CS11: 3D Scanning of Large Spaces

2/12/2021 Meeting

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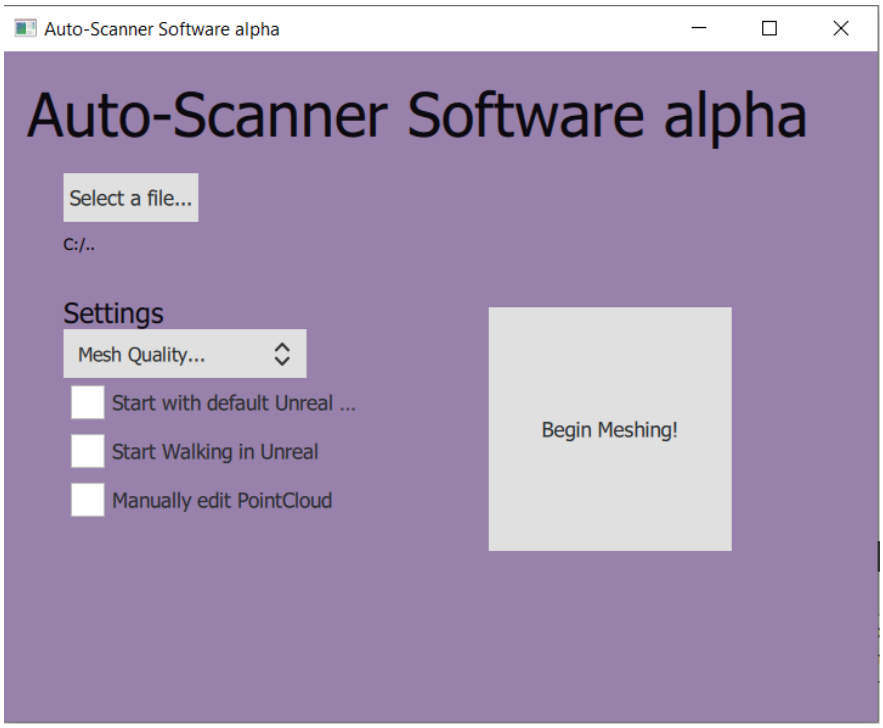
PointFuse Contact:
We are waiting for a response from PointFuse about an extended License, and other info, such as an API, SDK, or libraries.

Qt InterFace Design:
Now that we have changed gears in terms of a User interface, we have created a new design for the interface. This one will accept input for point cloud files(file type depending on meshing software, probably las or dp or pts), and then it will upload to the meshing software of choice. Again, there will be settings on this page to allow the user to have more control of the meshing process, such as directly using pointfuse.



Work with Meshing Software:

MetaShape:

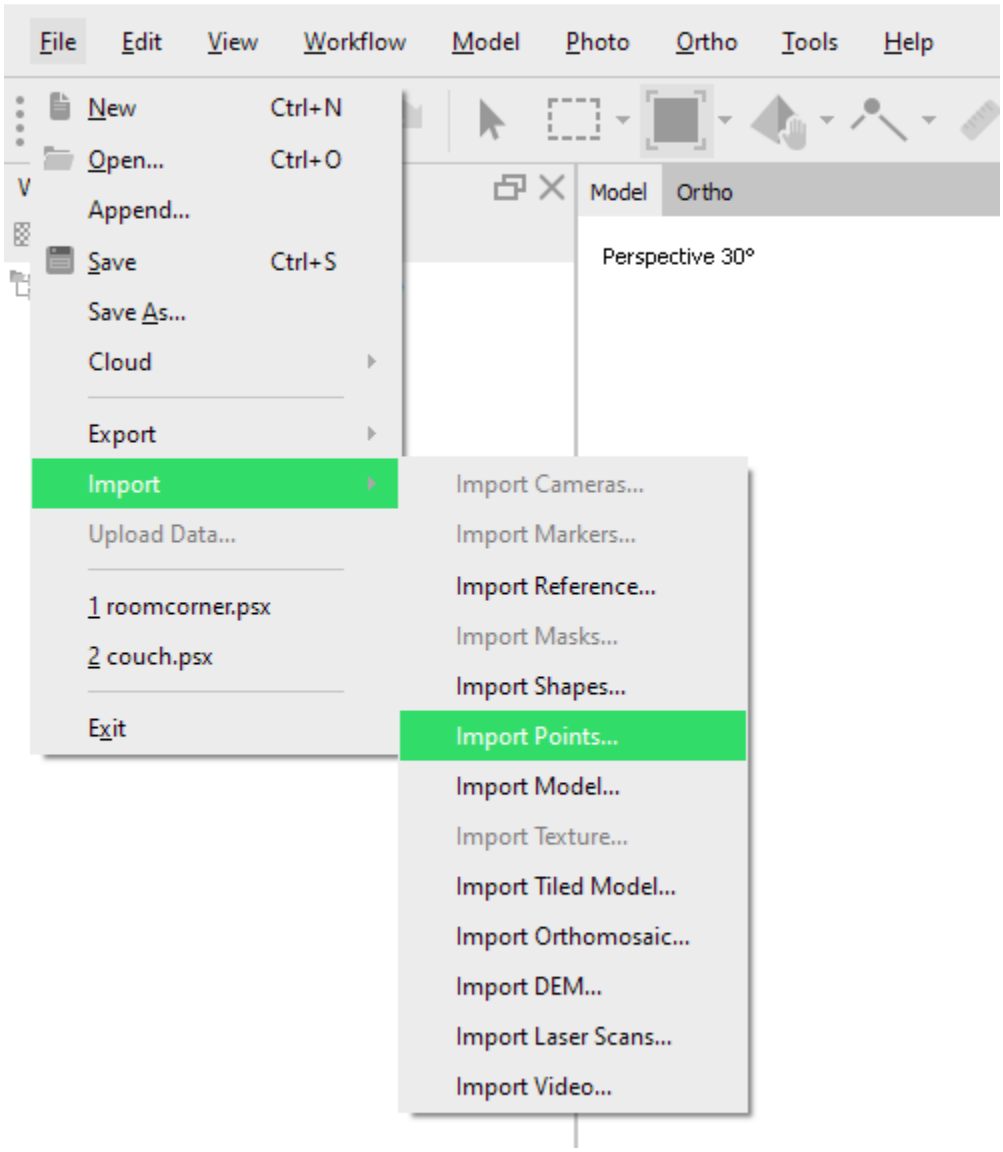
Notes on Agisoft MetaShape :

- Has a fully featured trial period of 30 days
- A standard license of MetaShape is a one time fee of $179
    - Exponentially cheaper than PointFuse
- Struggles a little with generating meshes from imported pointclouds.
    - When importing a pointcloud (.ply files) it cannot utilize interpolation between points when generating a mesh.
- Compared to Meshlab it has a more user friendly interface but it is not totally obvious how things are supposed to be done (creating a mesh region, the overall size of the mesh it is going to generate)
- It does not lend the user as much control as Meshlab does

Generate and export mesh from point cloud

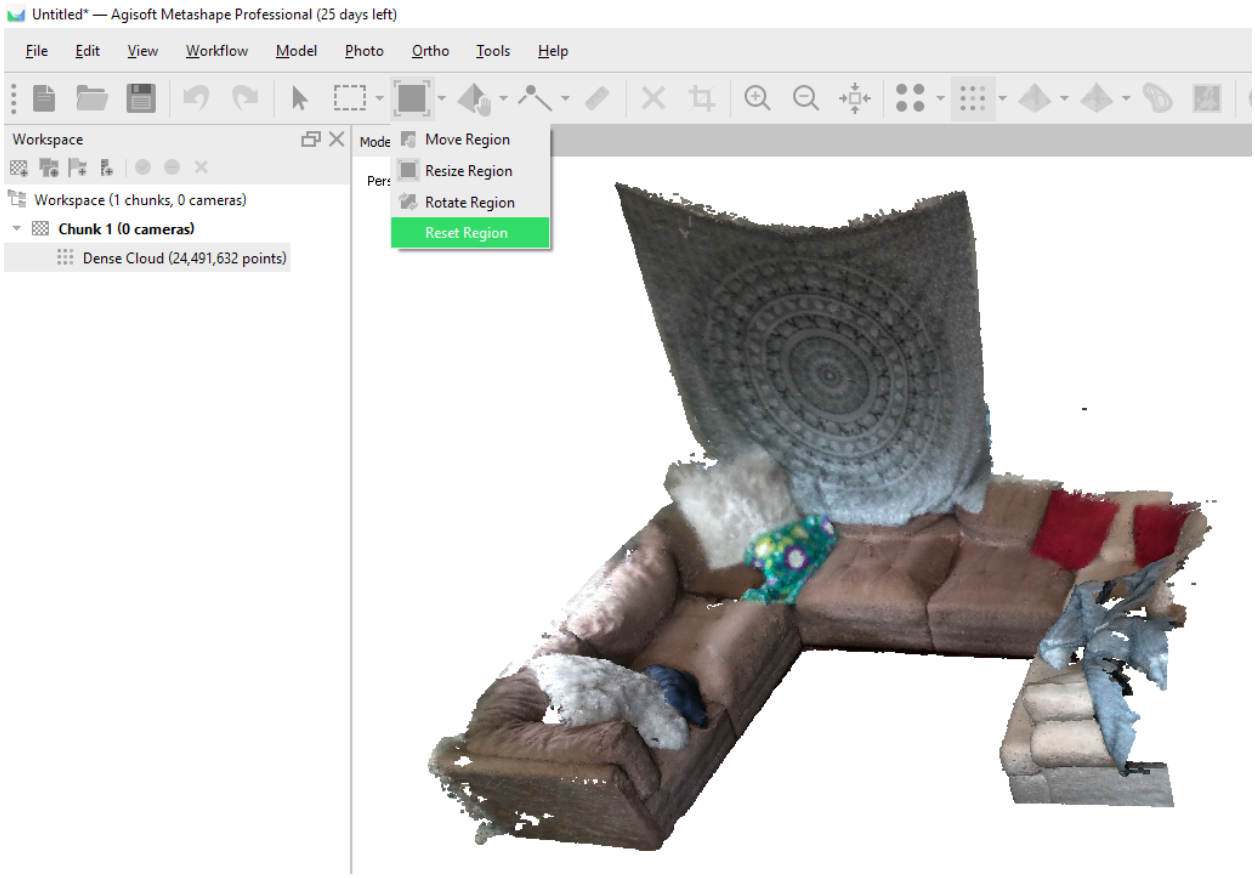
Import points

File > Import > Import Points…



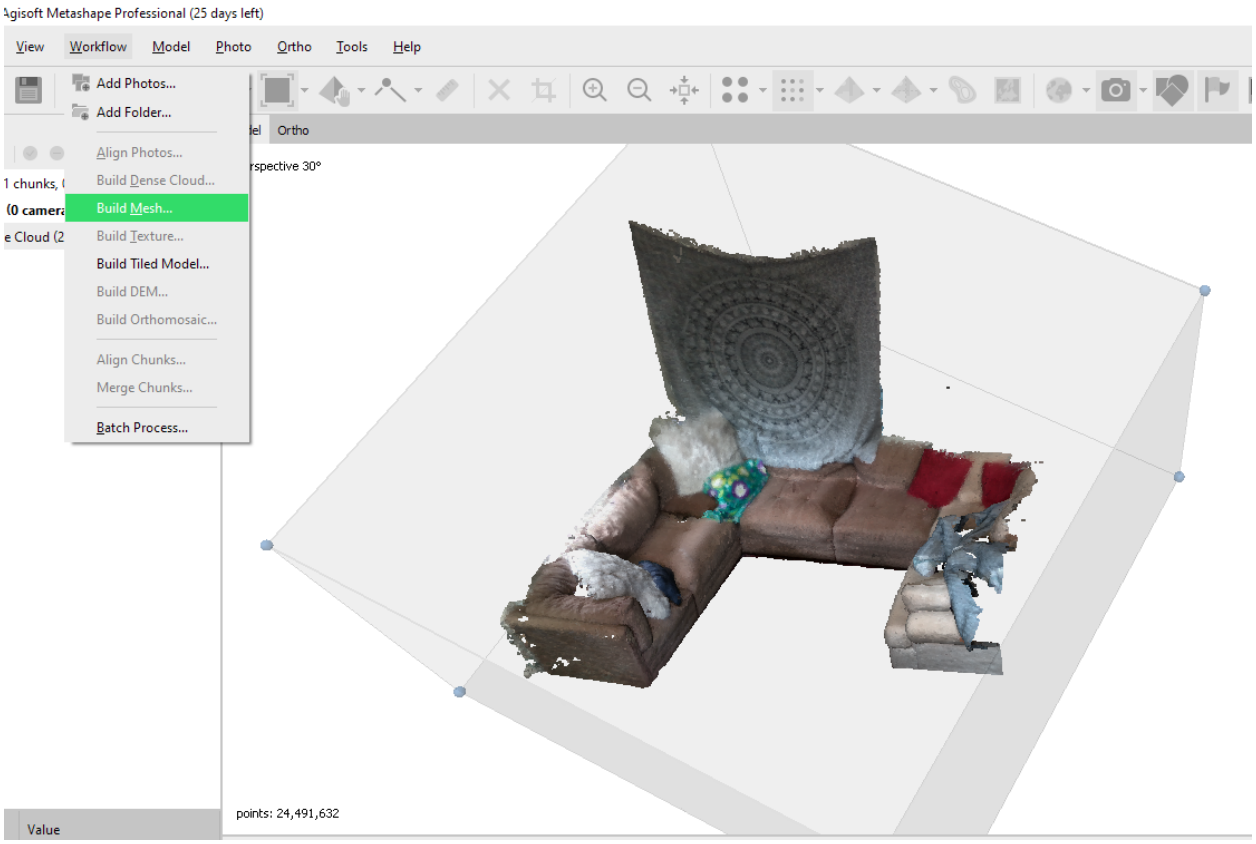
Reset region

Model > Transform Region > Reset Region

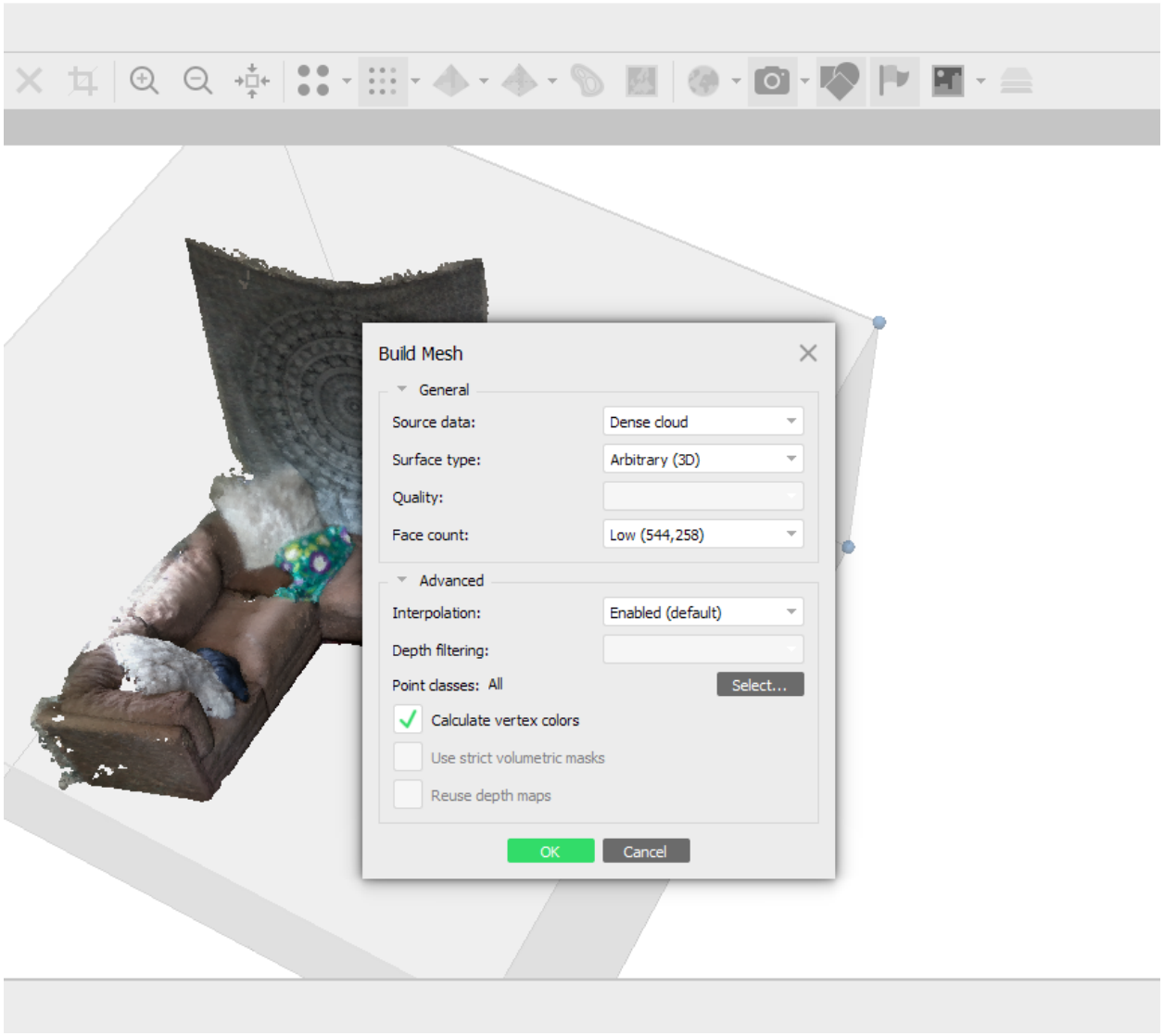


Build mesh

Workflow > Build Mesh...

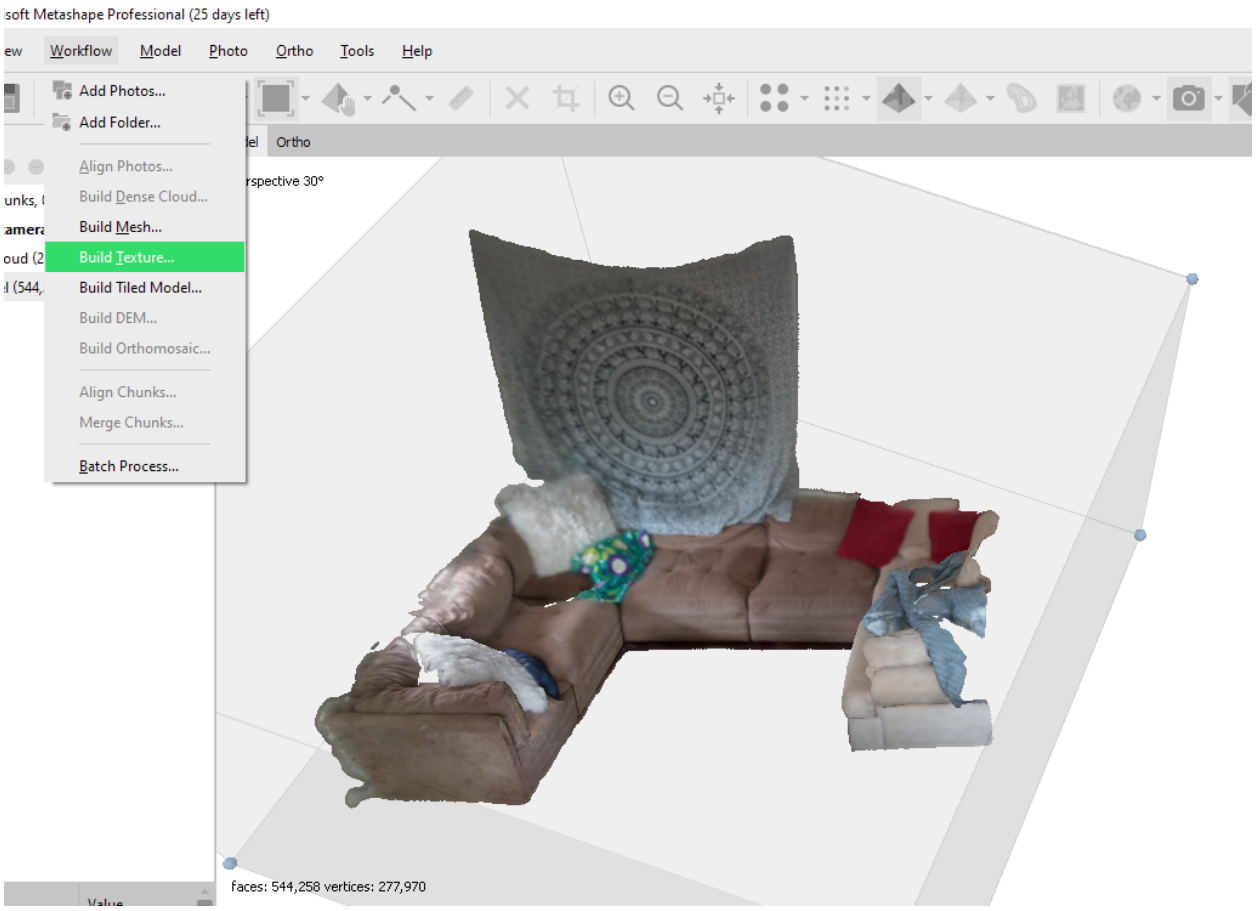


Make sure interpolation is enabled and “Calculate vertex colors” is selected. This will smooth and fill holes in the mesh as well as add color to the model.

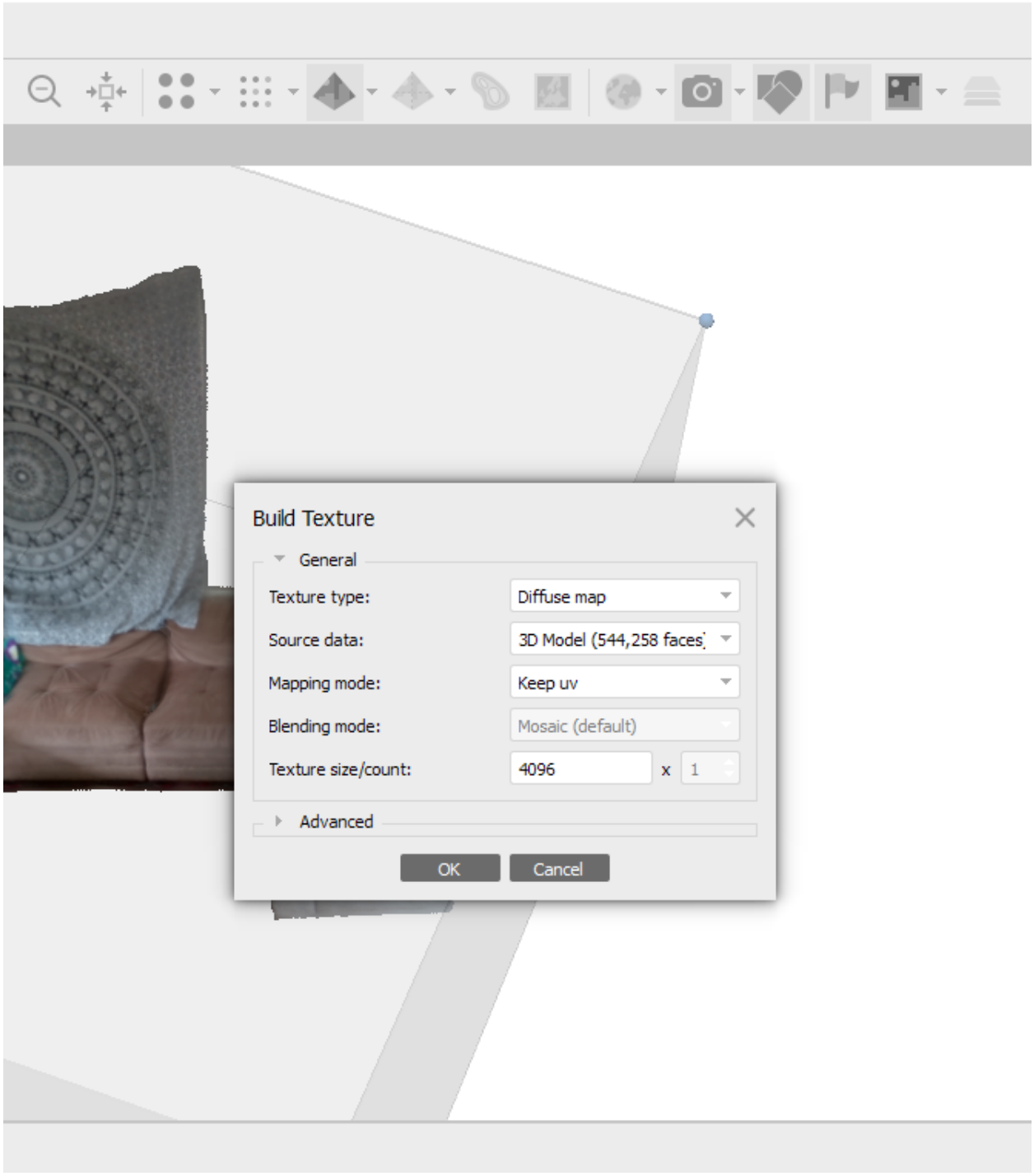


Build texture

Workflow > Build Texture…

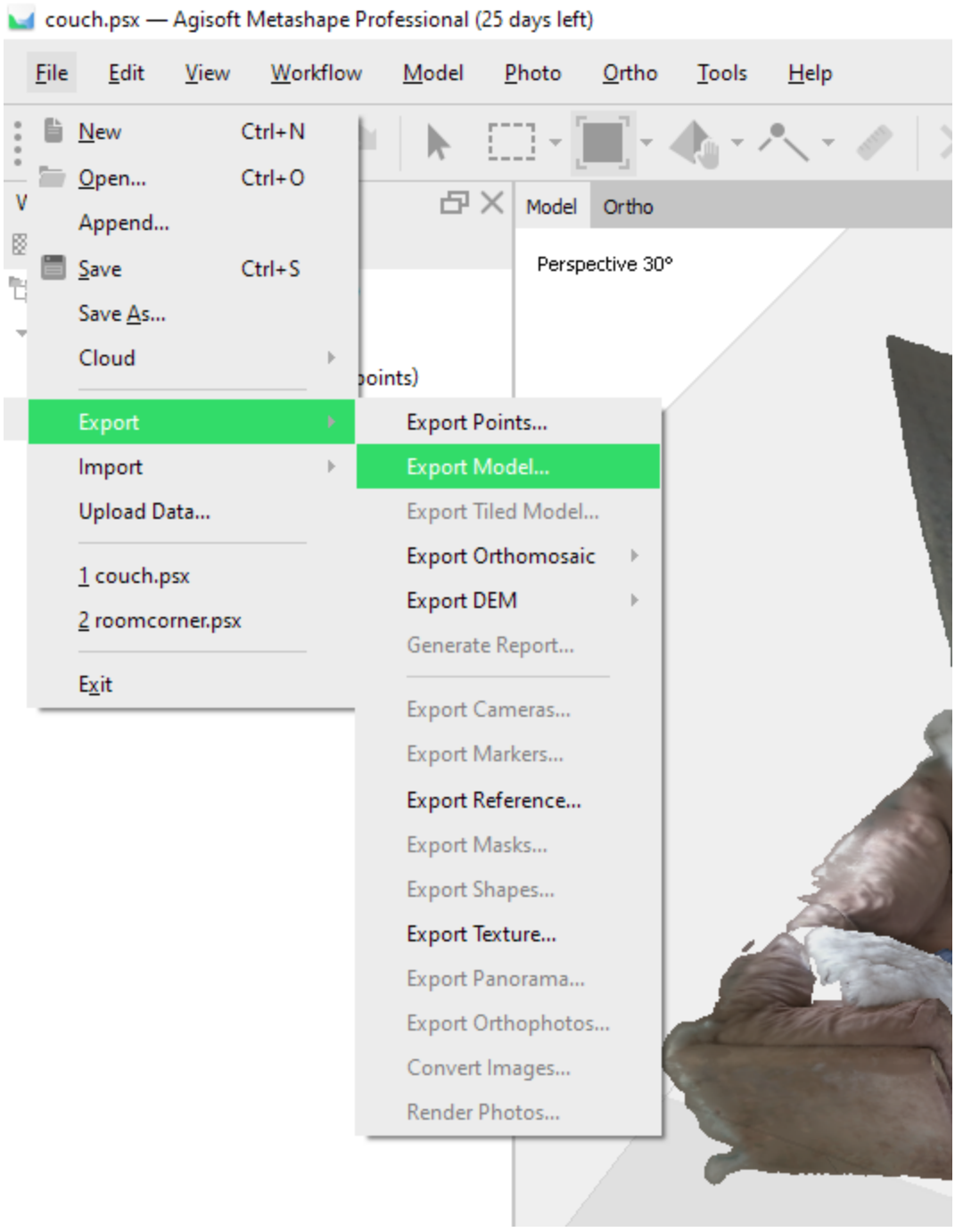


Set the source data to “3D model” as there are no images to build the texture from.

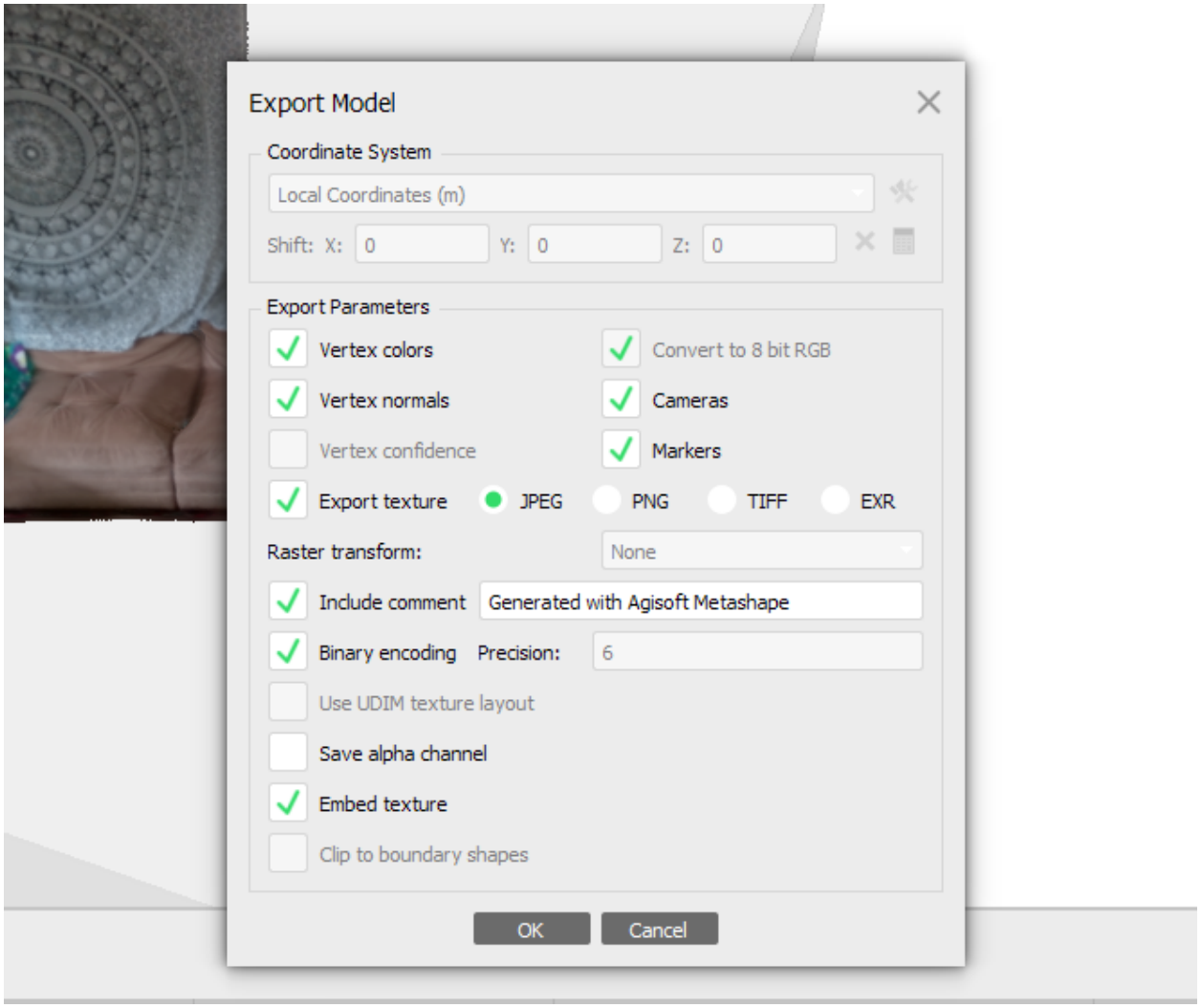


Export model

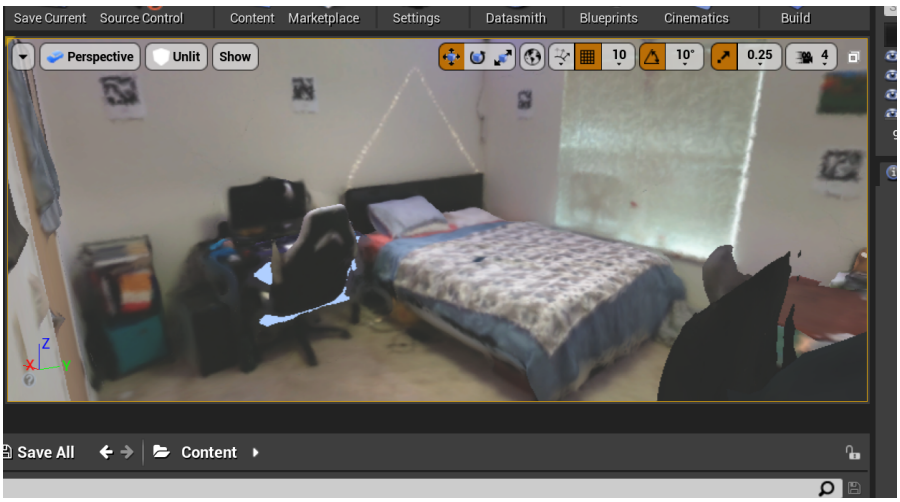
File > Export > Export Model…



Save the model in .FBX format to import into Unreal Engine. Select “Vertex normals” to include the normals provided by Dot3D and make sure that “Embed texture” is selected so that the texture material is automatically generated when importing into Unreal.



The texture and normals should be fully preserved when imported as a UE4 asset.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Blueprints
Cinematics
Build
Perspective
Unlit
Show
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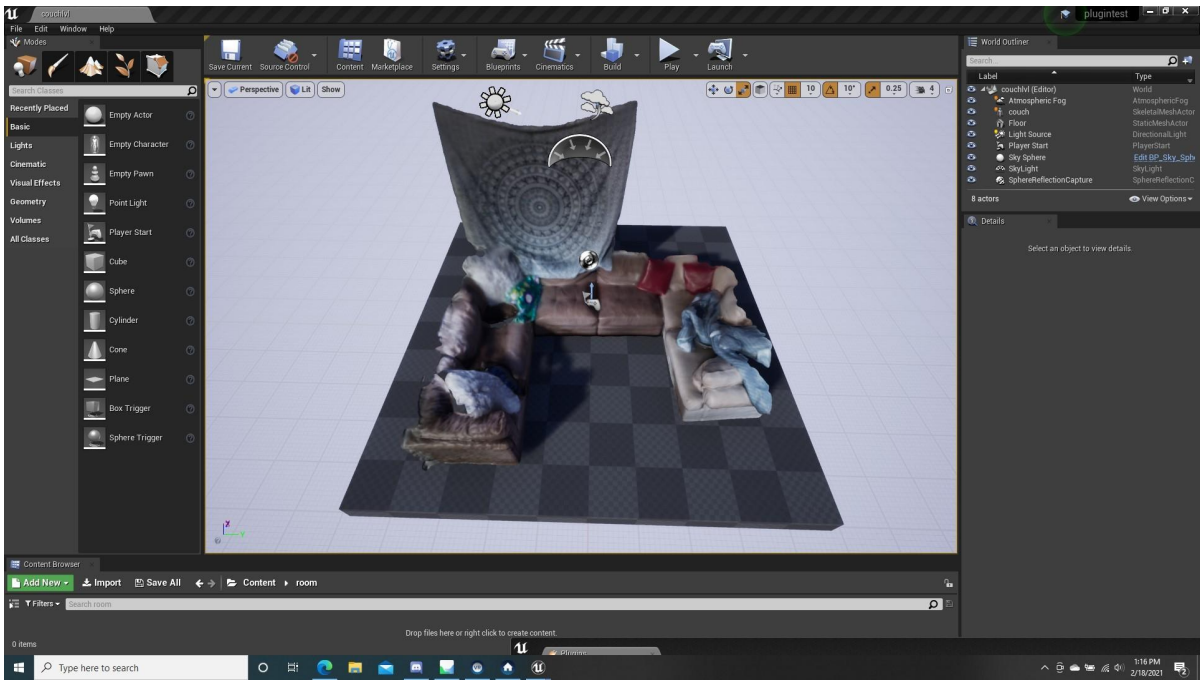
Content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Cinematic
Visual Effects
Geometry
Volumes
All Classes
Empty Actor
Empty Character
Empty Pawn
Point Light
Player Start
Cube
Sphere
Cylinder
Cone
Plane
Box Trigger
Sphere Trigger
Perspective
Lit
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World Outliner
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2/18/2021