



# OpenVSP Hangar Guidelines

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# Presentation Overview

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- **OpenVSP Hangar: What is the intent?**
- **SketchUp Analogy: 3D Warehouse**
- **What's Going Right?**
- **What's Going Wrong?**
- **What do we want to change?**
- **Examples**

# OpenVSP Hangar Intent




- Make the Hangar as useful as possible to the users.

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## Super Ximango Motorglider

Iso   Top   Right   Front   Zoom



left-click = rotate, middle-button/CTRL-left-click = pan,  
scroll/right-click/ALT-left-click = zoom

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<b>File ID#</b>	175
<b>Manufacturer</b>	Ximango
<b>Model</b>	Motorglider
<b>Units</b>	Feet
<b>Description</b>	Quite accurate model built on top of a 3D laser scan stl file of a NASA Dryden Super Ximango. Airfoils are accurate. Model computes wetted areas and performs meshing with a watertight model (as long as all internal components, the prop, the landing gear, and spoilers are deleted - which are not desired for a CFD analysis anyway).
<b>Source Quality</b>	2 - The source material used to create this model was Essentially Exact. This means detailed dimensions and drawings were used to create the model.
<b>Model Suitability</b>	1 - Cartoon or Pretty Picture 1 - Weight and balance 1 - Accurate OML for detailed aerodynamic analysis or CFD 1 - Check internal layout/volume 1 - Build a display model 1 - Structures 1 - OML for wetted areas/drag buildup

**Tags**   [general aviation](#) , [airplane](#) , [single-engine](#) , [piston engine](#)

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Enter all tags that describe the file separated by commas. (i.e. "Part, Engine, Aircraft")

# SketchUp Analogy: 3D Warehouse



- Tons of models to pull useful content.

3D Warehouse [SketchUp](#)

**Trimble 3D Warehouse**  Models  [Advanced Search](#) [Organize](#)

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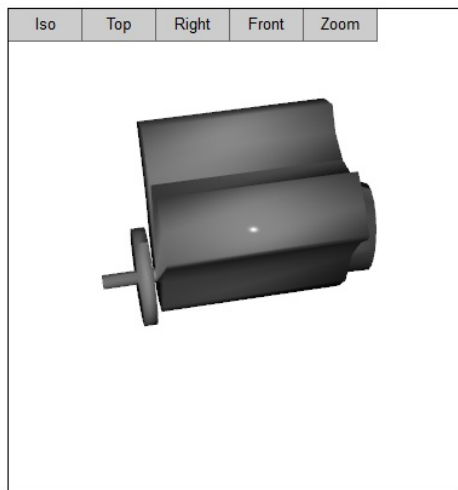
# What's Going Right?



- **Model Sharing**

- Over 100 models uploaded in 1<sup>st</sup> year
- Some are good, some not so good
  - Interesting to note that the F15 is the most downloaded model, yet it's one of the worst VSP models (modeling technique and accuracy).
  - But the 2<sup>nd</sup> most downloaded is the Eagle Eye, which is highly accurate, has a detailed internal layout, uses parent-child relations, etc.
- Some components are also being loaded

## Chevy LT-1 Corvette Engine



left-click = rotate, middle-button/CTRL-left-click = pan, scroll/right-click/ALT-left-click = zoom

<b>File ID#</b>	69
<b>Manufacturer</b>	GM
<b>Model</b>	LT-1
<b>Units</b>	Feet
<b>Description</b>	Corvette V-8 engine, 350 hp
<b>Source Quality</b>	3 - The source material used to create this model was Good. This means good 3-view drawings were used to create the model.
<b>Model Suitability</b>	1 - Check internal layout/volume 1 - Build a display model 1 - Cartoon or Pretty Picture 3 - Weight and balance 5 - Structures 5 - Accurate OML for detailed aerodynamic analysis or CFD 5 - OML for wetted areas/drag buildup

# What's Going Wrong?

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- **Model Sharing**
  - Users judge their own models when entering upload characteristics
  - Provides the opportunity to teach and perpetuate 'poor' modeling techniques, such as...
    - Poor accuracy
    - Poor tessellation
    - Use of older, poor quality components.,i.e. FUSE, POD (FUSE2 is a much better, later developed parameterization for body modeling).
    - High number of hard x-sections vs interpolated x-sections
    - Non water tight models
    - Models that have meshing problems

# What do We Want to Change?

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- **Model Checks: Confirmation that you have a 'good' model**
- **Propose to add the following check boxes to Hangar modeling upload screen**
  - **CompGeom Successful?** (wetted areas/volumes computed successfully)
  - **CompGeom Watertight?** (intersected triangulation is watertight without discarding 'open' components)
  - **CFD Mesh Executes?** (was a mesh able to be generated, and were internal or external detail components eliminated)
- **Maybe we even need to add some additional information that can help guide users to good models...**
  - **Rob/Mark/Andy/Alex Thumbs Up**
  - **Tessellation checks**
  - **Number of hard x-section checks**
  - **CART3D runs performed?**

# Examples

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- **Background import**
  - **2D background**
    - Ximango Aircraft Data.jpg
  - **3D background**
    - Ximango Full Skin.stl (3D Laser Scan of Dryden Aircraft)
    - ATR42.stl (stl file export from Google SketchUp)
- **Compgeom problems**
  - 737-300.vsp (components thrown out, not watertight)
- **Too many hard x-sections**
  - Supersonic Boeing N+2.vsp
  - Supersonic bizjet.vsp (uses interpolated x-sections instead)
- **Poor tessellation**
  - Zip eSwift Cwing.vsp