


Expert topic: VR in Unity Engine



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Scope of topic:

- Basic understanding of VR project setup
- Emulating hardware in the engine
- Setting up render pipeline
- Choosing the accurate build environment

Setting up VR project

Installing correct packages:

Add modules for Unity 2020.3.33f1 LTS

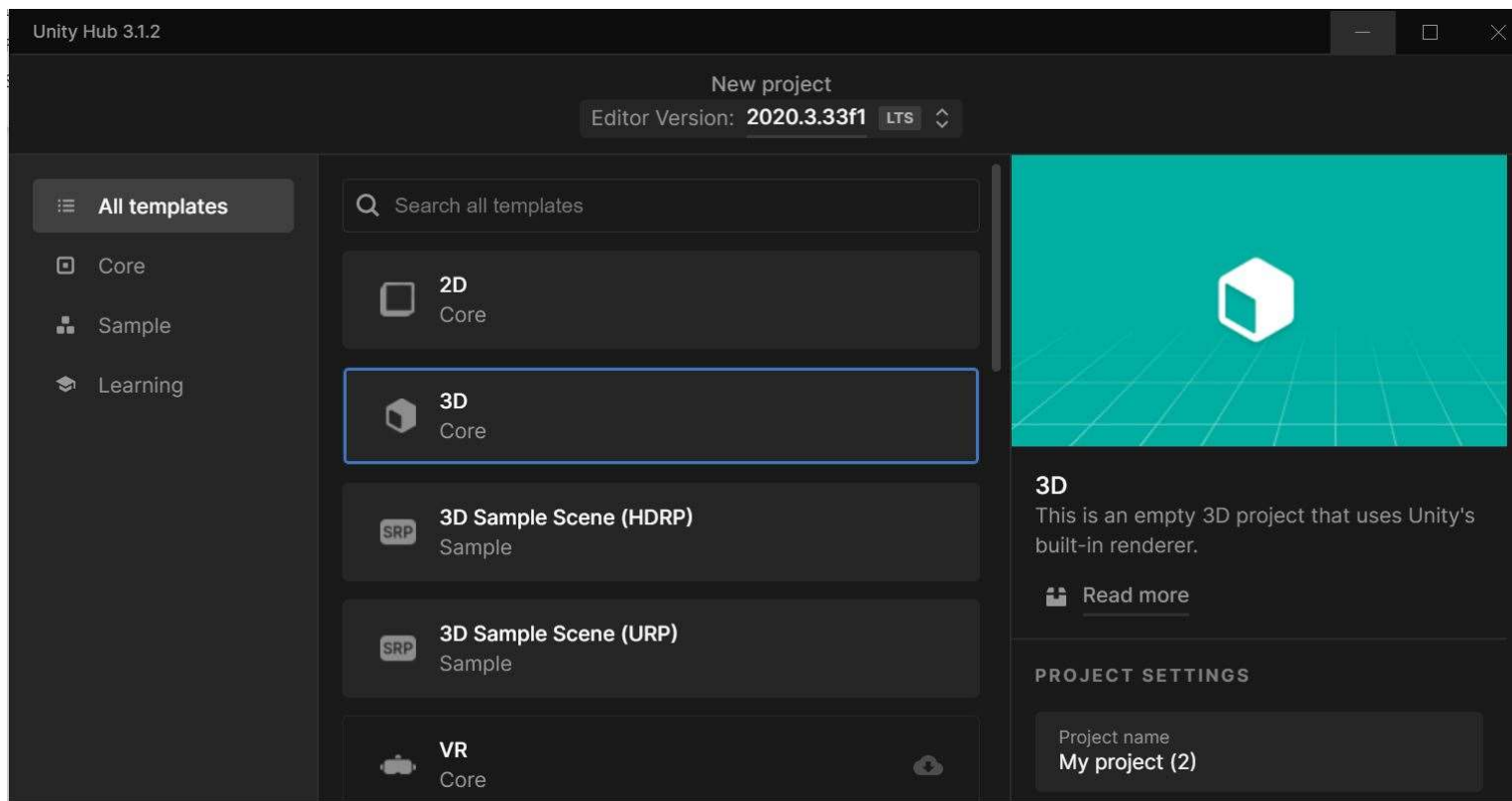
Add modules Required: 0 bytes Available: 344.09 GB

DEV TOOLS	DOWNLOAD SIZE	SIZE ON DISK
Microsoft Visual Studio Community 2019	Installed	1.24 GB

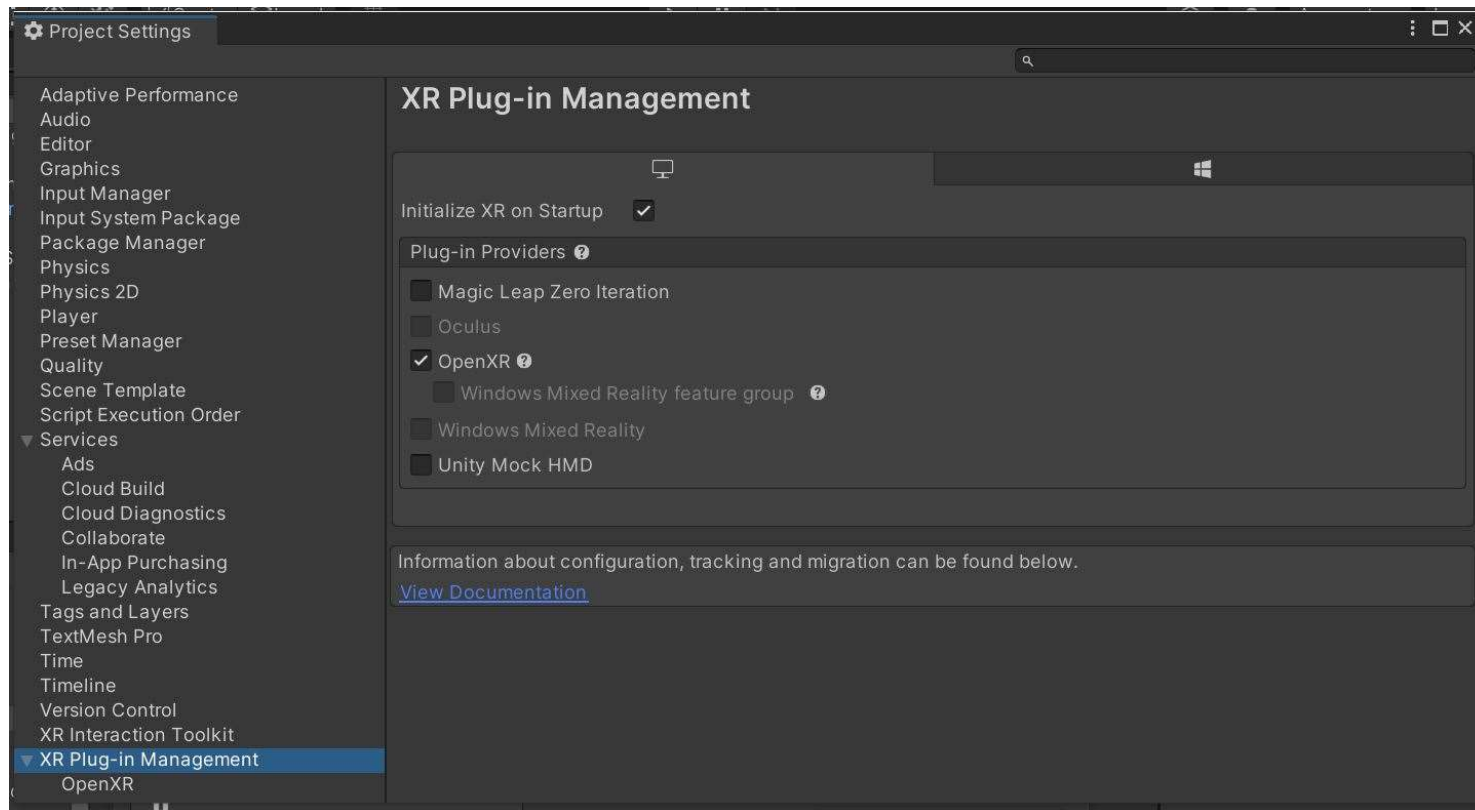
PLATFORMS	DOWNLOAD SIZE	SIZE ON DISK
<input type="checkbox"/> Android Build Support	354.97 MB	1.79 GB
<input type="checkbox"/> Android SDK & NDK Tools	141.14 MB	165.94 MB
<input type="checkbox"/> OpenJDK	67.2 MB	145.91 MB
<input type="checkbox"/> iOS Build Support	377.59 MB	1.72 GB
<input type="checkbox"/> tvOS Build Support	374.49 MB	1.71 GB

Install

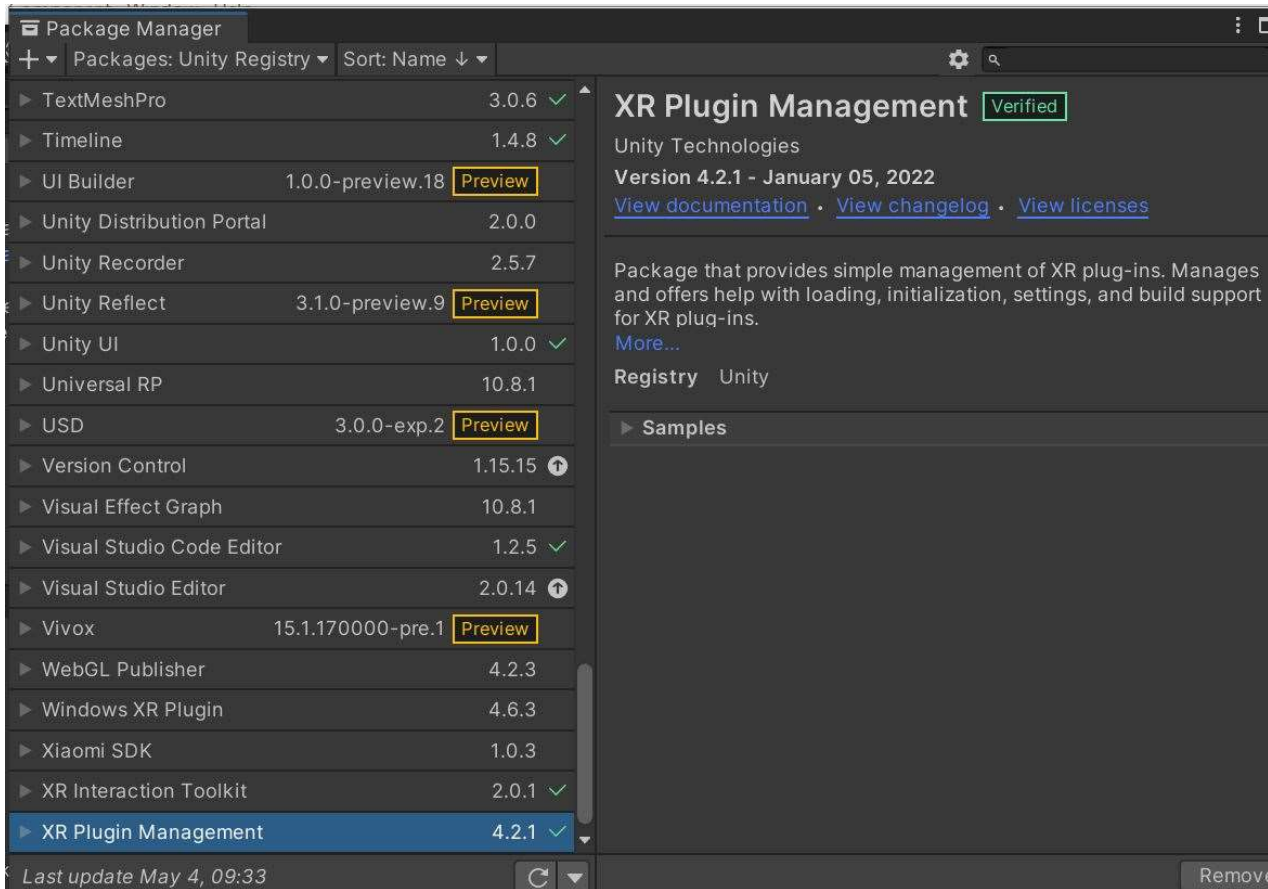
Choosing the correct template:



XR Plug-in manager:



Package Manager:



The screenshot displays the Unity Package Manager window. On the left, a list of packages is shown with their versions and status. The 'XR Plugin Management' package is highlighted at the bottom of the list. On the right, the details for the 'XR Plugin Management' package are displayed, including its version (4.2.1), release date (January 05, 2022), and a description of its functionality. The package is marked as 'Verified'.

Package Name	Version	Status
TextMeshPro	3.0.6	✓
Timeline	1.4.8	✓
UI Builder	1.0.0-preview.18	Preview
Unity Distribution Portal	2.0.0	
Unity Recorder	2.5.7	
Unity Reflect	3.1.0-preview.9	Preview
Unity UI	1.0.0	✓
Universal RP	10.8.1	
USD	3.0.0-exp.2	Preview
Version Control	1.15.15	ⓘ
Visual Effect Graph	10.8.1	
Visual Studio Code Editor	1.2.5	✓
Visual Studio Editor	2.0.14	ⓘ
Vivox	15.1.170000-pre.1	Preview
WebGL Publisher	4.2.3	
Windows XR Plugin	4.6.3	
Xiaomi SDK	1.0.3	
XR Interaction Toolkit	2.0.1	✓
XR Plugin Management	4.2.1	✓

XR Plugin Management Verified

Unity Technologies

Version 4.2.1 - January 05, 2022

[View documentation](#) · [View changelog](#) · [View licenses](#)

Package that provides simple management of XR plug-ins. Manages and offers help with loading, initialization, settings, and build support for XR plug-ins.

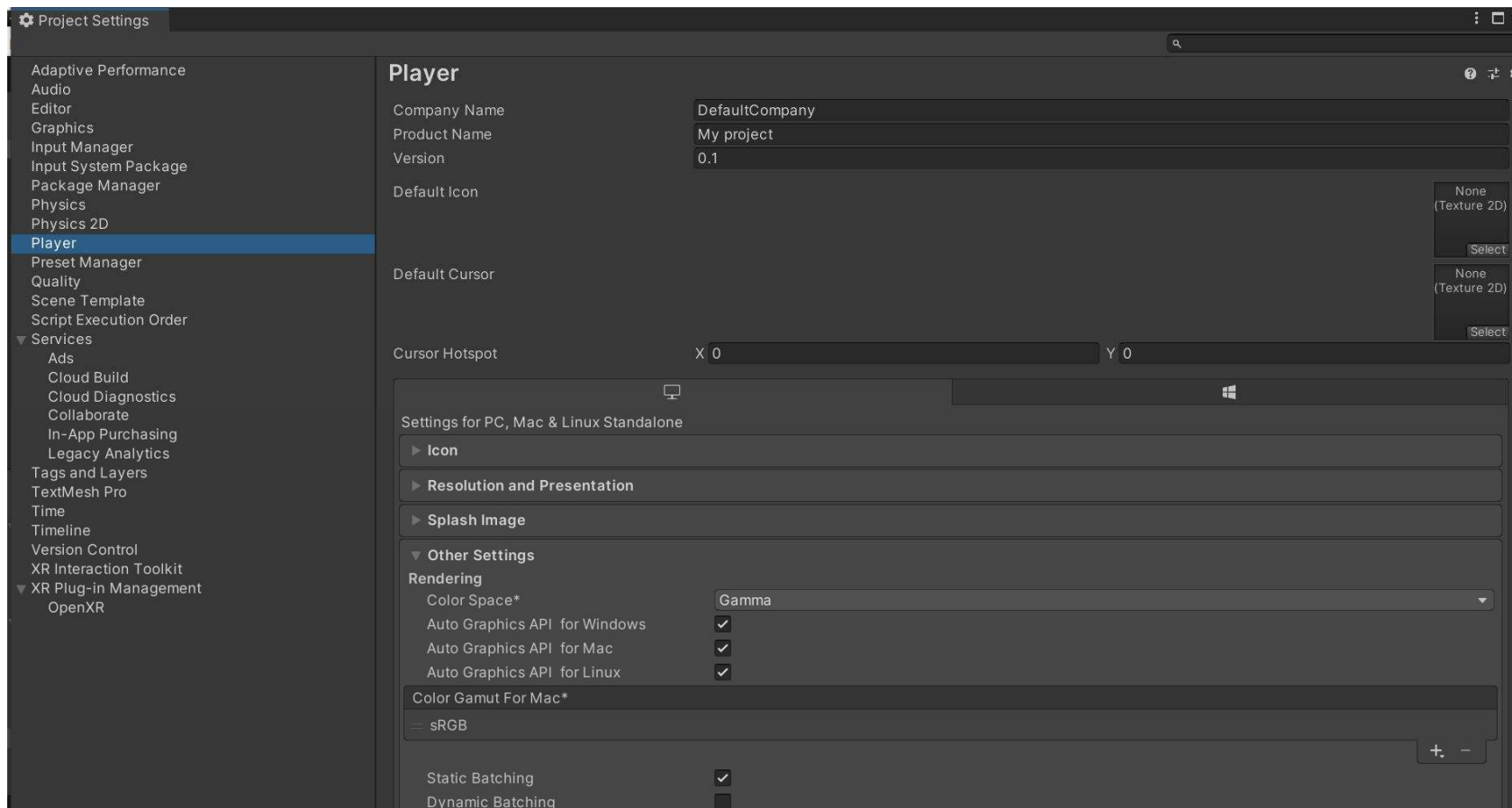
[More...](#)

Registry Unity

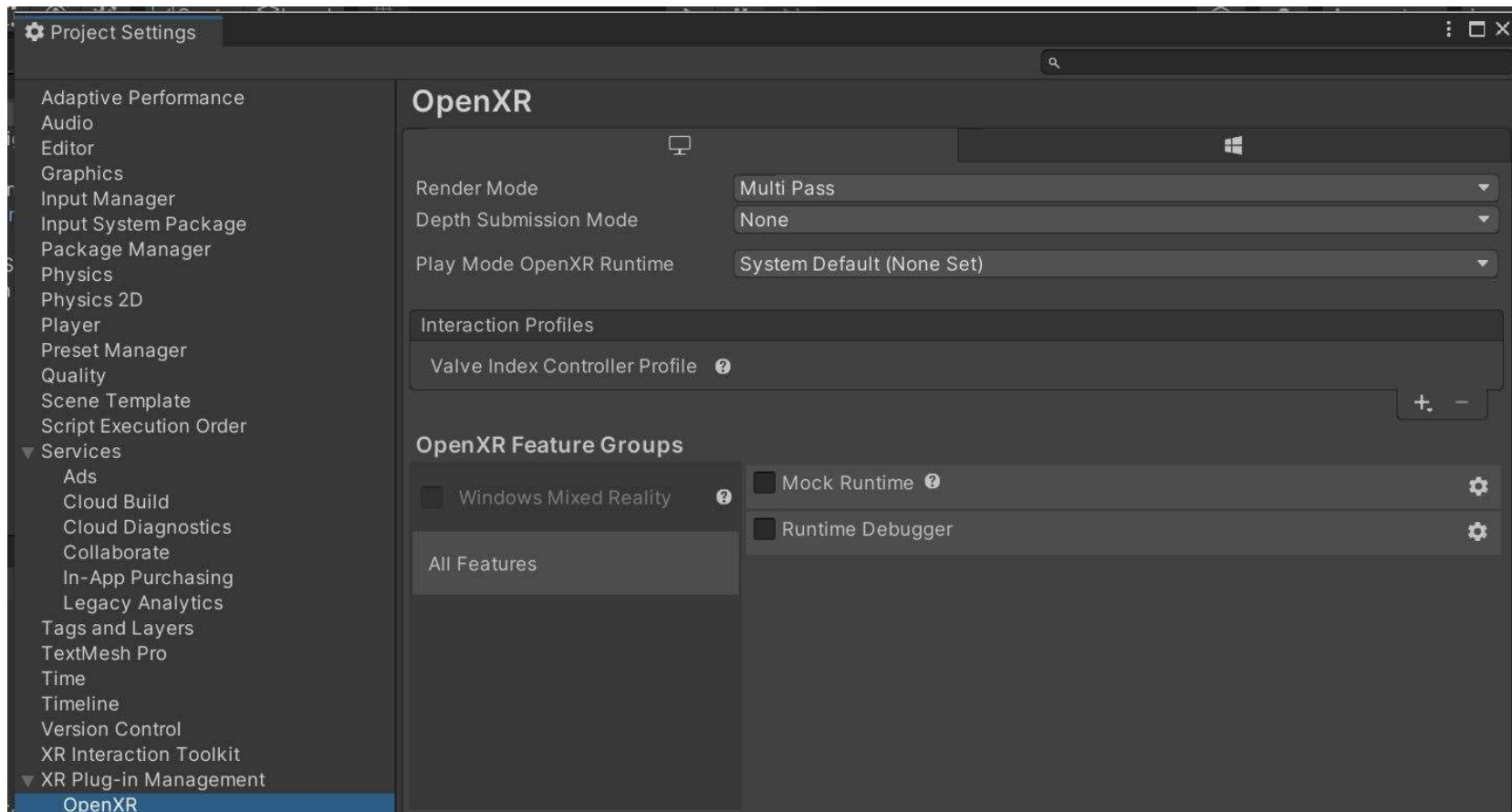
Samples

Last update May 4, 09:33 ↻ Remove

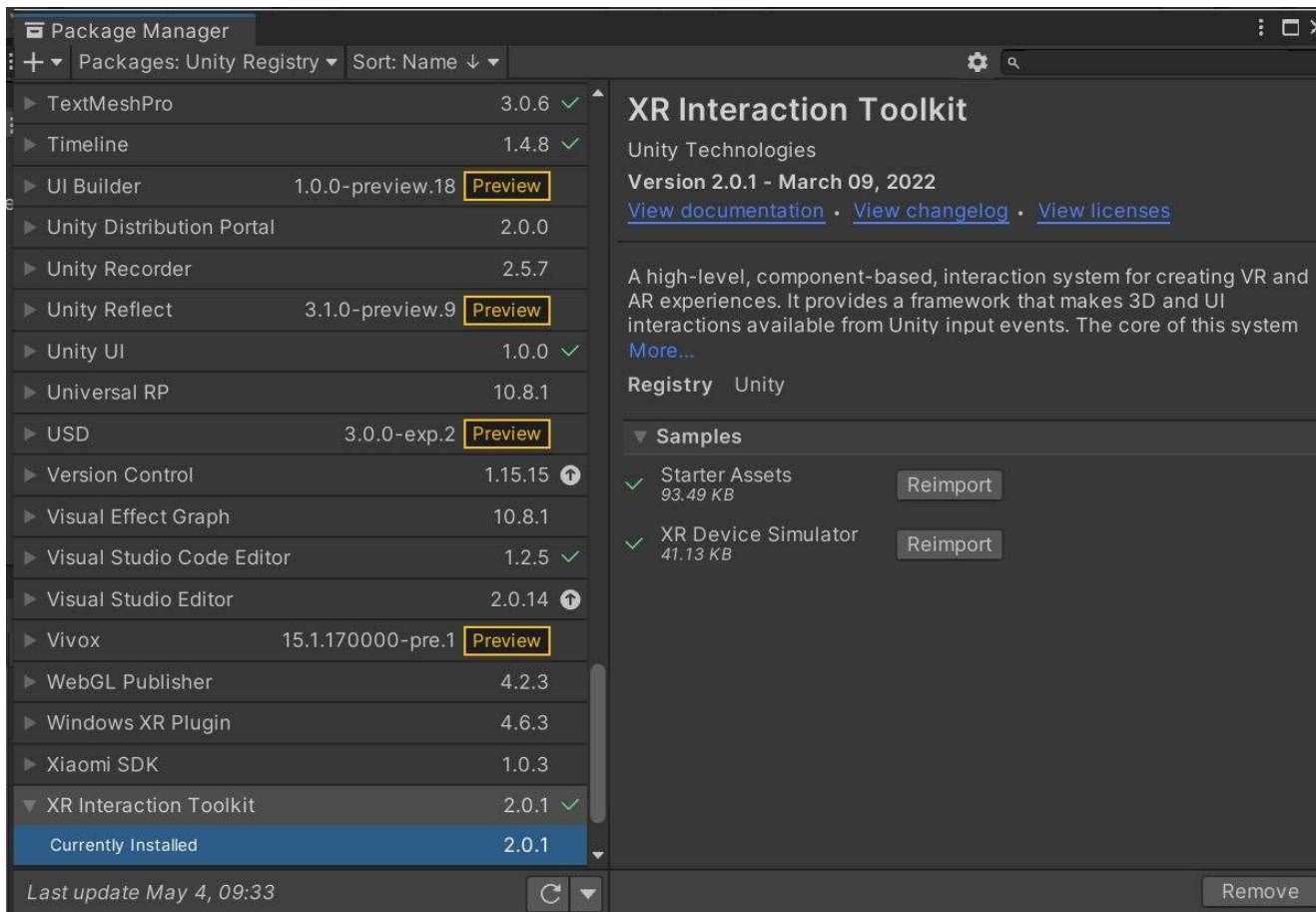
Player Settings:



VR platform to select from:



VR Hardware Emulation:



The screenshot shows the Unity Package Manager interface. On the left, a list of installed and available packages is shown, sorted by name. The 'XR Interaction Toolkit' package is highlighted at the bottom of the list, with its version '2.0.1' marked as 'Currently Installed'. Other packages like 'TextMeshPro', 'Timeline', 'UI Builder', 'Unity Distribution Portal', 'Unity Recorder', 'Unity Reflect', 'Unity UI', 'Universal RP', 'USD', 'Version Control', 'Visual Effect Graph', 'Visual Studio Code Editor', 'Visual Studio Editor', 'Vivox', 'WebGL Publisher', 'Windows XR Plugin', and 'Xiaomi SDK' are also listed. On the right, the details for the 'XR Interaction Toolkit' are displayed. It shows the package is from 'Unity Technologies' and is 'Version 2.0.1 - March 09, 2022'. There are links for 'View documentation', 'View changelog', and 'View licenses'. A description states: 'A high-level, component-based, interaction system for creating VR and AR experiences. It provides a framework that makes 3D and UI interactions available from Unity input events. The core of this system'. Below the description, there is a 'Registry' section with 'Unity' selected. Under 'Samples', there are two entries: 'Starter Assets' (93.49 KB) and 'XR Device Simulator' (41.13 KB), both with 'Reimport' buttons. At the bottom right, there is a 'Remove' button. The bottom status bar shows 'Last update May 4, 09:33' and a refresh button.

Package Name	Version	Status
TextMeshPro	3.0.6	✓
Timeline	1.4.8	✓
UI Builder	1.0.0-preview.18	Preview
Unity Distribution Portal	2.0.0	
Unity Recorder	2.5.7	
Unity Reflect	3.1.0-preview.9	Preview
Unity UI	1.0.0	✓
Universal RP	10.8.1	
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Version Control	1.15.15	ⓘ
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WebGL Publisher	4.2.3	
Windows XR Plugin	4.6.3	
Xiaomi SDK	1.0.3	
XR Interaction Toolkit	2.0.1	✓
Currently Installed	2.0.1	

XR Interaction Toolkit
Unity Technologies
Version 2.0.1 - March 09, 2022
[View documentation](#) · [View changelog](#) · [View licenses](#)

A high-level, component-based, interaction system for creating VR and AR experiences. It provides a framework that makes 3D and UI interactions available from Unity input events. The core of this system [More...](#)

Registry Unity

Samples

- ✓ Starter Assets (93.49 KB) [Reimport](#)
- ✓ XR Device Simulator (41.13 KB) [Reimport](#)

Last update May 4, 09:33 [Refresh](#) [Remove](#)

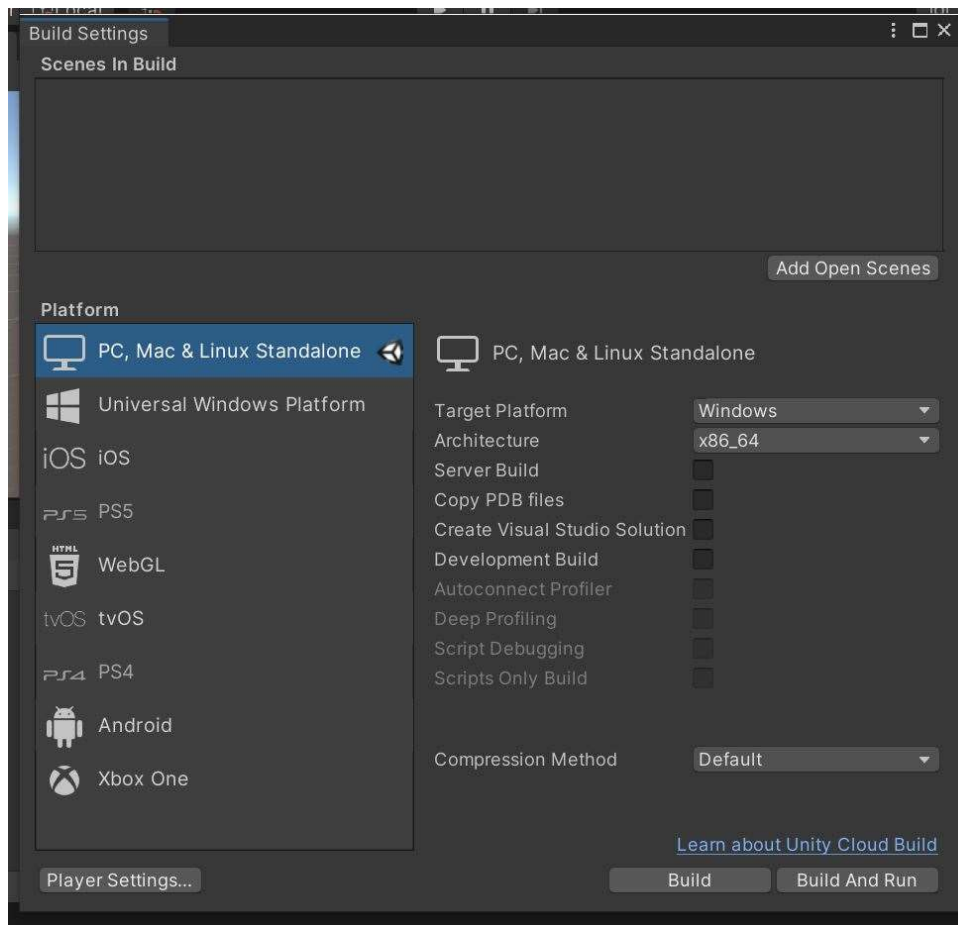


Render Pipeline setup:

- **Universal render pipeline:**

The Universal Render Pipeline (URP) is a prebuilt Scriptable Render Pipeline, made by Unity. URP provides artist-friendly workflows that let you quickly and easily create optimized graphics across a range of platforms, from mobile to high-end consoles and PCs.

Choosing build Environment:



Best Unity Practices:

- Avoid branching assets.
- Each team member should have a second copy of the project checked out for testing .
- Consider using external level tools for level editing.
- Consider saving levels in XML instead of in scenes.
- Put your world floor at $y = 0$.
- Get the scale right from the beginning.
- Use prefabs for everything.

Advantages of Unity:

- Long time support for engine versions
- Robust package management system
- IDE integration
- Ease of deployment
- Documentation abundance
- Minimal coding requirement
- Rich asset store



Limitations of Unity:

- **No external code libraries.**
- **Prefabs**
- **Strange Edge cases**
- **License issues**
- **macOS limitations when developing VR**
- **Complex particle system**
- **Documentation abundancy**
- **Upgrading existing project to a newer engine version**