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From Solidworks to Sketchup 0.1

An alternative approach with optimization*

Process for importing geometries with complex surfaces from Solidworks to SketchUp

List of Software used:

AutoCad

FBX Converter

SketchUp (Free or Pro Version)- Used Plugins: <u>OBJ Importer (TIG)</u>, <u>Component/Group Tools</u> (Matt666), <u>TT-Cleanup</u> (ThomThom), <u>Component Comparison</u> (ThomThom),

Assumptions:

Have a licensed copy of AutoCad. Geometry exported from Solidworks as Parasolid (text or binary)

From Solidworks to FBX:

1. Import the Parasolid into ACAD (Menu: Insert/Import)



A Import File					
Look in:	🕒 My Received Files 🗸 🔶 🗄	E (2, X 🖆 🛛	ws 🔻 Too <u>l</u> s 👻		
(Fa)	Name	Date modified	Туре		
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Buzzsaw	Files of type: Parasolid Binary (*x_b)		Cancel		

- 2. After Importing check the Units of the model in ACAD, this will come handy later. Also you might see the model is tilted in as axes are shifted. No worries, later on this will be handled by OBJ Importer.
- 3. Export from ACAD as FBX;



4. Open the FBX Converter and export the FBX file as OBJ;

FBX Converter 2013.3					- 0 ×	
Source files			Destination files			
File Ver. Creator Sour	rce files (Drop files here or use < Add \dots >)	File size	Destination File Location		Result	File size
1 7.0 FBX SDK/FBX Plugins versior	an_data\3D\exports\AP1750\AP1750-3D.fbx	23.48 MB	1 C:/erkan_data/3D/exports/	/AP 1750/AP 1750-3D.obj		
	Remove selected Remove		Change destination	folder	Rename selected file	
Preset Autodesk Media & Entertainmen	nt 💌 Edit preset		Destination format OBJ			
Source file options			Destination file options			
	FBX No option to set			OBJ Triangulate 🖌 🥇 Bake deformations 🖌		
Log files FBX Converter 2013,3						

Make sure **Triangulate** and **Bake Deformations** are selected to force converter creating proper triangulation for the geometry. Once it's done you have your OBJ ready to import SU.

5. Switch to SU and select Plugins/OBJ Importer/Import OBJ [as Mesh]

Make group Mirror Selection			
OBJ Importer	•	Import OBJ [with Textures]	
Copy along path	×	Import OBJ [no Materials]	
Random PushPull		Import OBJ [as Mesh]	
SimLab DWG Exporter	×		
SimLab DWG Importer	۲		

After you select the OBJ file created in the previous step, you'll be asked to pick the units for this model. So the info captured in Step 2 will become handy now. And on the lower left corner you'll see the number of lines processed even though it might become unresponsive give some time it to process it might take up to tens of minutes depending on the size of the model.

After this process is complete you should see the model on your screen and select if to Flip YZ axes with this

dialog box;



6. Next step is to <u>Soften the Edges</u> to have it displayed better until you have a good view without too many lines on where the curves are (rounded edges).



7. From now on we'll be optimizing the model to lower the polygon count of the whole model, at this point it's best to save a copy before moving forward. After saving select all and select Plugins/Convert in single components to have the groups (good thing about OBJ importer is that it converts loose geometry into groups already) to components.



Then confirm your action;



In return you'll have your confirmation



8. After you have them as components you'll need to fins the similar components and have them converted to instances of the same one of course with the help of a very useful plugin;

	· ·		
Tangent-Tools	►,		
Similar Objects	•	Replace Similar Objects	
CleanUp ³ UV Toolkit ² UV Projection	* * *	Inspect Comparison (Debug) Colour Instances by Definiton (Debug) Set tolerance (Debug)	
Weld			

9. You'll again be informed about the implications of your heavy plugin use :)



But you'll be rewarded with having similar looking components replaced as an instance of a single component:



10. Now you are ready to clean your model as you have less polygons to deal with by selecting Plugins/CleanUp³/Clean by ThomThom which is a fantastic plugin as well.

langent-ioois	,	
Similar Objects	•	
CleanUp ³	•	Clean
UV Toolkit ²	•	Clean with Last Settings
UV Projection	•	



Here you'll find my set of options optimized for large models as **Erase Duplicate Faces** might take too much time and **Erase Hidden Geometry** sometimes results in lost faces where you want them to be. Experiment for the best options that work for you.

Once you hit CleanUp you'll have nice and clean progress information on the lower left status bar. And will be presented with some statistics and validity results if you've asked for it as me on the left.

dity Check			
eanup Statistics: Edges Reduced: 94262 Faces Reduced: 9953 Materials Merged: 0 Purged Components: 29 Purged Layers: 0 Purged Materials: 7 Purged Styles: 1 Total Elapsed Time: 3s			
ОК			
lity Check			
esults of Validity Check.			
CEdge (126263) and CEdge (126594) connect the same 2 vertices - fixed The first edge use pointer for CLoop (176401) is not a CEdgeUse Loop 1 of CFace (162859) is an invalid inner loop - fixed			
ОК			

11. Last step is to purge and deposit all the polygon savings to your file;

Model Info		
Animation Components Credits	Entire model V Show nested of	components
Dimensions	Edage 29211	
File	Euges 20211	
Geo-location	Faces 13466	
Rendering	Component Instances 367	
Statistics	Guides 0	
Text	Guide Points 0	-
Units	Groups 0	=
	Images 0	
	3d Polylines 0	
	Section Planes 0	
	Dimensions 0	
	Text 0	
	Component Definitions 338	
	Layers 1	
	Materials 1	*
	Purge Unused Fix P	roblems

12. After purge I'd save the file to see my savings.