LAB 4: Create an AR application with Vuforia, incorporating3D models, interactive features using UI buttons

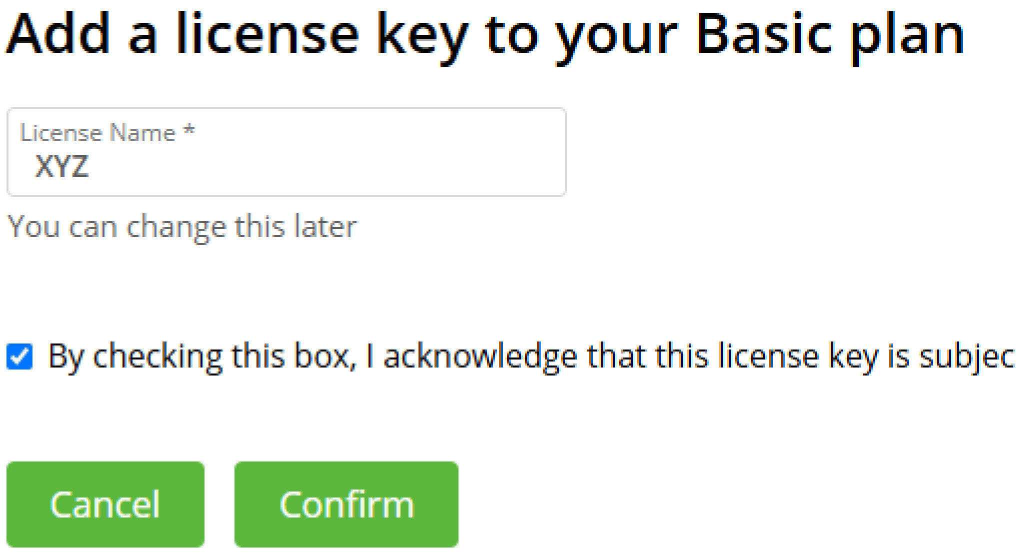
Sol:

Step 1: Create Vuforia Account

https://developer.vuforia.com/home

Step 2: Create Licence

- By click licence key
- Click Generate Basic Licence
- Give Name and Click Confirm



Add a license key to your Basic plan

License Name *
XYZ

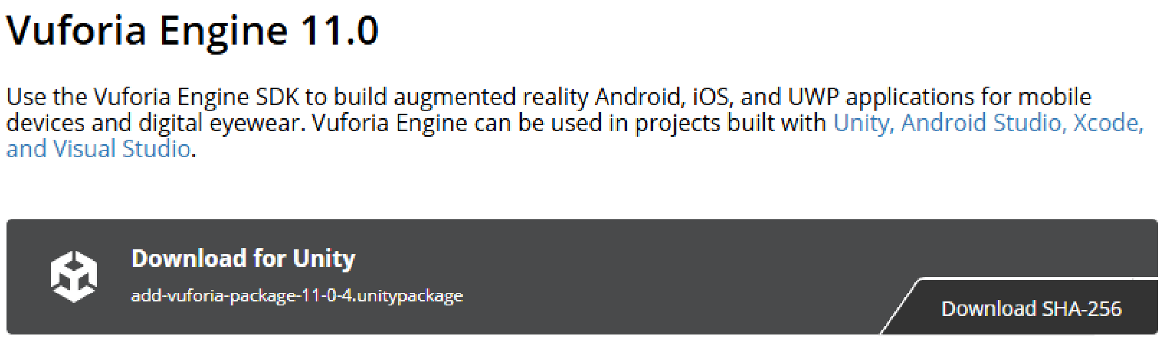
You can change this later

☑ By checking this box, I acknowledge that this license key is subjec

Step 3: Add Vuforia SDK from unity

https://assetstore.unity.com/packages/templates/packs/vuforia-engine-163598?srsltid=AfmBOoohbmlYwddAmIOAITZlC56DTKf4CSlsTma6A1zYXLWdXyOFvMMU

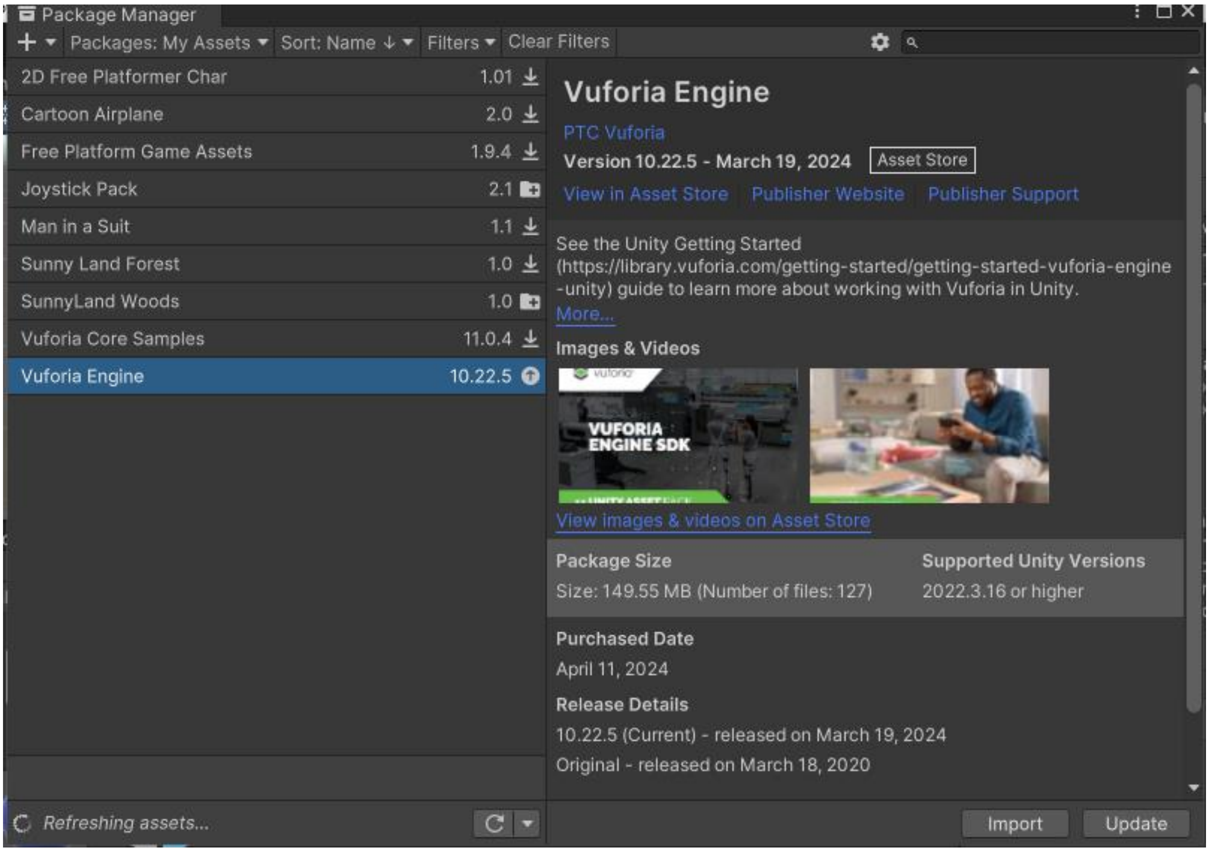
or download from Vuforia portal and import



Vuforia Engine 11.0

Use the Vuforia Engine SDK to build augmented reality Android, iOS, and UWP applications for mobile devices and digital eyewear. Vuforia Engine can be used in projects built with Unity, Android Studio, Xcode, and Visual Studio.

Step 4: Add asset in unity and click import


Package Manager
+ ▾ Packages: My Assets ▾ Sort: Name ↓ ▾ Filters ▾ Clear Filters
Refreshing assets...
Import
Update

2D Free Platformer Char	1.01
Cartoon Airplane	2.0
Free Platform Game Assets	1.9.4
Joystick Pack	2.1
Man in a Suit	1.1
Sunny Land Forest	1.0
SunnyLand Woods	1.0
Vuforia Core Samples	11.0.4
Vuforia Engine	10.22.5

Vuforia Engine

PTC Vuforia

Version 10.22.5 - March 19, 2024 Asset Store

View in Asset Store Publisher Website Publisher Support

See the Unity Getting Started (https://library.vuforia.com/getting-started/getting-started-vuforia-engine-unity) guide to learn more about working with Vuforia in Unity.
More...

Images & Videos

View images & videos on Asset Store

Package Size
Size: 149.55 MB (Number of files: 127)

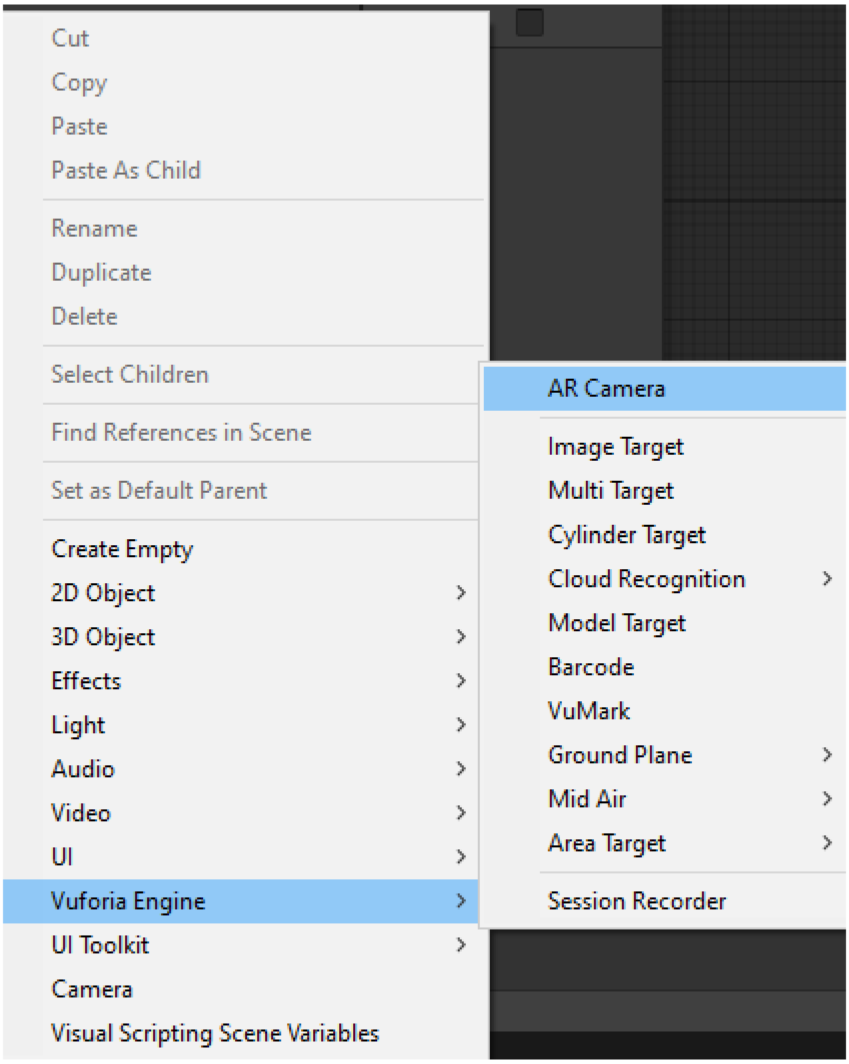
Supported Unity Versions
2022.3.16 or higher

Purchased Date
April 11, 2024

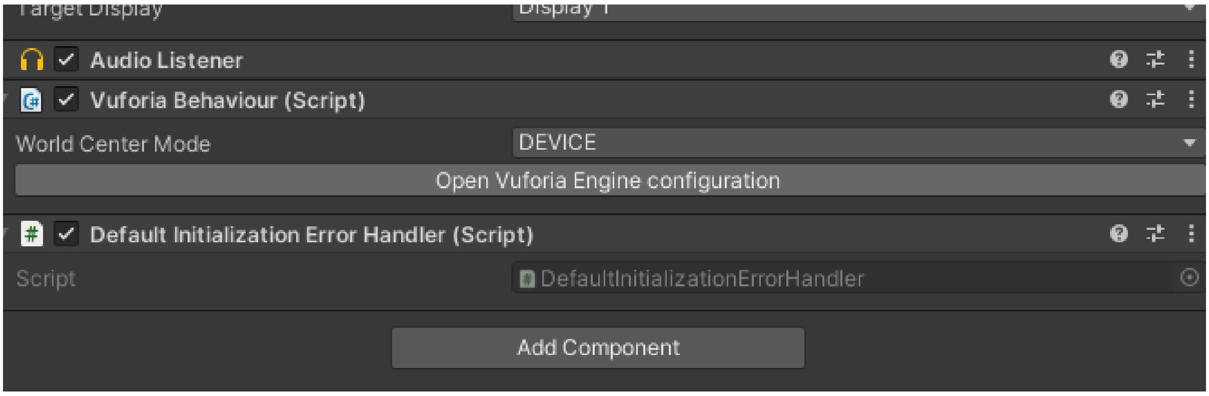
Release Details
10.22.5 (Current) - released on March 19, 2024
Original - released on March 18, 2020

Step 5: Setup Vuforia Engine in unity

- Right click and Add AR camera and delete main camera



- Click AR camera from hierarchy and click open Vuforia configuration and add licence key from Vuforia account


Target Display: Display 1

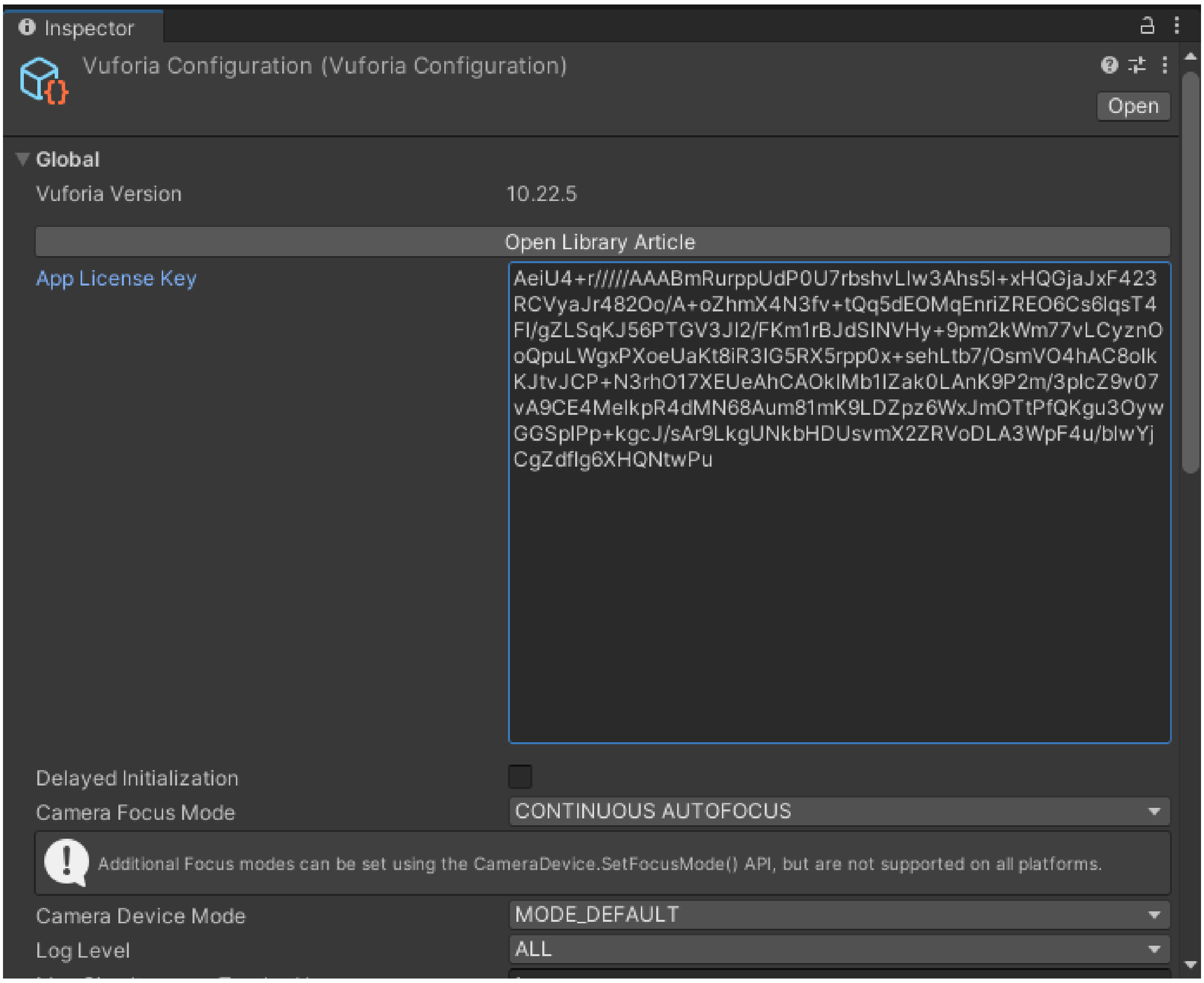
☑ Audio Listener

☑ Vuforia Behaviour (Script)

World Center Mode: DEVICE

☑ Default Initialization Error Handler (Script)

Script: DefaultInitializationErrorHandler



Vuforia Configuration (Vuforia Configuration)

Global

Vuforia Version 10.22.5

App License Key

```
AeiU4+r/////AAABmRurppUdP0U7rbshvLlw3Ahs5l+xHQGjaJxF423
RCVyaJr482Oo/A+oZhmX4N3fv+tQq5dEOMqEnriZREO6Cs6lqsT4
Fl/gZLSqKJ56PTGV3Jl2/FKm1rBJdSINVHy+9pm2kWm77vLCyznO
oQpuLWgxPXoeUaKt8iR3IG5RX5rpp0x+sehLtb7/OsmVO4hAC8olk
KJtvJCP+N3rhO17XEUeAhCAOklMb1IZak0LAnK9P2m/3plcZ9v07
vA9CE4MelkpR4dMN68Aum81mK9LDZpz6WxJmOTtPfQKgu3Oyw
GGSplPp+kgcJ/sAr9LkgUNkbHDUsvmX2ZRVoDLA3WpF4u/blwYj
CgZdflg6XHQNtwPu
```

Delayed Initialization □

Camera Focus Mode: CONTINUOUS AUTOFOCUS

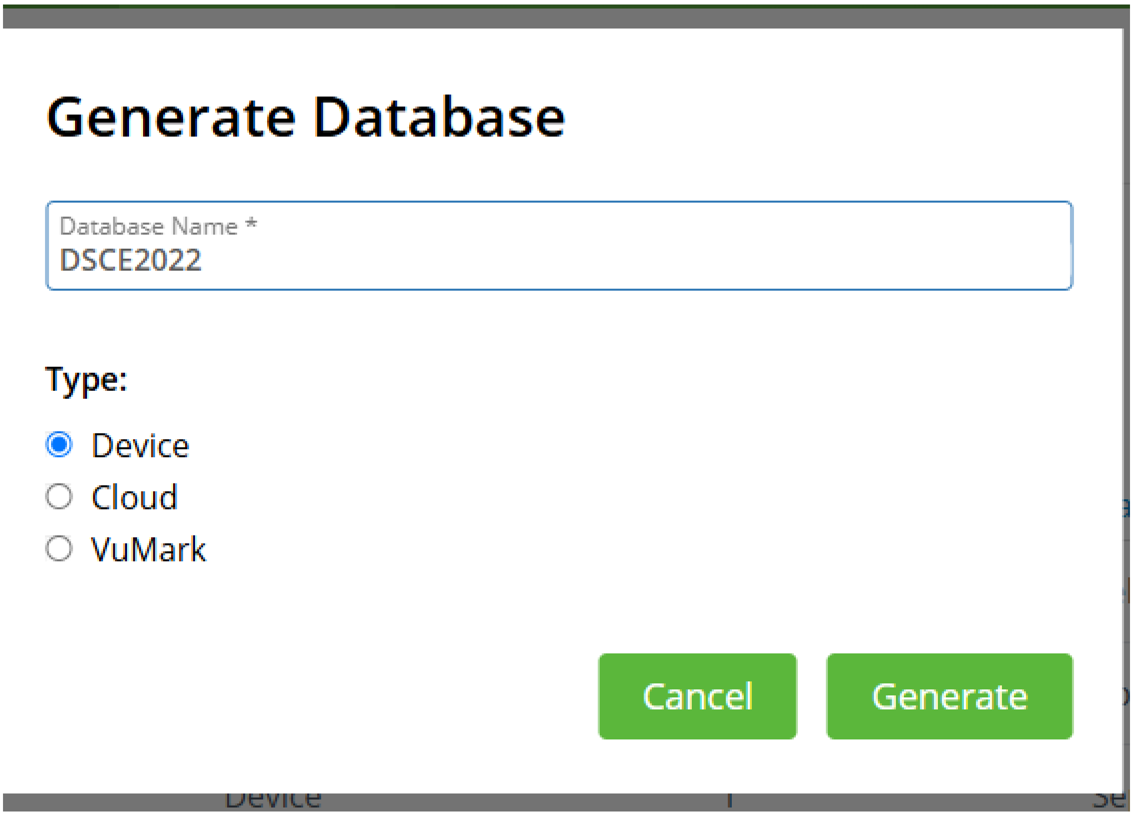
Additional Focus modes can be set using the CameraDevice.SetFocusMode() API, but are not supported on all platforms.

Camera Device Mode: MODE_DEFAULT

Log Level: ALL

Step 6: add image in Vuforia data base

- Click target manager
- Click generate database give name



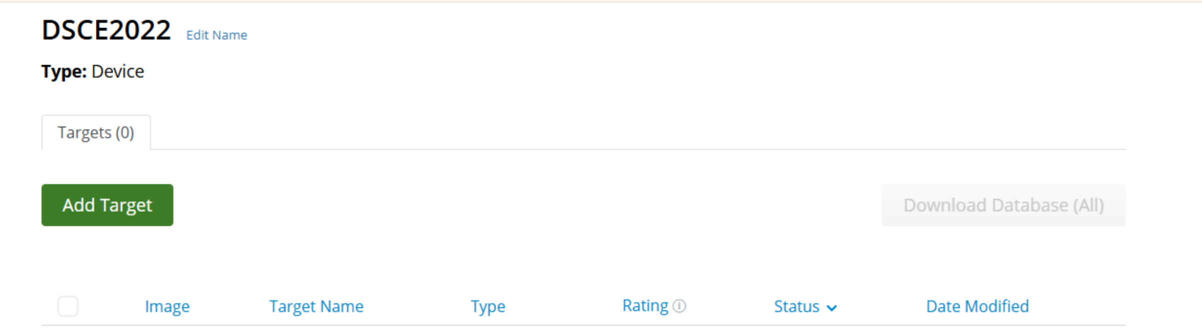
Generate Database

Database Name *
DSCE2022

Type:

● Device
○ Cloud
○ VuMark

- Click data base DSCE2022
- Click add target



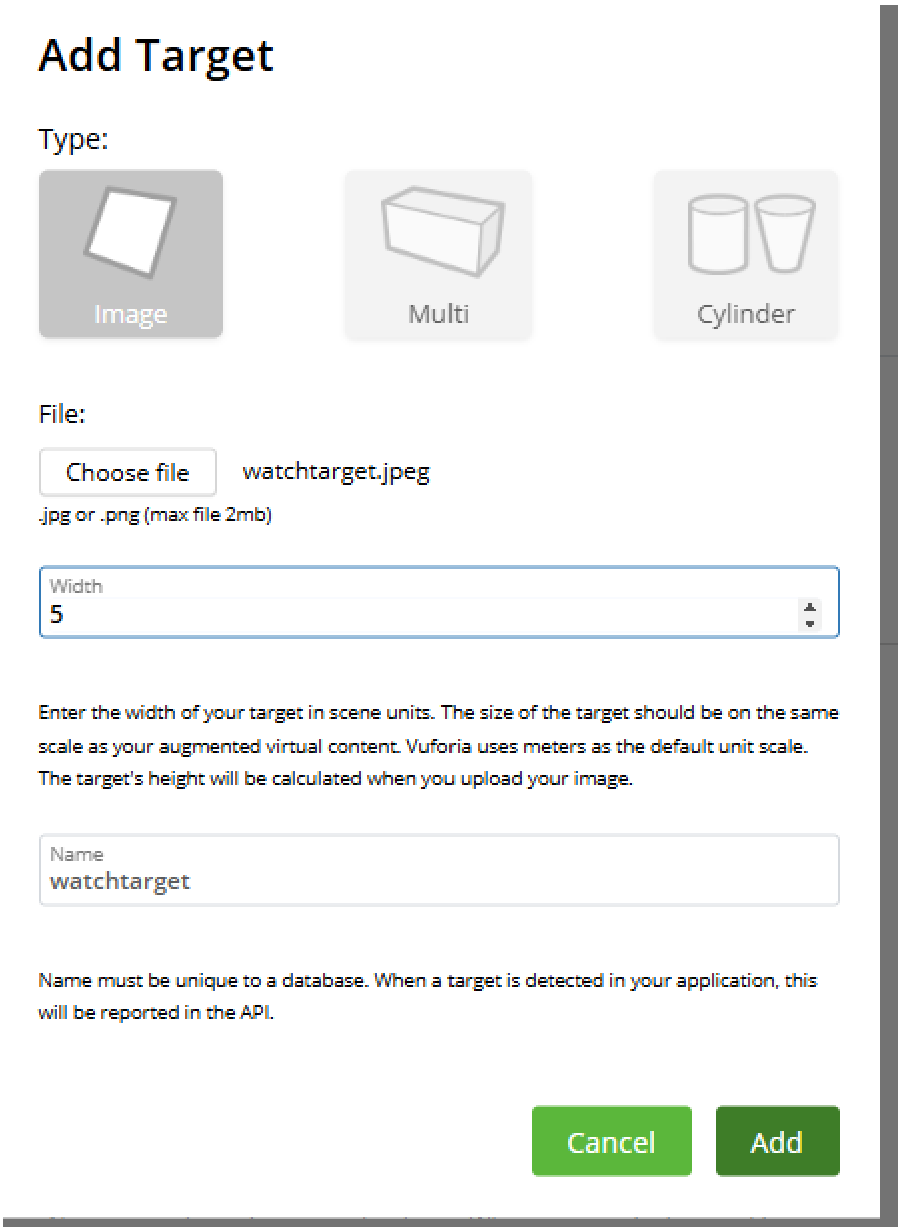
DSCE2022

Type: Device

Targets (0)

□	Image	Target Name	Type	Rating	Status	Date Modified

- Upload image



watchtarget.jpeg

.jpg or .png (max file 2mb)

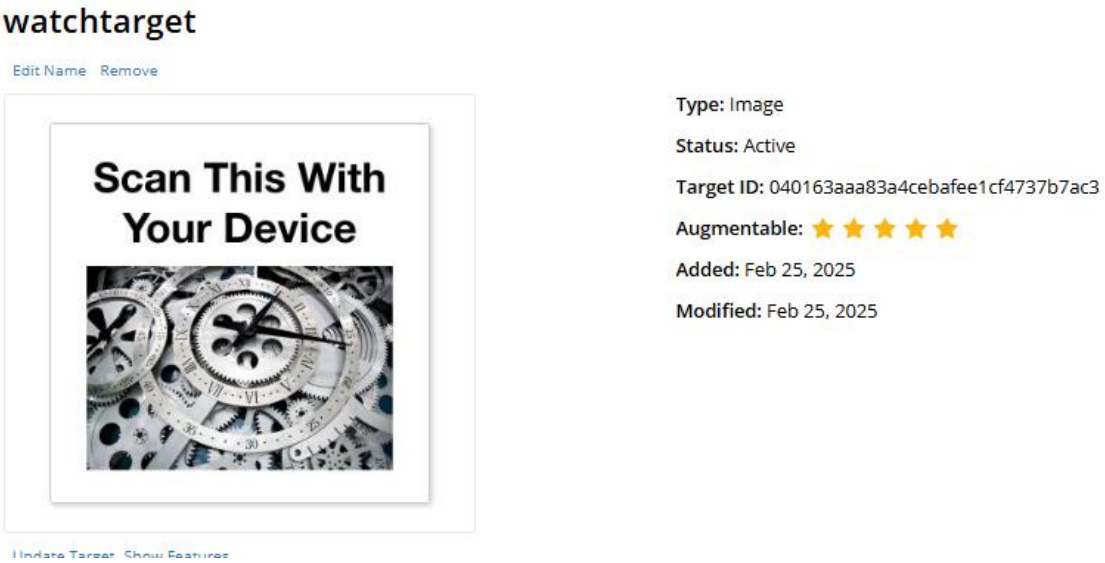
Width
5

Enter the width of your target in scene units. The size of the target should be on the same scale as your augmented virtual content. Vuforia uses meters as the default unit scale. The target's height will be calculated when you upload your image.

Name
watchtarget

Name must be unique to a database. When a target is detected in your application, this will be reported in the API.

- Click image and check ratings 4 or more is good



watchtarget

Type: Image

Status: Active

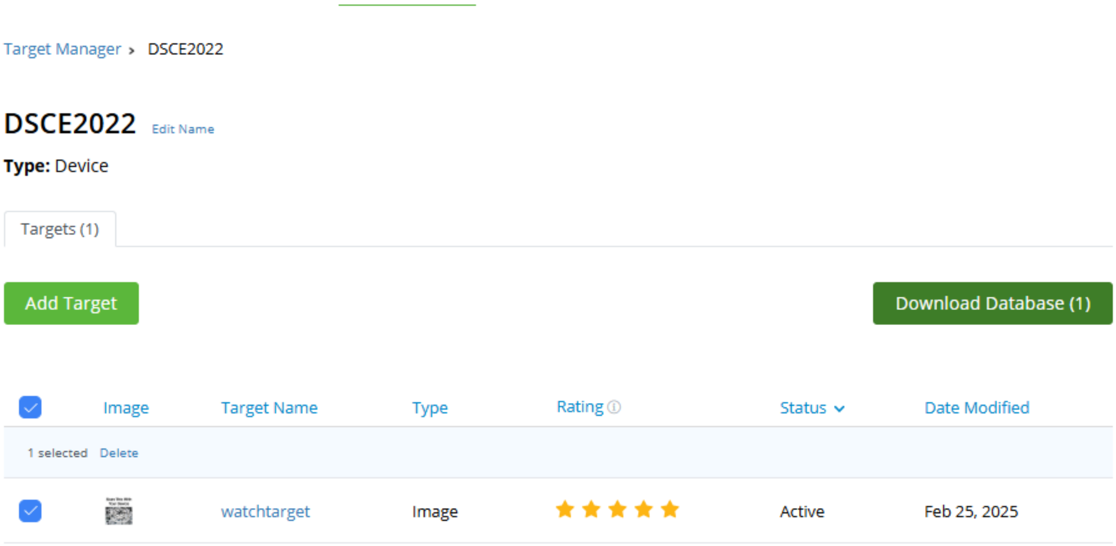
Target ID: 040163aaa83a4cebafee1cf4737b7ac3

Augmentable: ★★★★★

Added: Feb 25, 2025

Modified: Feb 25, 2025

- Download database and click unity editor

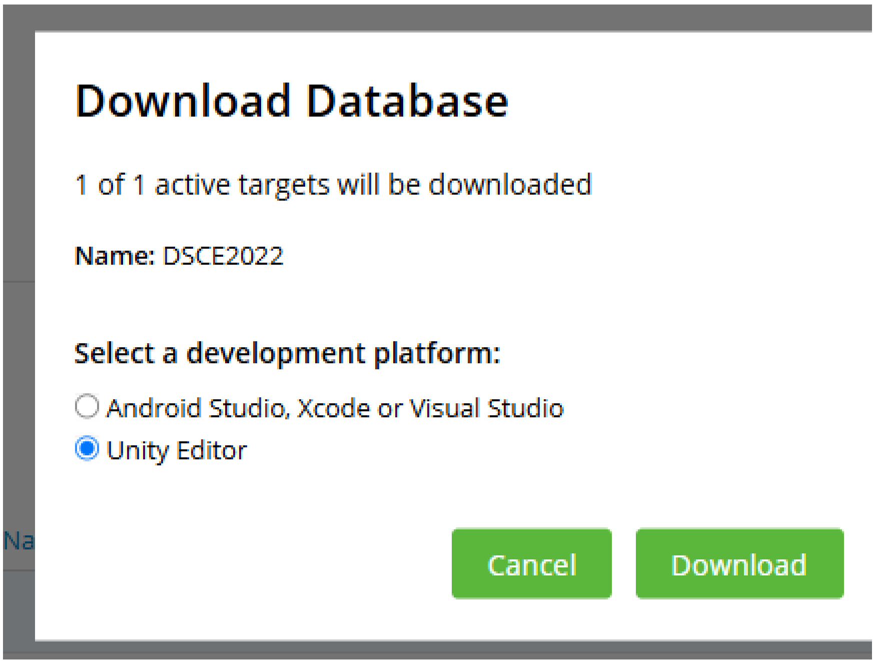


Target Manager › DSCE2022

DSCE2022

Type: Device

☑	Image	Target Name	Type	Rating ⓘ	Status ⌄	Date Modified
☑		watchtarget	Image	★★★★★	Active	Feb 25, 2025



Download Database

1 of 1 active targets will be downloaded

Name: DSCE2022

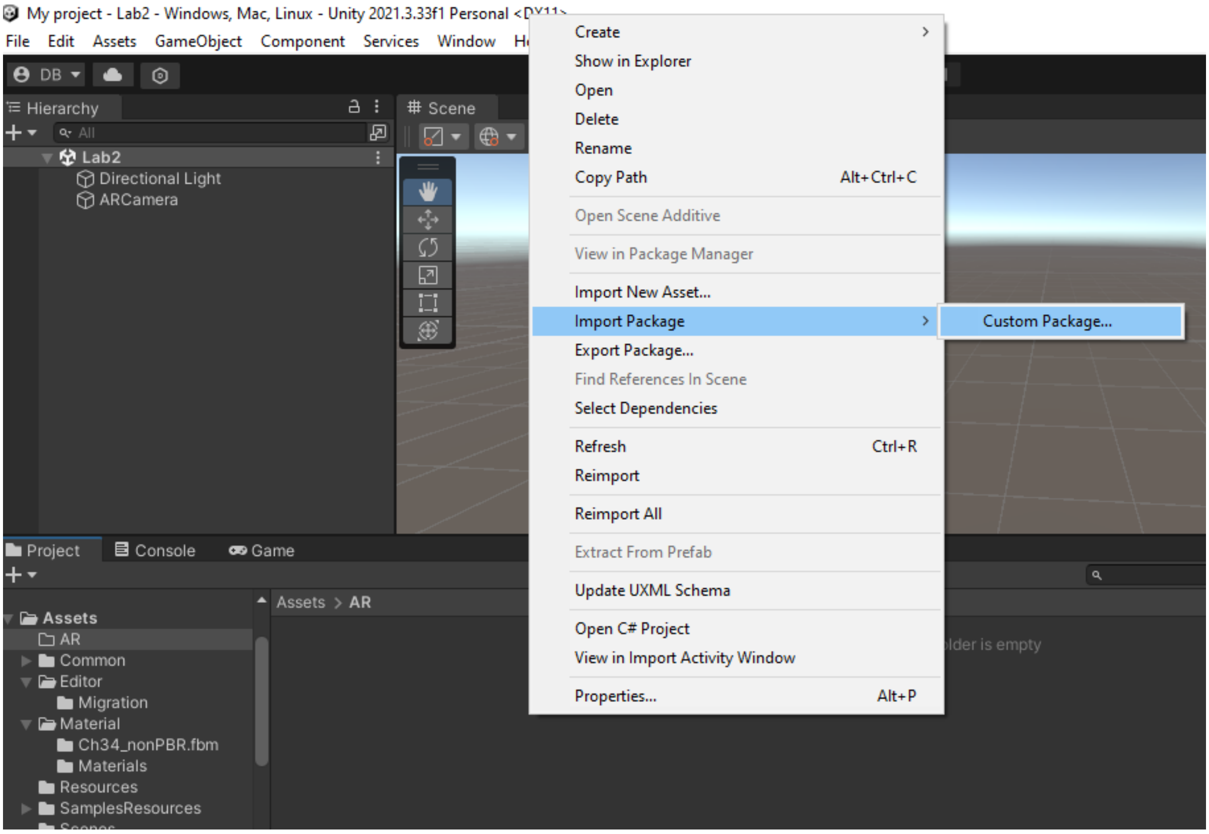
Select a development platform:

○ Android Studio, Xcode or Visual Studio

● Unity Editor

Step 7: Import database in unity

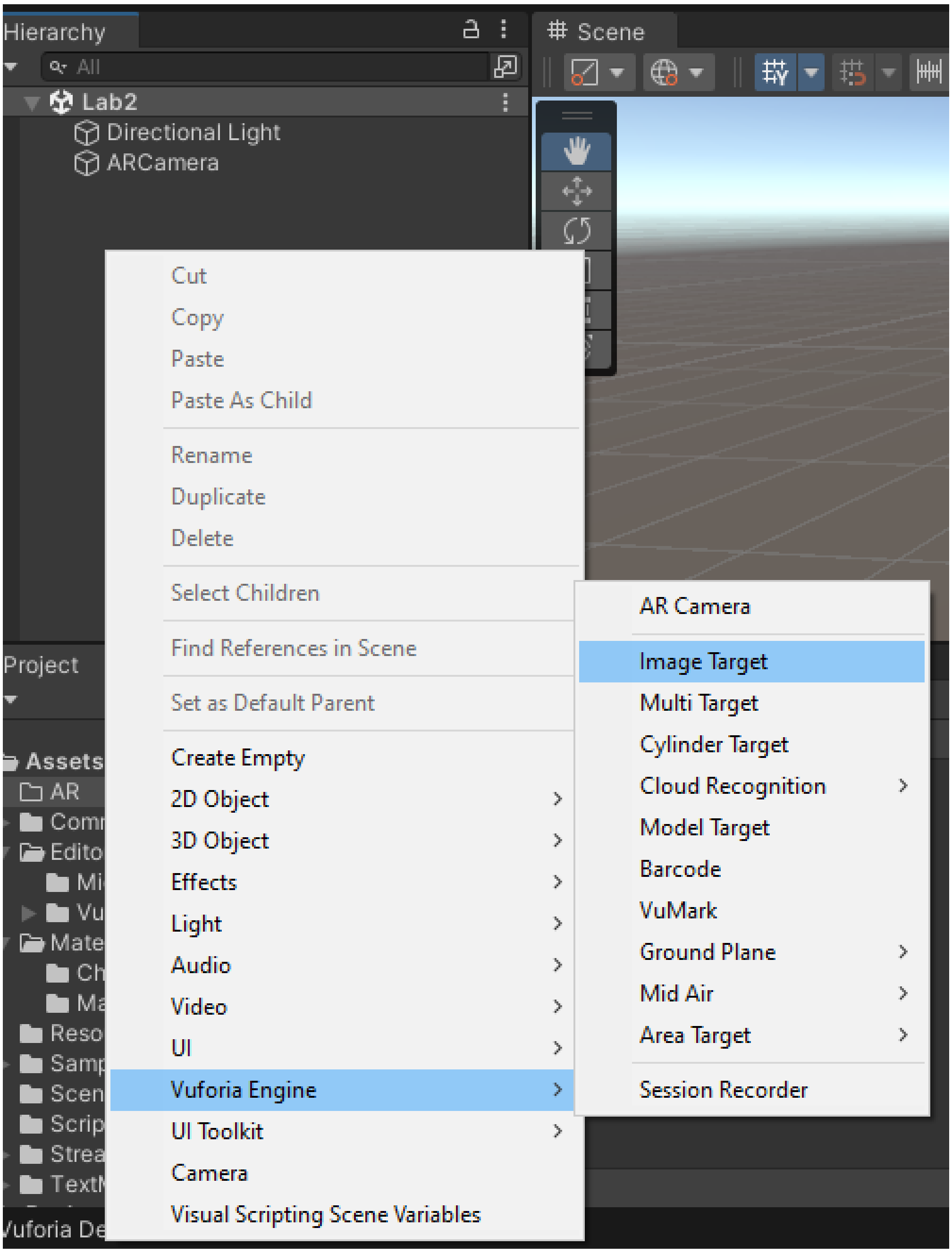
- Open unity create AR folder
- Right click import package->custom package



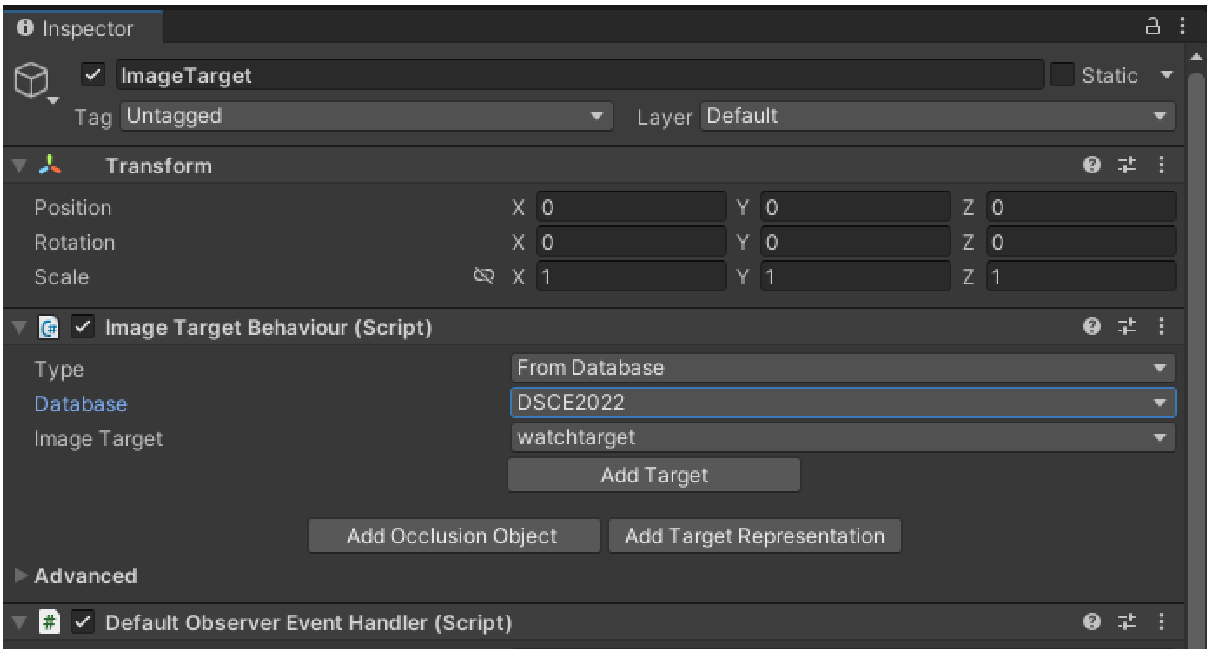
- Click downloaded package and click import

Step 8: setup in unity for image target

- Right click ->Vuforia engine image target



- Select image target and select database and your image



Inspector

☑ ImageTarget □ Static

Tag Untagged Layer Default

Transform

Position X 0 Y 0 Z 0

Rotation X 0 Y 0 Z 0

Scale X 1 Y 1 Z 1

☑ Image Target Behaviour (Script)

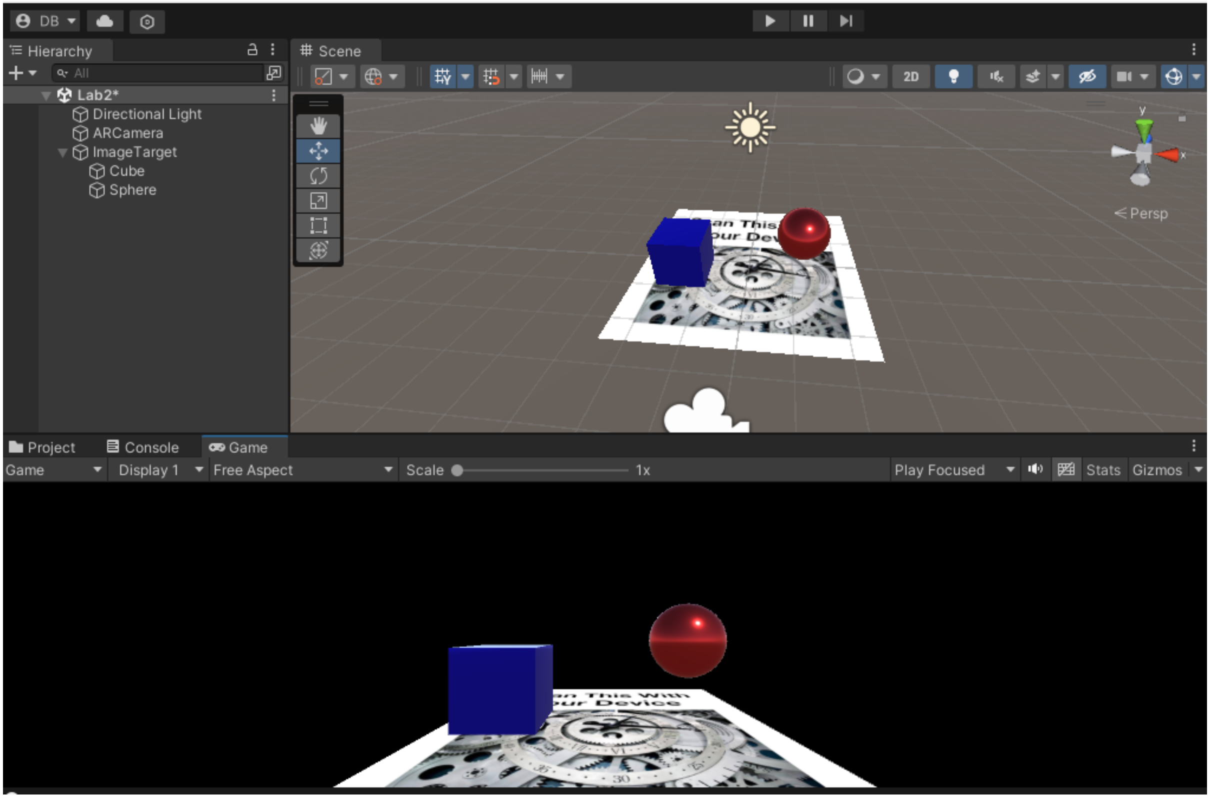
Type From Database

Database DSCE2022

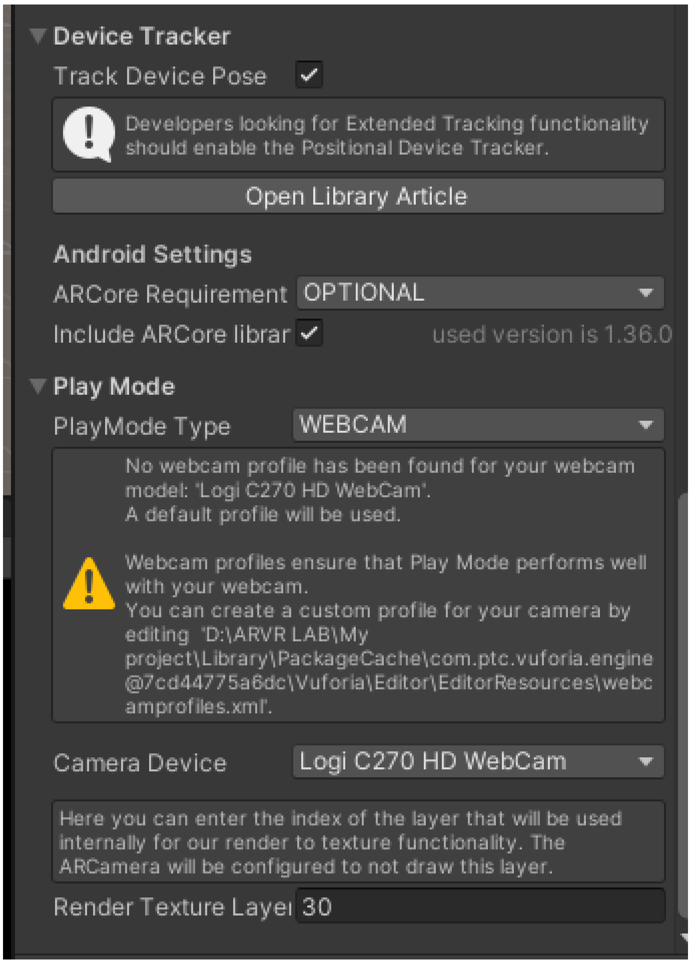
Image Target watchtarget

☑ Default Observer Event Handler (Script)

- Add cube and sphere in scene window and set up as below



for external webcam



Track Device Pose ☑

Developers looking for Extended Tracking functionality should enable the Positional Device Tracker.

ARCore Requirement OPTIONAL

Include ARCore librar ☑ used version is 1.36.0

PlayMode Type WEBCAM

No webcam profile has been found for your webcam model: 'Logi C270 HD WebCam'.
A default profile will be used.

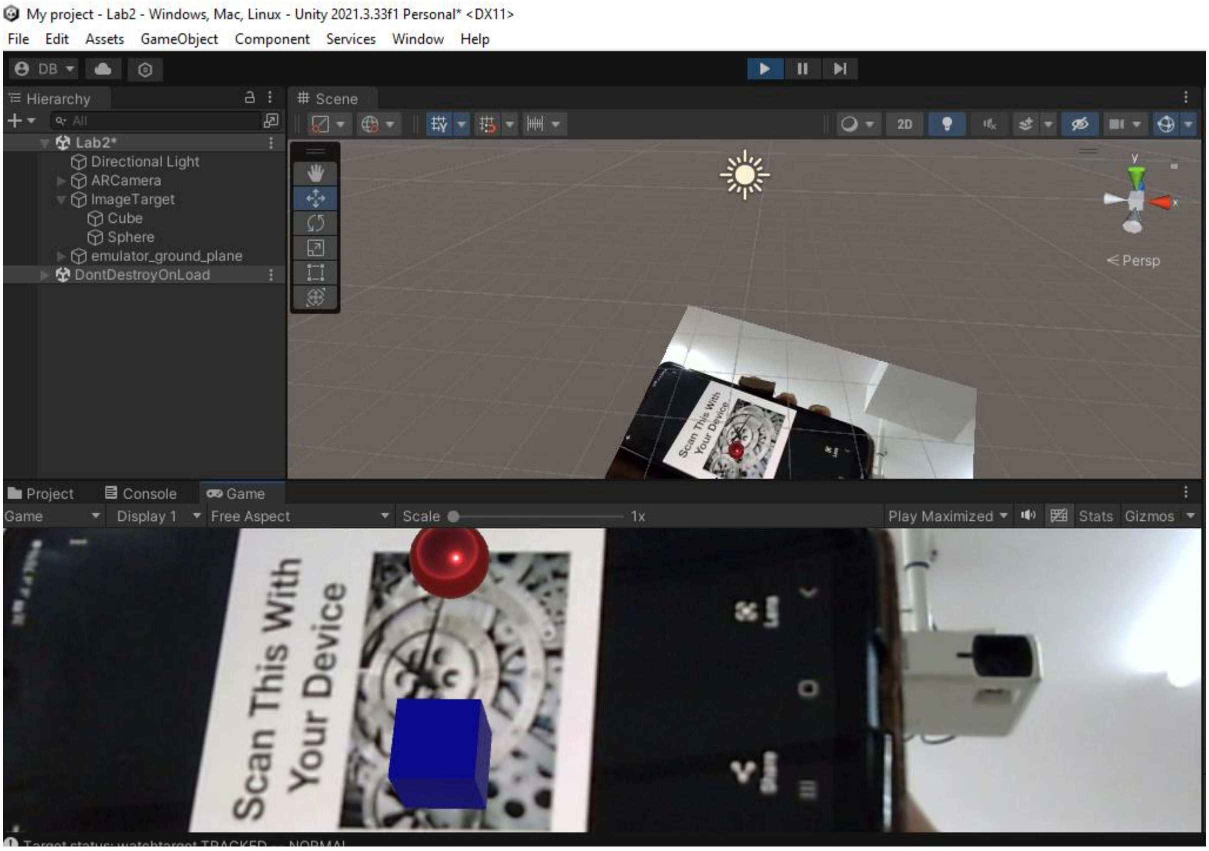
Webcam profiles ensure that Play Mode performs well with your webcam.
You can create a custom profile for your camera by editing 'D:\ARVR LAB\My project\Library\PackageCache\com.ptc.vuforia.engine@7cd44775a6dc\Vuforia\Editor\EditorResources\webcamprofiles.xml'.

Camera Device Logi C270 HD WebCam

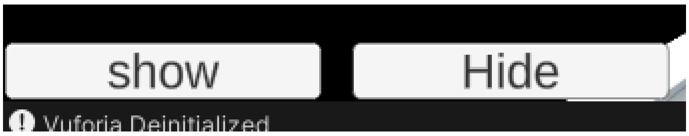
Here you can enter the index of the layer that will be used internally for our render to texture functionality. The ARCamera will be configured to not draw this layer.

Render Texture Layeı 30

- Now if u play while showing target image both gameobject will pop up



Step 9: create ui by creating buttons show and Hide



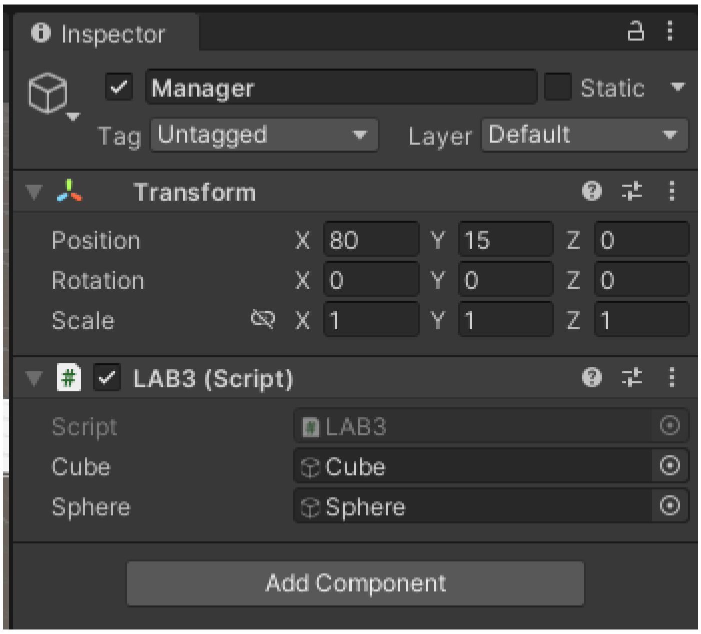
Step 10: create script and attach to empty game object manager and give reference of cube and sphere

```
using UnityEngine;

public class LAB3 : MonoBehaviour
{
   public GameObject cube;
   public GameObject sphere;
   void Start()
   {
      sphere.SetActive(false);
   }

   // Update is called once per frame
   void Update()
   {
      cube.transform.Rotate(0,30,0);
   }
   public void show()
```

```
    {
       sphere.SetActive(true);
    }
    public void hide()
    {
        sphere.SetActive(false);
    }
}
```



☑ Manager □ Static

Tag Untagged Layer Default

Transform

Position X 80 Y 15 Z 0

Rotation X 0 Y 0 Z 0

Scale X 1 Y 1 Z 1

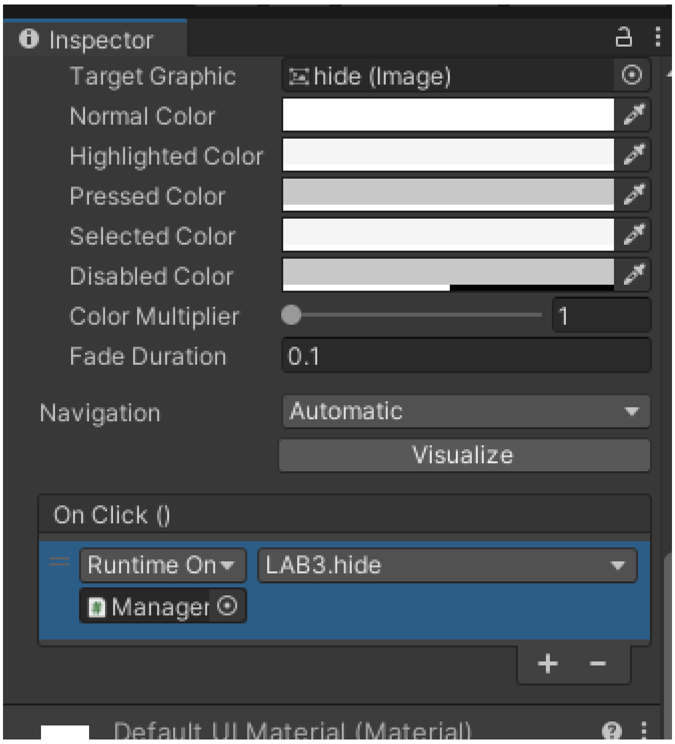
☑ LAB3 (Script)

Script LAB3

Cube Cube

Sphere Sphere

Step 11: Attach function to button



Inspector

Target Graphic: hide (Image)
Normal Color
Highlighted Color
Pressed Color
Selected Color
Disabled Color
Color Multiplier: 1
Fade Duration: 0.1

Navigation: Automatic

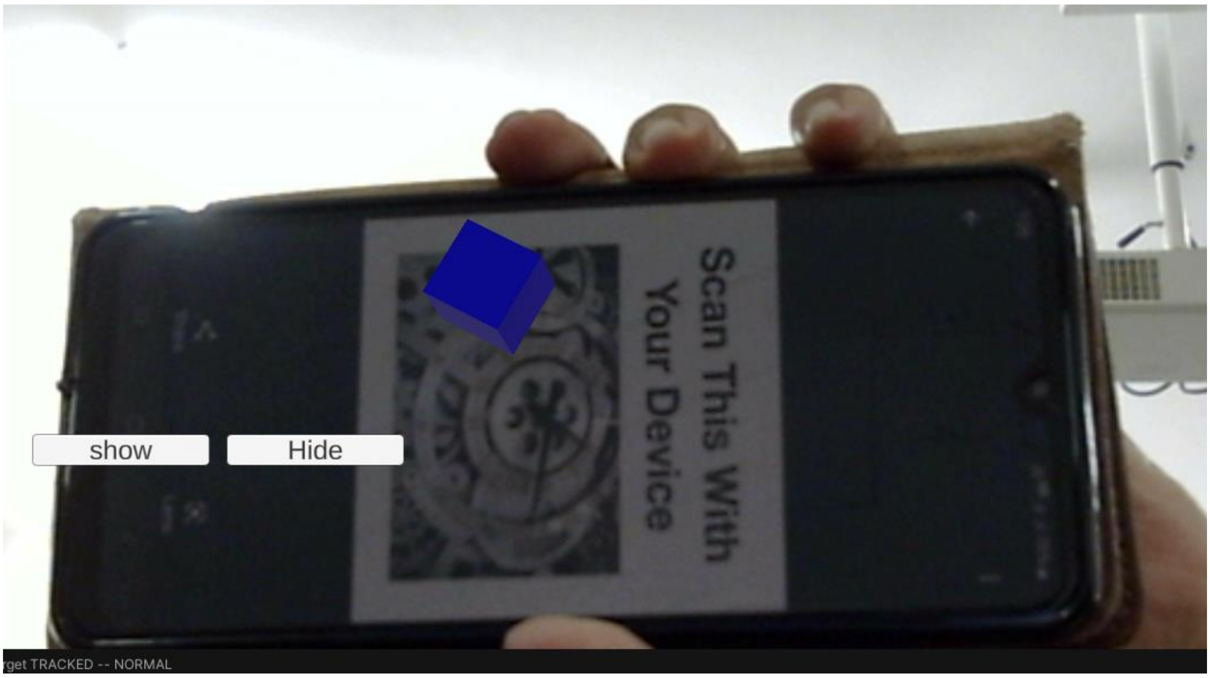
Visualize

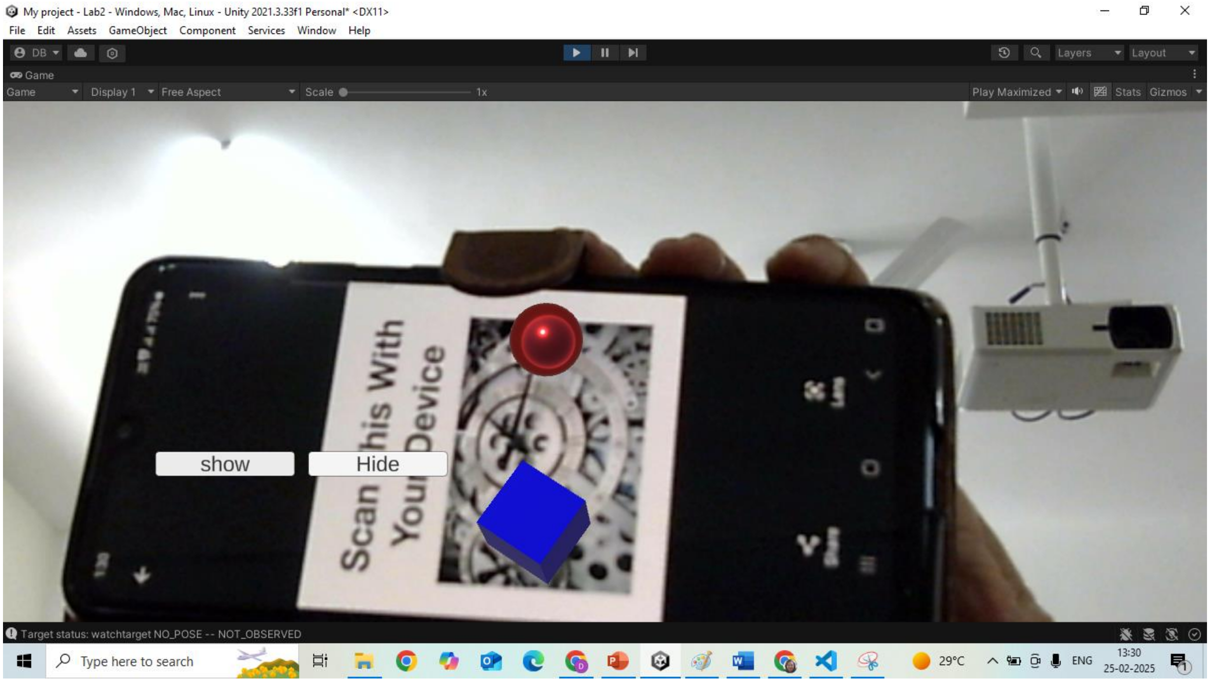
On Click ()

Runtime On | LAB3.hide
Manager

Default UI Material (Material)

Output:





My project - Lab2 - Windows, Mac, Linux - Unity 2021.3.33f1 Personal* <DX11>

Target status: watchtarget NO_POSE -- NOT_OBSERVED