

使用 Unity 打造高品质 XR内容体验

2023

Unity 中国 XR产品技术总监 李鹏鹏



TRIPLE

TEAM SCHEDULE

DATE	OPPONENT	TIME	TV
9/7	AT PIT	8:00	ESPN
9/14	AT CIN	1:00	ESPN
9/21	AT TEN	8:00	ESPN
9/28	AT IND	1:00	ESPN
10/5	AT NYJ	8:00	ESPN
10/12	AT BAL	1:00	ESPN
10/19	AT CLE	8:00	ESPN
10/26	AT DEN	1:00	ESPN
11/2	AT OAK	8:00	ESPN
11/9	AT ARI	1:00	ESPN
11/16	AT CAR	8:00	ESPN
11/23	AT WASH	1:00	ESPN
11/30	AT DAL	8:00	ESPN
12/7	AT HOU	1:00	ESPN
12/14	AT KC	8:00	ESPN
12/21	AT MIN	1:00	ESPN
12/28	AT LAR	8:00	ESPN
1/4	AT SEA	1:00	ESPN
1/11	AT NYG	8:00	ESPN
1/18	AT PHI	1:00	ESPN
1/25	AT WAS	8:00	ESPN
2/1	AT ATL	1:00	ESPN
2/8	AT MIA	8:00	ESPN
2/15	AT BUF	1:00	ESPN
2/22	AT NE	8:00	ESPN
2/29	AT DET	1:00	ESPN
3/7	AT CHI	8:00	ESPN
3/14	AT MIA	1:00	ESPN
3/21	AT NYG	8:00	ESPN
3/28	AT WAS	1:00	ESPN
4/4	AT PHI	8:00	ESPN
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12/17	AT NYJ	1:00	ESPN
12/24	AT BAL	8:00	ESPN
12/31	AT PIT	1:00	ESPN

ROTTOR

SEASON NAME



FREE PLAYER

ARMOR THE LEAGUE

DATE	OPPONENT	SCORE
9/7	PIT	17-10
9/14	CIN	24-17
9/21	TEN	20-17
9/28	IND	20-17
10/5	NYJ	17-10
10/12	BAL	17-10
10/19	CLE	17-10
10/26	DEN	17-10
11/2	OAK	17-10
11/9	ARI	17-10
11/16	CAR	17-10
11/23	WASH	17-10
11/30	DAL	17-10
12/7	HOU	17-10
12/14	KC	17-10
12/21	MIN	17-10
12/28	LAR	17-10
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1/11	NYG	17-10
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1/25	WAS	17-10
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3/28	WAS	17-10
4/4	PHI	17-10
4/11	NYJ	17-10
4/18	BAL	17-10
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5/9	TEN	17-10
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12/10	PHI	17-10
12/17	NYJ	17-10
12/24	BAL	17-10
12/31	PIT	17-10

SEASON TABLET



PROTECTOR







优秀XR体验的最基本特征是什么？



**精良的
画面效果**

**亮眼的
游戏逻辑**

**稳定的
画面帧率**

**自然的
交互方式**



Unity 是如何助力开发者解决这些问题？



Unity XR

1. XR 跨平台

XR new plug-in framework

2. 降低 XR 开发门槛

XR 开发者工具

Visual Scripting for XR

New Input System for XR

AI 工具

3. 提升 XR 画面质量与性能

URP for XR

HDRP for XR



Virtual Reality Devices

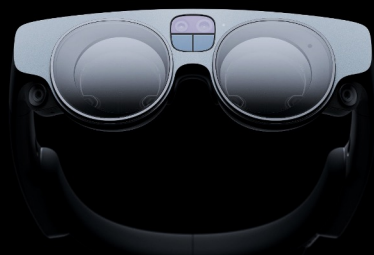
- Apple -> Vision Pro
- Oculus -> Rift, Quest 1 & 2 & Pro
- Pico -> Neo 3, 4
- HTC -> Vive, Vive Focus, Cosmos, Flow
- Valve -> Index
- Varjo -> VR-3, XR-3
- HP -> Reverb
- Sony -> Playstation VR
- And so much more!

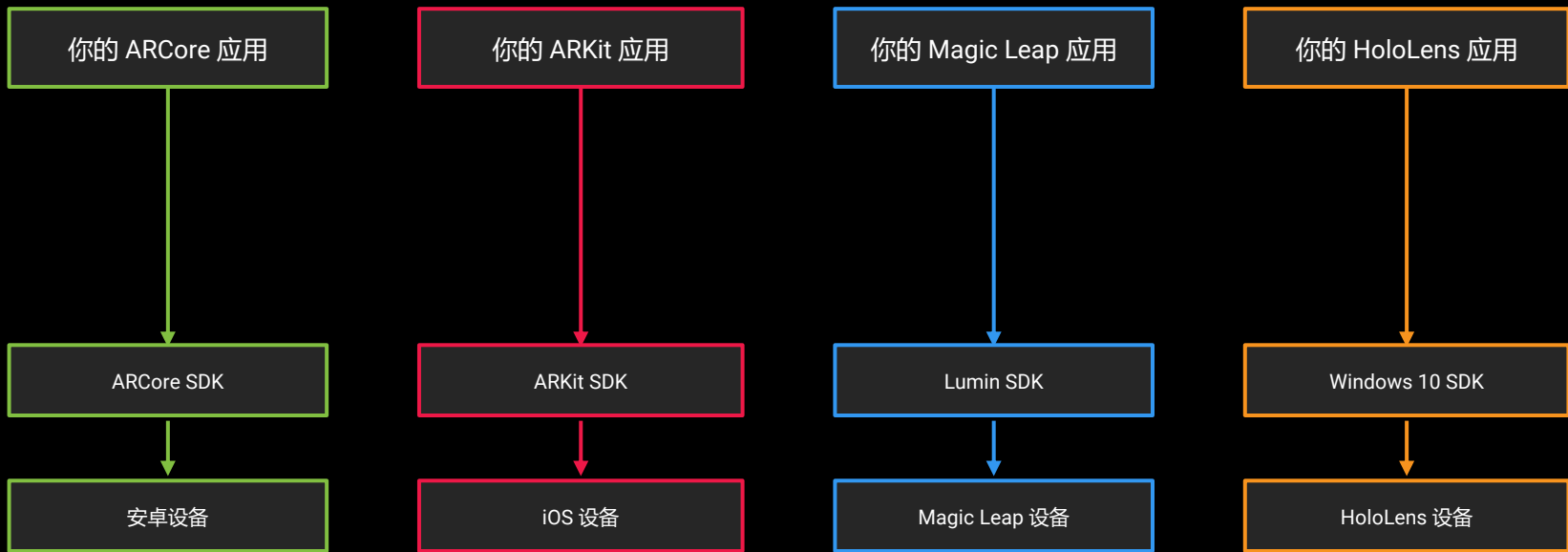


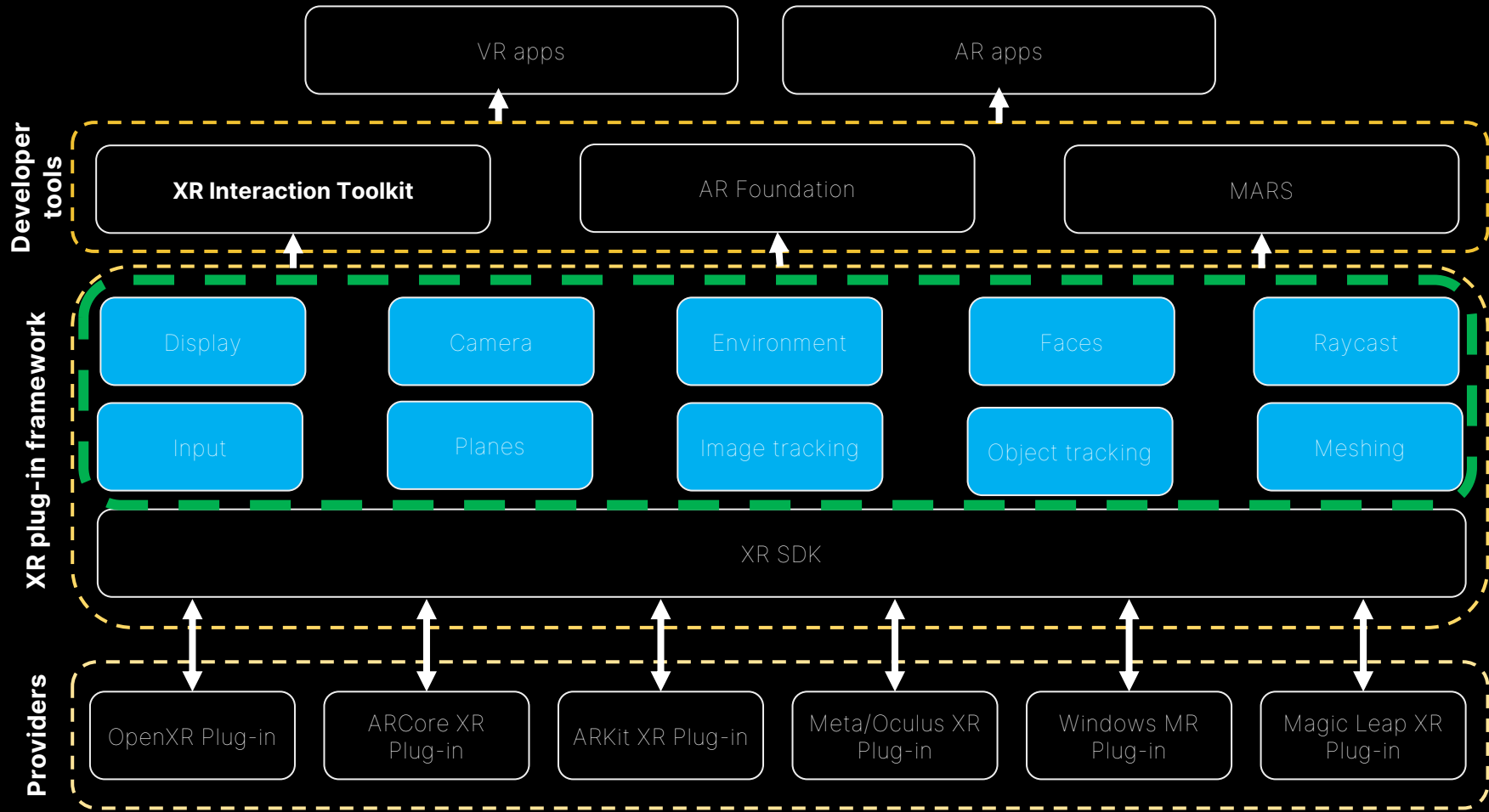


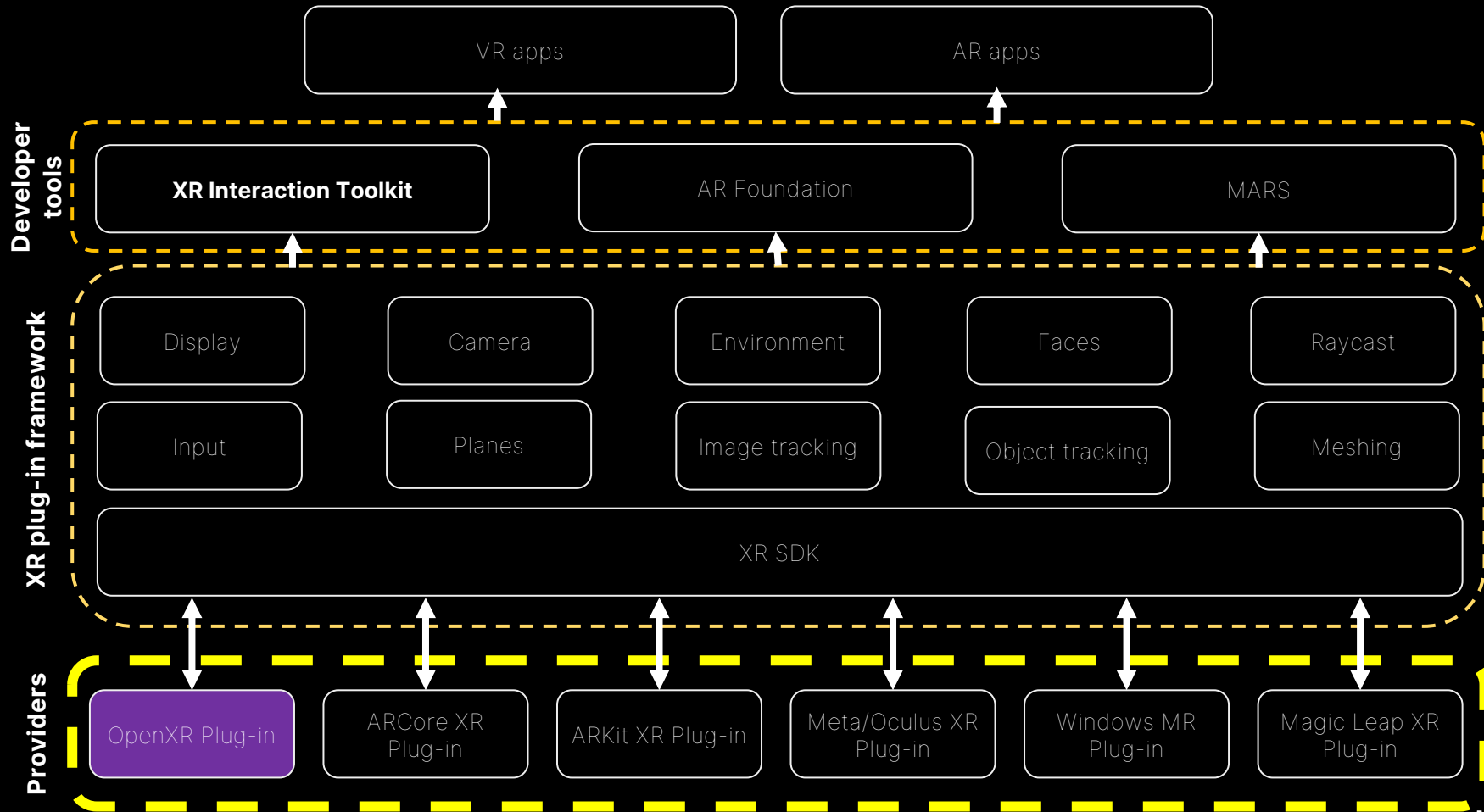
AR- Head-mounted & Handheld

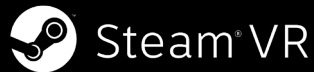
- Microsoft Hololens
- Magic Leap
- Nreal
- Lenovo A3
- Rokid Air
- 雷鸟 Air
- HUAWEI Vision Glass
- Google Android - AR Core
- Apple IOS - ARKit
- And so much more!





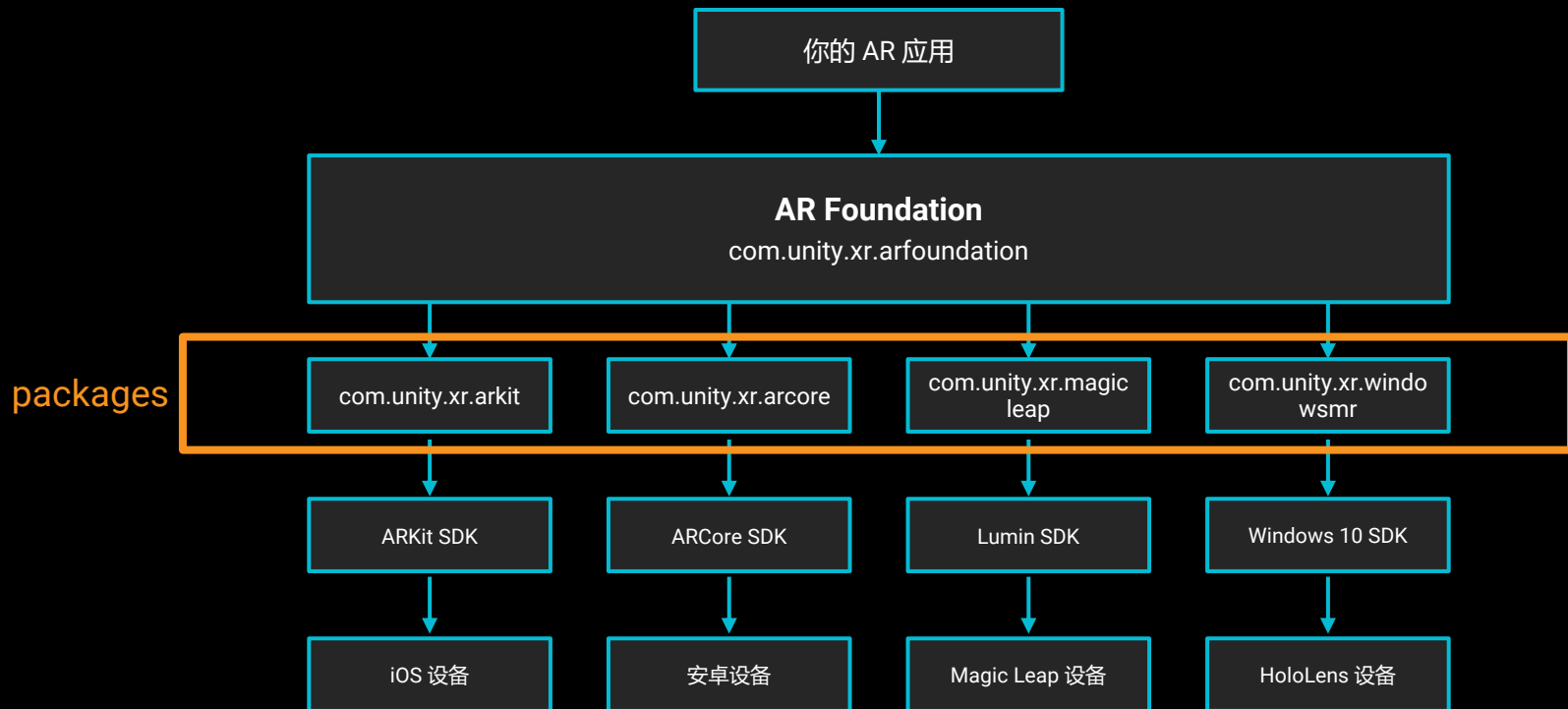


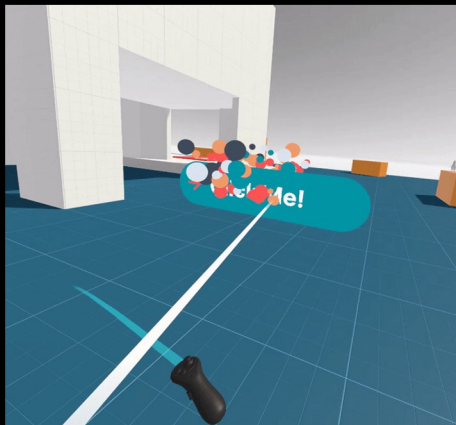




Daydream







XR Interaction Toolkit

可向任何AR或VR应用程序添加交互性



AR Foundation

Unity 针对多平台的 AR (增强现实) 开发者工具

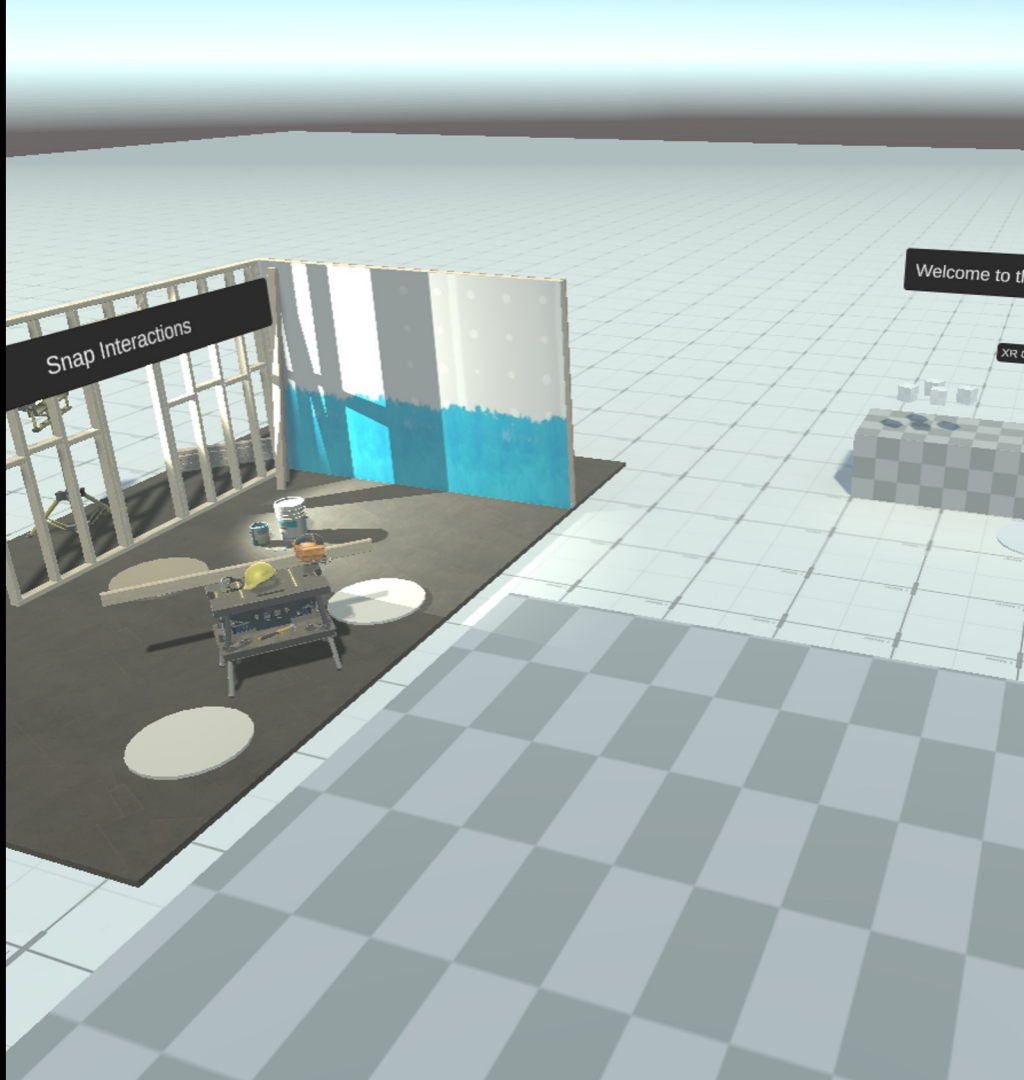


MARS

业内首款智能化混合现实及增强现实内容创作工具

XR Interaction Toolkit

向任何AR或VR应用程序添加交互性





对象交互 (AR/VR)

VR: 悬停、
选取、抓取、
投掷和旋转

AR: 点击、
拖动、缩放



对象放置 (AR)

AR 中内容
创作, 3D
对象场景中
放置于缩放

支持注释,
展示 AR 对
象信息和互
动



UI 交互 (AR/VR)

控制器与
UI 画布的
基本交互



移动功能(VR)

区域传送

定点传送

快速转向

连续转向

连续移动



眼动追踪

手部追踪

设备模拟器
(XR Device
Simulator)
的提升





注视交互



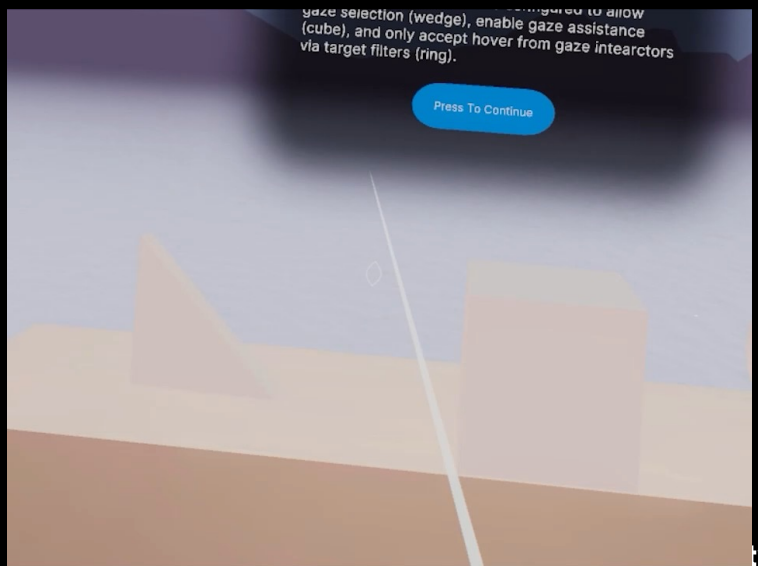
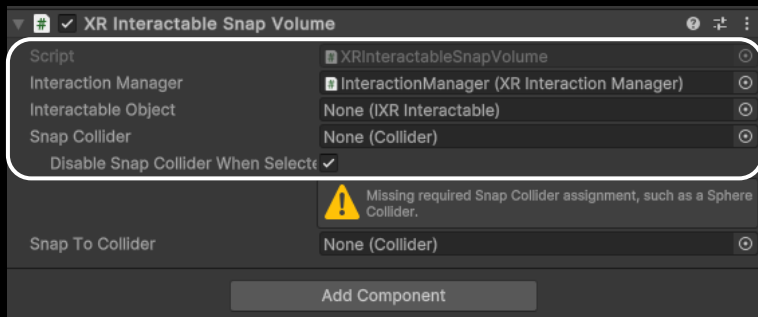
XR Gaze Interactor

1. XR Gaze Interactor (XR注视交互器)，由眼睛注视或头部注视姿势驱动。通过停留在可交互对象（3D 或 UI 组件）上进行交互；
2. 如果未找到有效的眼动追踪设备，凝视可以回退到头部追踪以支持所需的凝视功能；



XR Interactable Snap Volume

使 XR 射线交互器能够在视觉上捕捉到关联的可交互对象的组件。该组件是对 XR Gaze Interactor 凝视交互器的补充。



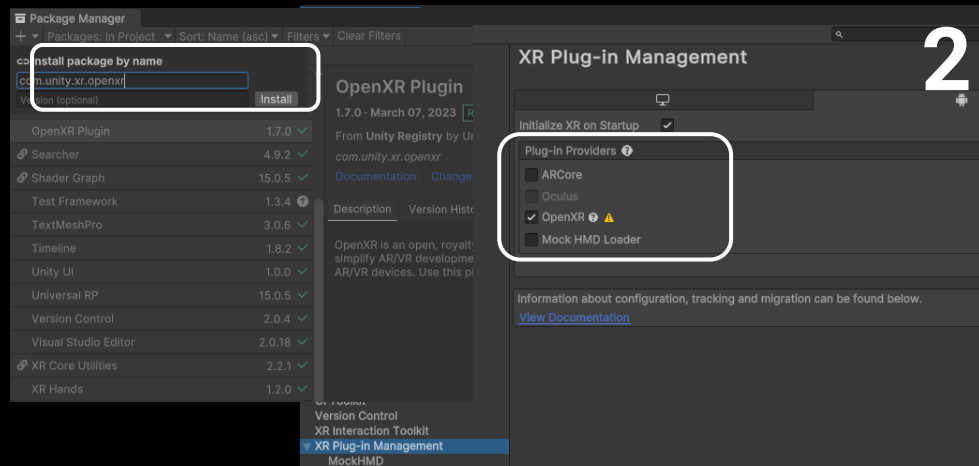
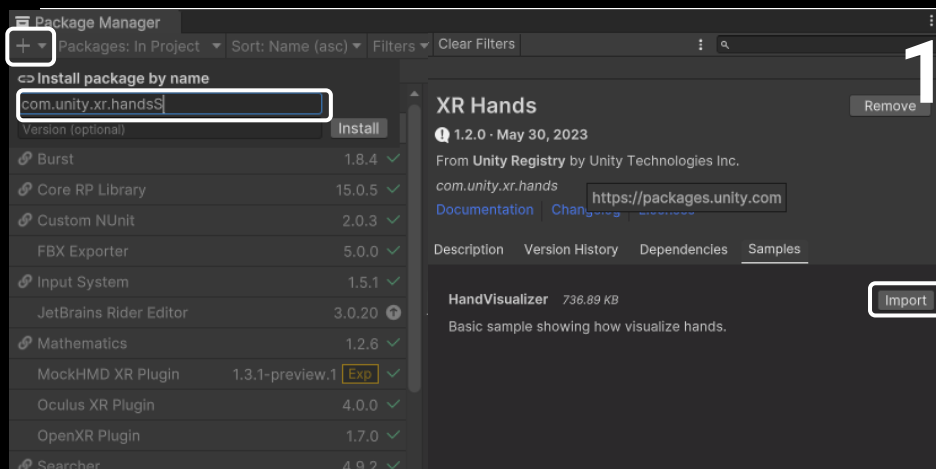


手部追踪



Unity XR Hands Setup 1

1. 在Package Manager中安装 XR Hands (Unity 2021.2+) , 并导入 XR Hands 示例 HandVisualizer;
2. 要在设备上使用 XR Hands, 必须至少在XR Plug-in Management下安装一个特定硬件的provider 插件包, 在Edit > Project Settings > XR Plug-in Management下启用OpenXR provider 插件包;

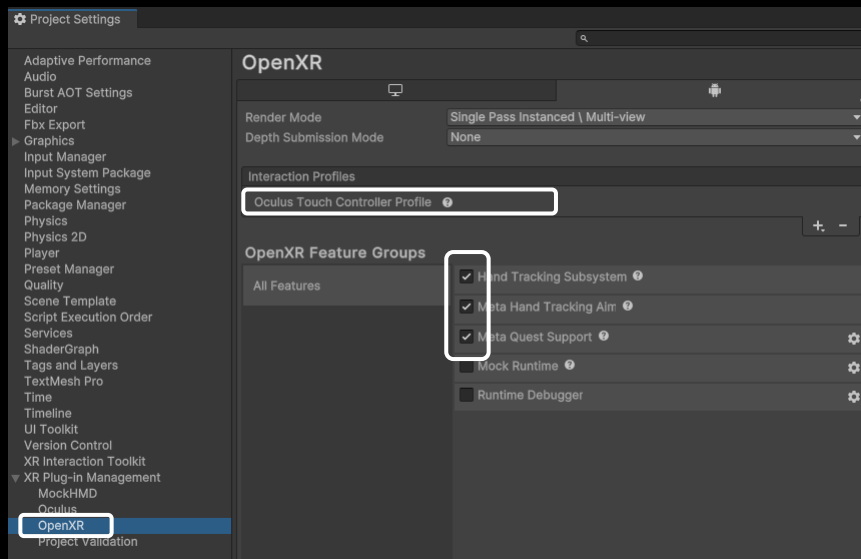


Unity XR Hands Setup 2

3. 在Edit > Project Settings > XR Plug-in Management > OpenXR

下勾选OpenXR Feature Groups中的Hand Tracking Subsystem;

- 启用Meta Quest Support (仅在 Android 选项卡中可用) 和 Meta Hand Tracking Aim。
- 然后在同一窗口中添加一个交互配置文件，例如Oculus Touch Controller Profile，以获得控制器支持。

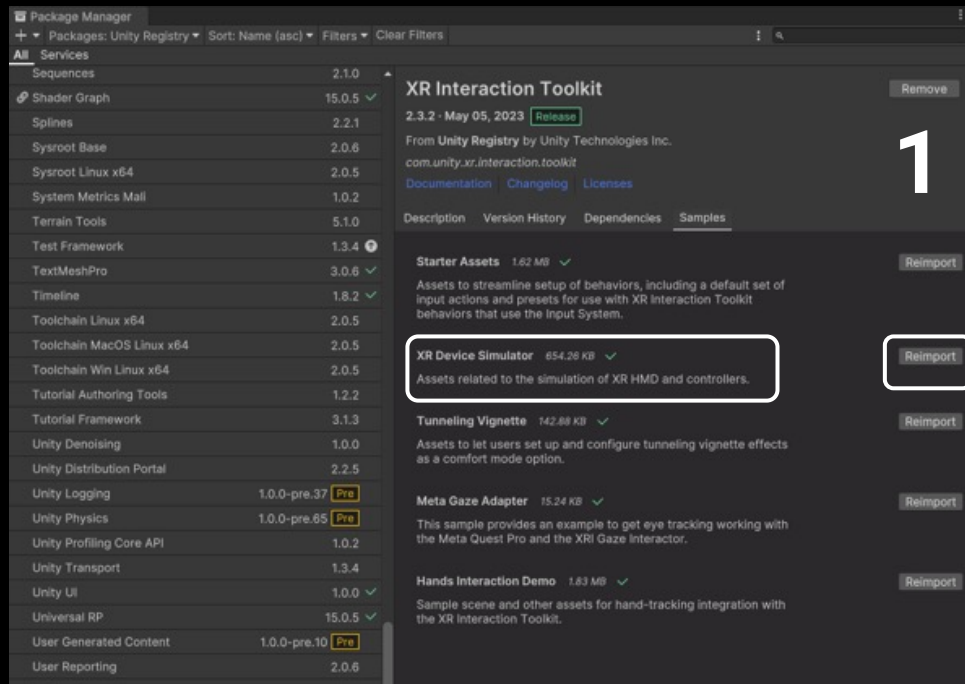




XR 设备 模拟器

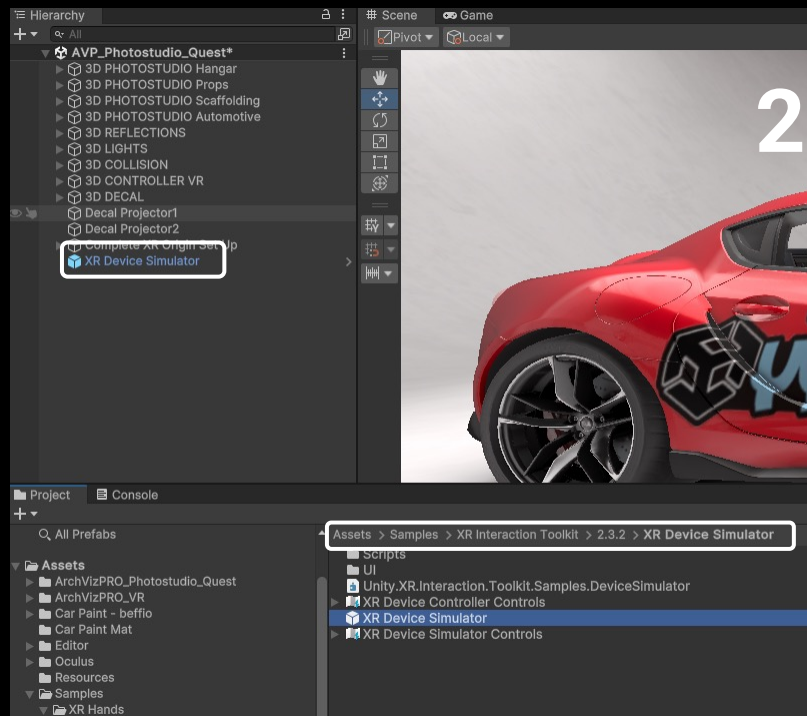
XR Device Simulator

1. 在Package Manager > XR Interaction Toolkit Package, 在 Samples处导入XR Device Simulator;



XR Device Simulator

2. 将Assets>Samples>XR Interaction Toolkit>2.3.2>XR Device Simulator 拖入到Unity Hierarchy面板中，点击Play；



Hierarchy

- Case
- Case
- Notebook
- Softbox_Ceiling_Quest
- Electrical_Wire_Quest
- Tape_Quest
- Power_Extension_5_Quest
- Power_Extension_3_Quest
- Cable_Extension_Quest
- Cable_Extension_Quest
- Paint_Tools_Quest
- Paint_Tools_Quest
- Camera_Job_Quest
- Work_Light_Quest
- Stage_Lights_Structure_Quest
- Light_Diffuser_Quest
- Light_Diffuser_Quest
- Ring_Light_Quest
- Tripod_Work_Light_Quest
- Tripod_Work_Light_Quest
- Umbrella_Quest
- Photo_Camera_NoLens_Quest
- Photo_Camera_NoLens_Quest
- Tripod_Photocamera_Tall_Quest
- Tripod_Photocamera_Short_Quest
- Tripod_Notebook_Quest
- Case_Tarp_Cages_Quest
- Case_Tarp_Cages_Quest
- Case_Tarp_Cages_Quest
- Case_Tarp_Cages_Quest
- Tripod_Spotlight_Quest
- Tripod_Spotlight_Quest
- Softbox_Quest
- Softbox2_Quest
- 3D PHOTOSTUDIO Scaffolding
- 3D PHOTOSTUDIO Automotive
- 3D REFLECTIONS
- 3D LIGHTS
- 3D COLLISION
- 3D CONTROLLER VR
- 3D DECAL
- Decal Projector1
- Decal Projector2

Inspector

Complete XR Origin Set Up

Tag Untagged Layer Default

Transform

Position	X 5	Y 0	Z 0
Rotation	X 0	Y 0	Z 0
Scale	X 1	Y 1	Z 1

Add Component

Project Console

Assets > Samples > XR Interaction Toolkit > 2.3.2 > XR Device Simulator >

- Scripts
- UI
- Unity.XR.Interaction.Toolkit.Samples.DeviceSimulator
- XR Device Controller Controls
- XR Device Simulator
- XR Device Simulator Controls

BoxColliders does not support negative scale or size.



为 XRI 添加可视化脚本扩展





Visual Scripting Extensions

-> 选择 Window -> Package Manager

- 点击 '+' 号 -> 选择 Add package from git URL

粘贴如下链接:

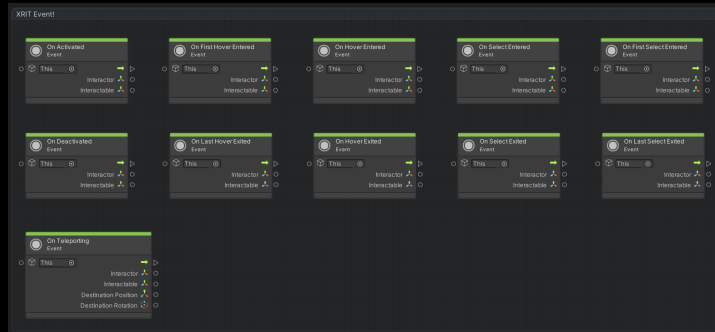
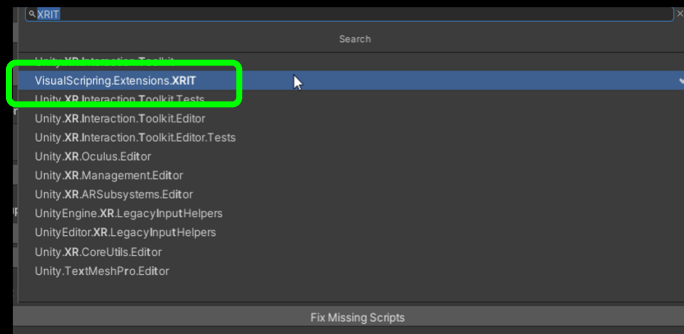
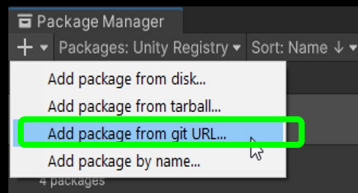
<https://github.com/RoadToTheMetaverse/visualscripting.xrinteractiontoolkit.git> -> Add

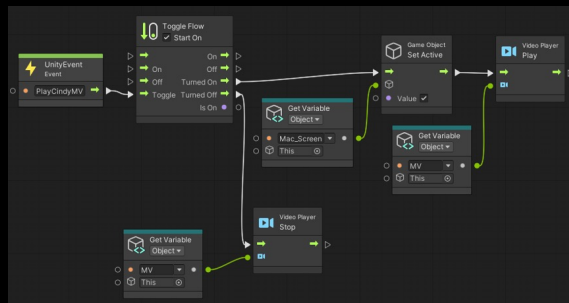
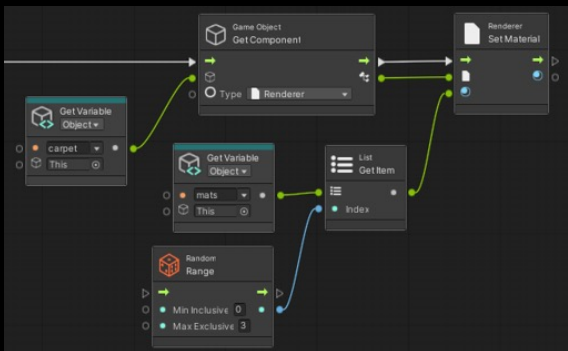
-> 在 Edit -> Project Settings -> Visual Scripting

- 展开 Node Library 列表
- 向下滚动并点击 “+”

添加 VisualScripting.Extensions.XRIT

- 点击 Regenerate Nodes 生成节点





URP

可以在Package Manager下载
[com.unity.render-pipelines.universal](https://www.unity.com/packages/technology/render-pipeline/urp)

可扩展到移动平台、更高端的游戏机、PC、AR 和
VR

对于 XR，开箱即用的立体渲染(stereoscopic
rendering)性能提高了约 25%





Foveated rendering



Eye tracking







Performance





Performance



Single-pass rendering	Frame time	Improvement
Standard single-pass	48.2 ms	
Foveated rendering		
Foveated rendering + eye tracking		



Performance



Single-pass rendering	Frame time	Improvement
Standard single-pass	48.2 ms	
Foveated rendering	28.1 ms	1.7x
Foveated rendering + eye tracking		



Performance



Single-pass rendering	Frame time	Improvement
Standard single-pass	48.2 ms	
Foveated rendering	28.1 ms	1.7x
Foveated rendering + eye tracking	14.7 ms	3.2x

HDRP

可以在Package Manager下载

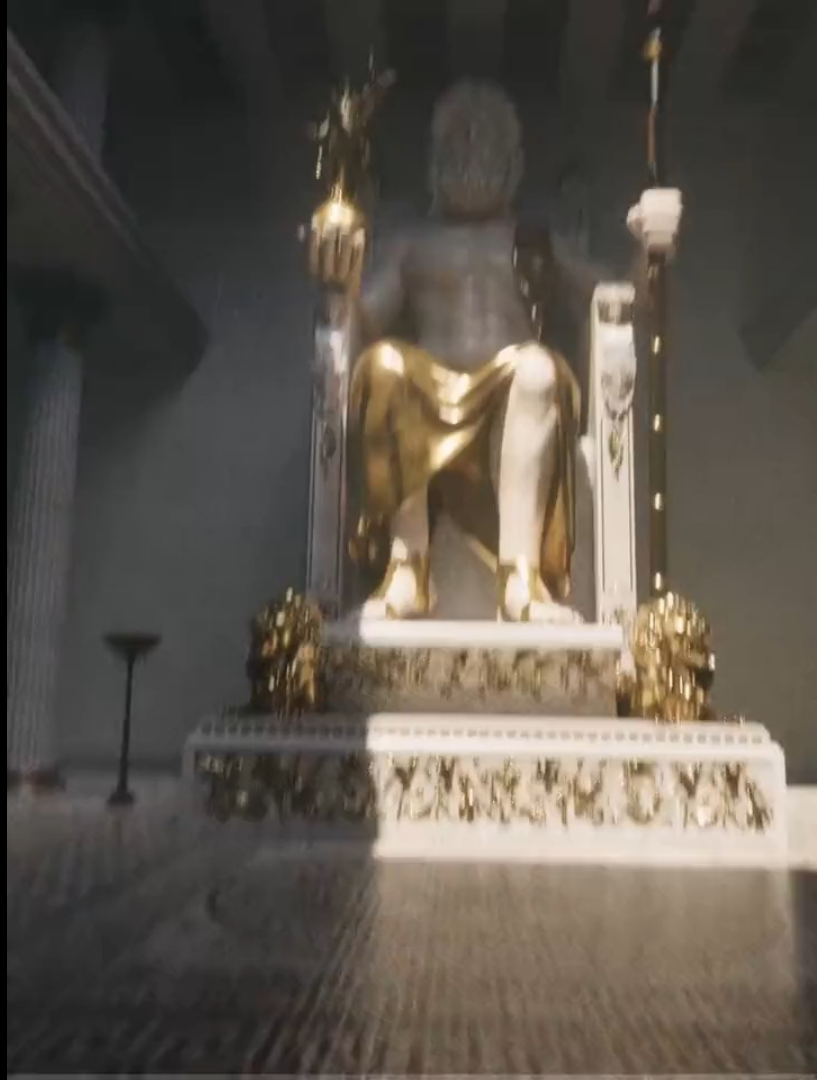
[com.unity.render-pipelines.high-definition](https://package-manager.unity3d.com/com.unity.render-pipelines.high-definition)

专为高端游戏机、PC 和联机 VR 设计

HDRP VR 所支持的功能

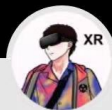
- Single-pass instancing
- Render and viewport scale
- VFX Graph
- Ray Tracing

Unity HDRP + Ray Tracing + VR (Nvidia RTX 2080ti)





HDRP VR



Unity+XR+Arduino学...

群号：457149871



扫一扫二维码，加入群聊。



Unity URP学习交流群

群号：1085557897



扫一扫二维码，加入群聊。



Unity 数字人交流群

群号：296041238



扫一扫二维码，加入群聊。



Thank you