

CPQ 3D Scene Feature: Submesh

The Submesh feature helps you create realism in your scene by applying different materials, to different faces, of the same mesh.

In this course, you will learn the theory of submeshes by watching a real-world example of how to use this feature to solve a design problem. Like any other feature, submeshes can be adjusted during run time with Snap rules.

Objectives

- Submesh Theory & Example: Spigot
- Submesh Manipulations with Snap

Submesh Theory & Example: Spigot

Use the Submesh feature to apply different materials to different faces of the same mesh.

For this example, we have imported a 3D model of a water spigot, like what you would find on the side of a building.

As a person viewing this mesh, it looks like it is made of different parts, like the red handle, the cast brass spigot, and the galvanized pipe. But these are not separate meshes. It's all one mesh, called "Spigot" in the explorer.

This mesh has no material applied to it, so it has the default grey appearance. All the materials are applied to parts of this one mesh in the features stack, as submeshes. Let's see how it's done.

To understand the geometry of a mesh, you can change the scene render to wireframe mode. This wireframe is built of lines that outline all the two-dimensional faces of the mesh. With the submesh feature, you can apply any material to any face.

To use this feature, first select the mesh you'd like to transform. In the properties column on the right, open the features expander, and add a new Submesh feature. As with all features, you can change the name of the feature to make future Snap programming easier.

Click the "select faces" button to enter face selection mode. A modal pane appears over the scene to help you select the right faces. You can select your faces manually, or with help from the pane.

Let's select manually first.

- To select faces manually, shift-drag over them. They will light up.
- To add to your selection, SHIFT-CONTROL DRAG over them.
- To remove faces, SHIFT-ALT-DRAG over them.

Depending on the shape of your mesh, options in the face selection pane can help you.

- Use "select backfaces" to include the faces on the other side of the mesh in your selection. Or turn that off, so you only select the faces you see.
- You can expand your selection. Click "expand by 1" to grow your selection slowly.
- Or enter an angle, and then click "expand by angle" to gather up many faces easily.

Experiment with these and other selection helpers.

When you're done defining the faces for this submesh, click Done.

Now, simply apply a material to the submesh. You'll see it appears only on the faces you selected.

Submesh Manipulations with Snap

Like any other feature, Submeshes can be adjusted during run-time with Snap rules.

Usually, the fields of data controlling this feature would come from a configurator, or some other source. For demonstration purposes, we will use fields within this stand-alone scene.

In this example, we want to allow the customer to choose the material of their spigot, without changing other materials on that one mesh.

Create a new text select field for the user to specify the type of material. We're offering Cast Brass, Polished Brass, and Chrome.

Create a new scene rule, called "Update Spigot".

Use the set feature block to set the Spigot's... Submesh-pipe... materialID. We don't have to look up that material ID ourselves... instead, use the "material" block to pick it. In this way, the name of the material can change in the future without breaking our code.

Run the scene, and you'll see the default brass has been replaced with chrome. But the customer can't adjust it.

Return to your rule. Use the switch block to create logic connecting your user's selections with the materials. Note that the field text does not have to be the same as the name of the material. In this way, you can store codes that make sense to your ERP or manufacturing systems downstream. When we run the scene, we see the Submesh is now driven by the fields.

Recap

You reviewed the theory of how a Submesh can apply different materials to different faces of a mesh.

And you learned how to automate the Submesh feature using Snap rules.

The contents of this document are for informational purposes only and are subject to change without notice. Epicor Software Corporation makes no guarantee, representations or warranties with regard to the enclosed information and specifically disclaims, to the full extent of the law, any applicable implied warranties, such as fitness for a particular purpose, merchantability, satisfactory quality or reasonable skill and care. This document and its contents, including the viewpoints, dates and functional content expressed herein are believed to be accurate as of its date of publication. The usage of any Epicor software shall be pursuant to the applicable end user license agreement and the performance of any consulting services by Epicor personnel shall be pursuant to applicable standard services terms and conditions. Usage of the solution(s) described in this document with other Epicor software or third party products may require the purchase of licenses for such other products. Epicor, the Epicor logo, and are trademarks of Epicor Software Corporation, registered in the United States and other countries. All other marks are owned by their respective owners. Copyright © 2021 Epicor Software Corporation. All rights reserved.

About Epicor

Epicor Software Corporation drives business growth. We provide flexible, industry-specific software that is designed around the needs of our manufacturing, distribution, retail, and service industry customers. More than 40 years of experience with our customers' unique business processes and operational requirements is built into every solution—in the cloud, hosted, or on premises. With a deep understanding of your industry, Epicor solutions spur growth while managing complexity. The result is powerful solutions that free your resources so you can grow your business. For more information, [connect with Epicor](#) or visit www.epicor.com.



Corporate Office

804 Las Cimas Parkway
Austin, TX 78746
USA

Toll Free: +1.888.448.2636
Direct: +1.512.328.2300
Fax: +1.512.278.5590

Latin America and Caribbean

Blvd. Antonio L. Rodriguez #1882 Int. 104
Plaza Central, Col. Santa Maria
Monterrey, Nuevo Leon, CP 64650
Mexico

Phone: +52.81.1551.7100
Fax: +52.81.1551.7117

Europe, Middle East and Africa

No. 1 The Arena
Downshire Way
Bracknell, Berkshire RG12 1PU
United Kingdom

Phone: +44.1344.468468
Fax: +44.1344.468010

Asia

238A Thomson Road #23-06
Novena Square Tower A
Singapore 307684
Singapore

Phone: +65.6333.8121
Fax: +65.6333.8131

Australia and New Zealand

Suite 2 Level 8,
100 Pacific Highway
North Sydney, NSW 2060
Australia

Phone: +61.2.9927.6200
Fax: +61.2.9927.6298