

Pointfuse V4.2 Quick Start Guide

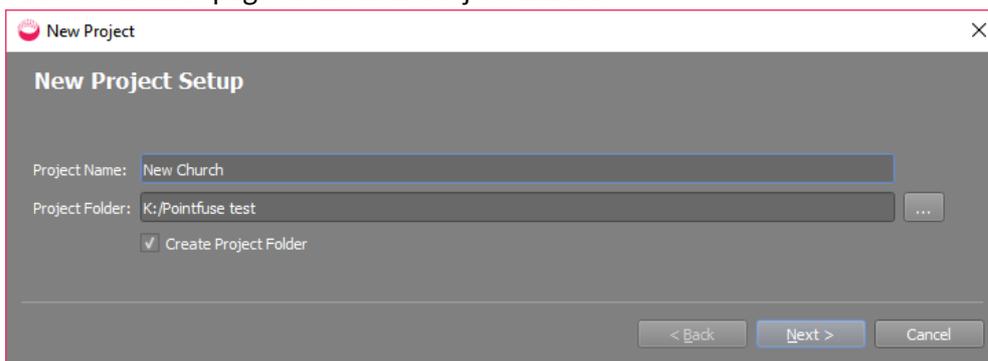
Pointfuse quickly and accurately converts point clouds into intelligent mesh models. Use the Pointfuse wizard to classify surfaces, including IFC for Scan2BIM. You can directly upload some or all surfaces to Autodesk BIM 360 or export to multiple formats for the next stage of your workflow.

Pointfuse runs on a physical PC. With a full (purchased) license, you can also run it on a virtual machine. You **can** use Pointfuse via desktop sharing, but Remote Desktop is **not** supported. TeamViewer is the suggested alternative.

The full User Guide includes a Quick Start section, which is more detailed than this short Quick Start Guide.

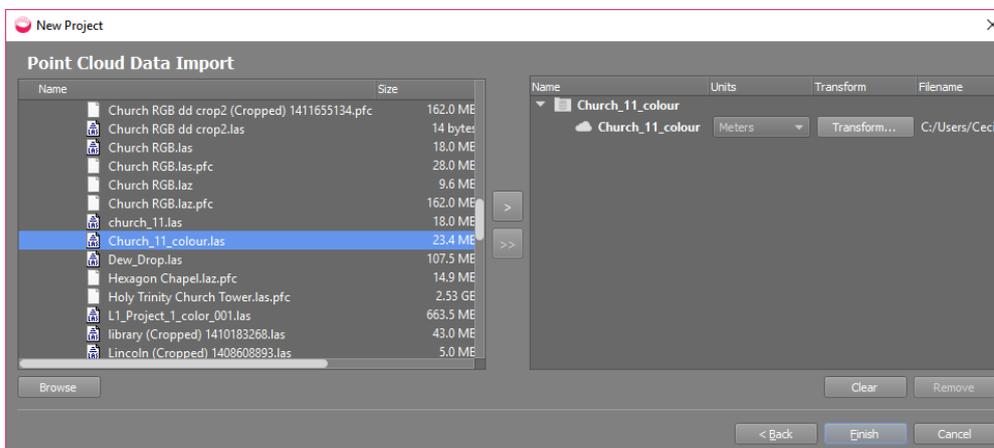
Load a Point Cloud

1. Download and open Pointfuse.
2. In Windows Explorer, navigate to a point cloud, and drag and drop it into Pointfuse. You see the first page of the New Project wizard.



Optional: Specify a custom **Project Name** and **Project Folder**.

3. Click **Next**.



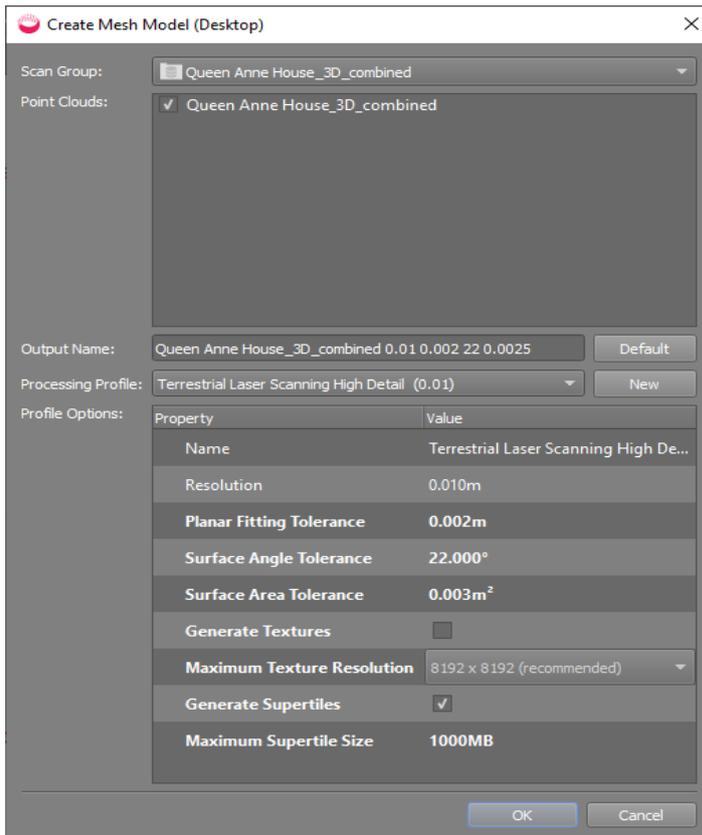
4. Click **Finish**. The point cloud will be imported and then displayed in the viewport.

Optional: If you want an intelligent mesh model created from only part of the point cloud:

- Use the **Crop** tool  to create a new, smaller point cloud.
- Select the new, cropped point cloud in the Project Explorer (no need to display it).

Create an Intelligent Mesh Model

1. Click **Create Mesh Model**  and select **Desktop** .



Optional:

- Specify a custom **Output Name**.
 - Select a different **Processing Profile** with different **Resolution** and **Tolerances**.
 - If the point cloud has RGB or intensity data, you can select **Generate Textures** and a **Maximum Texture Resolution**. This may increase processing time
 - Change **Supertile** parameters.
2. Click **OK** to create the mesh model. The mesh model is displayed when finished.

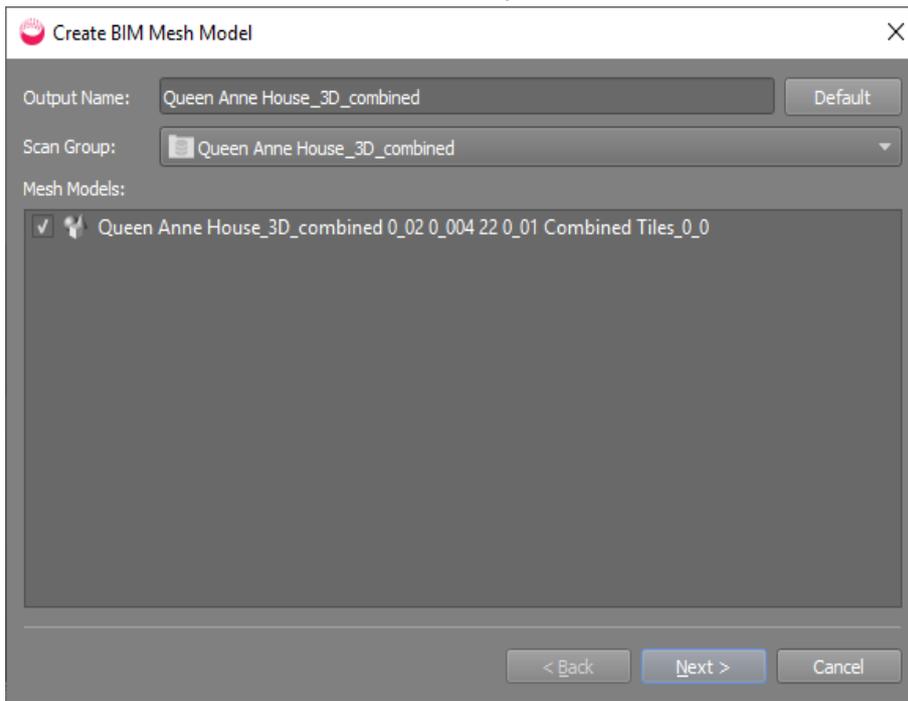
Scan to BIM Workflow

1. Display mesh model.
2. Optionally crop to create a copy, and crop away any irrelevant areas.
3. Run **Create BIM Mesh Model** wizard 
 - a. Add stories for each level of the building.
 - b. Select a classification template for each story.
4. Classify the model, using the **3D Select** tool and/or selecting individual surfaces.
5. Run **Create BIM Models** to create floorplans for each story . **Currently in beta test, not general release.**
6. Edit the BIM model. **Currently in beta test, not general release.**
For example, for each story, you can combine walls and make them square; split and delete walls; add walls, partitions, doors, and windows; change dimension and position of doors and windows; equalize wall heights, fit floor slabs (to create rooms), and change the elevation.
7. Export BIM mesh model as IFC.
8. Open IFC export in Revit.

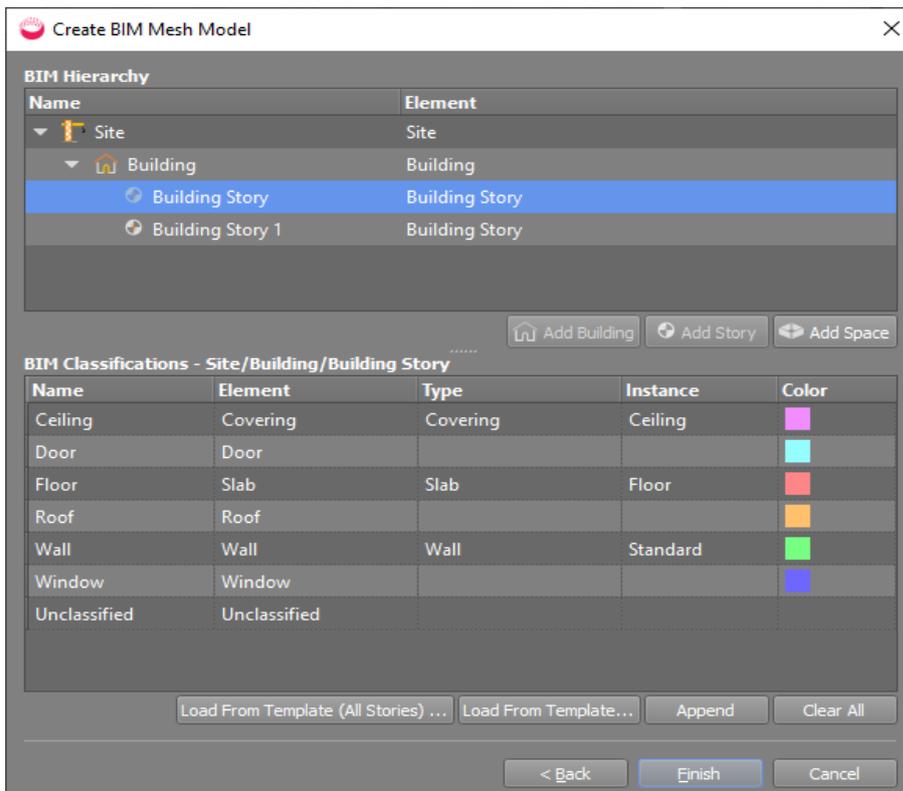
Create BIM Mesh Model - wizard

Use to apply IFC classifications to surfaces in the mesh model. Create and edit templates and map custom fields to IFC to ensure inter-operability in the next stage of your workflow.

1. Click **Create BIM Mesh Model**  to open the wizard:



2. Click **Next**:



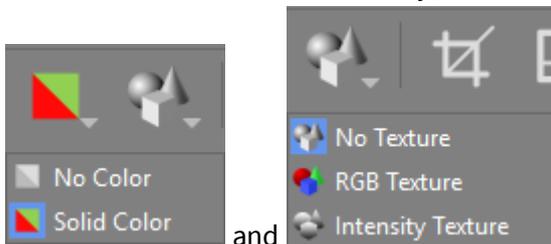
3. Create the site hierarchy. For example, click a Building and select **Add Story**.
4. To choose a different classification template, select a story and then select **Load from Template**. If you have multiple stories, you can select **Load from Template (All Stories)**.

In the Template Selector dialog, select a template, optionally edit it, and click **OK** to return to the main wizard.

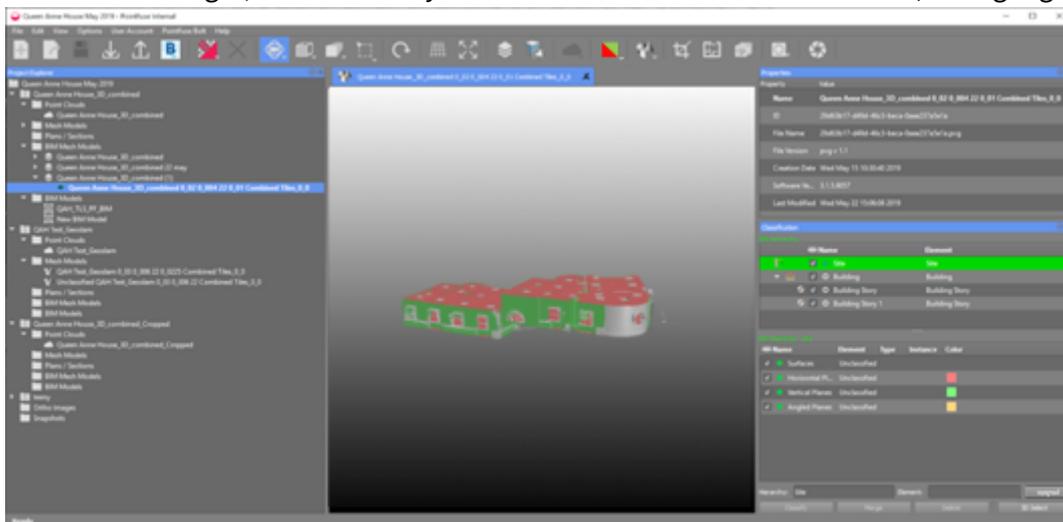
5. In the main wizard, you can edit the BIM classifications.
6. Click **Finish**.
7. Click **File > Save All**.

Classify Surfaces of BIM Mesh Model

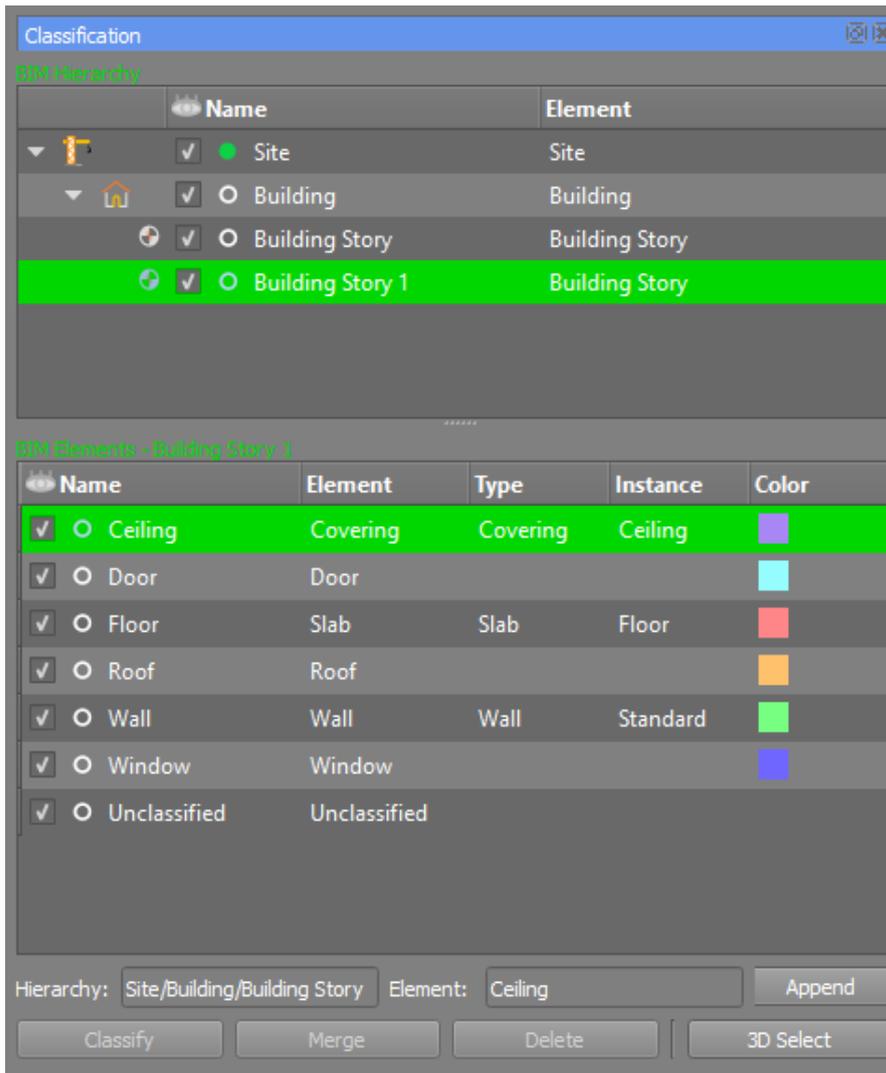
1. To display the model, in Project Explorer, open the BIM Mesh Models folder and double click the model.
2. To see classification colors clearly, select **Solid Color** and **No Texture**:



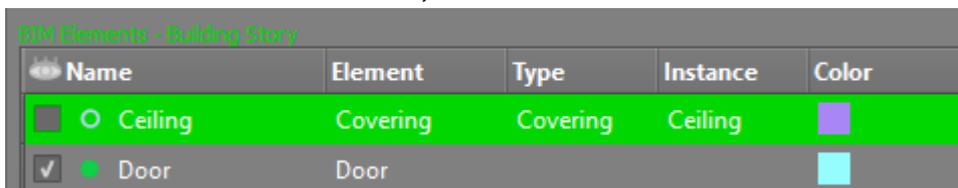
3. The model is color-coded by auto planar classification, as indicated in the Classification window in the bottom right, which initially shows the classifications for the Site (the highlighted row):



4. Select one or more mesh model surfaces to classify as a specific element in a specific story. Use a combination of 3D selection and manually selecting individual surfaces or groups of surfaces:
 - Select multiple elements: Click **3D Select** to use a cropping-style box, or **Ctrl+Click** on each surface in turn, or press and **hold** Ctrl to drag select.
 - Select a single surface: single click.
5. In the Classification window, click on the **Story** and **BIM Element**:



- Click **Classify** to classify them, but retaining separate surfaces, or **Merge**, to merge and classify them.
- To hide a BIM Element from view, uncheck it:



You can also right click on the selected row and, from the context menu, select to show, hide or toggle that element from all levels.

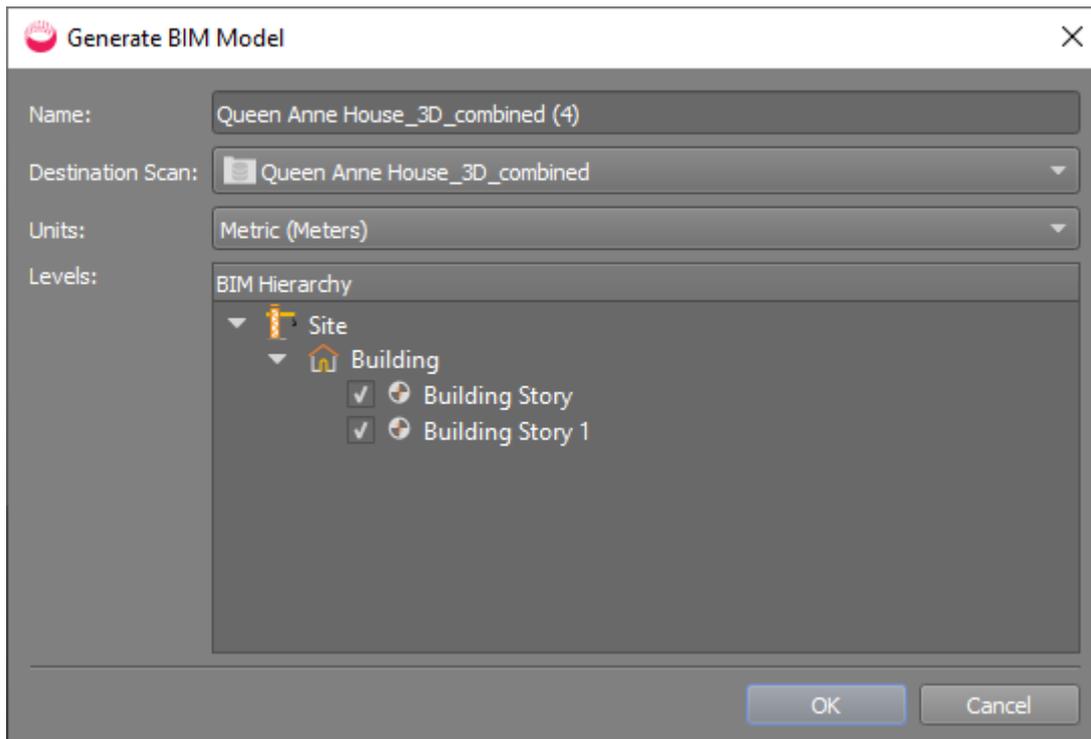
- Repeat until you have classified all surfaces.
- Click **File > Save All**.

Create BIM Models - Floorplans for each Story

Create and edit floorplans for each story to refine the model before exporting for the next stage of your workflow: for example, in IFC format for Revit.

This tool is currently in beta test and not available, even with a full Pointfuse license. Contact support@pointfuse.com for details.

1. Click **Create BIM Models** :

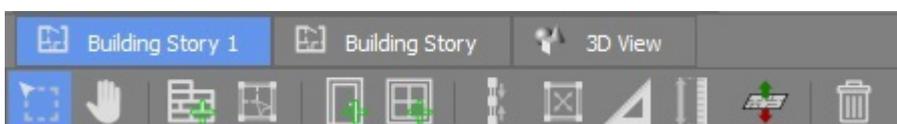


2. After a few seconds, you see a floorplan of one story, with tabs for other stories, one for 3D preview, and a toolbar below. These tools are for editing the BIM models by editing the floorplans.

Edit BIM Models

These tools are currently in beta test and not available, even with a full Pointfuse license. Contact support@pointfuse.com for details.

When you open a BIM model in the viewport, there are tabs for each 2D story, with a toolbar and context menu, and another tab for viewing the 3D model. Edits you make to 2D stories are immediately applied to the 3D model.



Switch between **Select**  and **Pan** .

Use the tools to refine the BIM model: combine walls and make them square; split walls; add and delete walls, partitions, doors, windows; equalize wall heights, and fit and delete floor slabs (to define rooms, for example).

Edit Walls

Move End Nodes

You can move the start and end points of a wall by selecting and dragging the nodes at either end.

Where the nodes of two or more elements are at the same point, they are pink; if they are just near, they are gray. To connect existing nodes, roll the mouse wheel to zoom in, then click and drag one of them until it overlays the other:



You can then **Combine**, **Make Square**, or just drag the shared node.

Nudge Wall Position

By default, nodes are at the center of each end. When you select a single wall, you see clickable triangles to cycle through nudging walls in, out, or centered. You can also press **Spacebar**.



Change Wall Width

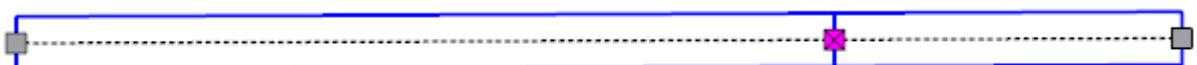
Hover over a wall edge and when you see a pinky-orange highlight, drag the edge.

Whether the wall widens or narrows in one direction or both depends on whether the nodes are centered or on corners (whether the wall has been nudged).



Combine Walls

1. The walls must have a node in common (indicated pink):



2. Click one wall and **Ctrl+Click** the other:



3. Click **Combine Walls** :



Split Wall

Just double click where you want to create new, overlapping nodes.

Make Square

1. To align contiguous walls that are nearly at right angles, as right angles, select with **Ctrl+Click**.
2. Click **Make Square** .

Add Wall or Partition

Partitions create boundaries for floor slabs where there are no walls. Partitions are not visible in the 3D view.

1. Click **Add Wall**  or **Add Partition** .
2. In the floorplan, left click once for the start point, again for the end point of that wall or partition - which will also be the start point of the next wall or partition.
3. Press **Esc** to stop adding walls or partitions.

Add Door or Window

1. Click **Add Door**  or **Add Window** .
2. Click once on a wall or partition at the center point of the door or window.
3. **Doors** are red and **windows** are green:



4. Slide the position by dragging from the center node, or change the width by dragging the nodes at either end.

Fit Floor Slabs

A floor slab must be fully enclosed by walls and/or partitions. The floor area is indicated by shading and the walls are nudged outwards so the nodes intersect at the inside corners.

Fit (single) Floor Slab

1. **Ctrl+Click** the walls and partitions that enclose the floor slab you want to define - and no others: **all selected wall notes must be pink**. See the User Guide for examples.
2. Click **Fit Floor Slab** .
3. You can select individual walls and click the nudging triangles to nudge to a different position.

Identify All Floor Slabs

This will try to fit floor slabs in **all** areas of the story that are enclosed by walls/partitions.

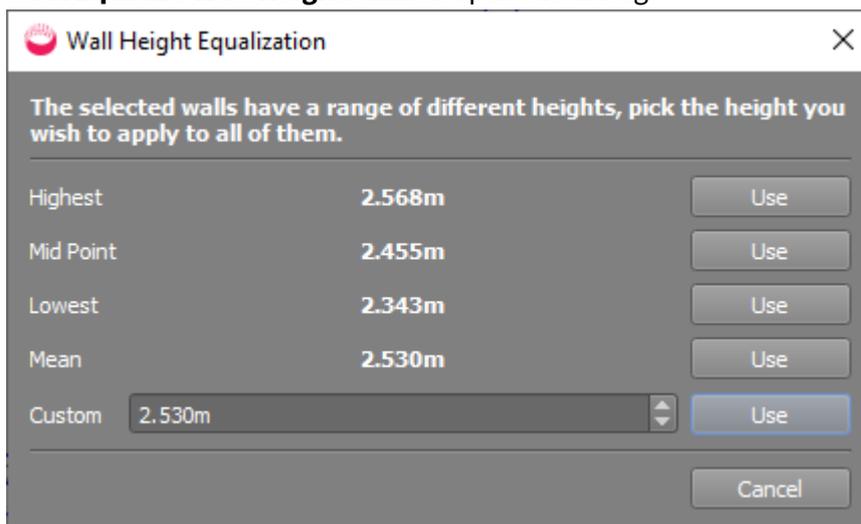
1. Right click anywhere in a 2D floorplan and select **Identify All Floor Slabs**.
2. Where slabs are not created, check for gaps in walls/partitions (gray nodes instead of pink), connect them, and rerun Identify All Floor Slabs.
See the User Guide for details of other cases where a slab may not be fitted, for example, where there is a room within another room **and** connected by a single wall.
3. Delete any unwanted floor slabs, and nudge or adjust wall positions if necessary.

Change Properties of BIM Elements

1. Select a wall, door, window etc.
2. In the **Properties** window, change the values for **Width, Height, Thickness, Elevation** etc.

Equalize Wall Heights

1. Click **Equalize Wall Heights**  to open the dialog:



2. Choose a height for the selected walls and click **Use**.

Set Story Elevation

1. Right click to see the context menu and select **Set Story Elevation** .
2. In the dialog, change the current value and click **OK**.

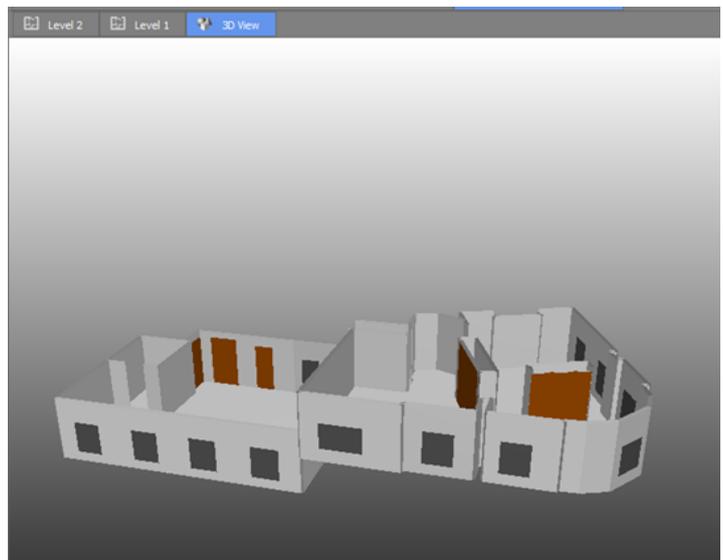
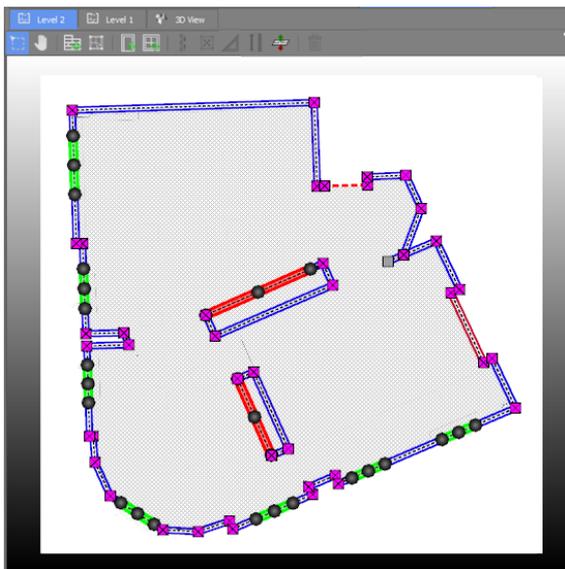
Remove (Delete)

1. **Click** (single element) or **Ctrl+Click** (multiple elements).
2. Click **Remove** .

Compare 2D and 3D

To check your work, compare the 2D floorplan of each story with the 3D view of the whole site.

Partitions are not visible in the 3D view.



Export Selected Surfaces of Mesh Model

It is quick and easy to export whole mesh models or selected surfaces for the next stage of your workflow, in Autodesk, Teckla Structures, Revit, or ArchiCAD, for example.

The trial version of Pointfuse limits you to exporting three mesh models, whether to Autodesk BIM 360 or files on your PC. After that, you need to buy a license to use Pointfuse.

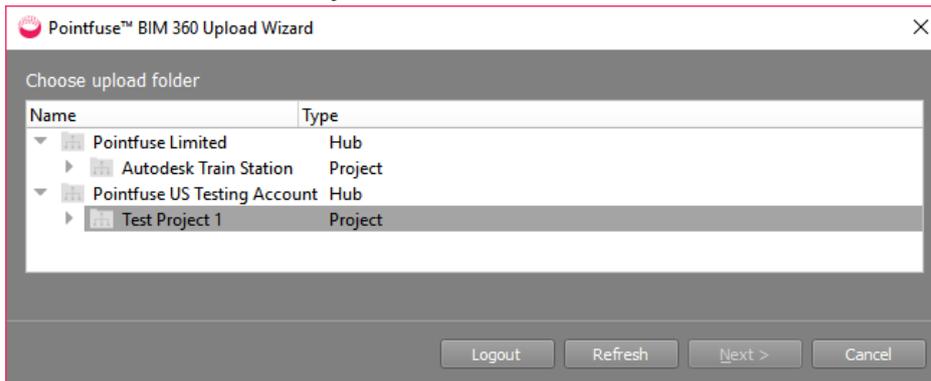
Export to Autodesk BIM 360

If you've selected and classified surfaces, the classification hierarchy will be uploaded with the model.

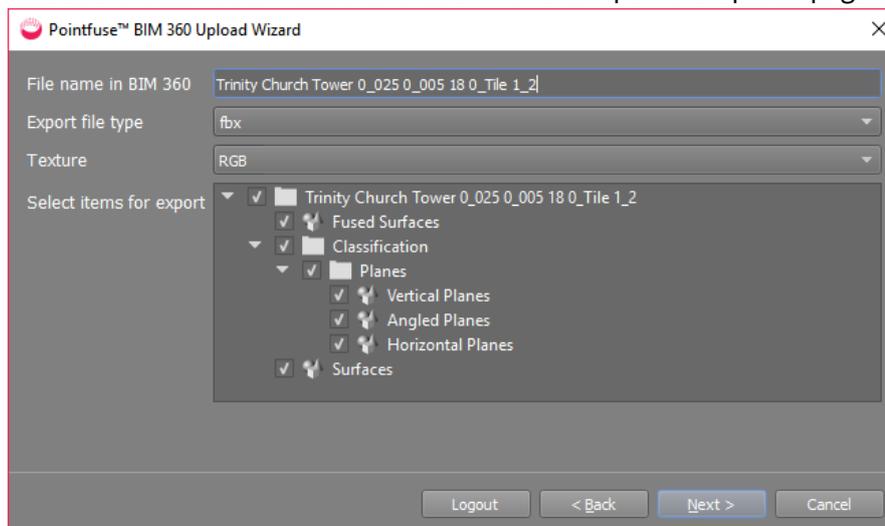
Prerequisites

- An Autodesk BIM 360 account with admin rights. Add Pointfuse as an app, as explained in the Autodesk article [To Add Apps & Integrations](#).
- A full Pointfuse license or Pointfuse trial with at least one of the three exports remaining.

1. Before exporting, click **Save**  on the toolbar.
2. To upload the whole model, or selected surfaces, select **BIM 360 Export** , and sign in to your Autodesk account and Project Files Folders.

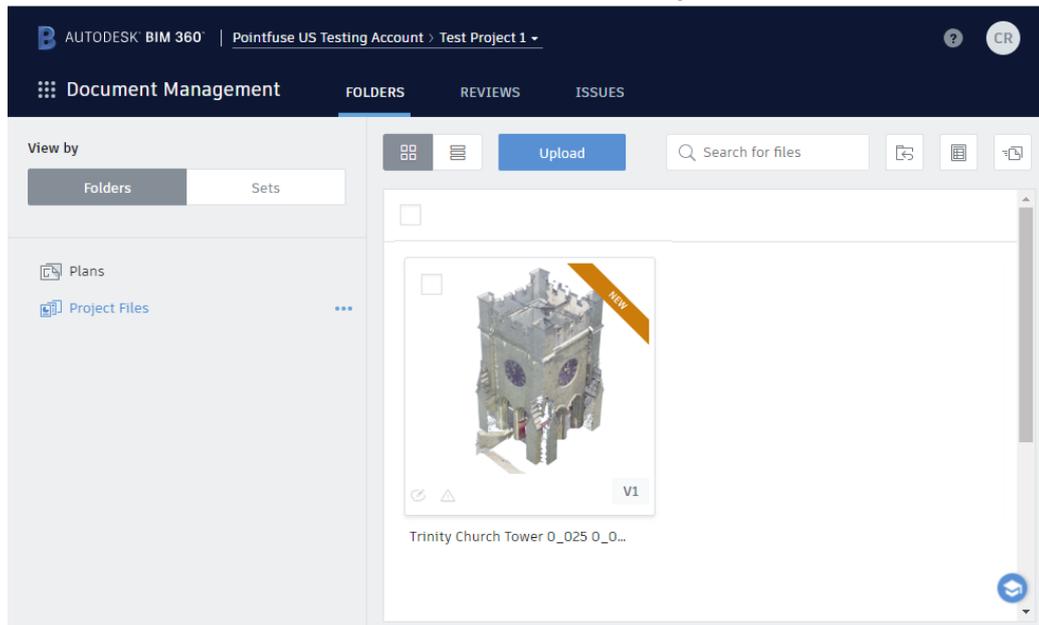


- a. Select the destination folder and click **Next** to open the upload page.



- b. Select the **File name**, the **Export file type**, and for FBX, whether to include a **Texture**.
- c. By default, all groups and layers are checked. Uncheck any you don't want in the export.
- d. Click **Next** to upload the model.

- e. When done, select **Show file in BIM 360** to view it in your default browser.



- f. In the browser, functions include: preview (including markup), download, move, copy, rename, lock, share, and delete.

Export to Files on Your Computer

The trial version of Pointfuse limits you to exporting three mesh models, whether to Autodesk BIM 360 or files on your PC. After that, you need to buy a license to use Pointfuse.

1. Click **Save**  on the toolbar.
2. To export the mesh model currently displayed in the viewport, select **Export** . To export multiple files, to multiple export files, all the same type, select them in the Project Explorer, right click, and select **Batch Export**.
3. In the dialog, choose a **File Name** and click the Browse button to select an export format: DAE, DXF (the default), FBX, IFC, NWC, OBJ, SKP, STL, or X3D.

If you've selected and classified surfaces, FBX and IFC retain the classification hierarchy.

4. If exporting to OBJ, DAE or FBX, you can include RGB or intensity texture in the export.
5. For single (not batch) you can choose whether to convert the whole model or selected groups and layers.
6. Click **OK** to create the export files. You can open them in a CAD or similar program, but not in Pointfuse.

Import IFC to Revit

1. Open a new or blank Revit project.
2. Link the IFC file into the project.
3. In Windows Explorer, navigate to the folder containing the IFC file.
4. Linking the IFC creates a Revit file with the same, but .RVT suffix.
5. You can open this .RVT file in Revit in the normal way.