Learning Guide
Edit a Photogrammetry Model's Geometry Using Unreal Editor for Fortnite

Introduction

In this Guide, you will learn about three approaches for editing a 3D model's geometry using the tools available in Unreal Editor for Fortnite (UEFN). There are many tools within UEFN that you can use to edit a model. The tools that will be covered in this Guide are the Plane Cut tool, the Boolean tool, and the Tri Select tool. This Guide will focus on cleaning up the extraneous geometry on a model created using photogrammetry, but you can use these tools with any editable 3D model imported into UEFN.

A video Learning Guide for this lesson is available here: https://youtu.be/86_zTIyFFr4.

Prior Knowledge Check

In order to successfully complete this lesson, you should have some familiarity with navigating UEFN. You will also need access to an editable 3D model. For a lesson on creating your own 3D model using photogrammetry, check out the "Create a 3D Model Using Polycam" lesson, and for importing models into UEFN, check out the "Import 3D Models into a Fortnite Island Using Unreal Editor for Fortnite" lesson, both available on CreateAccess.org's Microcourses Hub.

Step 1: Remove regions of geometry with the Plane Cut tool

Preview

The Plane Cut tool is an editing tool in UEFN that allows you to create a flat plane on an object in any orientation. Using the Plane Cut tool, you can remove all of the geometry on one side of the plane. The Plane Cut tool is a great tool for eliminating large sections of unwanted geometry.

Explore

Follow these steps to access and use the Plane Cut tool:
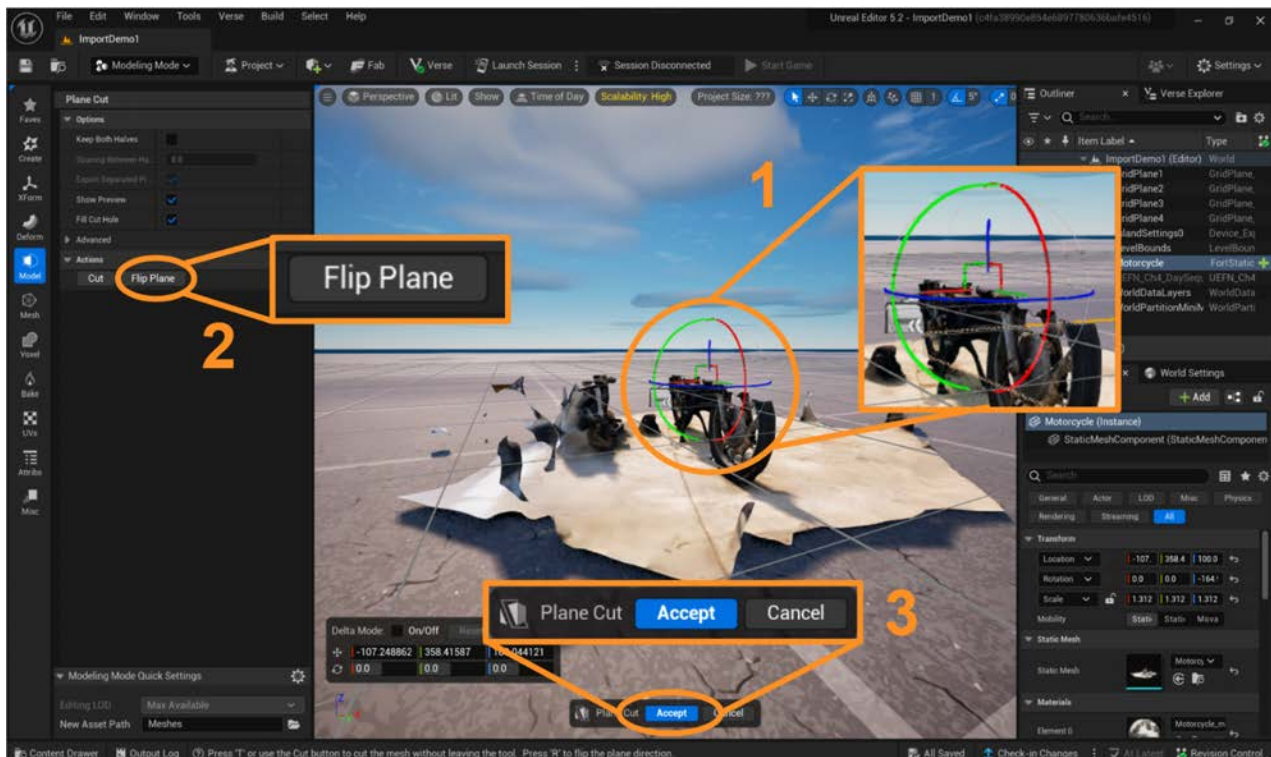
ACCESS THE PLANE CUT TOOL

To access the "**Plane Cut**" tool, first click on the model you wish to edit to select it. Next, select "**Modeling Mode**" from the dropdown menu at the top left of your screen (this menu defaults to "Selection Mode"). Finally, select "**Model**" **(1)** from the toolbar on the left side of your screen, and click "**Plane Cut**" **(2)** from the tools that appear.
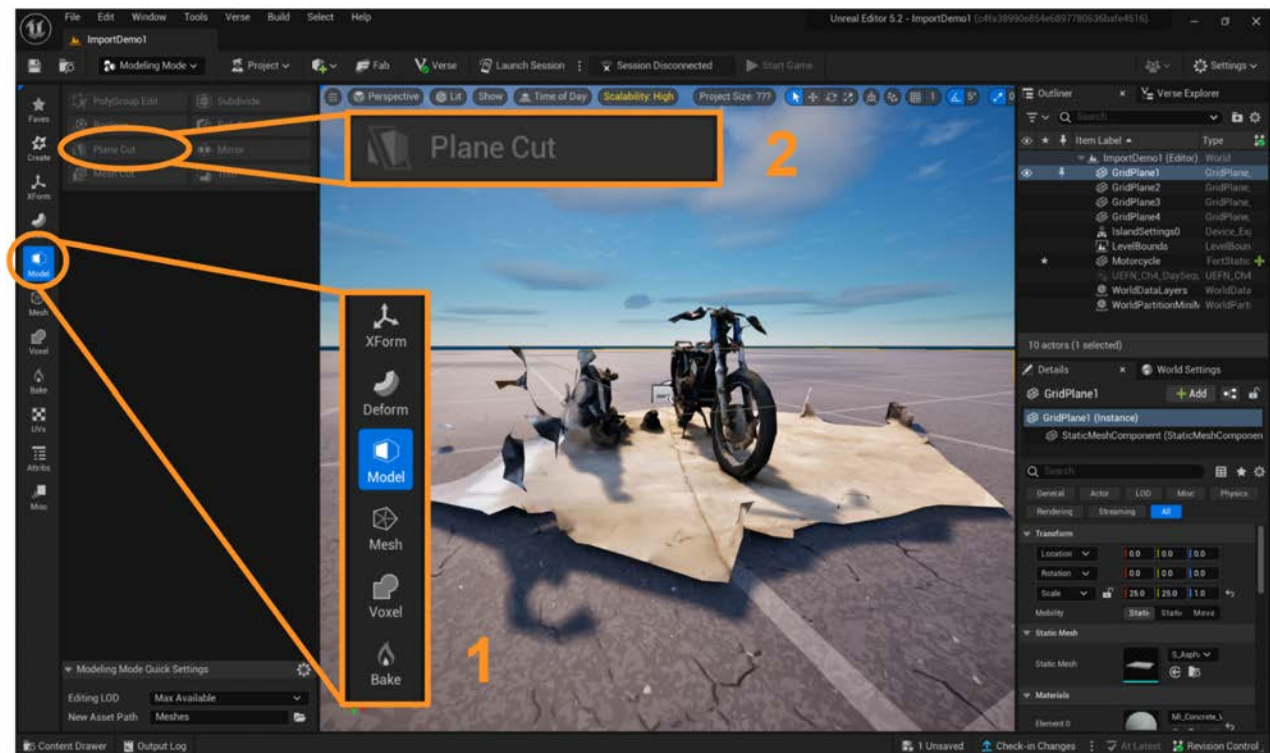
# MOVE AND ROTATE A PLANE TO DELETE A REGION OF GEOMETRY

When the Plane Cut tool is selected, you will notice a gray grid appear on your screen. This is the plane slicing through your model. You will notice that all of the geometry on one side of the plane is being eliminated.

Experiment with using the different handles on the gizmo **(1)** to rotate and move the plane until it looks like it's eliminating the geometry you want to delete. You may also choose to use "**Flip Plane**" **(2)** to change the side of the plane from which the geometry will be removed. Once you are satisfied with your selection, click "**Accept**" **(3)** at the bottom of the screen. You should see the model's geometry on one side of the plane disappear.

REPEAT AS NECESSARY

You can use the Plane Cut tool as many times as you want to slice away regions of geometry.
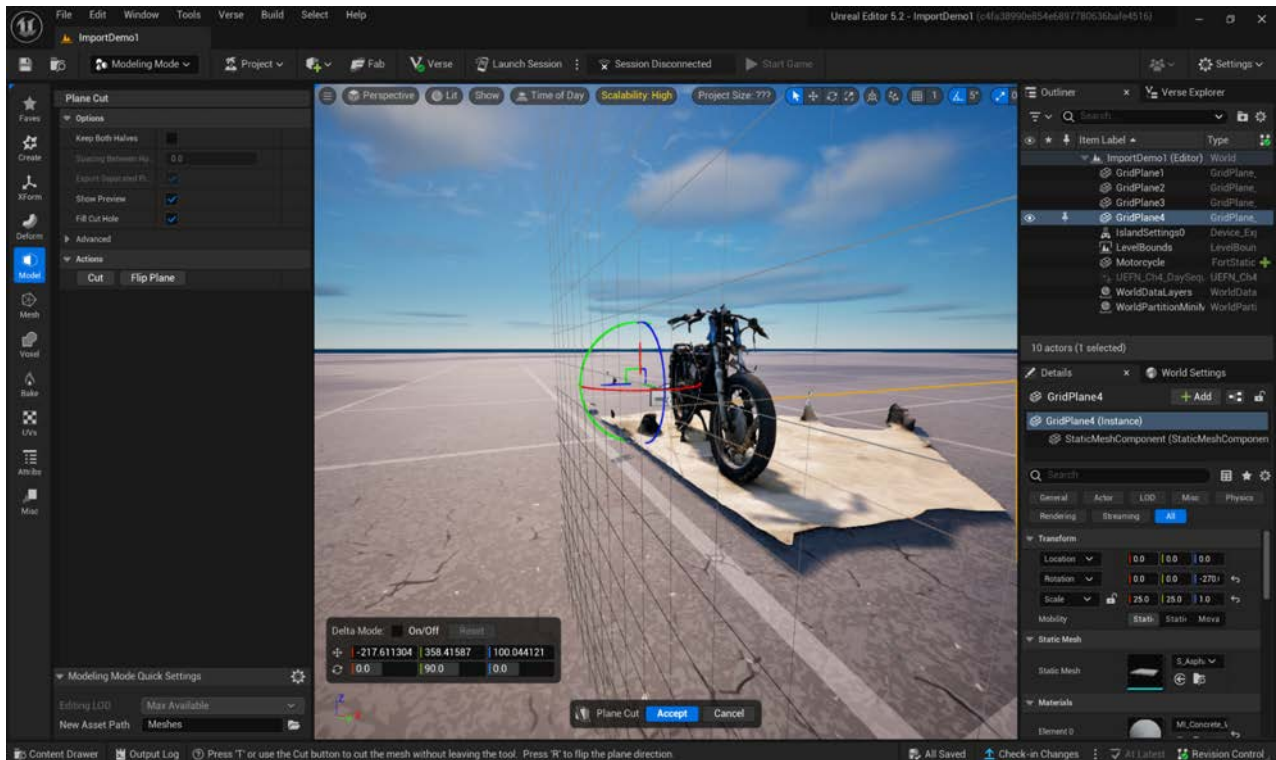
Creator Tip

Using the Plane Cut tool a few times around your model is a good way to ensure that there is no small or extraneous geometry floating in space around your model.

Self Check

Were you able to remove a lot of unwanted geometry?

Are you sure there are no geometry fragments floating around your model?

# Step 2: Remove chunks of geometry with the Boolean tool

Preview

The Boolean tool combines or subtracts the geometries of two objects from one another. To use the Boolean tool to remove extraneous geometry from your model, you will need to create a shape that encloses the area on your model that you want to remove. You can then subtract the new shape and the area inside it from the rest of your model.

Explore

Follow these steps to access and use the Boolean tool:
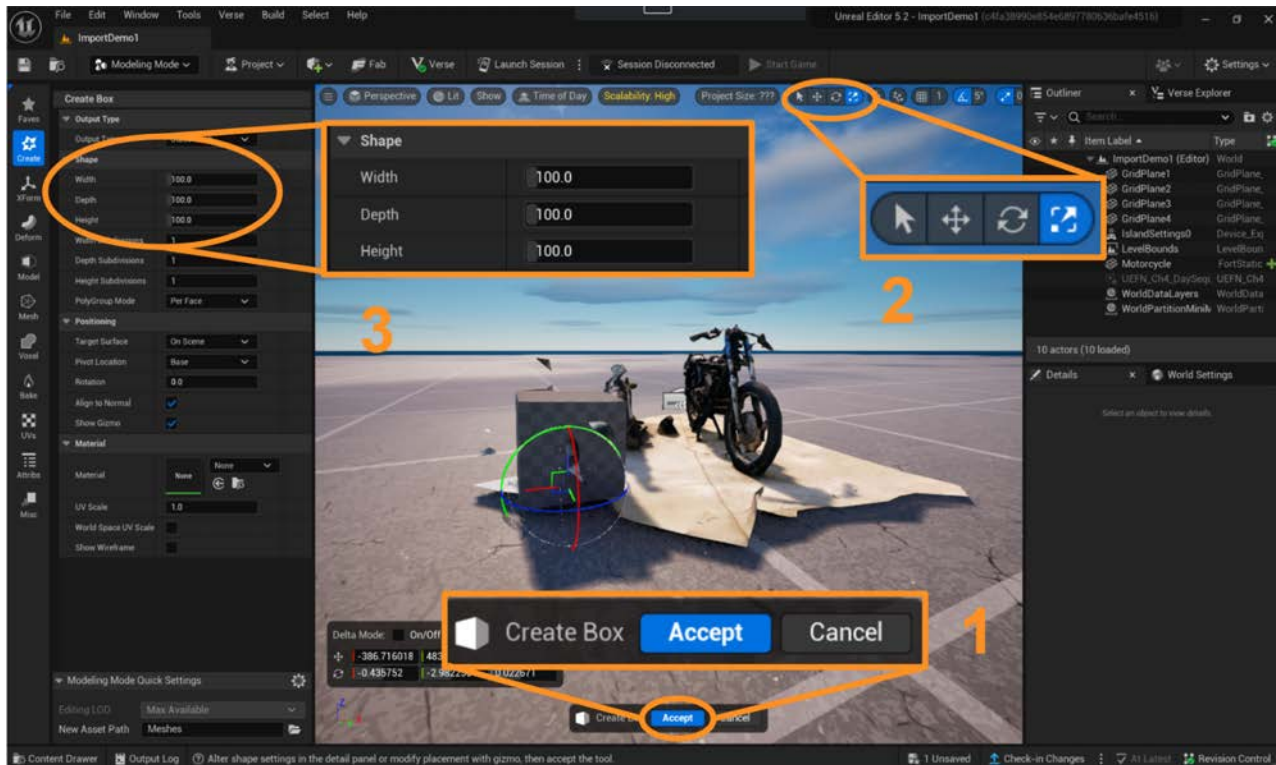
ACCESS THE CREATE TOOL

Be sure that "**Modeling Mode**" is selected in the dropdown at the top left of your screen. Click "**Create**" on the toolbar on the left side of your screen, which will bring up a menu to the right of the toolbar that allows you to select a shape that you will use to enclose and ultimately remove unwanted geometry.
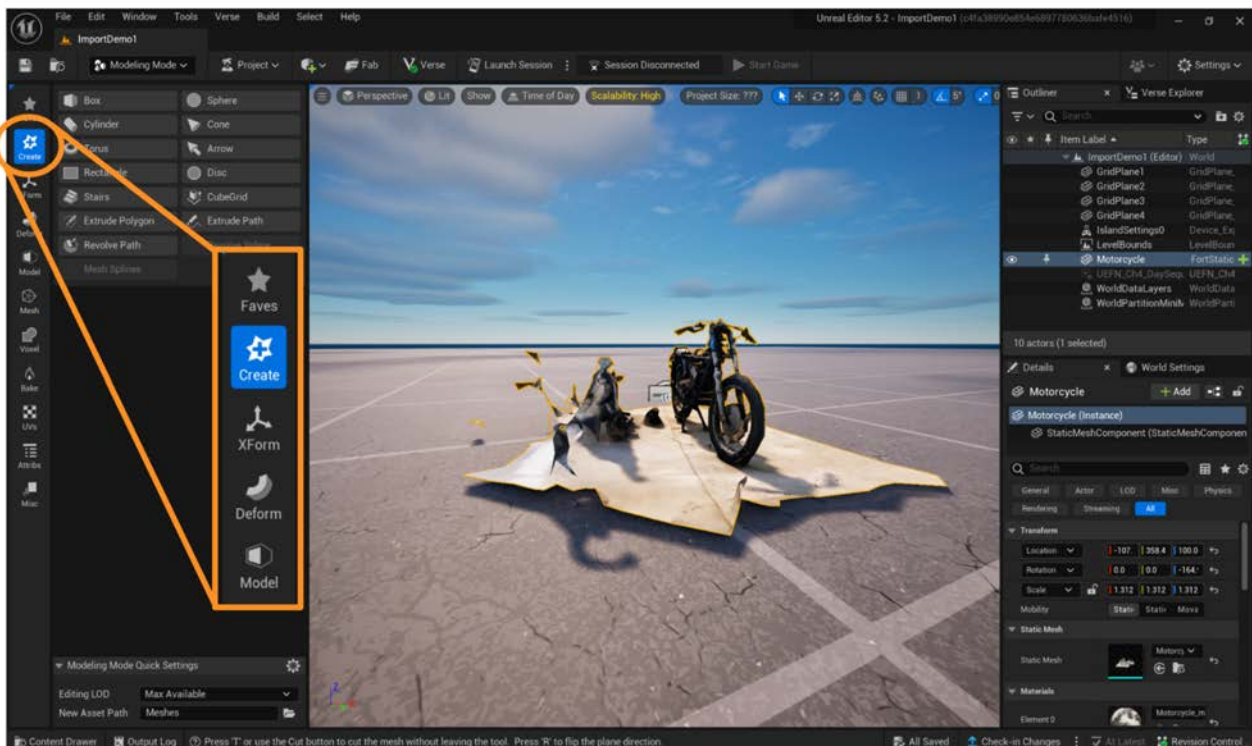
CREATE A SHAPE TO ENCLOSE THE GEOMETRY YOU WANT TO REMOVE

Click on a shape from the menu that will enclose the area that you'd like to remove from your model. In the example, a box overlaps with the unwanted geometry next to the motorcycle. Move the shape anywhere on your island, click to place it, and then click "**Accept**" **(1)**.

Use the Translate, Rotate, and Scale gizmos **(2)** to modify the size and position of your shape such that the geometry you want to remove is contained within the shape and the geometry you want to keep is outside the shape. You can also manually change the dimensions of the shape using the menu **(3)** on the left side of the screen.

SELECT YOUR MODEL AND THE SHAPE YOU CREATED, AND ACCESS THE BOOLEAN TOOL

In order to use the Boolean tool, you must have two models selected simultaneously. First, select your model (in this case the motorcycle) and then hold the "**SHIFT**" key down and click on the shape that you just created that should be enclosing the area you want to remove. Both models should now be outlined in yellow.

Next, click on the "**Model**" button **(1)** in the toolbar on the left side of your screen, and then click "**Boolean**" **(2)** in the menu that appears. If "**Boolean**" is not selectable, it likely means that the two models aren't simultaneously selected.
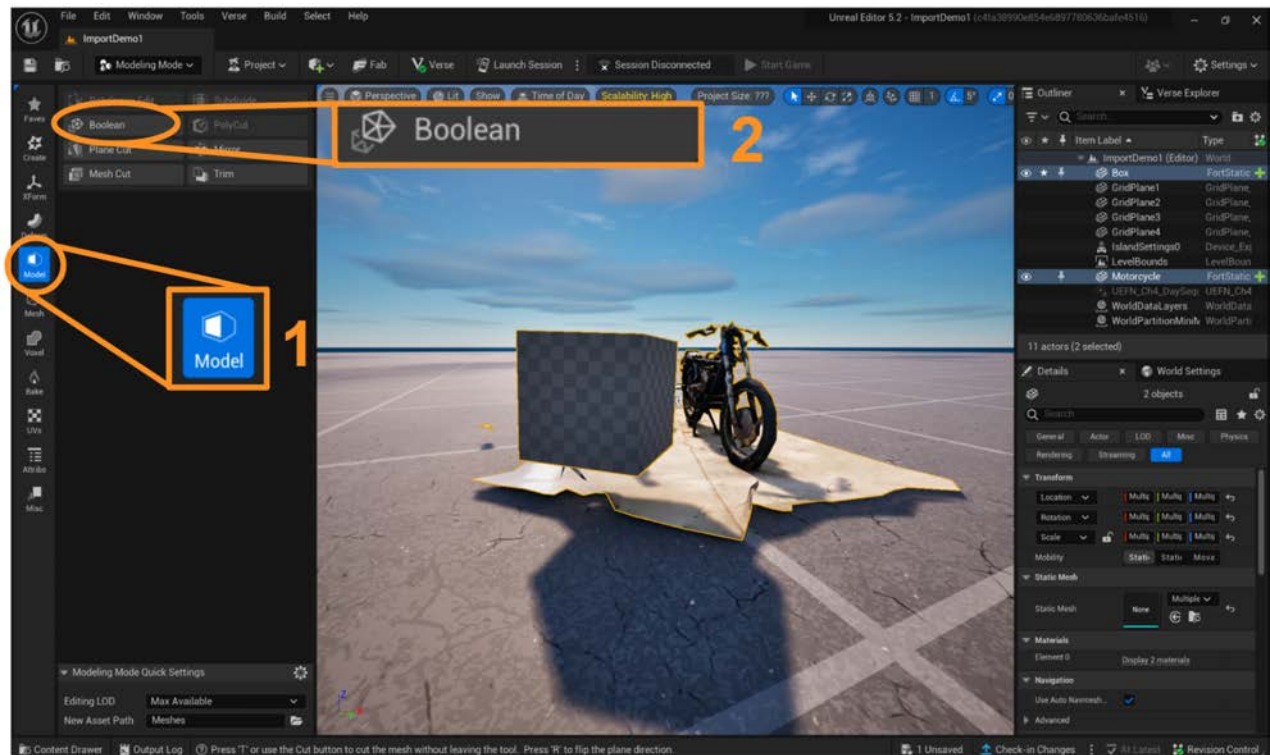
SELECT AND PERFORM THE APPROPRIATE BOOLEAN OPERATION

With your model and the shape selected, you will choose a Boolean operation to perform from the "Boolean" → "Operation" dropdown menu **(1)**.

The "**Difference A-B**" operation deletes model B (the second model selected) and any enclosed portion of model A (the first model selected). If the part of your model that you want to keep looks like it is disappearing, you may have selected the models in a different order; try the "**Difference B-A**" operation in this case.

When you have chosen the correct Boolean operation and the preview appears the way that you would like in the Viewport, click the blue "**Accept**" **(2)** button at the bottom of the screen.

You may repeat this process as necessary to remove more geometry from your model using Boolean operations.
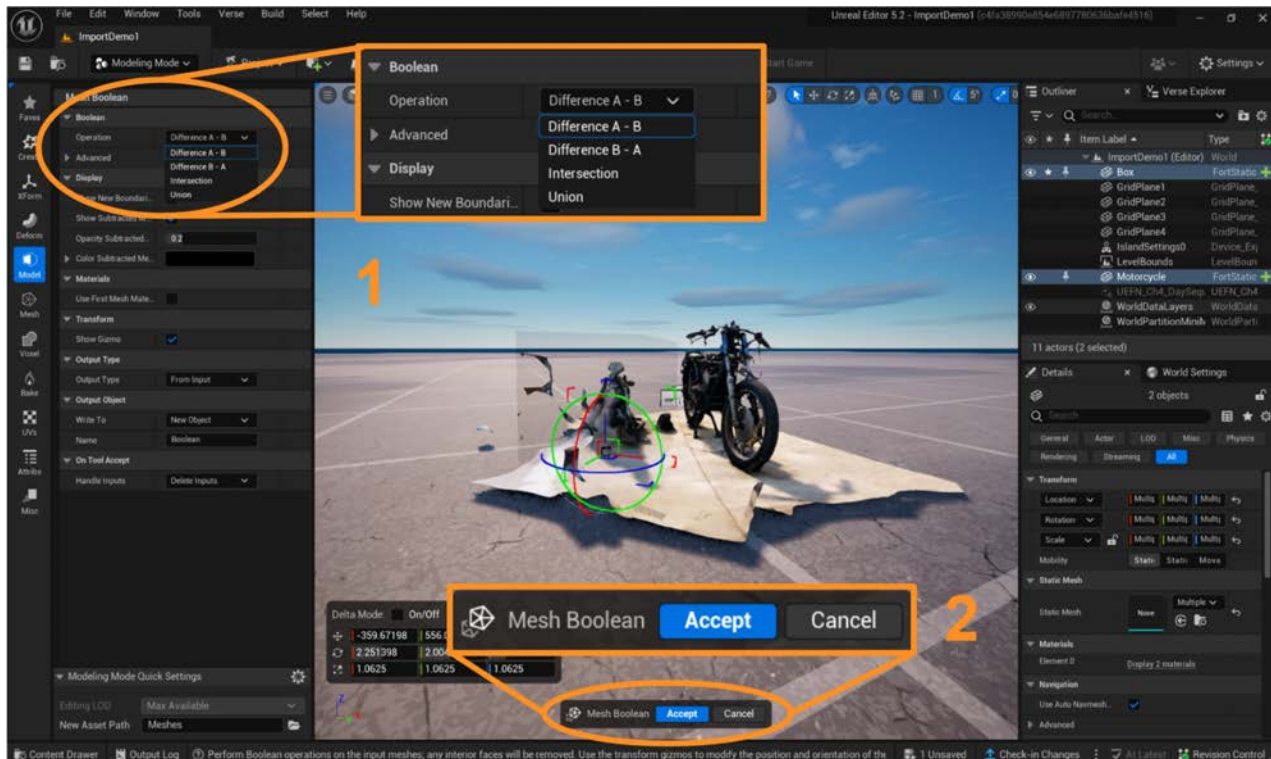
Self Check

What are some situations in which you'd like to use a Boolean operation to clean up a model's geometry?

What do the other Boolean operations do? How can you clean up geometry using them?

Step 3: Clean up geometry with the Tri Select tool

Preview

The Tri Select tool can require a little more practice to use compared to the Plane Cut tool and the Boolean tool, but it also allows for more precision when cleaning up a model's geometry since you can quickly select and delete smaller areas on your model.

Explore

Follow these instructions to access and use the Tri Select tool:
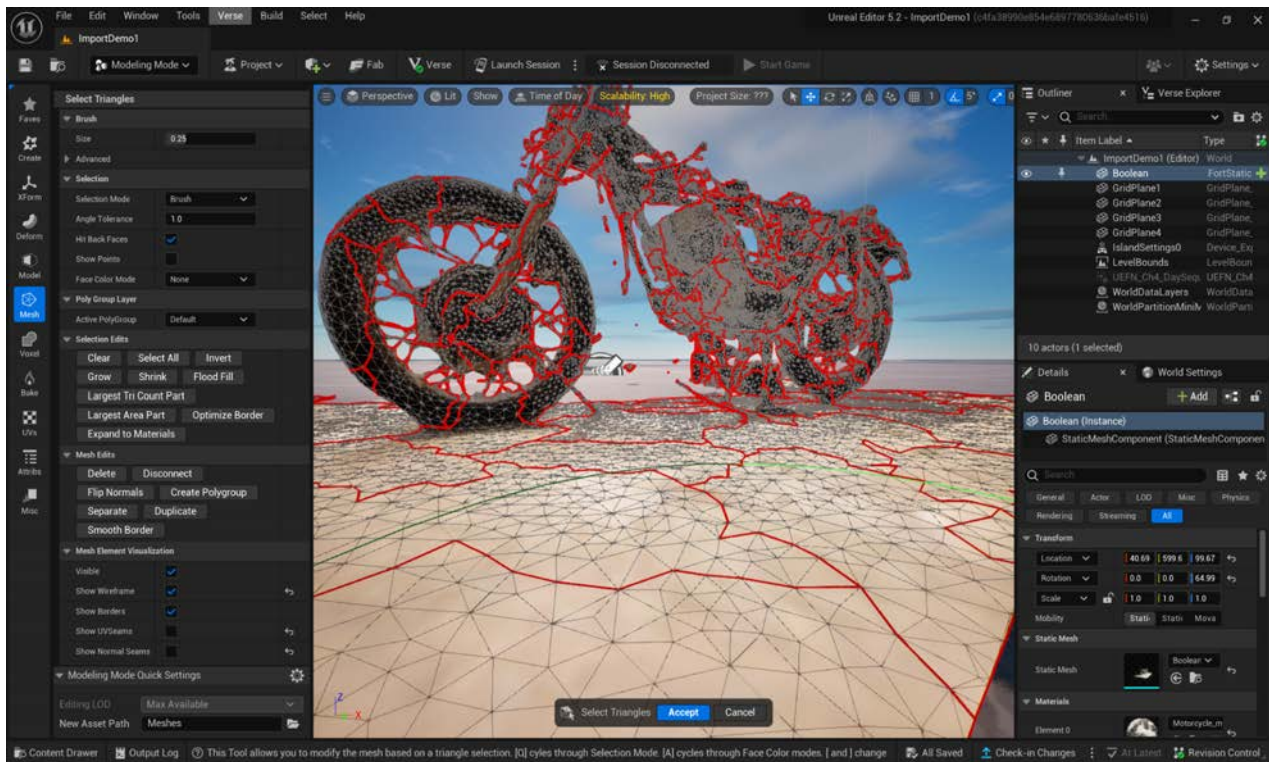
ACCESS THE TRI SELECT TOOL

To access the "**Tri Select**" tool, navigate to "**Modeling Mode**" from the dropdown at the top left of your screen. Then, select your model by clicking it. Finally, select "**Mesh**" **(1)** from the left toolbar and then click on "**Tri Select" (2)** from the menu of tools that appear.
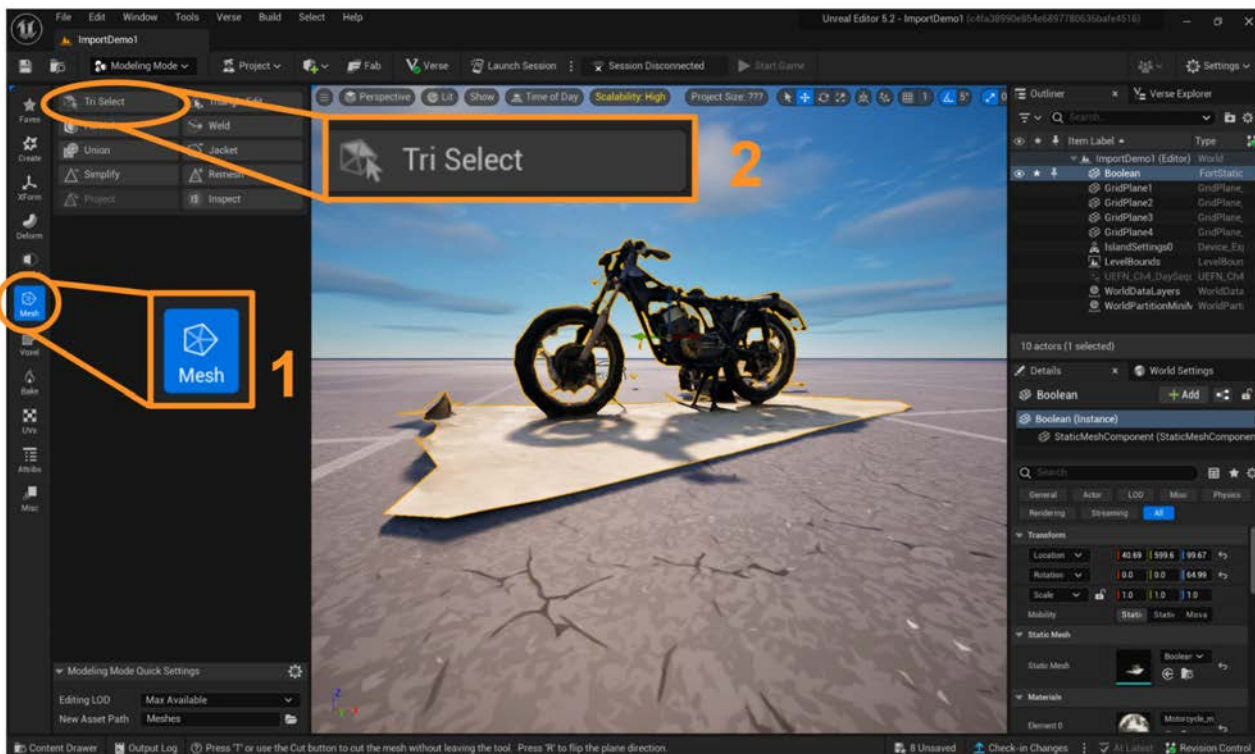
NAVIGATE TO THE AREA YOU WANT TO CLEAN UP

Once you have accessed the Tri Select tool, you should be able to see your model's mesh. This is what gives your model its structure. Meshes are made of up polygons (the gray shapes), which are bundled together into poly-groups (outlined in red).

In order to use the Tri Select tool, navigate around the screen until you have a clear view of the area of the mesh that you are planning to delete.

USE THE BRUSH TO SELECT POLYGONS TO DELETE

The Tri Select tool allows you to select groups of polygons using a brush. Selected polygons are highlighted in red. The brush cursor is indicated by a green circle on the screen. You can adjust the brush size under the "**Brush**" heading in the toolbar on the left side of your screen. Click and drag the brush over the areas you want to delete. These areas should turn red when you select them.
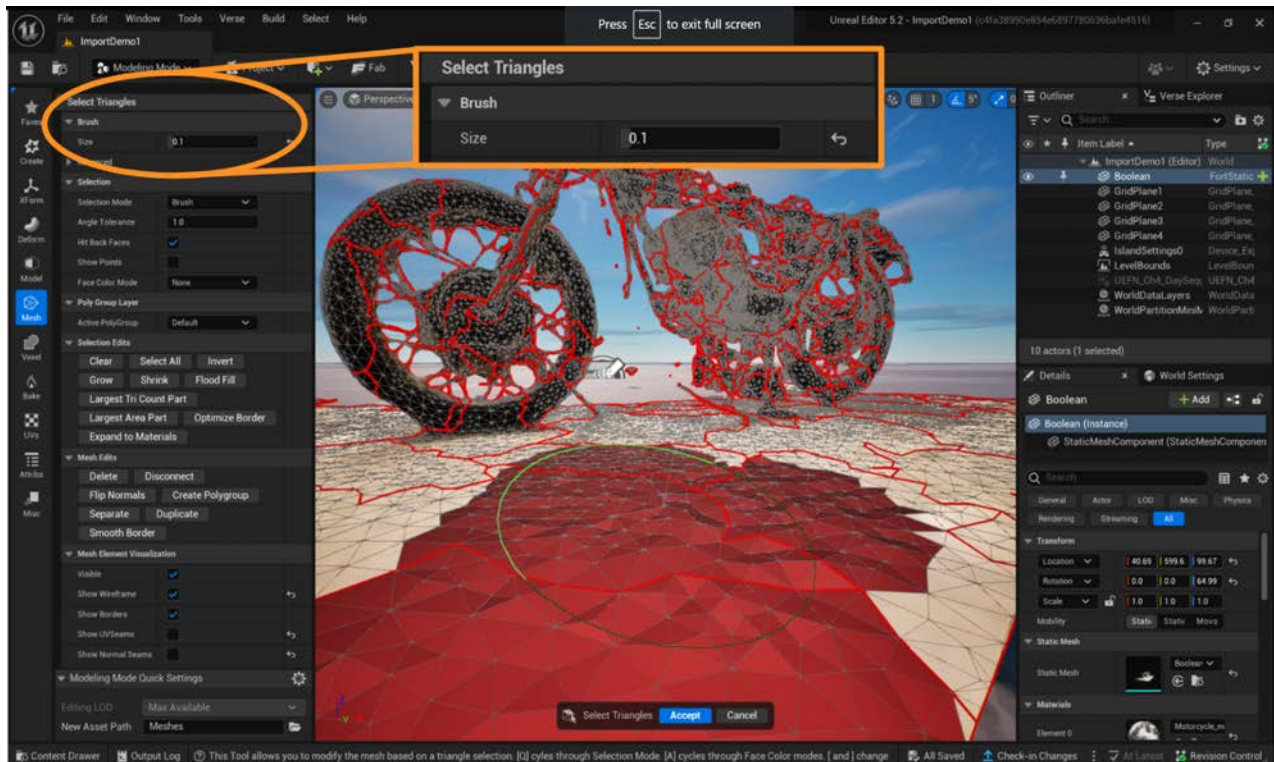

Creator Tip

The brush will only select polygons inside the green circle AND in the same polygroup as the center of the brush.

DELETE UNWANTED POLYGONS

While you have the geometry selected that you want to remove, press the "**DELETE**" key on the keyboard. This will delete all of the geometry that is highlighted in red.

You can continue navigating around your model to delete geometry with the Tri Select tool by repeating these steps. When you are done, click the "**Accept**" button at the bottom of the screen.
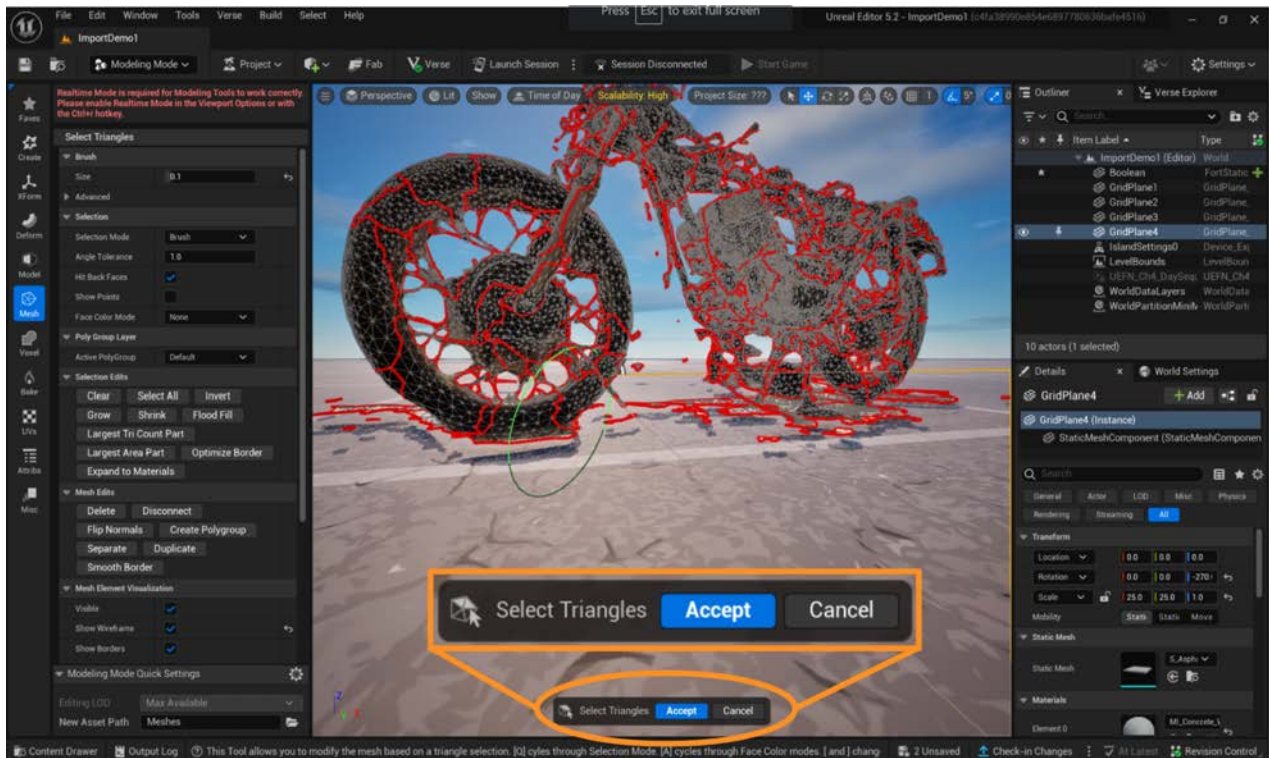
Self Check

Why would you want to use the Tri Select tool instead of a Boolean operation?

Were you able to eliminate all unwanted geometry in your model? If not, can you go back and use some combination of these tools to do so?

Lesson Closure

Demonstration of Learning

You were able to eliminate unwanted geometry from a model because you learned how to use the Plane Cut, Boolean, and Tri Select tools in UEFN. Editing a model's geometry is useful for a variety of reasons. In this example, the unwanted ground and items around the motorcycle were removed from the original photogrammetry model.

Exploration Opportunities

There are many other tools you can use to edit a model's geometry in UEFN such as PolyCut, Trim, Mirror, etc. Check them out and see what you can do with them!