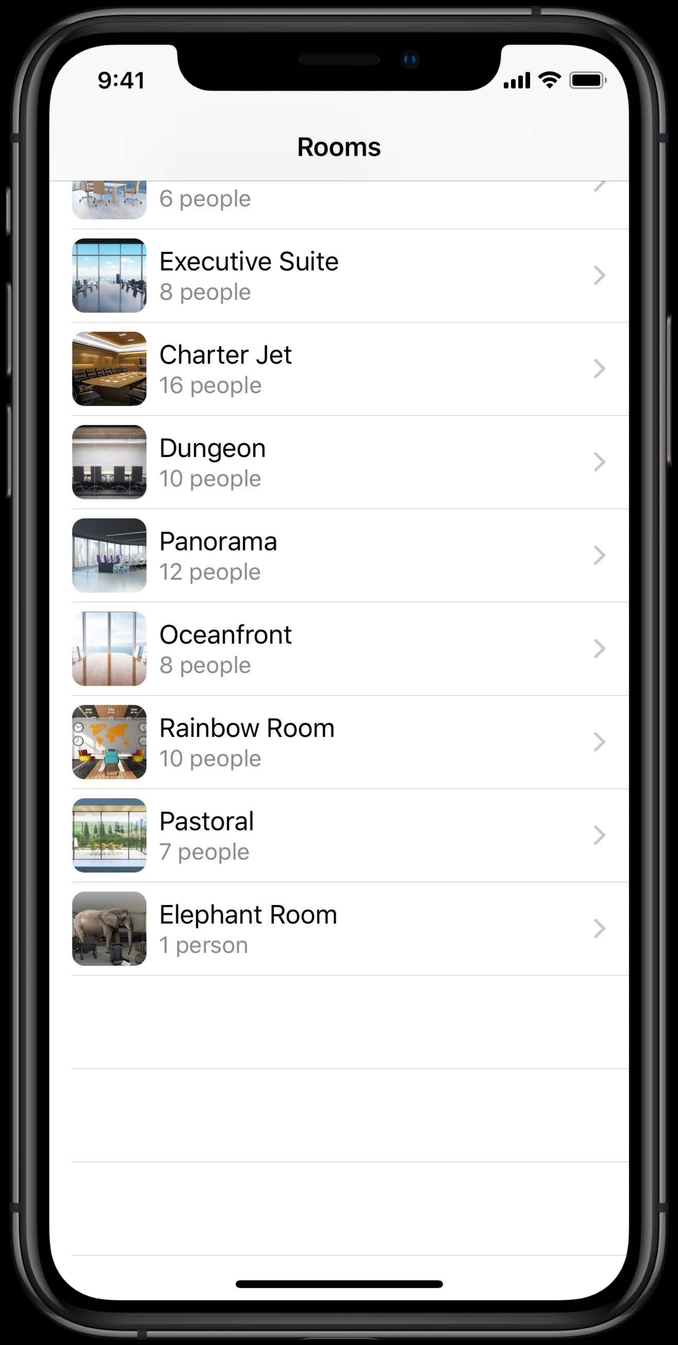
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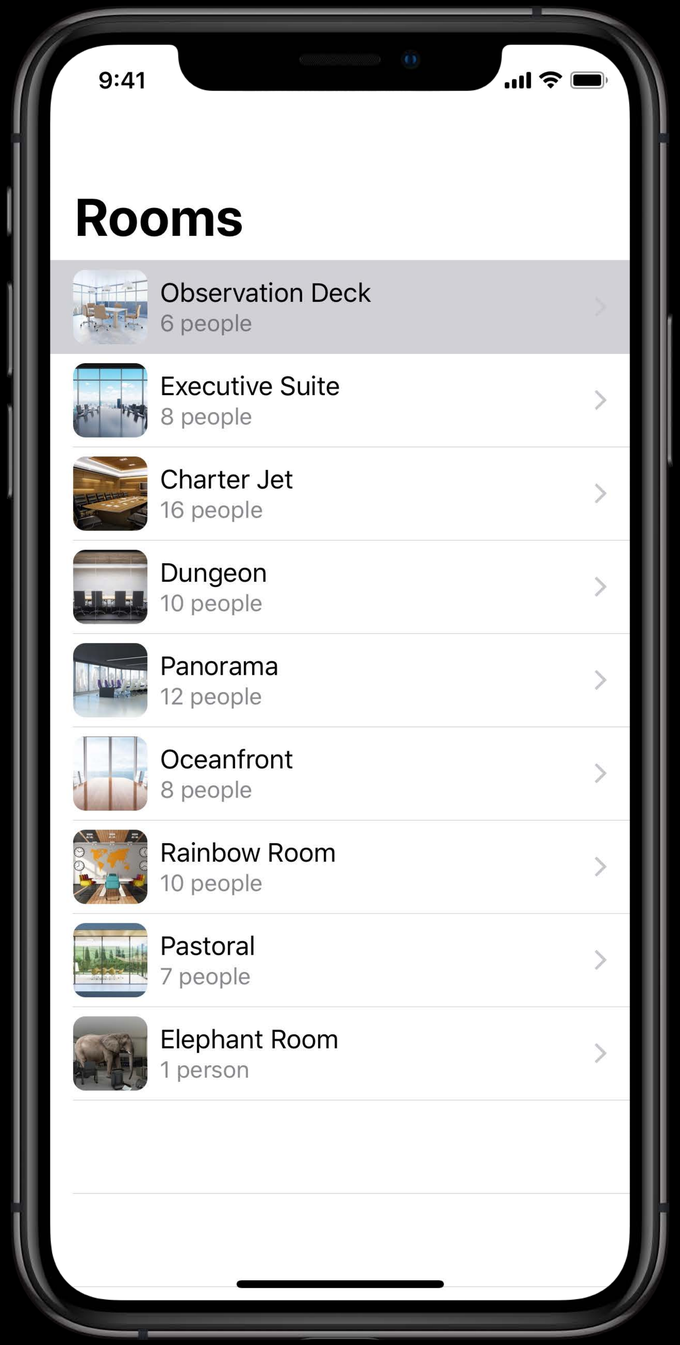
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```
struct AspectRatioView : View {
    let contentMode: ContentMode
    var body: some View { ... }
}
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Source of Truth

Derived Value

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struct AspectRatioView : View {
    let contentMode: ContentMode
    var body: some View { ... }
}
```

false

.fit

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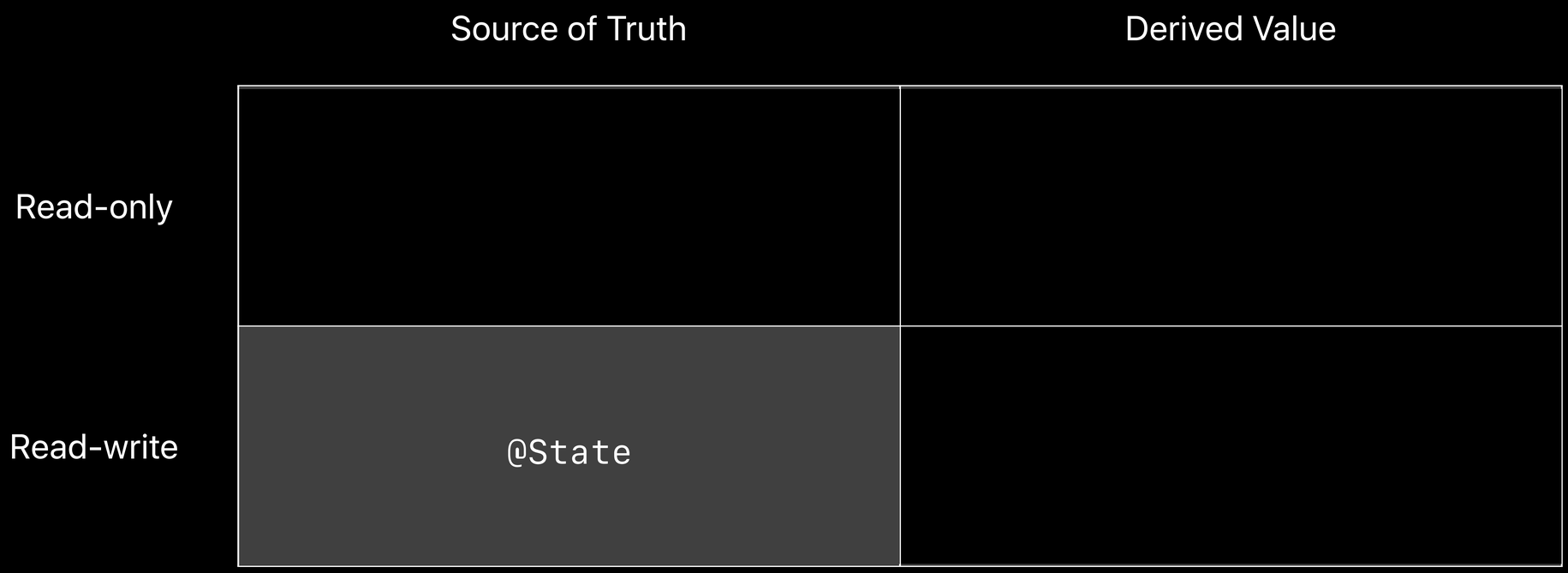
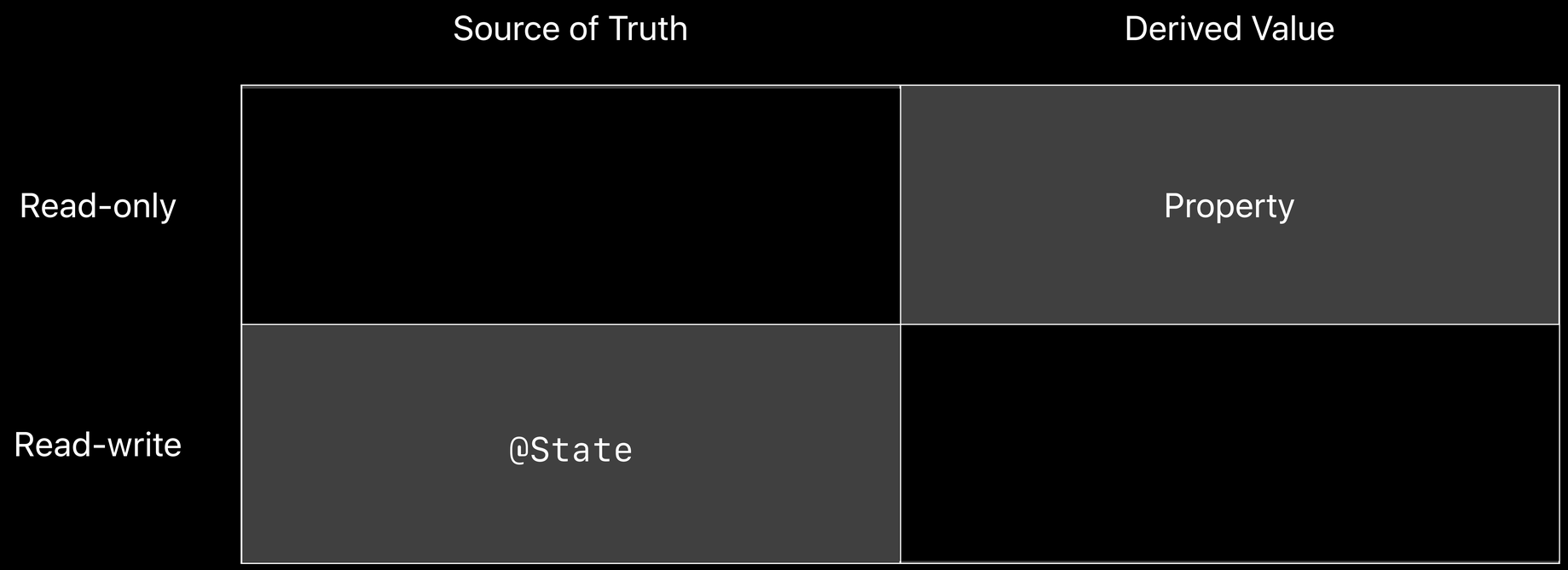
Data Flow Primitives



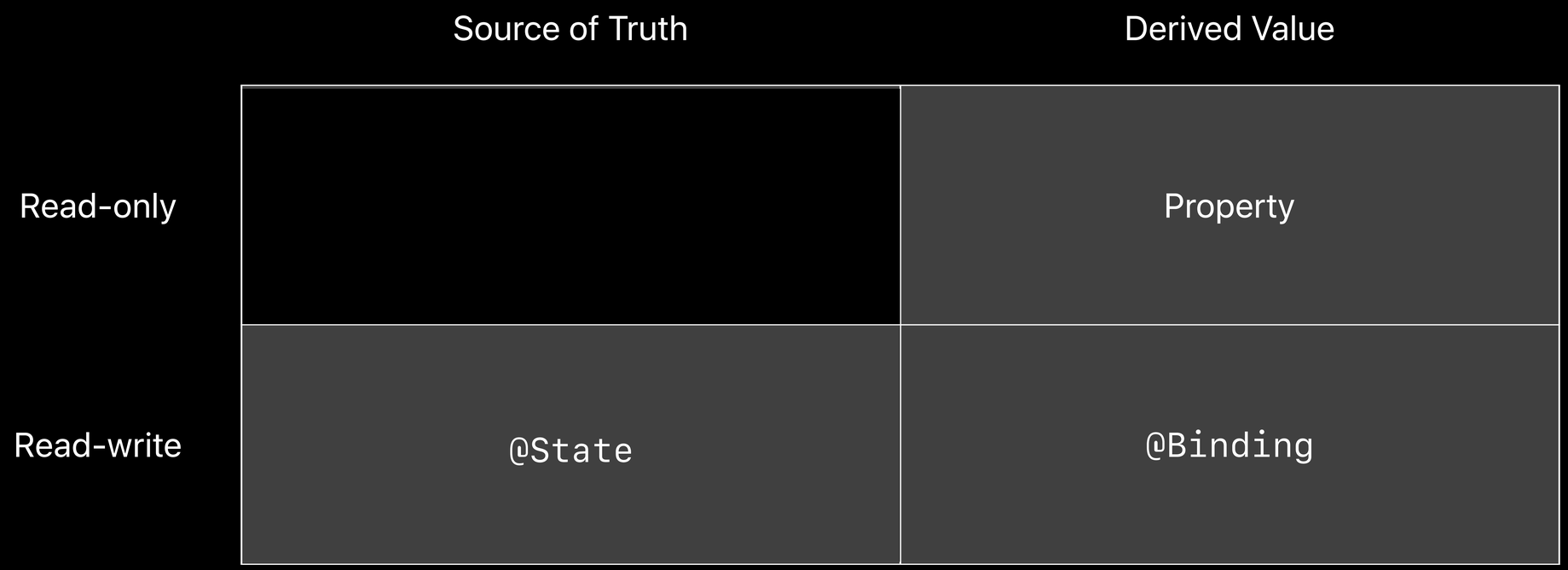
Data Flow Through SwiftUI

Thursday, 9:00

Data Flow Primitives



Data Flow Primitives



Data Flow Through SwiftUI

Thursday, 9:00

Data Flow Primitives

	Source of Truth	Derived Value
Read-only	Constant	Property
Read-write	`@State`	`@Binding`

Data Flow Through SwiftUI

Thursday, 9:00

Data Flow Primitives

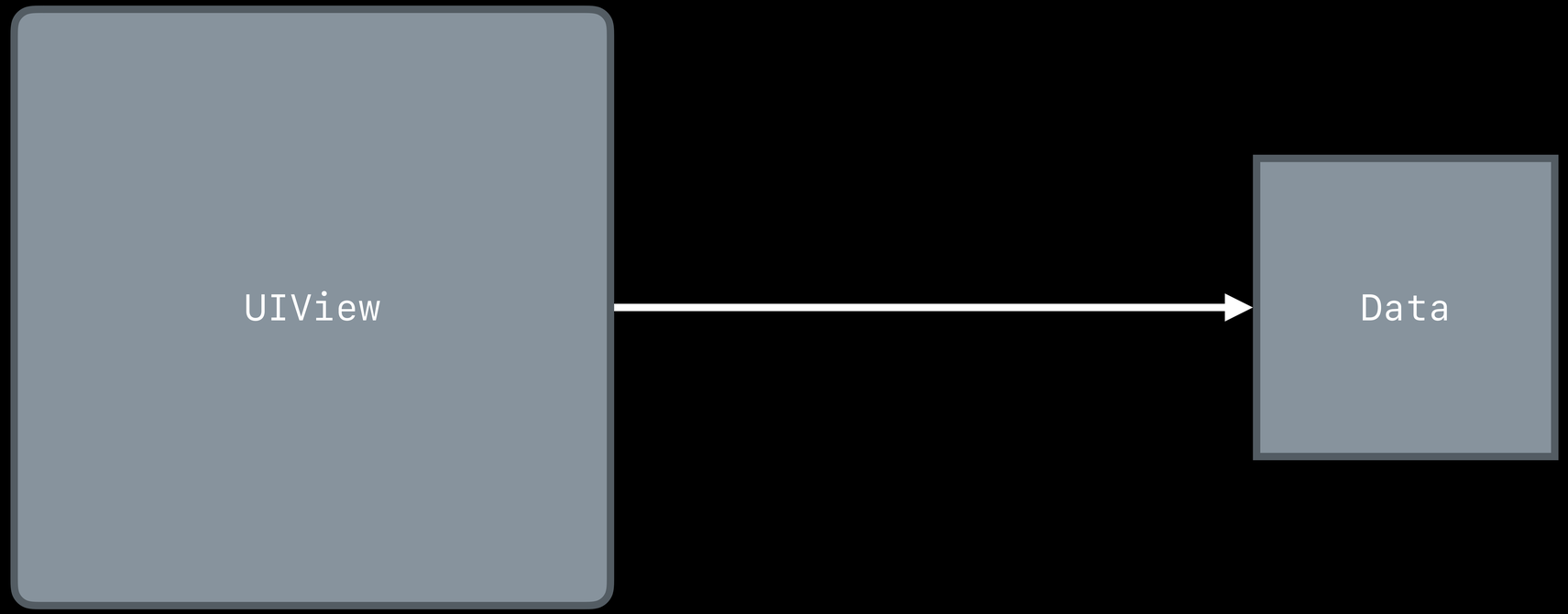
	Source of Truth	Derived Value
Read-only	Constant	Property
Read-write	`@State` `BindableObject`	`@Binding`

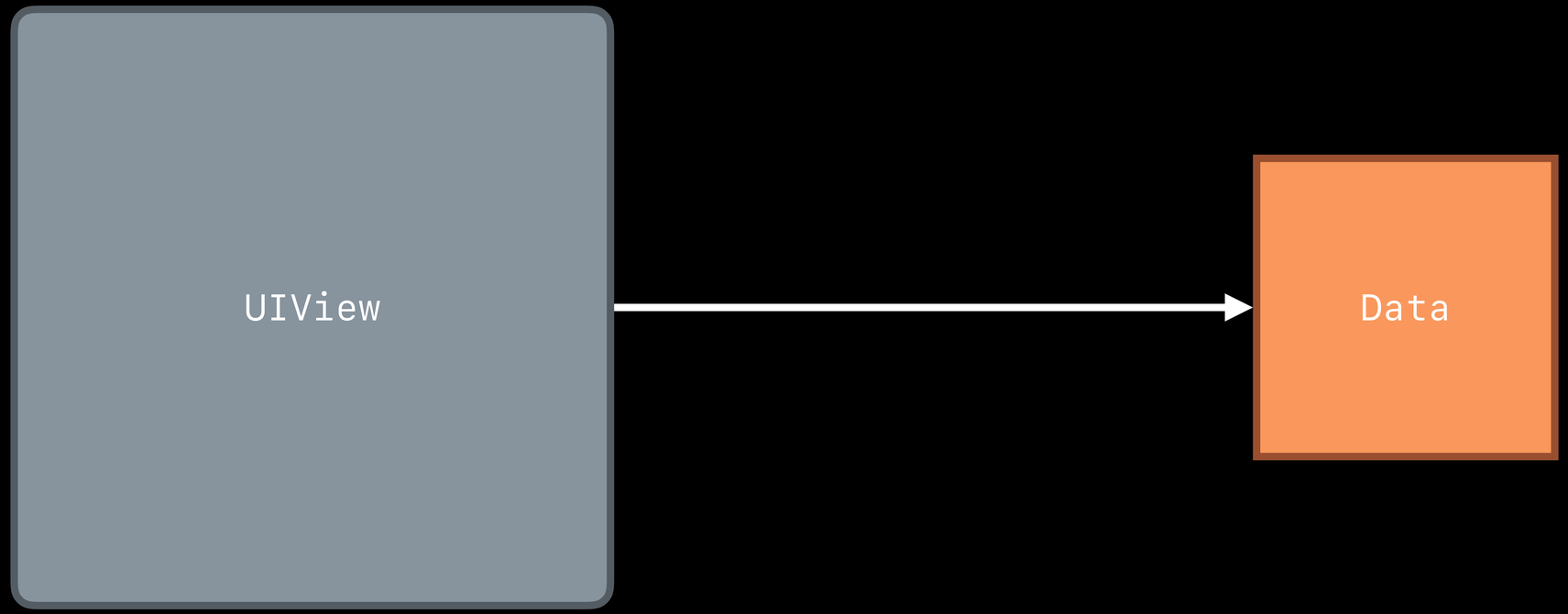
Data Flow Through SwiftUI

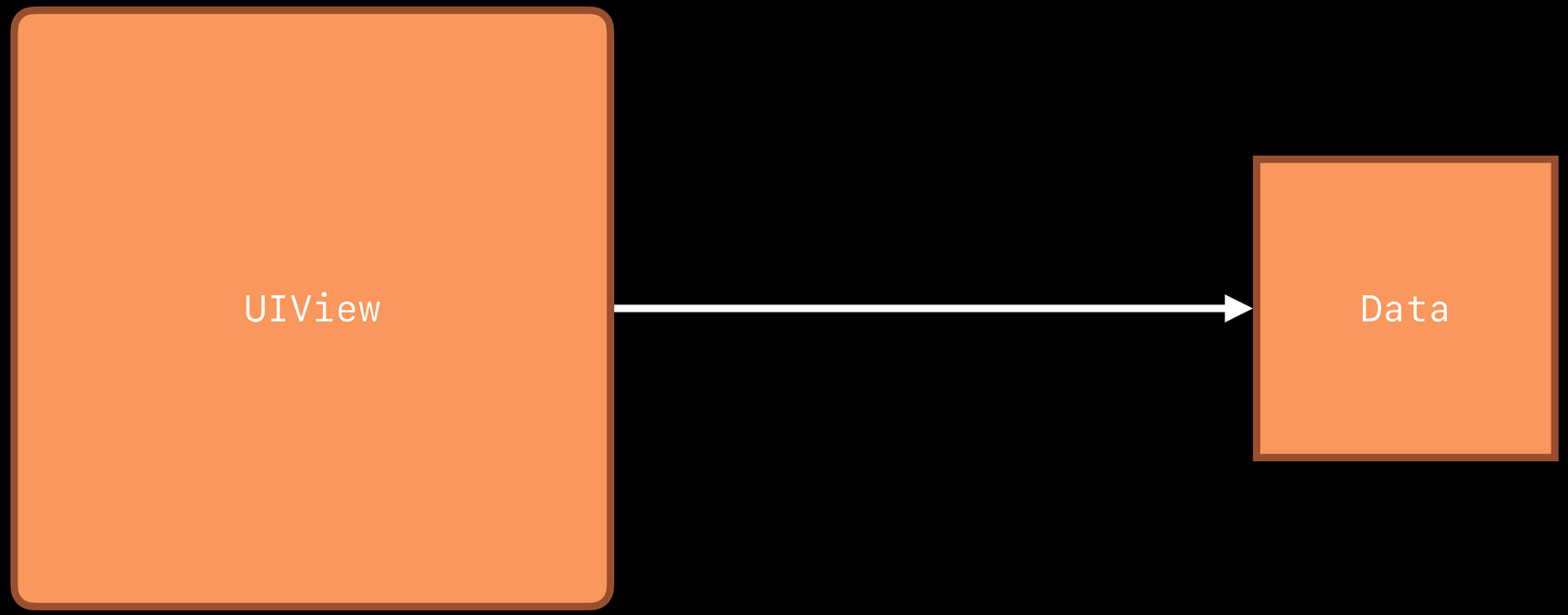
Thursday, 9:00

Managing Dependencies Is Hard


UIView
Data


UIView
Data


UIView
Data


UIView
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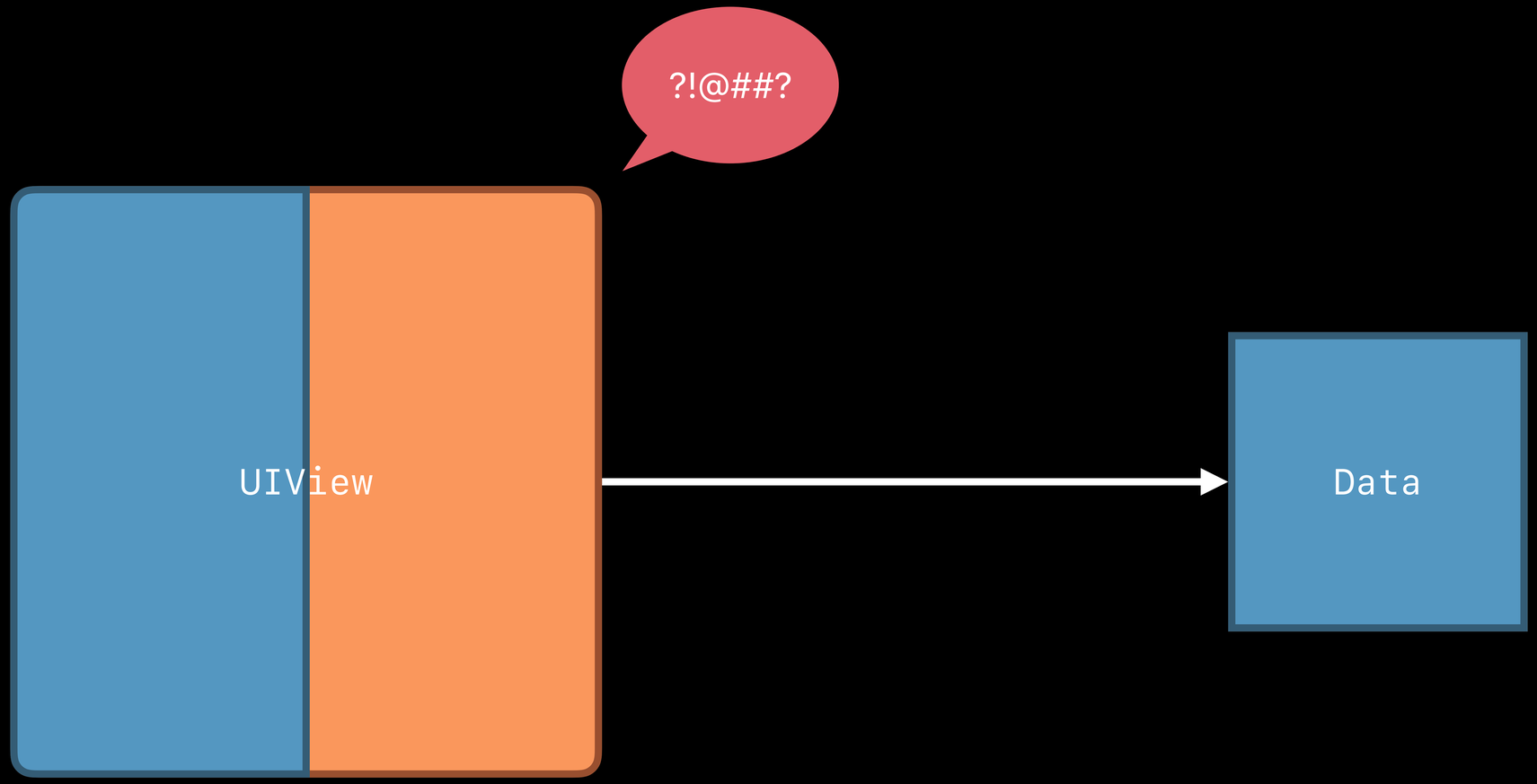
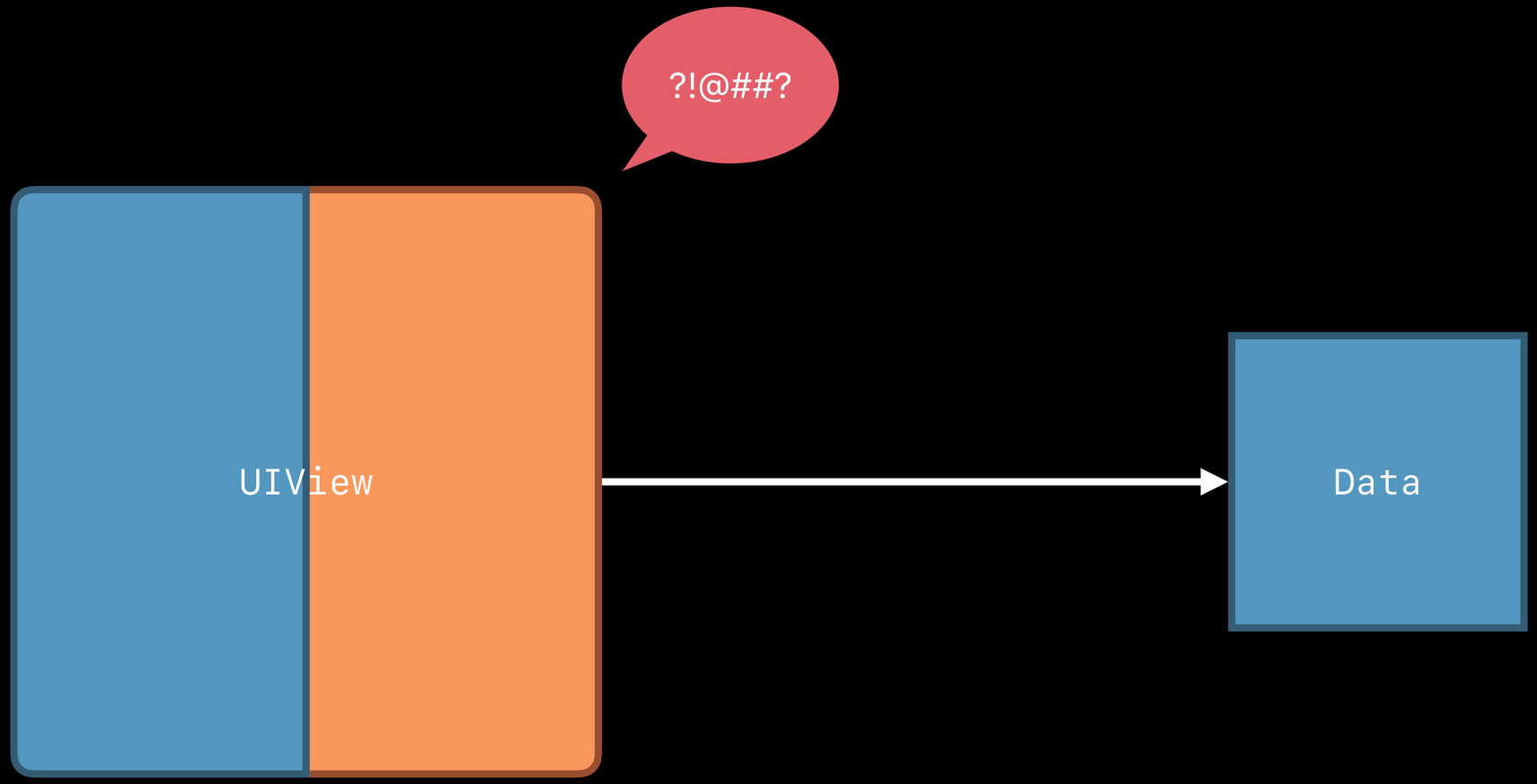

?!@##?
UIView
Data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UIView
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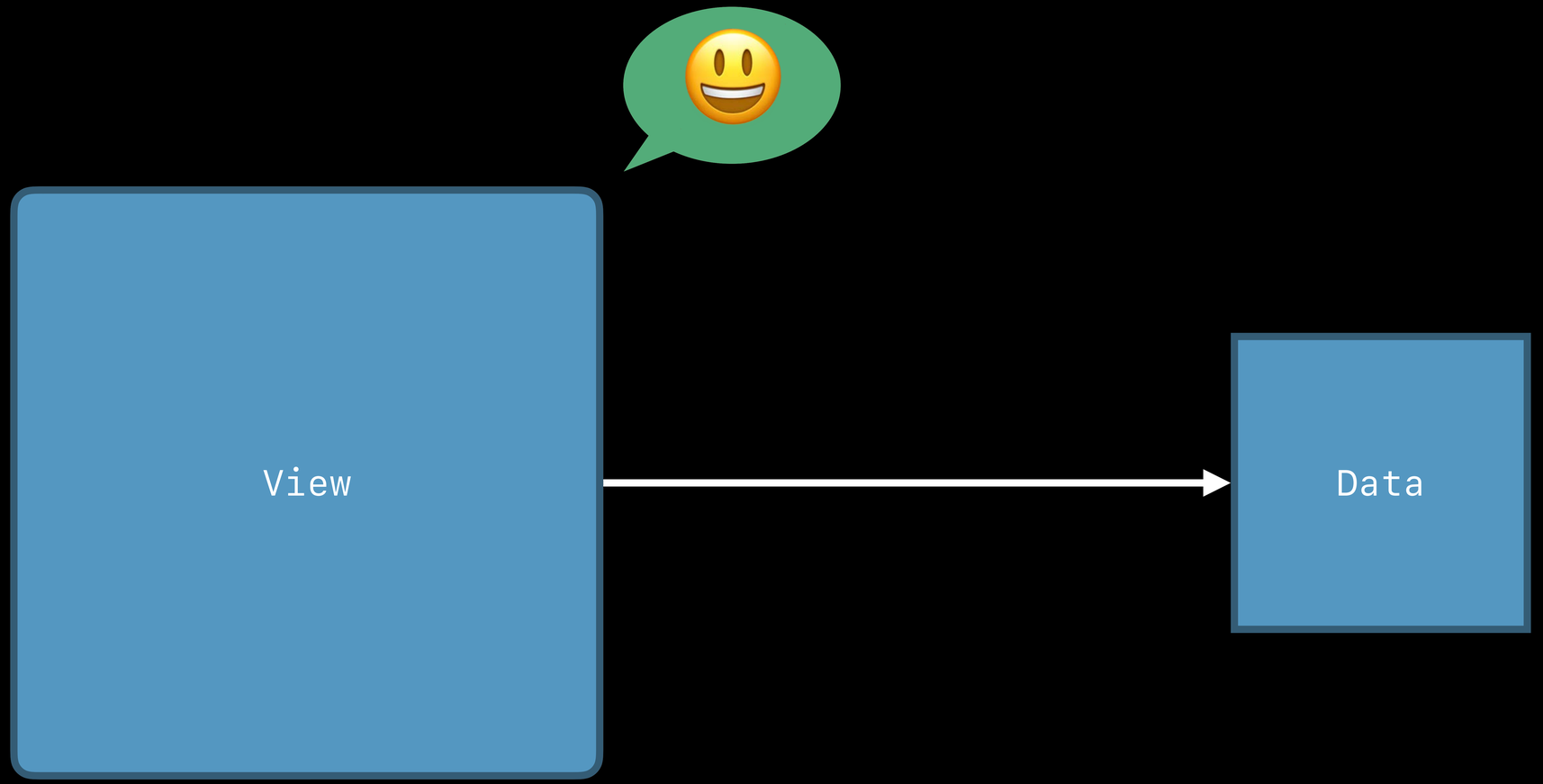
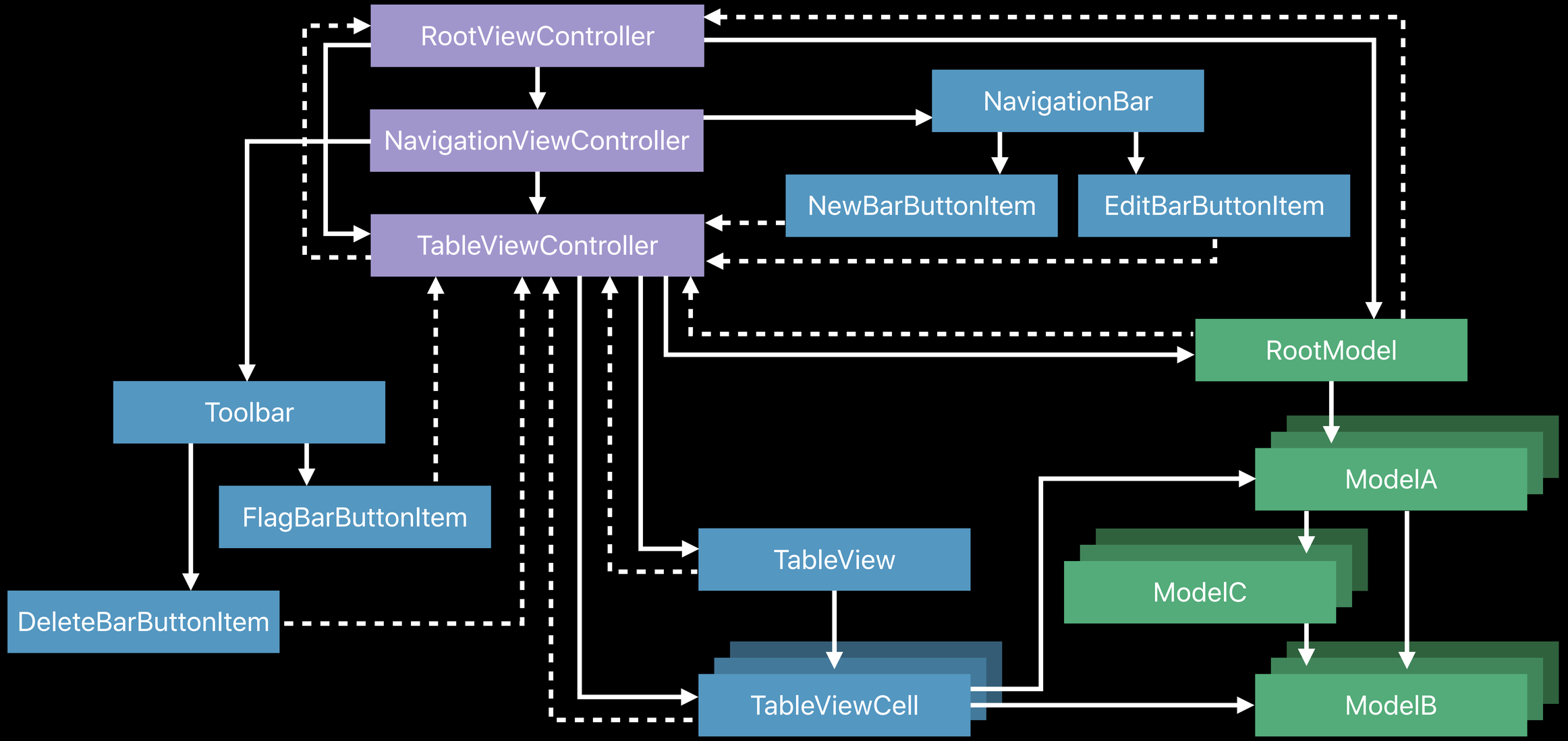

View
Data

Managing Dependencies Is Hard

Managing Dependencies Is Hard



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class RoomDetailViewController : UIViewController {
    func zoomIn() {
        // scale image to fill, show enhance button
        // if enhancing show activity indicator
        // if enhanced show scale badge
    }
    func enhance() {
        // show activity indicator
        enhancer.enhance(room.image, scale: scale) {
            // if zoomed hide activity indicator, show scale badge
            // set enhanced image
        }
    }
    func zoomOut() {
        // scale image to fit, hide enhance button
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    }
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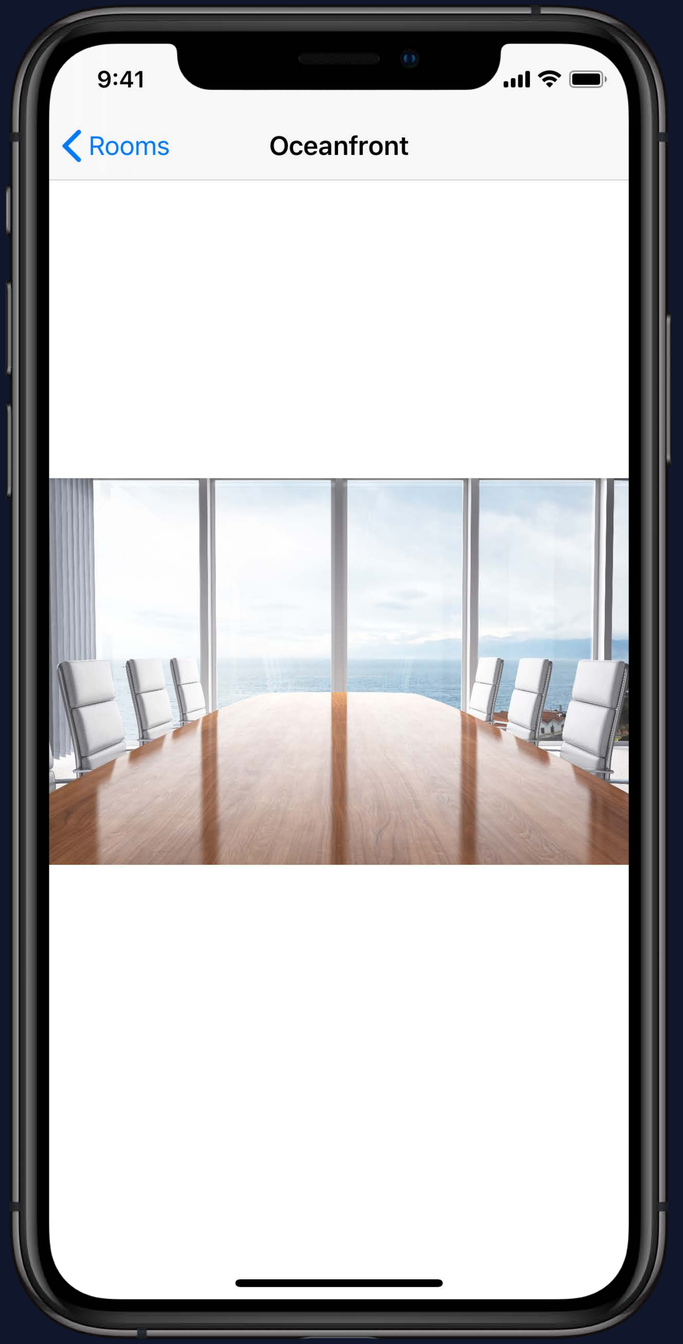

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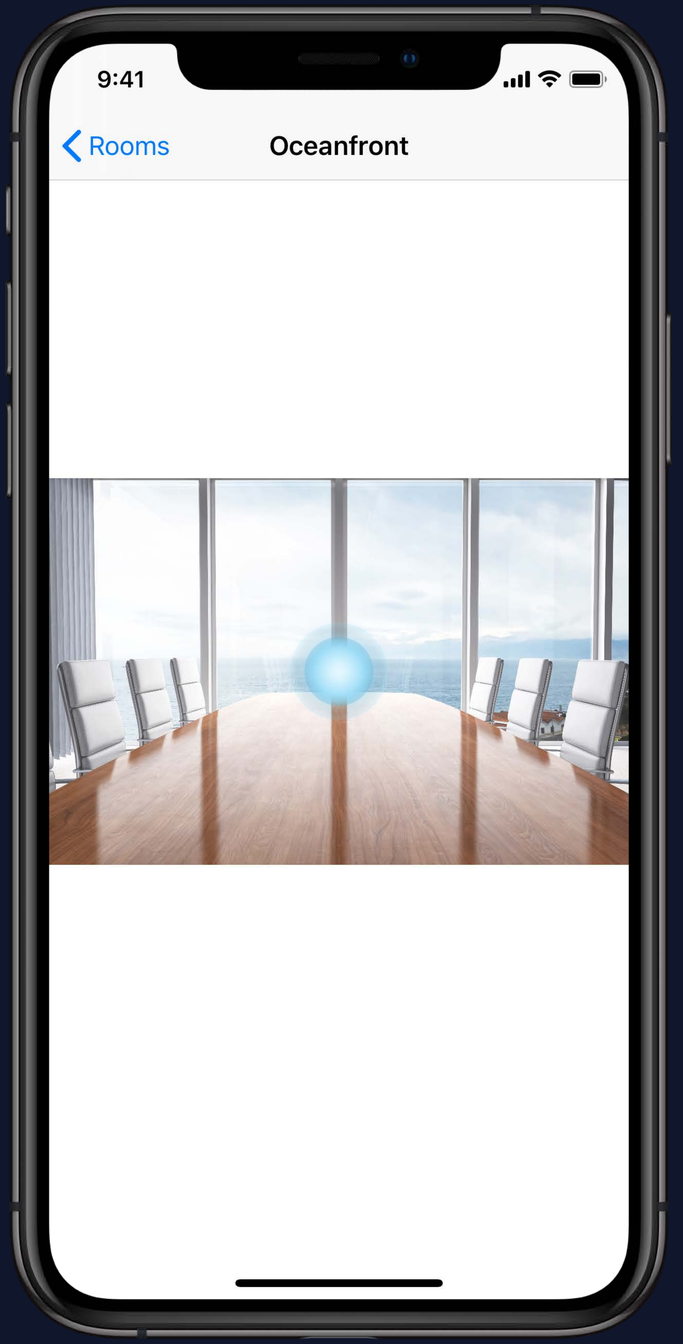

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    func enhance() {
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        enhancer.enhance(room.image, scale: scale) {
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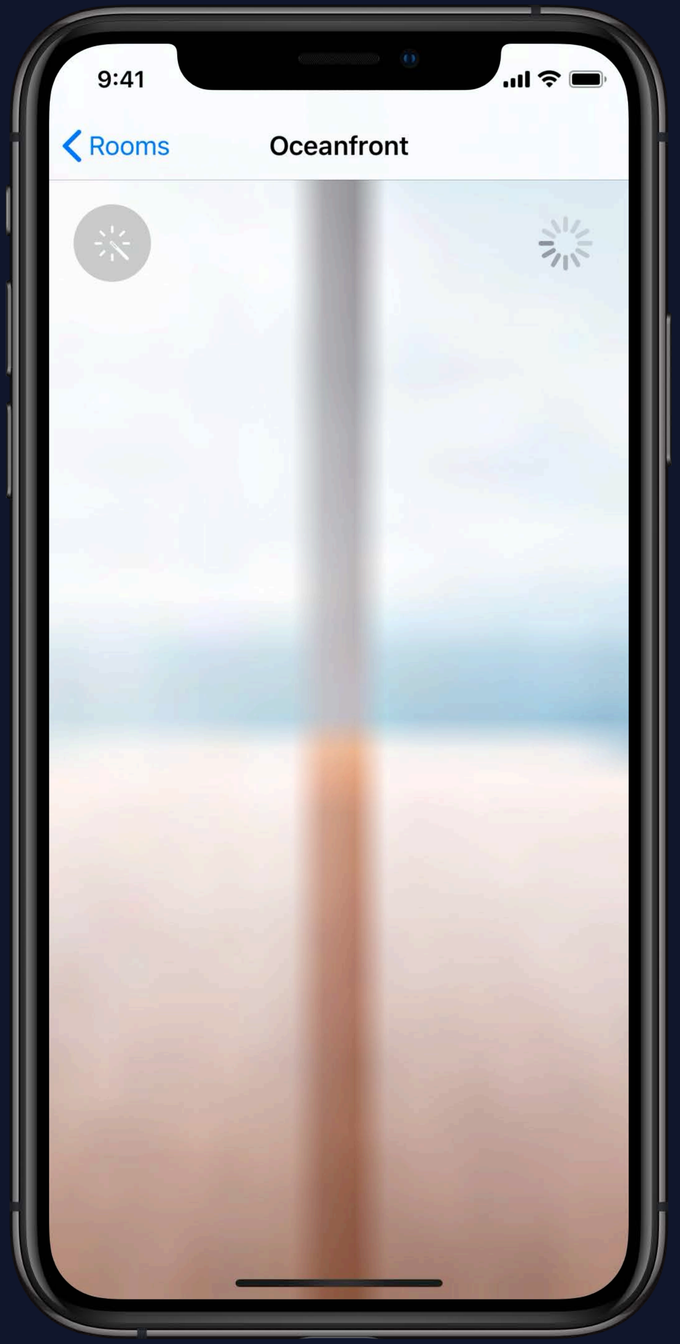

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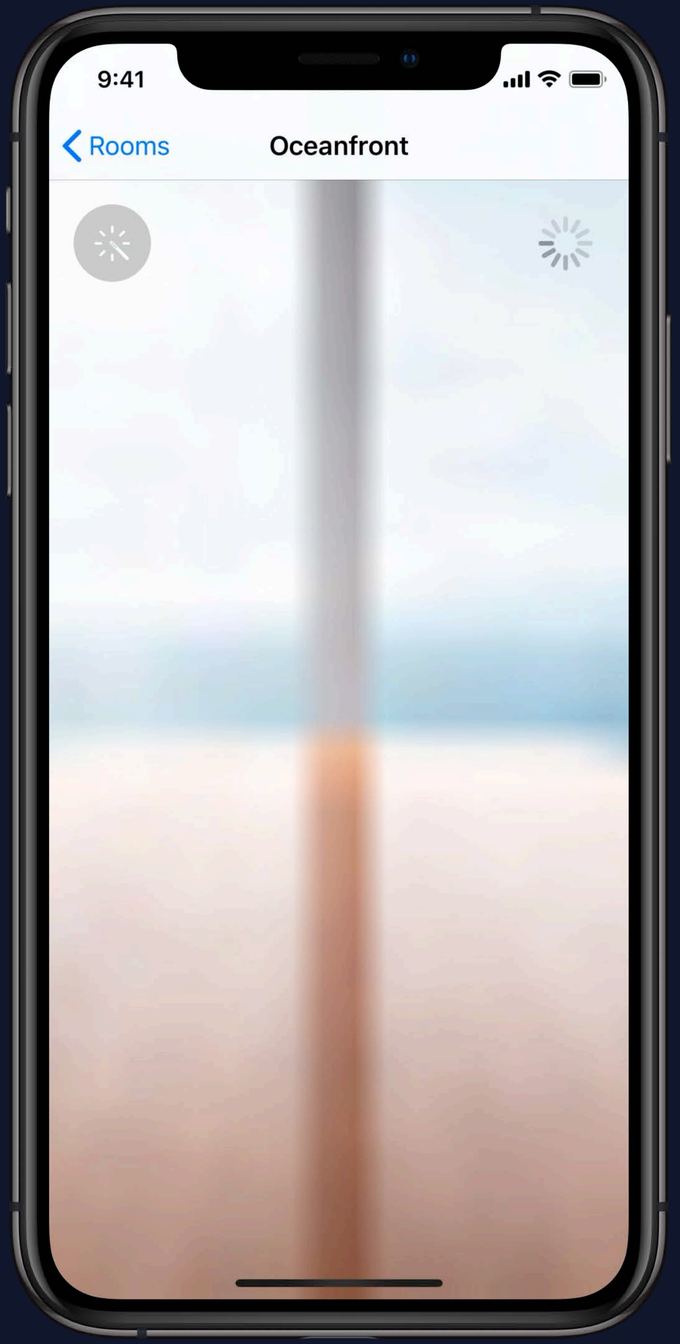

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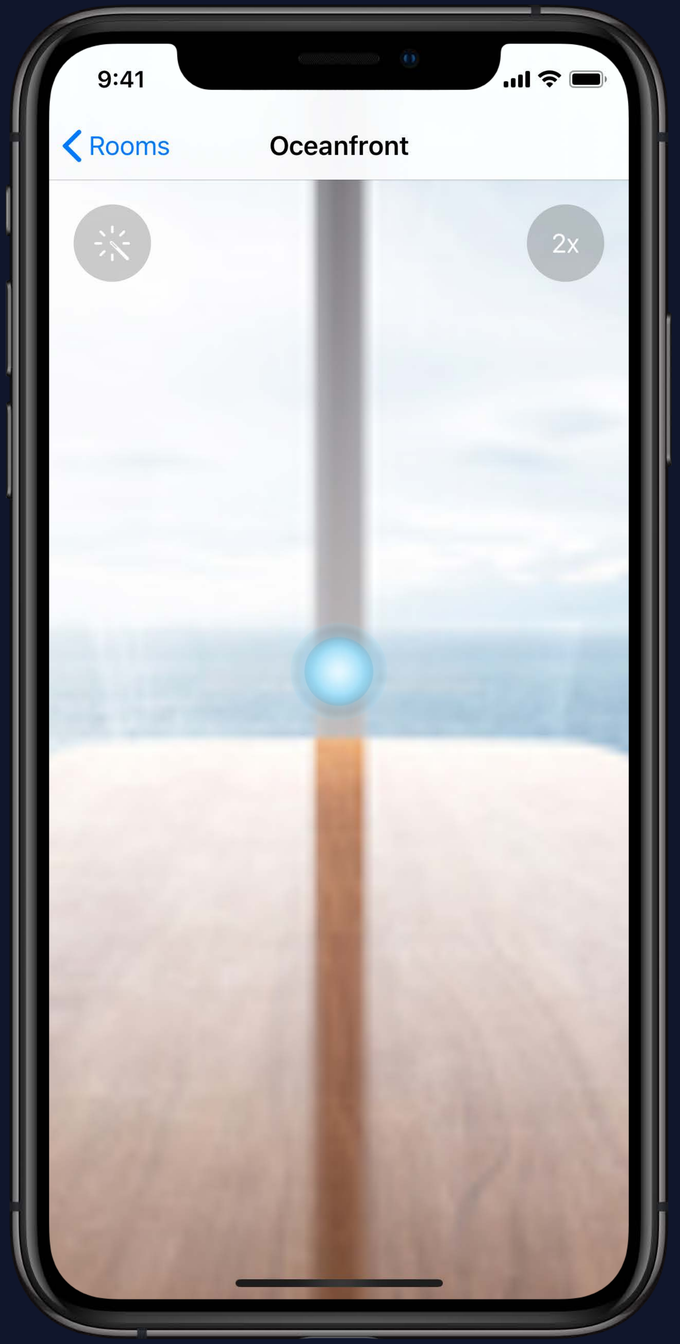

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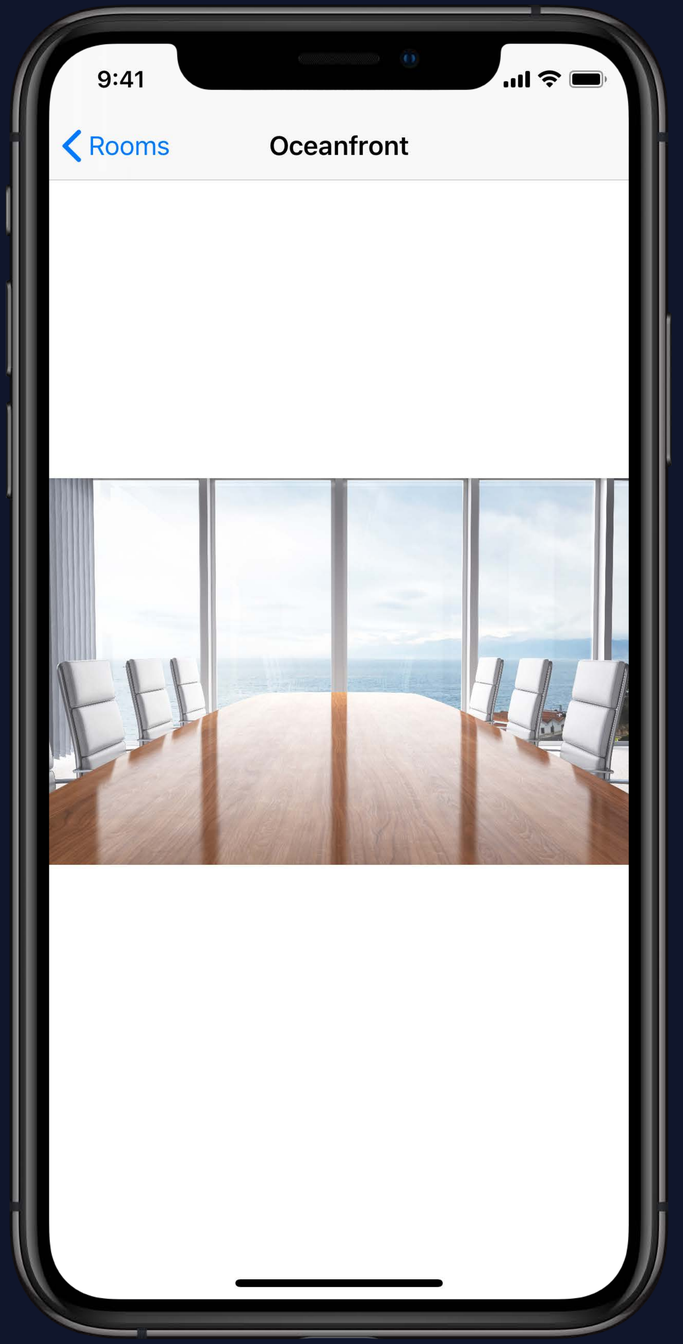

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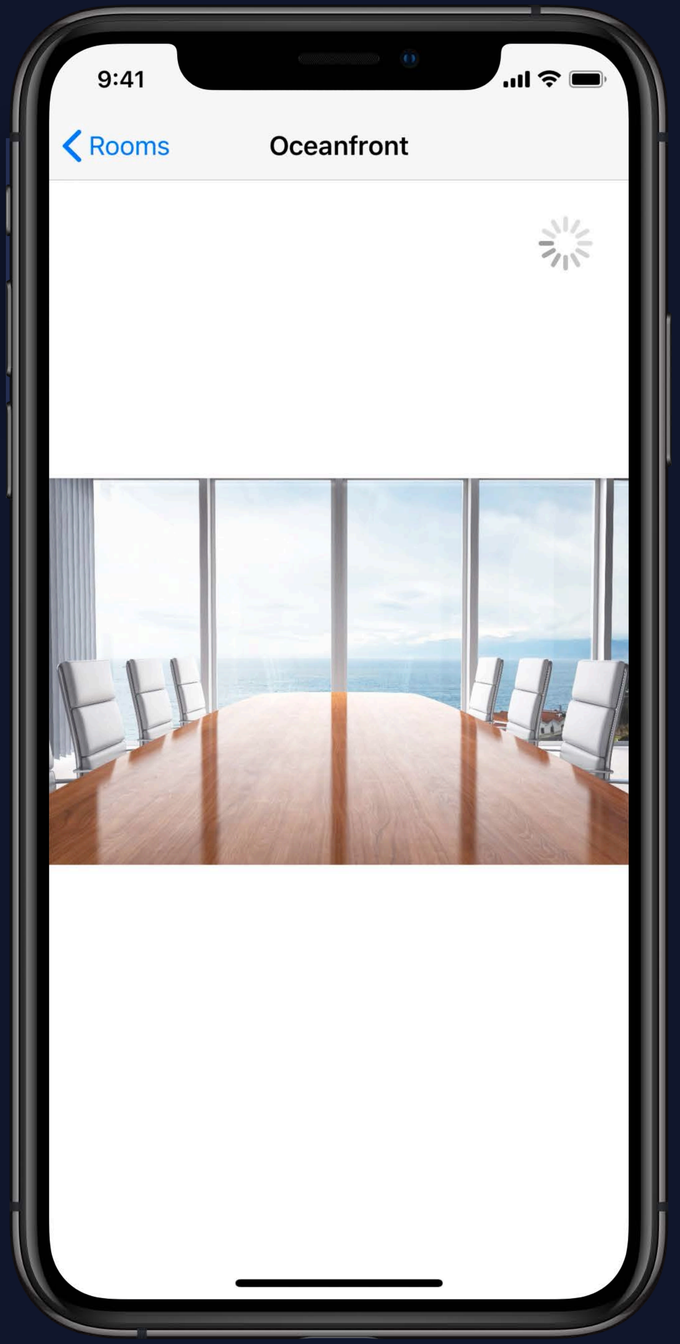

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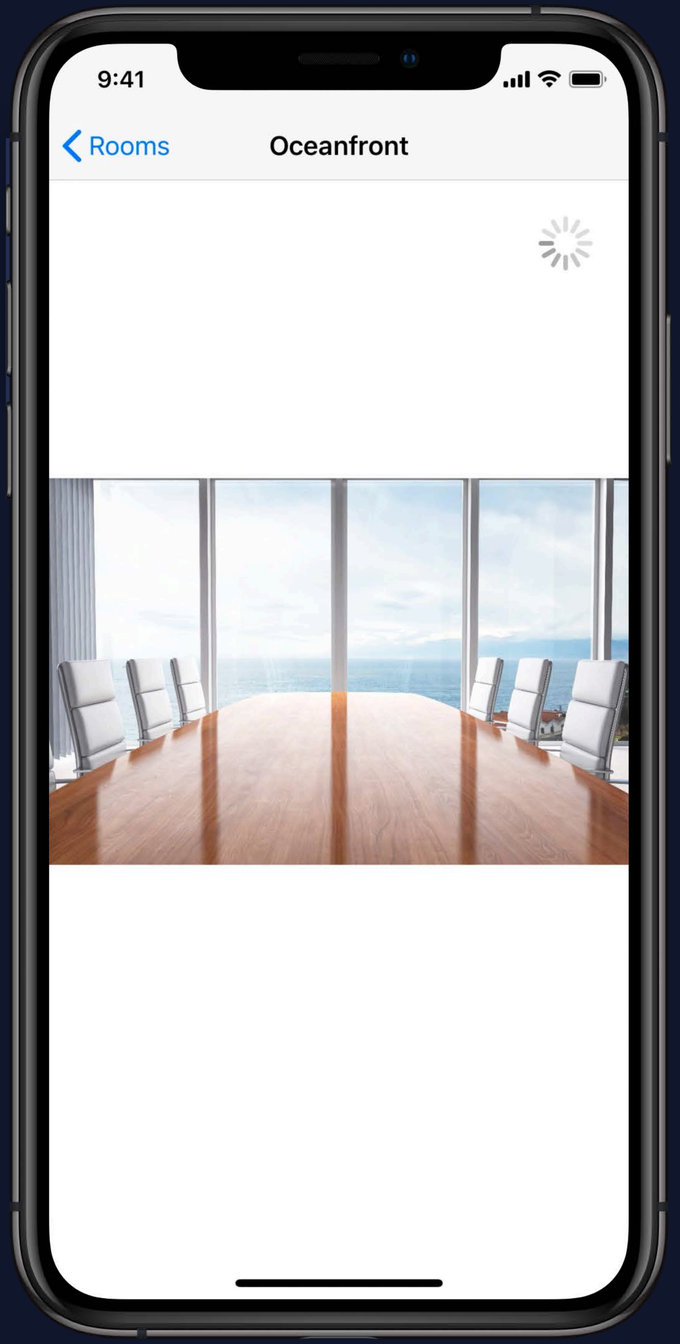
?!@##?



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```
zoomIn
zoomOut
enhance
completion
```

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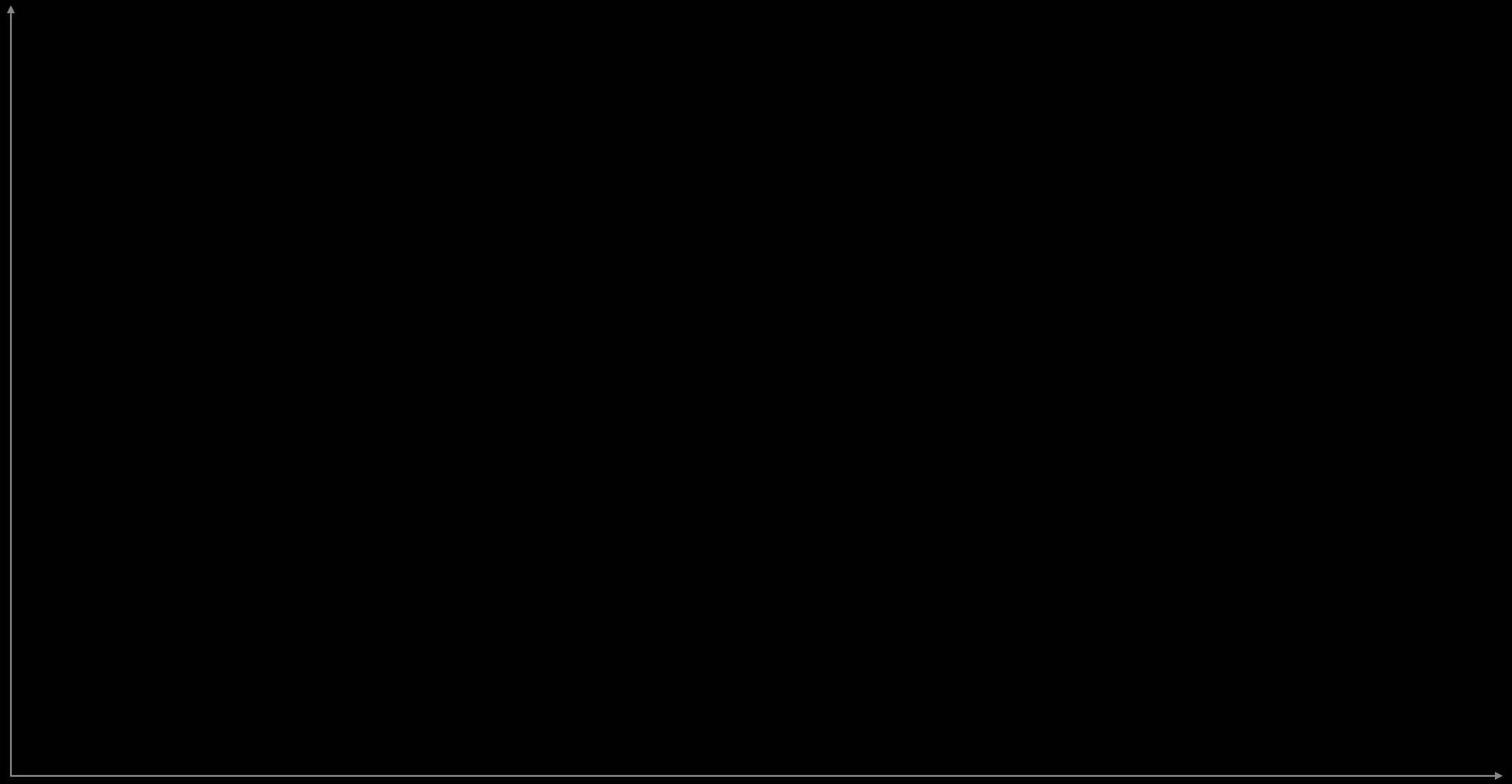
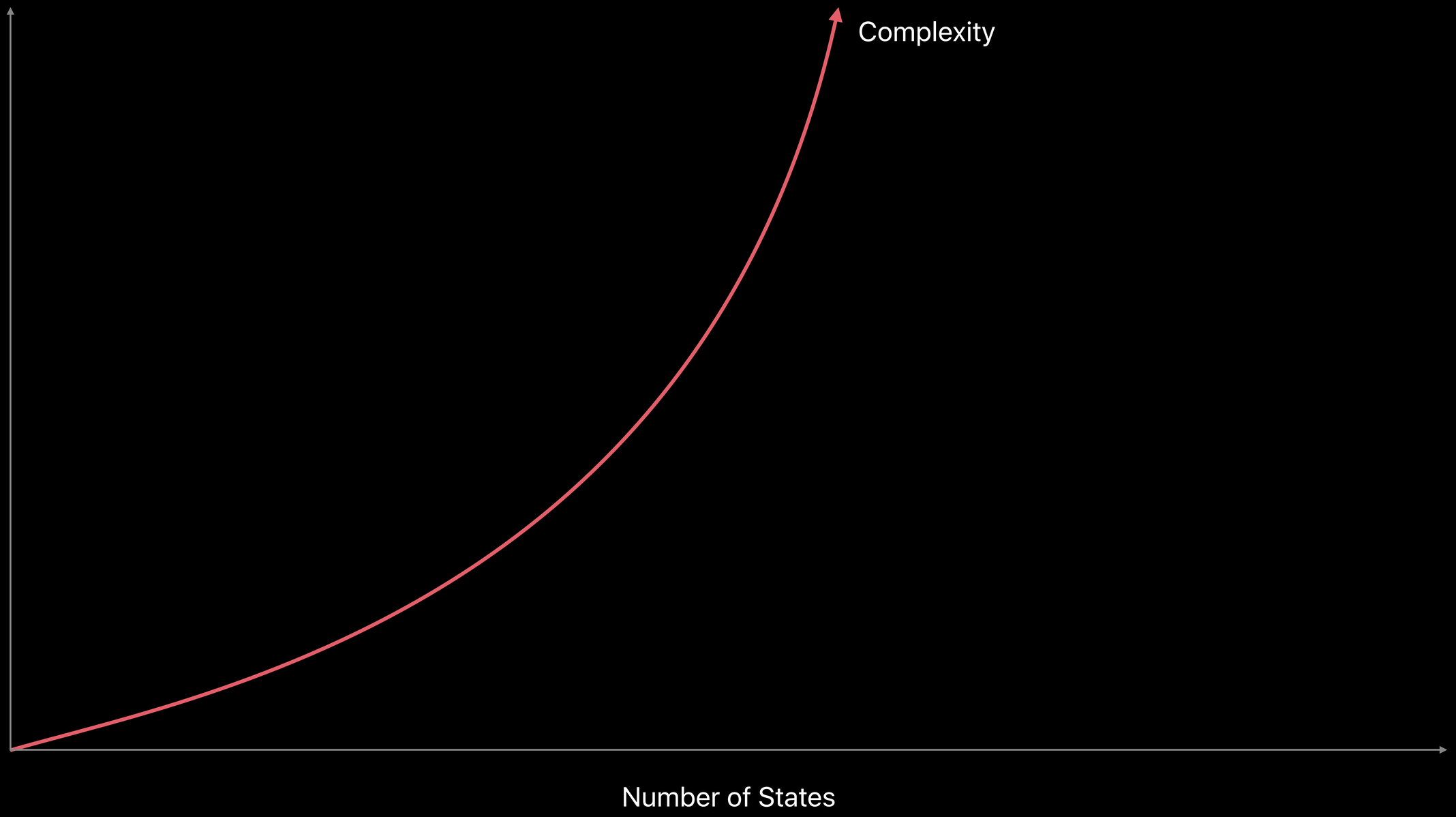
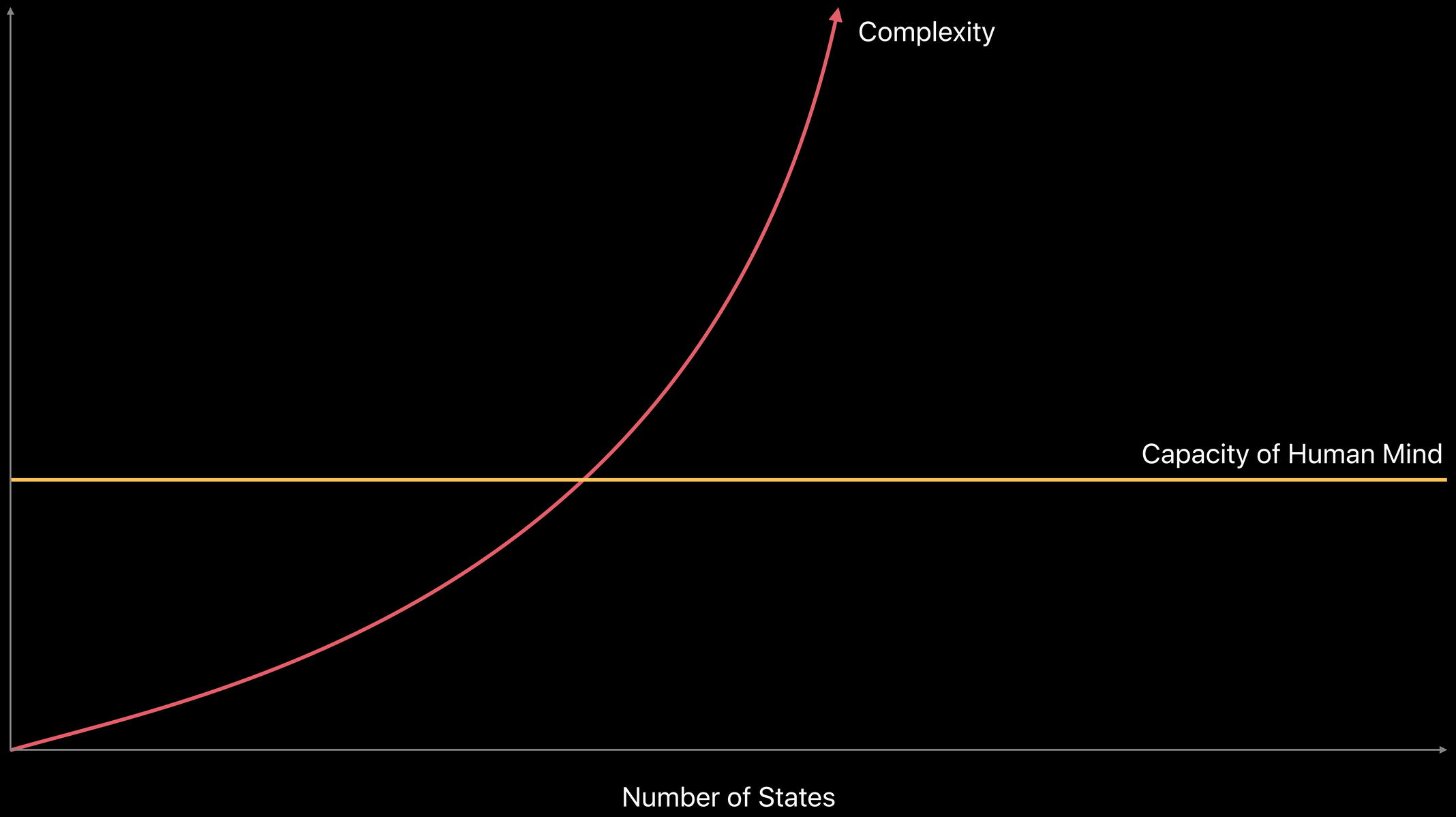
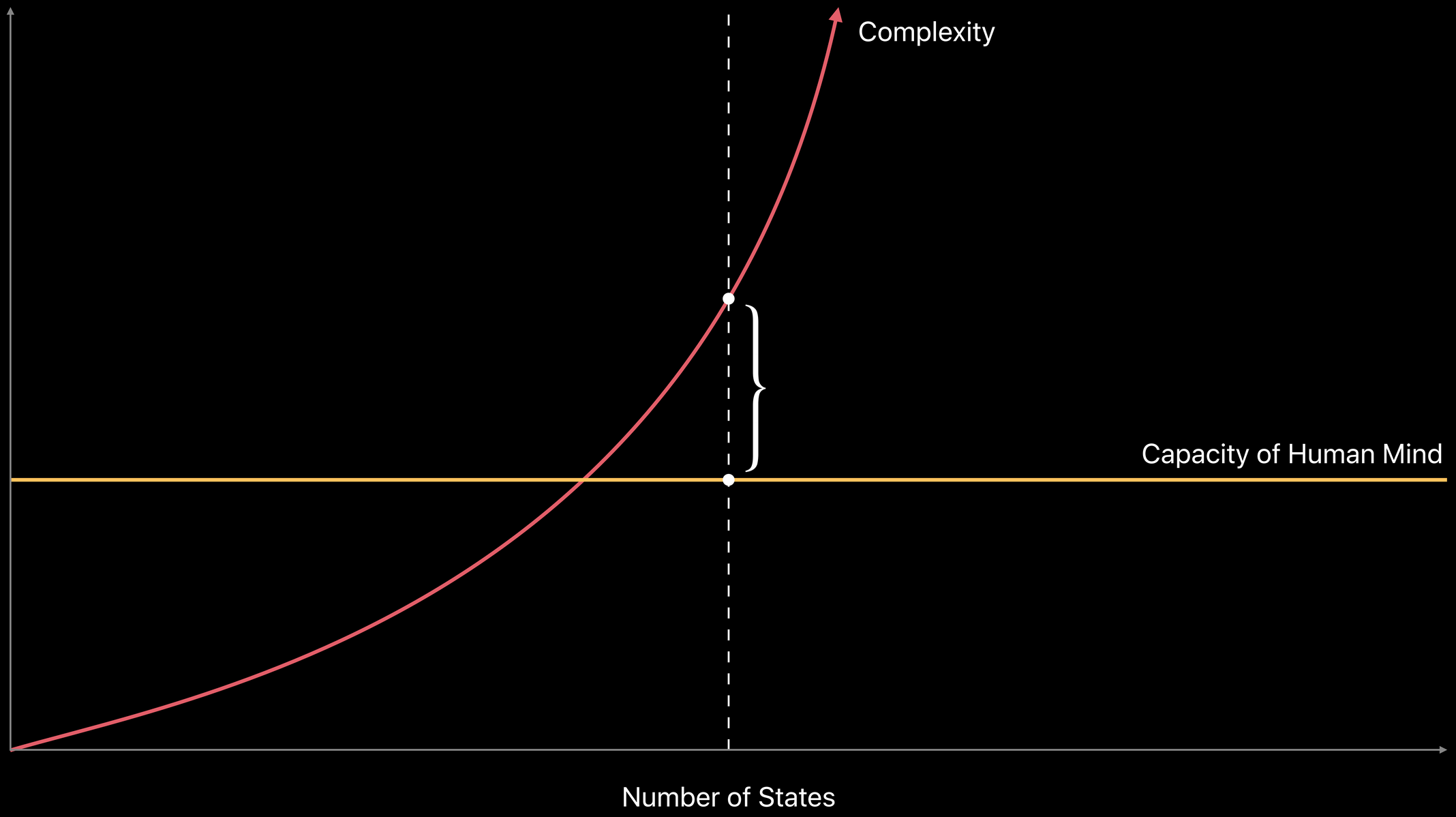
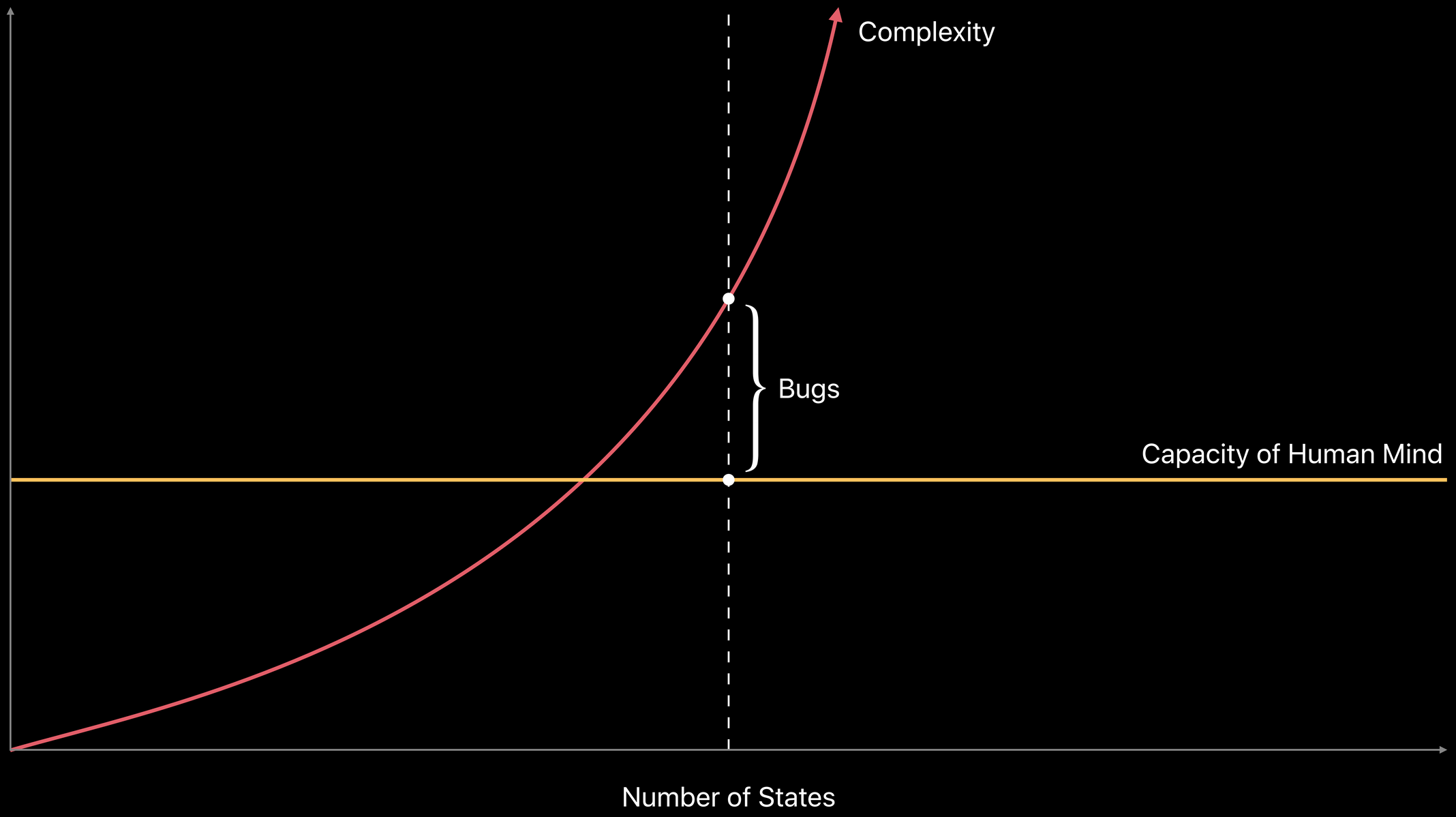

Number of States


Complexity
Number of States


Complexity
Capacity of Human Mind
Number of States


Complexity
Capacity of Human Mind
Number of States


Complexity
Bugs
Capacity of Human Mind
Number of States

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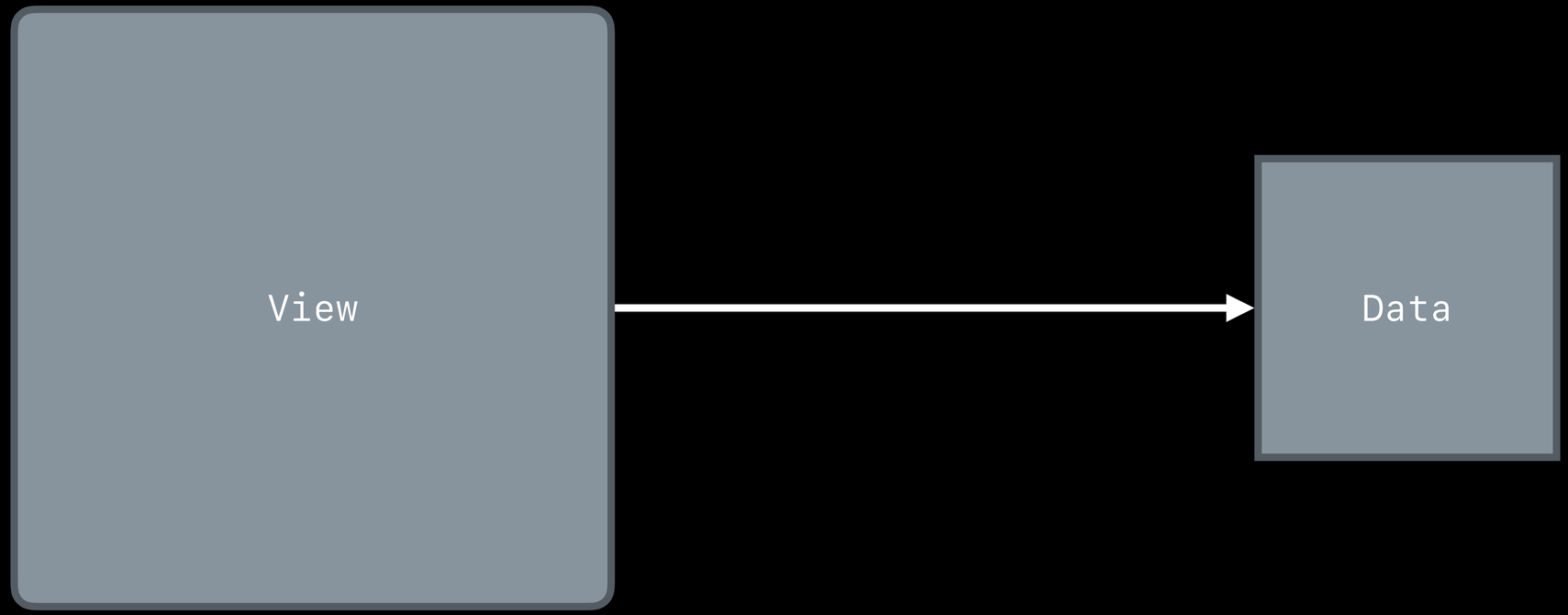
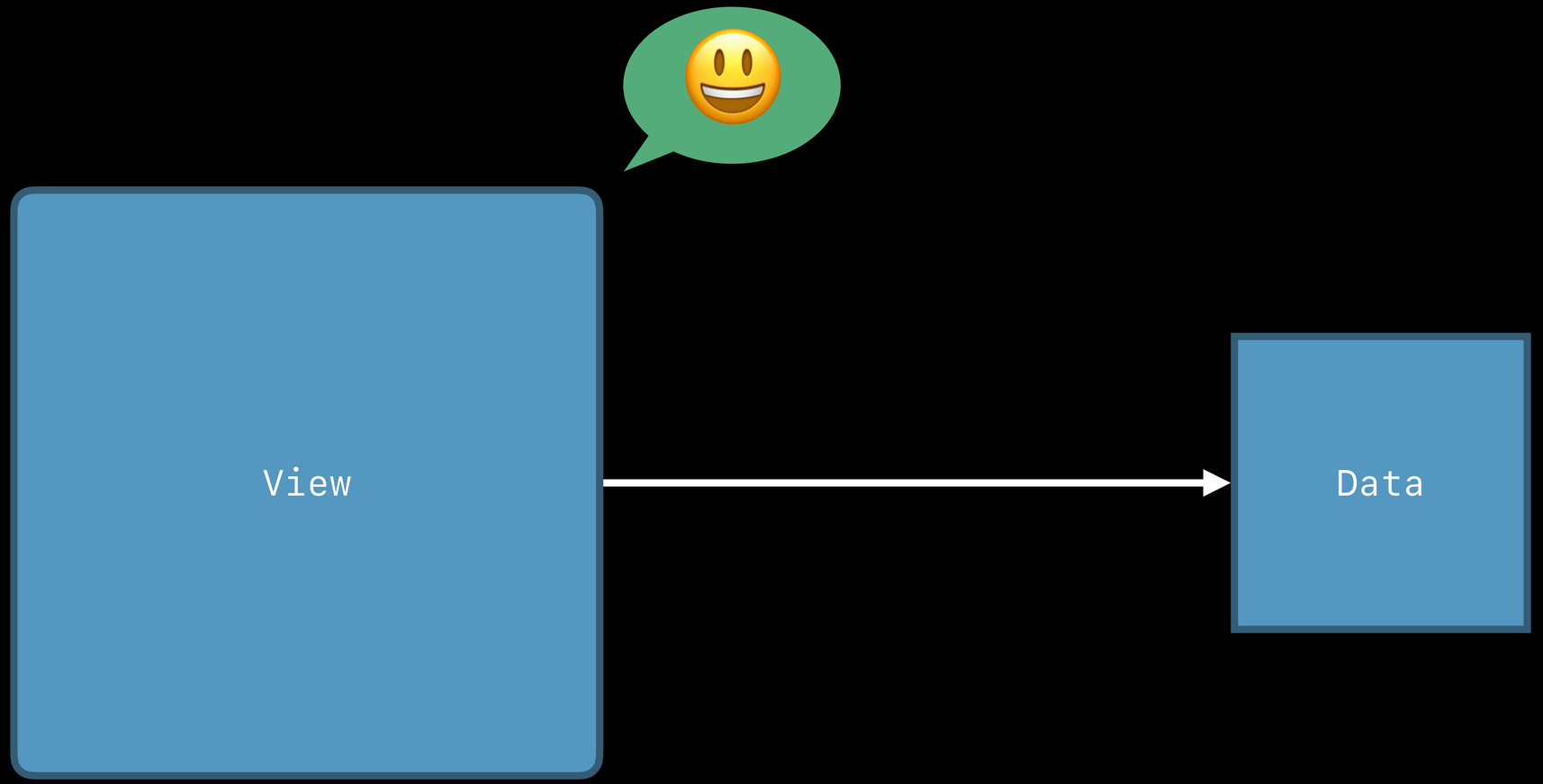

View
Data


View
Data

Demo

Jacob Xiao, SwiftUI Engineer

The Shortest Path to a Great App

Kyle Macomber, SwiftUI Engineer

The Shortest Path to a Great App

Declarative

Compositional

Automatic

Consistent

```
// Declarative Syntax

ZStack(alignment: .topLeading) {
    Image(room.imageName)
        .resizable()
        .aspectRatio(contentMode: zoomed ? .fill : .fit)
        .tapAction {
            withAnimation { self.zoomed.toggle() }
        }

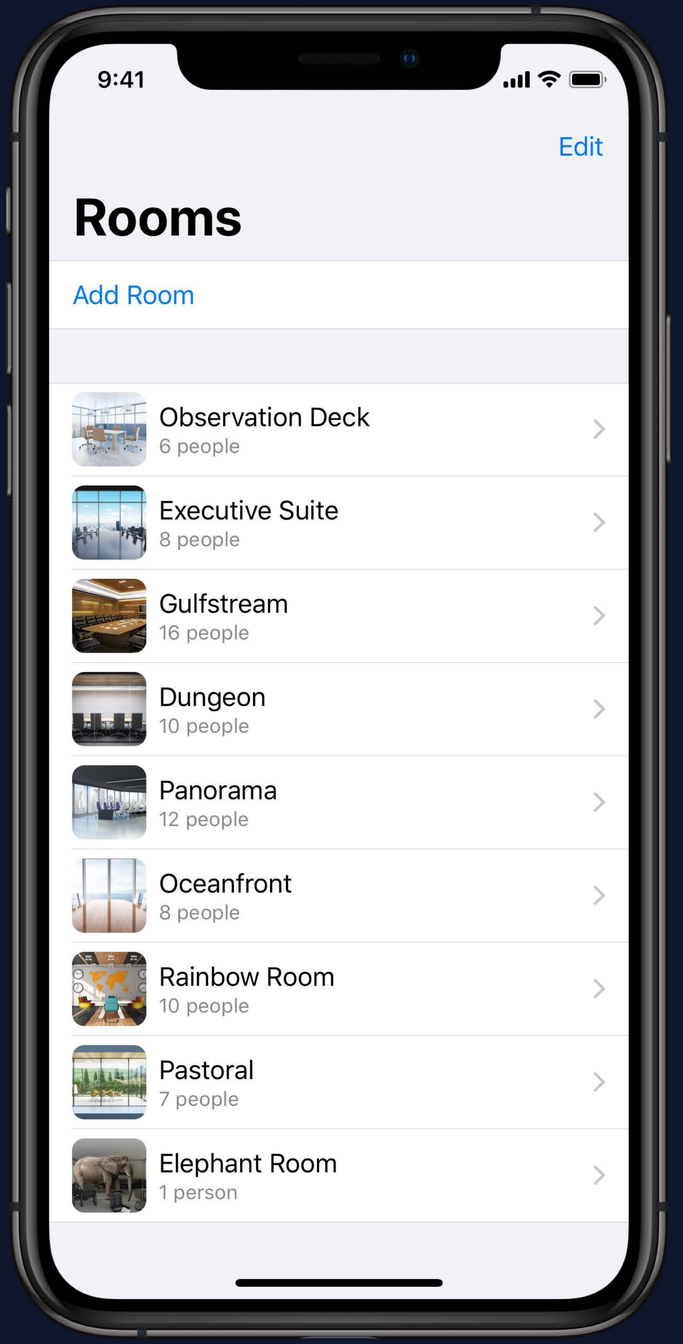
    if room.hasVideo && !zoomed {
        Image(systemName: "video.fill")
            .font(.title)
            .padding()
            .transition(.move(edge: .leading))
    }
}
```

```
// Compositional Pieces

NavigationButton(destination: RoomDetail(room: room)) {
    Image(room.thumbnailName)
        .cornerRadius(8)

    VStack(alignment: .leading) {
        Text(room.name)

        Text("\(room.capacity) people")
            .font(.footnote)
            .foregroundColor(.secondary)
    }
}
```



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// Automatic Behaviors

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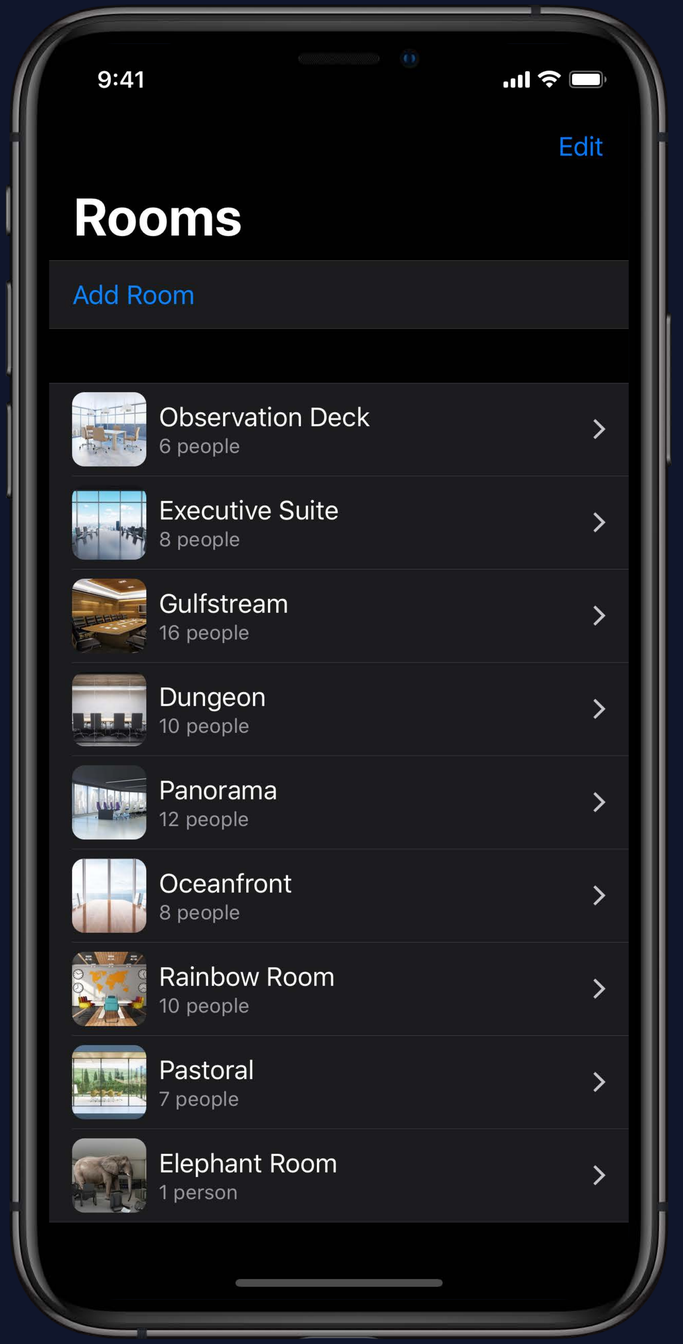

```
// Consistent State

struct RoomDetail : View {
    var room: Room
    @State private var zoomed = false

    var body: some View {
        Image(room.imageName)
            .resizable()
            .aspectRatio(contentMode: zoomed ? .fill : .fit)
            .tapAction {
                withAnimation { self.zoomed.toggle() }
            }
    }
}
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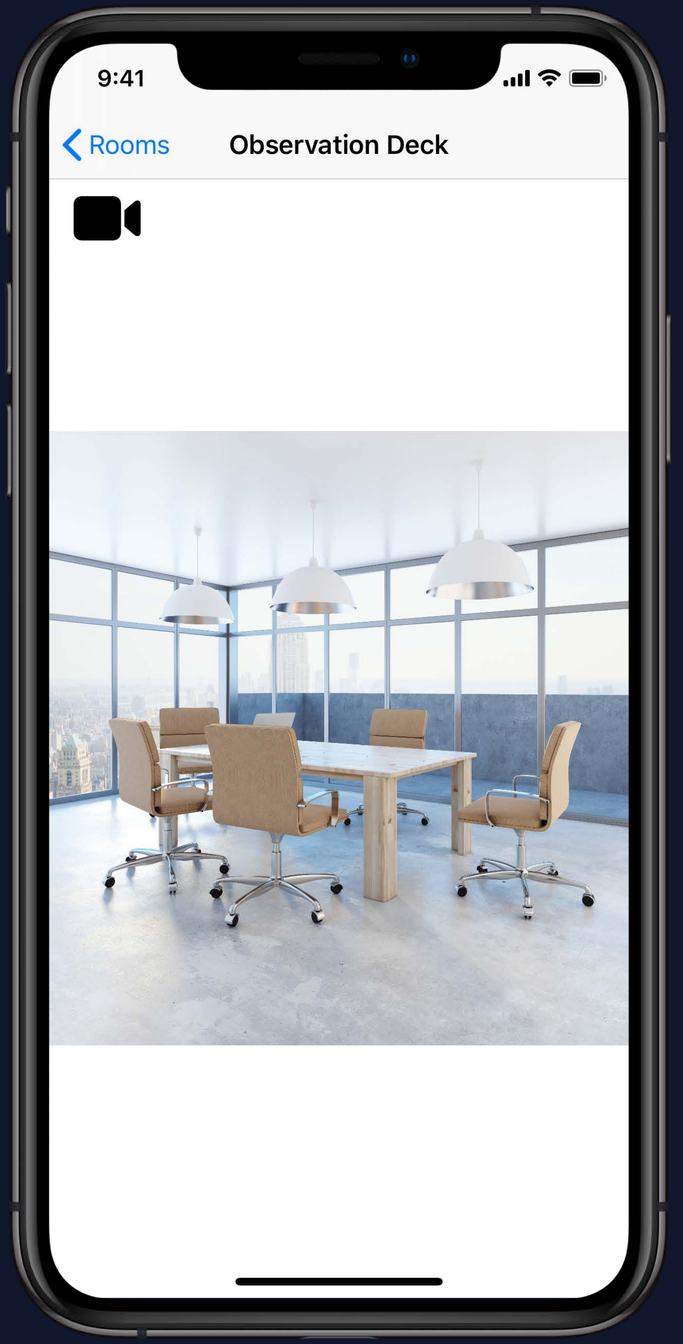

```
// Interruptible Animations

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Basic Features

Basic
Features

Exciting, Custom
Features!

Basic Features

Exciting, Custom Features!

More Information

developer.apple.com/wwdc19/204

SwiftUI Essentials	Wednesday, 11:00
Data Flow Through SwiftUI	Thursday, 9:00
Building Custom Views with SwiftUI	Friday, 9:00


WWDC19