

1 Virtual Reality

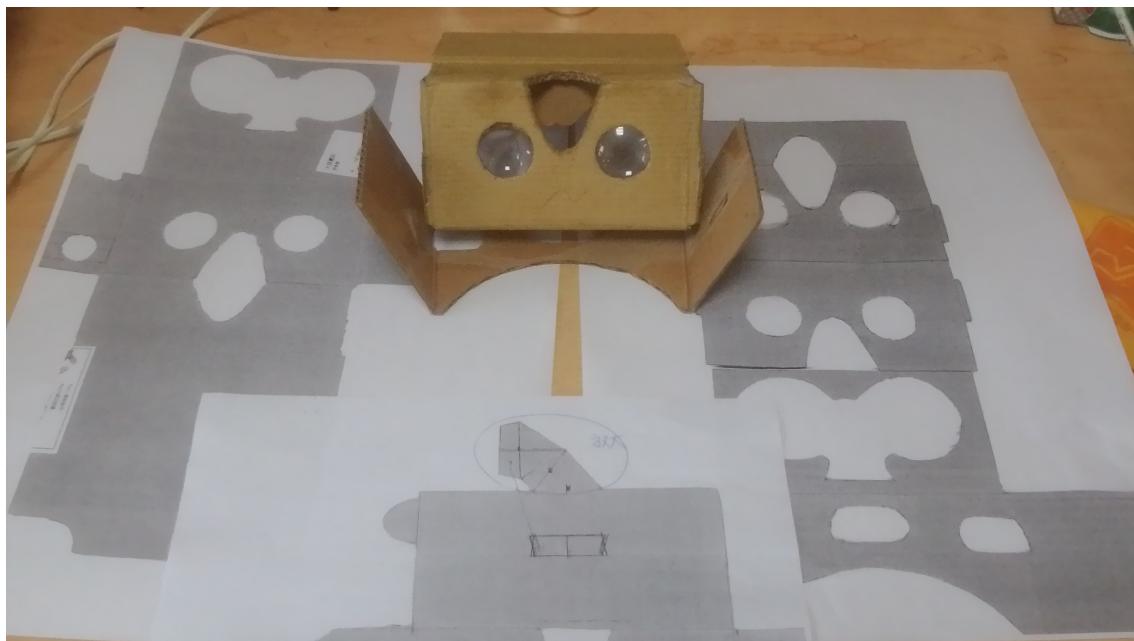
1.1 Unity (~~2019.1.4f1~~ 2019-1) with GVR Unity SDK v1.200.0

(2019/5/25)

- [Welcome Unity 2019.1.4f1 \(https://unity3d.com\)](https://unity3d.com)
- [GVR Unity SDK, 1.200.1 \(https://github.com/googlevr/gvr-unity-sdk/releases\)](https://github.com/googlevr/gvr-unity-sdk/releases)

No Problem, **Virtual Reality (VR)** is the hottest spot this year, 2016. Before we continue, there are some necessary requirement for implementing the work:

- [BluePrint of Cardboard \(https://www.google.com/get/cardboard/developers/\)](https://www.google.com/get/cardboard/developers/)

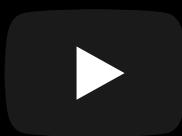


- [Unity \(http://unity3d.com\)](http://unity3d.com), Certainly not absent here, 5.5.0b11 (16/11/2016);
- [Cardboard SDK for Unity \(https://github.com/googlesamples/cardboard-unity\)](https://github.com/googlesamples/cardboard-unity), 1.0.3 (till 16/11/2016).
- a little idea, :-)

1.2 News about Google VR SDK (named GVR-unity-sdk now)(2016)

2016, Google announced [Google VR SDK in Google IO \(GoogleVRSDK.ipynb\)](#).

1.3 Assemble Cardboard v2 in Two minutes

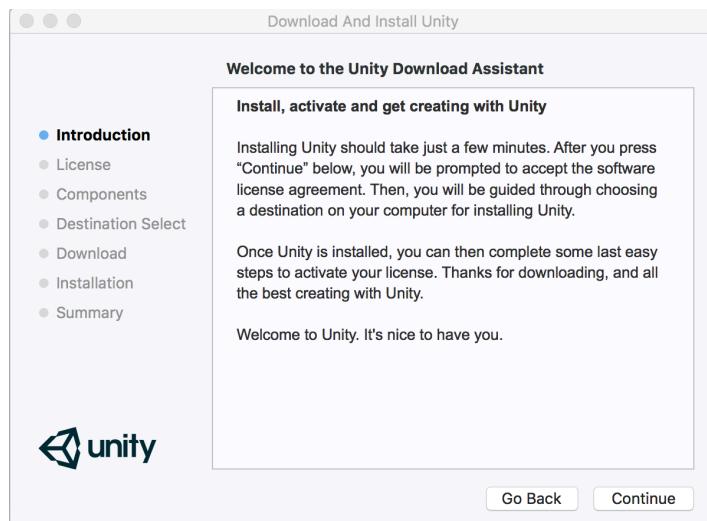
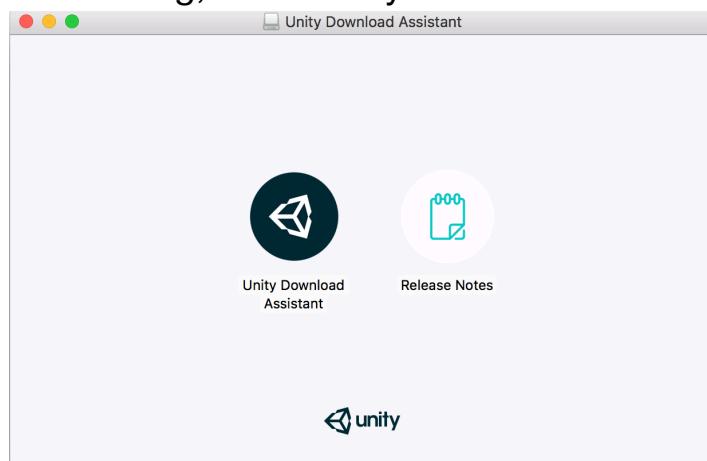


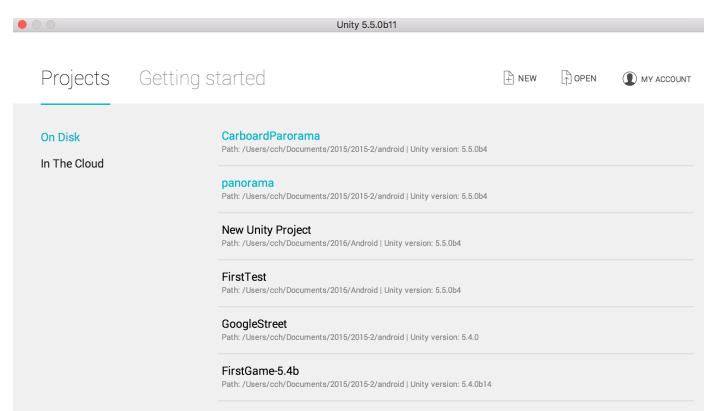
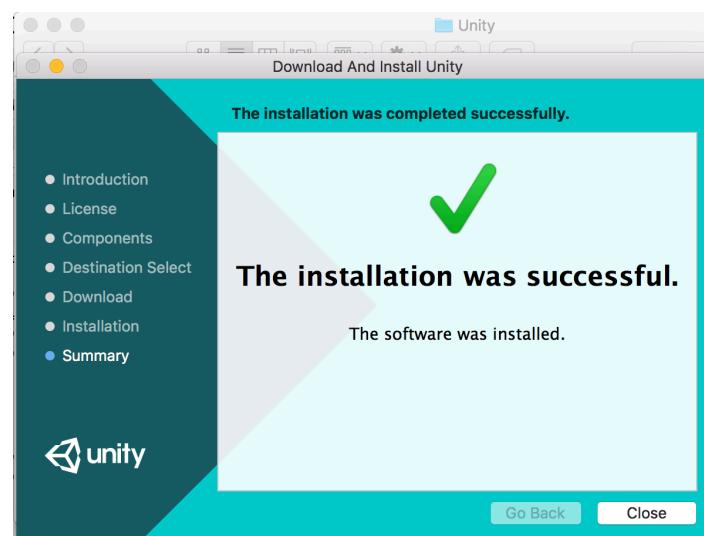
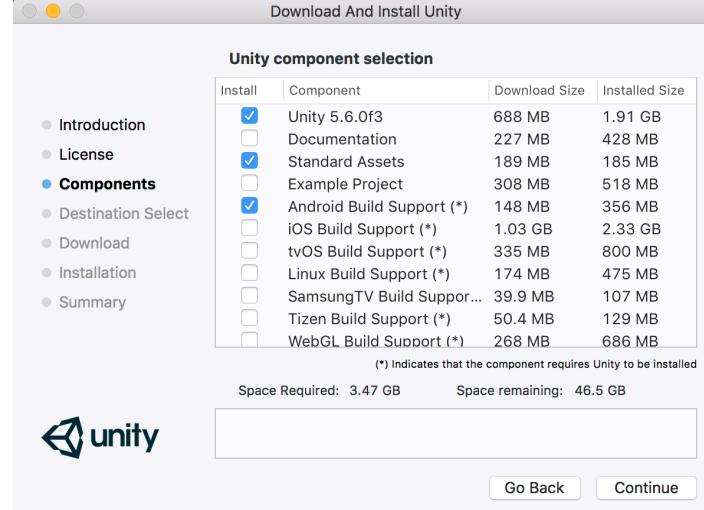
2 Unity

Unity is a game development platform that can create both 2D and 3D games. It's cross platform, so it can be used to develop apps for PC, Mac OS X, consoles, iOS, Android, Windows Phone 8, the web, and more.

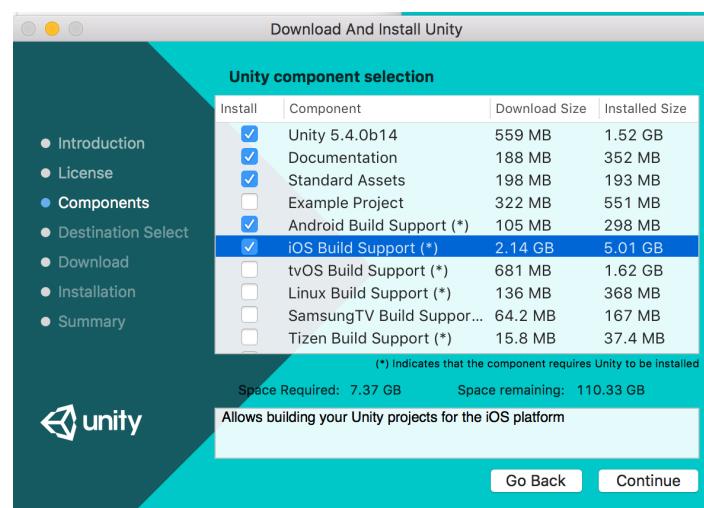
2.1 Unity installation Step by Step

1. Download [UnityHubSetup \(unity.org\)](https://unity.com/get-unity) from official site, for instance 2019-1f3 (2019/05/25);
2. As the assistant's default setting, install unity:





While installing Unity via its "Unity Download Assistant", also install the platform supports you want to make, for instance ios for Apple mobile devices:



2.2 Make a Virtual Reality Game with Unity For Google Cardboard

Prerequisites

- [Cardboard Unity Plugin \(<https://github.com/googlesamples/cardboard-unity>\)](https://github.com/googlesamples/cardboard-unity) v.0.6 (01/01/2016)
 - Modify the file, [\[cardboard-unity/Cardboard/Scripts/\]Cardboard.cs](#) as follows:

```
```C#
public RenderTexture StereoScreen {
 get {
 ...
 }
 set {
 // For 5.3.x
 if (stereoScreen != null && !stereoScreen.IsCreated()) {
 stereoScreen.Create();
 }
 /**
 * If (value == stereoScreen)
 * return;
 */
 ...
 }
}
```

```

- [\[Cardboard Unity Plugin\] v.0.7 \(04/15/2016\)](#)
- [\[Cardboard Unity Plugin\] v.0.8 \(05/20/2016\)](#)

2.3 GVR Unity SDK

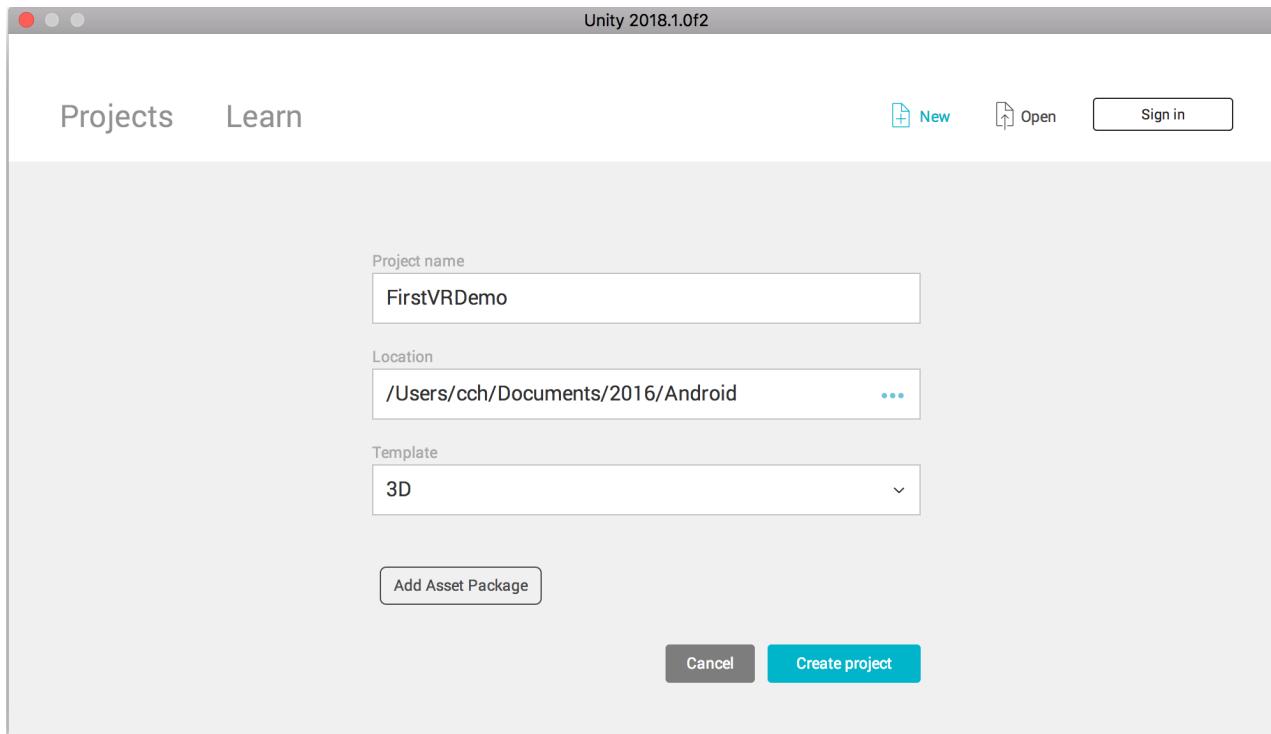
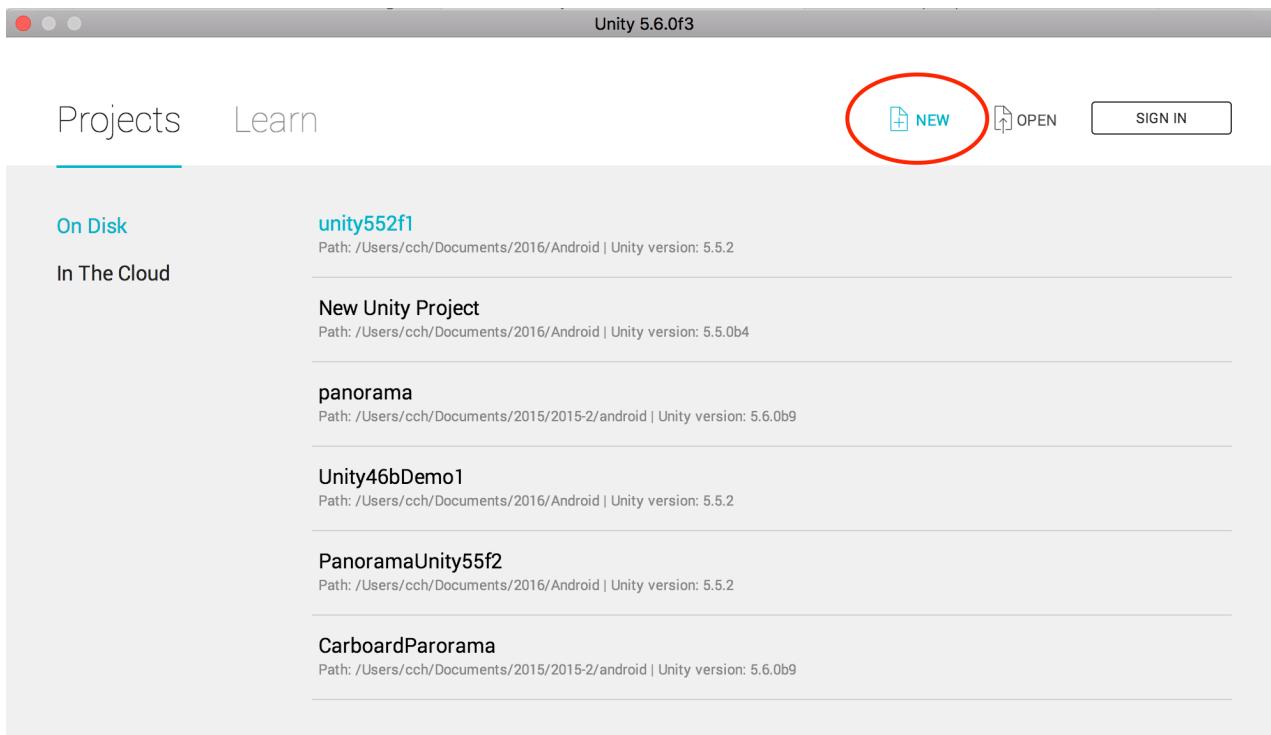
The new name for Google VR SDK for plugin,

- [Version 1.0.3 / 2016/11/21 \(<https://github.com/googlevr/gvr-unity-sdk>\)](#)
- [Version 1.4.0 / 2017/4/20 \(<https://github.com/googlevr/gvr-unity-sdk>\)](#)
- [Version v1.110.0 2017/11/20 \(\[https://github.com/googlevr/gvr-unity-sdk/releases/download/v1.110.0/GoogleVRForUnity_1.110.0.unitypackage\]\(https://github.com/googlevr/gvr-unity-sdk/releases/download/v1.110.0/GoogleVRForUnity_1.110.0.unitypackage\)\)](#) for Unity-6 or newer, size about 34 mega bytes
- [GVR SDK for Unity, 1.130.1 \(<https://github.com/googlevr/gvr-unity-sdk/releases>\), 2018-05-08](#)

2.4 Brief of Steps of Using Unity with Sample Project

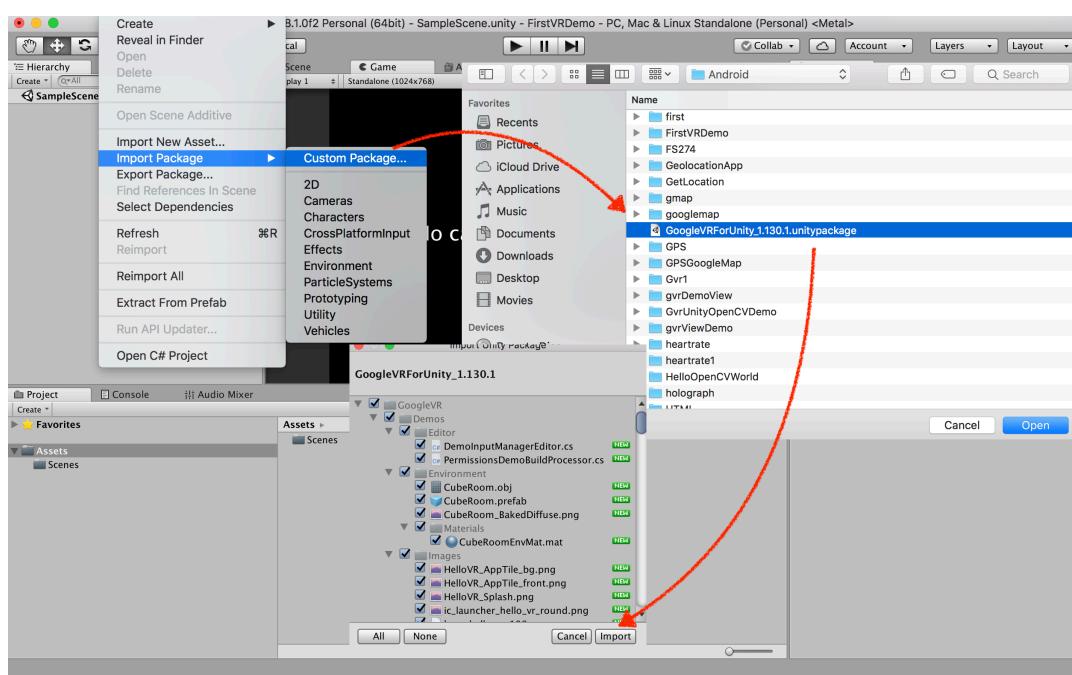
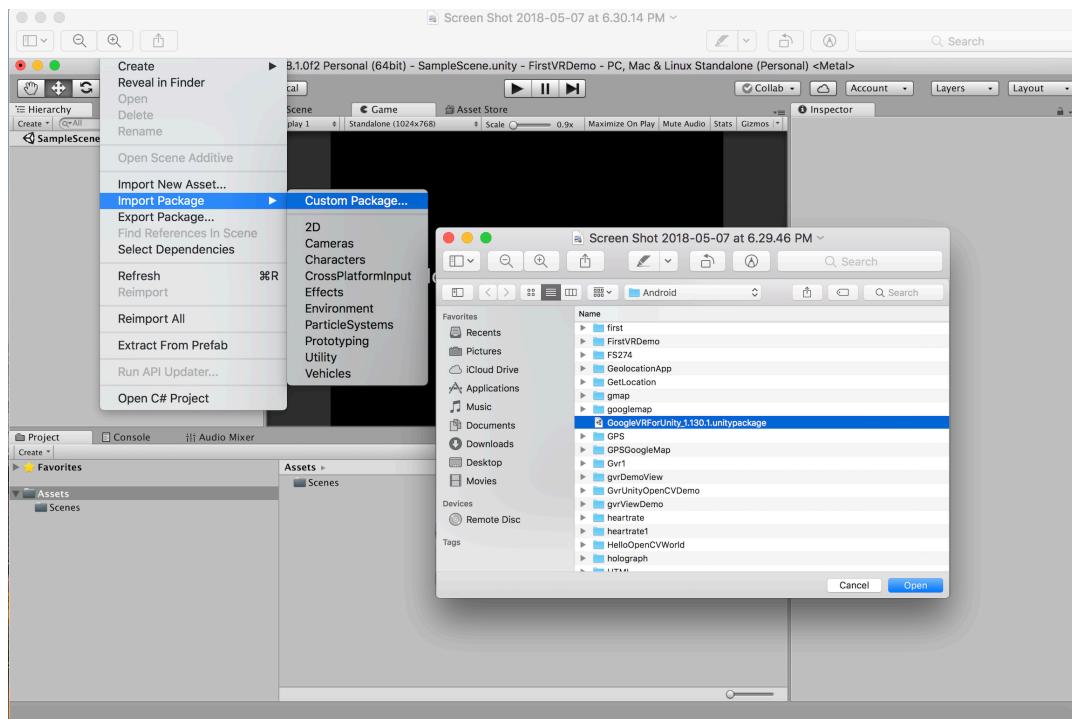
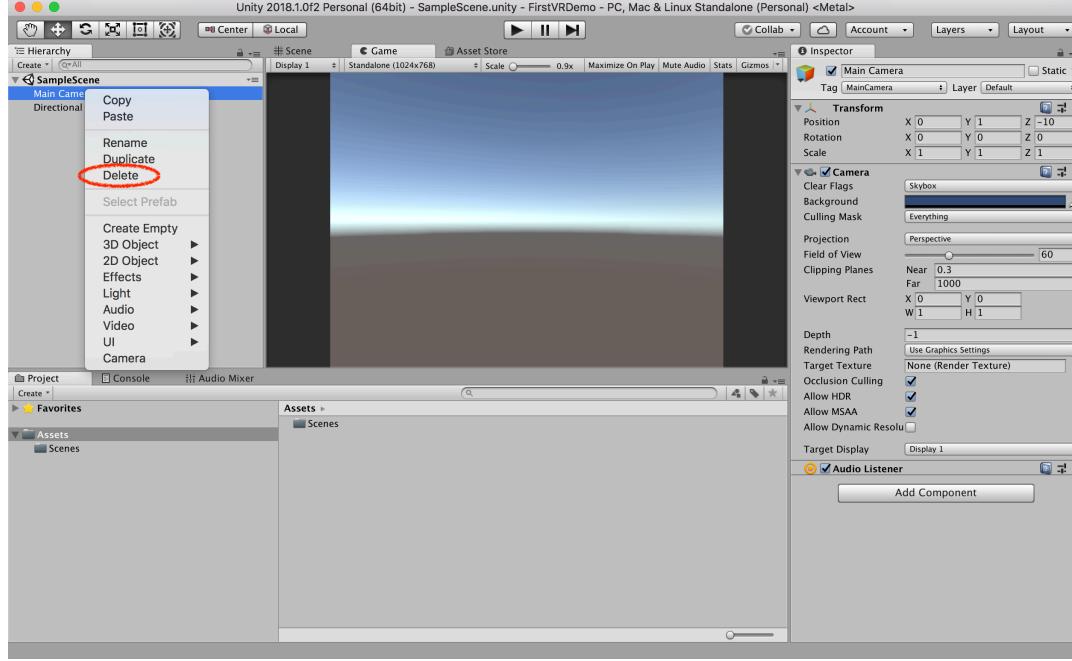
Reference the [official documentation](https://developers.google.com/vr/unity/get-started-android) (<https://developers.google.com/vr/unity/get-started-android>), let us to explore the first ~~Cardboard~~ GVR app by unity:

1. Open Unity, creating a new project.

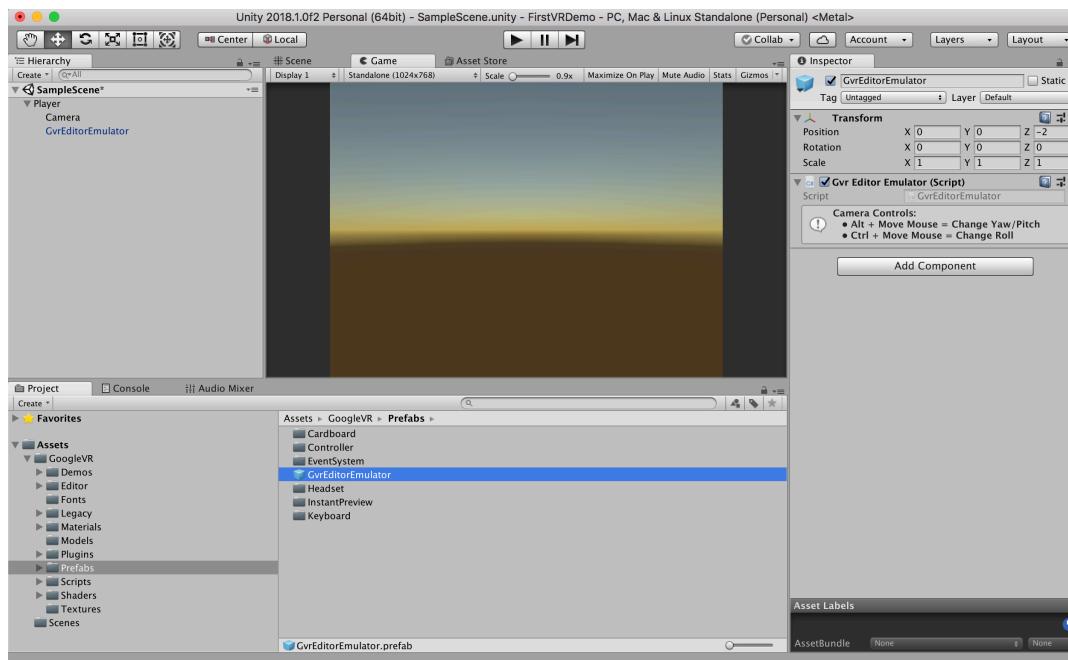
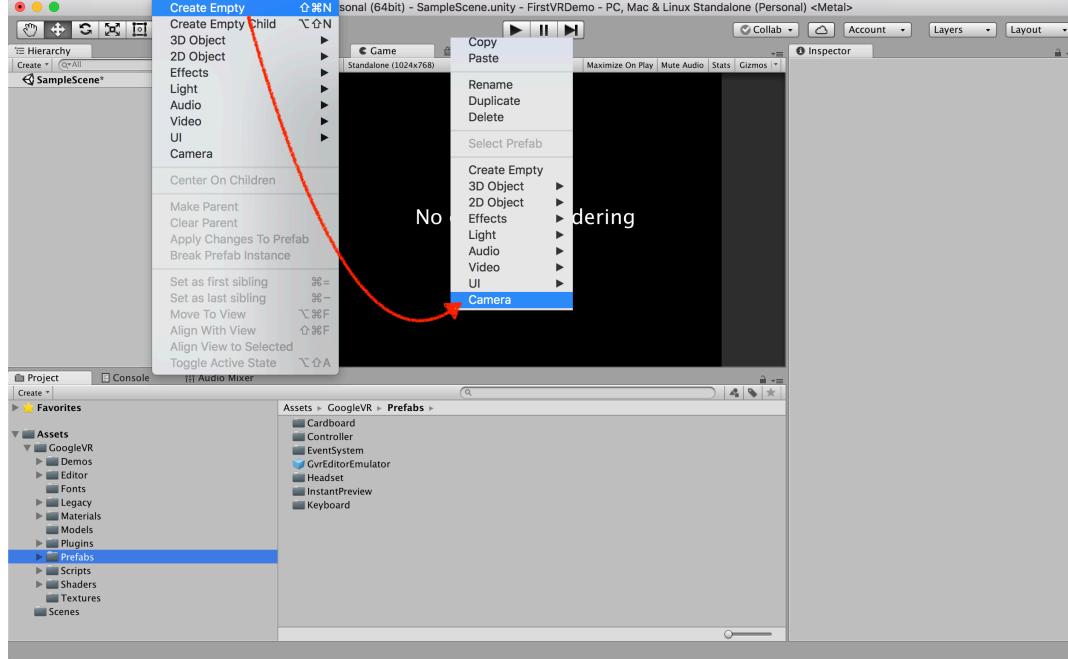


2. Import the SDK package: **Assets > Import Package > Custom Package**. Select the `GoogleVRSDKForUnity` (`CardboardSDKForUnity`, pre 0.8) `unitypackage` where you downloaded it and click **Open**. Make sure all the boxes are checked in the Importing Package dialog and click **Import**. Note: If you are using Unity 5, you may be warned that the APIs will be automatically upgraded. Accept it and continue if it happens.

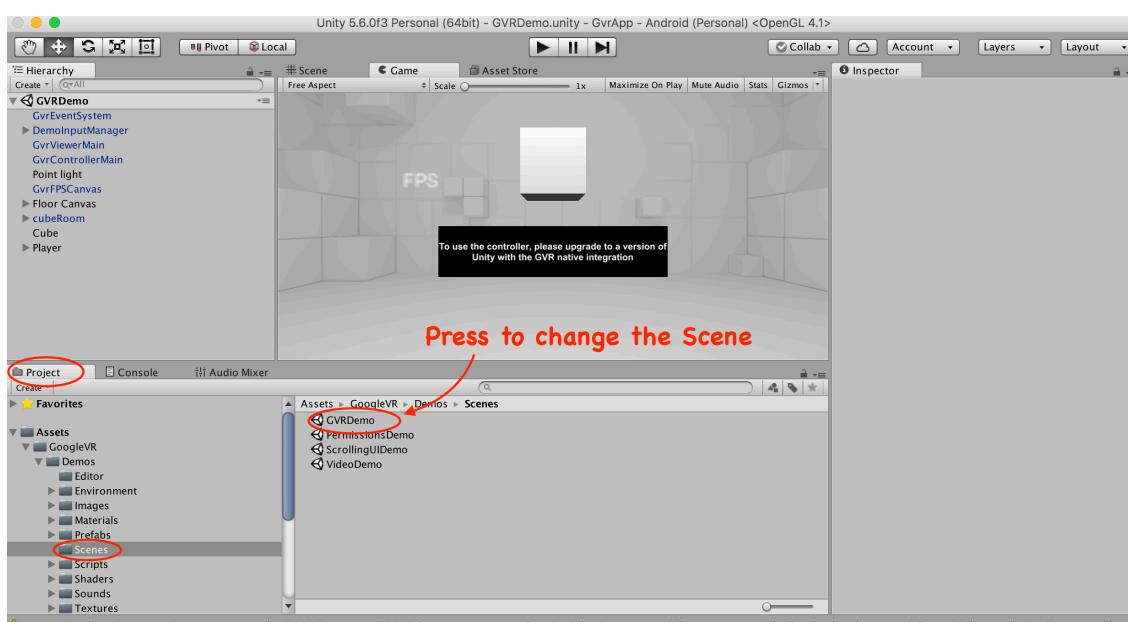
- delete any object in Hierarchy Windows, Main Camera and Directional Light ;
- Import the last GVR SDK for Unity, 1.30.1 (2018/05/08):



- create new GameObject, renamed as Player , add Camera and GVR SDK → Prefabs → GvrEditorEmulator under Player object.



3. In the editor's project panel, navigate to **Assets > GoogleVR > Demos > Scenes** folder and open **GvrDemo**. You should see a scene in which a floating cube is above a plane. Also an new option, GoogleVR, appears at the top menu bar.



4. Press **Play**, and you should see the game view showing a stereo rendering of a red cube. Press the **Control** key on your keyboard and move your mouse back and forth to tilt your view. You can also press the **option** button (**Alt** button for Windows) on your keyboard and move your mouse to pan around your view of the VR environment.

2.5 Build and Run APP

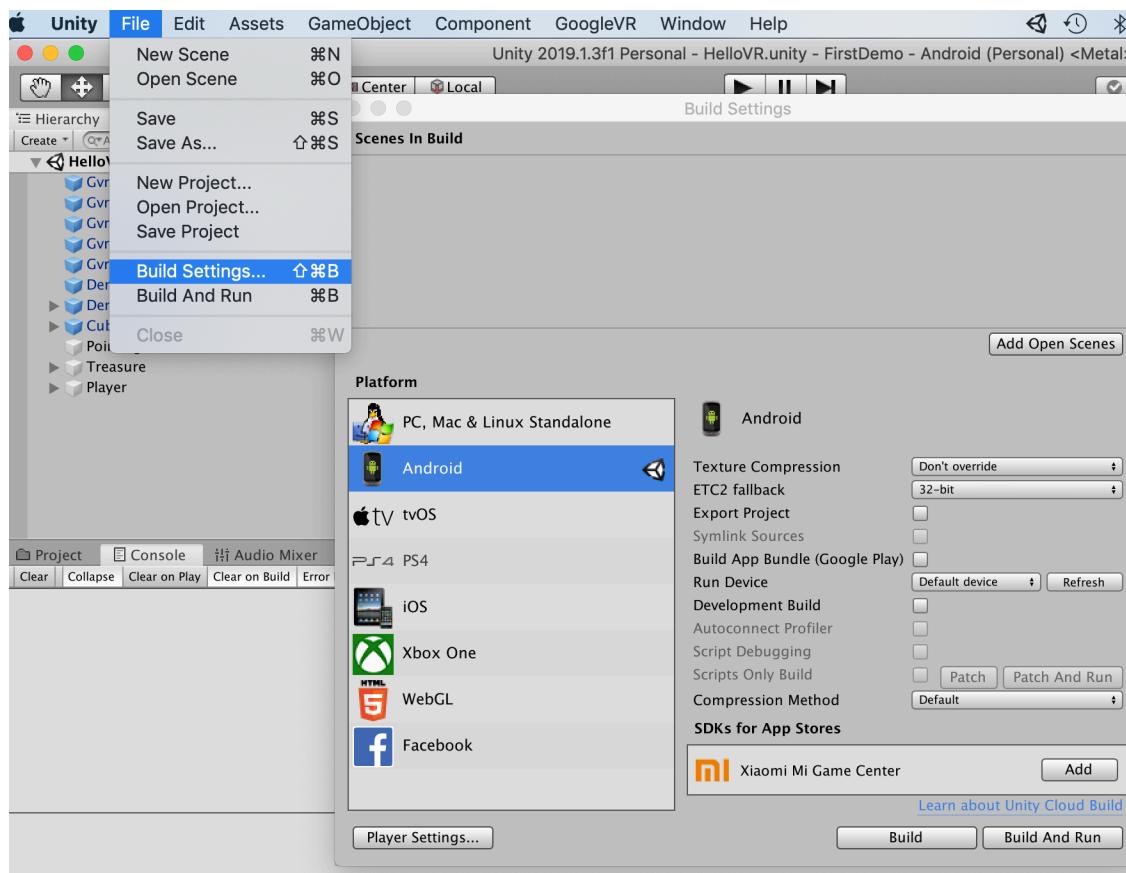
Building and deploying above demo to mobile app, for instance Android:

For Windows Users:

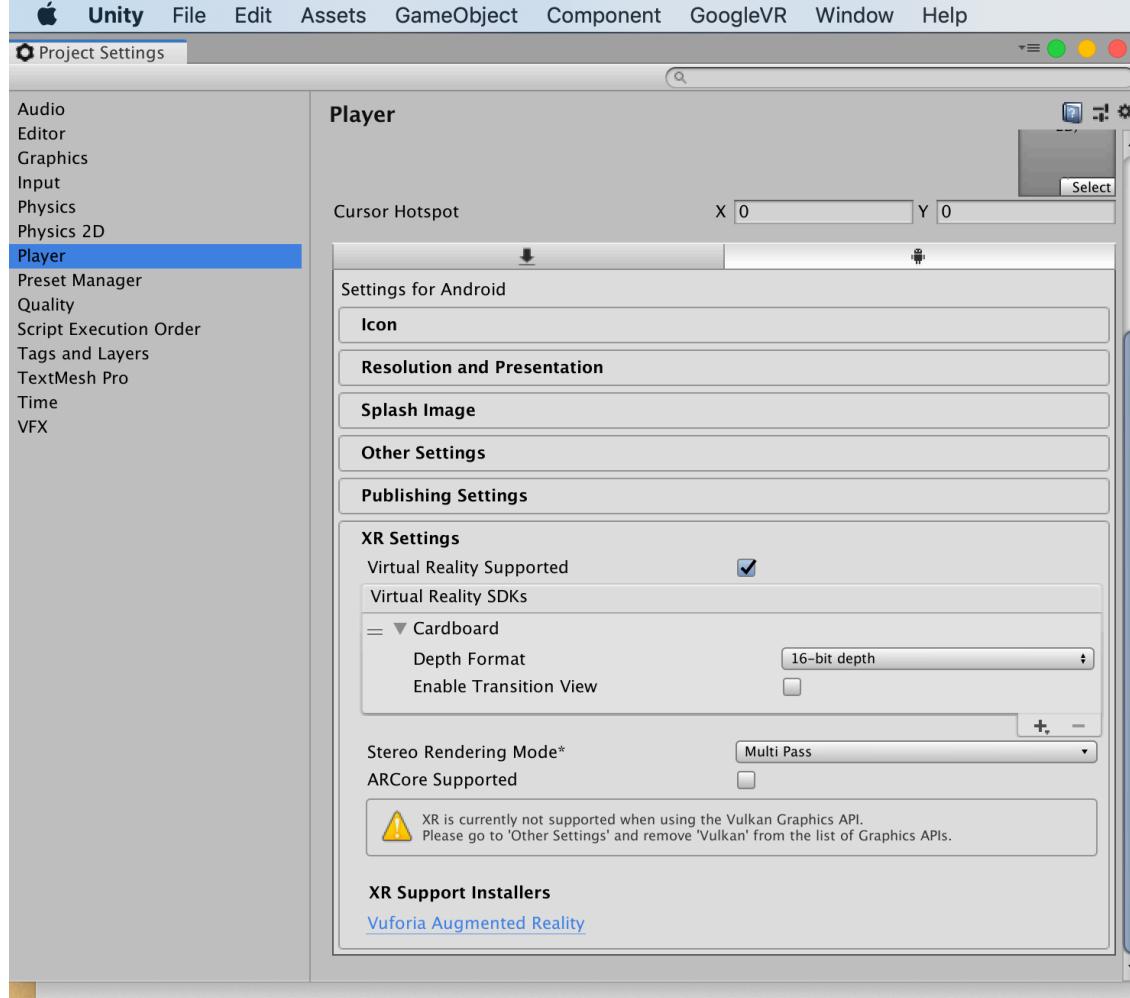
Before setup the "build setting", have to complete the settings (follows [Preferences/External Tools])

1. install "WinMerge"
2. set the path variables where Android SDK and J DK located;
3. ...

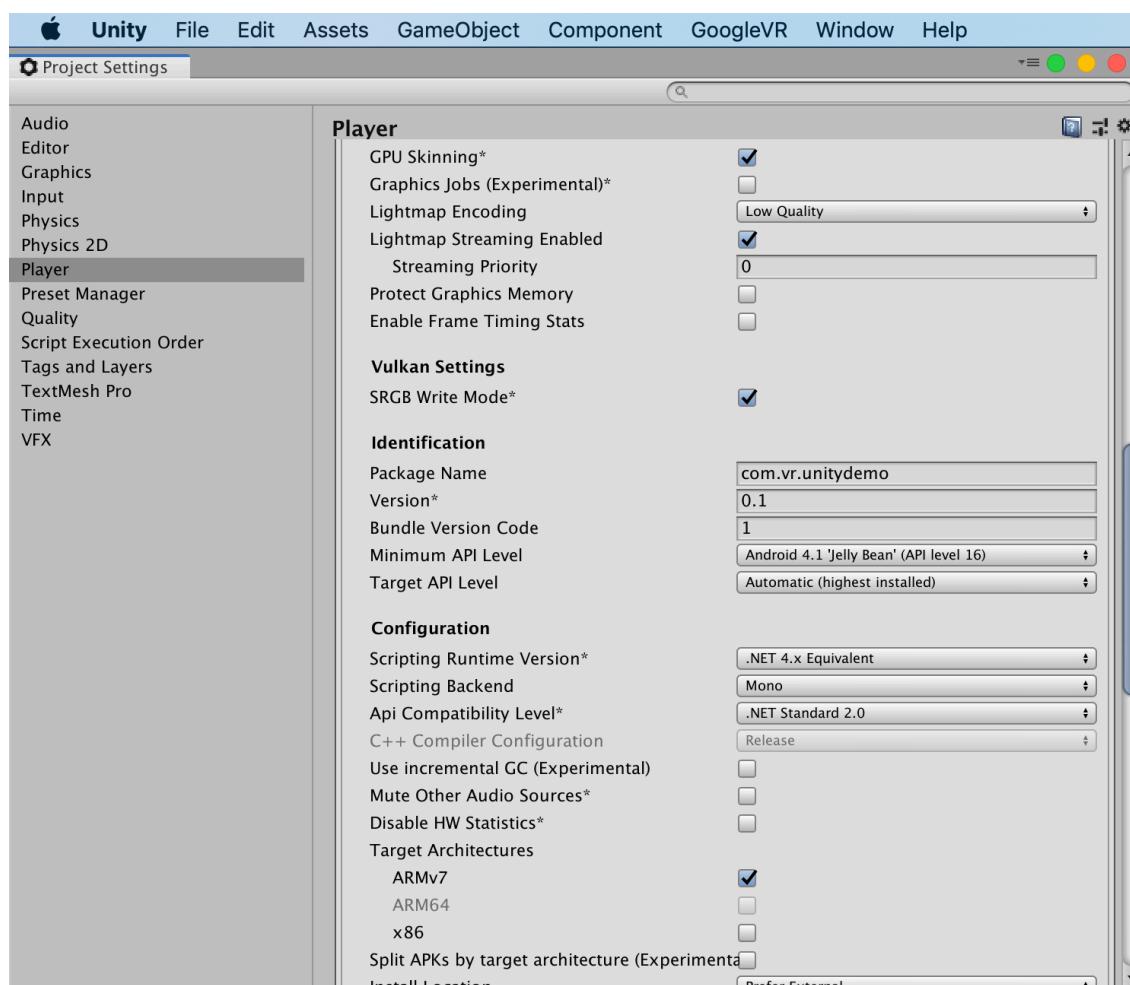
1. From **File > Build Settings**, select **Android** as follows:



2. Click **Player Settings**, in **XR Settings**, enable **Virtual Reality Supported**, choose **Cardboard** or Daydream, for instance, in **Virtual Reality SDKs**.



3. Change the [Package Name], `com.vr.unitydemo` for instance, in [Player Settings], [Player], [Other Settings]:



4. Click **Build and Run**. If prompted for location of the Android SDK, select unzipped SDK at which it had been installed. If not worked for JDK not found, check Unity preference. If more higher version of SDK is not found, update should be automatically prompted to progress from [from higher version] enabled.

```
[NbConvertApp] WARNING | pattern 'Unity-Get-Started-20  
16-11.ipynb' matched no files  
This application is used to convert notebook files (*.  
ipynb) to various other  
formats.
```

```
WARNING: THE COMMANDLINE INTERFACE MAY CHANGE IN FUTURE  
RELEASES.
```

Options

```
Arguments that take values are actually convenience aliases to full  
Configurables, whose aliases are listed on the help line. For more information  
on full configurables, see '--help-all'.
```

--debug

Enable debugging mode. DEBUG environment variable can be used instead.

2.6 Google Street View App

1. Add Street View to Skybox,
2. input Latitude/longitude
3. get the skybox pictures
4. Import FPsControl, Assets -> import package -> Characters
5. drag the pictures into Scence