Setup

- Unity 2019.4, choose between the Legacy installation or the XR Plugin Management setup.
- Unity 2020 and beyond, XR Plugin Management is the only option.
- Choose between OpenXR or SteamVR for PC targeting.
- After Setup read through Demonstration Scenes.
- Detail docs @ https://www.cloudwalkingames.com

Unity 2019.4 Legacy Oculus and OpenVR

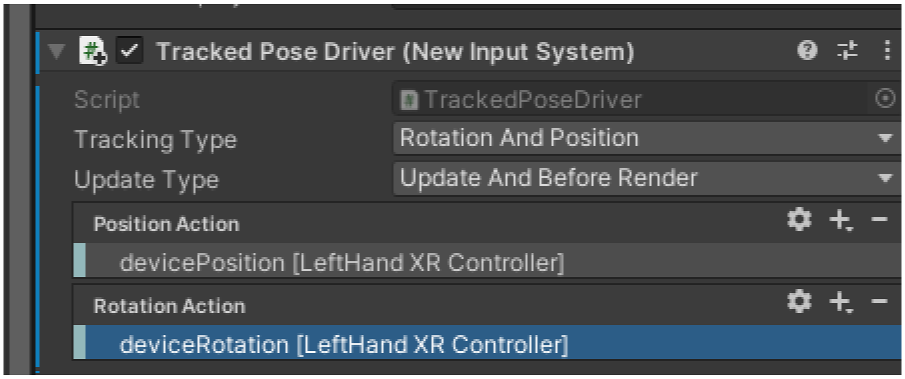
1. Import the HurricaneVR Asset from the Package Manager.
2. Install the following packages depending on your desired target platforms.
    1. Oculus Desktop
    2. OpenVR Desktop
        1. Follow the SteamVR setup steps below.
    3. Oculus Android (for Quest builds)
        1. You will get a black screen in Quest build if you don't install this package.
3. Locate XR Settings In Edit → Project Settings → Player, and make sure Virtual Reality Supported is Checked.
    1. Make sure your desired Virtual Reality SDK in priority order under Virtual Reality SDKs (populated after installing from step 2)
4. Install Package “XR Legacy Input Helpers". This contains the tracked pose driver components.
5. TextMesh Pro (install or update to the latest)

XR Plugin Management

1. Import the HurricaneVR Asset from the Package Manager
2. Install the following packages from the Package Manager depending on your target platforms.
    1. XR Plugin Management
    2. Oculus XR Plugin
    3. Windows XR Plugin
    4. OpenXR Plugin (2020.2+)
    5. SteamVR Plugin (from the asset store)
        1. The recent version of this asset installs the OpenVR XR Plugin Loader.
        2. Follow the SteamVR setup steps below.
    6. TextMesh Pro (install or update to the latest version)
3. Enable the Plug-in Providers under ProjectSettings - XR Plugin-Management

OpenXR Setup

1. Import the HurricaneVR Asset from the Package Manager
2. Install the following packages from the Package Manager depending on your target platforms.
    1. XR Plugin Management
    2. OpenXR Plugin (2020.2+)
    3. TextMesh Pro (install or update to the latest version)
3. Watch Valem's tutorial to learn more about OpenXR setup process here.
4. Locate the (LeftController, RightController) Objects under the player rig and remove the Legacy 'Tracked Pose Driver' Components
5. Add the new 'Tracked Pose Driver (New Input System) component to each object.
    1. Choose the correct bindings for the controller (left or right), position and rotation.



Tracked Pose Driver (New Input System)

Script: TrackedPoseDriver
Tracking Type: Rotation And Position
Update Type: Update And Before Render

Position Action
devicePosition [LeftHand XR Controller]

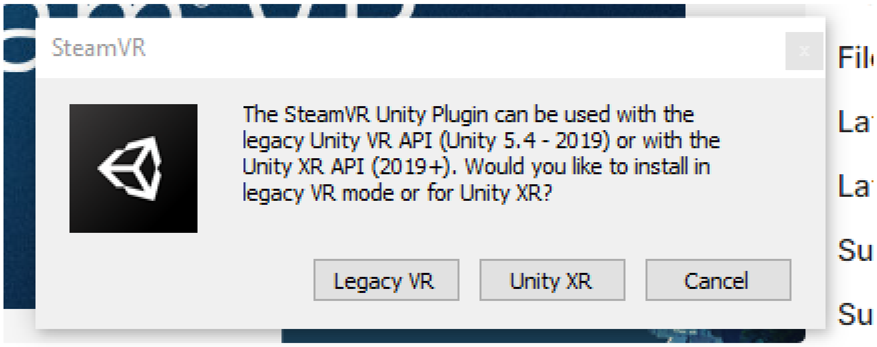
Rotation Action
deviceRotation [LeftHand XR Controller]

SteamVR Installation

Download and import the SteamVR Plugin from the Unity store.

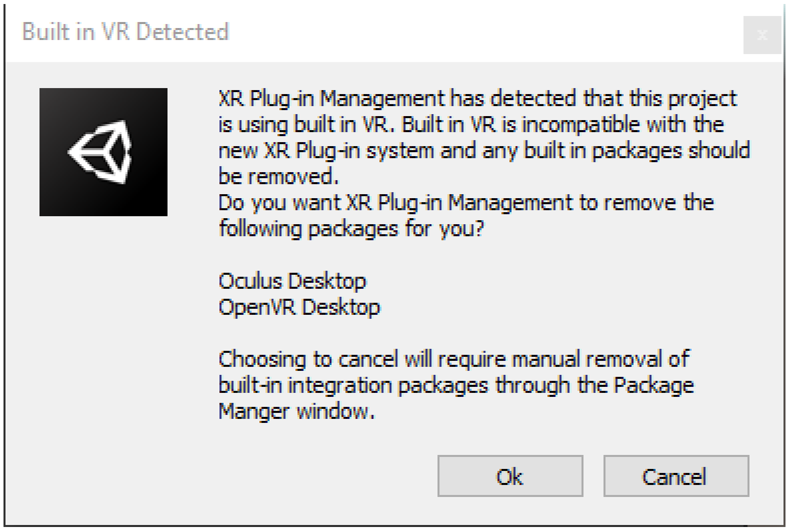
Unity 2019 Caveat

Because 2019 has access to Legacy and XR Plugin Management, you may receive this prompt after you import the plugin. At this point you can decide whether to remain with Legacy OpenVR or update to XR Plugin (OpenVR)



The SteamVR Unity Plugin can be used with the legacy Unity VR API (Unity 5.4 - 2019) or with the Unity XR API (2019+). Would you like to install in legacy VR mode or for Unity XR?

If you decide to convert to XR Plugin and receive this prompt, be sure to press Ok so that it will clean out the Legacy packages for you, if you fail to do so then you must remove the old packages manually.



XR Plug-in Management has detected that this project is using built in VR. Built in VR is incompatible with the new XR Plug-in system and any built in packages should be removed.
Do you want XR Plug-in Management to remove the following packages for you?

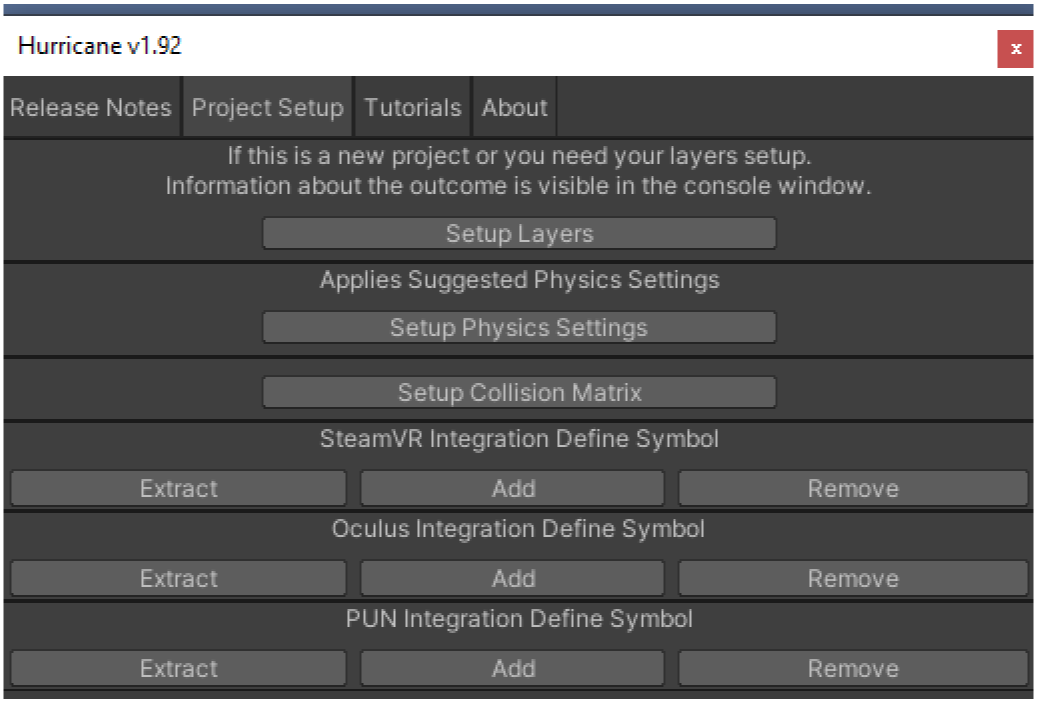
Oculus Desktop
OpenVR Desktop

Choosing to cancel will require manual removal of built-in integration packages through the Package Manger window.

Setup

1. Extract the SteamVR Integration located at /HurricaneVR/Framework/Integrations.
2. Press “Import” when prompted to import the Partial Input binding for ‘HVR’. If a second option comes up, choose “Replace”, not “Merge”

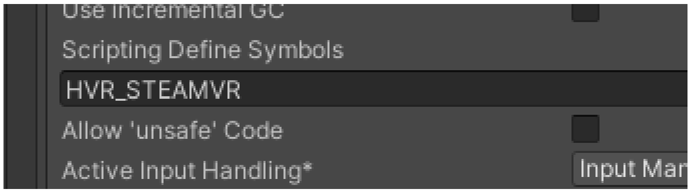
3. The SteamVR Input window should present itself, if not open this window via your toolbar at : Window → SteamVR Input
4. At the bottom of the SteamVR Input window, locate and press the “Save and generate” button.
5. Add HVR_STEAMVR to your project setting scripting define symbols or by using Tools → HurricaneVR → Setup (v1.9+)
    1. Wait a moment as the imported code becomes compiled.



If this is a new project or you need your layers setup.
Information about the outcome is visible in the console window.

Applies Suggested Physics Settings

Setup Physics Settings
Setup Collision Matrix
SteamVR Integration Define Symbol
Extract
Add
Remove
Oculus Integration Define Symbol
Extract
Add
Remove
PUN Integration Define Symbol
Extract
Add
Remove



Use Incremental GC □

Scripting Define Symbols

HVR_STEAMVR

Allow 'unsafe' Code □

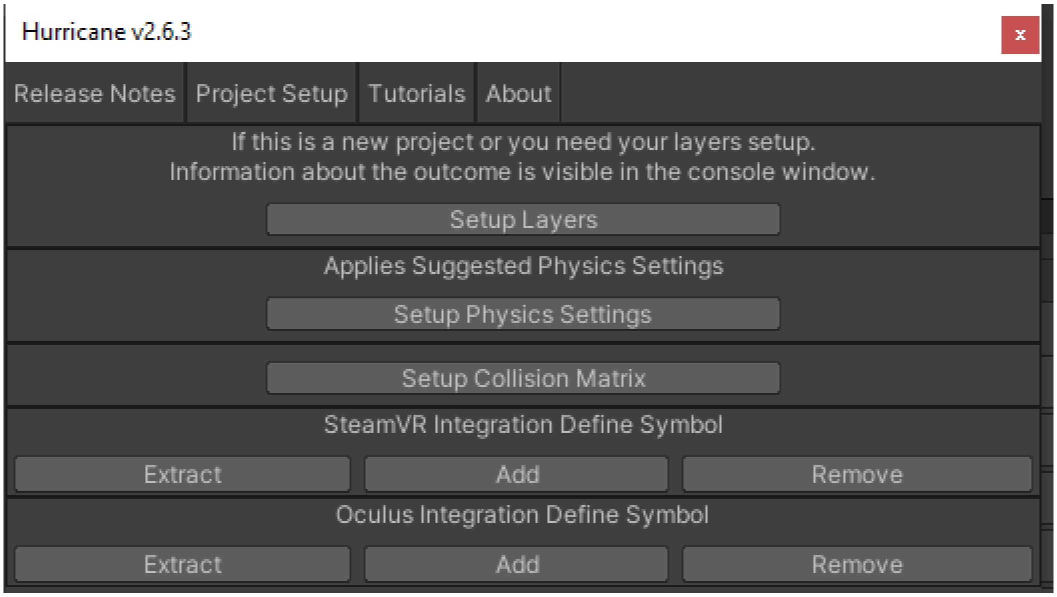
Active Input Handling* Input Mar

Project Settings

HurricaneVR requires a few project settings to get up and running, as of 1.9 there is a new Project Setup helper window that will help complete this process with just a few button clicks.

Open the Setup window by navigating to Tools → HurricaneVR → Setup and then click the “Project Setup" button on the toolbar.

1. Setup Layers will add layers if necessary and will report the status of the operation in your console.
2. Setup Physics settings will set the recommended physics settings for joint and collision stability.
3. Setup Collision Matrix will setup the collision layer matrix for you.



Hurricane v2.6.3

If this is a new project or you need your layers setup.
Information about the outcome is visible in the console window.

Applies Suggested Physics Settings

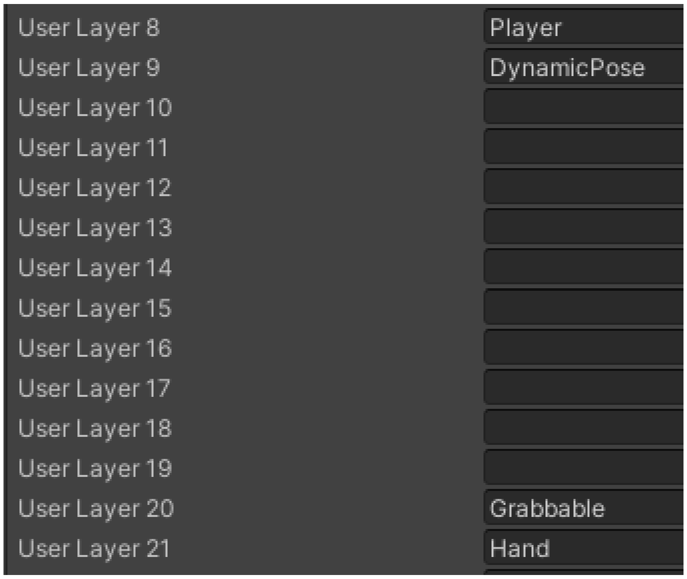
SteamVR Integration Define Symbol

Oculus Integration Define Symbol

Tags and Layers

1. Player - used to prevent collision with the player character controller.
    1. Assign to the PlayerController object (be careful not to assign to the children)
2. Grabbable - used to help prevent collision with the player character controller and is automatically assigned recursively to objects with HVRGrabbable components.
    1. Automatic layer assignment can be disabled per grabbable with by setting AutoApplyLayer to false.
    2. Automatic layer assignment can be toggled at the project level on the HVRSettings scriptable object.
3. Hand - used on the hand collision geometry

    1. Set the objects with your hand colliders to this layer
4. DynamicPose - Used for the auto posing grab sequence to ensure the fingers only collide with the desired object.
    1. Automatically set in code during the auto pose sequence, no need to assign these to any objects.



User Layer 8	Player
User Layer 9	DynamicPose
User Layer 10	
User Layer 11	
User Layer 12	
User Layer 13	
User Layer 14	
User Layer 15	
User Layer 16	
User Layer 17	
User Layer 18	
User Layer 19	
User Layer 20	Grabbable
User Layer 21	Hand

Time

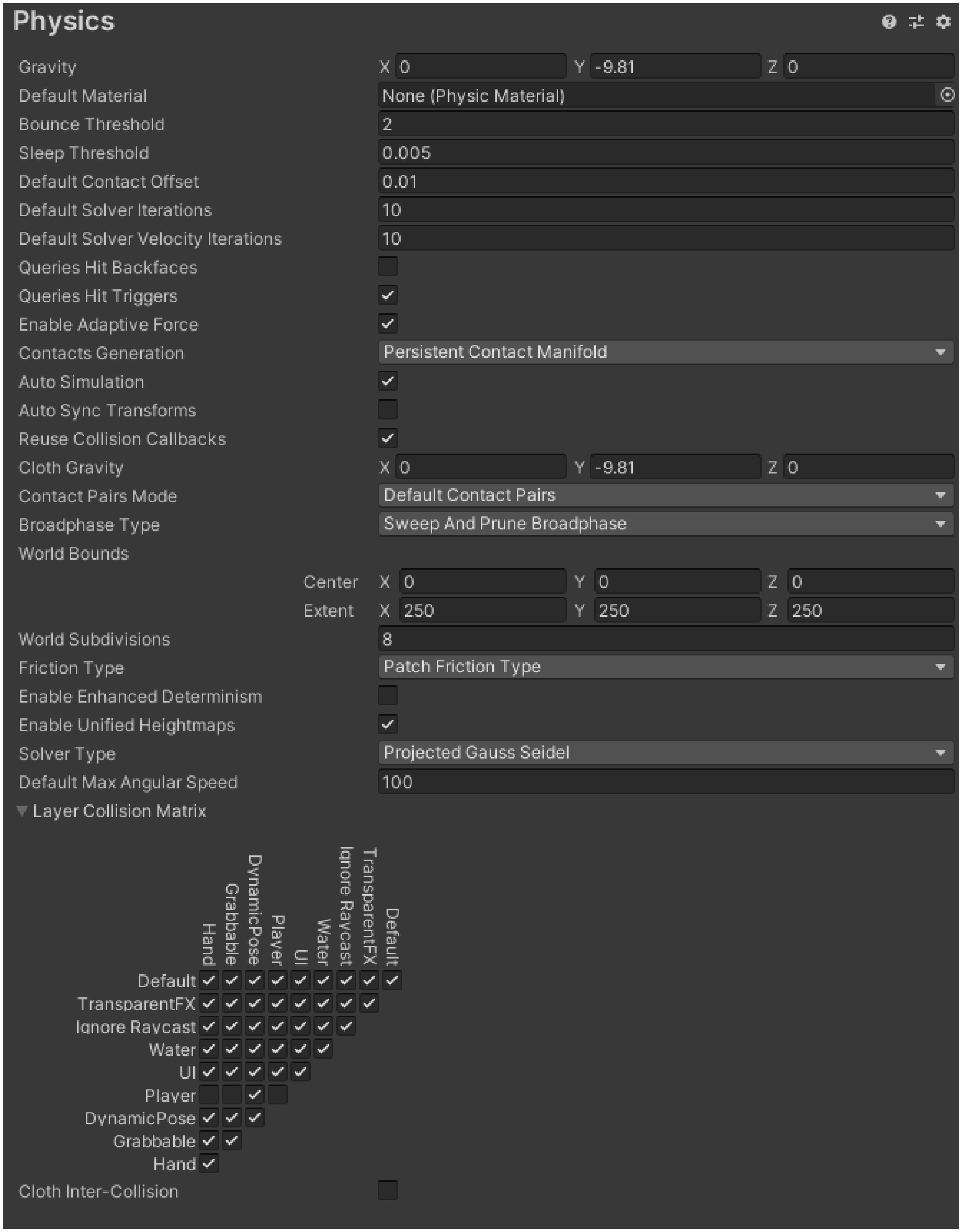
Update the Fixed Timestep to 1/90 for PC builds and Quest 2 if you override with OVR and 72 for Quest.

The new HVRTimeManager component can be added to your scene, and will automatically handle the fixed time step for you.

Physics Settings

Notable Properties:

1. Default Solver Iterations
2. Default Solver Velocity Iterations
3. Default Max Angular Speed
4. Layer Collision Matrix



Physics

Gravity	X 0 Y -9.81 Z 0
Default Material	None (Physic Material)
Bounce Threshold	2
Sleep Threshold	0.005
Default Contact Offset	0.01
Default Solver Iterations	10
Default Solver Velocity Iterations	10
Queries Hit Backfaces	☐
Queries Hit Triggers	☑
Enable Adaptive Force	☑
Contacts Generation	Persistent Contact Manifold
Auto Simulation	☑
Auto Sync Transforms	☐
Reuse Collision Callbacks	☑
Cloth Gravity	X 0 Y -9.81 Z 0
Contact Pairs Mode	Default Contact Pairs
Broadphase Type	Sweep And Prune Broadphase
World Bounds	
Center	X 0 Y 0 Z 0
Extent	X 250 Y 250 Z 250
World Subdivisions	8
Friction Type	Patch Friction Type
Enable Enhanced Determinism	☐
Enable Unified Heightmaps	☑
Solver Type	Projected Gauss Seidel
Default Max Angular Speed	100

Layer Collision Matrix

	Hand	Grabbable	DynamicPose	Player	UI	Water	Ignore Raycast	TransparentFX	Default
Default	☑	☑	☑	☑	☑	☑	☑	☑	☑
TransparentFX	☑	☑	☑	☑	☑	☑	☑	☑	
Ignore Raycast	☑	☑	☑	☑	☑	☑	☑		
Water	☑	☑	☑	☑	☑	☑			
UI	☑	☑	☑	☑	☑				
Player	☐	☐	☑	☐					
DynamicPose	☑	☑	☑						
Grabbable	☑	☑							
Hand	☑								

Cloth Inter-Collision	☐

Line of Sight Layermasks

The hand and force grabber components test for line of sight to determine if the object is allowed to be grabbed.

Adjust the layers on the HVRHandGrabber and HVRForceGrabberBag components like below. If you have objects on different layers that you wish to block grabbing with line of sight, add them here as well.

1. HVRHandGrabber - Raycast Layermask
    1. Located on the LeftHand and RightHand objects under the Rig
2. HVRForceGrabberBag - Layer Mask
    1. Located under the LeftHand and RightHand objects, there currently are 5 by default.

Demonstration Scenes

After your Unity VR environment has properly been setup, take a look and play through the provided example scenes to get an idea of what the framework is capable of, what is required to make use of the framework, and what components and fields are required to achieve similar behaviours for your game.
Located in /HurricaneVR / TechDemo / Scenes /

Examples Scene

Frequently updated with example stations to demonstrate how to use the various systems included with the toolkit.

- Physics doors, drawers, levers, buttons, and dial components.
- Socket examples for inventory, weapons, keys, and place once style game behaviours.
- New guns for the new weapon system.
- Climbing example.
- Keypad with physics button examples.
- Physical rotation limit examples, including demonstration of rotation limits of over 360 degrees with the pipe valve objects.
- Physical stabbing examples with the swords and spear
- Physics based bow and arrow that also using the stabbing system to stick arrows into objects.
- Posing and Grab points
- Code driven teleporting and grabbing

Tech Demo Scene

Open up scene_demo
Small escape room style tech demo showcasing locked doors, keyed entry, climbing, sockets and events.

Barebones Scene

Located at HurricaneVR / TechDemo/ Scenes / scene_barebones.scene
Demonstration of the bare minimum required objects and components in your scene for the toolkit to function properly.

2.