



EVOLVE 16



As Seen On TV ... Bringing C# to the Living Room

Matthew Soucoup

Code Mill Technologies

@codemillmatt

✖ **EVOLVE16**



Tonight's Lineup

Topics

- Introduce hardware, OS and take a tour
- Techniques to navigate between views
- Best practices to present cinematic content to a room full of people

Now Starring



Meet Our Stars

Apple TV, Siri Remote, tvOS

- Characteristics
- Strengths
- Weaknesses
- Special considerations

Hardware

HDMI

WiFi 802.11 a/b/g/n/ac

2 GB RAM

Game Controller Capable

10/100 Mbps Ethernet

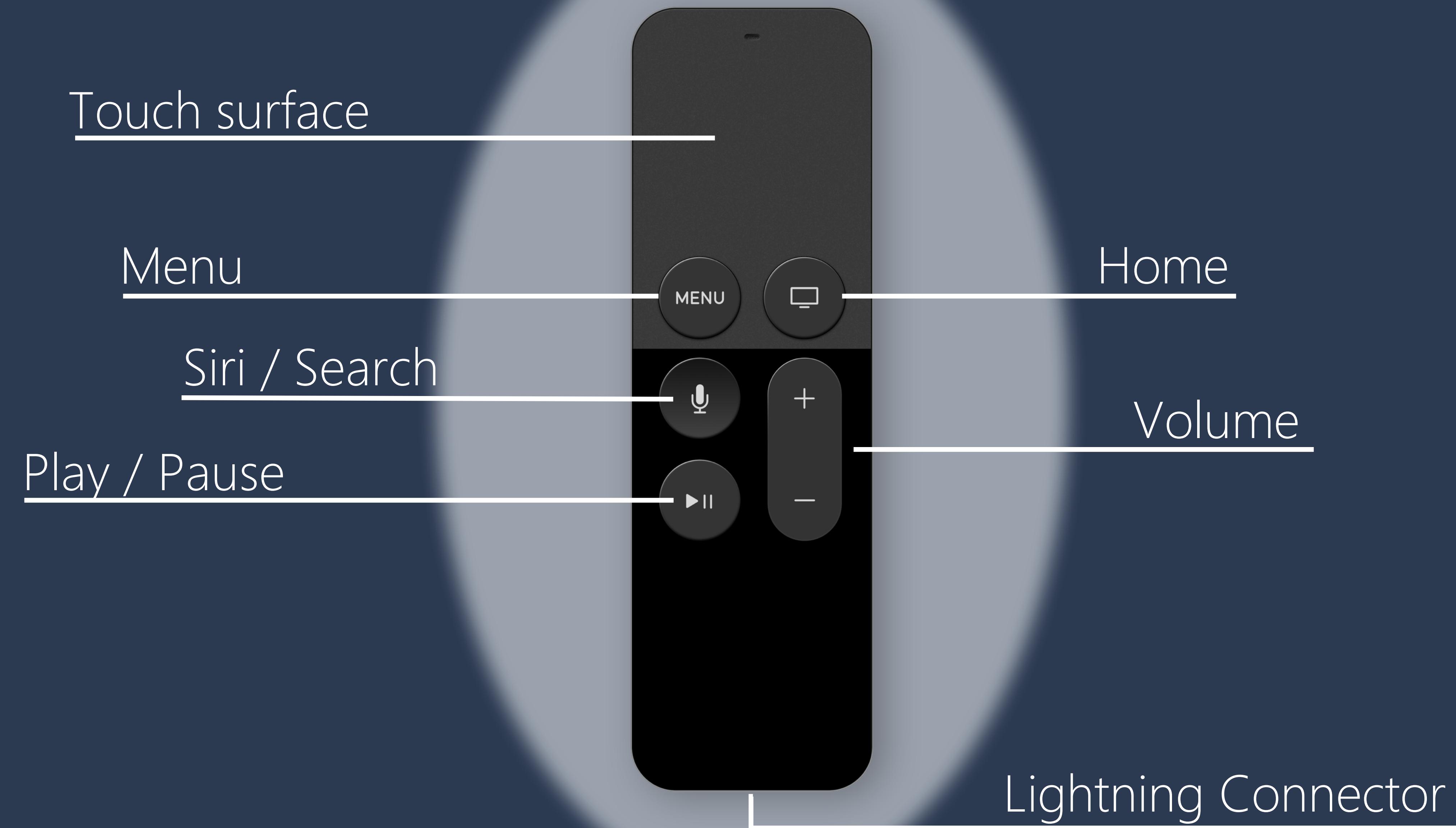
64-bit A8 processor

Up to 64 GB Storage

1080p Resolution

Siri Remote / Apple TV Remote





Hardware Star Bio

Strong Points

- Ample power for apps
- No hardware fragmentation
- One screen size
- Always on – high speed Internet
- New user interaction model

Weak Points

- Limited storage
 - 200 MB app bundle
 - 4 GB total ODR
 - Cannot write to permanent storage
- No 4K support
- New user interaction model

tvOS

tvOS Intro

Characteristics

- Derived from iOS
 - But is a distinct OS
 - UIKit, AVKit, CoreGraphics ... still present
- Supports new app type – TVML
- New TVServices framework
- Radically different interaction model
 - No touch - remote
 - Social
 - Immersive



tvOS

Tab Bar View

The image shows a user interface for a television guide or streaming service. At the top, there is a horizontal navigation bar with five tabs: "Home", "Shows", "Live TV", "Search", and "Settings". Below this bar, there are six rectangular cards, each representing a different television show. The shows are arranged in two rows of three. The top row contains "ANTHONY BOURDAIN NO RESERVATIONS", "BIZARRE FOODS with ANDREW ZIMMERN", and "DELICIOUS DESTINATIONS". The bottom row contains "BOOZE TRAVELER", "COULD I LIVE THERE?", and "THE DEAD FILES REVISITED". Each card has a small thumbnail image and the show's title displayed prominently.

- Home
- Shows
- Live TV
- Search
- Settings

ANTHONY
BOURDAIN
NO RESERVATIONS

BIZARRE
FOODS
with
ANDREW ZIMMERN

DELICIOUS
DESTINATIONS

BOOZE
TRAVELER

COULD
I LIVE
THERE?

THE
DEAD
FILES
REVISITED

Split View, Collection View, Table View

The image displays a mobile application interface for exploring different cuisines. On the left, a sidebar titled "Cuisines" lists various categories: English, Chinese, Mediterranean, Spanish, Greek, Thai, and Cajun. A "BROWSE" button is located at the top of the sidebar. The main area on the right shows a collection of food images, likely from a "Greek" section, including a whole roasted lamb, various cuts of meat, and a dish with lemon slices. Below this, there are more food images, such as a sandwich and a bowl of soup.

BROWSE

Cuisines

- English
- Chinese
- Mediterranean
- Spanish
- Greek**
- Thai
- Cajun

Greek Lamb Roast
COMPASS & FORK

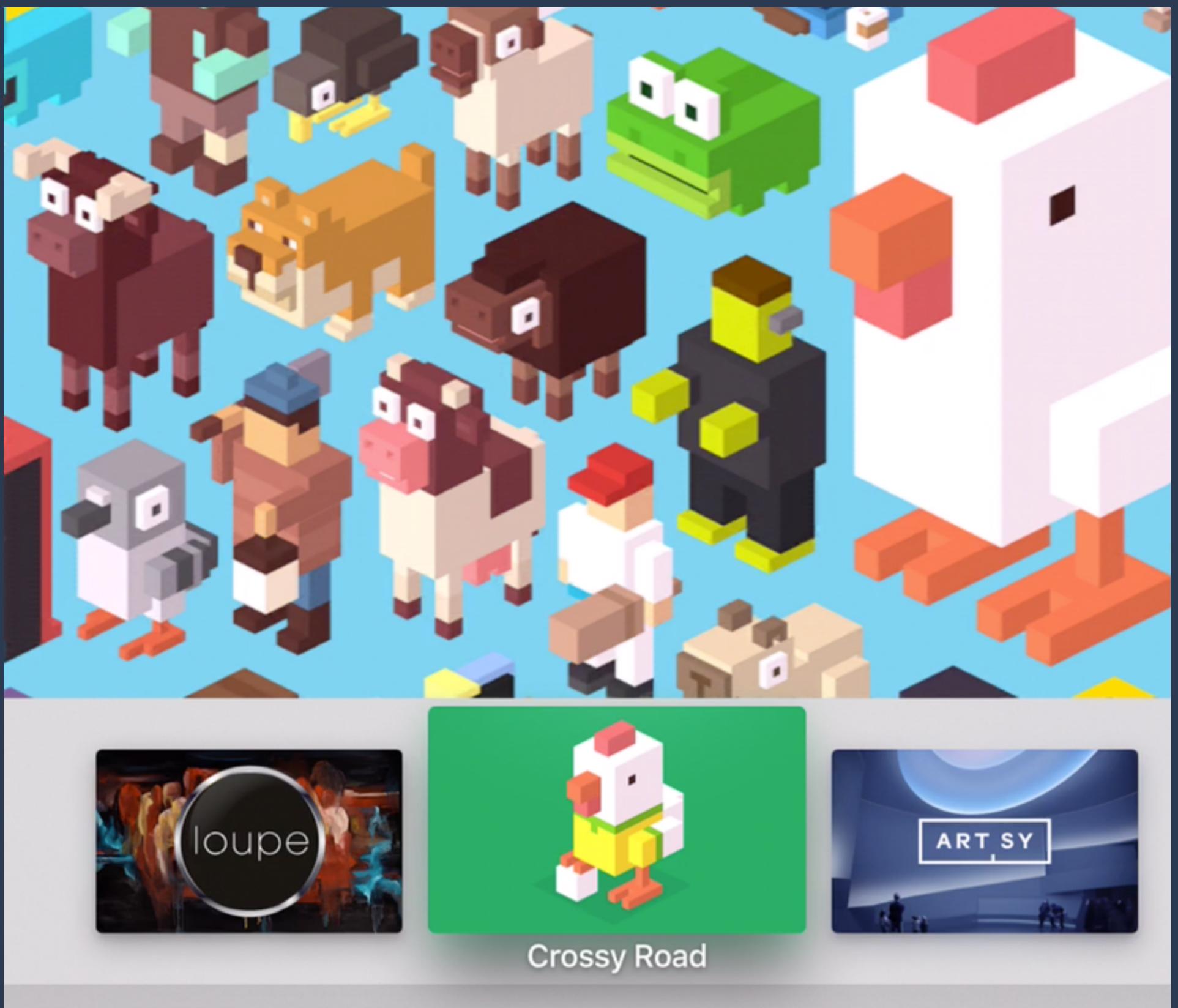
Page View



tvOS Star Bio

Considerations

- Two types of apps
 - TVML
 - Traditional
- Same old UIKit
- Different way to interact
- Immersive experience
- Most other native frameworks available



The Crew



Development Environment

Apple

- XCode 7.3
- tvOS 9.2 SDK

Xamarin

- Beta channel
- Xamarin.tvOS Beta Cycle 7
- Xamarin Studio 6

demo!



Scene One
Coming
Into
Focus

Sneak Preview

Remote & Navigation

- Types of interactions
- Handling events
- Navigation between views
- Design considerations

Focus Model

- What it is
- Focus engine
- Interacting with

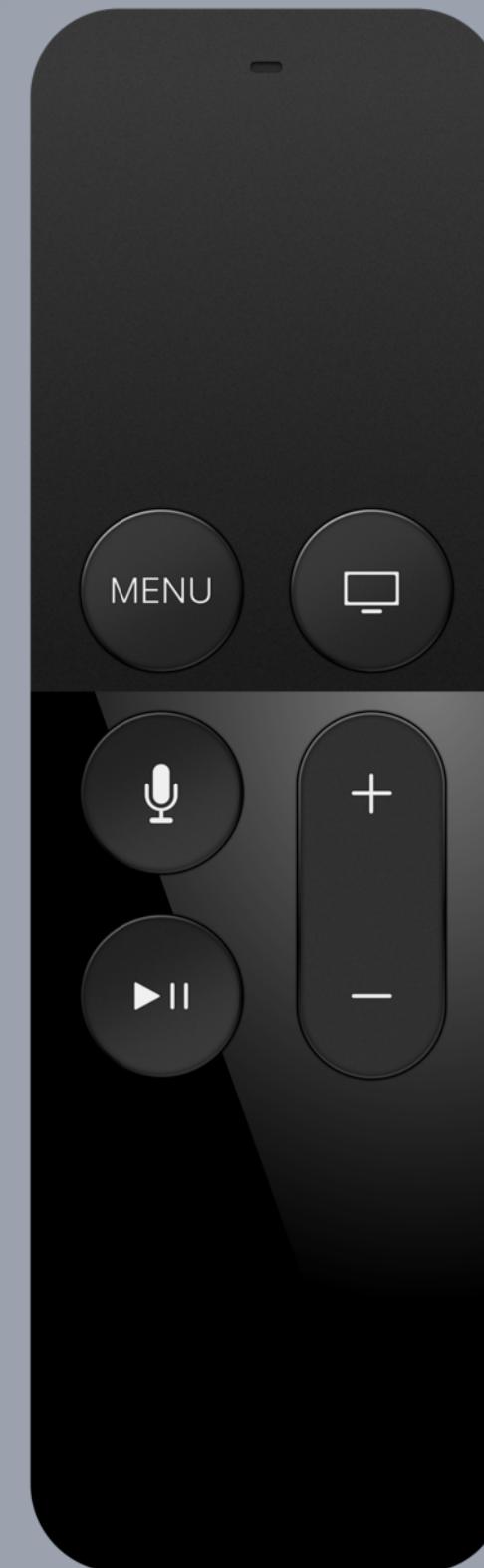
Demo!

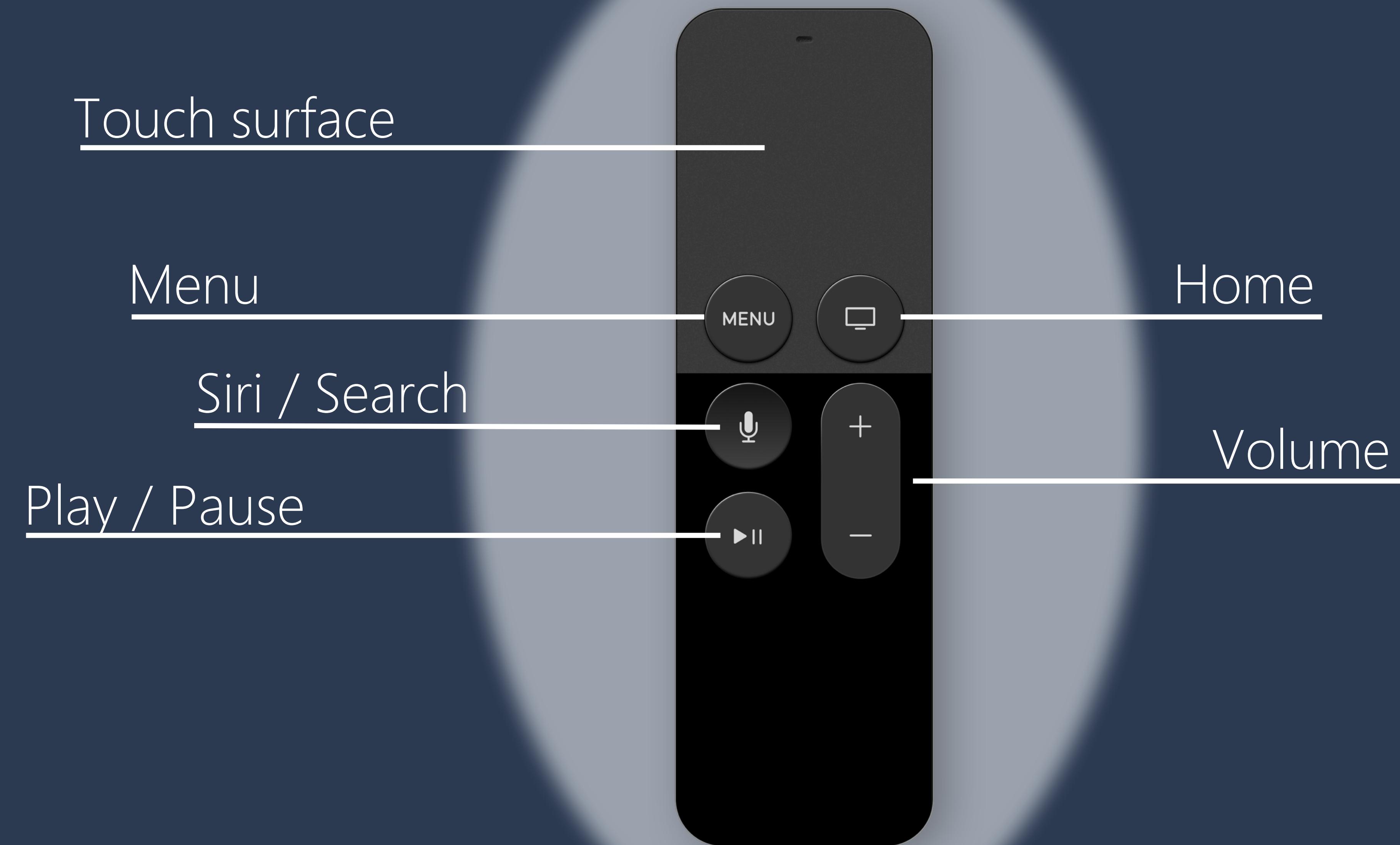
Siri Remote

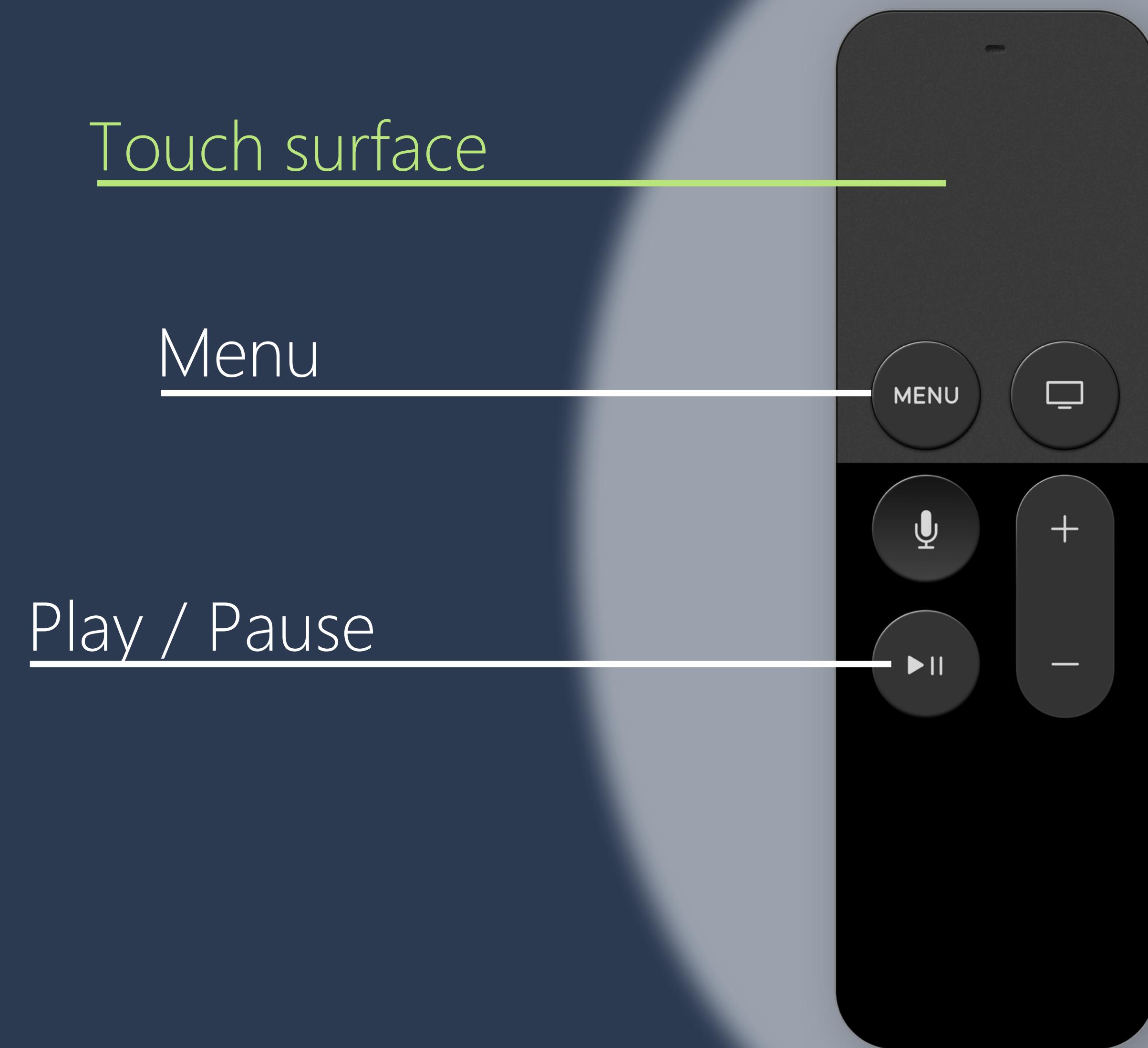
Remote Interaction

Interacting with tvOS

- Across the room
- Only one element on screen “in focus”
- Siri remote & game controllers
- Can use in landscape
- Accelerometer & gyroscope available

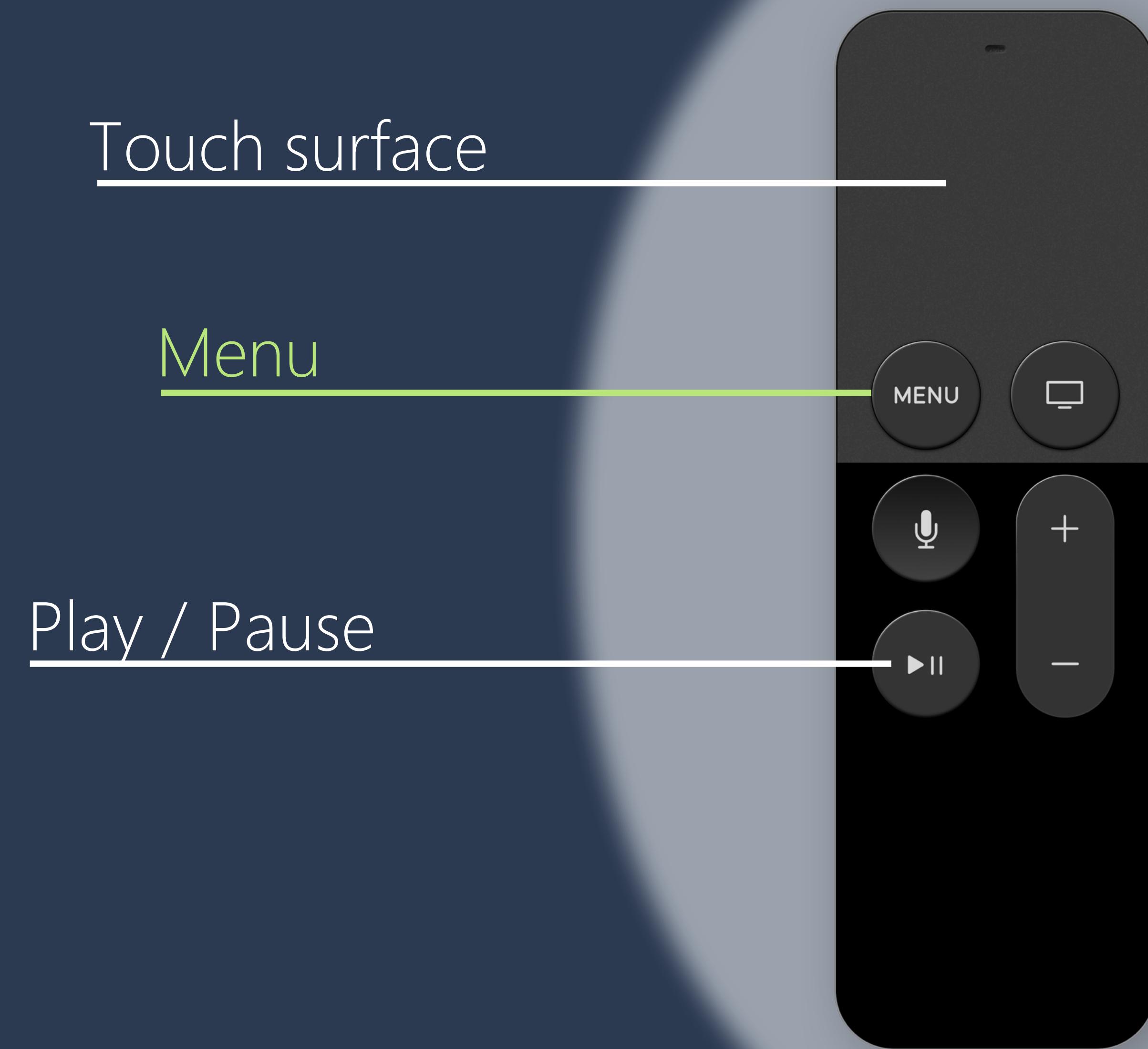






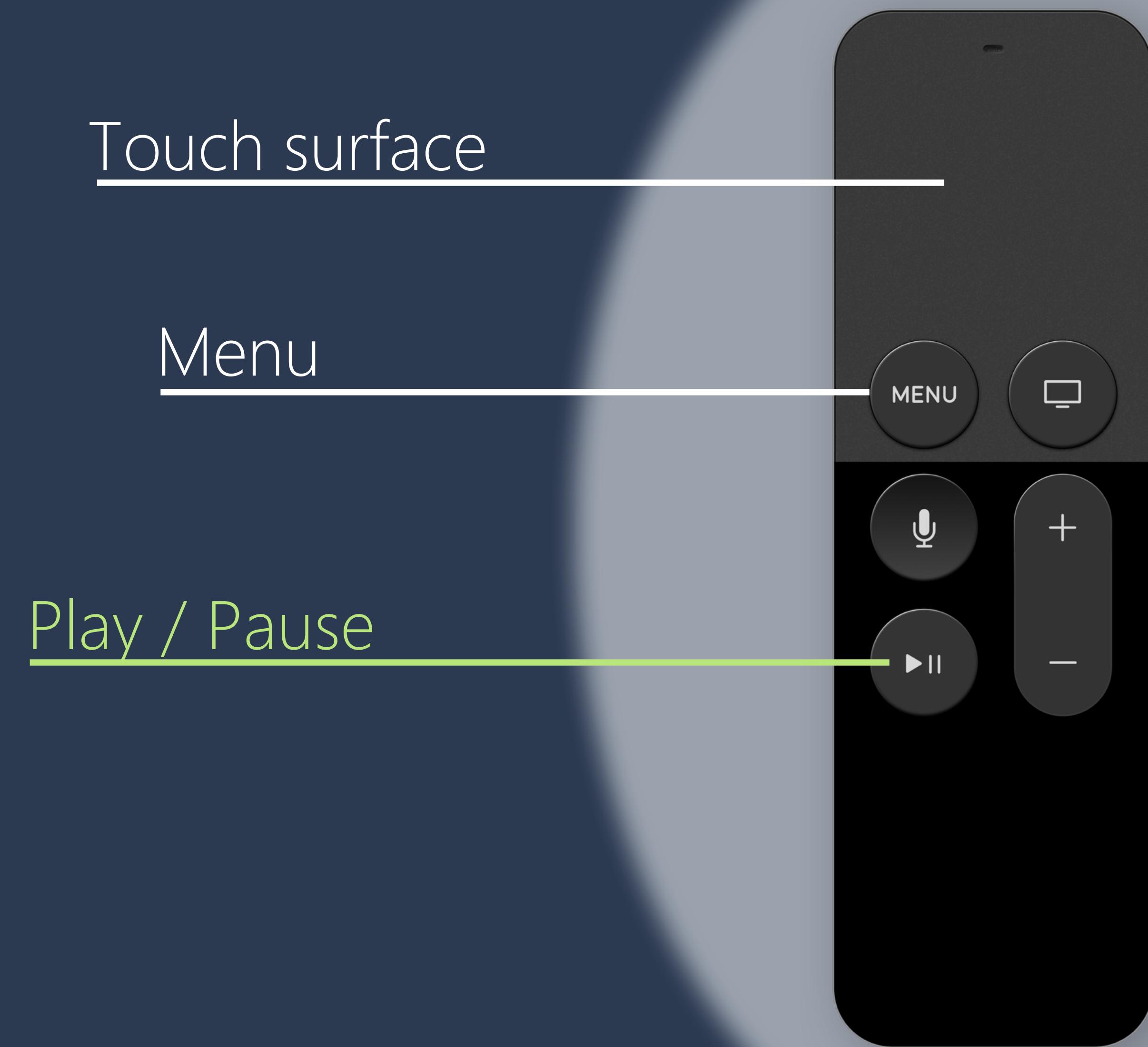
Touch Surface

- Gestures
 - Swipes – 1 finger only!
- Taps
- Clicks



Menu

- Back button
 - No on-screen back!
- Pause for game play



Play / Pause

- Playback shortcuts
- Game controls

Touch Pad Click

```
// Primary "click"
buttonOne.PrimaryActionTriggered += (sender, e) =>
{
    // Do something cool
};
```

- No touch events

Swipe Recognizers

```
// Swipe up
var upGesture = new UISwipeGestureRecognizer(() => {
    // The up action
});

upGesture.Direction = UISwipeGestureRecognizerDirection.Up;

this.View.AddGestureRecognizer(upGesture);
```

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Remote Button Clicks

```
// Play pause click
var playPauseClick = new UITapGestureRecognizer(() => {
    // Play or pause something
});

playPauseClick.AllowedPressTypes = new NSNumber[] {
    NSNumber.FromInt64((long)UIPressType.PlayPause)
};

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Remote Best Practices

Standards

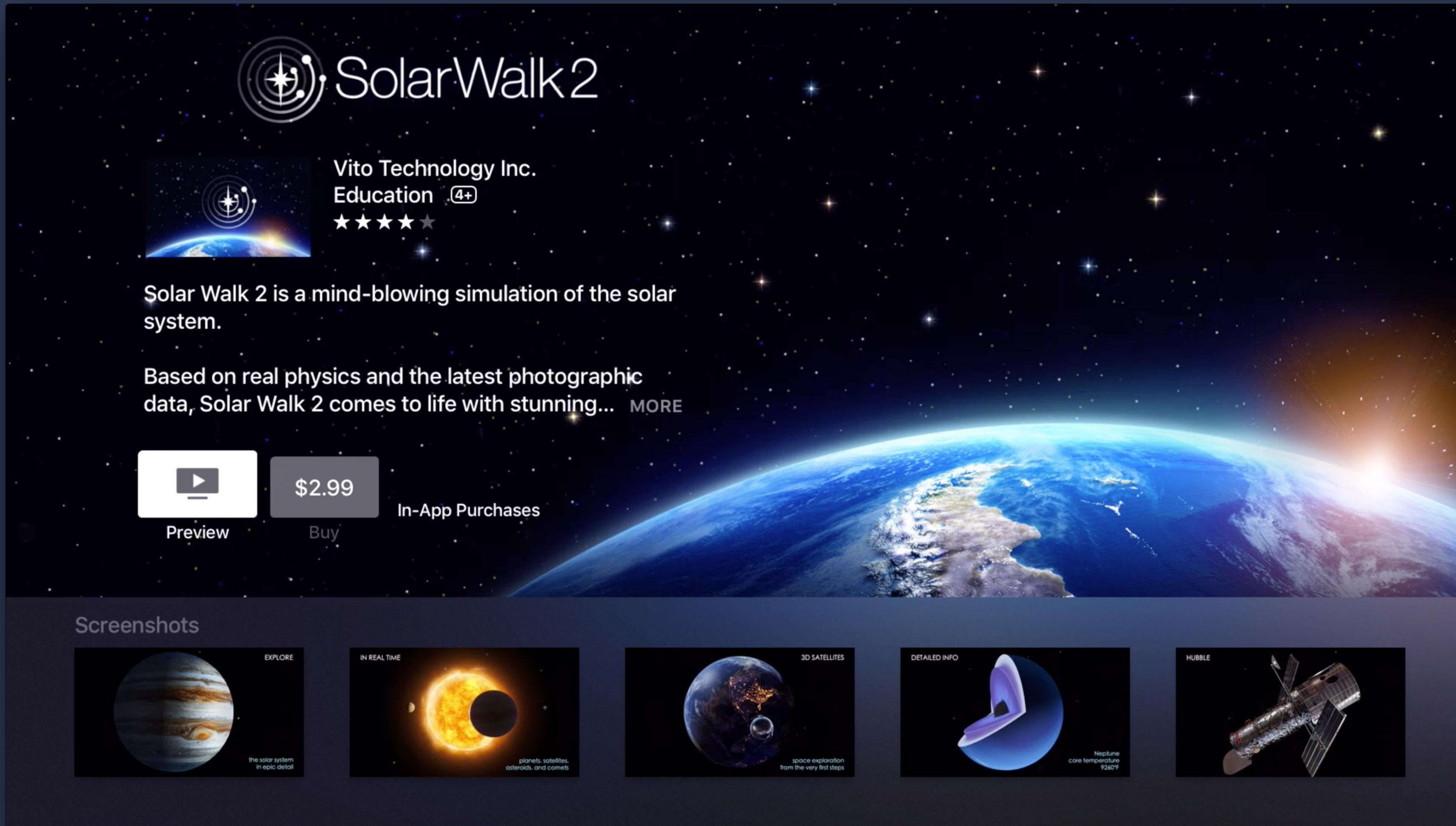
- Don't repurpose standard gestures
- Don't invent new gestures
- Use menu as back button

Navigation

Everything Needs To Be Obvious

- Only one item “in-focus” at a time
- Focused item needs to be obvious
- Move between items with minimal gestures
- Navigation between items & screens intuitive
- Don’t get the user lost!

Focused Control



The image shows the app store page for SolarWalk2. The background features a stunning view of Earth from space, with the horizon line visible against the dark void of space filled with stars.

SolarWalk2

Vito Technology Inc.
Education 4+
★★★★★

Solar Walk 2 is a mind-blowing simulation of the solar system.

Based on real physics and the latest photographic data, Solar Walk 2 comes to life with stunning... [MORE](#)

[Preview](#) **\$2.99** In-App Purchases [Buy](#)

Screenshots

- EXPLORE**
the solar system in epic detail
- IN REAL TIME**
planets, satellites, asteroids, and comets
- 3D SATELLITES**
space exploration from the very first steps
- DETAILED INFO**
Neptune core temperature 9260°F
- HUBBLE**

Focus Model & Engine

Focus Engine

- Implementation of Focus Model for UIKit controls
- Intended for use with Siri Remote (works with others)
- Provides consistent user experience

Focus Model

- Theory of indirect UI manipulation
- Only one view in focus
- Obvious and intuitive movement between views

Focus Engine

API Basics

- Maintains single view in focus at a time
- Takes care of finding next focusable view
- Cannot set focus programmatically
- Provides API to respond to focus changes
- Don't fight it – defaults on most UIKit controls work

demo!

Scene One

Recap

- User interaction happens at a distance
- Maintain a consistent remote control experience
- Don't get the user lost – easy navigation
- Take time to understand focus model and engine



Scene Two

A Live
Studio
Audience

Sneak Preview

Design Practices For

- Cinematic experience
- Many people – far away
- Organized and legible content

Tools To Provide

- Stack views
- Collection views

Immersive

Living Room Experience

Cinematic

- Edge to edge content
- No chrome
- Rely on focus model

Organized

- Legible at distance
- Adjust for content appearing/disappearing
- Reduce words on screen

The Tools

Stack View

THE MARTIAN

DIRECTOR Ridley Scott

STARRING Matt Damon, Jessica Chastain, Kristen Wiig, Jeff Daniels, Michael Peña, Kate Mara, Sean Bean

92% 12+ 2 hr 22 min Sci-Fi & Fantasy 2015 PG-13 CC AD HD

From legendary director Ridley Scott (Alien, Prometheus) comes a gripping tale of human strength and the will to survive. During a mission to Mars, American astronaut Mark Watney (Matt Damon) is presumed dead and left behind. But Watney is still alive. Against all odds, he must find a... [MORE](#)

[Preview](#) [\\$14.99](#) [\\$5.99](#) [Wish List](#)



Viewers Also Watched



Collection Views

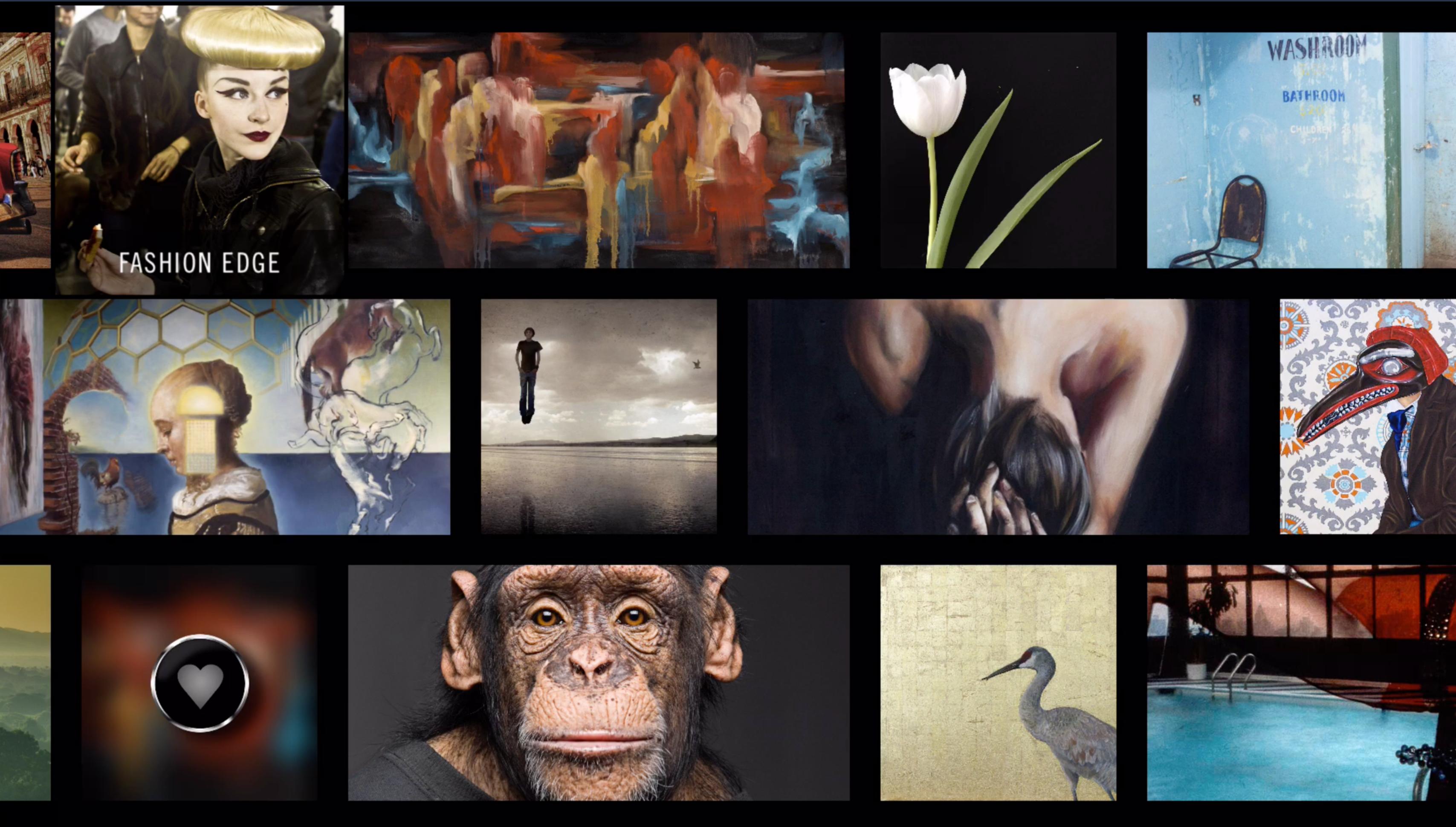
MLB

< Tuesday, Apr 19, 2016 >

NY 11-0 P (6-6) (6-8) ▲ 8th B ● ○ ○ S ○ ○ O ● ●	A's 2-2 NY (6-7) (5-6) ▲ 8th B ○ ○ ○ S ● ● ○ O ● ●	Toronto Blue Jays 4-3 Baltimore Orioles (7-7) (8-3) ▼ 8th B ○ ○ ○ S ○ ○ O ○ ○	CR 1-4 C (8-5) (6-7) ▼ 7th B ● ○ ○ S ○ ○ O ● ●	LA 1-6 A (8-5) (3-9) ▼ 7th B ● ○ ○ S ○ ○ O ● ●
TB 0-0 B (5-7) (6-6) ▲ 8th B ○ ○ ○ S ○ ○ O ○ ○	W 7-0 M (9-3) (4-7) ▼ 8th B ● ○ ○ S ● ● ○ O ● ●	D 2-8 KC (7-4) (8-4) ▲ 7th B ○ ○ ○ S ○ ○ O ● ●	Houston Astros 2-4 T (5-8) (7-6) End 3rd B ○ ○ ○ S ○ ○ O ● ●	A 0-2 S (6-7) (8-5) ▼ 4th B ● ○ ○ S ○ ○ O ● ●
Cubs 2-1 St. Louis Cardinals (10-3) (7-6) ▲ 4th B ● ● ● S ○ ○ O ● ●	P @ SD (7-6) 9:10 PM CT (4-9) SD Rea (0-1, 5.56) PIT Liriano, F (1-0, 2.45)	A @ SF (6-8) 9:15 PM CT (7-7) SF Cain, M (0-1, 6.75) ARI Ray (0-0, 2.92)	Milwaukee Brewers 6-5 T (6-8) Final (4-10) W Thornburg (2-0, 4.26) L Jepsen (0-3, 4.05) SV Jeffress (5)	Seattle Mariners 2-3 C (5-8) Final (6-5) W Carrasco (2-0, 2.79) L Miley (0-2, 8.04) SV Allen (4)

Free Game Of The Day

Collection Views



Scene Two

Recap

- Provide “Living Room Experience”
- Immersive, cinematic – edge-to-edge content, no chrome
- Easy to read and understand from a distance
- Adjust for content appearing and disappearing
- Stack Views – Auto Layout’s helper
- Collection Views - Grid organization

closing Credits



C# in the Living Room

Recap

- New generation of hardware and remote
- New tvOS and two ways to write apps
- Traditional apps – UIKit based
- User do not interact directly – rely on focus model
- Make interactions obvious and intuitive
- Immersive and organized layouts



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