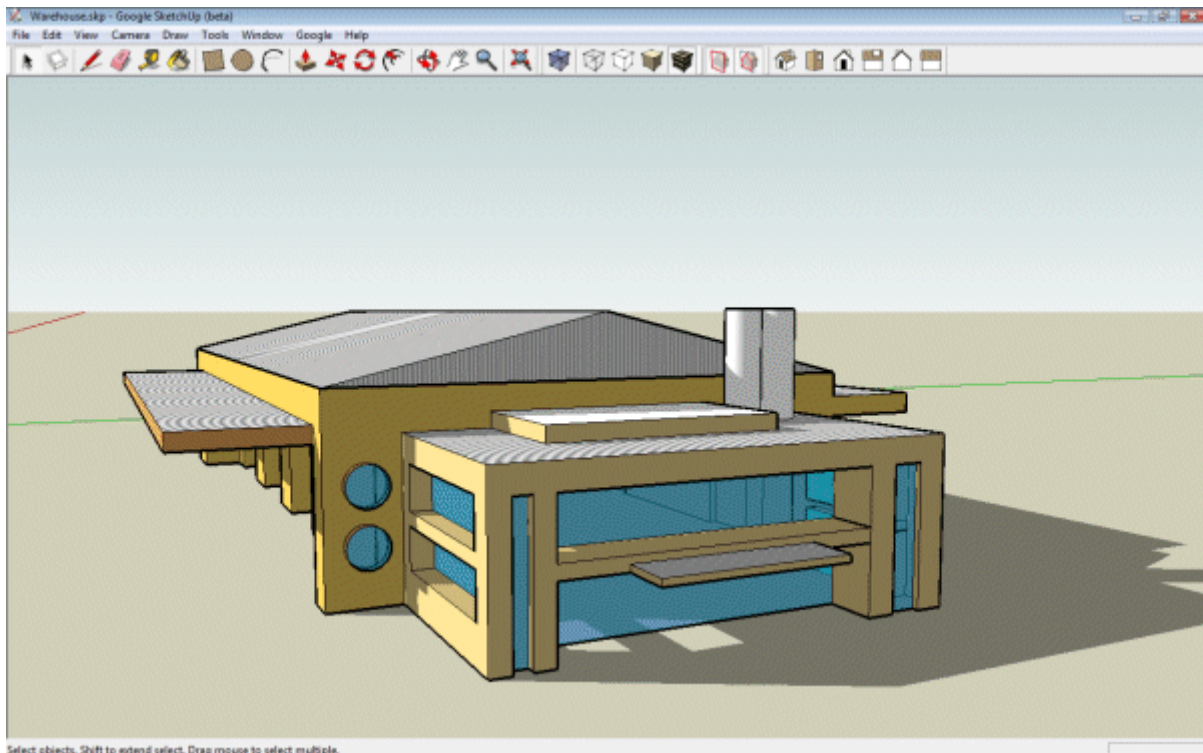


## Exporting SketchUp models to CAD software

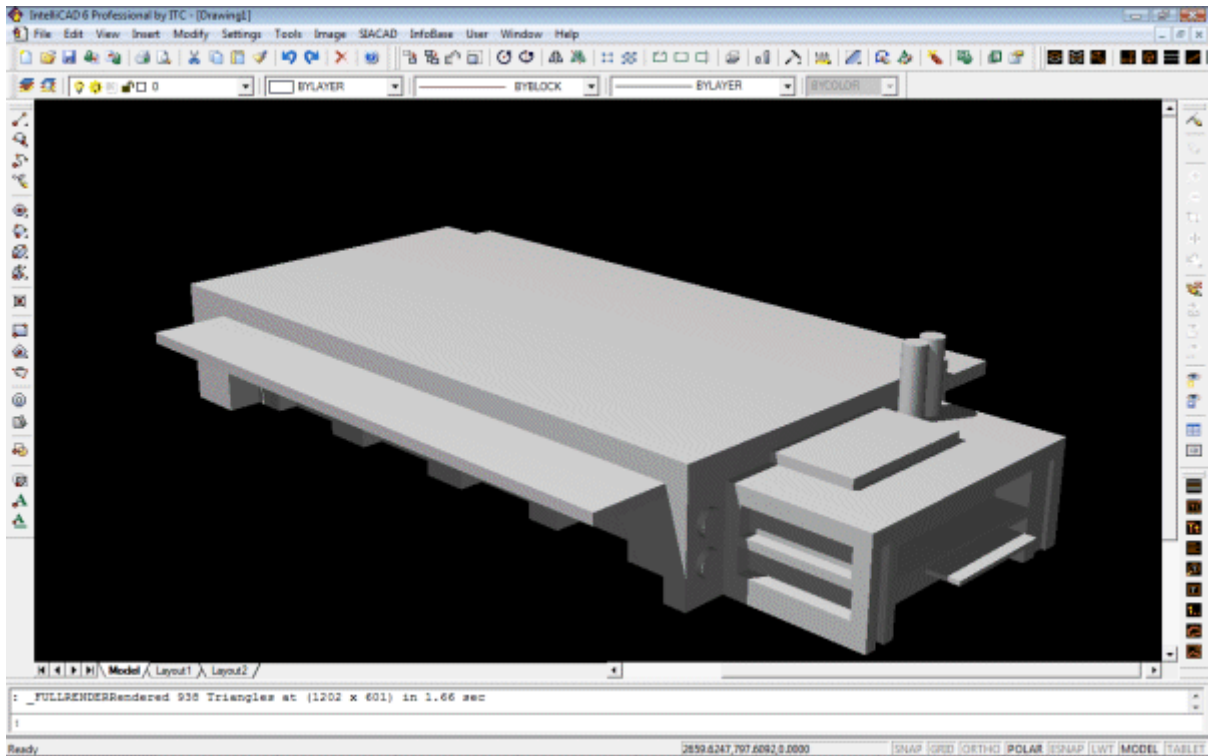
Models created in CAD software can be imported to SketchUp and SketchUp models can be ported to CAD software. In theory, there can be a two way street. In this article, we will show that while CAD models can be moved into SketchUp and worked on, it is not feasible to go in the opposite direction.

### Exporting from SketchUp

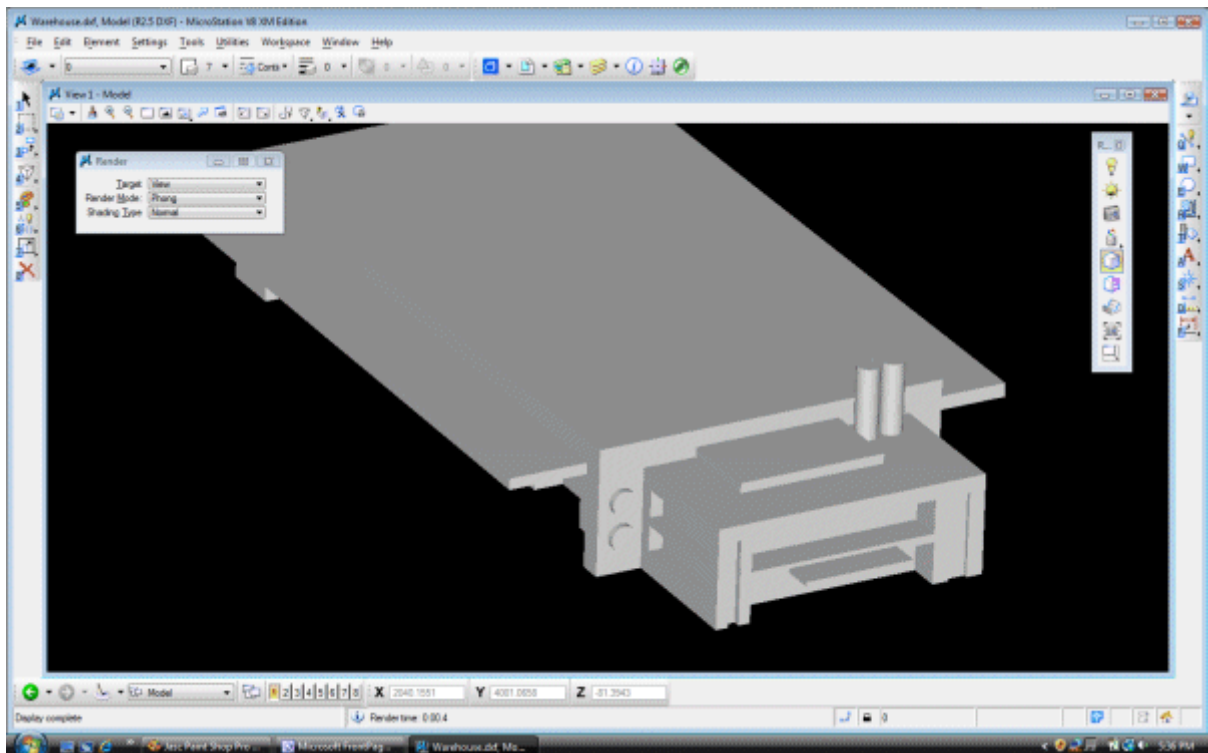
The figure below shows a model of a warehouse which was created entirely in SketchUp and exported to CAD software. The figure shows the exported model in both AutoCAD and MicroStation. Although on the surface, the models appear to render well in the CAD software, because SketchUp exports only triangles in the form of 3Dfaces, it becomes very difficult to add more geometry and edit these SketchUp models in the CAD environment.



*Model of a warehouse, constructed entirely in SketchUp. Note the application of shadows, perspective and materials application.*



The same model exported to a DXF file and imported to IntelliCAD (an AutoCAD clone). Note that the materials applied to surfaces in the model did not translate.



The same model exported to a DXF file and imported to MicroStation.

## How to exporting CAD models from SketchUp

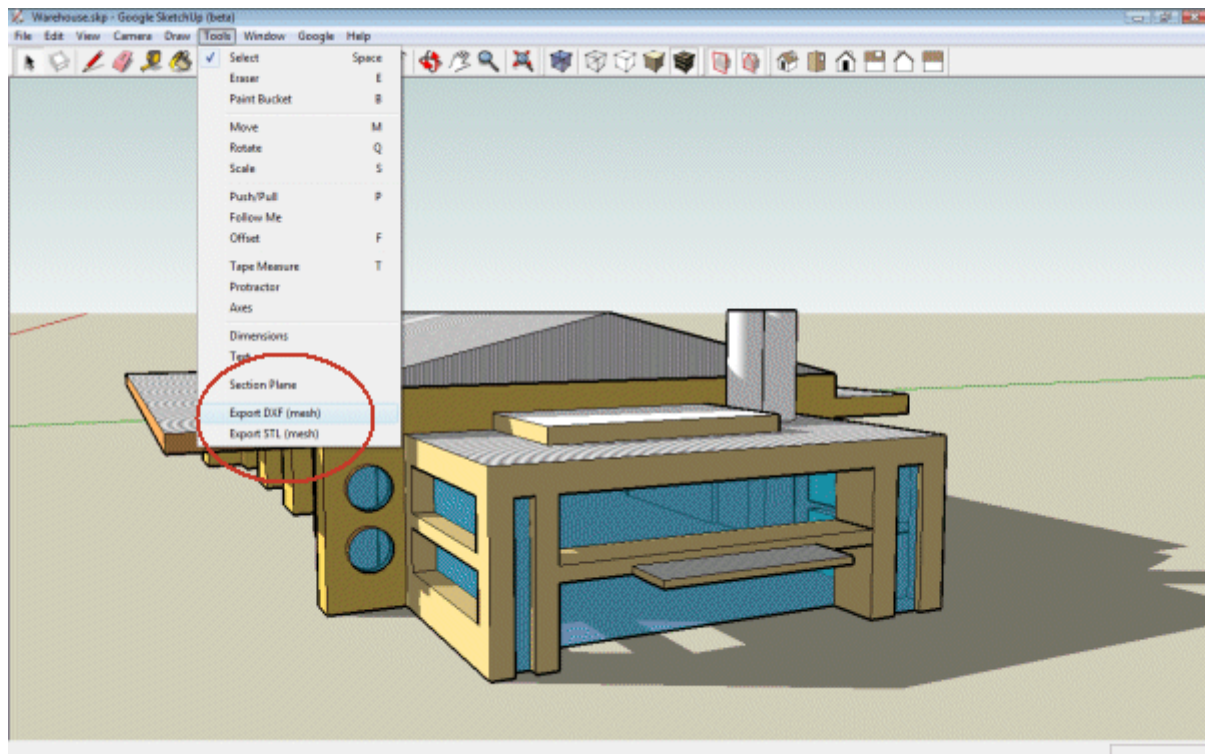
*Use the Pro version of SketchUp*

The professional version of SketchUp (but not the non-commercial version) allows you to export models in a form such that they can be read by CAD software. Common file formats are: 3DS, DXF or DWG models.

💡 We find that the DXF file format works best.

### Use SketchUp's programming language - Ruby on Rails

It is also possible to export models using third part scripts developed using SketchUp's programming language (Ruby on Rails).



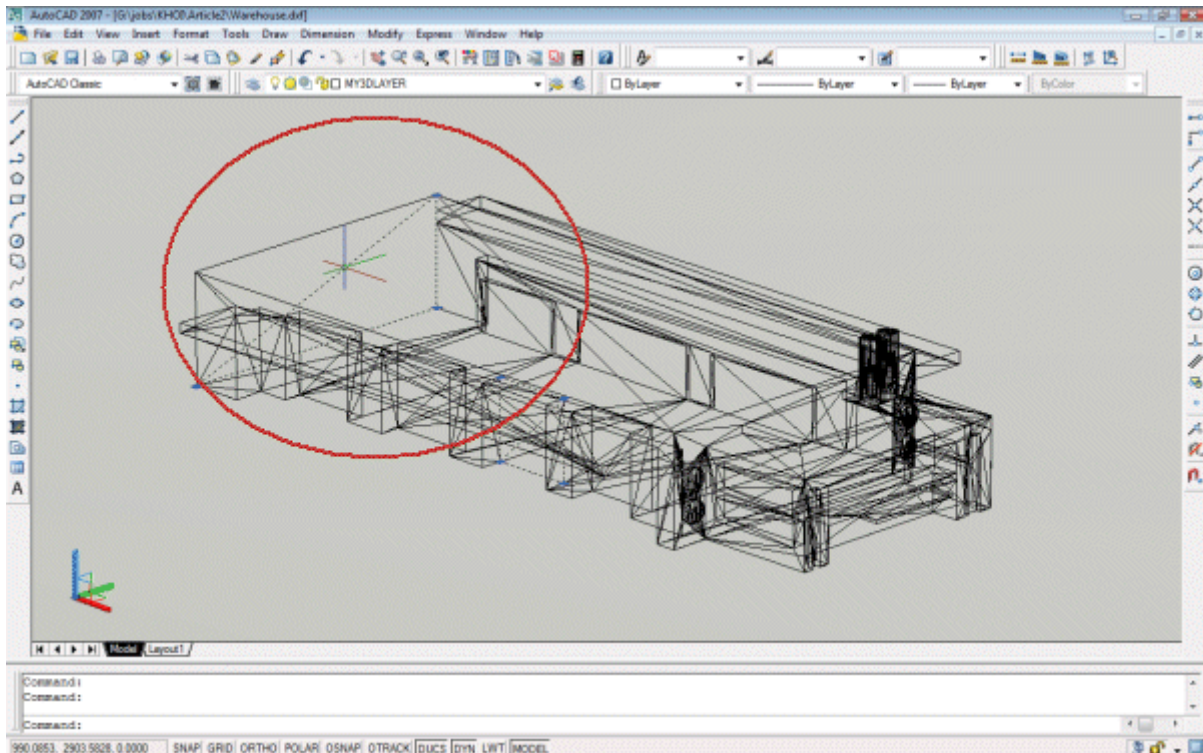
*Exporting a SketchUp model as a DXF file.*

### The exported file in your CAD software

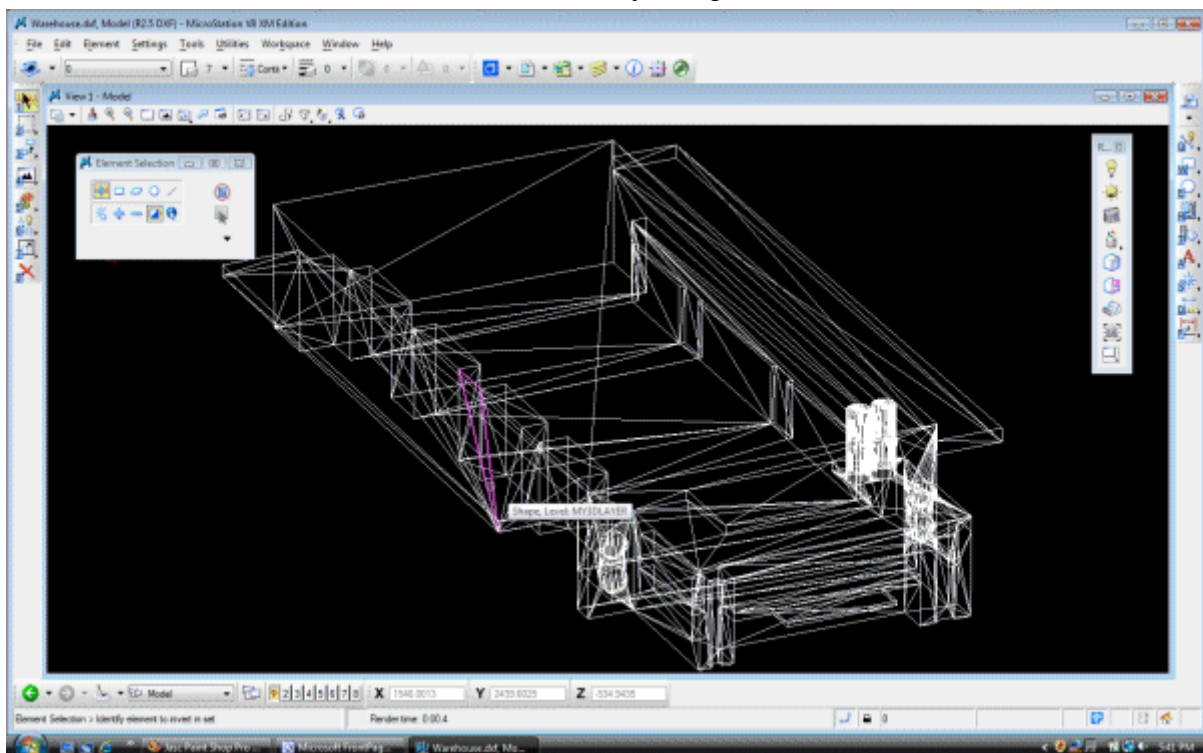
If you have used SketchUp, you know that it works all the time in the 3D environment unless you tell it otherwise. SketchUp encourages you to build your model in perspective mode and to apply materials to surfaces as you go. Despite this level of sophistication, SketchUp still operates very quickly, even on fairly modest computer equipment - there is no noticeable deterioration in performance as you add new parts to the model. SketchUp can do this because it builds its models using triangular meshes; many surveying packages do the same when they are asked to create terrain models of land surfaces. Complex 3D entities such as Coons patches, surfaces of revolution and so on which are used by software such as AutoCAD, IntelliCAD and MicroStation are not used.

This fundamental difference in storing model geometry places severe limitations on the model when it arrives in the CAD environment.

The figure below shows the warehouse model above in the AutoCAD environment after we had exploded it and selected one of the faces. Note the appearance of many triangles. Incidentally, AutoCAD translates these triangles to to 3DFACES.



*The model consists of many triangles - AutoCAD.*



*The model consists of many triangles - MicroStation.*

To sum up, we suggest that movement of models should be towards SketchUp from your CAD software, not the other way around.

### **If you have access to CAD software**

If you have access to either AutoCAD or IntelliCAD, you might care to examine the model of the warehouse.



Click here to play a movie which shows how to export a model from SketchUp such that it can be loaded into your CAD software.



## SketchUp - importing DXF model files

Start SketchUp.

Use DXFIN

Navigate to the Exercises folder.

Open the file warehouse.dxf

Explode the model and examine the elements.

Note the 3dfaces.

## Review



Please review your knowledge of the material in this module before progressing to the next module. When you have done this, return to the menu of modules.