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3D Importation to OpenSim and Second Life

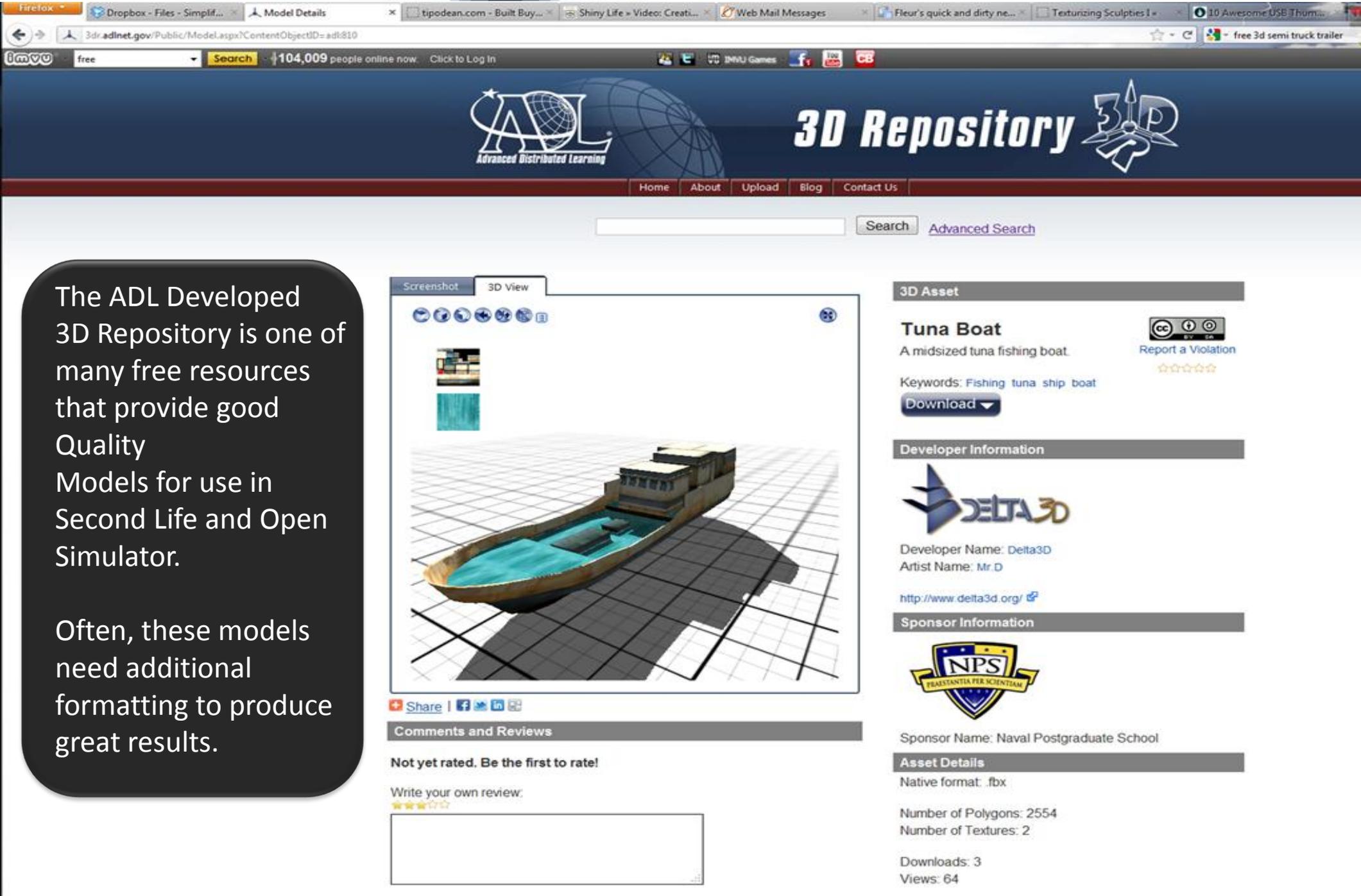
I/ITSEC 2011

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So Many Models, I Can't Make Up My Mind

The ADL Developed 3D Repository is one of many free resources that provide good Quality Models for use in Second Life and Open Simulator.

Often, these models need additional formatting to produce great results.



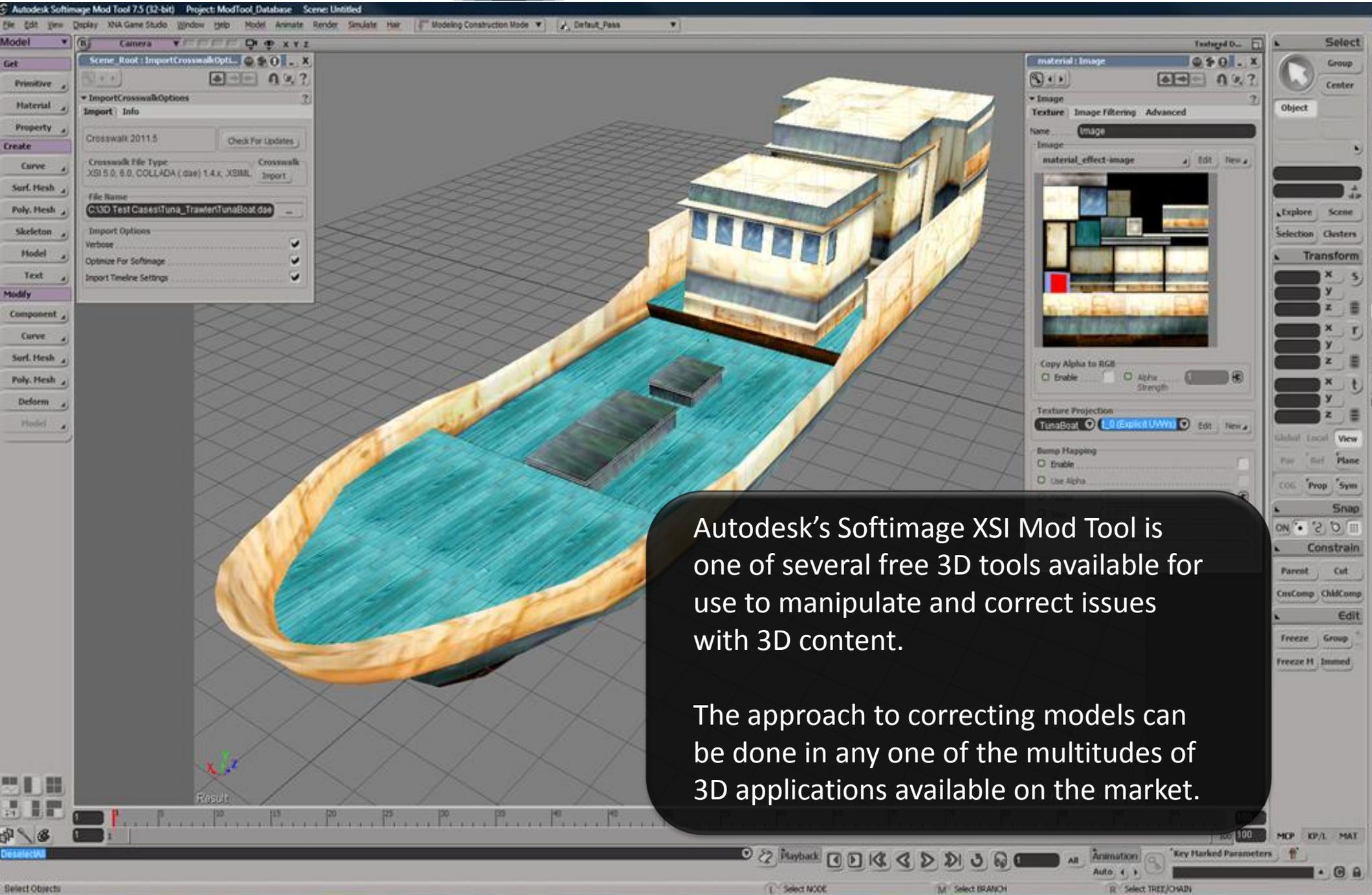
The screenshot shows a web browser window displaying the 3D Repository website. The browser's address bar shows the URL 3dr.adlnet.gov/Public/Model.aspx?ContentObjectID=adl:810. The website header features the ADL logo (Advanced Distributed Learning) and the title "3D Repository". A navigation menu includes links for Home, About, Upload, Blog, and Contact Us. Below the header is a search bar with a "Search" button and a link to "Advanced Search".

The main content area displays a 3D model of a tuna boat. The model is shown in a 3D view on a grid floor. To the right of the model, there is a "3D Asset" section with the following details:

- 3D Asset**
- Tuna Boat**
- A mid-sized tuna fishing boat.
- Keywords: Fishing tuna ship boat
- Download button
- Developer information: Delta3D, Mr. D
- Sponsor information: Naval Postgraduate School
- Asset details: Native format: .fbx, Number of Polygons: 2554, Number of Textures: 2, Downloads: 3, Views: 64

Below the 3D view, there are social media sharing options (Share, Facebook, Twitter, LinkedIn, YouTube) and a "Comments and Reviews" section. The review section indicates that the asset is "Not yet rated" and prompts the user to "Write your own review" with a star rating system and a text input field.

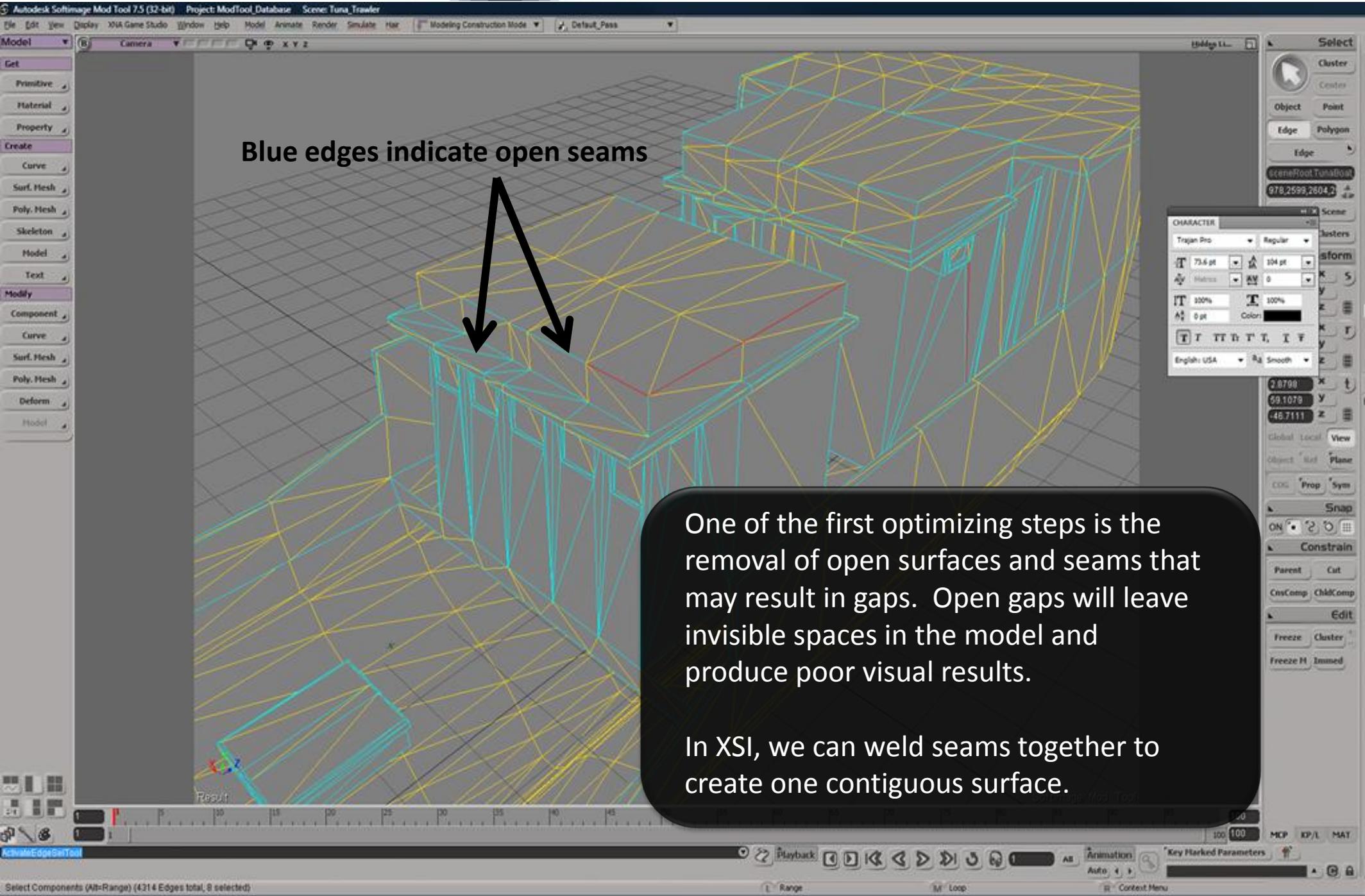
Gentlemen! Choose Your Free 3D Application!



Autodesk's Softimage XSI Mod Tool is one of several free 3D tools available for use to manipulate and correct issues with 3D content.

The approach to correcting models can be done in any one of the multitudes of 3D applications available on the market.

Weld Those Seams, You'll Be Happy You Did

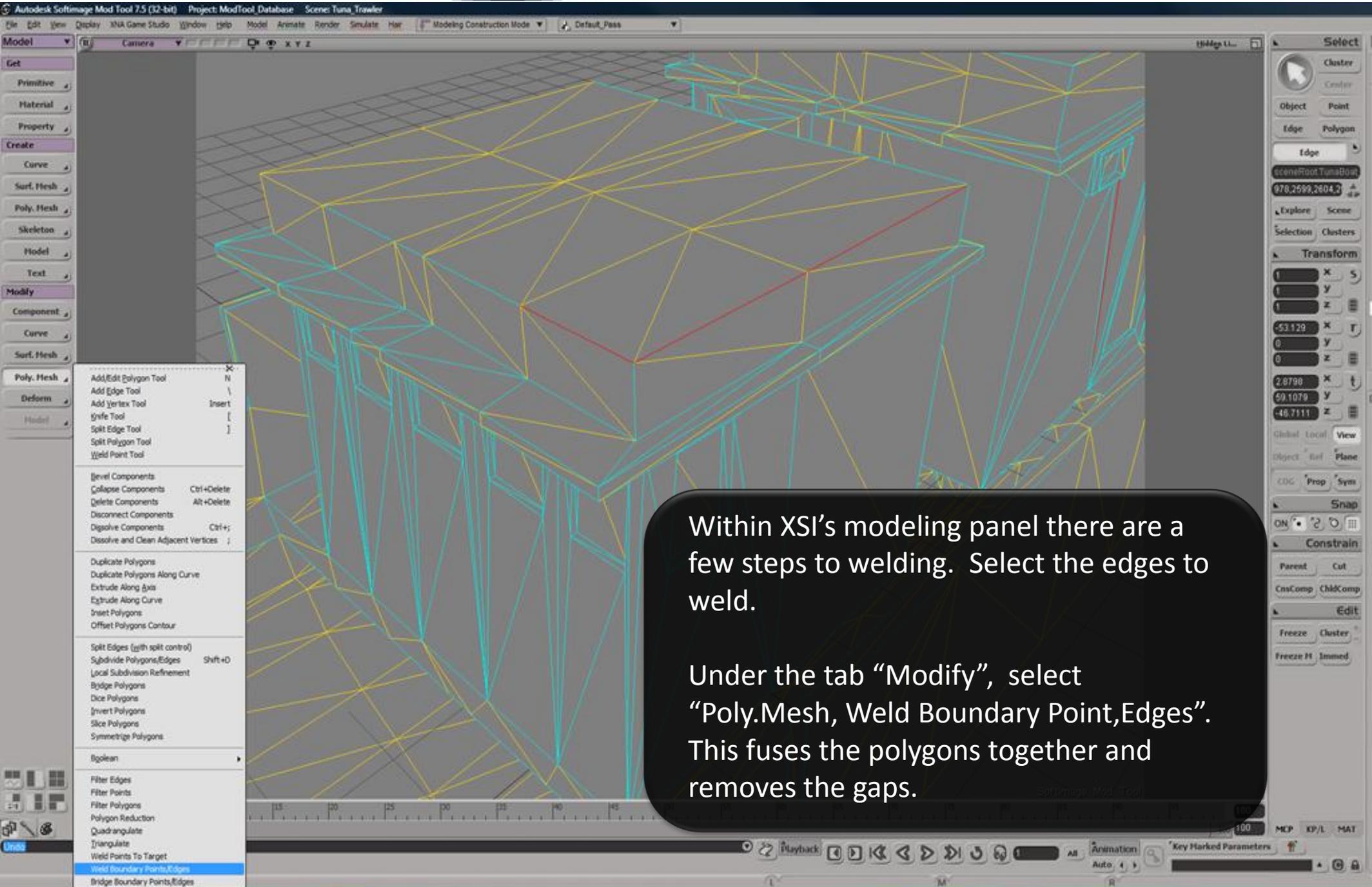


Blue edges indicate open seams

One of the first optimizing steps is the removal of open surfaces and seams that may result in gaps. Open gaps will leave invisible spaces in the model and produce poor visual results.

In XSI, we can weld seams together to create one contiguous surface.

XSI Mod Tool Welding Approach



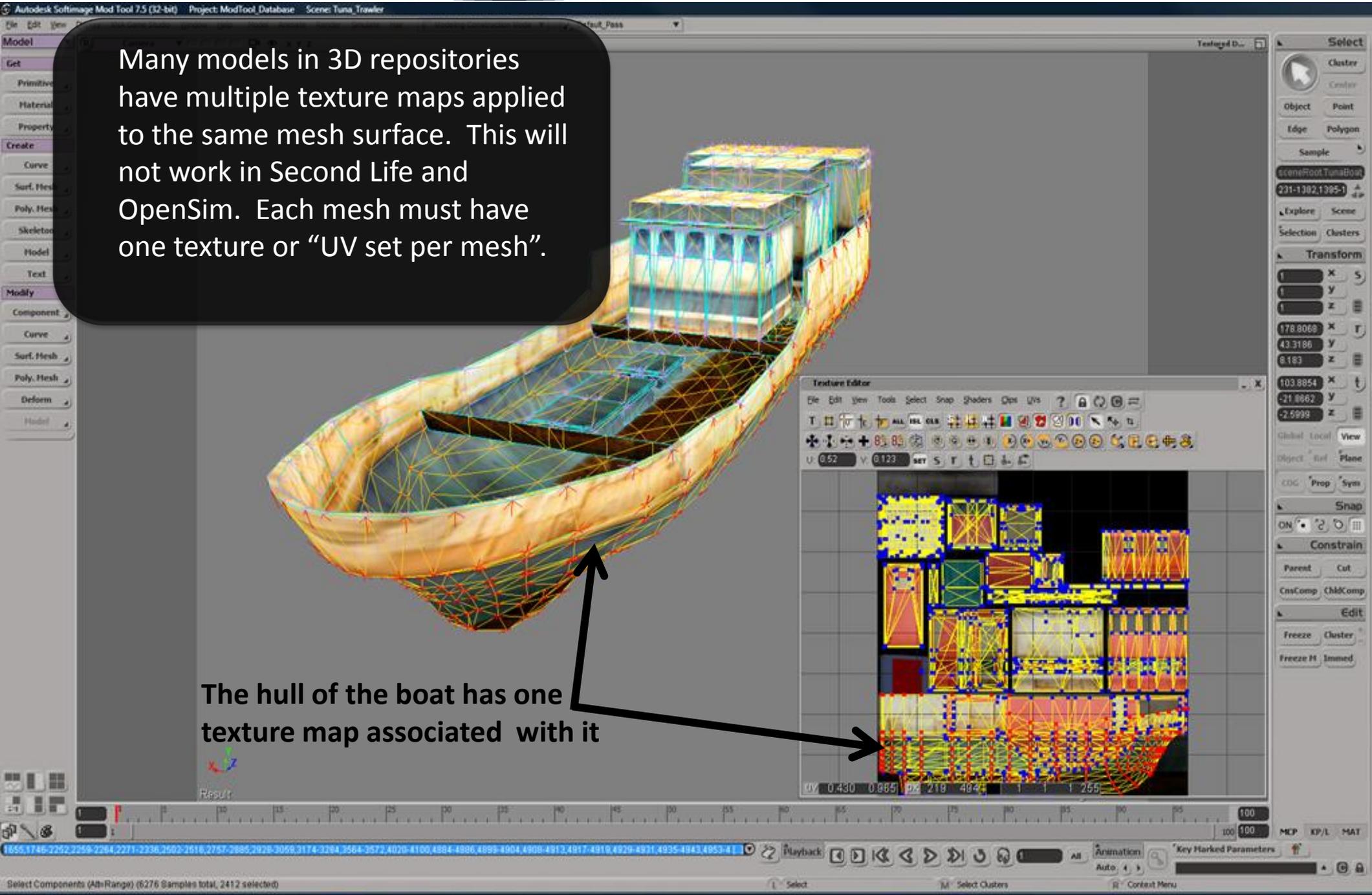
Within XSI's modeling panel there are a few steps to welding. Select the edges to weld.

Under the tab "Modify", select "Poly.Mesh, Weld Boundary Point,Edges". This fuses the polygons together and removes the gaps.

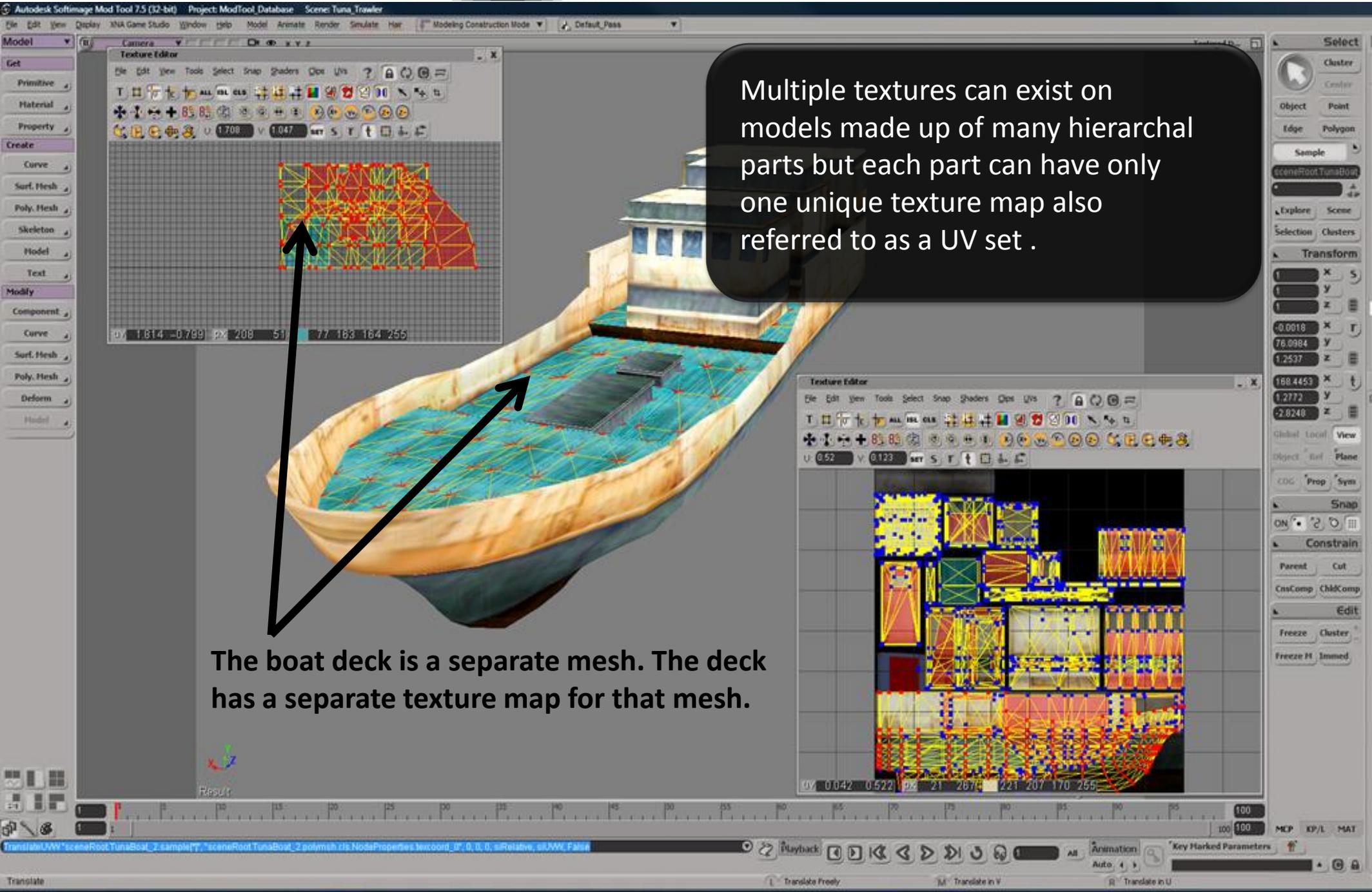
Beauty on a Mesh is Really Just Skin Deep

Many models in 3D repositories have multiple texture maps applied to the same mesh surface. This will not work in Second Life and OpenSim. Each mesh must have one texture or "UV set per mesh".

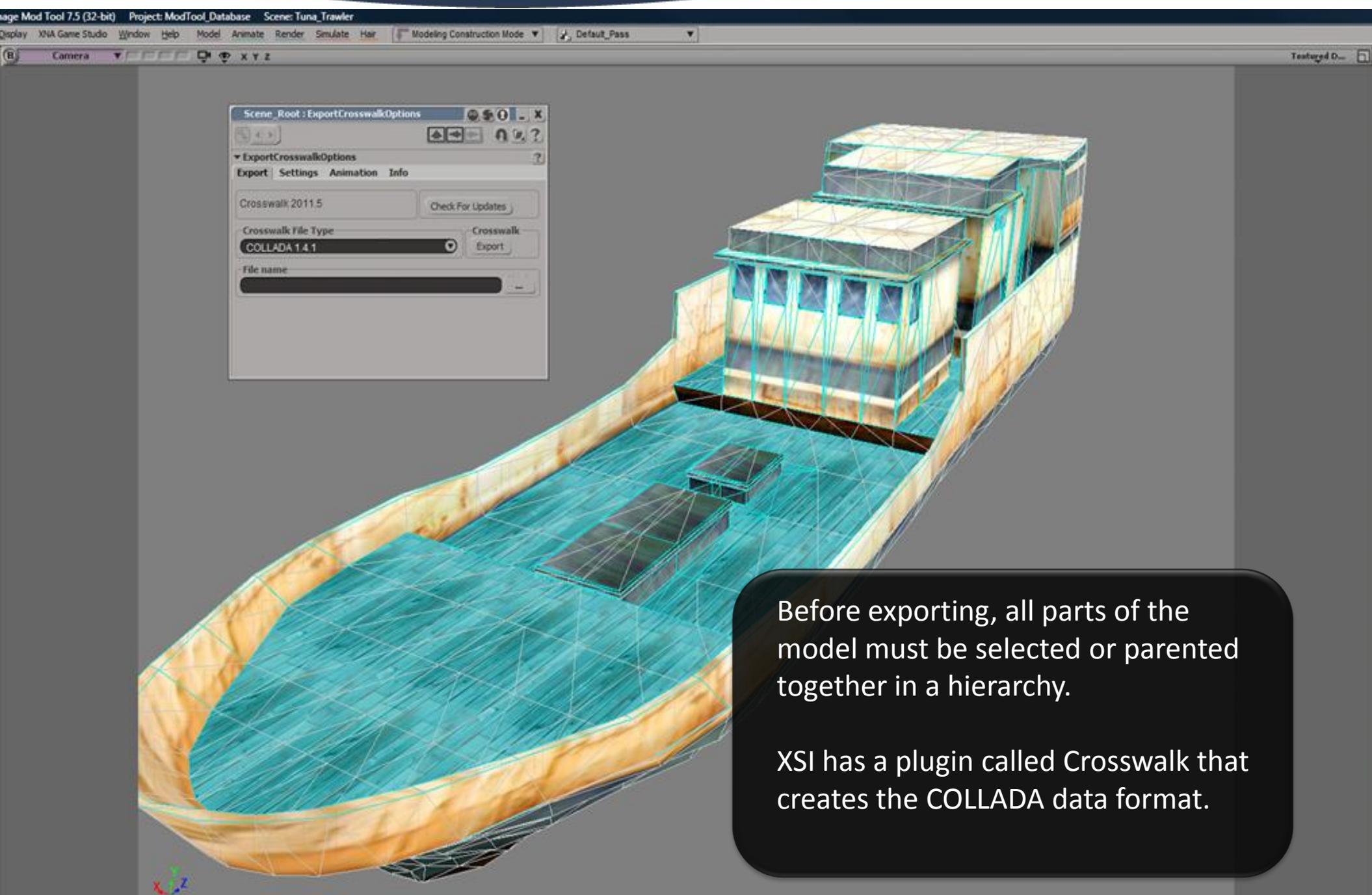
The hull of the boat has one texture map associated with it



Only One Texture Map Per Mesh Surface



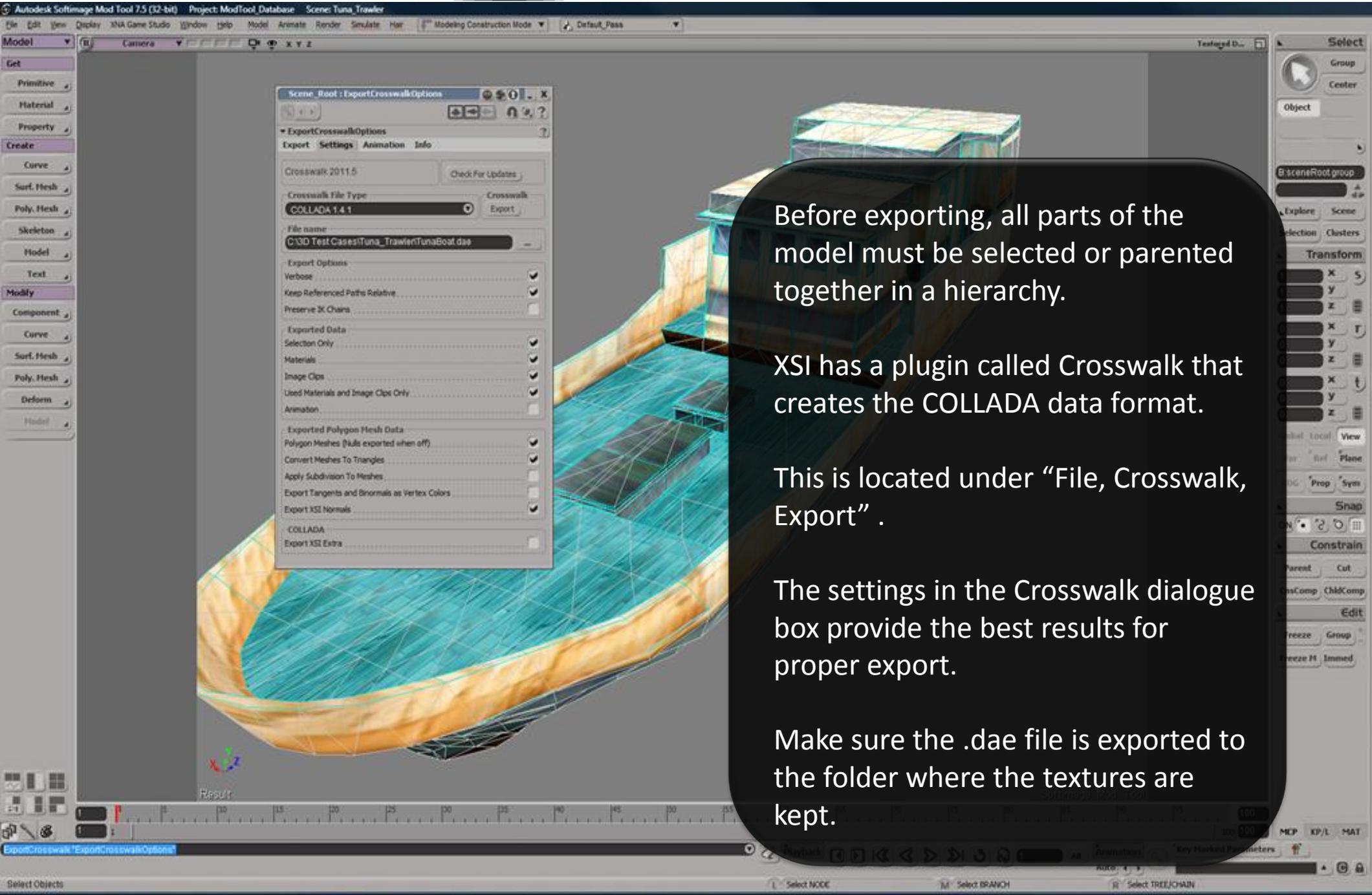
Exporting the Model as COLLADA Data



Before exporting, all parts of the model must be selected or parented together in a hierarchy.

XSI has a plugin called Crosswalk that creates the COLLADA data format.

Export Settings for COLLADA Data



Before exporting, all parts of the model must be selected or parented together in a hierarchy.

XSI has a plugin called Crosswalk that creates the COLLADA data format.

This is located under “File, Crosswalk, Export” .

The settings in the Crosswalk dialogue box provide the best results for proper export.

Make sure the .dae file is exported to the folder where the textures are kept.

Second Life Upload Process

Select level of detail for the model mesh

Model window for viewing

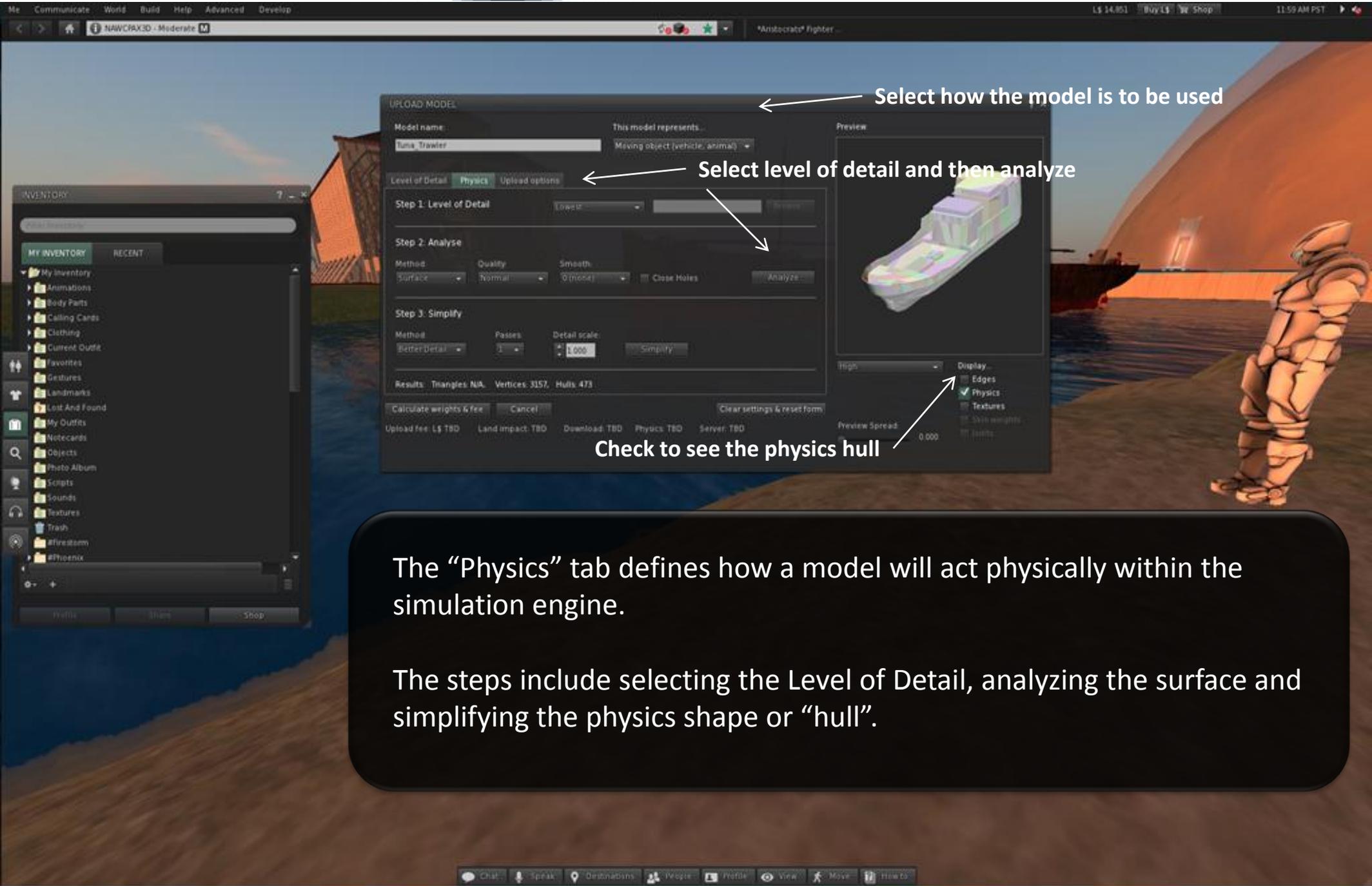
Level of Detail	Source	Triangles	Vertices
High	Load from file C:\LD Test Cases\Tuna Trailer	2554	2365
Medium	Use LOD above	2554	2365
Low	Use LOD above	2554	2365
Lowest	Use LOD above	2554	2365

Importing the model into Second Life starts with the tab at the bottom of your inventory for upload.

Select "Upload, Model" from the popup. Navigate to the folder with the COLLADA model .

A new "Upload Model" window will appear. The screen shows the settings that will give you the best import results.

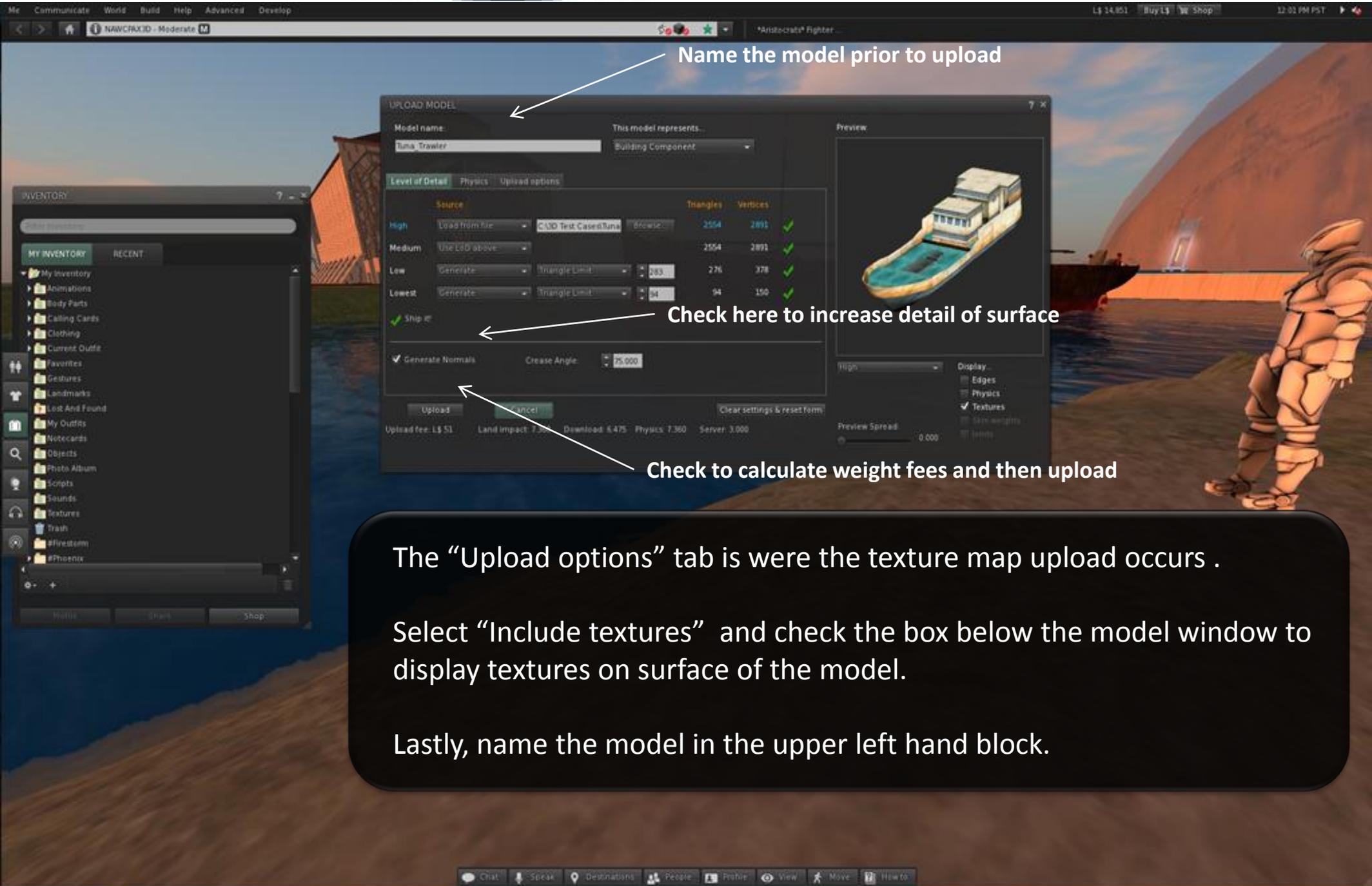
Physics Level of Detail Dialogue



The "Physics" tab defines how a model will act physically within the simulation engine.

The steps include selecting the Level of Detail, analyzing the surface and simplifying the physics shape or "hull".

Texture Association and Upload

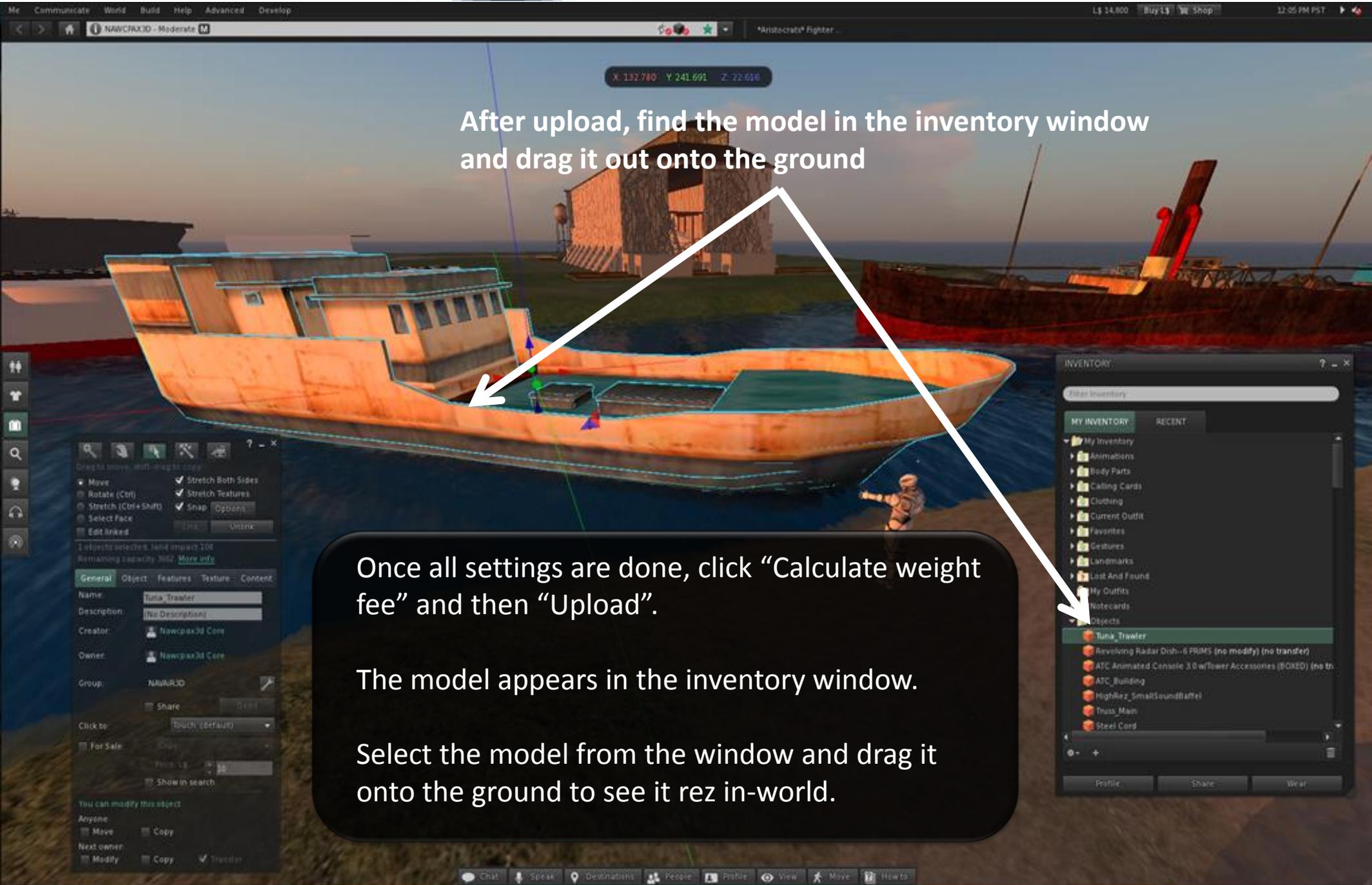


The "Upload options" tab is where the texture map upload occurs .

Select "Include textures" and check the box below the model window to display textures on surface of the model.

Lastly, name the model in the upper left hand block.

Voila! We Have a Boat in Second Life



After upload, find the model in the inventory window and drag it out onto the ground

Once all settings are done, click "Calculate weight fee" and then "Upload".

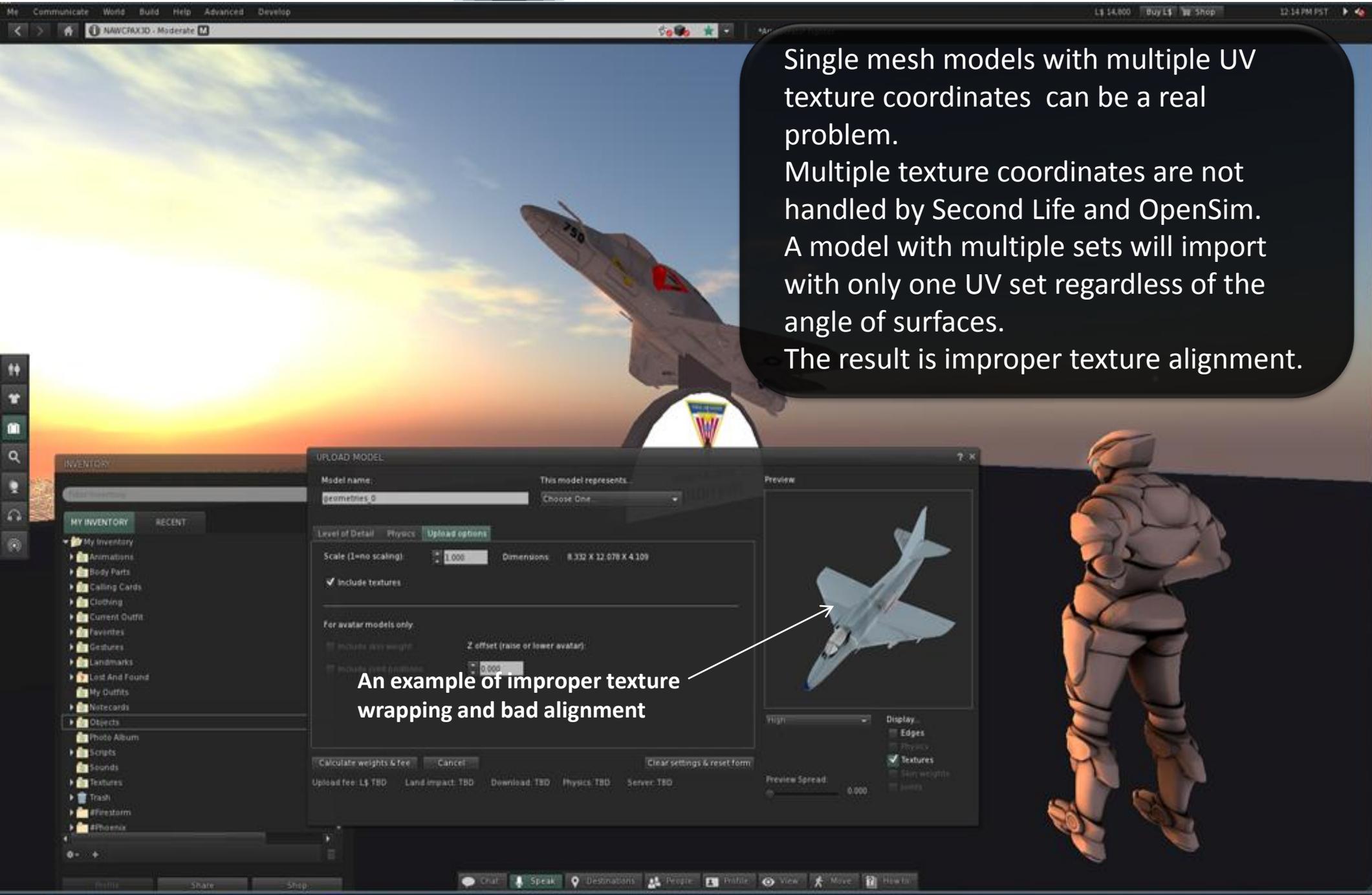
The model appears in the inventory window.

Select the model from the window and drag it onto the ground to see it rez in-world.

Those Pesky Problem Models

Single mesh models with multiple UV texture coordinates can be a real problem. Multiple texture coordinates are not handled by Second Life and OpenSim. A model with multiple sets will import with only one UV set regardless of the angle of surfaces. The result is improper texture alignment.

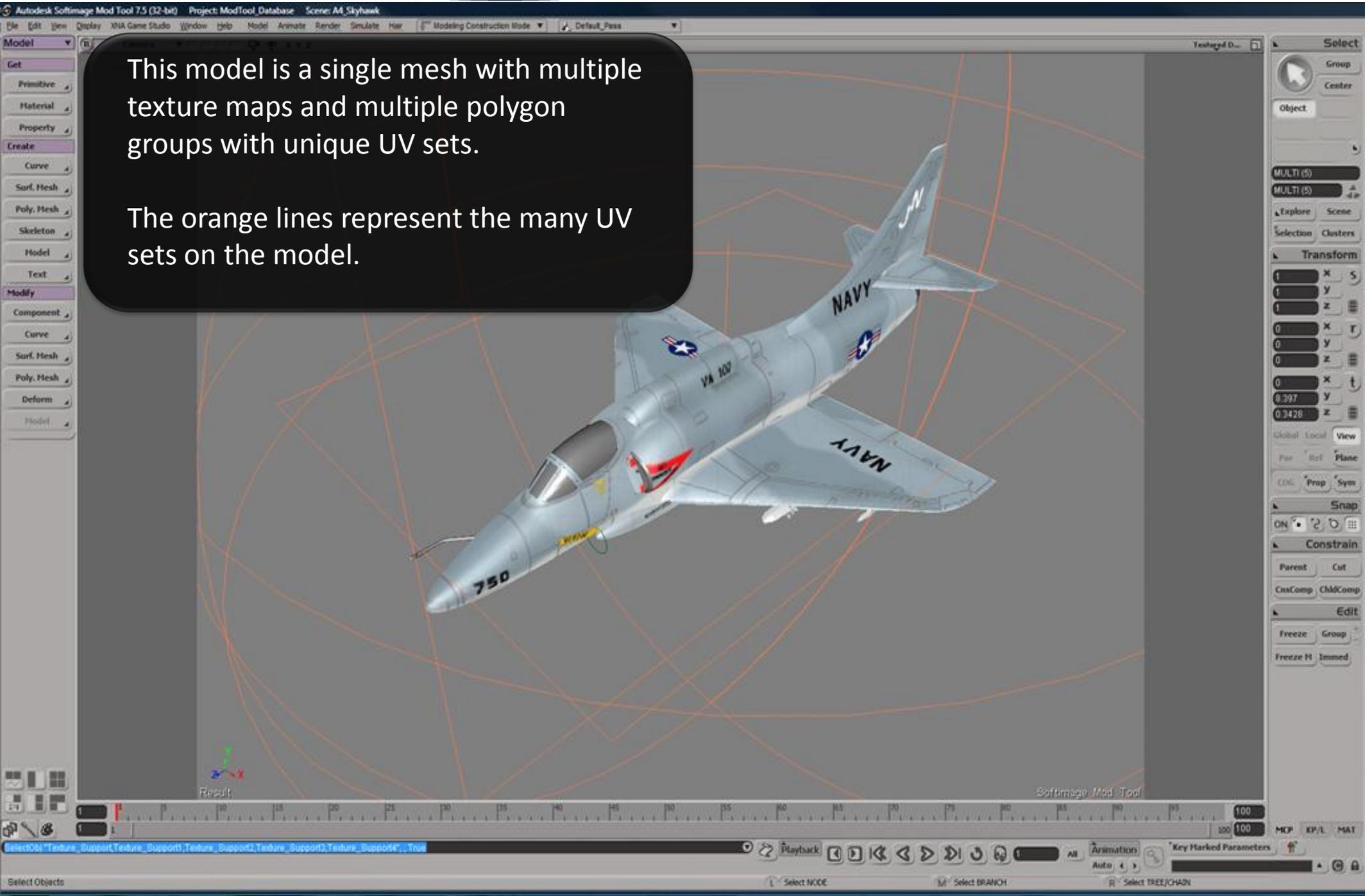
An example of improper texture wrapping and bad alignment



Single Mesh, Multiple UV Sets

This model is a single mesh with multiple texture maps and multiple polygon groups with unique UV sets.

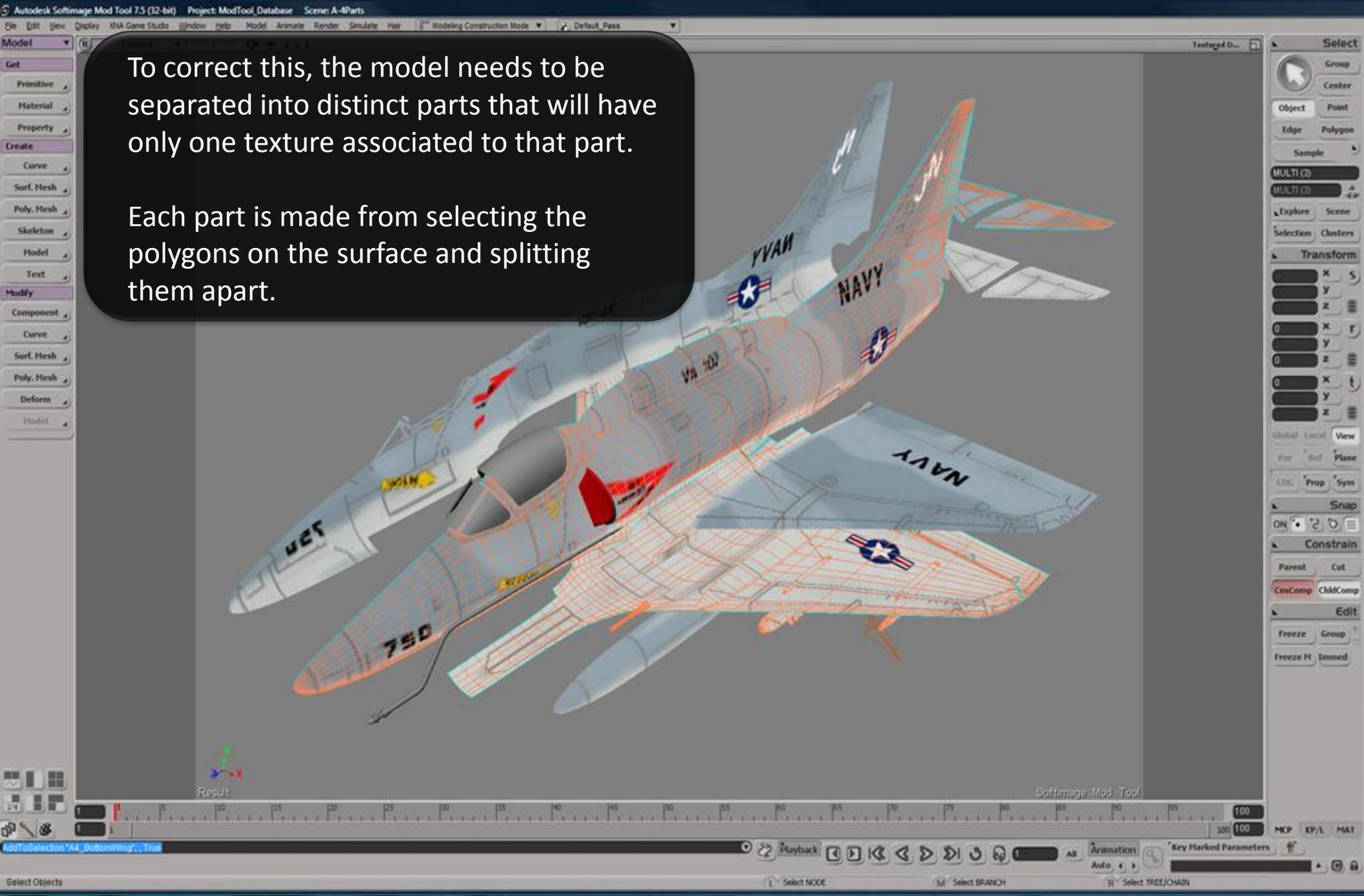
The orange lines represent the many UV sets on the model.



Fixing the Problem

To correct this, the model needs to be separated into distinct parts that will have only one texture associated to that part.

Each part is made from selecting the polygons on the surface and splitting them apart.



Fixed Mesh and Proper Mapping



Questions?

Contact me at
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