Augmenting reality: Bring digital objects into the real world

The webinar will begin at 8 am PT | 11 am ET | 4 pm BST





CREATOR SERIES

2022

Augmenting reality: Bring digital objects into the real world

Meet your hosts

Drew Domokos Creator & Developer Advocate Vanesa Mendez Creator Advocate

Jerome Maurey-Delaunay Senior Technical Specialist

@jeromemaurey

Ben Radcliffe Senior Technical Specialist

<u>@lightandalchemy</u>



Agenda

- → Introduction (5 minutes)
- → Augmenting Reality: Bring digital objects into the real world (45 minutes)
 - What is AR?
 - AR platforms overview
 - Getting started with AR Foundations in Unity!
- → Q&A + Wrap-up (10 minutes)
- → Overtime! (30 minutes)
 - MRTK
 - The Future of AR







Introduction

Tales from the Metaverse!





The Metaverse Minute

https://blog.unity.com/topic/metaverse-minute



Metaverse Minute: Reimagining summertime travel





Community Team July 28, 2022 in Manufacturing | 4 min. read



Road to the Metaverse: Forums!

https://forum.unity.com/forums/road-to-the-metaverse.798/



Road to the Metaverse

Filter by tag:

Unity-Gehan, Jun 9, 2022

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Official Workshops: Let's get real: An introduction to AR, VR. MR. XR and more	*	Replies:	0	l



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ROAD TO THE METAVERSE

CREATOR SERIES

Augmenting reality: Bring digital objects into the real world



What is XR?

What is XR? It's shorthand for a related set of new technologies that are changing the way we interact with the world and with each other: Virtual Reality, Augmented Reality, and Mixed Reality.

- VR Virtual Reality
- MR Mixed Reality
- **AR** Augmented Reality
- **XR** Umbrella term for all the above



Unity Learn Intro to XR







What is AR?







Let's jump in!

What is AR?





Download the **SDK** via the Asset Store

- Log in and select Add to my Assets <u>Here</u>
- Open a project in Unity
 - Navigate to Window
 → Package Manager and select
 Packages: My Assets
 - Select Vuforia Engine and Download, then Import
 - Now you can find Vuforia Engine AR into your Packages
- Add ARCamera Gameobject from the Vuforia Engine menu
 - Select the ARCamera and click Open Vuforia Configuration
 - Select Add License and add Get Basic (You will have to register), copy and paste the license key into App License Key on the Inspector.









Set up a basic **AR** Scene - Image Target

- GameObject → Vuforia Engine → Image Target
 - Select Image Target and choose **Type : Database** on the Inspector and click Import
 - Download Robot Kyle from the Unity Asset Store here and 0 Import
 - Add your asset as a **Child** of the Image Tracker and Scale it 0
 - Select Image Target → Advanced → Device Tracker 0 Settings → PlayMode → Playmode Type → **Webcam**
 - Print or Download to a mobile device the Image Tracker 0
 - **Focus** your webcam into the Image Tracker and press Play 0





Features Overview







Other Examples

- Complex Image Targets \bullet
- Virtual Buttons
- Model Targets \bullet
- And more...

🔊 vuforia



Vuforia VFX Library











HYPER-REALITY Keiichi Matsuda

<u>Watch Here!</u>













What is XR? → Hardware Platforms







Augmented Reality - Handheld

a technology that superimposes a computer-generated image on a user's view of the real world, thus providing composite view.

Handheld AR offers the most mainstream AR solutions today on social media. People may not even realize that the AR filters they use on Instagram are augmented real.., experiences.



- Google Android AR Core
- Apple IOS ARKit





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Unity for AR







Augmented Reality - Head-mounted

Augmented Reality HMDs also known as Optical head-mounted displays or OHMDs. The displays of these devices are transparent. They allow users to see through them while projecting images and information in front of the users' eyes.

- Microsoft Hololens
- Magic Leap
- Nreal

• Lenovo A3

Intro to Unity for Hololens

Intro Unity for Magic Leap





AR Fundamental Concepts



Motion Tracking



Environmental Understanding



Light Estimation







Let's jump in!

SLAM Demo







Vuforia Engine Package

SDK for mobile devices that enables the creation of **AR** applications. Available on the Unity Asset Store <u>here</u>

Vuforia Features:

- Image Tracking
- Model Tracking
- Area Tracking
- Ground Plane Detection



Resources

- Project Set Up
- <u>Docs</u>





Getting started with XR in Unity \rightarrow **Toolkits**

Niantic Lightship ARDK

Create persistent and realistic experiences. ARDK's meshing feature translates the colors produced by the user's camera, runs them through a neural network, and builds a mesh of tessellated triangles that create a machine-readable representation of the physical world.

website video





Niantic Lightship ARDK

Lightship Augmented Reality Developer Kit (ARDK) is the first product of the Niantic Lightship Platform. It is a cross-platform development kit that brings world understanding technology depth, meshing, semantics—together with Lightship VPS and multiplayer services for more realistic and diverse AR experiences fused with the real world.

- **Depth** : Generate 3D depth information from a user's surroundings in real time, using just the device's camera.
- Semantic Segmentation : Easily and automatically classify objects, such as "ground" or "sky", from the user's camera data.
- **Meshing :** Build a 3D mesh representation of objects in the world, based on camera images.
- **GameBoard :** Enable smart object placement, procedural gameplay, and character navigation.
- Shared AR: Users can use your app to locate and orient themselves in the same AR space, and then use that shared space to collaborate in virtual activities.
- Lightship VPS: Use Lightship VPS to create immersive experiences in which your users interact with persistent, shareable AR content at real-world locations. With Lightship VPS you can place virtual objects that persist in the real-world and can be found and shared by others.









Microsoft **Mixed Reality Toolkit**

Microsoft MRTK3 is distributed as a set of packages that are imported into Unity using the Mixed Reality Feature Tool for Unity and the Unity Package Manager (UPM).

Microsoft MRTK3 leverages the **Unity XR** Subsystem Management infrastructure for writing extensible modules that can help provide cross-platform support for features like speech and hand tracking.

Docs **Initial Setup for MRTK3** MRTK3 packages **Subsystems** MRTK2 to MRTK3 concept migration guide





Microsoft MRTK

Lightship Augmented Reality Developer Kit (ARDK) is the first product of the Niantic Lightship Platform. It is a cross-platform development kit that brings world understanding technology depth, meshing, semantics—together with Lightship VPS and multiplayer services for more realistic and diverse AR experiences fused with the real world.

- Input System
- Hand Tracking
- Eye Tracking
- UI Controls
- Solvers

- Spatial Awareness
- Speech & Dictation





Unity AR Foundation

AR Foundation allows you to work with augmented reality platforms in a multi-platform way within Unity.

This package presents an interface for Unity developers to use, but doesn't implement any AR features itself. To use AR Foundation on a target device, you also need separate packages for the target platforms officially supported by Unity:

ARCore XR Plug-in on Android ARKit XR Plug-in on iOS OpenXR Plug-in on HoloLens

<u>Docs</u>



Feature support per platform

You can refer to this table to understand which parts of AR Foundation are relevant on specific platforms:

Device tracking	
Plane tracking	
Point clouds	
Anchors	
Light estimation	
Environment probes	
Face tracking	
2D Image tracking	
3D Object tracking	
Meshing	
2D & 3D body tracking	
Collaborative participants	
Human segmentation	
Raycast	
Pass-through video	
Session management	
Occlusion	

Note: To use ARCore cloud anchors, download and install Google's ARCore Extensions for Unity's AR Foundation.

ARCore	ARKit	OpenXR
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AR Foundation Samples

Download sample project via the github

- Get Project Here \bullet
- Clone or download this repository to a workspace on your drive \bullet
 - \circ Click the \downarrow Code button on this page to get the URL to clone with Git or click Download ZIP to get a copy of this repository that you can extract
- Open a project in Unity \bullet
 - Download, install, and run Unity Hub
 - \circ In the Installs tab, select Locate or Add to find or install Unity 2019.4 LTS or later
 - In the Projects tab, click Add
 - Browse to the VR folder within your downloaded copy of this 0 repository and click Select Folder
 - Click the project which should now be added to the list to open the project
- To run the AR Foundation sample on a headset, go to File > Build \bullet Settings and build the app. 1

Samples (v4.2) Samples (v5)

Building for iOS Building for Android Unity-Technologies / arfoundation-samples Public

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Meshing

Face Tracking

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Point Cloud

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AR Foundation Samples

Example projects that use AR Foundation 5.0 and demonstrate its functionality with sample assets and components

- This set of samples relies on three Unity packages:
- Google ARCore XR Plug-in (documentation)
- Apple ARKit XR Plug-in (documentation)
- ARFoundation (documentation)









Let's jump in!

AR Foundations Demo

Project Assets: https://bit.ly/R2MV_XpressoAR_assets





Unity[®]

AR Foundation Samples









Samples (v4.2) Samples (v5)













Unity AR project template

Unity's AR project template provides a starting point for augmented reality development in Unity. The template pre-installs the right packages needed for AR development, and the Scene hierarchy is pre-configured for AR.

Unity directly supports the following AR platforms:

- ARCore
- ARKit

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- HoloLens
- Magic Leap



Documentation

New project Editor Version: 2021.3.4f1 LTS 🗘

	AR Quickstart your Augmented Reality (AR) applications with a sample scene, assets, and the recommended packages and settings.
	Project name My project
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	Cancel Create project



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AR Foundation Packages

Create rich, deeply engaging augmented reality experiences with Unity's AR Feature Set. The AR Feature Set provides a starting point for augmented reality development, spanning from head-mounted displays to mobile.

- AR Foundation
- ARKit XR Plugin
- ARCore XR Plugin
- XR Plugin Management

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AR Sample Scene

The template contains a Scene named SampleScene. This scene contains sample materials and models. It additionally contains all the tutorials, and a script that allows you to spawn anchors through input.

You can use this Scene as a reference, or you can remove the example Assets from it and use it as a starting point for your own Project.

- **AR Session**
- **AR Session Origin**



Welcome to the AR Project Template

Before you begin, go to Edit > Project Settings > XR Plug-in Management and select the platform(s) you plan to deploy to. If you don't see your platform listed, make sure you have the right build targets installed in Unity Hub. For more information on the content and settings used in this template, you can refer to the documentation here



Documentation



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Anchor Prefab

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Add Component

None (Game Object)

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PlaceOnPlanes script

Listens for touch events and performs an AR raycast from the screen touch point. AR raycasts will only hit detected trackables like feature points and planes.

PlaceOnPlanes.cs

AR Foundation Samples

using UnityEngine; using UnityEngine.XR.ARFoundation;	
using UnityEngine.XR.ARSubsystems;	
<pre>/// <summary> /// Listens for touch events and performs an AR raycast from the screen to</summary></pre>	
/// AR raycasts will only hit detected trackables like feature points and	pla
<pre>/// If a raycast hits a trackable, the <see cref="placedprefab"></see> is insta /// and moved to the hit position.</pre>	
///	
[RequireComponent(typeof(ARRaycastManager))]	
[SerializeField]	
GameObject m_PlacedPrefab;)]
/// <summary></summary>	
/// The prefab to instantiate on touch.	
public GameObject placedPrefab	
<pre>set { m_PlacedPrefab = value; }</pre>	
/// The object instantiated as a result of a successful raycast inters	
///	
public GameObject spawnedObject { get; private set; }	
void Awake()	
<pre>(m RavcastManager = GetComponent<arravcastmanager>();</arravcastmanager></pre>	
bool TryGetTouchPosition(out Vector2 touchPosition)	
{ if (Input.touchCount > 0)	
<pre>touchPosition = Input.GetTouch(0).position; return true;</pre>	
}	
<pre>touchPosition = default; return false;</pre>	
}	
void Undate()	
{	
<pre>if (!TryGetTouchPosition(out Vector2 touchPosition)) return;</pre>	
<pre>if (m_RaycastManager.Raycast(touchPosition, s_Hits, TrackableType. {</pre>	.Pla
// Raycast hits are sorted by distance, so the first one	
<pre>// will be the closest hit. var hitPose = s_Hits[0].pose;</pre>	
<pre>if (spawnedObject == null)</pre>	
{	ion
Spawnedobject - Instantiate(M_Placedrieiab, hitrose.posit)	<u>1011</u> ,
else	
<pre>spawnedObject.transform.position = hitPose.position;</pre>	
}	
<pre>static List<arraycasthit> s_Hits = new List<arraycasthit>();</arraycasthit></arraycasthit></pre>	
ARRaycastManager m_RaycastManager;	

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tion with a plane.

laneWithinPolygon))

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Unity

Build Settings

Unity can build your application for different platforms and with different settings. This documentation describes how to define the scenes, target platform, and settings for your build.

- Android
- iOS

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Build Settings

Scenes In Build

Scenes/MyAwesomeARScene

Build Settings Documentation

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XR Plug-in Management

Support for XR hardware is delivered via plug-ins. Plug-ins allow you to develop for a universal XR platform so you don't need to modify your project for different XR headsets. Supporting new XR hardware is as easy as adding the Plug-in Providers in Project Settings.

Currently, XR plug-ins are available for Oculus, Windows Mixed Reality, and Magic Leap headsets. Also included is the MockHMD plug-in, which allows for XR development without a device. It's possible to install multiple XR plug-ins to support multiple headsets. In this scenario, the application will look for the headset supported by the first listed loader (covered later in this tutorial). If the headset is not available, the application will search for the next in the list, continuing through all listed loaders in order.

- ARCore
- ARKit
- Oculus
- OpenXR
- WindowMixedReality

🌣 Project Settings	
 Project Settings MagicLeap Manifest Settings Project Adaptive Performance Audio Editor Graphics Input Manager Input System Package Memory Settings Package Manager Physics Physics 2D Player Preset Manager Quality Scene Template Script Execution Order Services Ads 	Initialize XR on Startup Plug-in Providers ARCore Oculus OpenXR Unity Mock HMD
Cloud Build Cloud Diagnostics Collaborate In-App Purchasing Legacy Analytics Tags and Layers TextMesh Pro Time Timeline UI Builder Version Control Visual Scripting XR Plug-in Management ARCore ARKit Magic Leap Settings OpenXR	

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Setting Up the Development Environment for AR Applications

There are a few tools we must set up before developing Unity applications for either iOS or Android devices. If developing for iOS, this involves setting up Xcode (Apple's integrated development environment (IDE)) on your development machine. Xcode is required to deploy our Unity builds onto our iOS devices.



Unity Learn Tutorial





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Universal Render Pipeline

AR Foundation supports the Universal Render Pipeline (URP) versions 7.0.0 or later.

Note: Projects made using URP are not compatible with the High Definition Render Pipeline or the built-in Unity rendering pipeline. Before you start development, you must decide which render pipeline to use in your Project.

Signal
Physic Material
GUI Skin
Custom Font
Legacy
UI Toolkit
Search
Brush
Terrain Layer
Input Actions
XR
Rendering



Configuring AR Camera Background

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Unity

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Wind Turbine Simulation

- \rightarrow Porting to Hololens
- \rightarrow Adding speech using Microsoft Azure!
- \rightarrow Creating a custom Visual Scripting node







Unity[®]

Workshops

https://create.unity.com/road-to-metaverse

April	Welcome to the Metaverse!
May	Bring your digital and physical assets into Unity
June	Add interactivity to your immersive experience
July	How to bring your real-time 3D digital twin data into Unity
August	Let's get real: An introduction to AR, VR, MR, XR and more
September	Augmenting reality (AR): Bring digital objects into the real world
October	Build immersive worlds in virtual reality (VR)
October November	Build immersive worlds in virtual reality (VR) Improve learning retention with immersive training experiences
October November December	Build immersive worlds in virtual reality (VR) Improve learning retention with immersive training experiences Build a Microsoft HoloLens experience for training in AR
October November December January	Build immersive worlds in virtual reality (VR) Improve learning retention with immersive training experiences Build a Microsoft HoloLens experience for training in AR Integrate cloud-based IoT data into your XR experience
October November December January February	Build immersive worlds in virtual reality (VR) Improve learning retention with immersive training experiences Build a Microsoft HoloLens experience for training in AR Integrate cloud-based IoT data into your XR experience Masterclass: Build a collaborative multi user experience



Road to the metaverse

The metaverse is here and it is being powered by real-time 3D technology. Our new series of talks and worksh for decision makers and creators will inspire your journey.

Register now

Notify me of future sessions

Monthly sessions for creators and decision makers

Get access to curated sessions designed for creators and decision makers.

As a leader in real-time 3D technology, Unity is poised to prepare its community for new modes of interaction t enable data discovery and insight. Explore strategies and get training on the tools required to build connected immersive experiences across industries.



Creator series

Build a strong foundation and develop your skills with Unity experts during these monthly sessions. Ranging from beginner to advanced, these deep-dives are curated specifically for creators looking to gain the knowledge and skill to succeed in the metaverse.

View all sessions



Executive series

Journey with Ryan Peterson, Unity's VP of professional services, as he and special guests tackle the why and how behind this new era of consumer and social experience. These intimate chats are designed to spark your imagination, and will end with a live Q&A.

View all sessions

Learn Live

https://learn.unity.com/project/road-to-the-metaverse-live

March	Prototyping and world building.
April	Intro to Visual Scripting
May	Animation
June	Intro to Universal Render Pipeline
July	Intro to High Definition Render Pipeli
August	Shader Graph
September	VFX Graph
September October	VFX Graph Post Processing
September October November	VFX Graph Post Processing UI Building
September October November December	VFX Graph Post Processing UI Building Intro to VR
September October November December January	VFX Graph Post Processing UI Building Intro to VR Intro to AR

Unity Learn My Learning

Pathways

Browse *

Live

For Educators ~

Q What do yo

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Live Learn: Road to the Metaverse

Project • Beginner • +0 XP • 10 Hours • 🗆 41

😟 Unity Technologies

Live Learn: Ro

UPCOMING LIVE LEAR

Metaverse - In Associated project: **Road to the Metaver**

April 20, 2022

() 5:00 - 7:00 pm B

Learn More

Overview Skills Live Groups

Summary

The road to the metaverse is paved in real-time 3D. But the challenges for creators are plenty – from capturing, transforming, visualizing and optimizing right-time data to creating, distributing and operating rich, interactive, immersive experiences that will engage stakeholders anywhere. Get ready to start your journey and learn the skills to thrive in the next era of computing.

Select your version @

Last updated: March 21

2022.1

Language English

Project Objective

By the end of this series, you should understand the following topics:

- Intro Unity
- Polybrush
- Probuilder



Executive series

https://create.unity.com/road-to-metaverse#executive





EXECUTIVE SERIES

Building successful B2C brands in the metaverse

August 25, 2022 9 am PT / 12 pm ET / 5 pm BST Duration: 60 minutes

Join Ryan and Media.Monks' SVP, Tim Dillon, as they discuss what it's going to take for B2C brands to make it in the metaverse. Hear from Tim as he shares lessons he's picked up from working with large consumer brands and walk away with strategic tips on how to get started, how to leverage real-time 3D technology to make an impact, and much more.



The Metaverse Minute

https://blog.unity.com/topic/metaverse-minute





Metaverse Minute: Reimagining summertime travel

July 28, 2022 in Manufacturing | 4 min. read

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	222		
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Topics covered

Manufacturing

By

Community Team

Digital Twin Metaverse Minute

Sha

Metaverse Minute: Reimagining summertime travel

It's July, which means it is time for summer holidays! We hope you're reading this edition of the Metaverse Minute from the beach with a piña colada, but if you're not, we have some options for you. Here are four ways to travel with Unity.



Road to the Metaverse: Forums!

https://forum.unity.com/forums/road-to-the-metaverse.798/



Road to the Metaverse

Filter by tag:

Unity-Gehan, Jun 9, 2022

Title	Start Date	Replies	Views	La
Official Welcome to the Road to the Metaverse Unity-Gehan, Jun 9, 2022	😂 📌 🔒 Edit	Replies: Views:	3 469	
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Official Learn Live: Intro to HDRP	😂 📌	Replies:	4	je
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Official Learn Live: Shader Graph	📌	Replies:	0	ι
Unity-Gehan, Jun 9, 2022	Edit	Views:	262	
Official Learn Live: VFX Graph	📌	Replies:	0	l
Unity-Gehan, Jun 9, 2022	Edit	Views:	262	
Official Learn Live: Post Processing	📌	Replies:	0	ι
Unity-Gehan, Jun 9, 2022 post-processing	Edit	Views:	292	
Official Learn Live: UI Building	📌	Replies:	0	ι
Unity-Gehan, Jun 9, 2022	Edit	Views:	312	
Official Learn Live: Intro to VR	📌	Replies:	0	ι
Unity-Gehan, Jun 9, 2022	Edit	_{Views:}	265	
Official Learn Live: Intro to AR	📌	Replies:	1	
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Official Learn Live: Intro to Spatial Audio	📌	Replies:	0	ι
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Official Workshops: Add interactivity to your immersive experience Unity-Gehan, Jun 9, 2022	😂 📌 Edit	Replies: Views:	6 457	
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Official Workshops: Let's get real: An introduction to AR, VR. MR. XR and more	*	Replies:	0	l



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Social

→ Please use **#R2MV**



Jerome Maurey-Delaunay **@jeromemaurey**

...



Jerome Maurey-Delaunay nior Technical Specialist for Automotive, Transport & Manufacturing at Uni...

Getting ready for our Road to the Metaverse workshops, like using #MRTK and Visual Scripting!

Want to learn Unity from the ground up? This is your chance! Learn the skills needed to build the Metaverse with Unity.

https://lnkd.in/dmDGcErZ

#R2MV





Ben Radcliffe **<u>@lightandalchemy**</u>

Ben Radcliffe @lightandalchemy · Feb 7 ···· There's a lot of uncertainty about the Metaverse these days. One thing that is certain is that the Metaverse is going to need good coffee!!!

#unity3d #metaverse #AR #MRTK #hololens2 #espresso #coffee



Ben Radcliffe @lightandalchemy · Mar 29 Building some content for our new series "Road to the Metaverse"

Join us on this year-long journey to harness the power of real-time to transform the way we create!

Sign up here: eate.unity.com/road-to-metave..









Any questions?







Thank You





2022 Unity



Overtime

WE NEED TO GO





Update

NEW YORK 29°C CLEAR SKY

Building a Wind turbine Simulation, Part II

Hololens Edition!

50

Unity°

Previously...





Mixed Reality Feature Tool

Use Mixed Reality Feature Tool to discover, update, and add Mixed Reality feature packages into Unity projects.

You can search packages by name or category, see their dependencies, and even view proposed changes to your projects manifest file before importing.

Download the latest version from the Microsoft Download Center.



A Microsoft Mixed Reality Feature Tool	-	
Discover teatures		
O Mixed Reality Toolkit (1 of 9) Select All Select None		^
Mixed Reality Toolkit Examples 2.7.2 V (Details)		
Mixed Reality Toolkit Extensions 2.7.2 × (Details)		
Mixed Reality Toolkit Foundation 2.7.2 × (Details)		
Mixed Reality Toolkit GPU Stats 1.0.3 × (Details)		
Mixed Reality Toolkit Microphone Stream Selector 1.0.0 × (Details)		
Mixed Reality Toolkit Plane Finding 1.0.0 × (Details)		
Mixed Reality Toolkit Standard Assets 2.7.2 × (Details)		
Mixed Reality Toolkit Test Utilities 2.7.2 V (Details)		
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Mixed Reality OpenXR Plugin 1.0.0 × (Details)		
Mixed Reality Scene Understanding 0.6.0 v (Details)		~
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I to make the following changes to MRTKOpenXR

-

Files to be copied into the project

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Import features

🛎 Microsoft Mixed Reality Feature Tool

The Mixed Reality Feature Tool has identified the packages that are required to import your chose

Features	Required dependencies
Mixed Reality Toolkit Foundation 2.7.2 (D Mixed Reality OpenXR Plugin 1.0.0 (Detail	etails) Mixed Reality Toolkit Standard Assets 2.7.2 (Details)
	Mixed Reality Feature Tool \times
	No validation issues were detected.
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?	Go Back Validate Namport
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Unity



Let's dive in!





Project Setup

Build settings

• UWP

公

- ARM 64-bit
- Use Visual Studio 2019
 - Install build tools **v142**
- Build and run via **Device Portal**

Project settings

- Make sure to check the required capabilities under Player → Publish Settings
- Use .NET Framework for the latest features
- Make sure to install the Mixed Reality OpenXR Plugin!

	Control Workshift Unbashrought - MATIC-WITE Eff J. Saints Compose Mark * Compose Compose	uffutbinsSimulationScene - et Mixed Reality Jobs 1 96-65 Scene 15
Build Settings		
Unable to access Unity services. Please I	log in, or request membership to this proje	ct to use these
Scenes In Build		
Platform	🖷 Universal Windows Platfo	rm
Windows, Mac, Linux Windows, Mac, Linux Dedicated Server Android WebGL Universal Windows Platform☆	Architecture Build Type Target SDK Version Minimum Platform Version Visual Studio Version Build and Run on Build configuration Device Portal Address	ARM 64-b D3D Proje 10.0.1904 10.0.1024 Visual Stur Remote Do Release https://169
iOS ios	Device Portal Username Device Portal Password	admin
	Copy References Copy PDB files Development Build Autoconnect Profiler	
▼ Asset Import Overrides		
Max Texture Size No Override		
Player Settings		



Holographic Remoting

Stream holographic content to your HoloLens in real time, quickly test and debug your app, **without building** and **deploying** a full project.

- 1. **Download** the Holographic Remoting app from the Windows Store on your Hololens
- 2. **Enable** Holograhic Remoting for Play Mode in Project Setting \rightarrow XR Plug-in Management \rightarrow OpenXR
- 3. Click the **©**icon to reveal the **settings**

There are two options for connecting:

- Wifi for wireless freedom
- USB for speed and stability

When connected via a USB cable, make sure to disable Wifi on the HoloLens.

🕂 Graph	🍄 Project Settings	Cons	ole
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Adaptive I	Performance		Ope
Editor			
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Version Co	ontrol		
XR Plug-ir	n Management		
OpenXF	<		

Docs







Let's jump in!

Live demo ahead...





Resources used



Vertical Turbine with Solar Panels

Vertical turbine concept by Rifky Zaidani. Created in **Solidworks**, imported with Pixyz Plugin.

<u>GrabCAD</u>



Add Azure Cognitive mixed reality project

29 min • Module • 11 Units

*** 4.4 (40)

Beginner Developer Windows Windows Mixed Realit

Import and learn about Azure Speech Services

Azure Cognitive Services

Import and learn about Azure Speech Services to enhance your learning experience.

Tutorial



Maps SDK

A Microsoft Garage project provides the ability to visualize a 3D map within Unity-based projects. <u>Github</u>





M

Questions?

