

# **NOLO Sonic UE4 SDK Document**

NOLO Co., Ltd

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# 1 About NOLO Sonic UE4 SDK

Requirement for Hardware: NOLO Sonic All-in-One VR headset (Hereafter “NOLO Sonic”)

Requirement for ROM of VR headset: Please use the latest version of ROM

Unreal version: Unreal4.24.3、Unreal4.25.4

Visual Studio: VS2017 and above

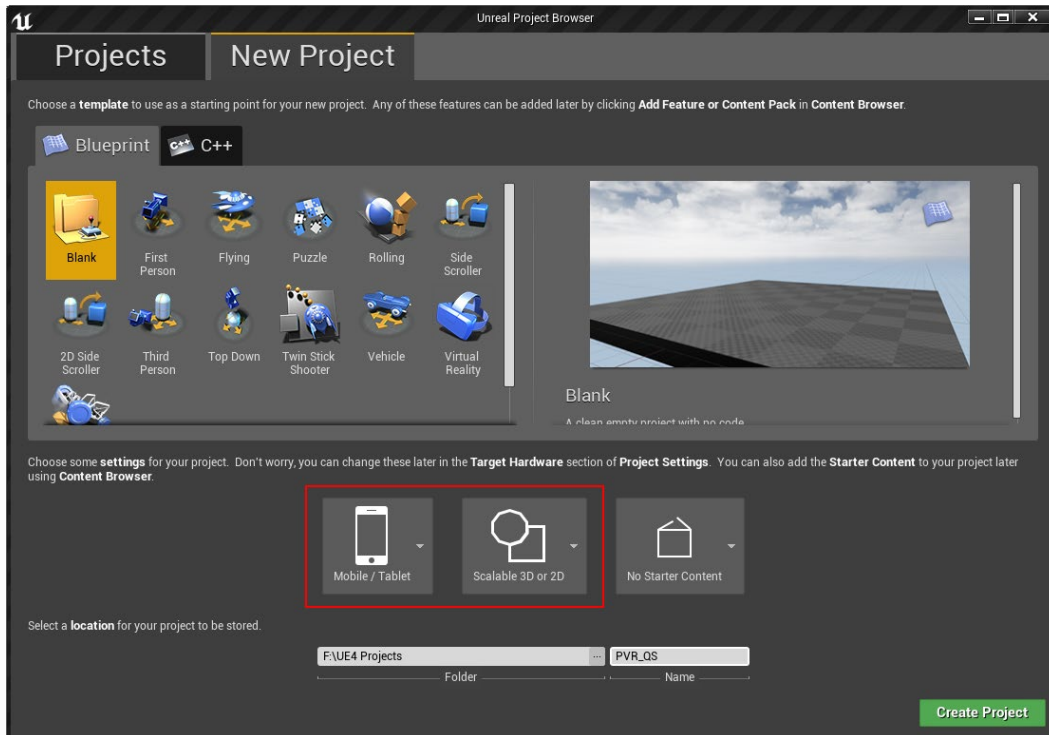
Please make sure your computer is properly and completely configured with Android Works before developing projects with the SDK.

Note: When installing Visual Studio, be sure to check "Game development using C++" and ".NetFramework 4.6.1" or above.

## 2 SDK Quick Start

### 2.1 Create a Project

When creating a new project, you can choose both Blueprint and C++ projects, here is the Blueprint of Blank project template as an example.



Due to the high rendering requirements of VR, in order to ensure that the project runs at the correct frame rate from the beginning, please ensure that the target hardware is: Mobile/Tablet, and the target image level is: Scalable 3D or 2D. In addition, the project name and project path should not appear in Chinese.

### 2.2 Project Setup

To be compatible with our SDK, the project needs to be set up to include the following points:

1. Set the Editor Start Map and Game Default Map of the project: keep the current map, then go to Edit->Project Setting->Project->Maps and Modes, set the Editor Start Map and Game Default Map of the project as the currently maintained map.

## Project - Maps & Modes

Default maps, game modes and other map related settings.

These settings are saved in DefaultEngine.ini, which is currently writable.

### Default Maps

Editor Startup Map

NewMap

Game Default Map

NewMap

2. Clear the default virtual button: Go to project settings->Engine->Input->Mobile, and clear the Default Touch Interface.

### Mobile

Always Show Touch Interface



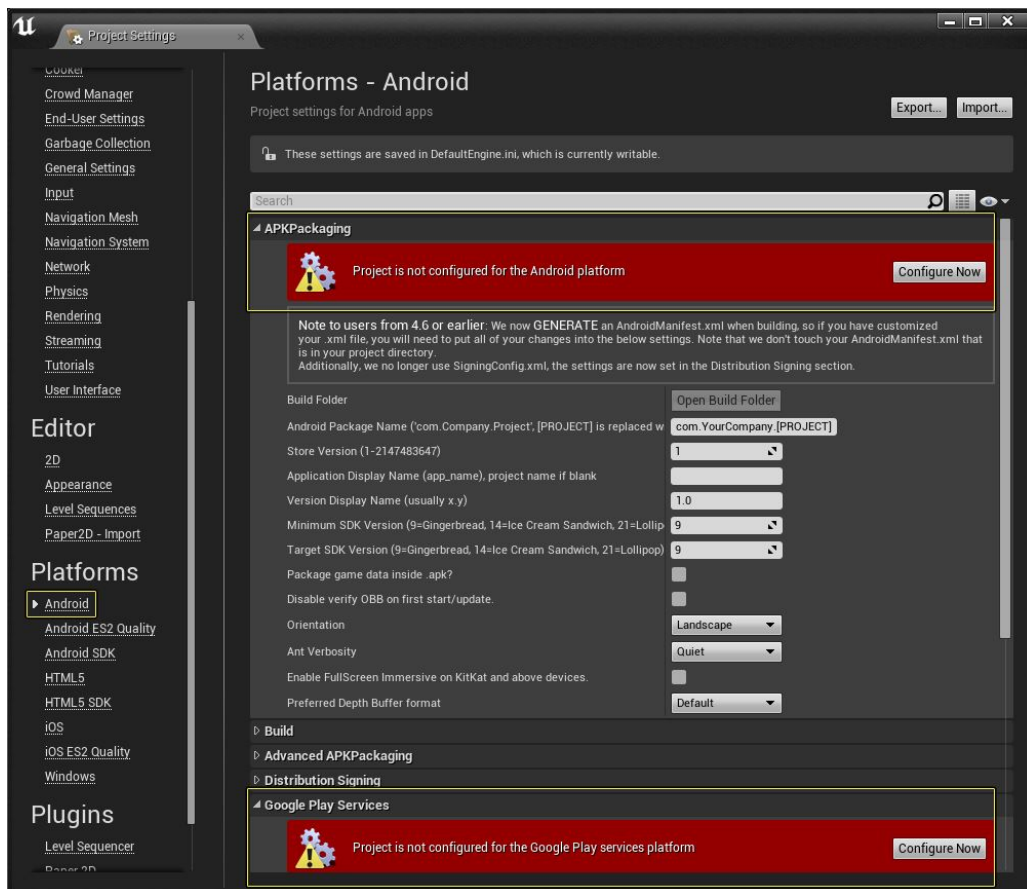
Show Console on Four Finger Tap



Default Touch Interface

None

3. Project Settings->Platforms->Android-> APK Packing, click the Config Now button, then click the Accept SDK License button shown below to ensure that the AndroidSDK configuration allows you to pack properly.



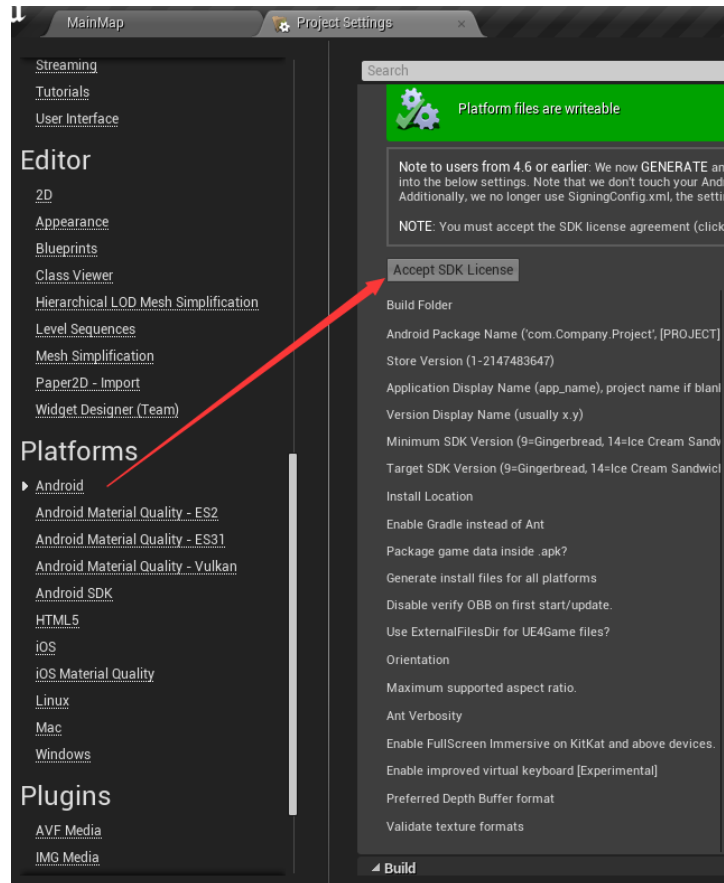
北京凌宇智控科技有限公司 NOLO Co., Ltd

电话: 010-53630964

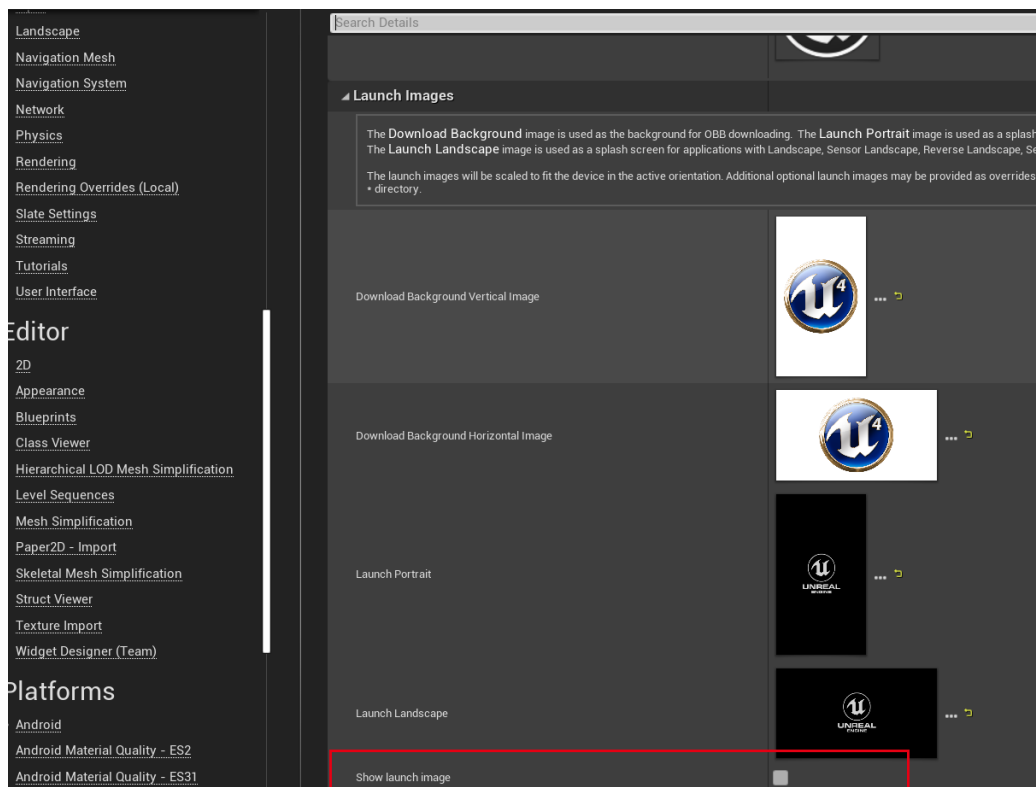
邮箱: dev@nolovr.com

地址: 北京市海淀区宝盛南路1号院奥北科技园20号楼2层203室

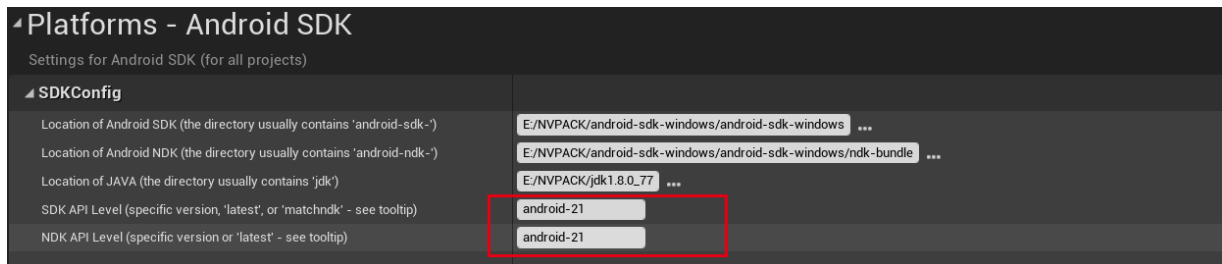
邮编: 100192



#### 4. Project Settings->Platforms->Android->Launch Images, Uncheck Show Launch image.



5. In Project Settings->Platforms->Android SDK, set the SDK API Level to latest and NDK API Level to android-21 to ensure your project will be compiled against the latest Android SDK.



6. Check "Start in VR" in Project Settings->Project->Description->Setting.



7. Close Plugins that conflict with the SDK: Go to Edit->Plugins and uncheck all items under Built-in / Virtual Reality, and all items under Built-in / Input Devices. At this point the editor will prompt for a restart, we can just close the editor.

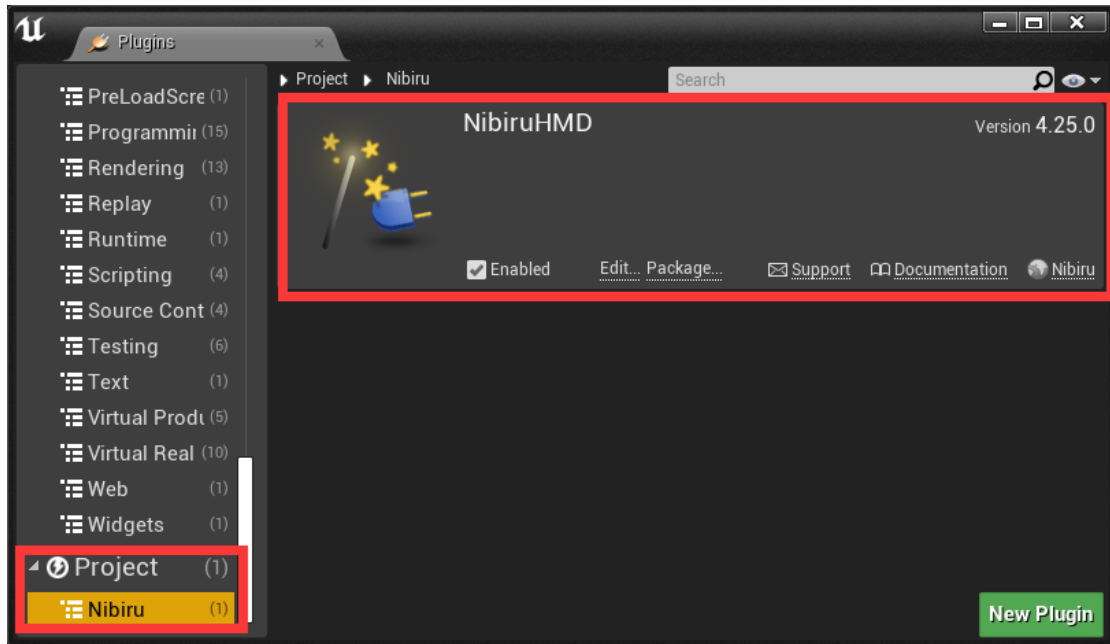
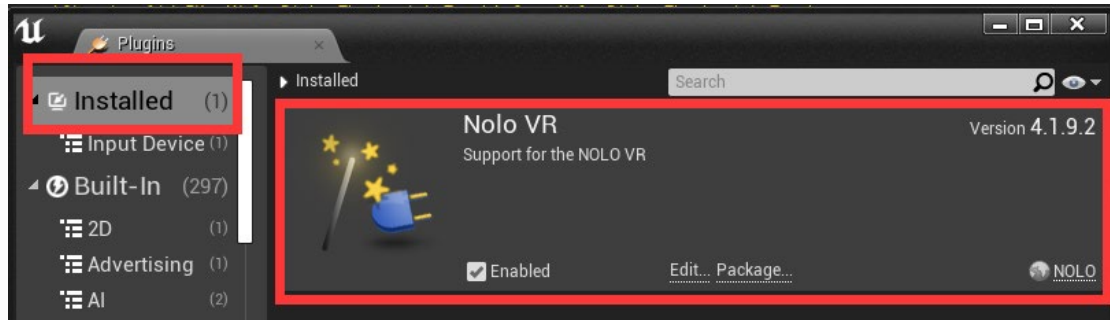
## 2.3 Import SDK development kit

Be sure to keep the editor closed and copy the extracted Plugins directory to the root directory of the project:

名称	修改日期	类型	大小
Config	2018/3/28 16:10	文件夹	
Content	2018/3/28 16:10	文件夹	
Intermediate	2018/3/28 16:12	文件夹	
Plugins	2018/3/28 16:16	文件夹	
Saved	2018/3/28 16:10	文件夹	
MyProject.uproject	2018/3/28 16:10	Unreal Engine Project File	1 KB

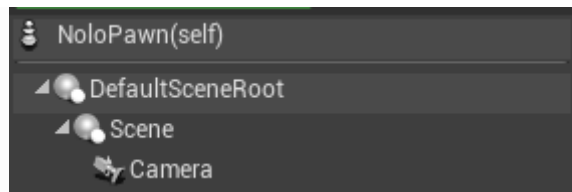
Then double-click the project name to re-open it.

After the project is opened, you can see our plug-in under the Plugins page:



## 2.4 Complete Project

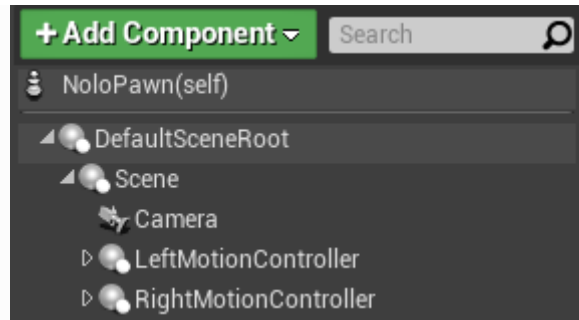
1. Create a new Pawn blueprint class, add a Scene component under its DefaultSceneRoot component, and then create a new Camera component under the Scene component:



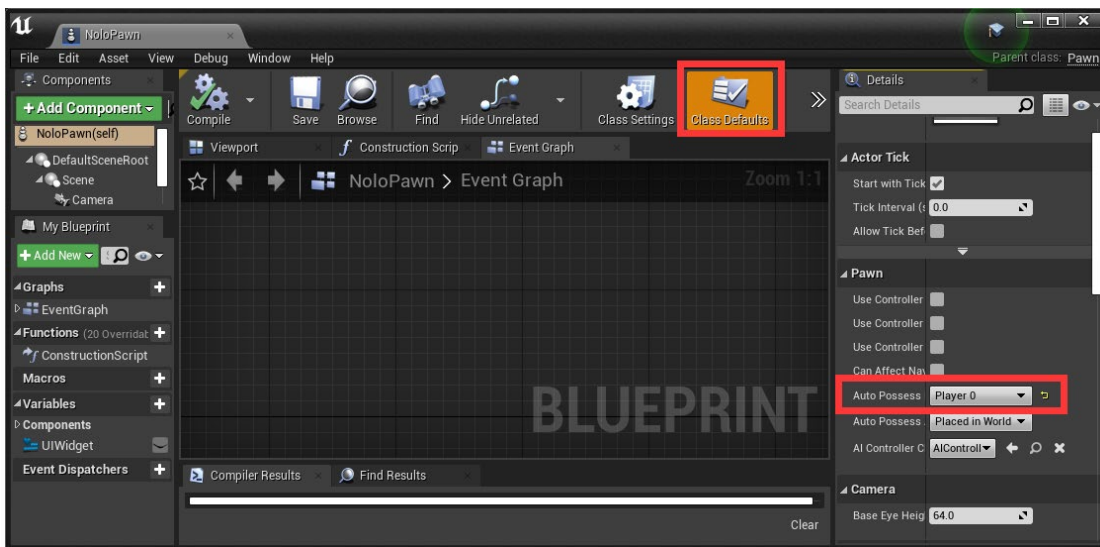
After the package being built and installed into the headset, the relative position/posture of this Camera will be refreshed in real-time according to the headset, completing the head tracking and stereo rendering.

2. Add a Motion Controller component under the Scene component and add a model. After adding the Motion Controller component, the position and direction of the Motion Controller component can be synchronized with the position and rotation of the NOLO controller to complete the controller tracking.





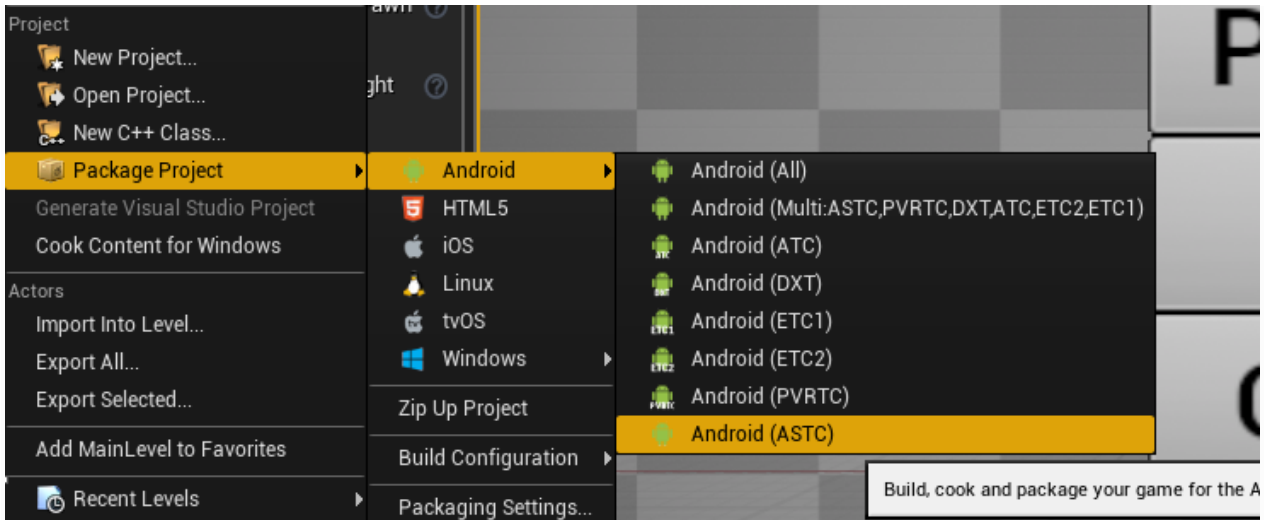
3. In the default settings of Pawn, set AutoPossessPlayer under Pawn to Player0



4. Drag the Pawn into the scene and adjust the position and direction.

## 2.5 Project packaging

The texture compression format supported by Nolo series devices is ASTC, so you need to select Android (ASTC) when packaging the project. The specific packaging process is: in the editor, execute the file -> package project -> Android -> Android (ASTC), you can package (it is recommended to enter the "Project Settings" first, check the "Package game data inside .apk?" in the Platforms's sub-section Android to pack the data into the apk):

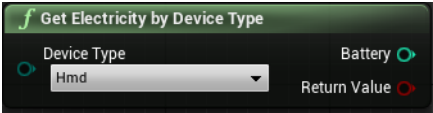


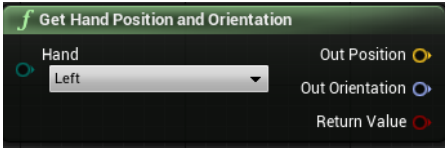
After packaging, double-click "Install\_project name\_compile configuration-armv7-es2.bat" to install:

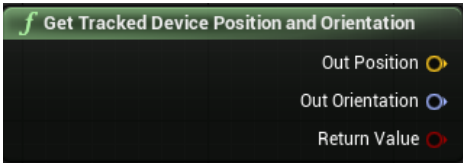
名称	修改日期	类型	大小
Install_SonicUnrealSDK-armv7.bat	2021/4/30 14:13	Windows 批处理...	2 KB
SonicUnrealSDK-armv7.apk	2021/4/30 14:13	APK 文件	131,069 KB
Uninstall_SonicUnrealSDK-armv7.bat	2021/4/30 14:13	Windows 批处理...	1 KB

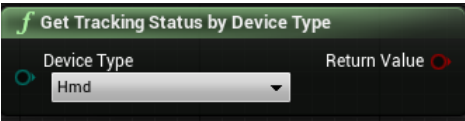
## 3 SDK interface description

### 3.1 Blueprint interface description

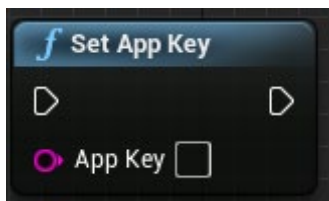
	Function	Obtain the power of the specified device
	Input	DeviceType, including HMD and left and right hands
	Output	electric quantity
	Return Value	True: acquisition success, False: acquisition failure

	Function	Obtain the position and direction of the specified hand
	Input	Hand, Left Hand / Right Hand
	Output	Position and direction
	Return Value	True: acquisition success, False: acquisition failure

	Function	Obtain the position and direction of the HMD
	Input	null
	Output	Head position and direction
	Return Value	True: acquisition success, False: acquisition failure

	Function	Obtain device connection status
	Input	Device type, always return true when it is HMD
	Output	null
	Return Value	True: connected, False: not connected

Function Set AppKey

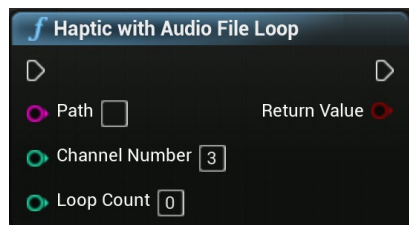


Input AppKey

Output null

Return Value null

Function Call wide-frequency linear haptics of controller through audio files. The audio file support formats pcm, mp3, mp4, aac, wav.

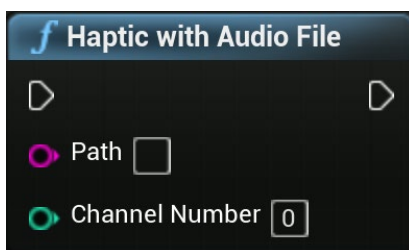


Input Path Audio file path  
Channel Number: 1 is left hand, 2 is right hand, 3 is both hands.  
Loop Count: the number of times of play, 0 means always play.

Output Null

Return Value True: connected, False: not connected

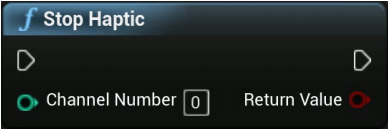
Function Call wide-frequency linear haptics of controller through audio files. The audio file support formats pcm, mp3, mp4, aac, wav.




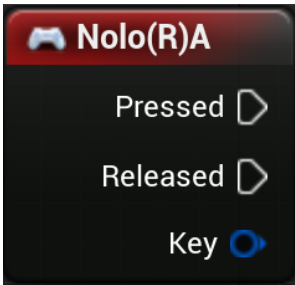

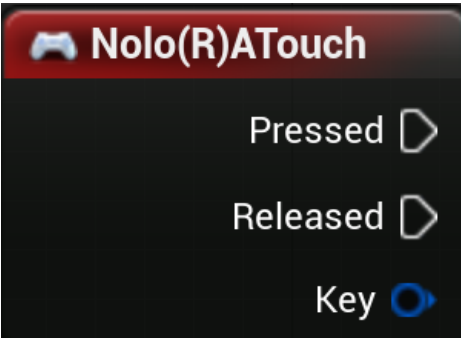
Input Path Audio file path  
Channel Number: 1 is left hand, 2 is right hand, 3 is both hands.


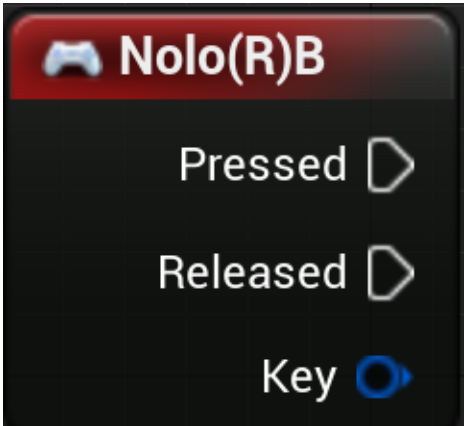




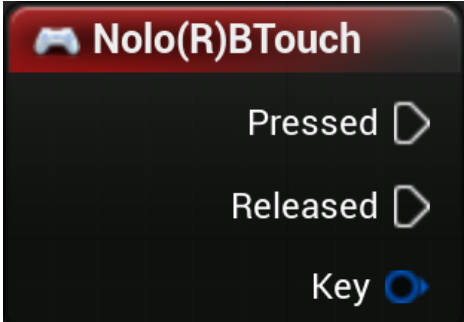




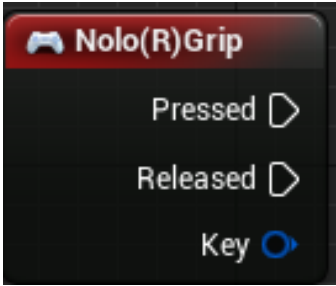




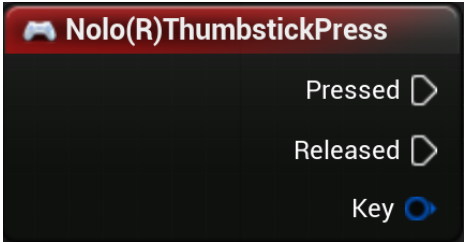



Output null


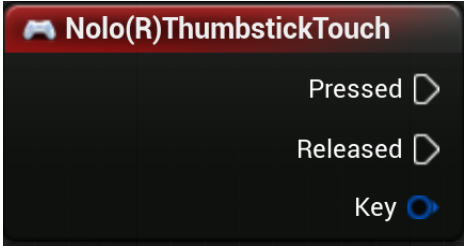


















Return Value null




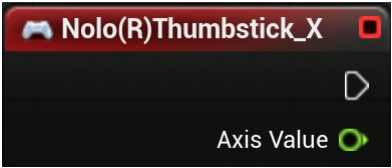

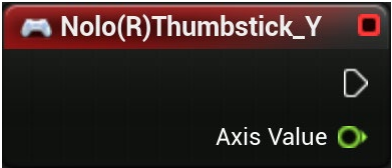

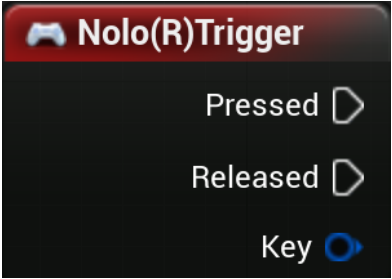
	Function	Manually stop the vibration of the controller without waiting for the end of the vibration
	Input	Channel Number: 1 is left hand, 2 is right hand, 3 is both hands.
	Output	Null
	Return Value	True: connected, False: not connected

## 3.2 Controller Button Description


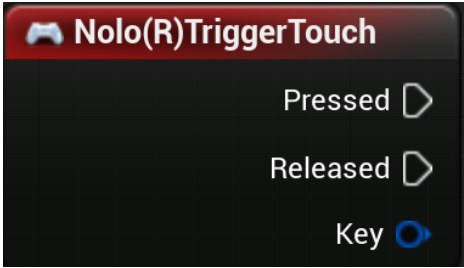

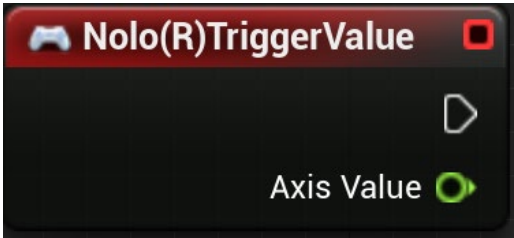

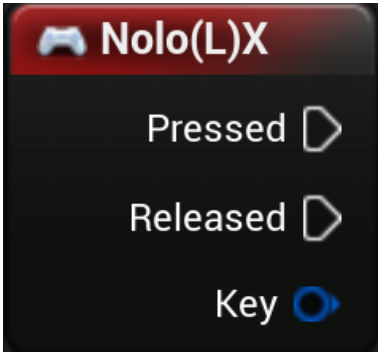

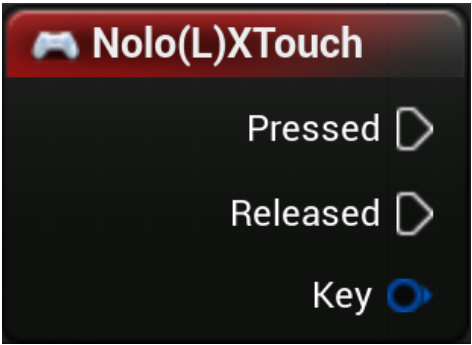
Button	Action	Input event
	Click	
	Touch	


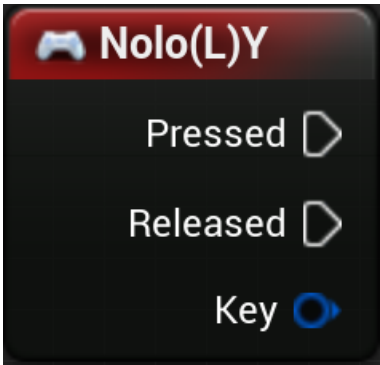

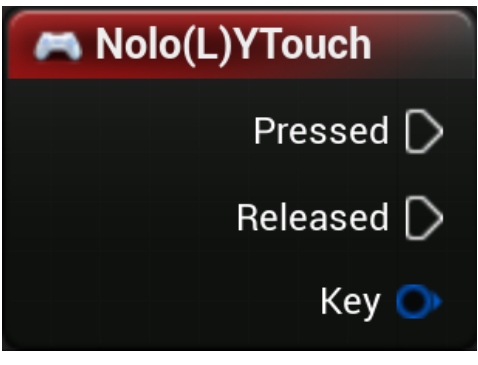

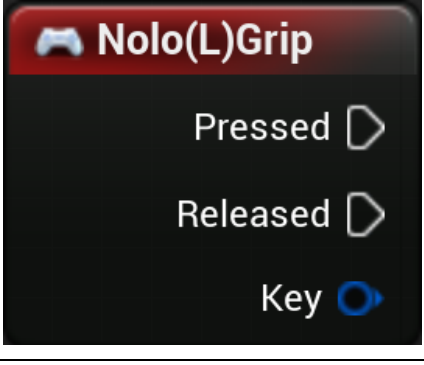

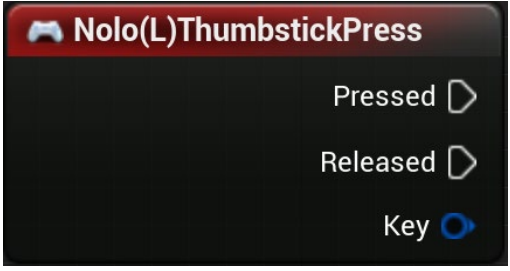
Button	Action	Input event
	Click	 <p><b>Nolo(R)B</b></p> <p>Pressed </p> <p>Released </p> <p>Key </p>
	Touch	 <p><b>Nolo(R)BT touch</b></p> <p>Pressed </p> <p>Released </p> <p>Key </p>
	Click	 <p><b>Nolo(R)Grip</b></p> <p>Pressed </p> <p>Released </p> <p>Key </p>
	Click	 <p><b>Nolo(R)ThumbstickPress</b></p> <p>Pressed </p> <p>Released </p> <p>Key </p>


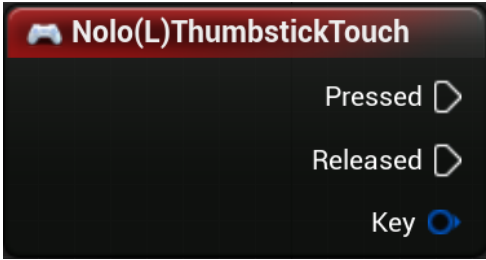




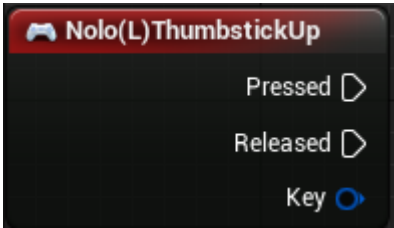




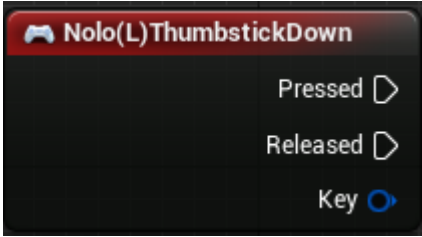








Button	Action	Input event
	Touch	 <p>Nolo(R)ThumbstickTouch</p> <ul style="list-style-type: none"> <li>Pressed </li> <li>Released </li> <li>Key </li> </ul>
	Thumbstick Up	 <p>Gamepad Left Thumbstick Up</p> <ul style="list-style-type: none"> <li>Pressed </li> <li>Released </li> <li>Key </li> </ul>
	Thumbstick Down	 <p>Nolo(R)ThumbstickDown</p> <ul style="list-style-type: none"> <li>Pressed </li> <li>Released </li> <li>Key </li> </ul>
	Thumbstick Left	 <p>Nolo(R)ThumbstickLeft</p> <ul style="list-style-type: none"> <li>Pressed </li> <li>Released </li> <li>Key </li> </ul>




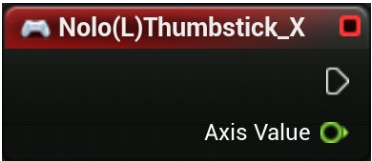

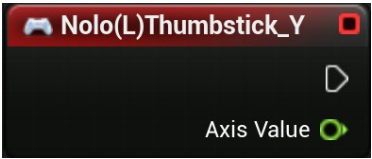

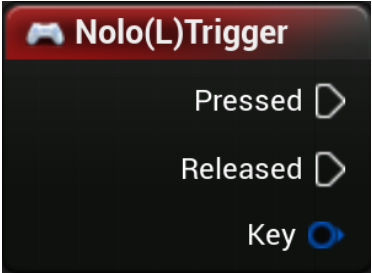
Button	Action	Input event
	Thumbstick Right	
	Thumbstick X Axis Value	
	Thumbstick Y Axis Value	
	Click	


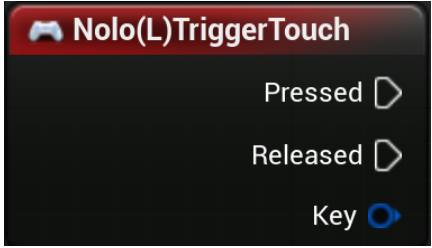

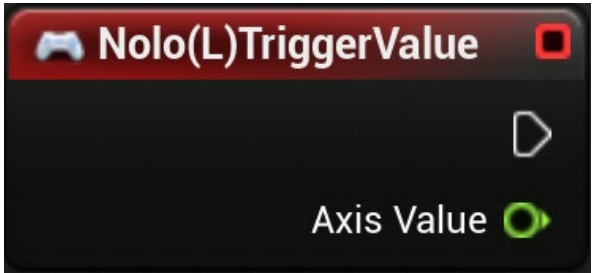

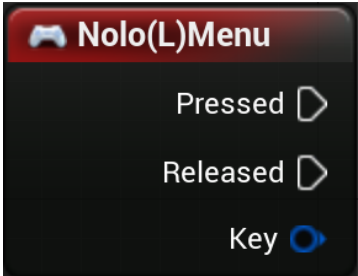


Button	Action	Input event
	Touch	
	Trigger Axis value	
	Click	
	Touch	

Button	Action	Input event
	Click	
	Touch	
	Click	
	Click	

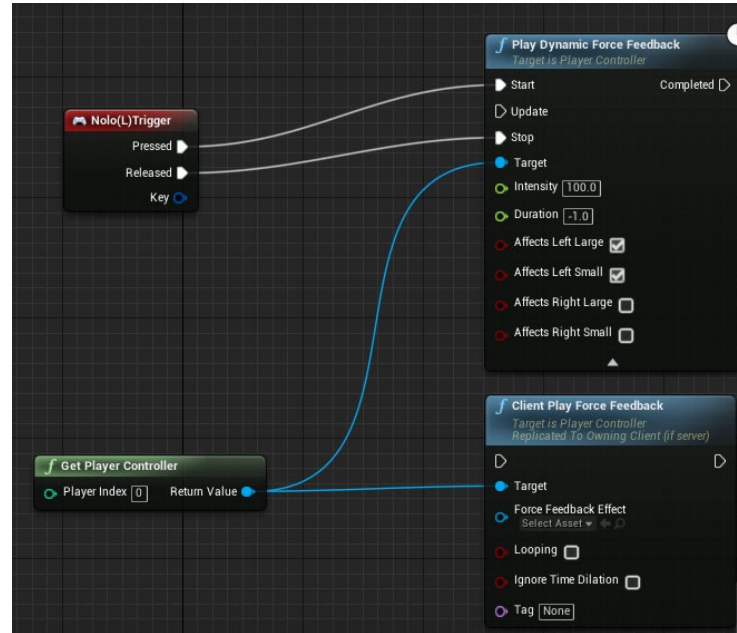
Button	Action	Input event
	Touch	 <p>Nolo(L)ThumbstickTouch</p> <ul style="list-style-type: none"> <li>Pressed </li> <li>Released </li> <li>Key </li> </ul>
	Thumbstick Up	 <p>Nolo(L)ThumbstickUp</p> <ul style="list-style-type: none"> <li>Pressed </li> <li>Released </li> <li>Key </li> </ul>
	Thumbstick Down	 <p>Nolo(L)ThumbstickDown</p> <ul style="list-style-type: none"> <li>Pressed </li> <li>Released </li> <li>Key </li> </ul>
	Thumbstick Left	 <p>Nolo(L)ThumbstickLeft</p> <ul style="list-style-type: none"> <li>Pressed </li> <li>Released </li> <li>Key </li> </ul>

Button	Action	Input event
	Thumbstick Right	
	Thumbstick X Axis Value	
	Thumbstick Y Axis Value	
	Click	

Button	Action	Input event
	Touch	 <p>Nolo(L)TriggerTouch</p> <ul style="list-style-type: none"> <li>Pressed ▸</li> <li>Released ▸</li> <li>Key 🔑</li> </ul>
	Trigger Axis value	 <p>Nolo(L)TriggerValue</p> <ul style="list-style-type: none"> <li>Axis Value 🔑</li> </ul>
	Click	 <p>Nolo(L)Menu</p> <ul style="list-style-type: none"> <li>Pressed ▸</li> <li>Released ▸</li> <li>Key 🔑</li> </ul>

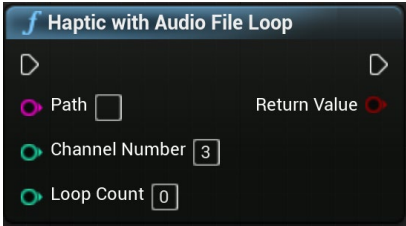
### 3.3 Controller Haptics

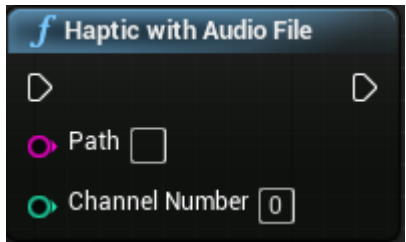
The SDK implements the engine's controller haptics interface. The following two interfaces can be used to vibrate the controller.



In addition to the above engine interface to drive the controller vibration, the SDK also supports the function to drive the controller vibration according to the audio file. To use this feature, the developer needs to call the CopyFilestoDevices interface, copy the audio files in the project directory to the device path. And then pass the device path returned by the interface to the HapticwithAudioFile interface. The specific interface description is as follows:

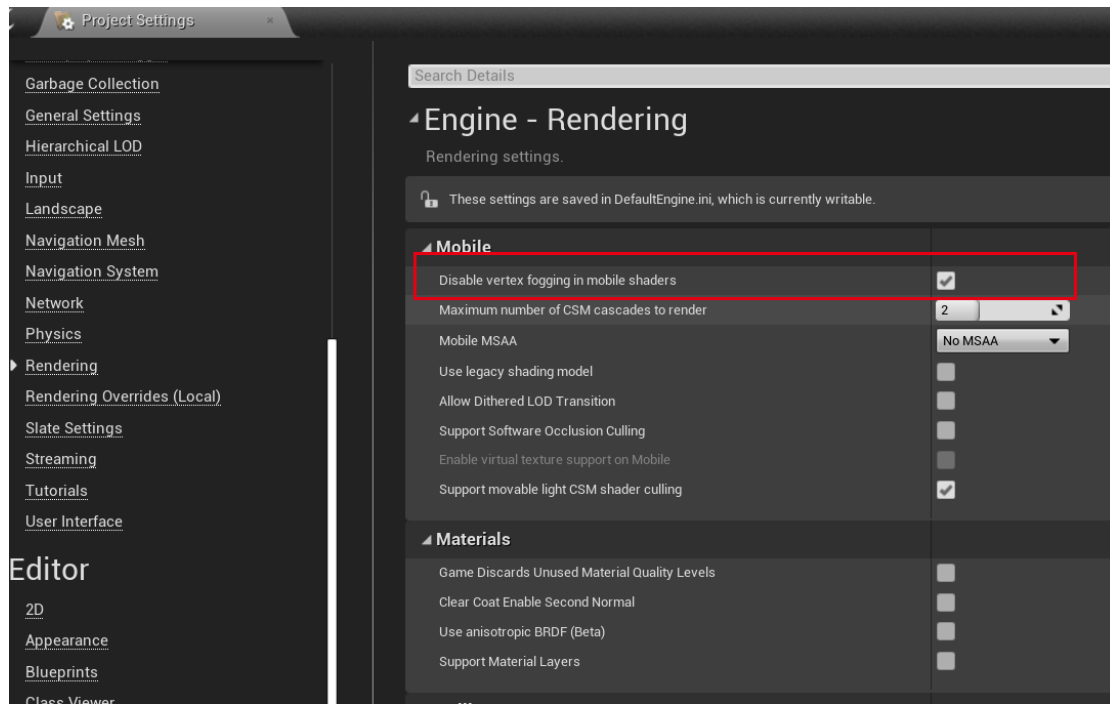
	Function	Copy the audio files in the project path to the device path
	Input	Files Path: The project path of the file File Name: File name of the Audio file (with extension)
	Output	Copy the completed file path
	Return Value	True: Copy success, False: Copy failure

	Function	Call wide-frequency linear haptics of controller through audio files. The audio file support formats pcm, mp3, mp4, aac, wav.
	Input	Path Audio file path Channel Number: 1 is left hand, 2 is right hand, 3 is both hands. Loop Count: the number of times of play, 0 means always play.
	Output	Null
	Return Value	True: connected, False: not connected

	Function	Call wide-frequency linear haptics of controller through audio files. The audio file support formats pcm, mp3, mp4, aac, wav.
	Input	Path Audio file path Channel Number: 1 is left hand, 2 is right hand, 3 is both hands.
	Output	Null
	Return Value	Null

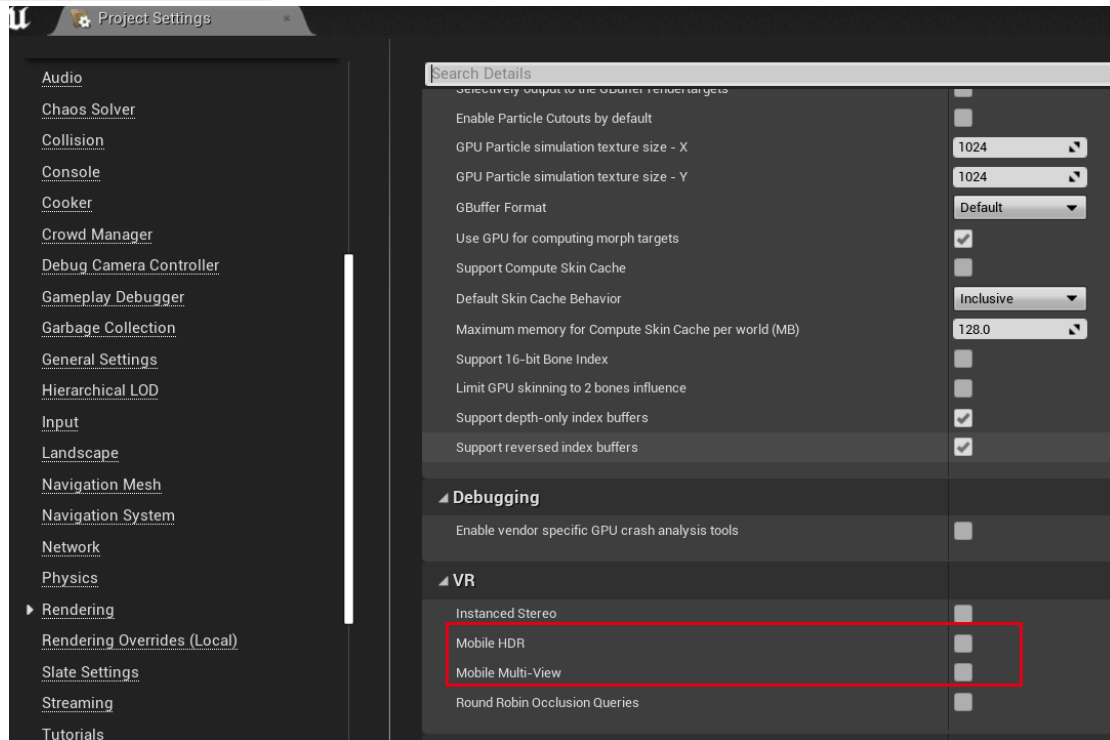
## 4 Notes

1. To ensure the frame rate of the Demo, please keep the "Disable vertex fogging in mobile shaders" checked under the project settings ->Engine->Rendering->Mobile without using atmospheric fog.



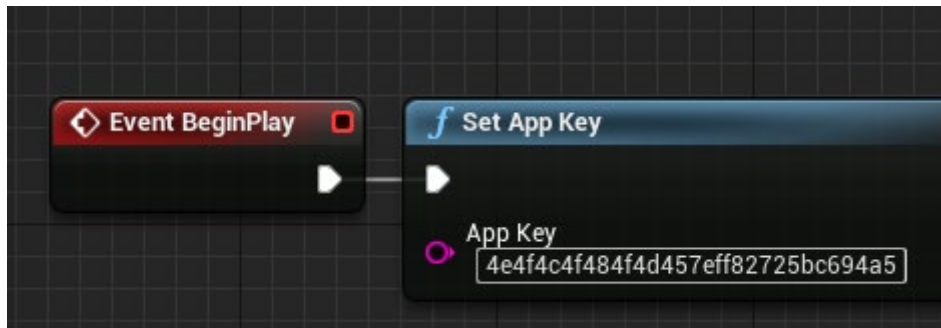
2. The SDK does not support the Mobile HDR and Multi View function at the moment. Please make sure the "Mobile HDR" and "Mobile Multi-View" under Project Settings->Engine->Rendering->VR are unchecked.





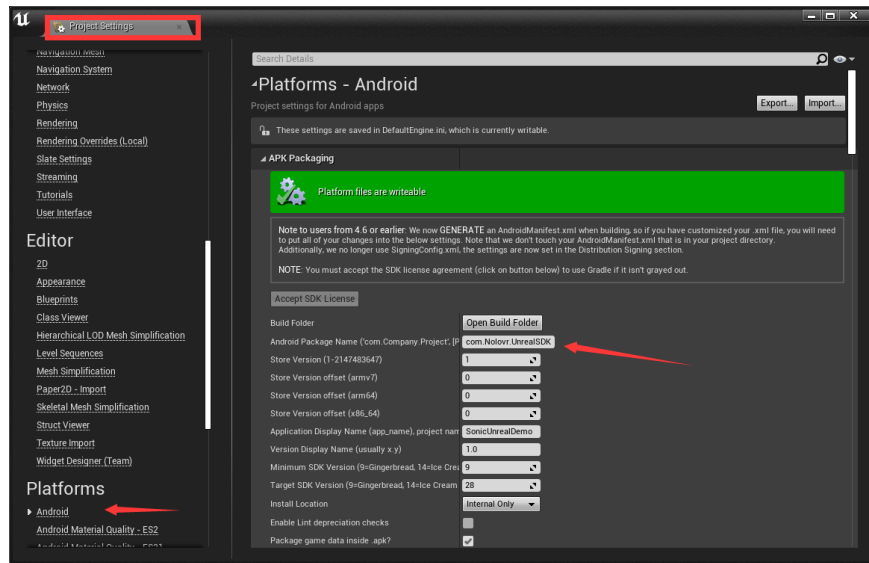
3. The game must be set with an APPKey to run normally. Please contact [dev@nolovr.com](mailto:dev@nolovr.com) to obtain the Appkey and fill it in your project. You can use the public Appkey in the debugging phase, and change it to official Appkey when it is launched officially.

Public Appkey: 4e4f4c4f484f4d457eff82725bc694a5

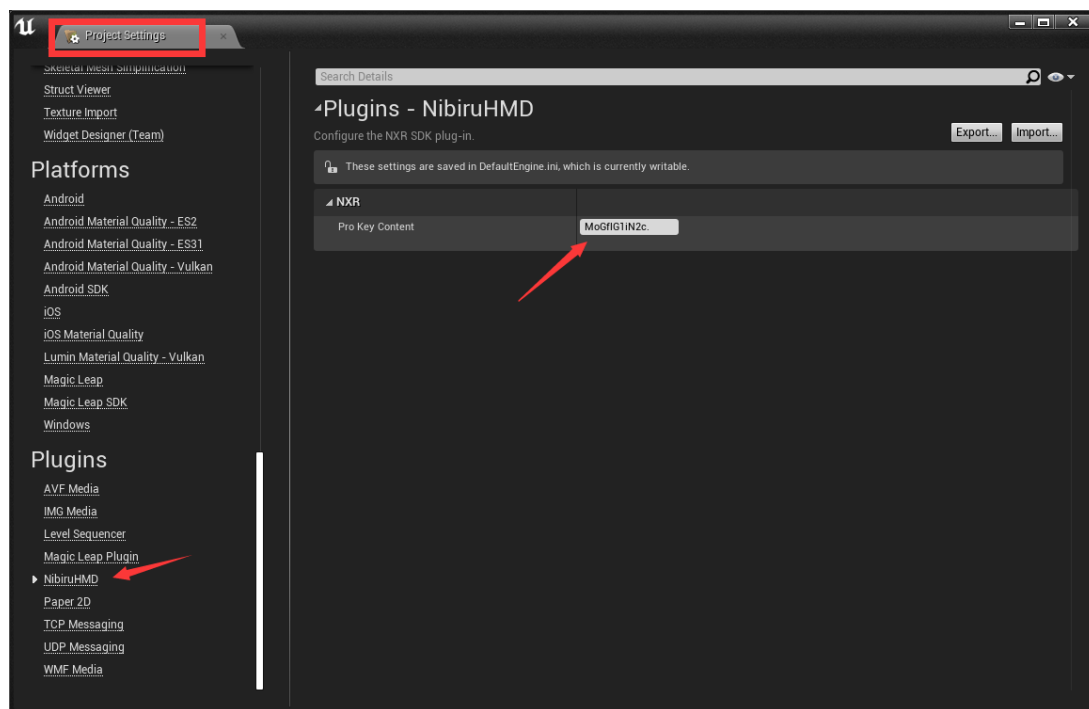


Test project package name: com.Nolovr.UnrealSDK, the apk package name is bound to the NibiruSDKKey.bin file. If you need to modify the package name, please contact [dev@nolovr.com](mailto:dev@nolovr.com) to obtain the NibiruSDKKey.bin file.

Please see the following figure to modify the package name:



The path to NibiruSDKKey.bin is shown in the following figure.



4. The SDK does not support Unreal's RHI thread at the moment, please add the following content under the [/Script/Engine.RendererSettings] tag in the project directory/Config/DefaultEngine.ini file when developing the 4.25 version project to close RHI Thread:

`r.OpenGL.AllowRHIThread=False`

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