

Ground Truthing and Virtual Field Trips

Part 3

Oliver Dawkins

Building City Dashboards

Maynooth University

Maynooth, Ireland.

Oliver.Dawkins@MU.ie

Gareth W. Young

V-SENSE

Trinity College Dublin

Dublin, Ireland.

YoungGa@TCD.ie



Software requirements

For this tutorial you will need the following software installed:

- Meshroom [Windows / Linux]
 - (<https://alicevision.org/#meshroom>)
- Blender 2.8 or above [Windows / Mac / Linux]
 - (<https://www.blender.org/download/releases/2-80/>)
- Unity Hub [Windows / Mac / Linux]
 - (<https://unity3d.com/get-unity/download>)
- Unity (version 2019.2.12f1) & Unity account [Windows / Mac / Linux]
 - (<https://unity3d.com/get-unity/download/archive>)
- AltspaceVR (via Windows Store or Steam) and an AltspaceVR account
 - (<https://altvr.com/>)

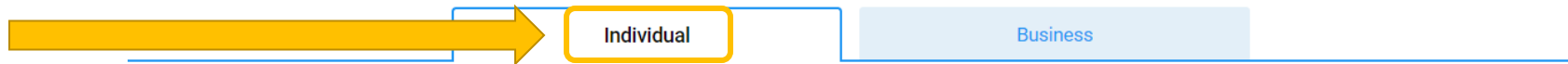
Download Unity



1. Navigate to the Unity Website and find the “individual” license versions

Plans and pricing

We offer a range of plans for all levels of expertise and industries.
All plans are royalty-free.



Student

Learn the tools and workflows professionals use on the job

Free

Sign up

Eligibility:
Students enrolled in an accredited educational institution of legal age to consent to the collection and processing of their personal information, e.g., age 13 in the US, 16 in the EU. Must join the GitHub Student Developer Pack to be verified.

- ✓ Latest version of the core Unity development platform
- ✓ Unlimited access to Learn Premium
- ✓ Five seats of Unity Teams Advanced
- ✓ Dark theme UI
- ✓ Real-time cloud diagnostics

Personal

Start creating with the free version of Unity

Free

Get started

Eligibility:
Revenue or funding less than \$100K in the last 12 months

- ✓ Latest version of the core Unity development platform
 - ✓ Resources for getting started and learning Unity
- [Compare plans](#)

During the COVID-19 situation, we're offering three months of complimentary access to Learn Premium.

Learn Premium

Master Unity with expert-led live sessions and on-demand learning

Get started

Included with Plus, Pro and Enterprise plans

2. Choose Individual and click “Get Started” to download the free Personal license version.

Download Unity Hub

1. Navigate to the “Download Unity” page

unity Products Solutions Made with Unity Learning Support & Services

Download Unity

Welcome! You're here because you want to download Unity, the world's most popular development platform for creating 2D and 3D multiplatform games and interactive experiences.

Before you download choose the version of Unity that's right for you.

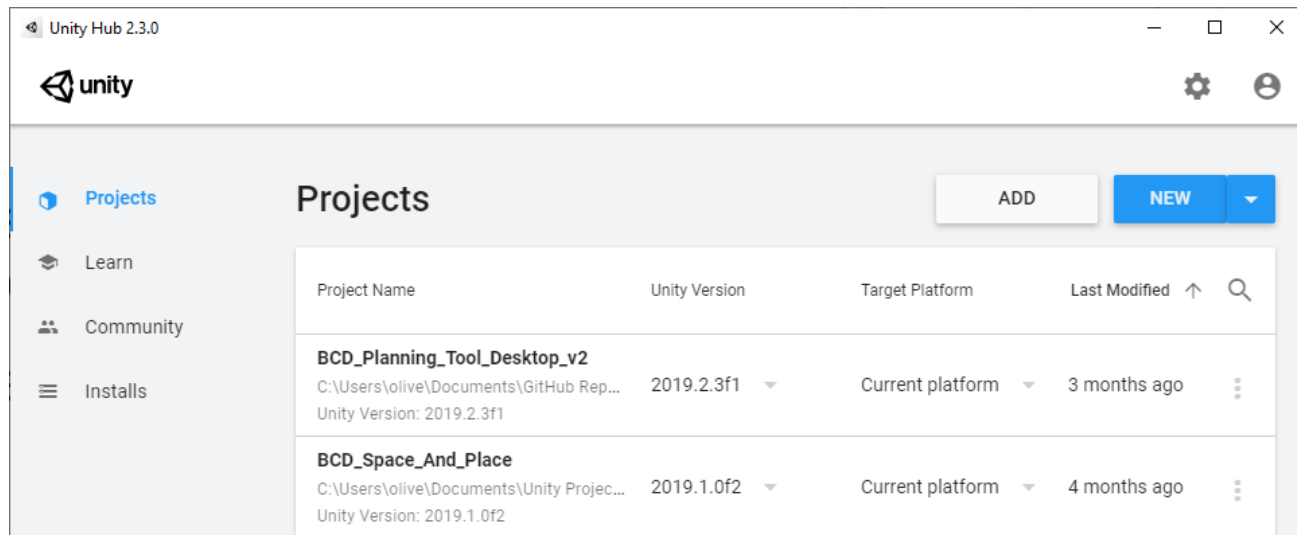
Choose your Unity + download Download Unity Hub

[Learn more about the new Unity Hub here.](#)

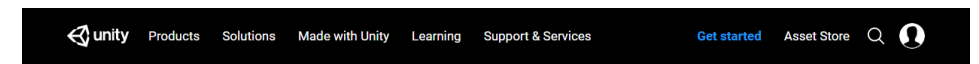
2. Click “Download Unity Hub” and follow the installation instructions for “UnityHubSetup.exe”

Adding Unity 2019.2.12f1 to Unity Hub

- Open Unity Hub on your desktop



- Later we will be using the AltSpaceVR Uploader which requires Unity version 2019.2.12f1
- Navigate to the Unity download archive in your web browser
- Scroll down the page until you find Unity 2019.2.12
- Click the green 'Unity Hub' button next to it
- It should start downloading in Unity Hub



Unity download archive

From this page you can download the previous versions of Unity for both Unity Personal and Pro (if you have a Pro license, enter in your key when prompted after installation). Please note that there is no backwards compatibility from Unity 5; projects made in 5.x will not open in 4.x. However, Unity 5.x will import and convert 4.x projects. We advise you to back up your project before converting and check the console log for any errors or warnings after importing.

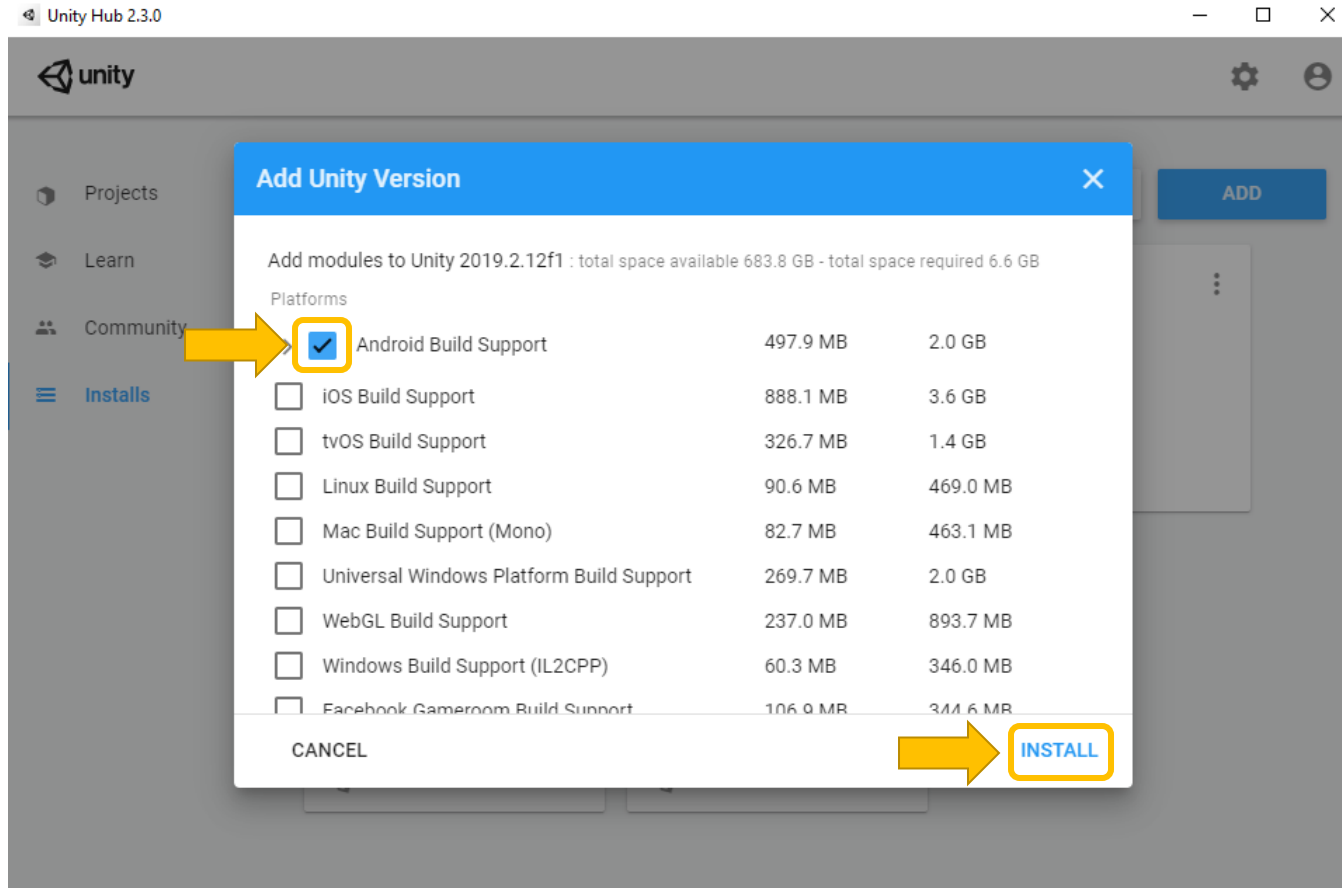
Long Term Support releases
The LTS stream is for users who wish to continue to develop and ship their games/content and stay on a stable version for an extended period.
[Download LTS releases](#)

Patch Releases
We are listening to our users who are demanding that we fix more bugs, and faster, with our ongoing patch build releases. Each patch build is a full release of the editor with all runtimes and contains a number of bug fixes.
[Download patch releases](#)

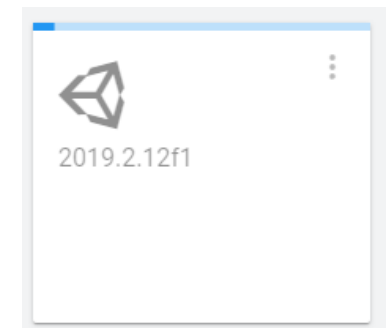
Unity 2019.x Unity 2018.x Unity 2017.x Unity 5.x Unity 4.x Unity 3.x

Unity 2019.4.0 9 Jun, 2020	Unity Hub	Downloads (Win) ▾	Downloads (Mac) ▾	Release notes
Unity 2019.3.15 28 May, 2020	Unity Hub	Downloads (Win) ▾	Downloads (Mac) ▾	Release notes
Unity 2019.3.14 18 May, 2020	Unity Hub	Downloads (Win) ▾	Downloads (Mac) ▾	Release notes
Unity 2019.2.13 20 May, 2019	Unity Hub	Downloads (Win) ▾	Downloads (Mac) ▾	Release notes
Unity 2019.2.12 11 Nov, 2019	Unity Hub	Downloads (Win) ▾	Downloads (Mac) ▾	Release notes
Unity 2019.2.11 30 Oct, 2019	Unity Hub	Downloads (Win) ▾	Downloads (Mac) ▾	Release notes

Adding Unity 2019.2.12f

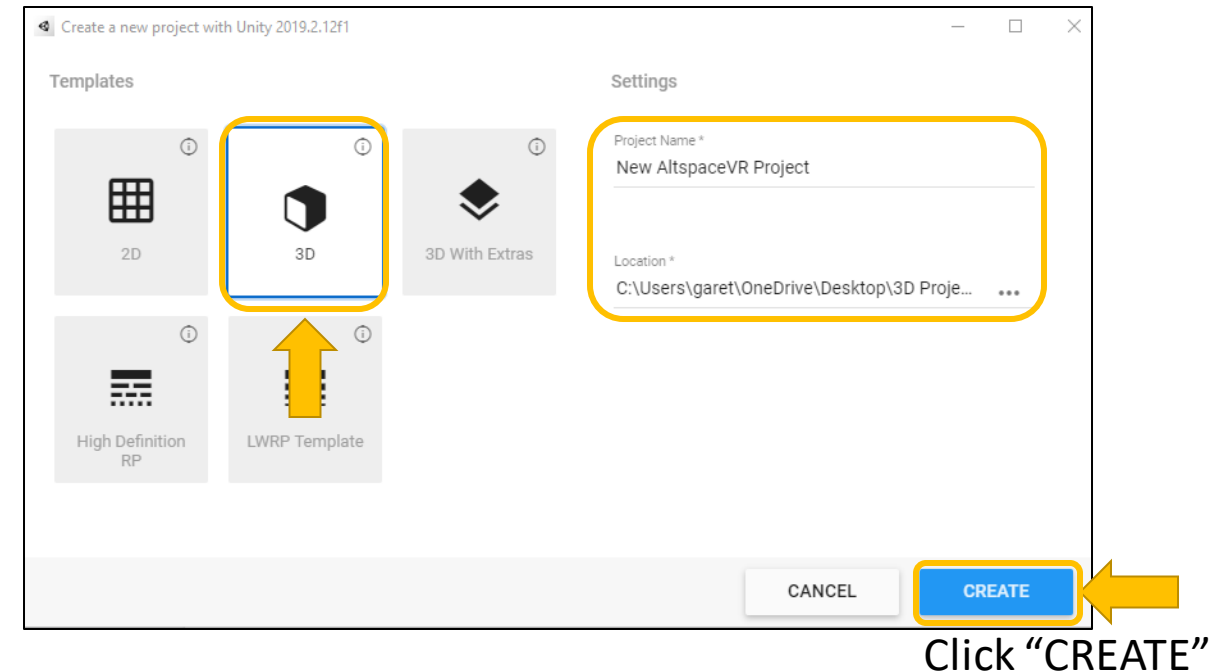
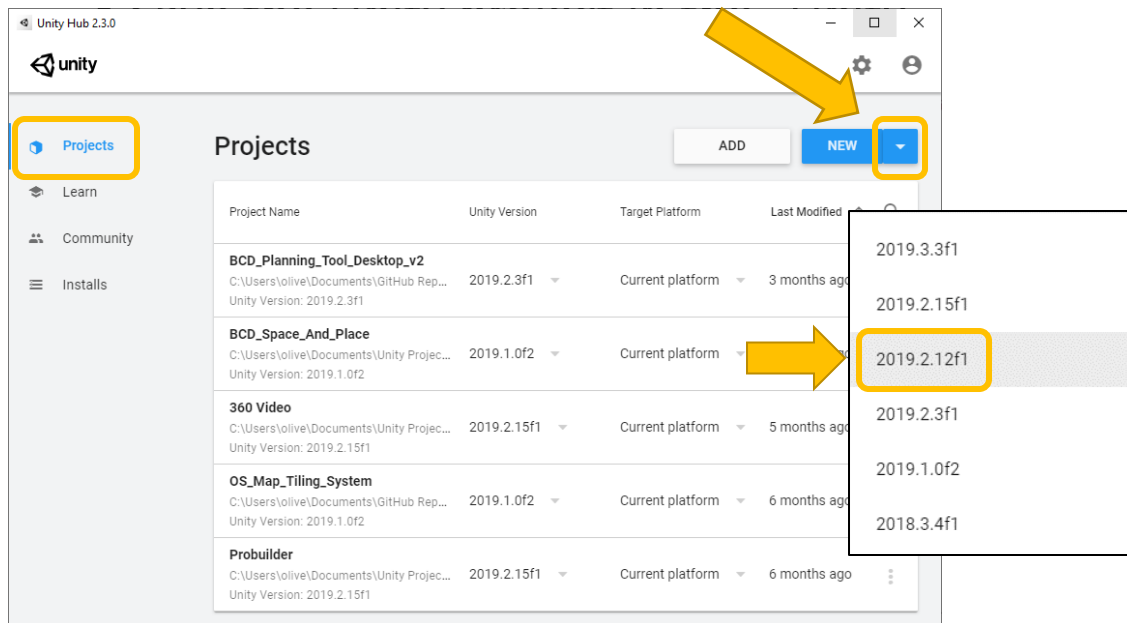


- Check “Android Build Support” to allow you to build AltspaceVR apps for Mobile VR
- Click “Install”
- Unity 2019.2.12f1 will be added to your list of Unity Installs and start downloading



Using Unity – Starting a new project from Unity Hub

- In Unity Hub select Projects and click the button next to “New”
- Select Unity version 2019.2.12f1
- Select “3D” and provide a name for the project
- Use the “Unity” folder in the “3D Project” folder as the save location
- Click “Create”

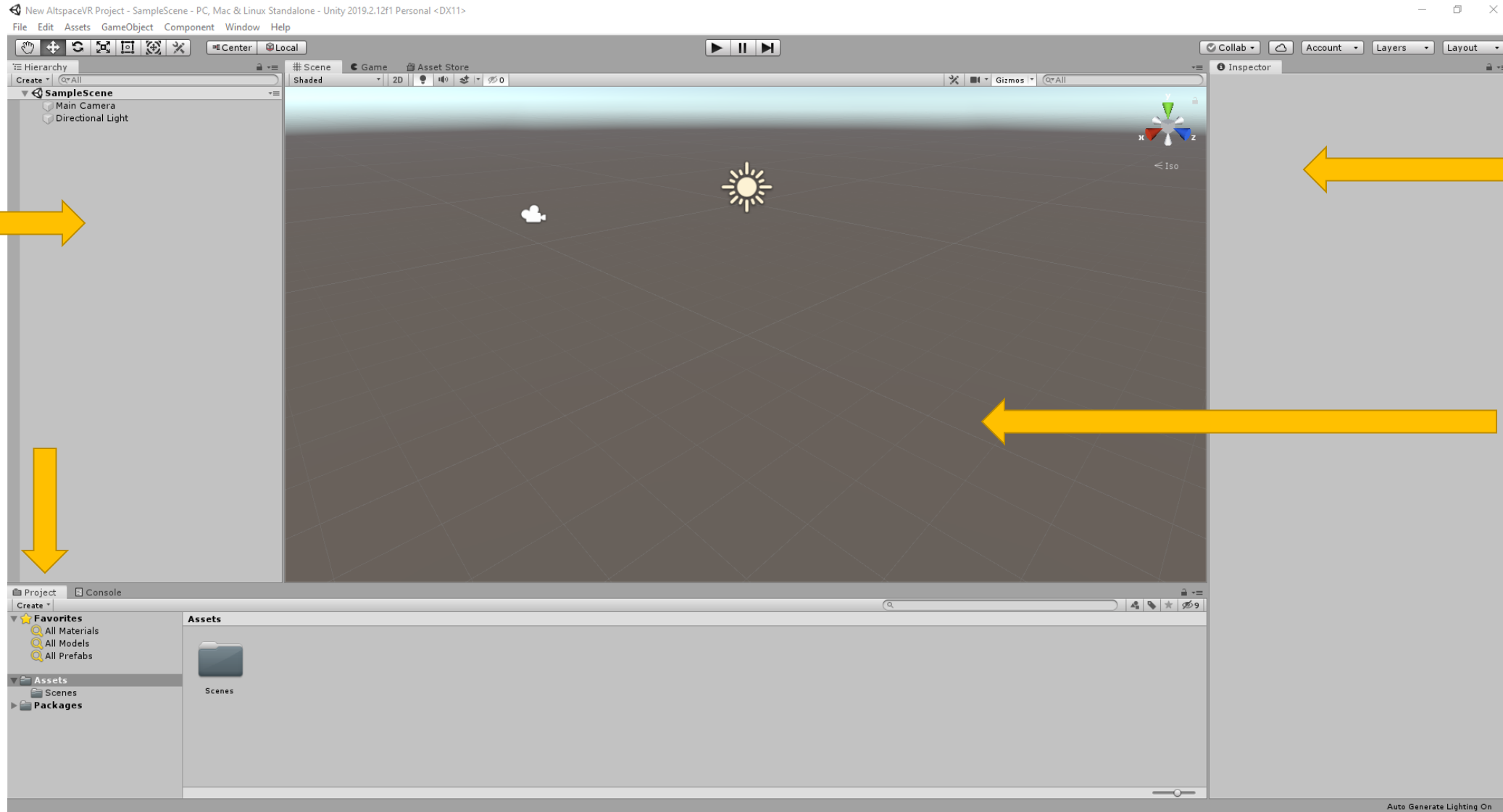


Using Unity – The basics (User Interface)

Hierarchy Panel lists the contents of the current scene



The **Project Tab** is used to manage your project and provides a view of your **Assets** folder where 3D models, textures and other game content are stored



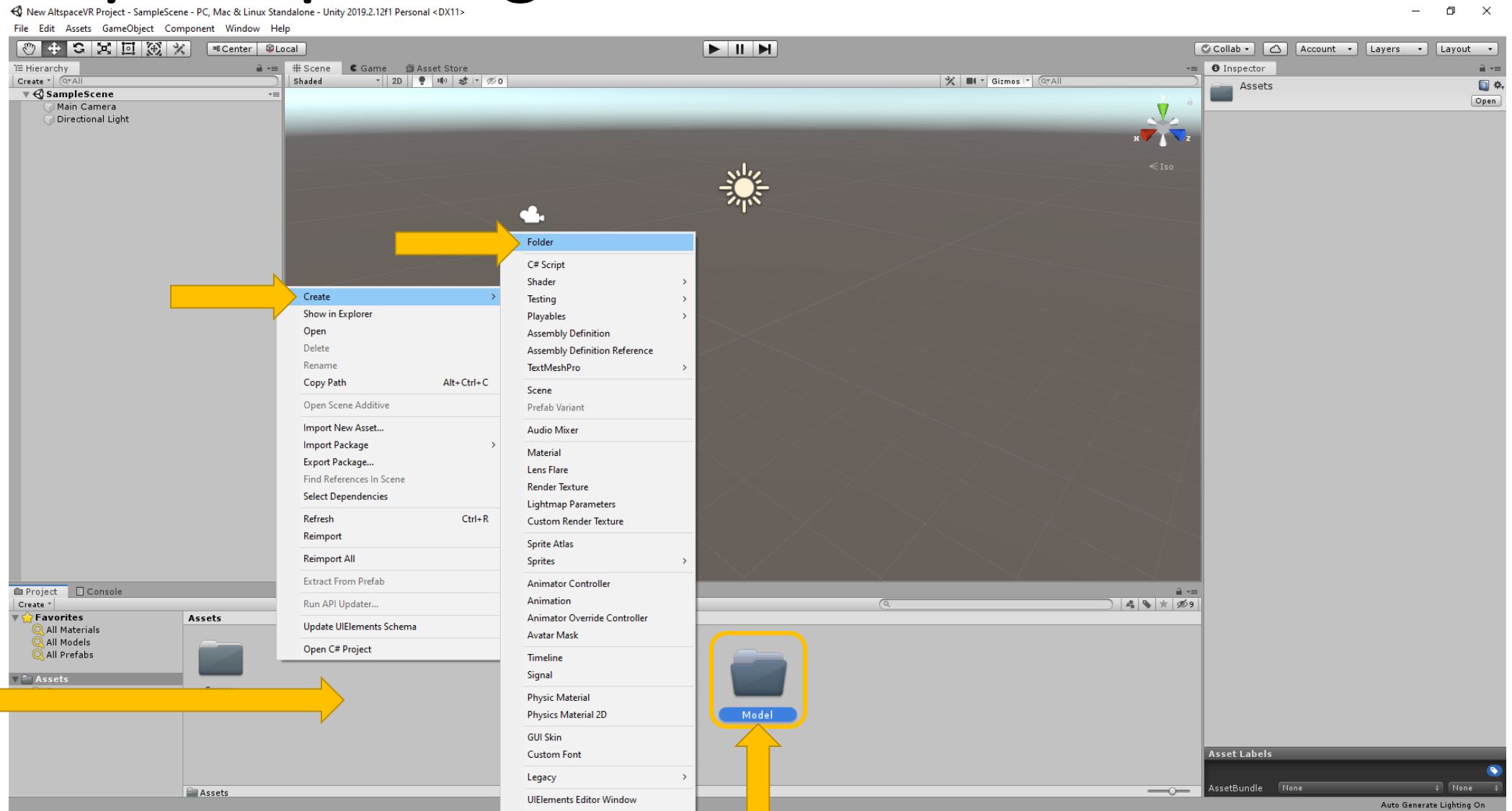
Inspector Tab displays the properties of selected game objects



Scene View is the window where you arrange and view game objects in your scene



Using Unity – Importing the edited model

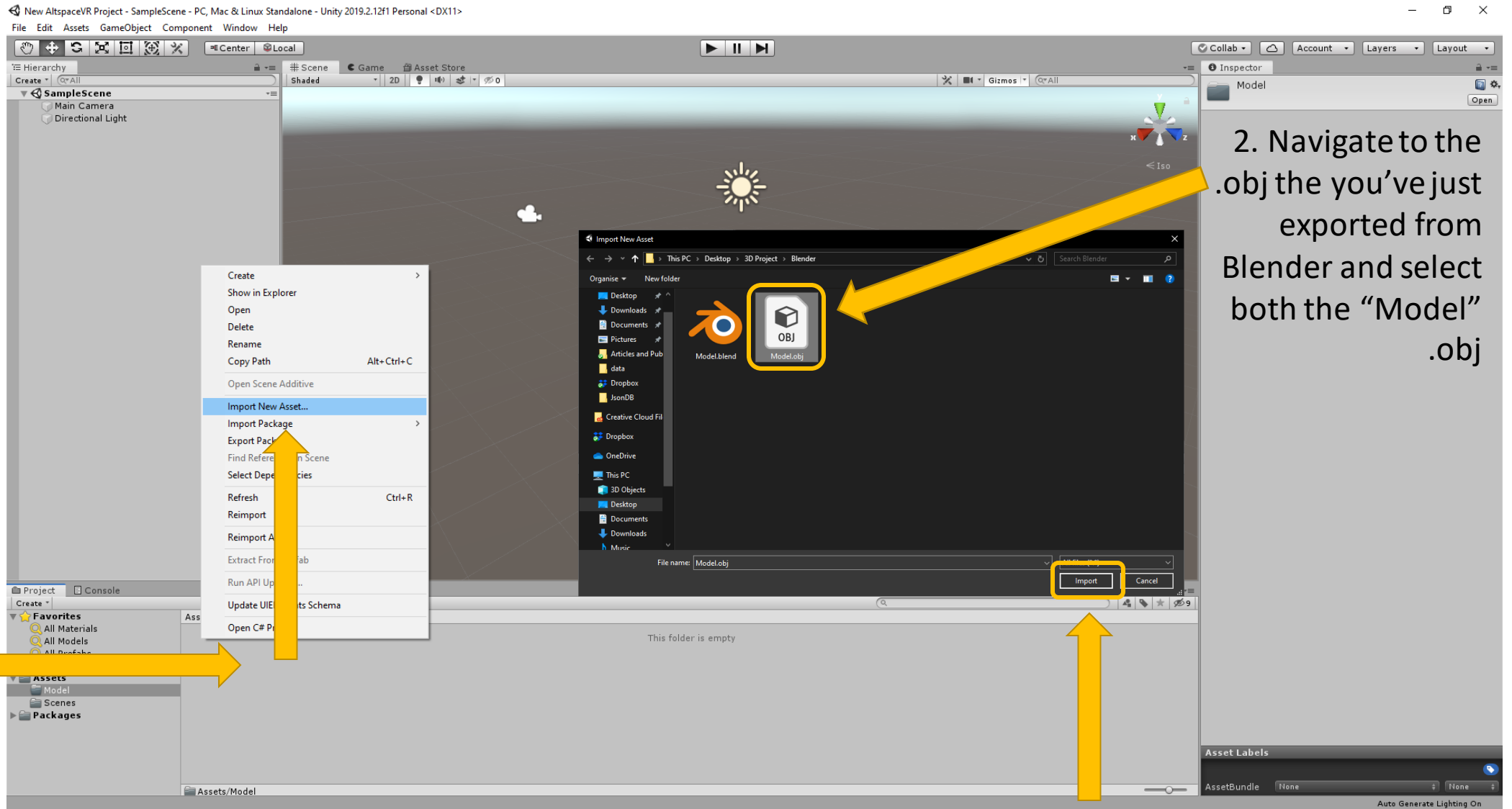


1. Right-click in the “Assets” window of the “Project” and then go to “Create” and “Folder”

2. Call the new folder “Model” and double click to open it

Using Unity – Import the edited model Blender model

1. Right-click in the “Assets/Model” folder window and then select “Import New Asset”



2. Navigate to the .obj the you’ve just exported from Blender and select both the “Model” .obj

3. Click “Import”

Using Unity – Importing the Meshroom model texture

1. Right-click in the “Assets/Model” folder and select “Import New Asset” as before

2. Navigate to the Meshroom folder containing the initial textured mesh you imported into Blender

3. Select the .png texture

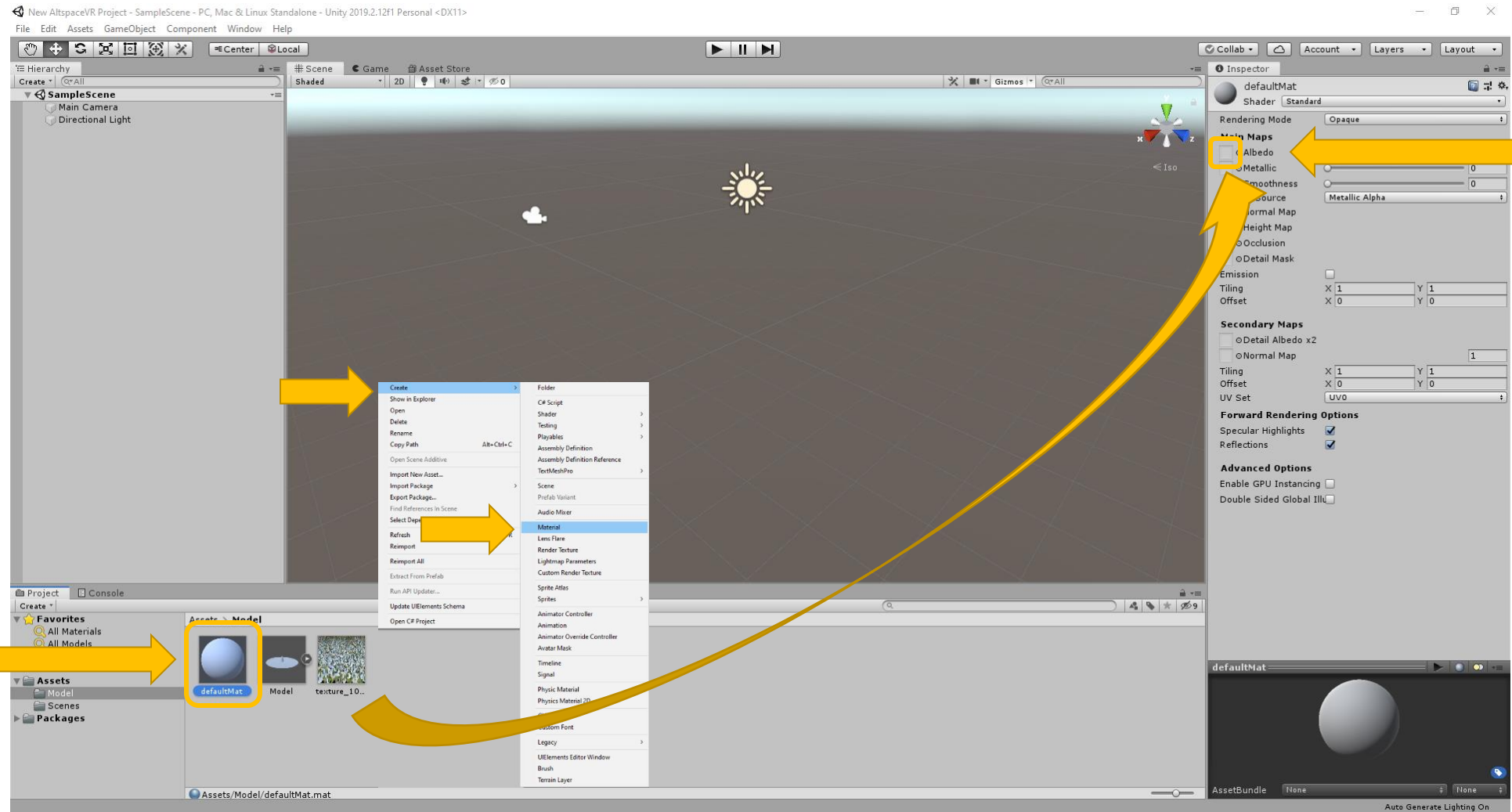
4. Click “Import”

NOTE: You’ll find the Meshroom model by navigating to the “3D Project folder”: **3D Project\Model\MeshroomCache\Texturing**
The folder is named with a long string of alphanumeric characters. Inside you’ll find the .png file you are looking for.

Using Unity – Create a material and apply the texture

1. Right-click in the “Assets/Model” folder but this time select **Create > Material**

2. The material should now appear in the “Model” folder.

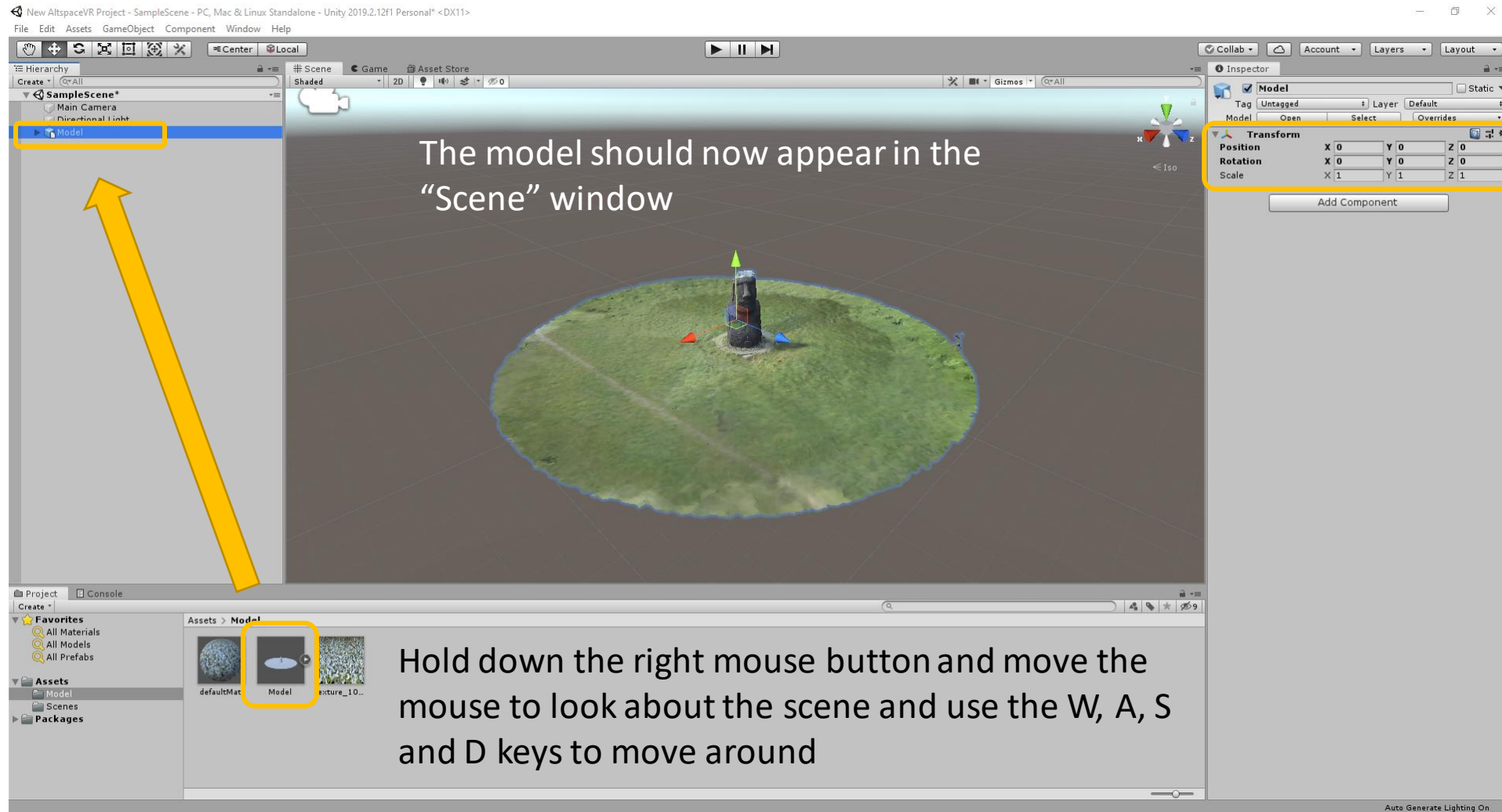


4. Drag and drop the “Texture” file over to the “Albedo” map on the material

3. Left-click on the material and look over to the “Inspector window” on the right for more information

Using Unity – Working with the model in your scene

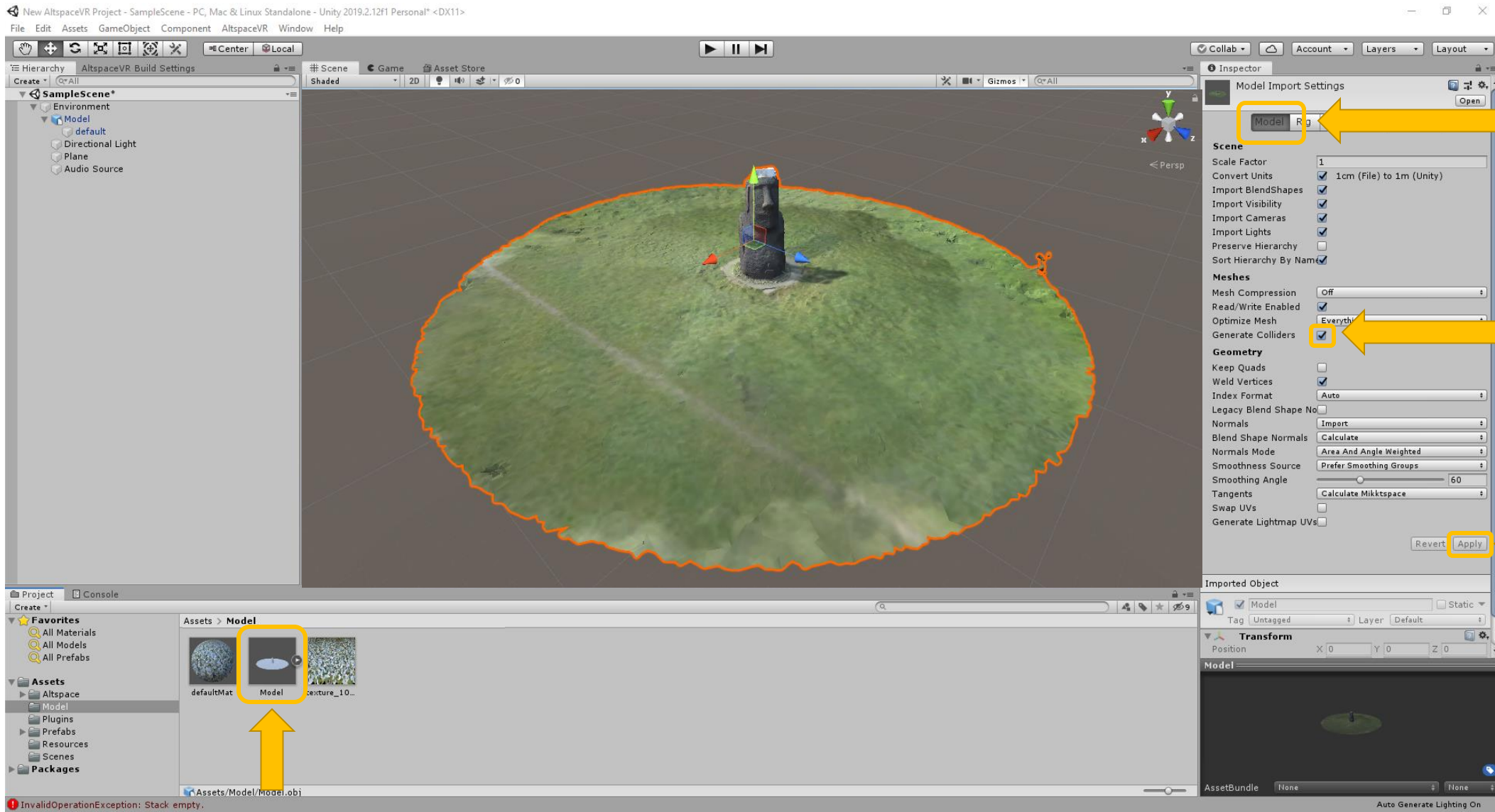
1. Drag and drop the “Model” file into the “Hierarchy” window



Scale the model to make it bigger or smaller on the X, Y, and Z scale. You can also change its position and rotation

Alternatively use the move scale and rotate functions appearing above the “Hierarchy”

Using Unity – Making the model solid



2. In the "Inspector" window, select "Model"

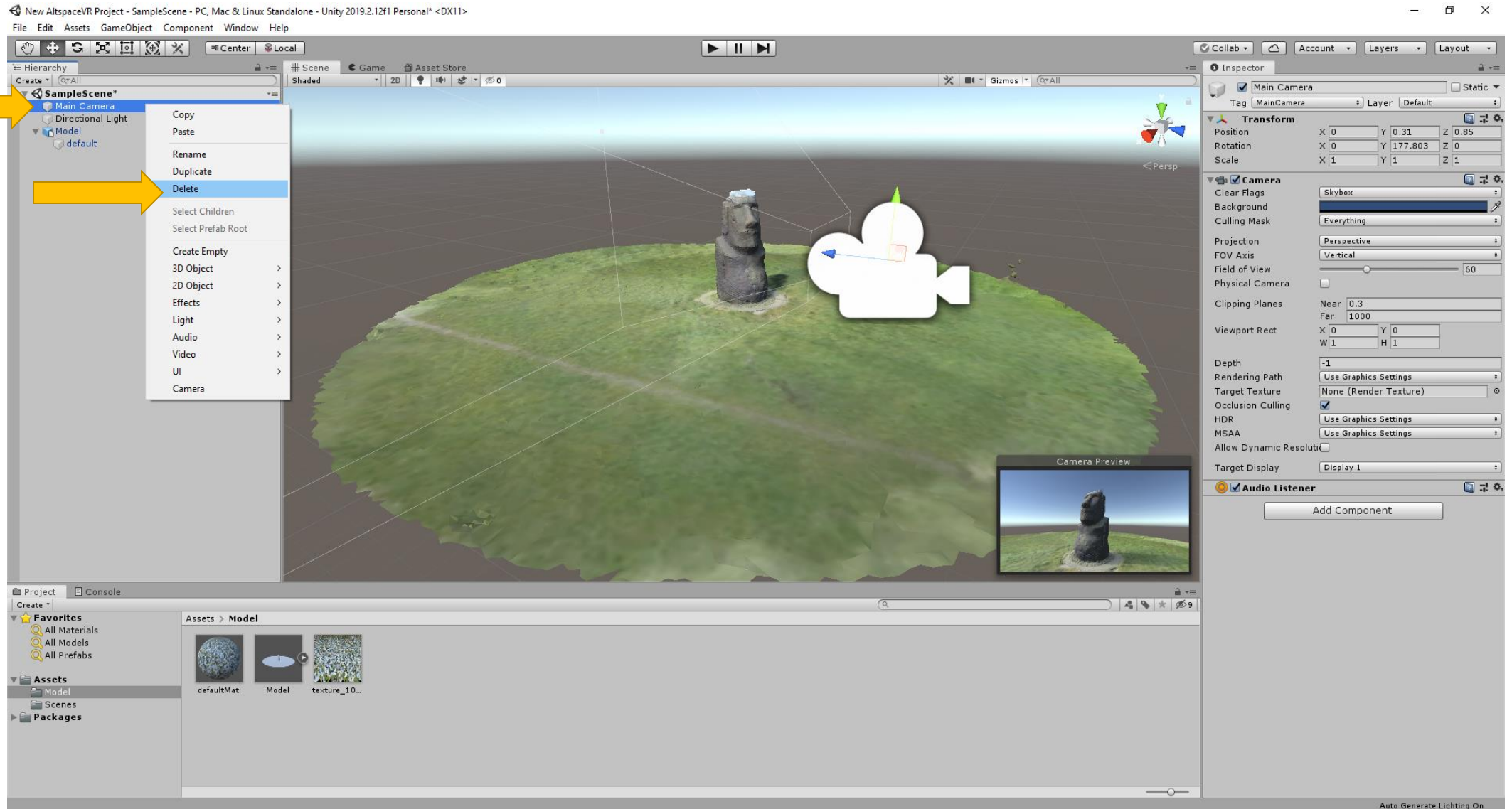
3. tick "Generate Colliders"

4. Click "Apply"

1. Select the "Model" in the "Project" Window

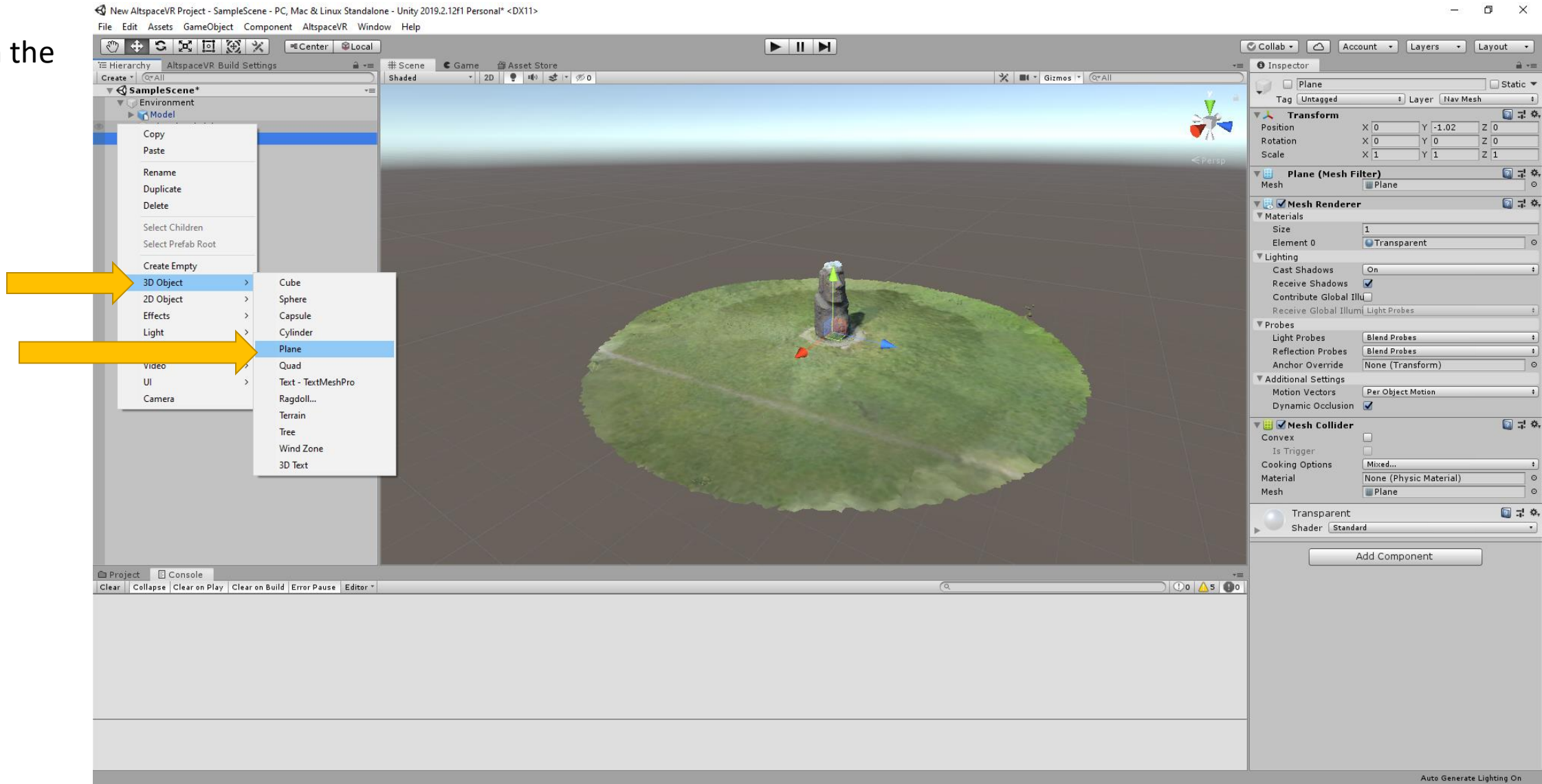
Using Unity – Delete the camera

Delete the “Main Camera” by right-clicking and selecting delete - the camera is not needed because AltspaceVR will provide its own when you upload your scene

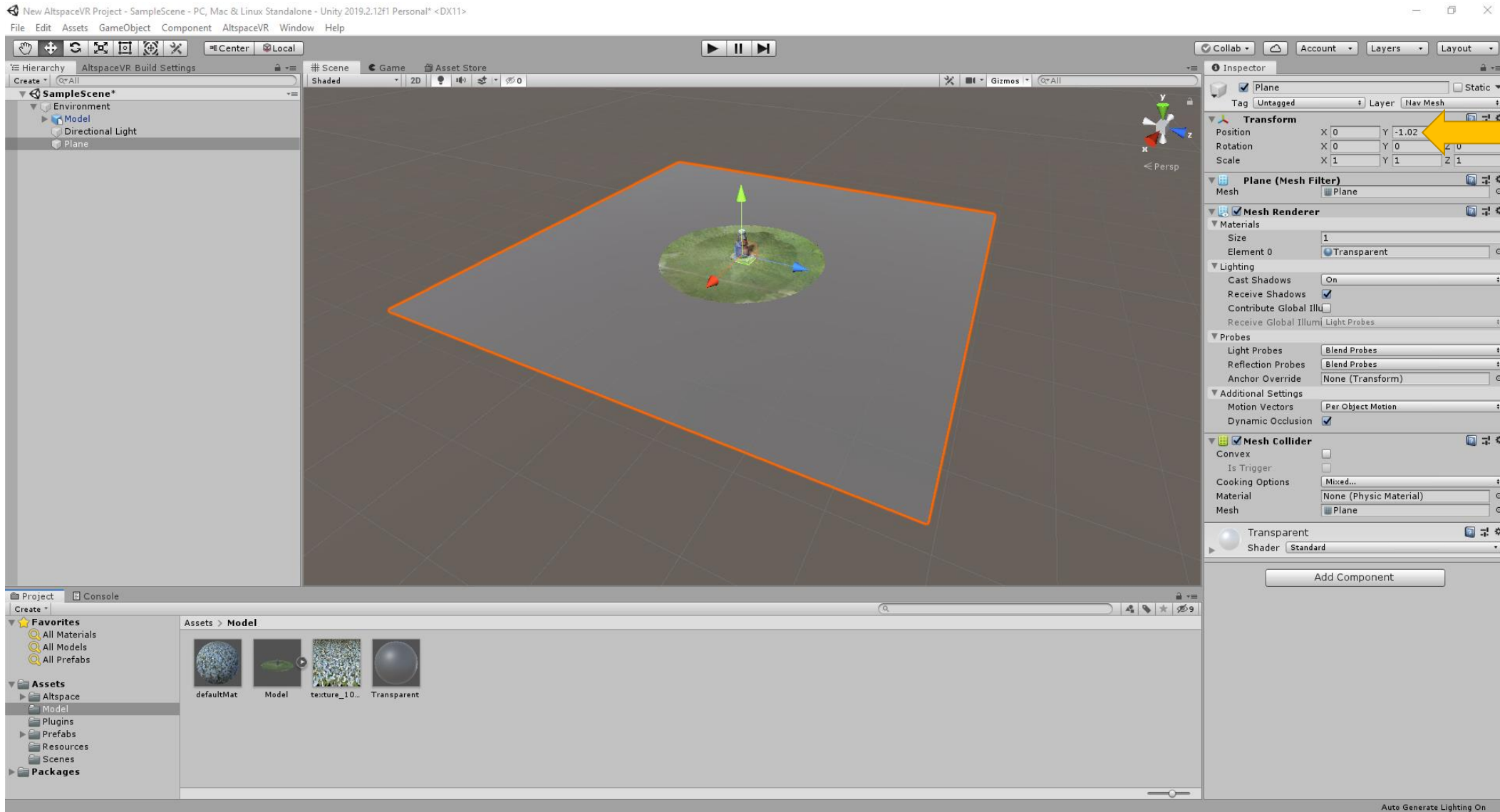


Using Unity – Inserting a plane

Right-click in the “Hierarchy” window and select “3D Object” => “Plane”



Using Unity – Positioning the plane



Position the new plane just under the model

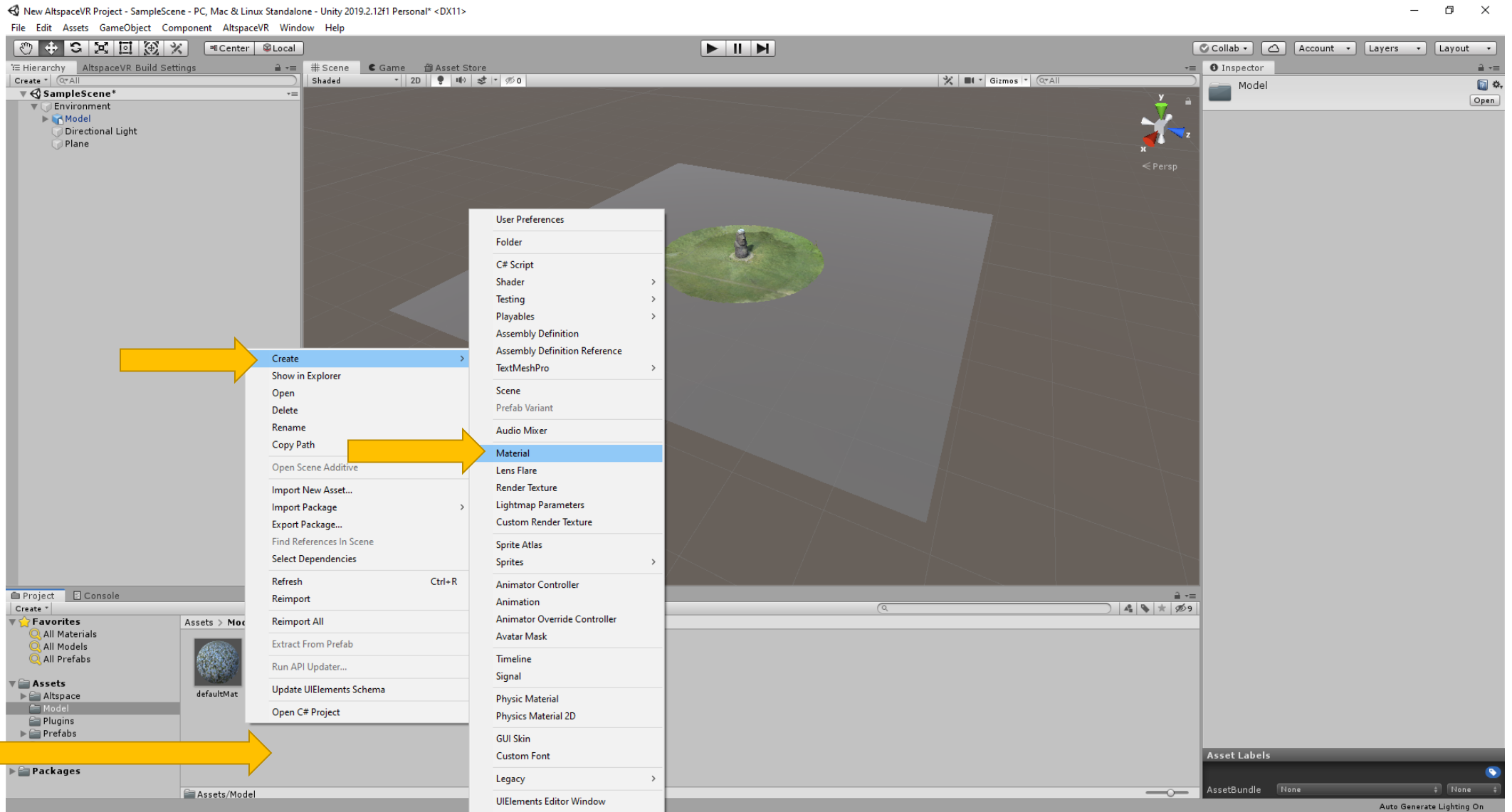
This step will prevent you from immediately falling off the edge of the model in AltspacVR.

You can scale the plane to suit your scene.

Using Unity – Customizing the plane

1. Right-click in the “Assets” => “Model” folder and select “Create” and “Material”

2. Left-click on the new material’s name and rename the material “Transparent”

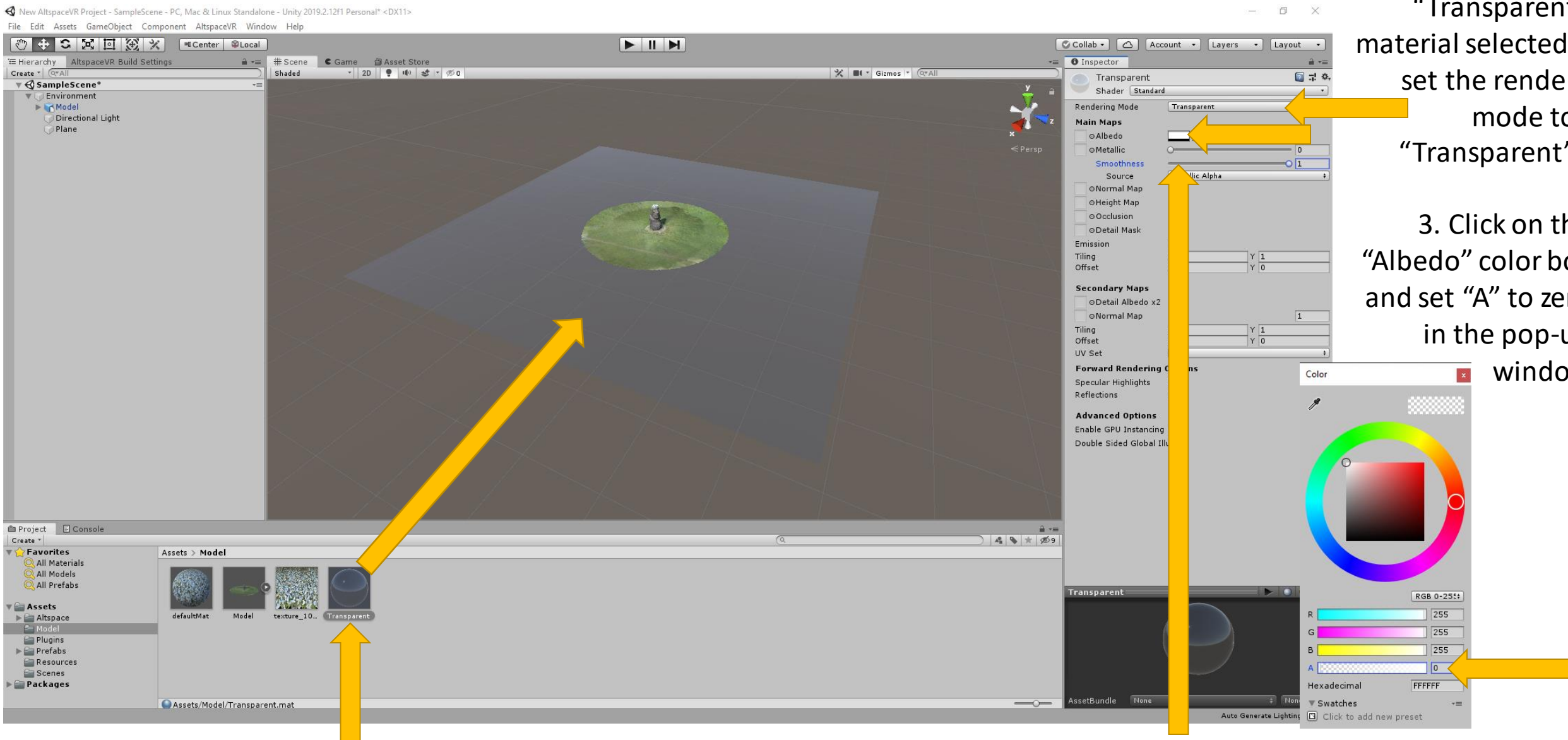


Using Unity – Customizing the plane

2. With the “Transparent” material selected, set the render mode to “Transparent”

3. Click on the “Albedo” color box and set “A” to zero in the pop-up window

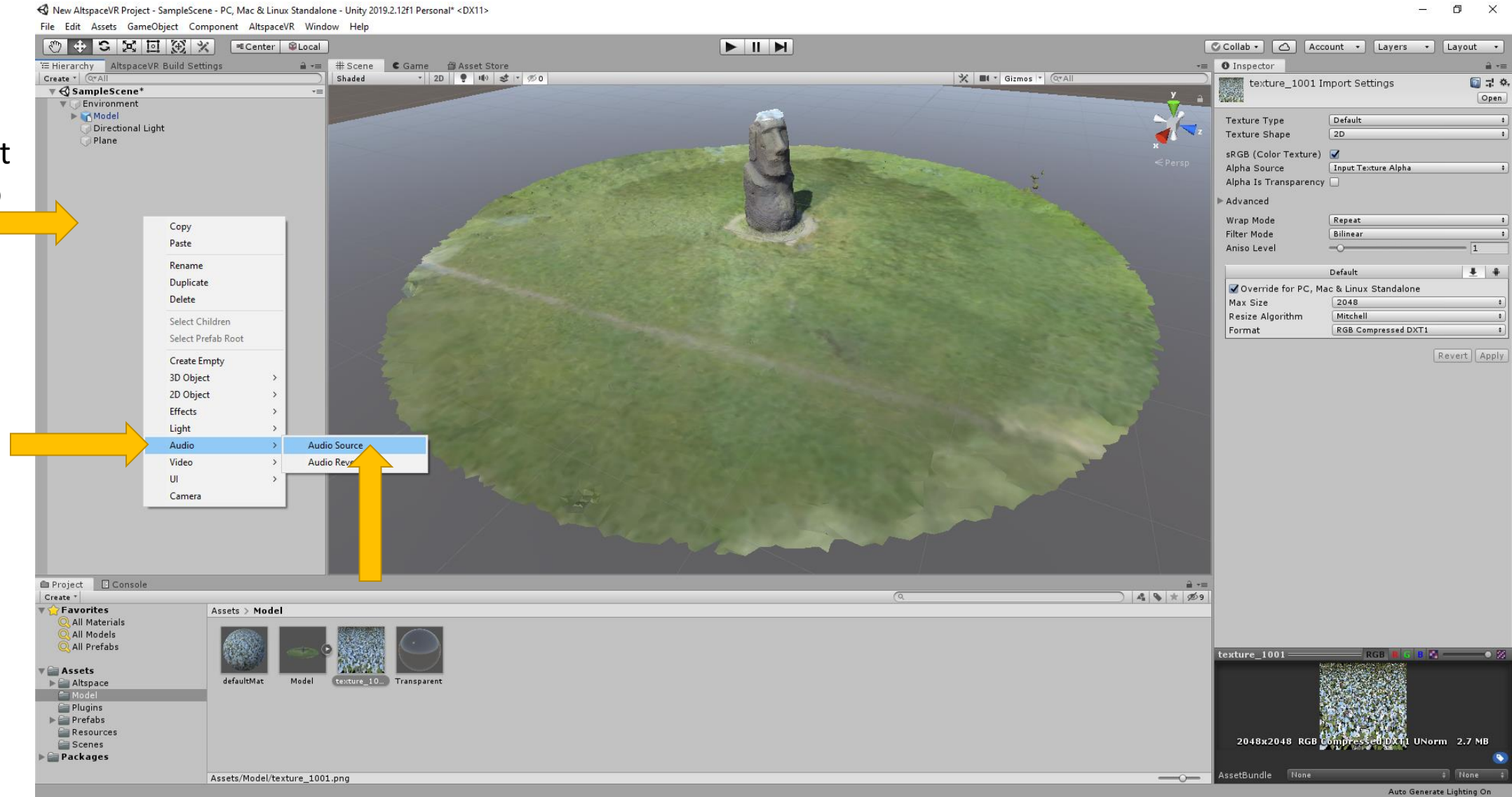
4. Set “Smoothness” to “1”



1. Drag and drop the “Transparent” material onto the plane

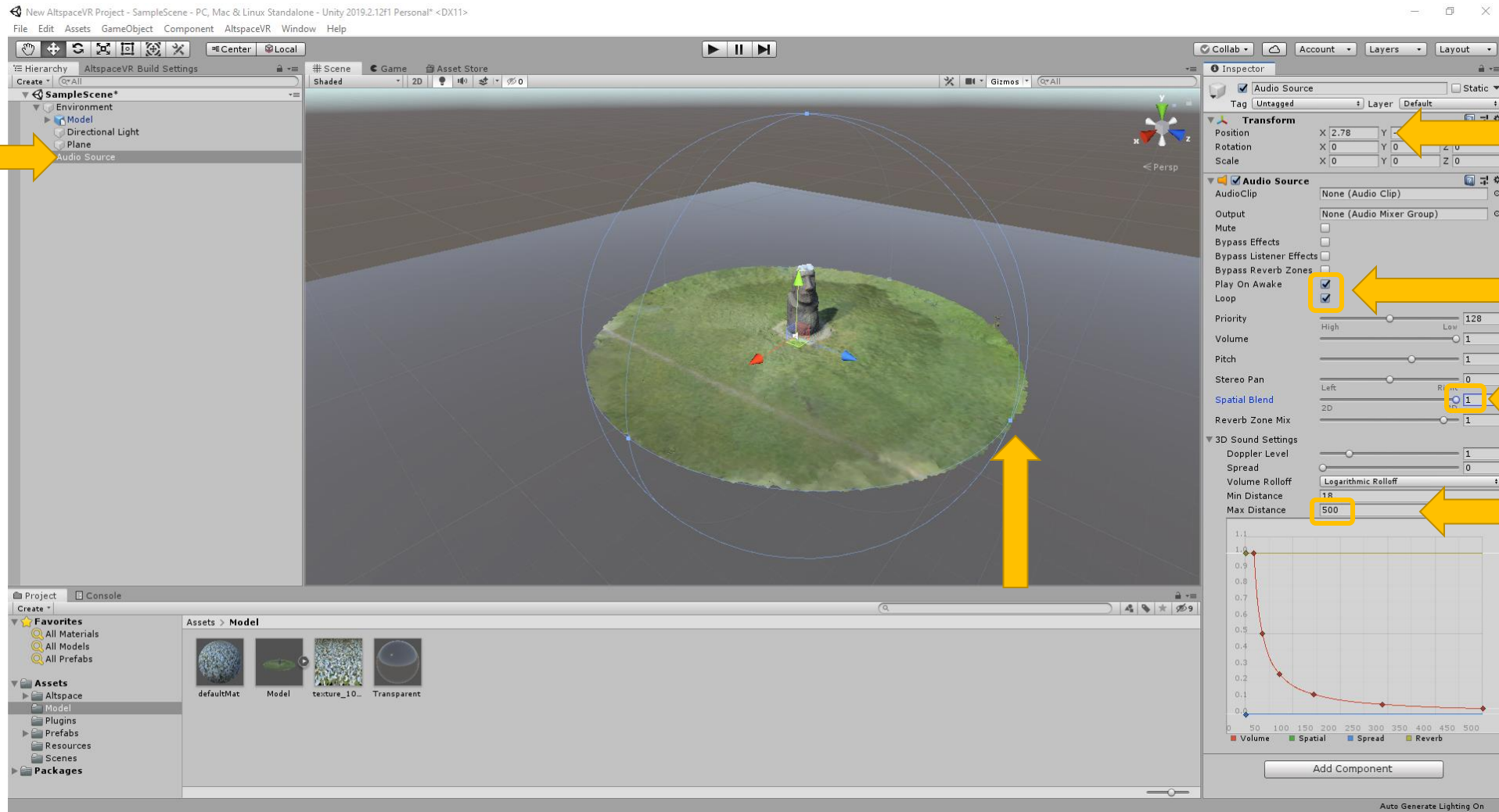
Using Unity – Setting up for audio

Right-click in the
“Hierarchy”
window and select
“Audio” => “Audio
Source”



Using Unity – Setting up the audio object

1. Select the “Audio Source” in the “Hierarchy” window



2. Position the audio object to the center of the model

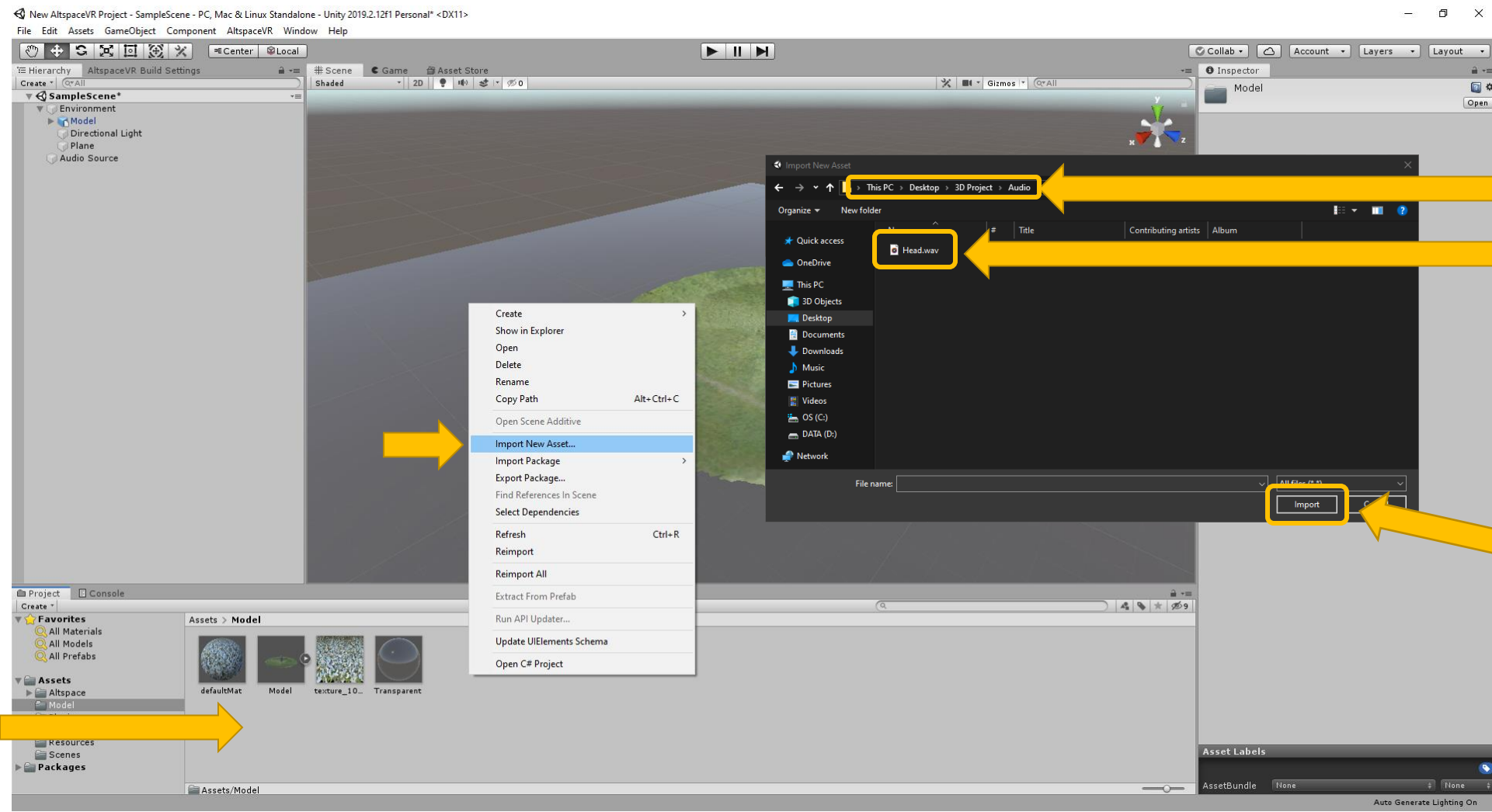
3. Tick Both “Play on Awake” and “Loop”

4. Set “Spatial Blend” to “1”

5. Set the “Max Distance” to reach the edge of the model

Using Unity – Importing audio

1. Right click in the Project window, and select “Assets” => “Model” => “Import New Asset”

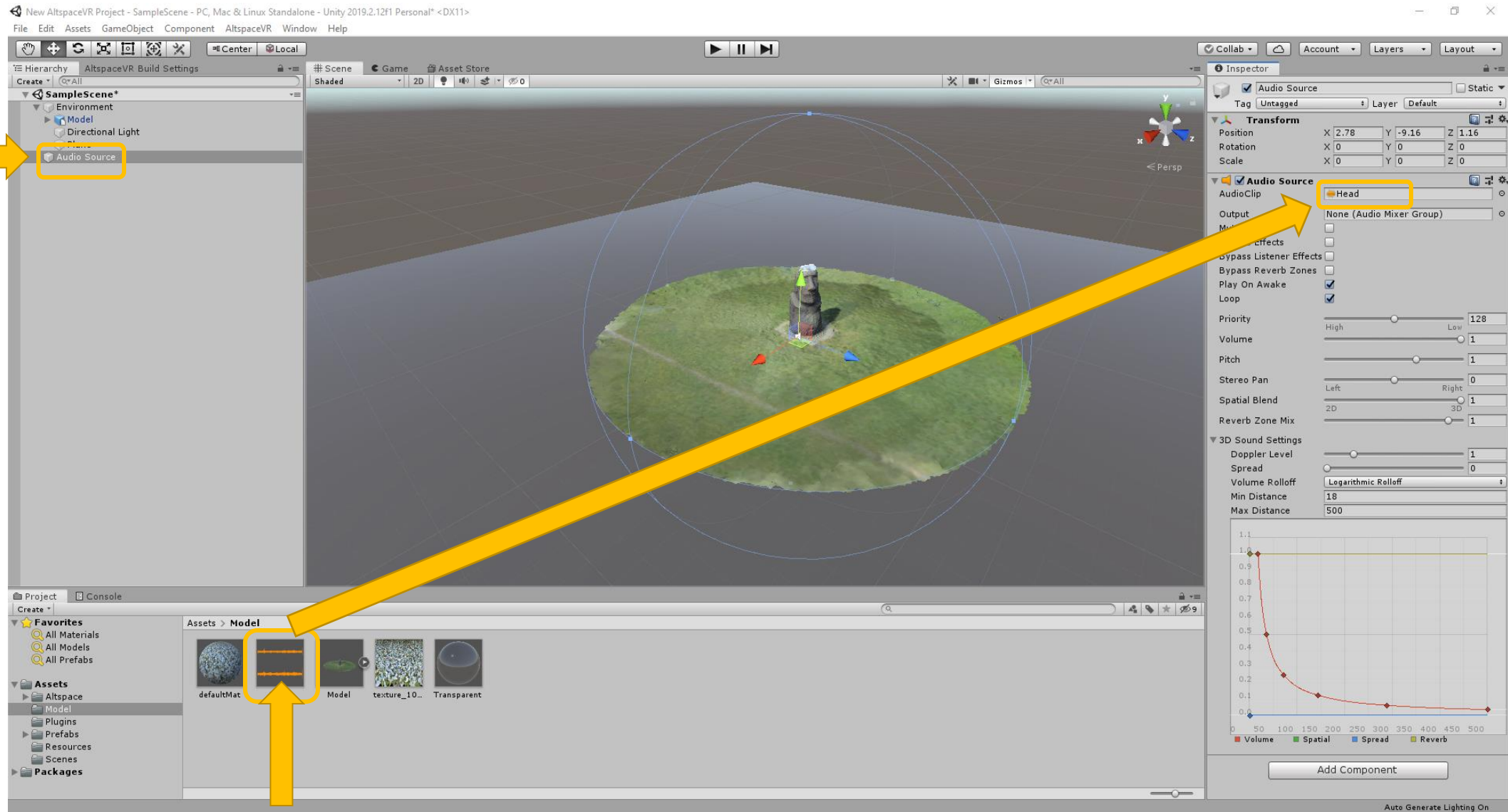


2. In the pop-up window, navigate to “Audio” folder in “3D Project” and select your audio recording from earlier

3. Click “Import”

Using Unity – Importing audio

1, Select the “Audio Source” in the “Hierarchy” window



2. Drag and drop the new audio file to the “AudioClip” box in the



End of Part 3

