



3D Studio Max to DTS Pipeline

(Condensed Version*)
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The Max to DTS pipeline is pretty straight forward. We use the standard Torque Max to DTS Exporter (max2dtsExporter.dle) with no modifications. The Torque Engine by default does require a few mods to get everything functioning correctly, for example we found that the LOD that we specified in Max did not sync up, and discovered the engine was choosing LOD levels on its own.

Modeling & Texturing

DTS files support normal UV unwraps & concave meshes and therefore allow you to model in a pretty much the standard method for modeling and texturing anything in 3D. Within the Max file every level of detail is setup as a physically separate mesh and a suffix is added to the name with a number. That number specifies the pixel size on screen at which the LOD will change. For example, if we were modeling a barrel the meshes would follow the order, barrel_100 being a high LOD and barrel_20 being a lower level. Depending on the complexity of the model the lower levels of LODs would normally be generated by using the Multires Modifier, although they always came out too messy to be used at they were, so a clean up pass always had to be done.

DTS's allow for Translucency and Self Illumination, although you will often find sorting issues occurring when Translucency is used. The SORT:: command (placed before the name of a mesh, e.g. SORT::barrel_20) forces Torque to sort meshes correctly, although it does double the poly count.

Billboards are easily setup by prefixing a mesh name with BB:: if you want a true Billboard or BBZ:: if you would like the billboard to only rotate around the Z-axis. Remember to setup your Z-axis with the 'Affect Pivot Only' tool in Max.

Collision

Collision meshes within a DTS still use BSP based calculations and thus require collision meshes to remain convex. (This means that all the faces, of the mesh, must point out away from each other.) A model like a barrel could use a simple collision mesh consisting of a single cube (the safest convex shape) that encompasses the entire visible mesh, although for something more complex like a Earth Moving Machine we would simply use more than one cube and work in sections until all the areas of the mesh had collision. The only restriction is that Torque only allows for up to 9 collision meshes within a single DTS.

Bounds, Nodes & Mount Points

DTS models support bone systems and mount points for advanced characters with animations and models that allow for other meshes or game objects to be attached. (Our brake light glows were mounted to a mount point specified in Max.)

The standard node structure works perfectly and must be adhered to for the exporter to function.

base01

- **start01**

- ANY MESHES YOU MAY HAVE (All collision meshes (named **Col-1**, etc) and LOD meshes)

- **mount1** (Any mount points are parented under the start01 node)

- **detail2** (Where the number corresponds to the suffixed LOD level on the mesh)

- **collision-1** (collision node, this number also increments depending on the number of collision meshes you have parented to start01)

bounds



The 'bounds' is simple a cube that also encompasses the entire model. It is used by the engine to know if a model is within the viewing area or not, and thus allows the engine to cull the model if it does not need to be rendered.

Whenever exporting a DTS with mount points you must remember to generate a 'cfg_settings' file which **MUST** be stored in the same directory as the .max file you are exporting from. If this is not in the same folder then none of your mount points will be exported.

Notes & Hints

Something to always keep in mind when using the DTS format is to never scale a DTS model in the engine, specifically when using collisions. Collision is not correctly calculated when you scale the model within the engine, so always model everything to the actual size it will be in the game.

Always reset the XForm on objects (again, especially important when using collision). The *Reset XForm* tool basically removes all Scale, Rotation and Positional information that may still be linked to a model. Often when *Reset XForm* is not used the collision may not sync up to the visible mesh correctly.

* This is a condensed version, or intro to our Max to DTS Pipeline, I hope to at some point be able to sit down and take the process much further. - 2007
<http://www.greatgamesexperiment.com/user/byder>

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