

Futuristic Gaming - Building AR and VR Games with Unity

Session 15

Creating Multi Target System in Vuforia



DO NOT



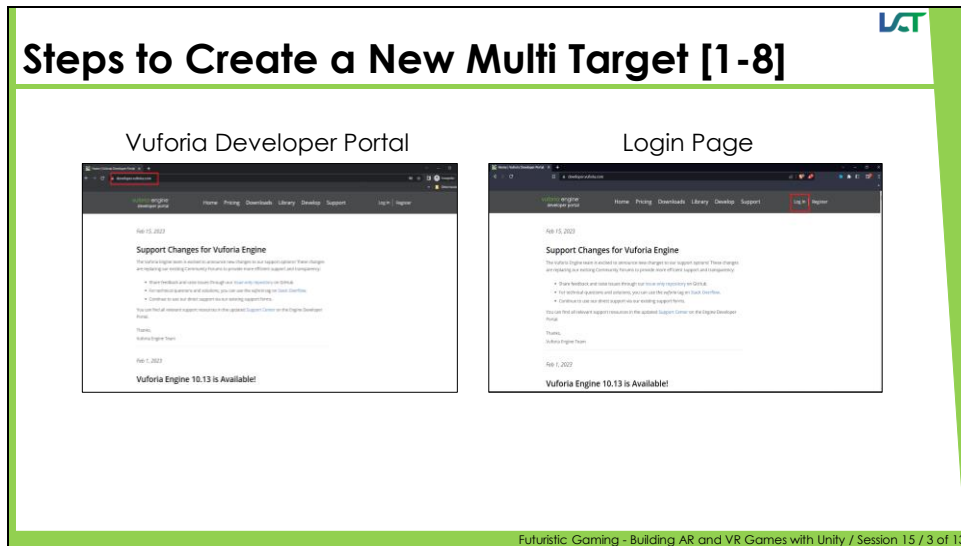
Session Overview

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

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Instruction(s) to the trainer:

Show slide 2 and give students an overview of the current session through session objectives. Tell students this session illustrates how to create Multi Target for Augmented Reality (AR) and how to place a GameObject on the Multi Target.



Instruction(s) to the trainer:

Show slide 3 and demonstrate the steps to create a new Multi Target.

In-Class Question: What is the purpose of creating a Multi Target in Vuforia?

Answer: In Vuforia, a Multi Target refers to a group of multiple Image Targets arranged in a particular geometric configuration. This feature enables the detection and tracking of objects in instructional contexts.

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, search by typing **Vuforia Developer Portal** or search using the link developer.vuforia.com.

Step 2: Login using the valid credentials.

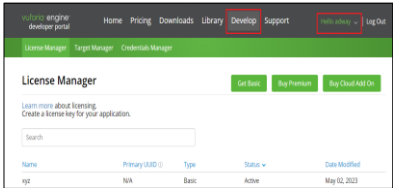
Refer to following links for additional information:

<https://library.vuforia.com/objects/multi-targets>

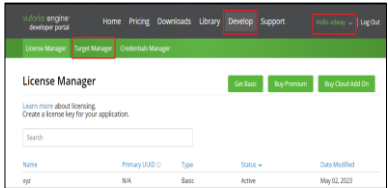
<https://library.vuforia.com/objects/recommendations-designing-multi-targets>

Steps to Create a New Multi Target [2-8]

Develop Option



Target Manager Option



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Instruction(s) to the trainer:

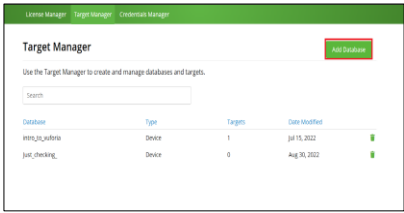
Show slide 4 and demonstrate the steps to create a new Multi Target.

Step 3: Click the **Develop** tab for the subsequent process to appear.

Step 4: Click the **Target Manager** option.

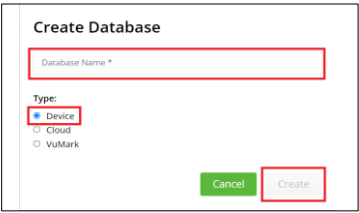
Steps to Create a New Multi Target [3-8]

Add Database Button



Database	Type	Targets	Date Modified
https://api...	Device	1	Jul 15, 2022
just checking...	Device	0	Aug 30, 2022

Create Database Screen



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Instruction(s) to the trainer:

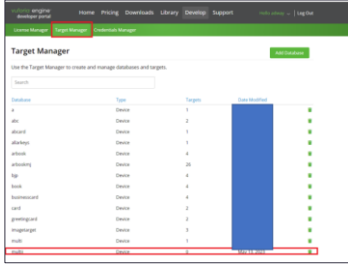
Show slide 5 and illustrate the steps to create a new Multi Target.

Step 5: Create a database by clicking the **Add Database** button.

Step 6: After clicking the Add Database, select the database and make sure the **Type** is selected as **Device**. Then, click **Create**. A new database will be created.

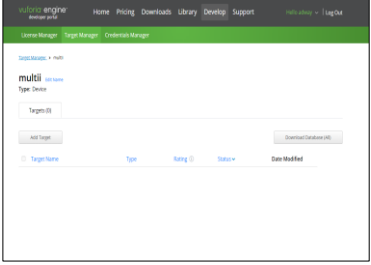
Steps to Create a New Multi Target [4-8]

Creation of a New Database



Database	Type	Targets	View Database
2	Device	1	
all	Device	2	
allcard	Device	1	
allkeys	Device	1	
allview	Device	4	
allview2	Device	20	
tip	Device	4	
book	Device	4	
bookmark	Device	4	
card	Device	2	
gamecard	Device	2	
gamecard2	Device	2	
game	Device	1	
multi	Device	0	

An Empty Database



The screenshot shows the 'multi' database selected. The 'Targets' section is empty, with a 'Download Database' button at the bottom right.

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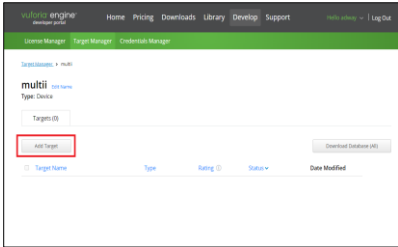
Instruction(s) to the trainer:

Show slide 6 and demonstrate the steps to create a new Multi Target.

Step 7: As one Database can contain multiple Multi Target, the count is zero initially. For adding Multi Target, click the newly created Database. The list is empty as shown on the slide.

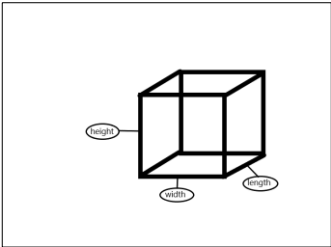
Steps to Create a New Multi Target [5-8]

Add Target Button



The screenshot shows the Unity engine interface with the 'Target Manager' tab selected. Under the 'multi' type, there is a table with columns for 'Target Name', 'Type', 'Rating', 'Status', and 'Date Modified'. The 'Add Target' button is highlighted with a red rectangle.

Example of a Cube



The diagram shows a 3D wireframe cube. Three labels with arrows point to its dimensions: 'height' points to the vertical edge, 'width' points to the bottom-left horizontal edge, and 'length' points to the bottom-right horizontal edge.

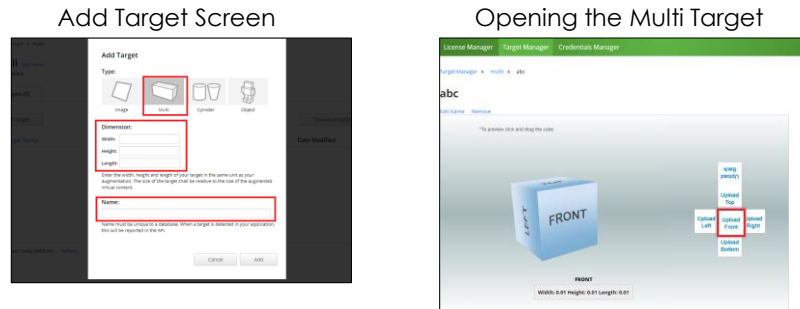
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Instruction(s) to the trainer:

Show slide 7 and demonstrate the steps to create a new Multi Target.

Step 8: Click the **Add Target** button. A new target window is displayed. Now, consider the example of an image (Cube). It has a dimension of 10 centimetres which is 0.1 meters in height, width, and length.

Steps to Create a New Multi Target [6-8]



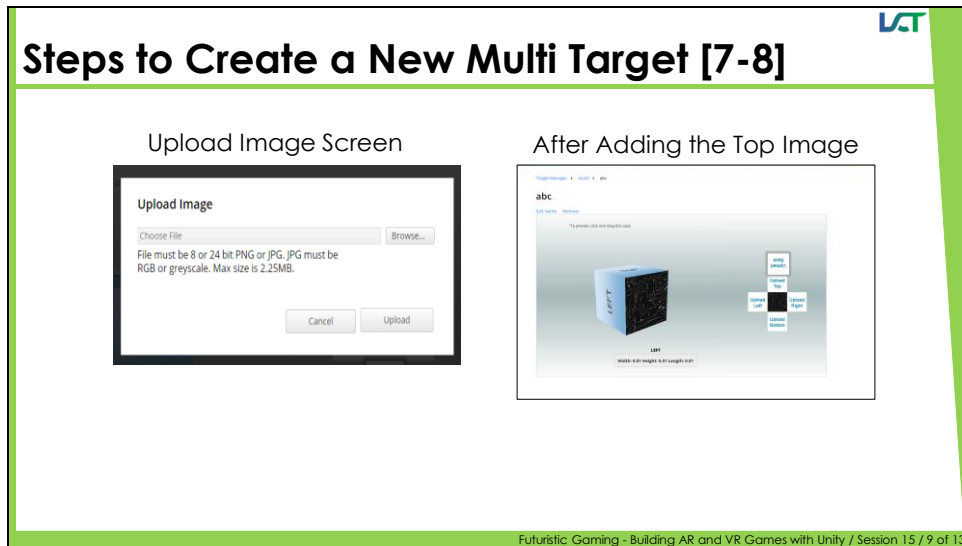
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Instruction(s) to the trainer:

Show slide 8 and demonstrate the steps to create a new Multi Target.

Step 9: Select **Type** as **Multi**, enter the width, height, and length in meters, enter the value in the **Name** field, and click **Add**.

Step 10: After creating the target, open the Multi Target created. Click any one of the sides and upload the image (Cube), but make sure the dimensions match the dimensions entered earlier. Now, repeat the same steps for all the sides of the box.

**Instruction(s) to the trainer:**

Show slide 9 and illustrate the steps to create a new Multi Target.

Step 11: Upload the image in the **Upload Image** screen.

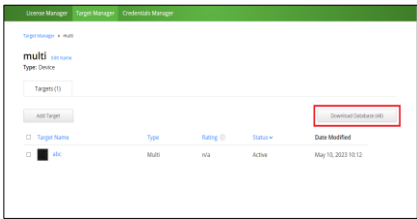
After uploading the image, it will be displayed as shown on the slide.

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.

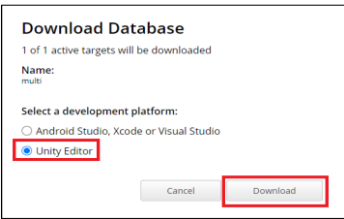
Please make sure of the bit depth of the picture, if it is not 8-bit or 24-bit, you can use Canva, PhotoScape, or any other picture editing tools.

Steps to Create a New Multi Target [8-8]

Download Database (All) Button



Download Database Screen



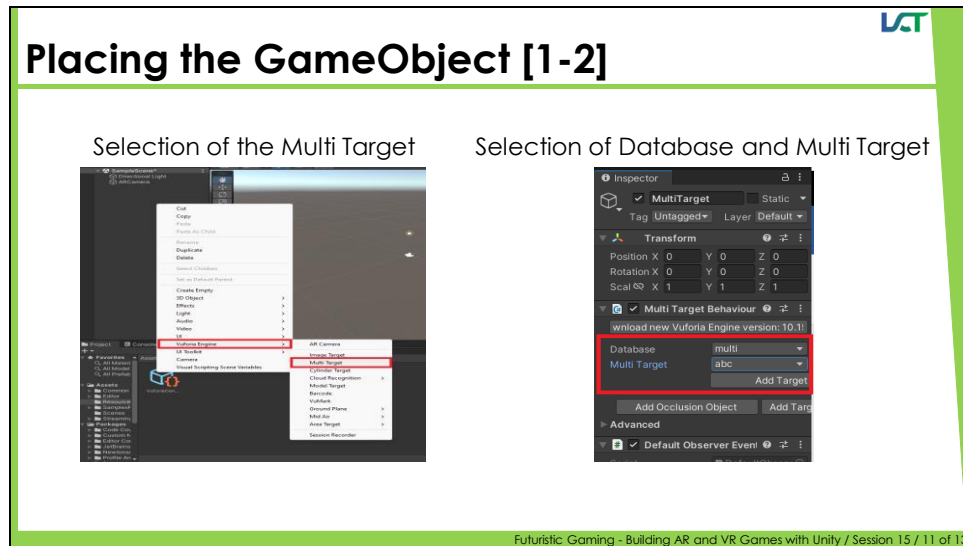
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Instruction(s) to the trainer:

Show slide 10 and demonstrate the steps to create a new Multi Target.

Step 12: Click the **Download Database (All)** button. A dialog box is displayed.

Step 13: Select the editor, and then, **Download**.



Instruction(s) to the trainer:

Show slide 11 and guide students on how to place an object on the Multi Target.

In-Class Question: What are the different types of targets available in Vuforia?

Answer: Vuforia offers different types of targets for adding to a database such as 3D Objects, Cuboids, Single Images, and Cylinders.

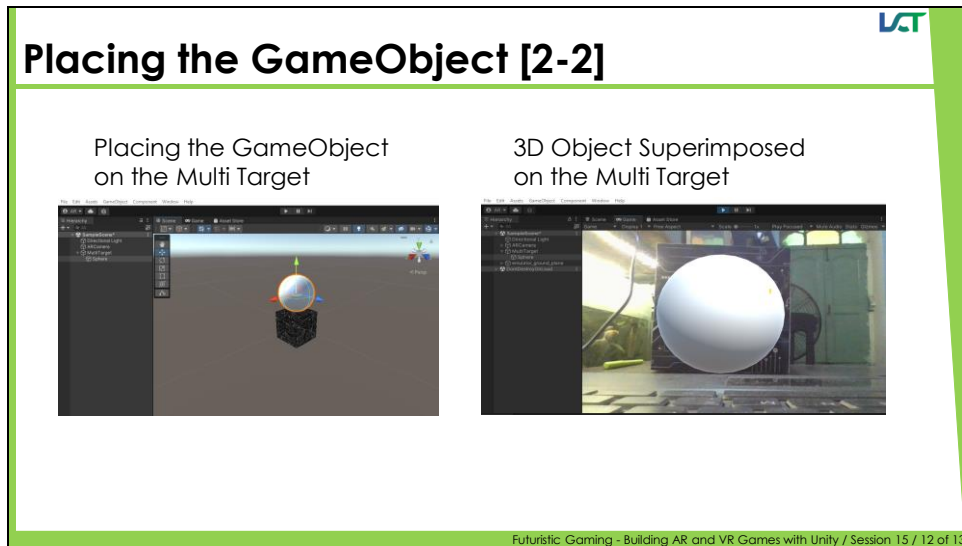
Follow the steps given to place an object on the Multi Target:

Step 1: Set up the Unity scene. After deleting the primary camera and adding the AR Camera, create a Multi Target.

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.

Refer to following link for additional information:

<https://help.easyar.com/EasyAR%20Sense%20Unity%20Plugin/Samples/ObjectSensing/MultiTarget.html>



Instruction(s) to the trainer:

Show slide 12 and guide students on how to place an object on the 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.

Step 4: Save the scene (**Ctrl + S**) and play it in the Game Mode. The 3D object is 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.

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Summary

- A custom Vuforia Multi Target can be created by creating 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 2.25MB.
- The GameObject should appear on top of the **Multi Target** and move with it as the camera is moved.

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Instruction(s) to the trainer:

Show slide 13 to summarize the session. End the session with a summary of what has been taught in the session. Tell the students pointers of the session. This will be a revision of the current session.