



Session 15

Creating Multi Target System in Vuforia

Welcome to the session, **Creating Multi Target System in Vuforia**. This session illustrates how to use Multi Target for Augmented Reality (AR).

In this session, students will learn to:

- Describe the creation of a new Multi Target
- Explain how to place a GameObject on the Multi Target

15.1 Create a New Multi Target

To create a custom Vuforia Multi Target, go to the Vuforia Developer portal and create a custom database. Follow the given steps for creating a Multi Target:

Step 1: Open any browser and search by typing **Vuforia Developer Portal**. Alternatively, you can search using the link, developer.vuforia.com. Figure 15.1 shows the Vuforia Developer Portal.

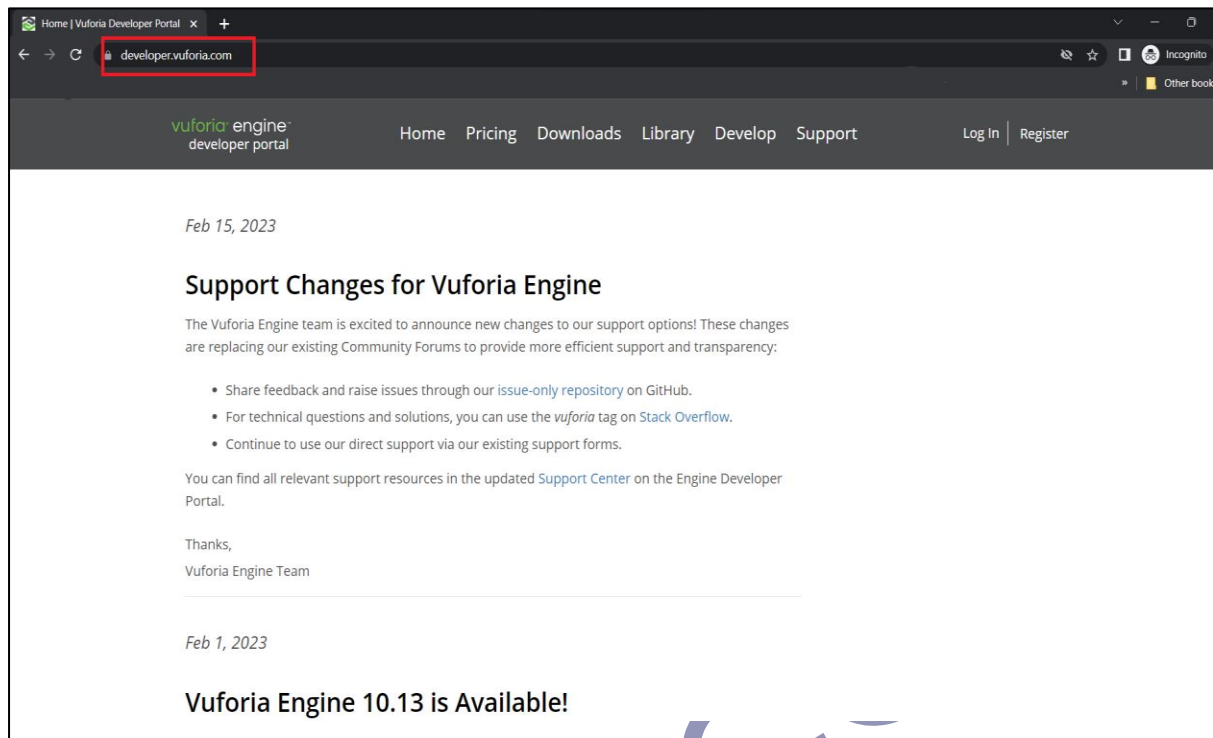


Figure 15.1: Vuforia Developer Portal

Step 2: Click **Log in** and log into the portal using valid credentials. Figure 15.2 shows the Log in option.

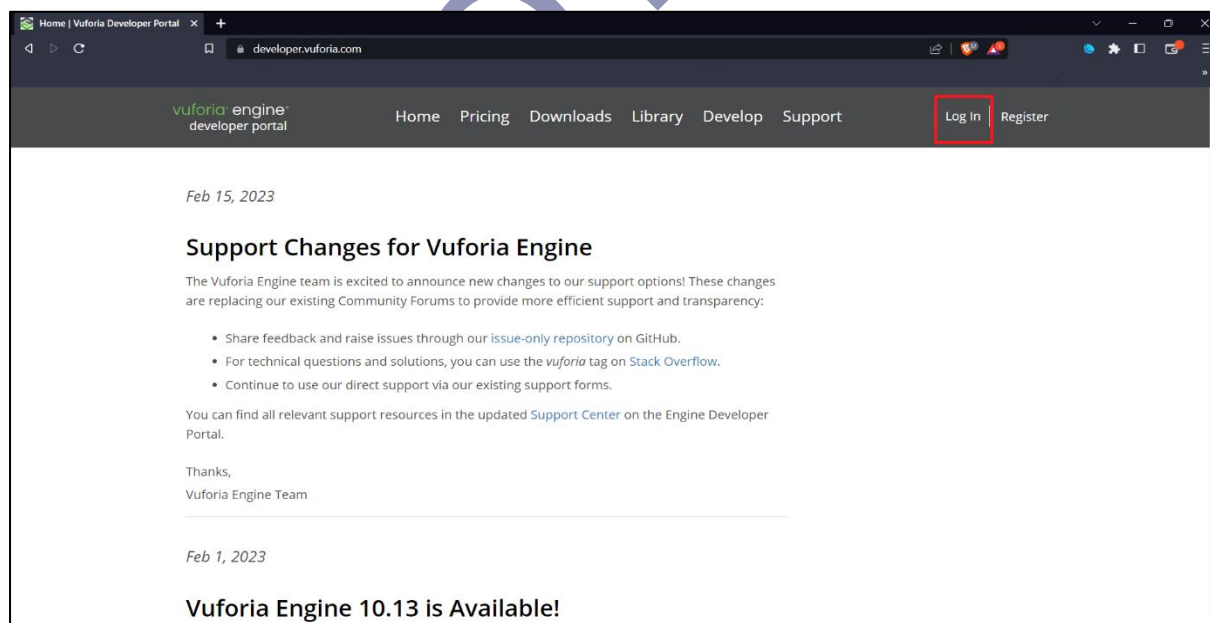


Figure 15.2: Login Page

Username appears at the top corner of the Vuforia portal, as shown in Figure 15.3.

Step 3: Click the **Develop** tab for the next process to appear, as shown in Figure 15.3.

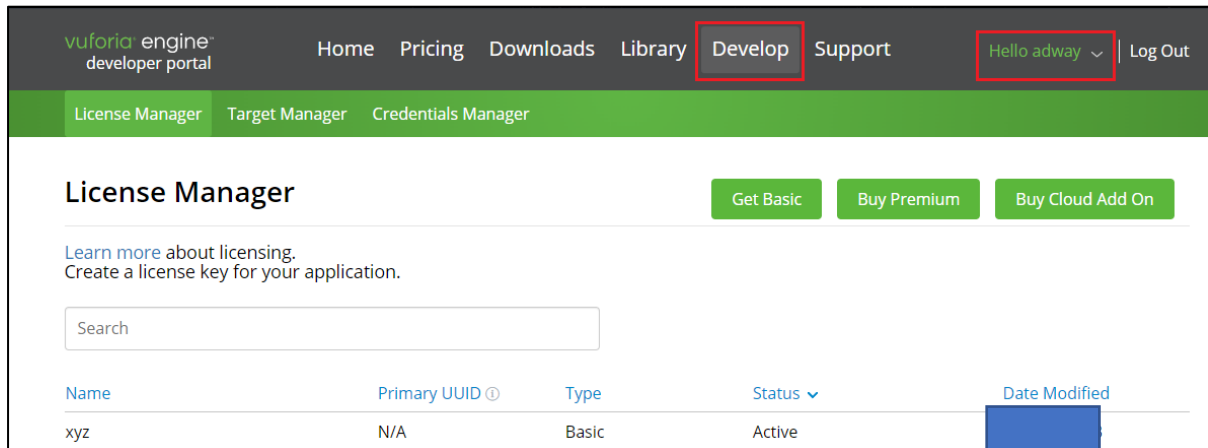


Figure 15.3: Develop Option

Step 4: Click the **Target Manager** tab. Figure 15.4 shows this tab.

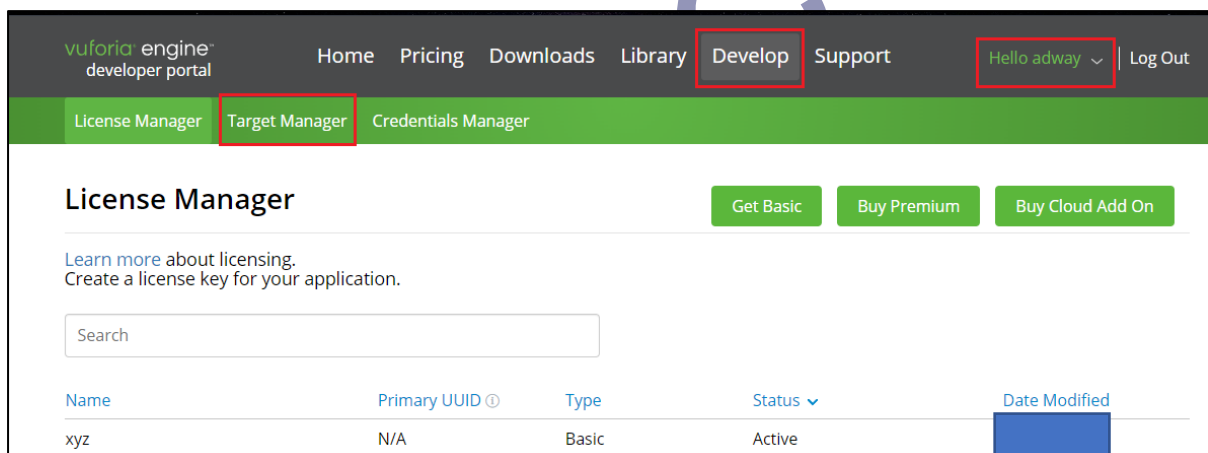


Figure 15.4: Target Manager Option

Step 5: Create a database by clicking the **Add Database** button as shown in Figure 15.5.

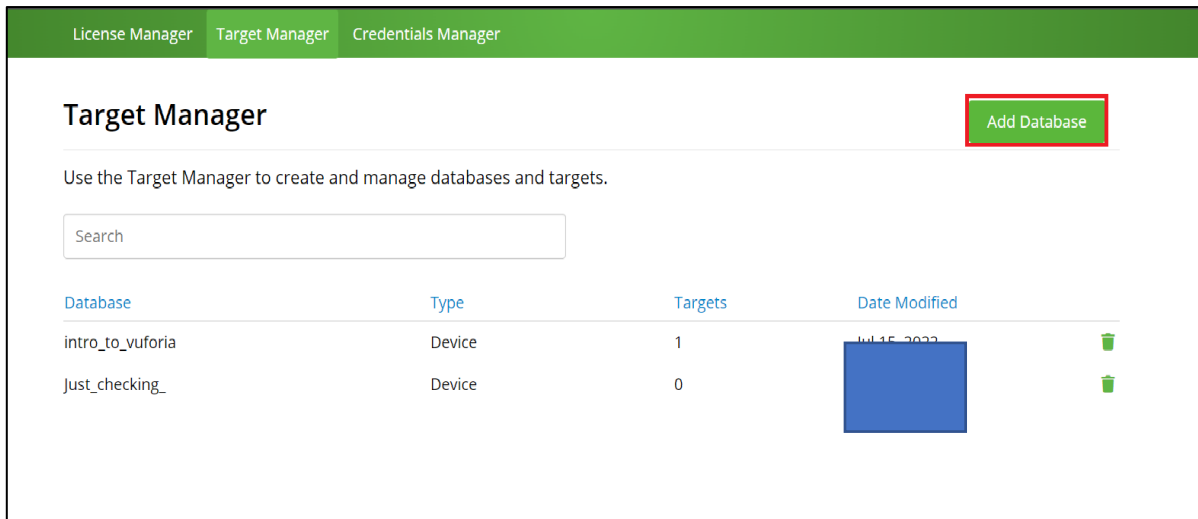


Figure 15.5: Add Database Button

Step 6: Select the desired database and make sure that **Type** is selected as **Device** as shown in Figure 15.6.

Step 7: Click **Create**.

The screenshot shows the 'Create Database' form. At the top, the title 'Create Database' is displayed. Below the title is a text input field labeled 'Database Name *' which is highlighted with a red rectangular border. Below the input field is the 'Type:' section with three radio buttons: 'Device', 'Cloud', and 'VuMark'. The 'Device' radio button is selected and highlighted with a red rectangular border. At the bottom right of the form are two buttons: 'Cancel' (green) and 'Create' (gray). The 'Create' button is highlighted with a red rectangular border.

Figure 15.6: Create Database Screen

Now, a new Database is created in Target Manager as shown in Figure 15.7.

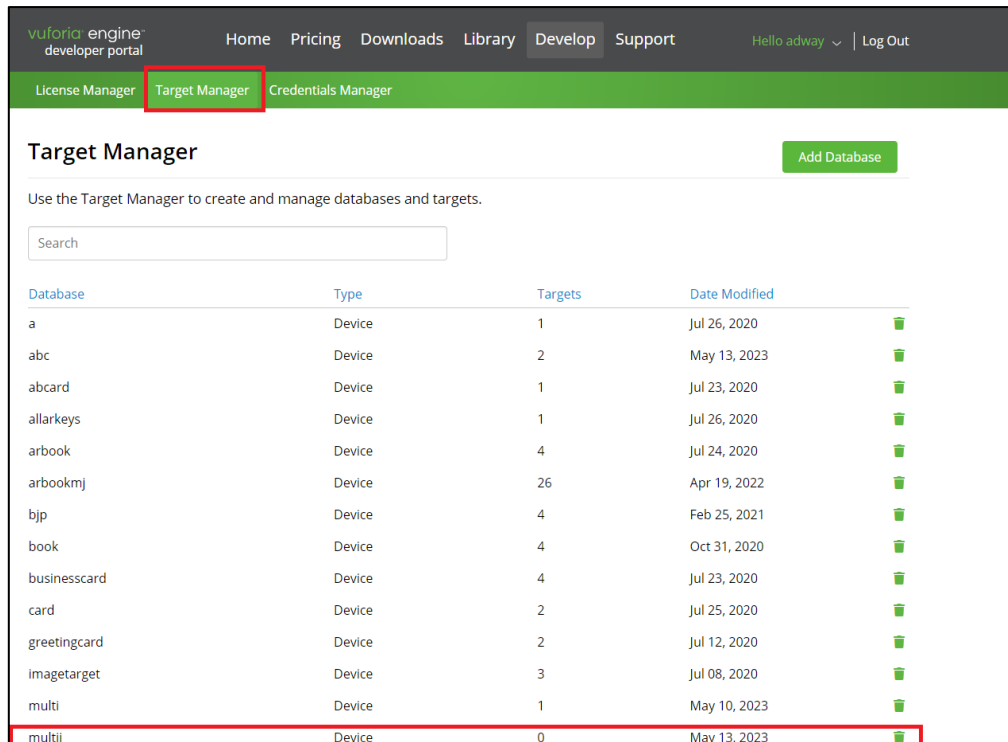


Figure 15.7: Creation of New Database

As one database can contain multiple Multi Target, the count is zero initially.

Step 8: For adding Multi Target, click the newly created database. Here, the list is empty as shown in Figure 15.8.

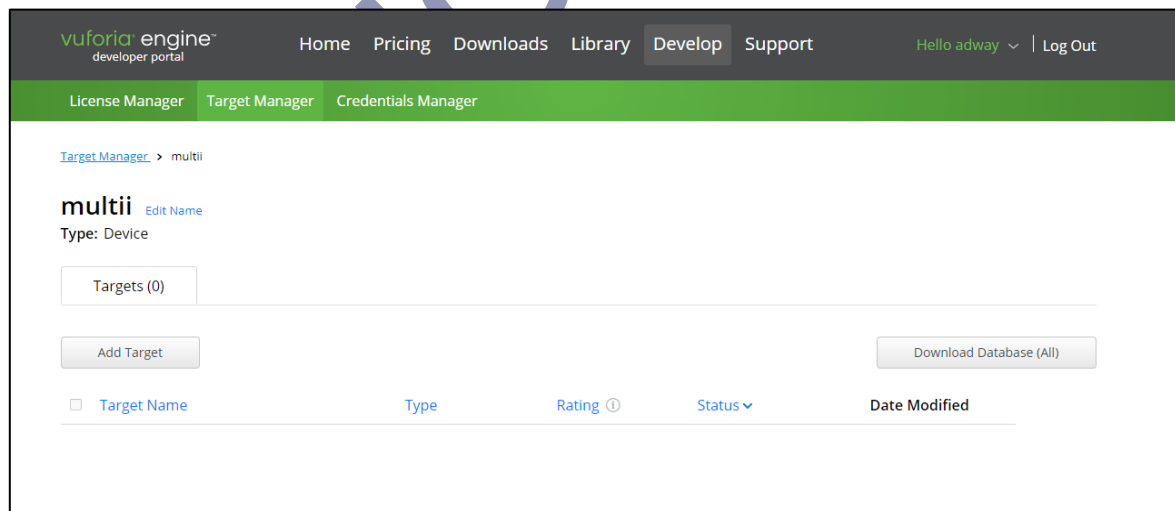


Figure 15.8: Empty Database

Step 9: Click **Add Target** as shown in Figure 15.9.

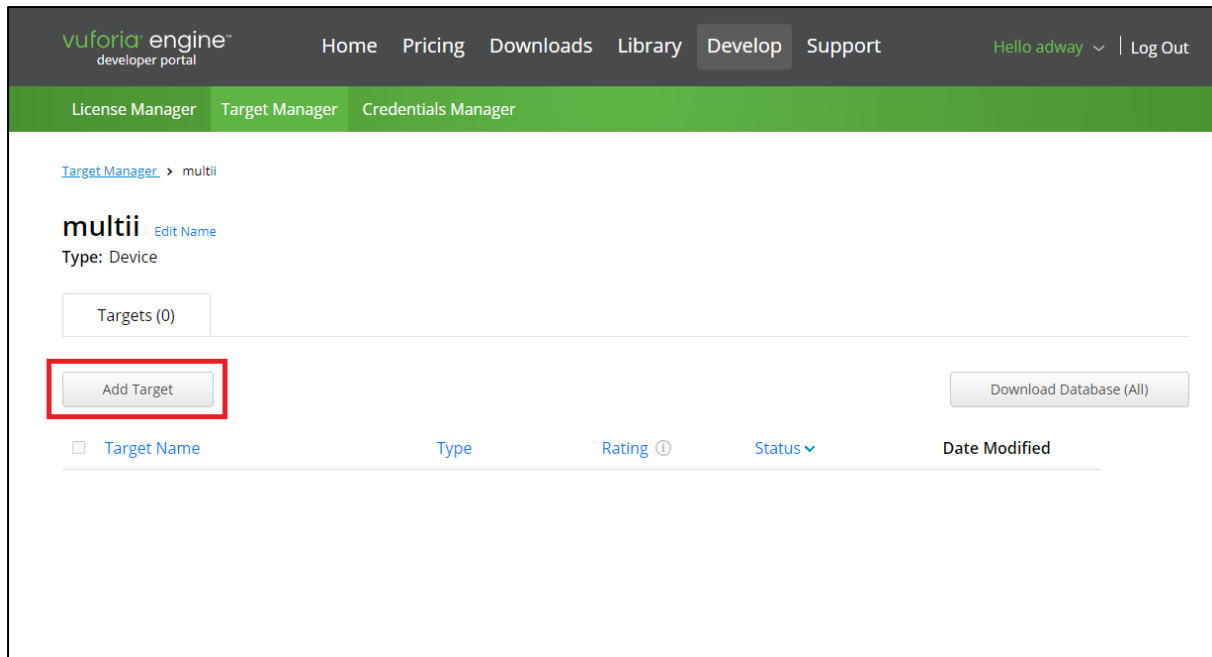


Figure 15.9: Add Target Button

Now, consider the example of an image (Cube) shown in Figure 15.10. It has a dimension of 10 centimeters which is 0.1 meters in height, width, and length.

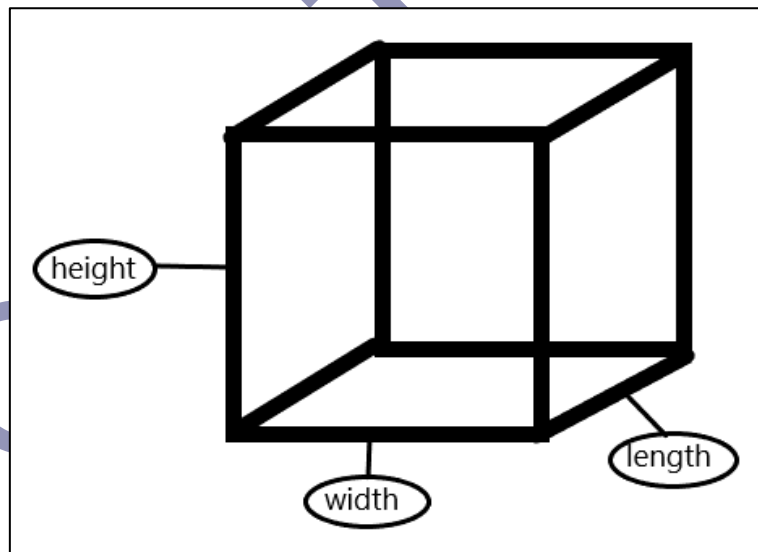


Figure 15.10: Example of a Cube

The Add Target window opens, as shown in Figure 15.11.

Step 10: Here, select **Type** as **Multi**, enter the width, height, and length in meters, enter the value for the **Name** field, and then, click **Add**.

Add Target

Type:

Image Multi Cylinder Object

Dimension:

Width:

Height:

Length:

Enter the width, height and length of your target in the same unit as your augmentation. The size of the target shall be relative to the size of the augmented virtual content.

Name:

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

Cancel Add

Figure 15.11: Add Target Screen

Step 11: After the target has been created, open the Multi Target created. Click any one of the sides as shown in Figure 15.12 and upload the image (Cube) as shown in Figure 15.13 but, make sure the dimensions match with the dimensions entered earlier.

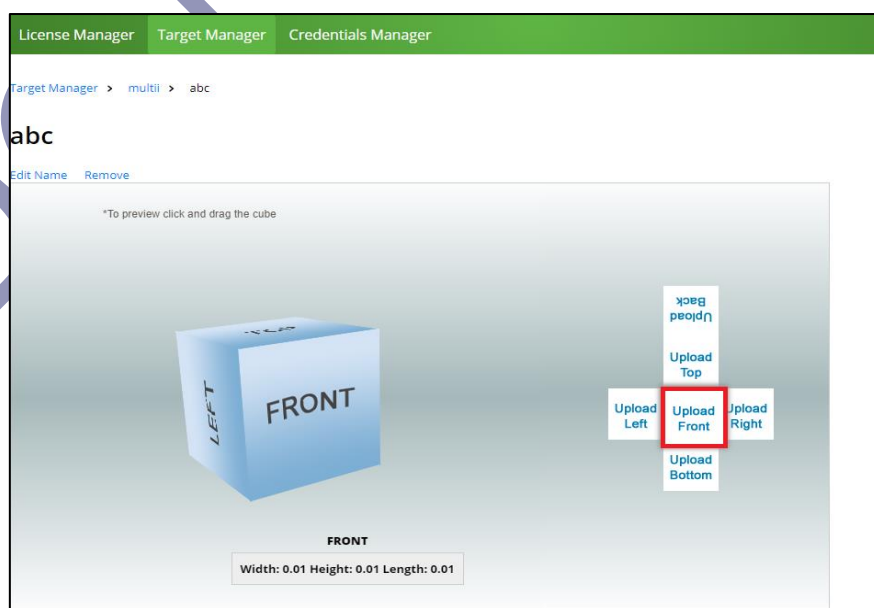


Figure 15.12: Opening Multi Target

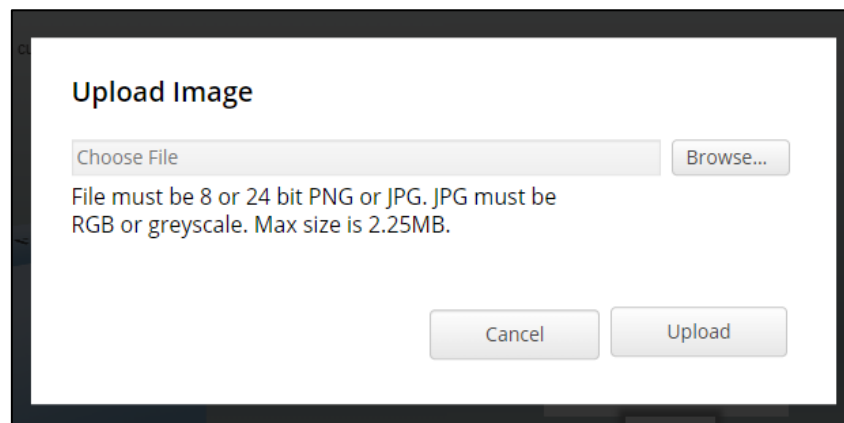


Figure 15.13: Upload Image Screen

Now, repeat the same steps for all the sides of the box.

You can refer to <https://library.vuforia.com/objects/recommendations-designing-multi-targets> for designing the Multi Target. Please make sure of the bit depth of the picture, if it is not 8-bit or 24-bit, you can use Canva, PhotoScape, or any other picture editing tools.

Note: The picture must be 8-bit or 24-bit PNG or JPG. JPG must be RGB or greyscale. Max size is 2.25 MB.

Step 12: After uploading the image, it will be displayed as shown in Figure 15.14.

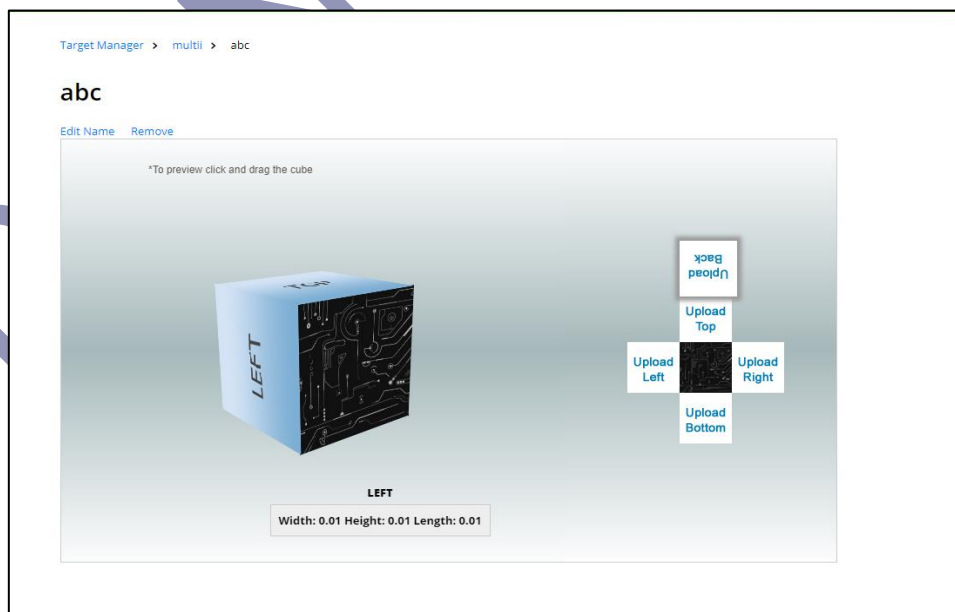


Figure 15.14: After Adding Image

Step 13: Click the **Download Database (All)** button as shown in Figure 15.15.

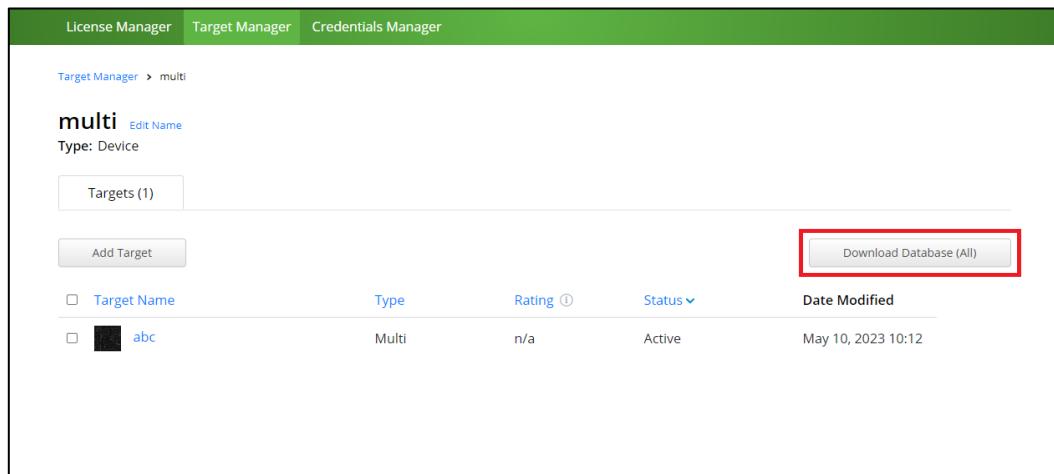


Figure 15.15: Download Database (All) Button

Step 14: After clicking the **Download Database (All)** button, a dialog box will open, select the Unity Editor and then, **Download** as shown in Figure 15.16.

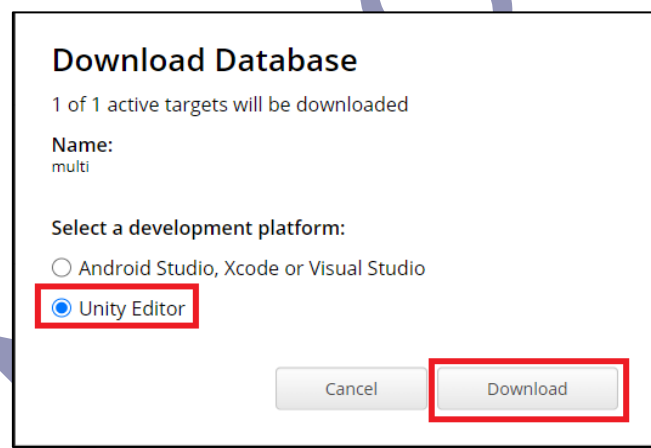


Figure 15.16: Download Database Screen

15.2 Placing the GameObject on the Multi Target

Follow the steps given to place an object on the Multi Target:

Step 1: Set up the Unity scene. After deleting the main camera and adding the AR camera, create a Multi Target as shown in Figure 15.17.

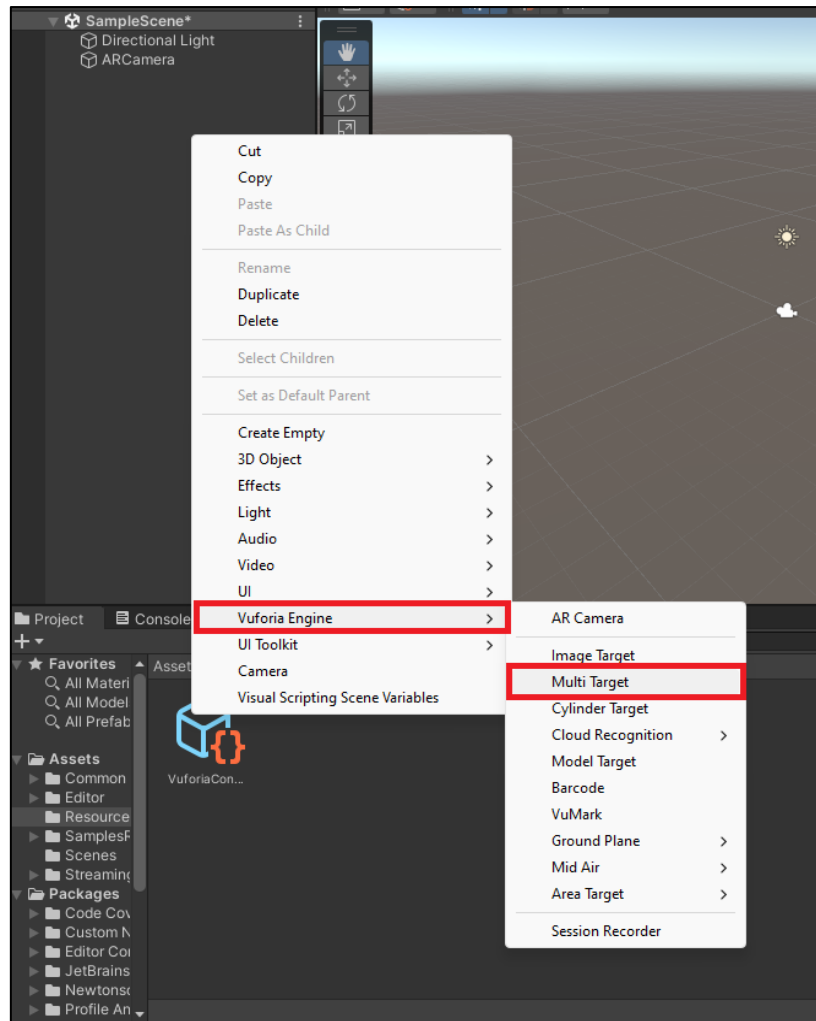


Figure 15.17: Multi Target Option

Step 2: Import the database previously created. In the Inspector window, select the created database as the value for the **Database** field and the created Multi Target as the value for the **Multi Target** field as shown in Figure 15.18.

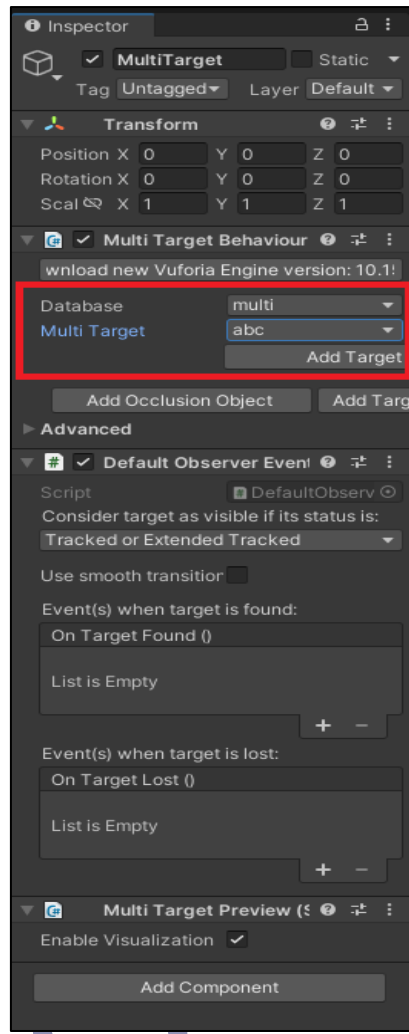
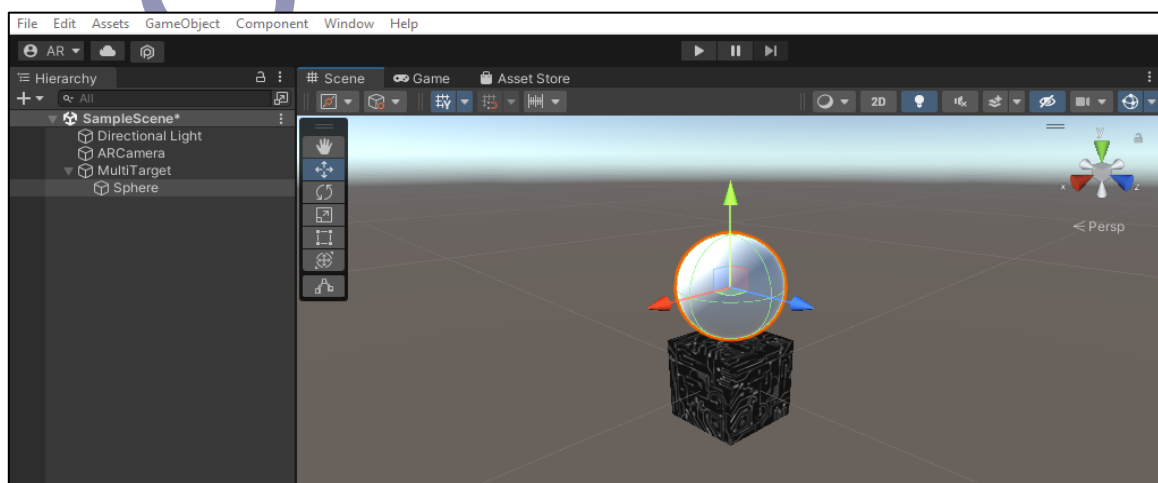


Figure 15.18: Selection of Database and Multi Target

Step 3: Now, add a 3D object to the scene. Make sure to make it a child of Multi Target and resize the 3D object because the Multi Target is small. This is shown in Figure 15.19.



15.19: Placing the GameObject on the Multi Target

Step 4: Now, save the scene (**Ctrl + S**) and play it in the Game Mode. The 3D object is superimposed on the Multi Target as shown in Figure 15.20.

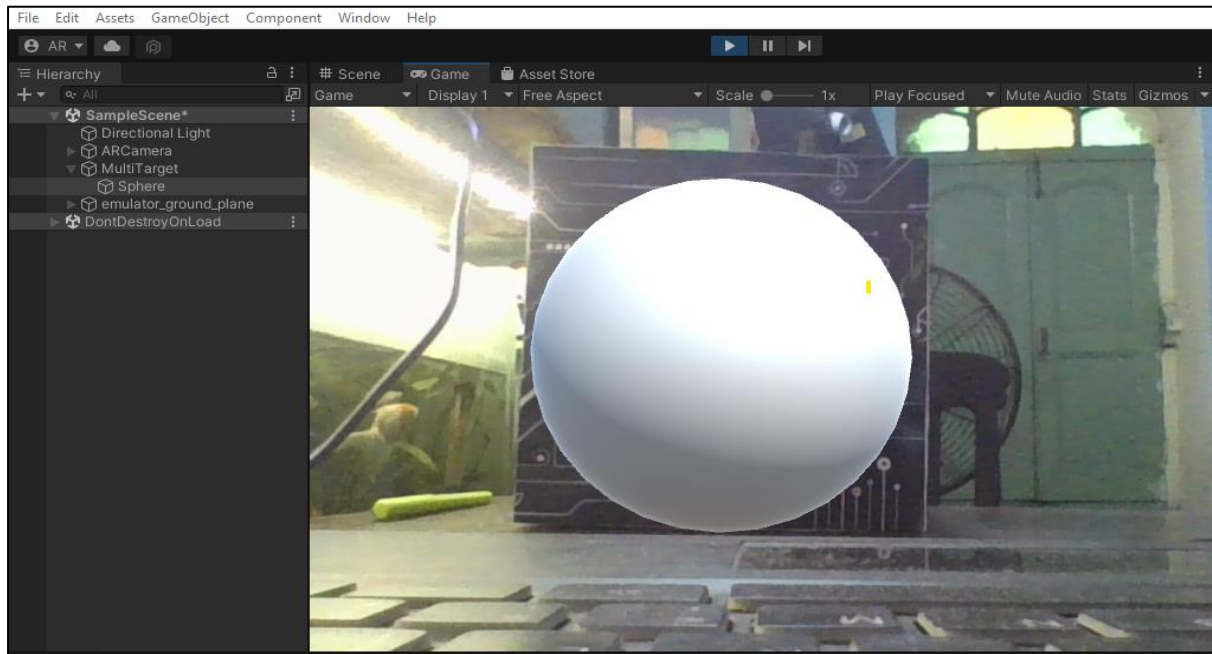


Figure 15.20: 3D Object Superimposed on the Multi Target

Step 5: Build the application on the selected platform (Android or iOS).

Congratulations! An AR experience using Multi Target has been created now.

15.3 Summary

- A custom Vuforia Multi Target can be created by a custom database in the Vuforia Developer portal.
- One database can contain multiple Multi Target.
- Once a database is created, you can create a Multi Target and download it as a Unity Package.
- While uploading the image used for Multi Target, ensure the image must be 8-bit or 24-bit PNG or JPG. JPG must be RGB or greyscale and the max size allowed is 2.25 MB.
- The GameObject should appear on top of the **Multi Target** and move with it as the camera is moved.

15.4 Check Your Progress



- 1) What type of image formats are supported for Multi Targets in Vuforia?
 - a) BMP and GIF
 - b) APNG and AVIF
 - c) SVG and WebP
 - d) JPEG and PNG
- 2) The file format of a Vuforia downloaded database is .unitypackage.
 - a) True
 - b) False
- 3) The picture must be _____ bit PNG or JPG.
 - a) 8 or 24
 - b) 8 or 32
 - c) 24 or 32
 - d) 34 or 43
- 4) The Multi Target's width, length, and height must be in centimeters.
 - a) True
 - b) False
- 5) The format of a 3D model in unity must be _____.
 - a) .max
 - b) .jpg and .bit
 - c) .gif and .jpg
 - d) .fbx and .obj

15.4.1 Answers

1)	d)
2)	a)
3)	a)
4)	b)
5)	d)

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15.5 Try It Yourself

- Try to create a Unity project, create a new Multi Target and database, and create a new scene and place objects in a new Multi Target.
- Explore Unity and Vuforia developer's portal to learn more about AR.

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