WorldViz PPT Plugin for Unity
Getting Started

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Overview

Plugin Usage

The WorldViz PPT plugin for Unity provides support for Integrating the WorldViz PPT tracking system as well as the WorldViz PPT wand with a Unity application. This plugin directly supports integration with CAVE systems and Oculus VR headsets. It should be possible to integrate with other HMD devices, following the same steps listed in this document. However, the exact method for aligning or overwriting the final device coordinates is left to the end user.

Beyond HMD and controller/wand integration, our PPT tracking system can be used to track any general object in the environment.

Purpose of This Document

This document covers the setup process for the WorldViz PPT plugin for Unity. This document assumes the reader has some knowledge of Unity. This document also assumes that the reader has already set up their VR hardware and software environment (i.e. Oculus Home/SteamVR)

System Requirements

Operating system	Windows x64 (8.1, 10)
VR Headset Support	Oculus CV1, Vive
PPT Software Version	PPT 2013 (for PPT-E only) PPT N
Unity Version	2018 LTS (and select older versions)

Configuring PPT

Before you are able to use the system with PPT, you will need to follow the instructions in the “Configuring PPT for Unity and Unreal” document. This covers setting up the trackers and wand in PPT Studio. These settings will be used within your Unity project.

Creating a New HMD Project

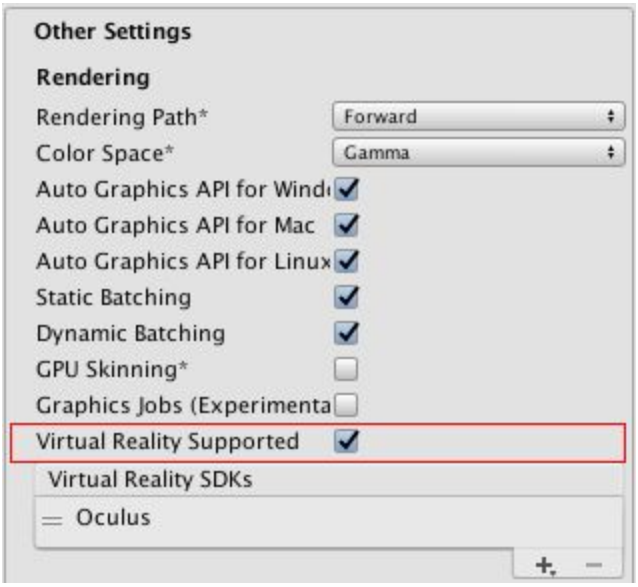
This section will detail the process of creating a new HMD project for Unity. Depending on your needs, you can skip to specific sections or omit setup instructions that do not apply.

Start by creating a new Unity project.

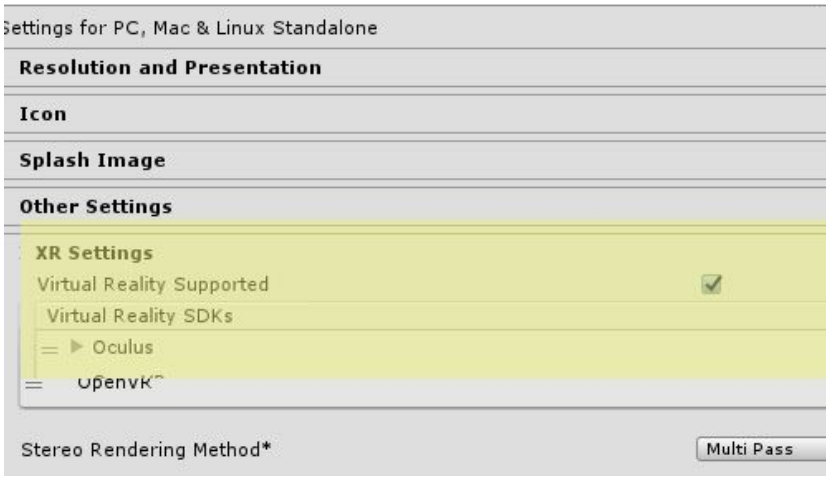
Enable VR Support

Open “PlayerSettings” located under Edit -> Project settings -> Player

Unity 5.4 - Under the “Rendering” subheader, check “Virtual Reality Supported”



Unity 2018 LTS - Under the “XR Settings” subheader, check “Virtual Reality Supported”



By default, Unity will use the Oculus Virtual Reality SDK. If you are using a different HMD, you can use the + and - button tabs under the Virtual Reality SDK section to adjust this.

Add PPT Plugin (Method 1)

Add the supplied PPT Plugin, either PPT_Unity_5.zip or PPT_Unity_2018.zip

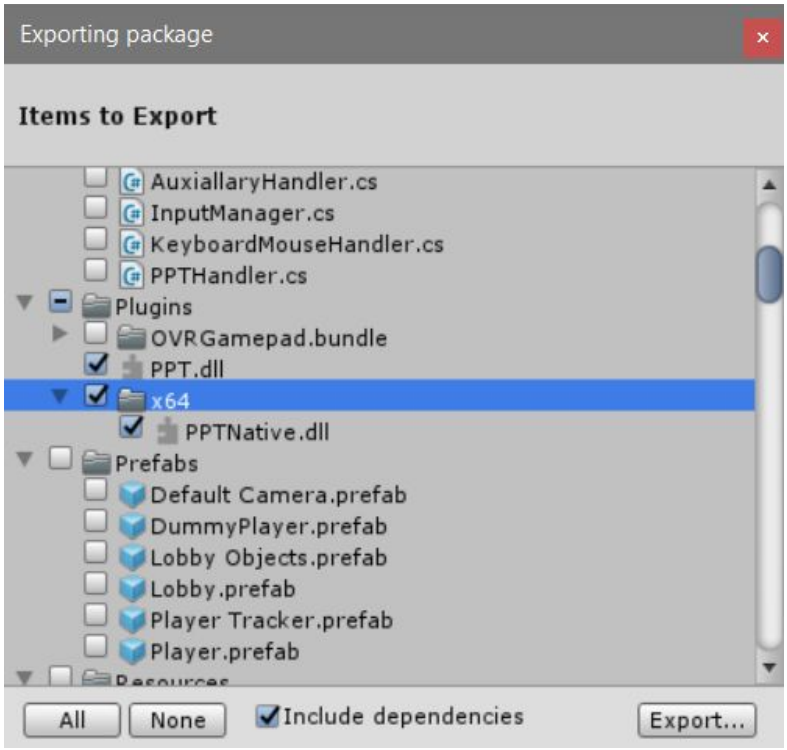
1. Create a folder called “Plugins” in your projects Assets folder
2. Unzip the plugin files into this folder
3. You should now have access to the PPT plugins objects and components
4. Also add the HMDOverride.cs script to your assets folder

Add PPT Plugin (Method 2)

If you have an existing project that you would like to copy the PPT plugin from and optionally any related scripts that you have created and would like to reuse

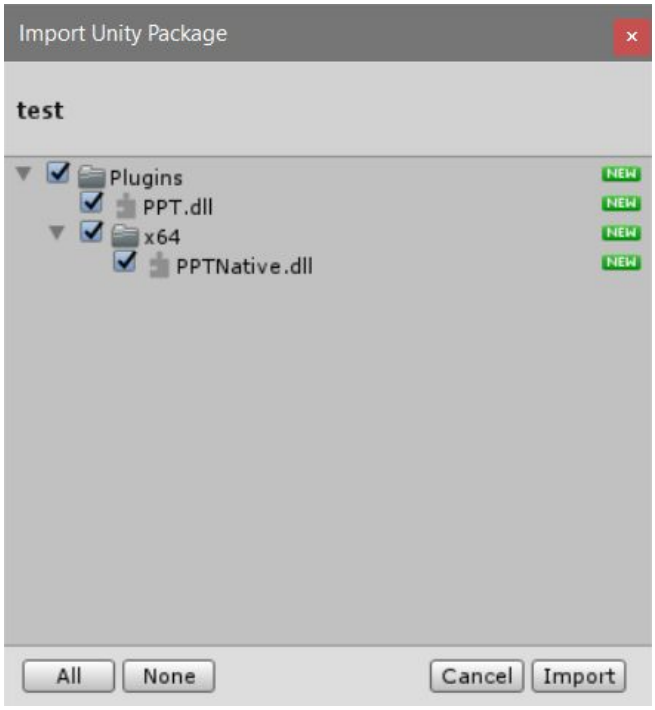
1. Open the existing project

2. Select Assets -> Export Package



3. Click None and select the PPT.dll, x64, and PPTNative.dll
4. Check any other files that you would also like to move to your new project
5. Click Export, enter your filename to save to, and click Save
6. Close the project and open the new project that you have created
7. Select Assets->Import Package->Custom Package

8. Find the file that you saved to in step 5 and open it



9. In the Import Package menu, click All, and then click Import
10. You should now have access to all of the PPT objects, components, and any other assets that you imported

Add a Player

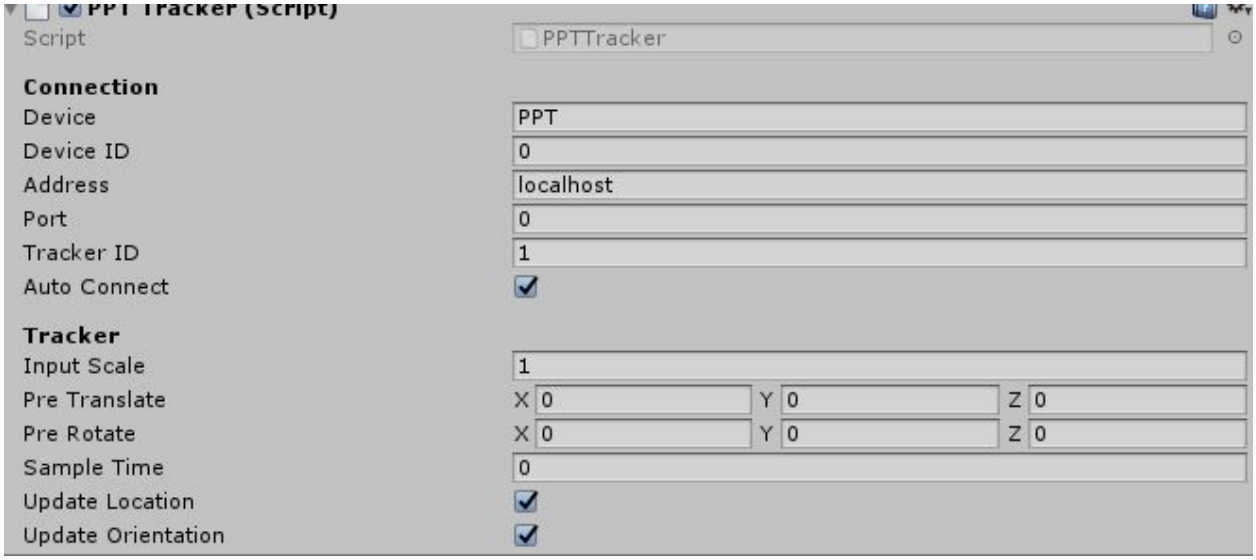
1. Create an empty Game Object and rename it to “player”
2. Add another empty object as a child of “player” and rename it to “player tracker”
3. Add a “PPT Tracker” component to the new player tracker game object

PPT Tracker Setup

Use the following settings for the ”PPT Tracker” component that is attached to the “player tracker” game object

Address IP address of the machine running PPT Studio
Tracker ID PPT Marker number being tracked

All other settings should use their default values



Add Camera

Create a new Camera object and make it a child of “player”.

Add HMD Override

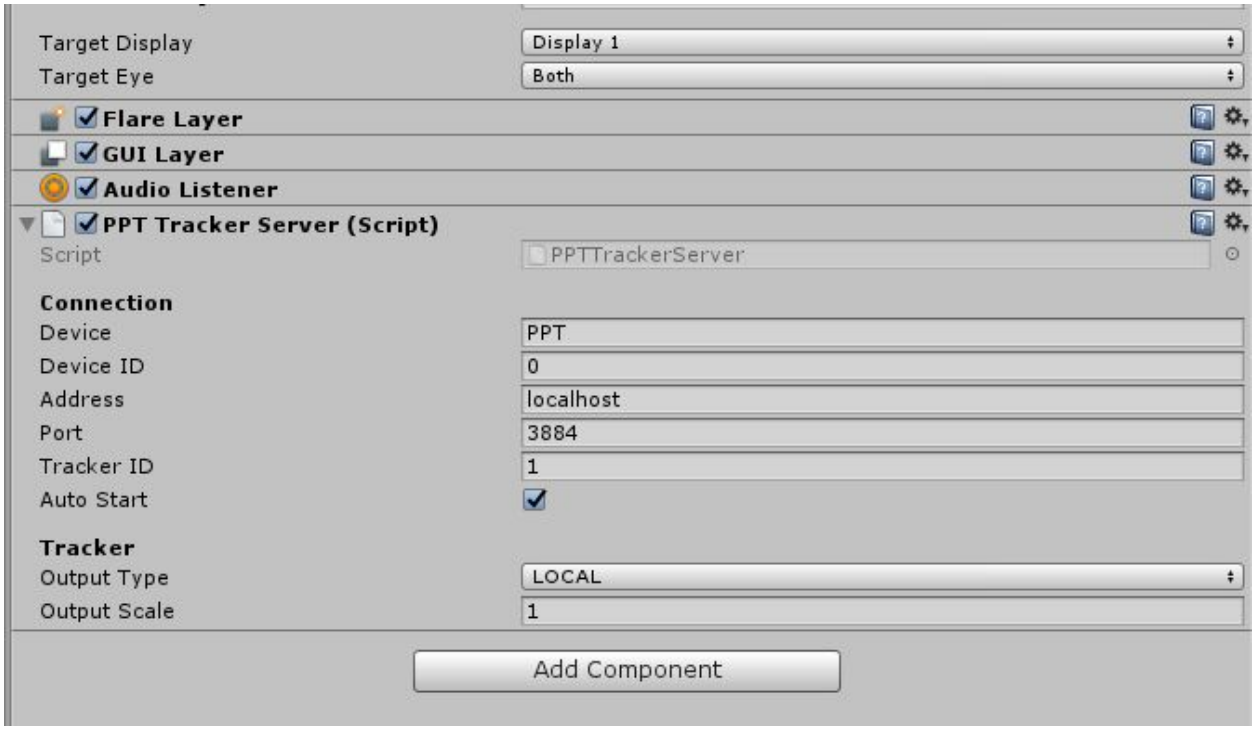
Unity is designed to use the internal tracking information of your HMD. If you want to use PPT tracking, such as PPT Eyes, with your HMD, PPT Studio needs to know about it’s tracking information so it can correctly supply its own tracking information.

If you are not using PPT tracking on the HMD you can skip this step.

Add a “PPT Tracker Server” component to the Camera with the following settings:

Address Keep it as “localhost” unless using an Android based project
Port Set to 3884
Tracker ID PPT Marker number being tracked

All other settings should use their default values

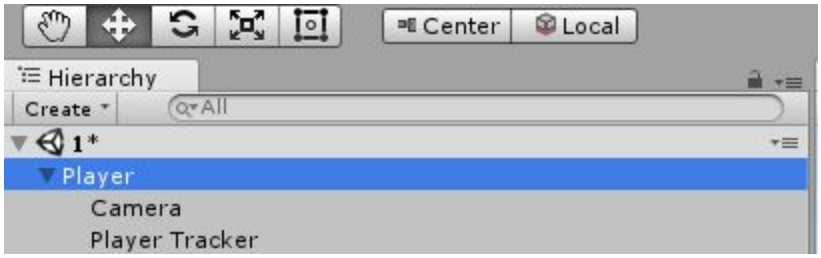


The Tracker Server component will relay the location and orientation of the GameObjects transform to the PPT Studio Optical Heading plugin

On the existing “player” Game Object, add a “HMD Override” component. On the component, set the tracker source to the “player tracker” Game Object.

Finalize

Your final player hierarchy should look like this



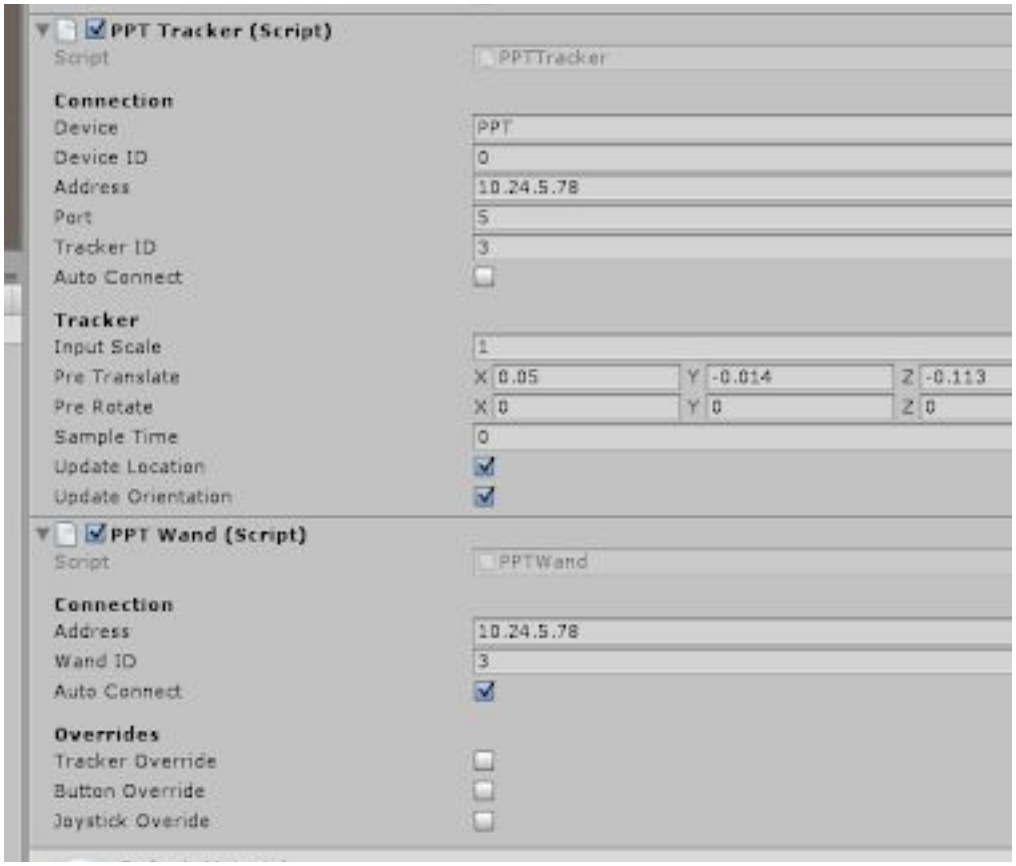
If there is a player input script component attached, remove it to disable keyboard and mouse control. In order to check that you are moving through the scene, it may be helpful to place a 3D object (such as a cube) in your scene.

Add Wand Tracking

First verify that you have completed the optional step in Set up PPT Studio to add the “Wand 2013” plugin. You will also need to make sure that you have your wand connected to the same machine that is running PPT Studio.

1. Create a 3D object that will be tracked with the wand
2. On the new 3D object, add a “PPT Wand” Component
    a. The PPT Wand will create the PPT Tracker, Analog, and Buttons component that it requires to support the device
    b. Uncheck the Auto Connect option for PPT Tracker, Analog and Buttons, but keep “Auto connect” checked” for the “PPT Wand” script
3. Change “Tracker ID” to the marker ID you have set for the left LED on your wand.(i.e. If your Wand is set to Marker ID “3” in PPT Studio, then enter “3”)
4. On the “PPT Wand” and “PPT Tracker” components, change the address field to the IP address of the PPT machine (or “localhost” if running PPT Studio on the same machine).
5. Adjust the offsets as shown in the “PPT Tracker” script

Note: If running PPT on a remote machine, you will need to change all the address fields to the IP address of the machine running PPT



Run Project

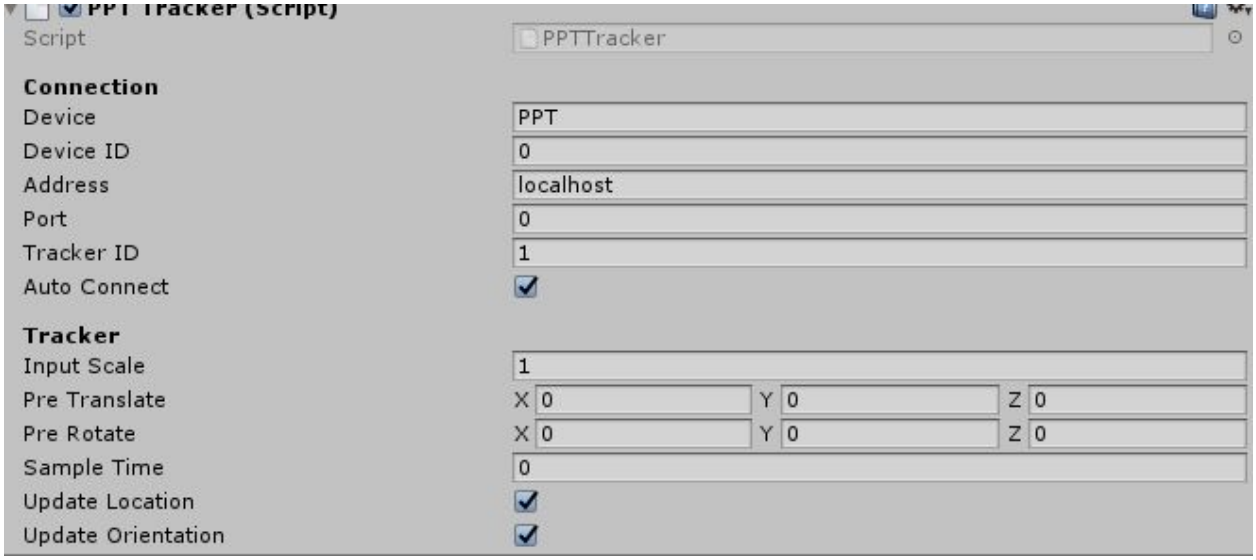
(Note if you get the error from Oculus “We can’t find your sensor”, you can either click “OK” with an XBox controller, or run any Vizard script that uses Oculus (such as a Vizconnect file with the Oculus preset). Also, make sure to have “Unknown sources” checked in the Oculus Home settings.

Tracking an Additional Object

In order to track an additional object in the environment you only need to attach a ”PPT Tracker” component to whichever game object you want to associate with the physical marker.

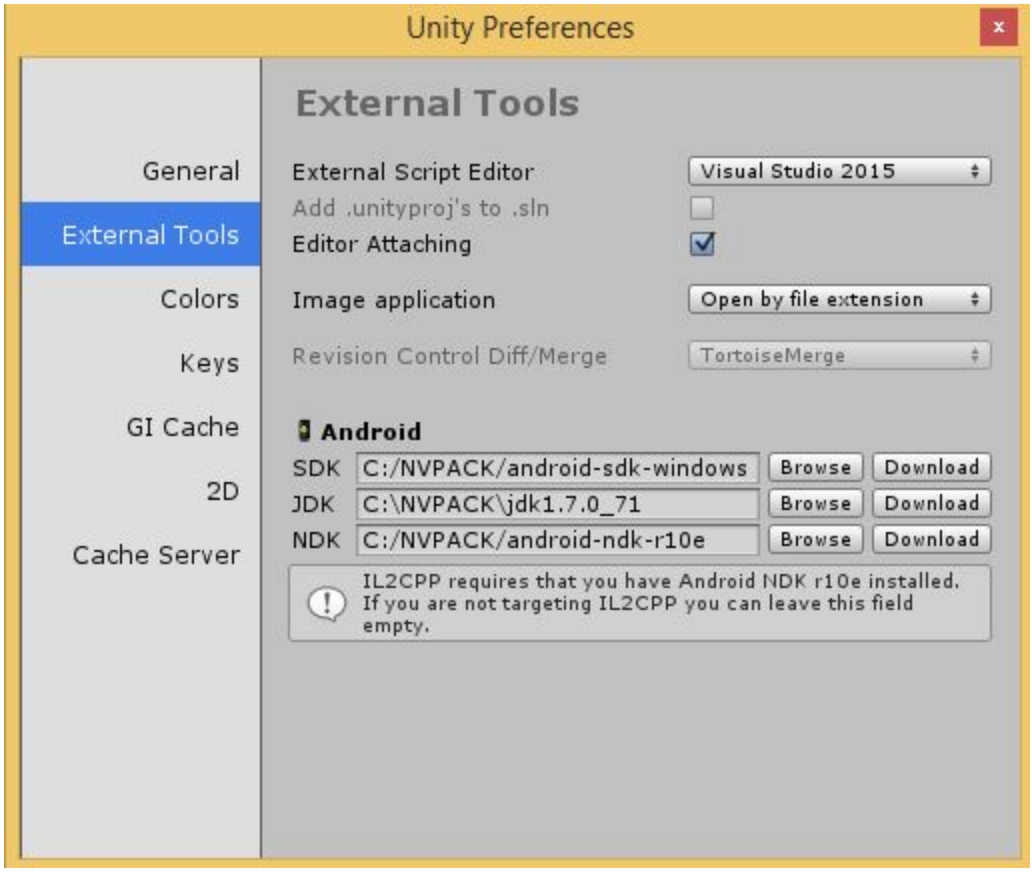
Address IP address of the machine running PPT
Tracker ID PPT Marker number being tracked

All other settings should use their default values



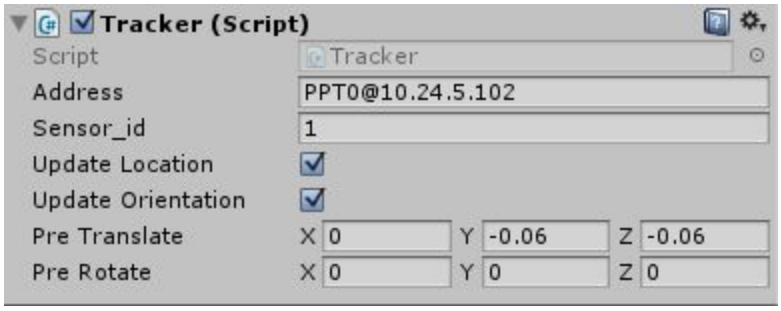
Additional notes for Android platform

You will need the Android SDK, JDK, and NDK similar to Unreal. Once you have the project open in Unity, click Edit -> Preferences. This will open up the window where you need to enter the Android information.
Download Android Build Support option from Unity
Download Codeworks
https://developer.nvidia.com/gameworksdownload#?dn=codeworks-for-android-1r4



The oculus signature for the Android device you will be using should be placed in ProjectName/Assets/Plugins/Android/Assets/ folder.

The IP Address of the machine that is running PPT Studio will need to be entered in the Tracker settings in Unity. PPT0@ip address of the machine.



Next you will need to set up the Build Settings so that you can build it to the Android device. In Unity click File -> Build Settings. In this window select Android as the Platform, ETC2 (GLES 3.0) as the Texture Compression, and click the "Add Open

Scenes" button. Make sure only the TrackerServer scene is selected in the "Scenes in Build" pane. Click the "Build And Run" button to build the demo to the Android device.