

## IMMERSIVE SDK WEBINAR

Unlock your creative potential within immersive experiences using our  
Unity SDK in UNITY, and uploading into Discovery Studio



**immersive**  
interactive  
BESPOKE++

Presented by Chris Porter and Nelson Teixeira

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#### Note:

- For more information on any topic, please check our documentation
- Key points to be signposted





# OVERVIEW

For additional support:

- Please join us in our Discord channel: Immersive Interactive SDK-HELP (<https://discord.gg/8DjhdjEk>)
- Email us [sdk@immersive.co.uk](mailto:sdk@immersive.co.uk)
- Go to our documentation archives <https://immersiveuk.github.io/Core-SDK-2/>

# OVERVIEW

## About this webinar

- Who is this webinar for?
- What level do you need to have as developer prior?
- Definition of a Software Development Kit (SDK)
- Why utilising a SDK?
- Terms and conditions
- Documentation (here to help)

<https://immersiveuk.github.io/Core-SDK-2/>



# GETTING STARTED

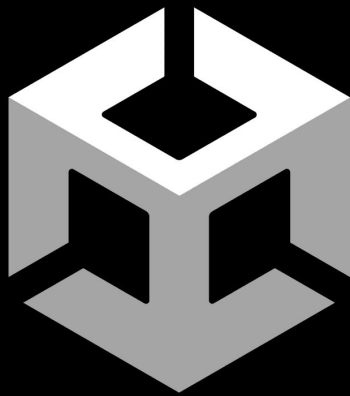
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# GETTING STARTED

## Installing UNITY

- Unity is our most reliable development engine
- Unity has been one of the most relevant game engines since its appearance in 2005



# Unity

# GETTING STARTED

## Installing UNITY

Here are some of the best games examples developed in Unity:  
Beat Saber, Hollow Knight, Outer Wilds, Crossy Road, Monument Valley, Pokemon Go, Ori the blind forest, Untitled Goose Game, etc.

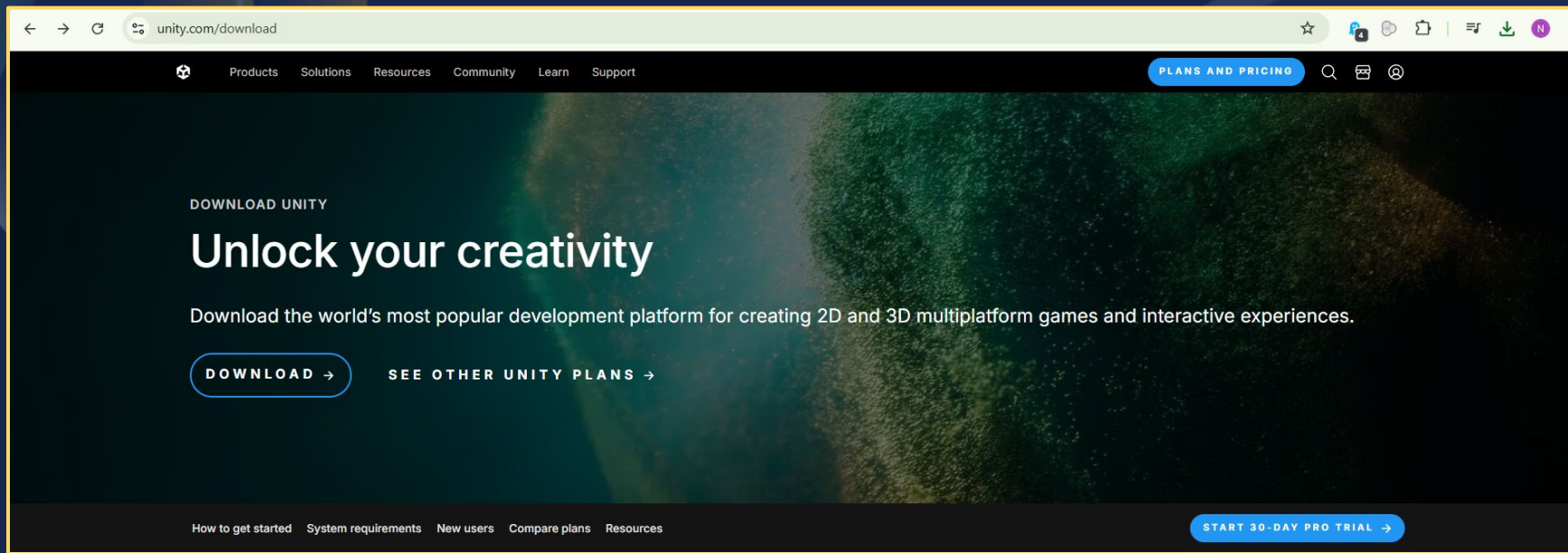




# GETTING STARTED

## Installing UNITY

- Get your own copy ([unity.com/download](https://unity.com/download))
- Recommended Version 2021.3.2





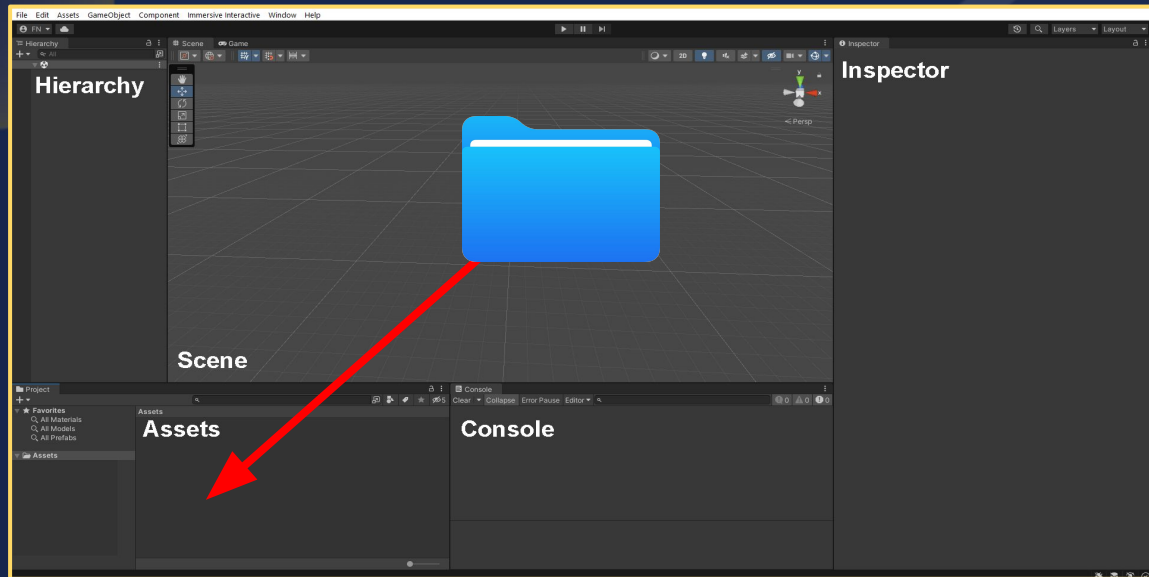
# GETTING STARTED

## Installing Immersive Interactive SDK

### IMMERSIVE AUTHENTICATION

- Download and add the authentication package to a new Unity Project
- Drag and drop the Immersive\_Authentication.unitypackage file into your

Assets folder

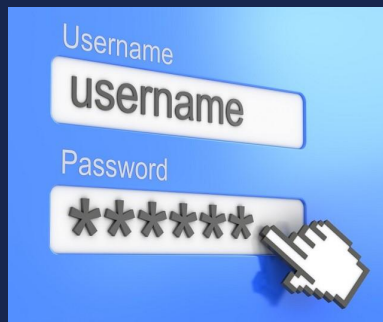
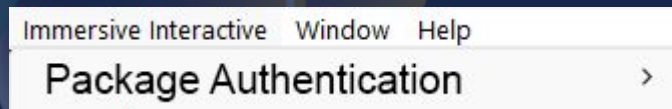


# GETTING STARTED

## Installing Immersive Interactive SDK

### IMMERSIVE AUTHENTICATION

- Go to: Menu/Immersive Interactive/Package Authentication/Setup
- Once you have logged in, it will set up the package manager automatically for you.

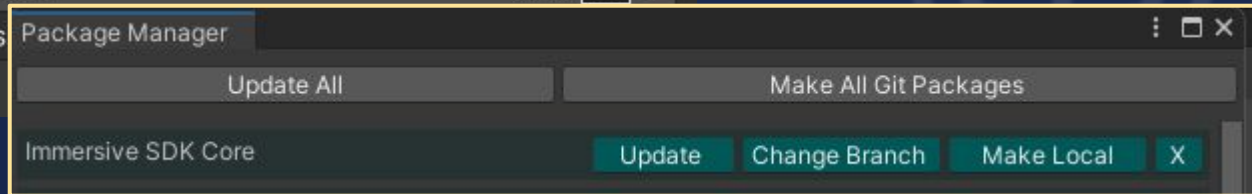
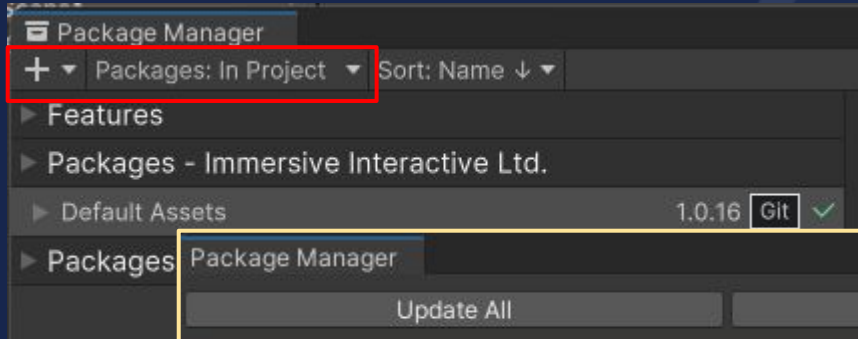
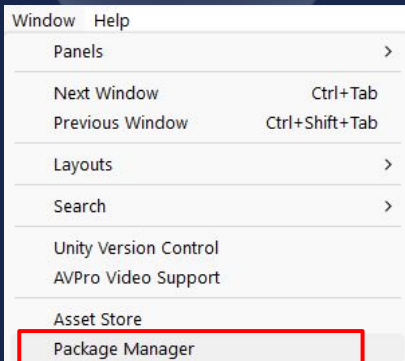


# GETTING STARTED

## Installing Immersive Interactive SDK

### IMMERSIVE AUTHENTICATION

- Go to: Menu/Package Manager
- Next to the plus button on the top-left of the package manager, you should be able to select "My Registries" from the drop-down menu.
- There should be a selection of packages under the "Immersive Interactive Ltd. banner". Select "Immersive SDK Core", and install it.
- The Unity Package Manager should automatically install the Unity and Immersive packages Core needed.



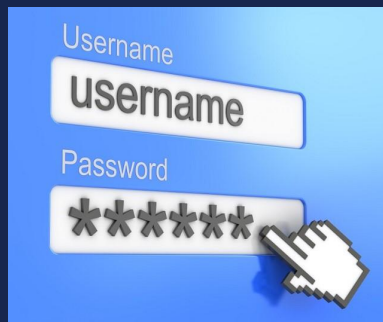
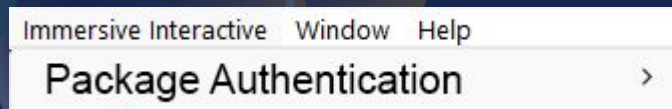
# GETTING STARTED

## Installing Immersive Interactive SDK

### CHANGE PASSWORD:

If this is your first time signing in, use the credentials provided to you and change your password

Go to: Menu/Immersive Interactive/Package Authentication/Change Password





# SETTINGS

For additional support:

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# SETTINGS

## Types of settings

IMMERSIVE MANAGER SETTINGS (affect the current UNITY scene only)(defb.)

- Custom aspect ratio
- ☞ • Camera settings
- Input handling
- Add camera configurations

EXPERIENCE SETTINGS (affects entire experience)(defb.)

- Allow 360 rotation
- Show flat view zoom

RUNTIME SETTINGS (describes the physical space)(affects entire experience)

- Desktop Runtime Settings
- Testing Using Batch Files
- Run Shortcuts

SIMULATOR SETTINGS (how the experience is seen in UNITY)(is a runtime setting just in the editor)

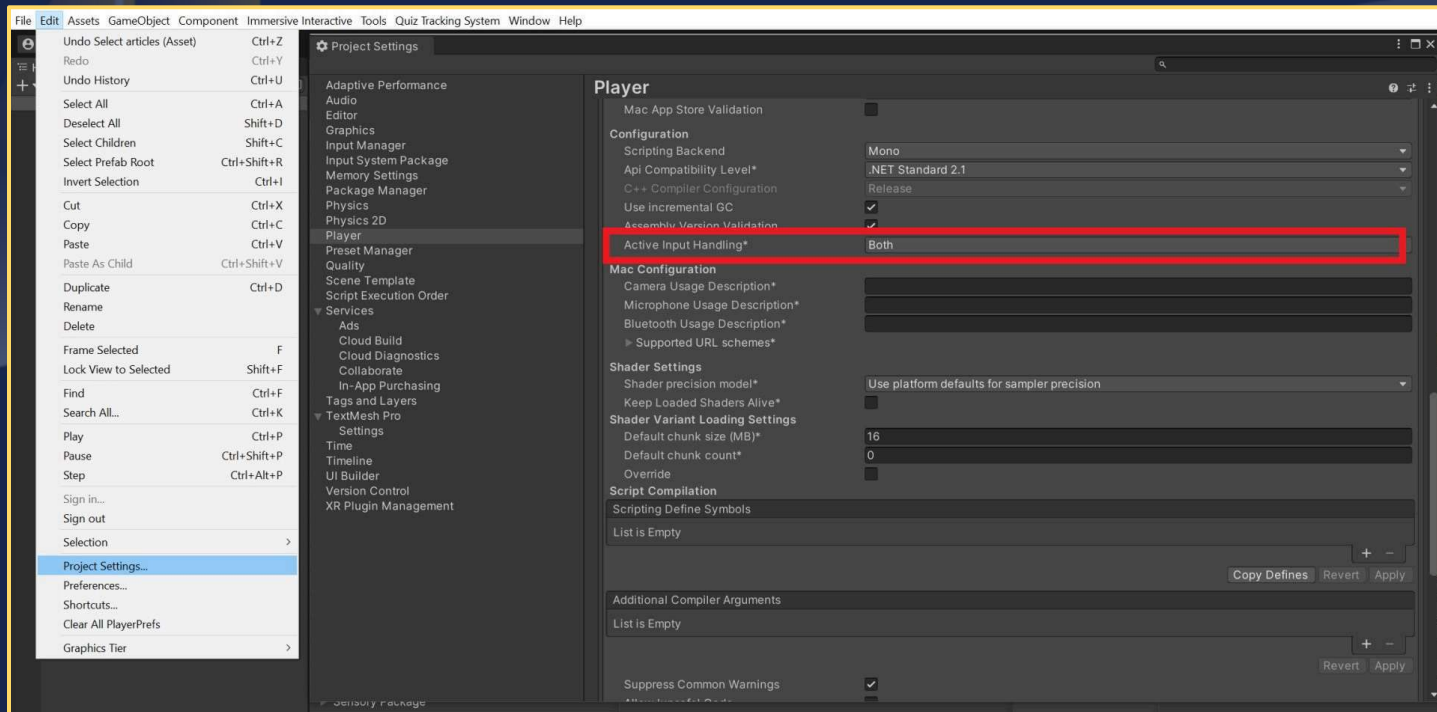
- ☞ • Display mode
- ☞ • Active walls
- Aspect ratio
- ☞ • Room shape
- Screen height
- Debug settings
- Content Area Guide (CAG)



# SETTINGS

## UNITY / project setup

- Activate input handling (set to both)

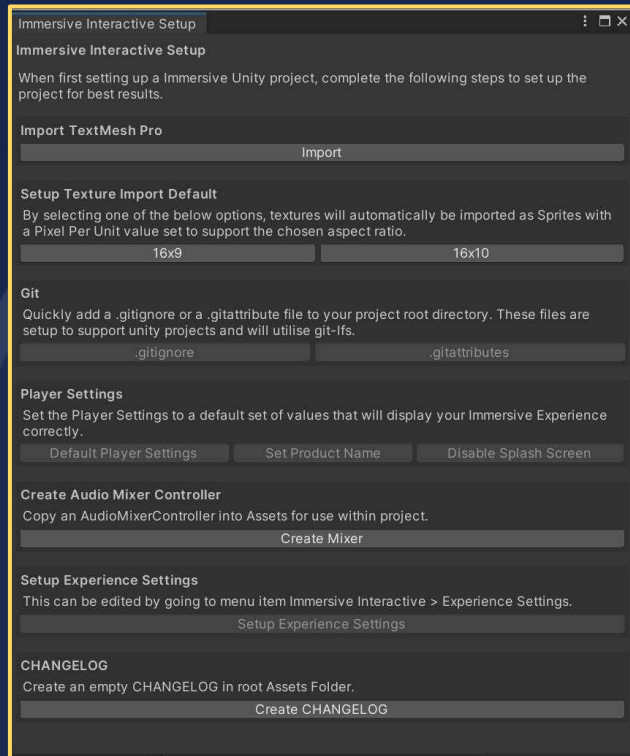
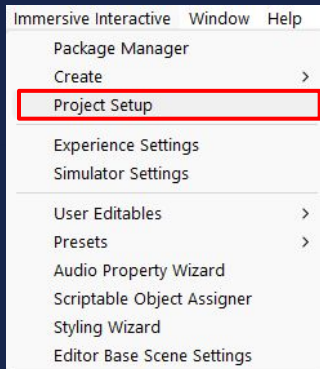


# SETTINGS

## Immersive Interactive / project setup



- Import Text Mesh Pro
- 16x9 aspect ratio
- GitHub (optional)
- Player settings (default)
- Creating audio mixer controller
- Setup experience settings
- Setup texture import default
- Changelog (optional).



# SETTINGS

## Immersive scenes

CREATING AN IMMERSIVE BASIC SCENE IN UNITY

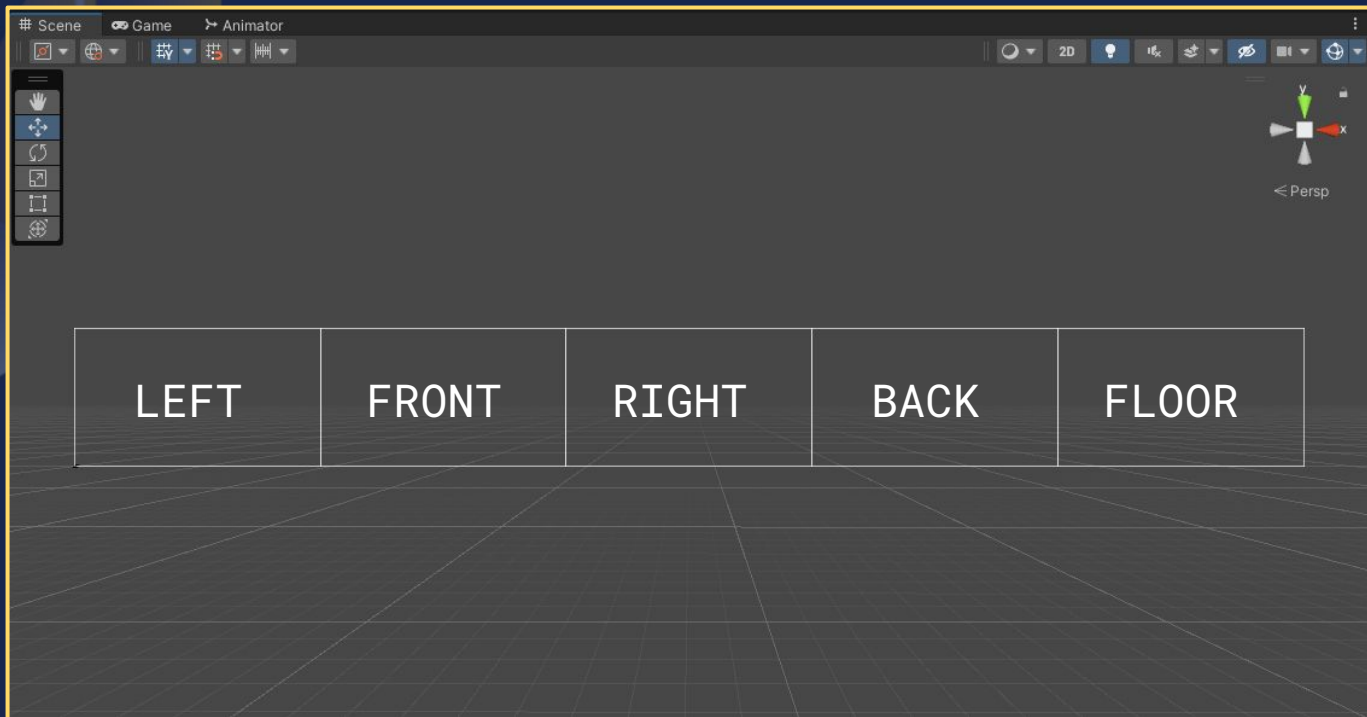
ANATOMY OF THE IMMERSIVE SCENES

- UI system
- Stage
- 👉 • Immersive manager

# SETTINGS

## UI System

- Canvas





# SETTINGS

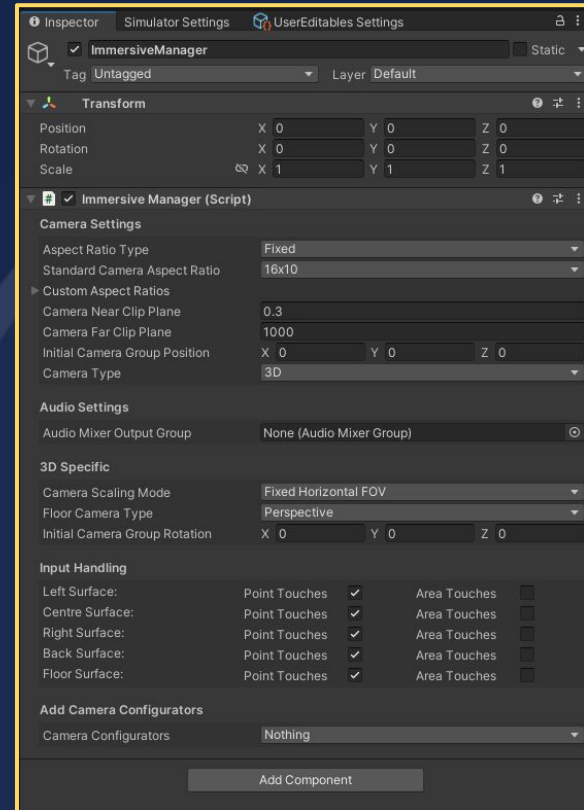
## Immersive manager settings

### IMMERSIVE MANAGER KEY POINTS:

- > Located in the hierarchy
- It regulates and controls only the current scene
- Every Immersive scene has their own Immersive manager

### REGULATES:

- Camera settings
- Camera type
- 2D specific
- Input handling
- Custom aspect ratio
- Add camera configuration



# SETTINGS

## 2D and 3D scenes key characteristics

### 2D SCENES:

- Flat panoramic video backgrounds
- 2D graphic resources (banners, icons, logos, etc.)
- 2D animated objects
- **Interactive objects**
- UI gameobjects (buttons, etc)

### 3D SCENES:

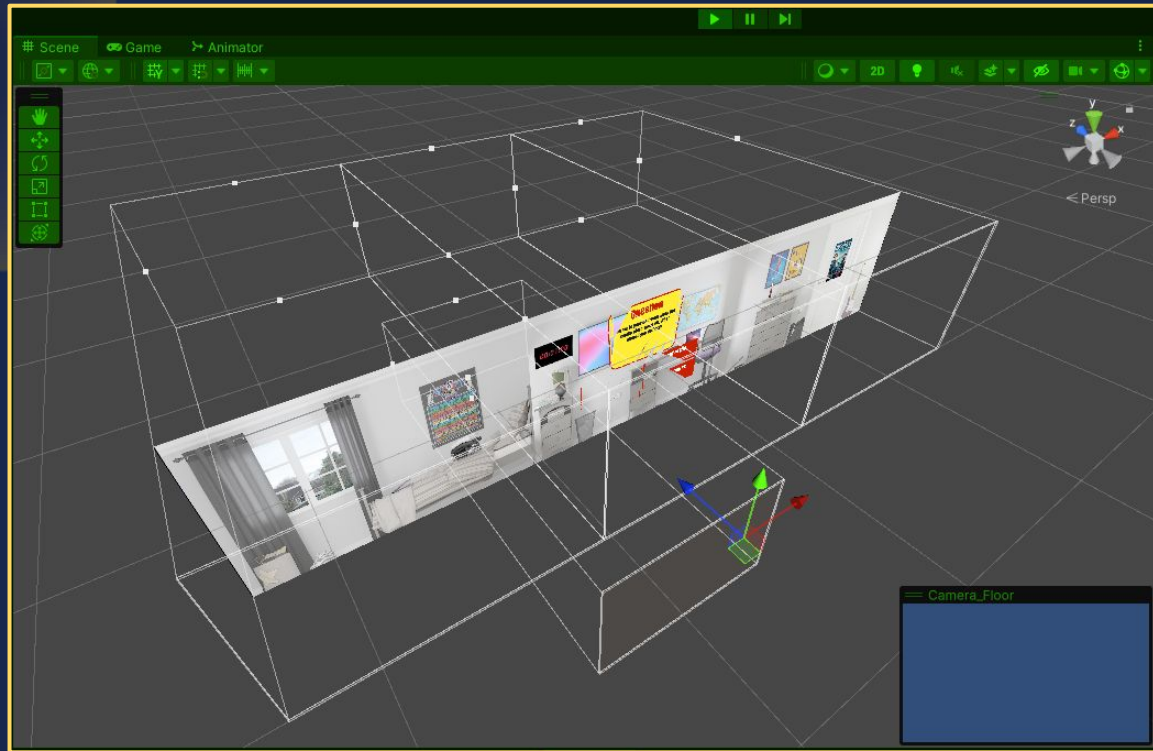
- 3D models (animated or not)
- 360 backgrounds
- Walk-through
- Topography and scenarios
- **Interactive objects**
- UI gameobjects (buttons, etc)



# SETTINGS

## 2D and 3D scenes key characteristics

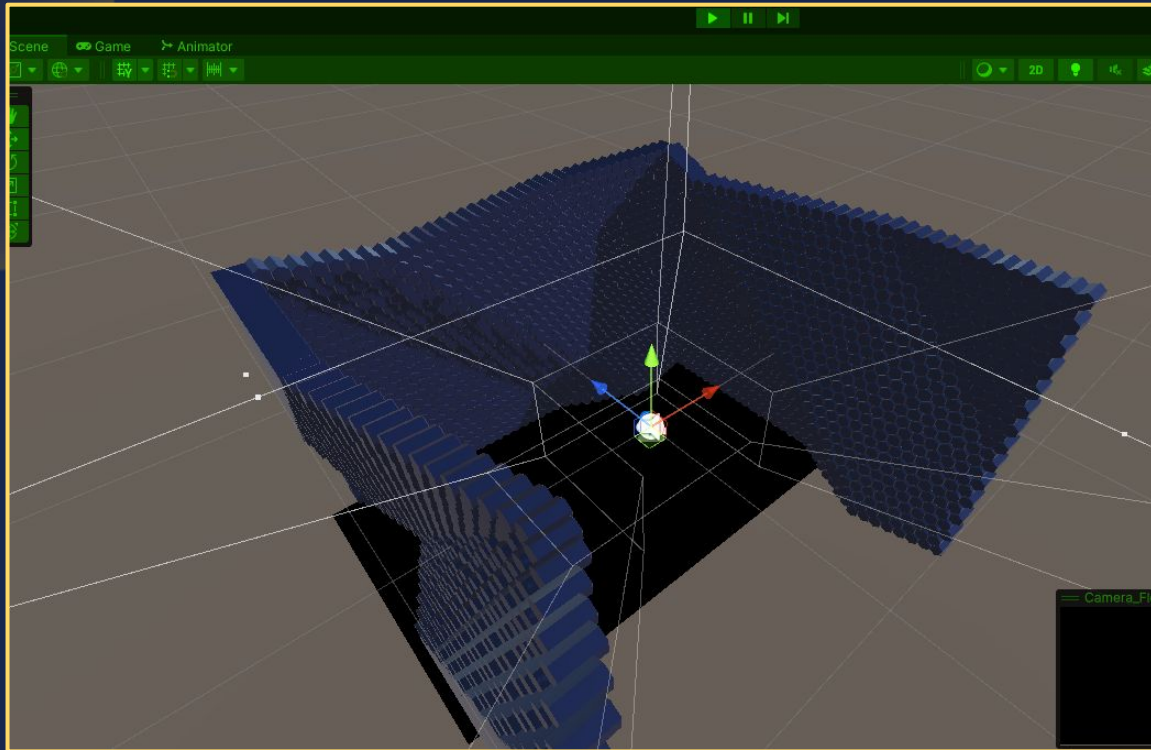
- 2D scene example (and camera layout)



# SETTINGS

## 2D and 3D scenes key characteristics

- 3D scene example (and camera layout)





# SETTINGS

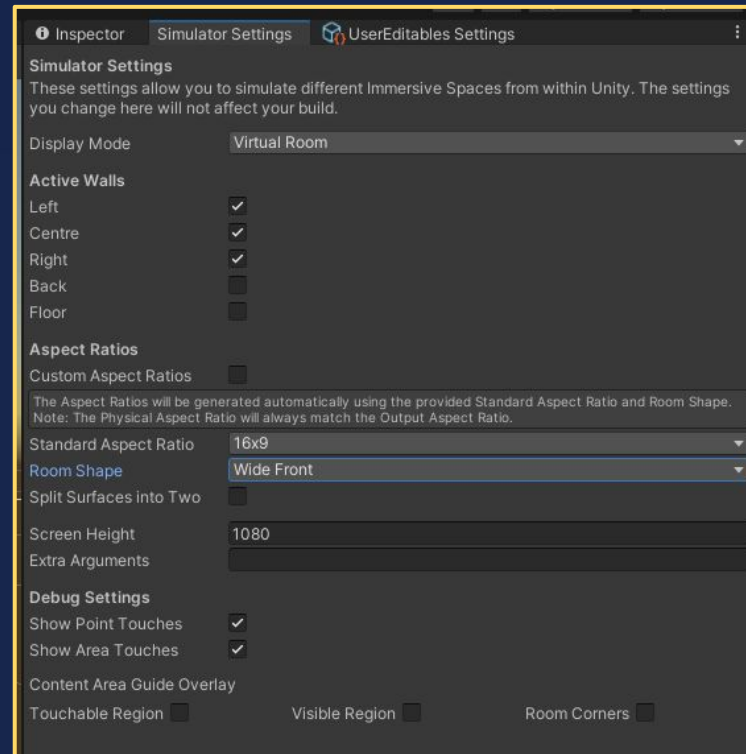
## Simulator settings

### SIMULATOR SETTINGS KEY POINTS:

- >Immersive Interactive / Simulator Settings
- How the experience is seen in UNITY
- It is a type of runtime setting but just in the editor

### REGULATES:

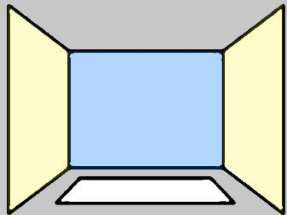
- Display mode
- Active walls
- Aspect ratio
- ☞ • Room shape
- Screen height
- Debug settings
- Content Area Guide (CAG)



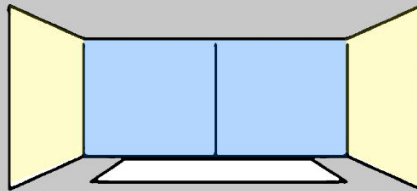
# SETTINGS

## Simulator settings

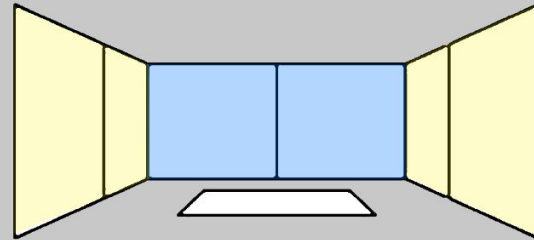
👉 • Room shape



Standard Room



Wide Front Room



Wide Room

# SETTINGS

## Simulator settings

- 👉 Aspect ratio (a standard A.R. can be 16x10, 16x9 and 4x3)

Output A.R. 1.6



Left Wall  
Output A.R. 1.6  
Render A.R. 1.6

Output A.R. 1.6



Centre Wall  
Output A.R. 1.6  
Render A.R. 2.0

Output A.R. 2.0



Right Wall  
Output A.R. 2.0  
Render A.R. 1.6



# SETTINGS

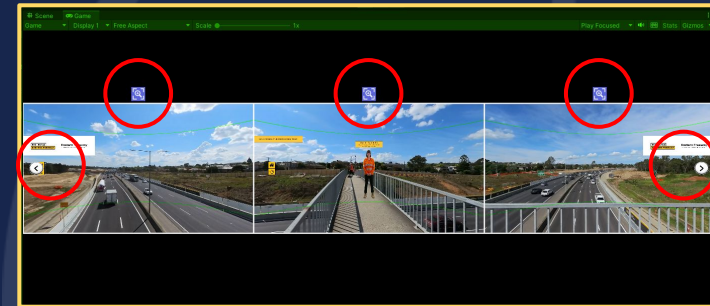
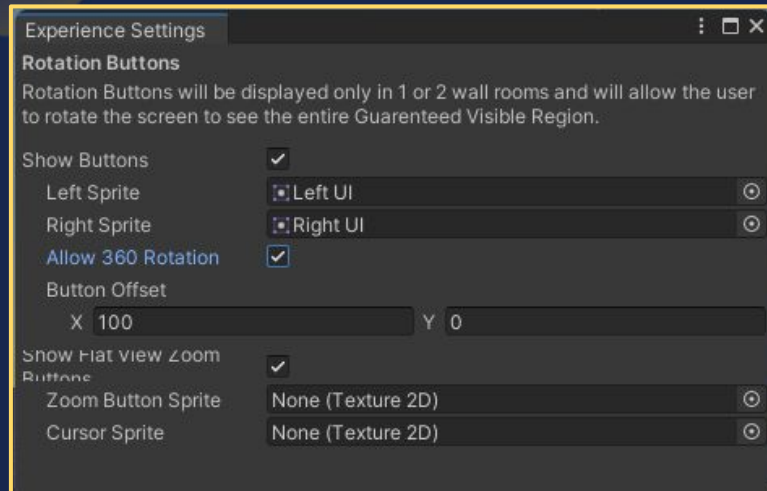
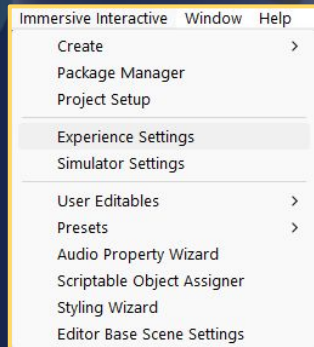
## Experience settings

### EXPERIENCE SETTINGS KEY POINTS:

- >Immersive Interactive/Experience Settings
- It affect the entire experience

### REGULATES:

- Allow 360 rotation
- Show flat view zoom buttons







# SETTINGS

## Runtime settings

### RUNTIME SETTINGS KEY POINTS:

- It's automatically generated when building your project
- Describes the physical space (the immersive room)
- Its scope covers the entire experience
- Simulator settings is also a type of runtime settings (just for the editor)

### REGULATES:

- Desktop Runtime Settings
- Testing Using Batch Files
- Run Shortcuts

# SETTINGS

## Runtime settings

### • Desktop Runtime Settings

The following runtime arguments can be used to control the Runtime Settings:

- layout
  - **Required**
  - This is a number which defines what surfaces are present in the space. Left Surface = 1, Centre Surface = 2, Right Surface = 4, Back Surface = 8, Floor = 16. To combine surfaces add the numbers together. For example, 7 represents a Space with Left, Centre and Right walls.
  - eg. -layout=7
- surfaces
  - **Required**
  - This is an array of the resolution of each surface. The format is [x,y,width,height]. The first element corresponds to the first surface in the layout defined by the order above. The second element corresponds to the second surface in the layout and so on.
  - eg. -surfaces="[0,0,1920,1080][1920,0,1920,1080][3840,0,1920,1080]"
- debug
  - Point and Area touches will display a touch marker.
  - eg. -debug=true
- debuginteraction
  - Similar to debug however allows you to enable Point and Area touch debug independently.
  - Value should be two "|" separated boolean values. Element 1 enables Point Touch debug, and element 2 enables Area Touch debug.
  - eg. -debuginteraction=true|false
    - Point Touches are displayed but Area Touches are not.
- displayMode
  - Allows you to force the application into either Virtual Room or Flat View.
  - Values can be VirtualRoom or FlatView.
  - eg. -displayMode=FlatView.

- physicalAspectRatios
  - Allows you to define the Physical Aspect Ratios for each surface.
  - See Aspect Ratios (Aspect%20Ratios.html) for further information.
  - Value should be a series of comma separated floats. One for each surface.
  - If not supplied the Physical Aspect Ratios are calculated automatically from the surfaces argument.
  - eg. -physicalAspectRatios=1.7,1.57,1.65
- forceDynamicWallAspectRatio
  - Force walls to render out at the Physical Aspect Ratio.
  - See Aspect Ratios (Aspect%20Ratios.html) for further information.
  - eg. -forceDynamicWallAspectRatio=true
- forceDynamicFloorAspectRatio
  - Force floor to render out at the Physical Aspect Ratio.
  - See Aspect Ratios (Aspect%20Ratios.html) for further information.
  - eg. -forceDynamicFloorAspectRatio=true
- surfaceDivisions
  - Allows you to subdivide surfaces into multiple divisions.
  - Dynamically placed objects such as PopUps will then be placed between Surface Divisions.
  - Usecase: Octagonal Immersive Space.
  - Value should be an int array with a number of divisions corresponding to each surface.
  - eg. -surfaceDivisions=1,2,1

# SETTINGS

## Runtime settings

- Testing Using Batch Files

Example.

```
"..\..\Immersive Application.exe" -layout="7" -surfaces="[0,0,1920,1080][1920,0,1920,1080]  
[3840,0,1920,1080]" -popupwindow
```

Note: It is recommended to add the `-popupwindow` argument for best results.

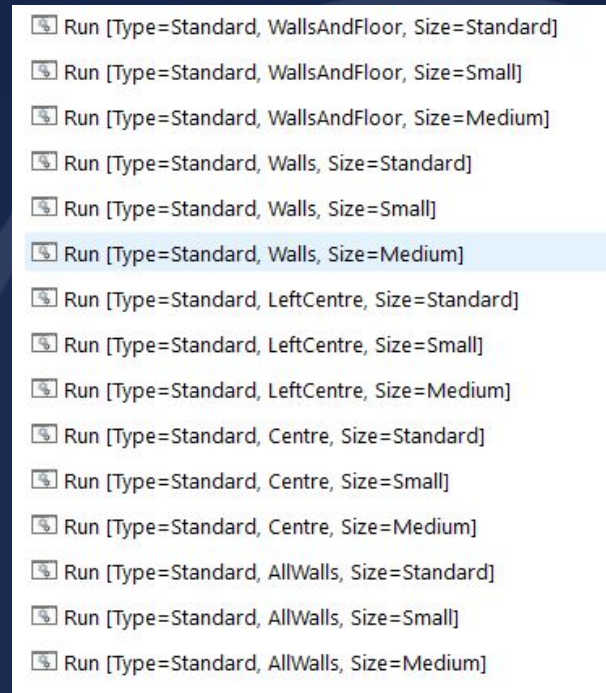
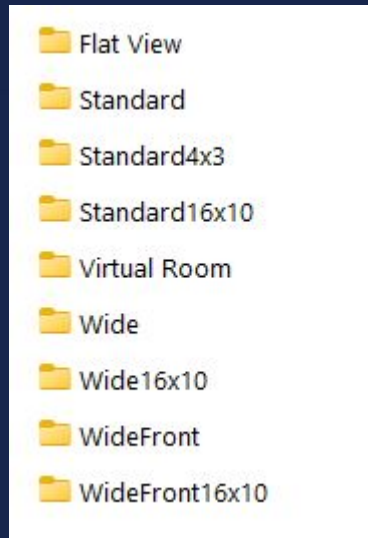
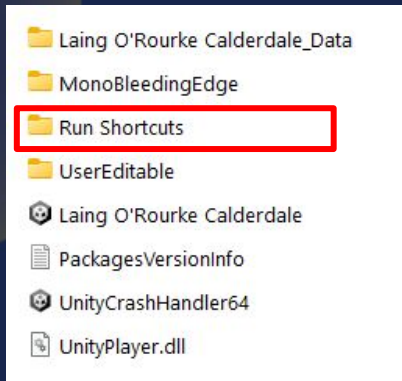
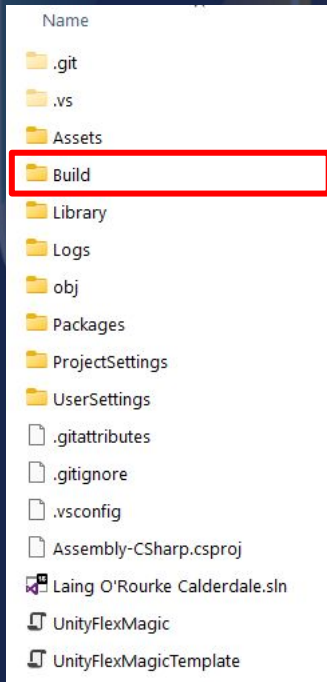
```
"..\..\Laing O'Rourke EBTA Musculoskeletal.exe" -layout="15" -  
surfaces="[0,0,480,270][480,0,480,270][960,0,480,270]  
[1440,0,480,270]" -popupwindow
```

```
"..\..\Laing O'Rourke EBTA Musculoskeletal.exe" -layout="2" -  
surfaces="[0,0,480,270]" -popupwindow
```

# SETTINGS

## Runtime settings

- Run Shortcuts





# INTERACTION AND INPUT

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# INTERACTION AND INPUT

## Types of interaction

👉 POINT TOUCHES AND AREA TOUCHES

### SCRIPT

- 👉 • Interactive objects
- Advanced Events based interactions

### UI SYSTEM

- Buttons

### CONSOLE CONTROLLER

- Adding a controller

### KEYBOARD

- Getkey



# INTERACTION AND INPUT

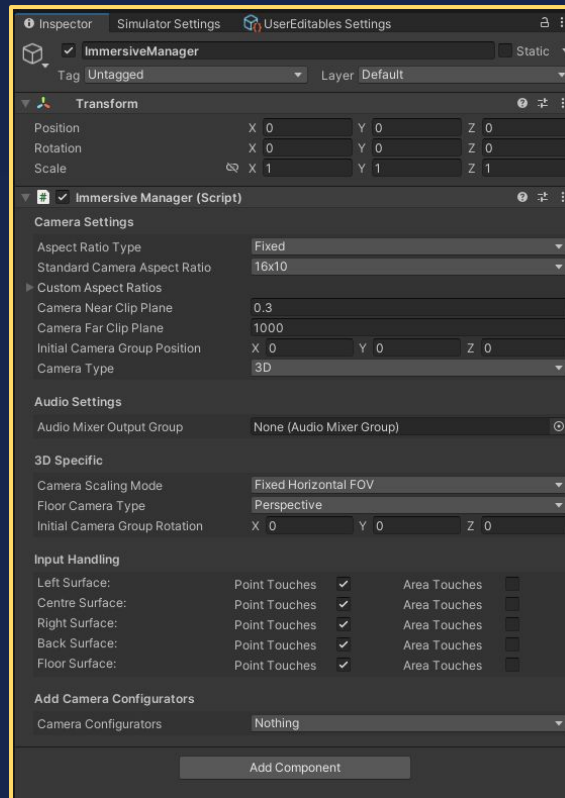
## Point touches

### AREA TOUCHES:

- Physics (Geometry)
- Particle systems
- Scatter games

### POINT TOUCHES:

- Single points
- Buttons (Hotspots)
- Every other interactive component



# INTERACTION AND INPUT Script

## INTERACTIVE OBJECTS BASE KEY POINTS:

- It requires a collider
- It is added to the game object as component
- The key method is the Tap.

```
using Immersive.Input;
using Immersive.Interactive;
using UnityEngine;

public class InteractiveObjectExample : InteractiveObjectBase
{
    public override void OnEnter()
    {
        Debug.Log("On Enter");
    }

    public override void OnExit()
    {
        Debug.Log("On Exit");
    }

    public override void Tap(TapInput tapInput)
    {
        Debug.Log("On Tap");
    }
}
```

# INTERACTION AND INPUT Script

## ADVANCED INTERACTION

You can also get more specific data such as: where was the touch, coordinates, touch in progress, touch finished, surface, etc.

```
using Immersive.Input;
using UnityEngine;

public class AdvancedInteractionExample : MonoBehaviour
{
    private void Start()
    {
        InputController.SurfaceTouchedEventHandler += OnSurfaceTouched;
    }

    private void OnDestroy()
    {
        InputController.SurfaceTouchedEventHandler -= OnSurfaceTouched;
    }

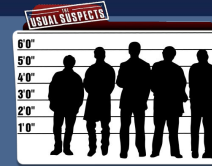
    private void OnSurfaceTouched(object sender, SurfaceTouchedEventArgs touch)
    {
        switch (touch.Phase)
        {
            case InputPhase.Start:
                Debug.Log($"Touch Started: ID = {touch.TouchId}, Surface = {touch.TouchedSurfaceLocation}, Viewport Position = {touch.ViewportPosition}");
                break;

            case InputPhase.InProgress:
                Debug.Log($"Touch In Progress: ID = {touch.TouchId}, Surface = {touch.TouchedSurfaceLocation}, Viewport Position = {touch.ViewportPosition}");
                break;

            case InputPhase.Finished:
                Debug.Log($"Touch Finished: ID = {touch.TouchId}, Surface = {touch.TouchedSurfaceLocation}, Viewport Position = {touch.ViewportPosition}");
                break;
        }
    }
}
```

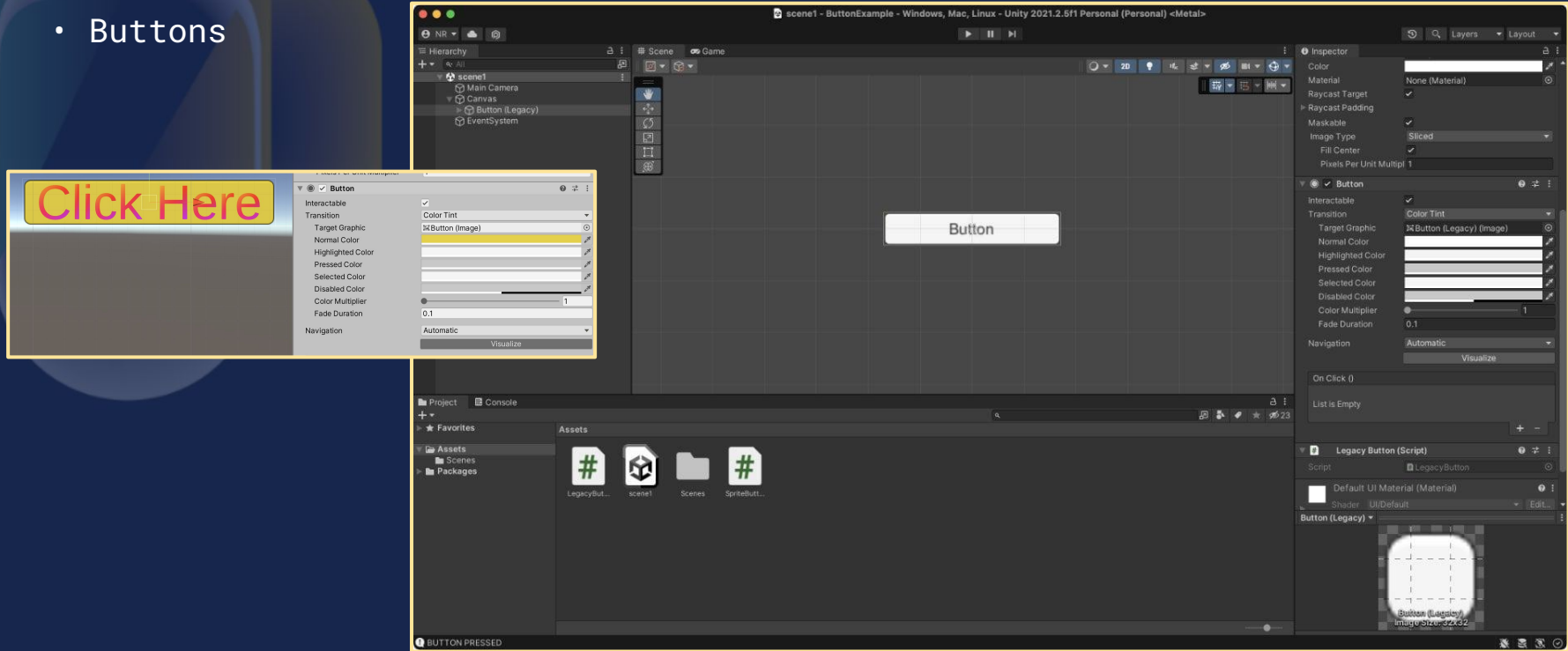
# INTERACTION AND INPUT

## UI System



Please check UNITY's  
documentation

- Buttons



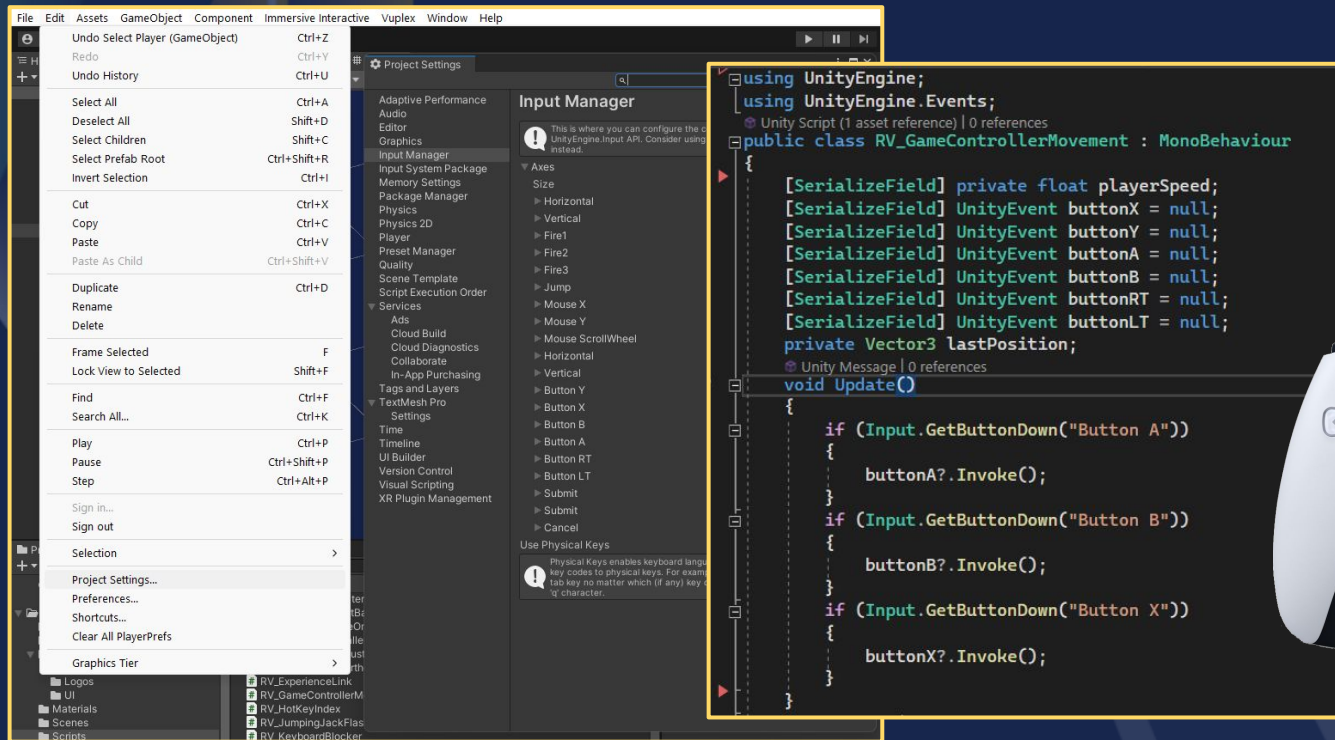
# INTERACTION AND INPUT

## Console controller



Please check UNITY's  
documentation

- Adding a controller



# INTERACTION AND INPUT

## Keyboard



Please check UNITY's  
documentation

- GetKeyUp
- GetKeyDown
- Getkey

```
//Jumping Part (graunded variable controled in diferent script)
//First Part Is to play squish animation when you press the butten
if (Input.GetKeyDown("w") & graunded == true)
{
    print("Down");
    Animat.Play("Jump-Squish");
}
//Second part is to jump and play the up part of the animation
if (Input.GetKeyUp("w") & graunded == true)
{
    print("Up");
    Animat.Play("Jump-Up");
    RigBod2D.AddForce(new Vector2(0, JumpForce), ForceMode2D.Impulse);
}
```



# BUILDING AND DEVELOPMENT

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# BUILDING AND DEPLOYMENT

From build to publish

## BUILDING IN UNITY

- Add all your scenes
- Make sure the scene order is correct
- Select your target platform

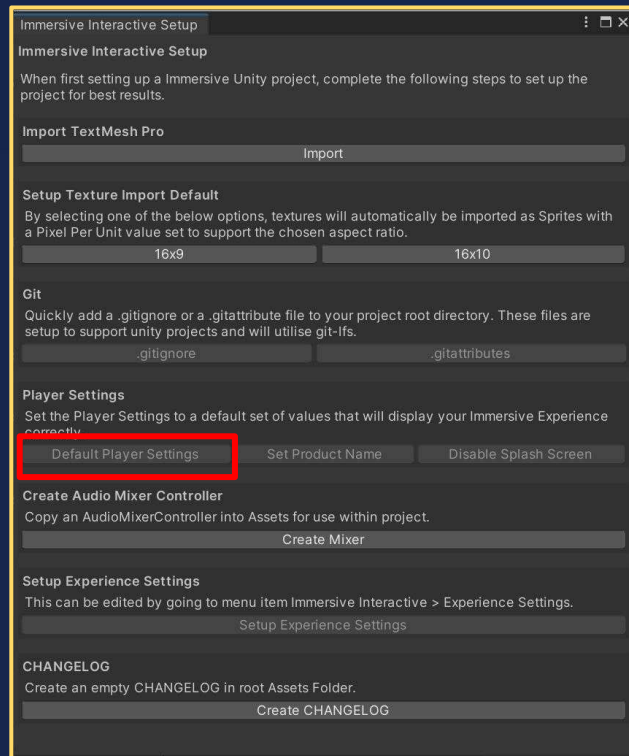
## UPLOADING INTO IMMERSIVE STUDIO

- Zip your build files
- Create a new experience
- Fill in all the basic data
- Use the “Media” tab
- Drag the “Package” component
- Browse your Zip file
- Enter the correct name of the “.exe” file
- Safe

# BUILDING AND DEPLOYMENT

## Building in UNITY

- Add all your scenes
- Make sure the scene order is correct
- Select target platform “Windows standalone”
- Make sure default setting is on.



# BUILDING AND DEPLOYMENT

## Uploading into Immersive Studio

- Zip your build files
- Create a new experience
- Fill in all the basic data
- Use the “Media” tab
- Drag the “Package” component
- Browse your Zip file
- Enter the correct name of the “.exe” file
- Safe

# BUILDING AND DEPLOYMENT

## Uploading into Immersive Studio

### WHERE CAN I SEE MY IMMERSIVE EXPERIENCE?

- Go to your immersive room (synchronise)
- Use the Immersive desktop app
- Use the “run shortcuts” in the runtime

settings section (for more detail, please check our documentation)



# SUPPORT AND DOCUMENTATION

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# SUPPORT AND DOCUMENTATION

## Useful links

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or email us [sdk@immersive.co.uk](mailto:sdk@immersive.co.uk)



...and all the Developers: Chris, Luke, Liam,  
Vijay, Esther, Nelson (The guy talking)

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# QUESTIONS AND ANSWERS

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