



Example Vehicle - Taxi

# 1 Taxi files

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In the zip file along with this document you should find the following files:

- taxi.max (this is a 3DSMAX 9 file containing all taxi elements)
- car\_vw\_taxi\_yellow.psd (Adobe Photoshop file containing the taxi texture)
- taxi.obj (a file exported from 3DSMAX that may be of use if you don't have 3DSMAX)
- taxi.skeleton (a skeleton file used by Zombie Driver to animate car wheels)
- taxi\_c1.nxs (car collision file created out of taxi\_c1.mesh with a special tool)
- bunch of mesh files (those are the model files for the car and its upgrades)

# 2 Modeling

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As a modeling reference you can use the 3DSMAX9 file or the obj file. You will need to install the Ogre Scene Exporter plugin to your 3DSMAX in order to open the scene. You can find the exporters in here:

[http://www.ogre3d.org/wiki/index.php/OGRE\\_Exporters](http://www.ogre3d.org/wiki/index.php/OGRE_Exporters)

The scene contains several models separated into layers. To see all parts you will have to use the layer manager.

The main car body uses a skin modifier that combines the bones with the 3D model. Properly named bones are required for the wheel animation and need to be rigged to your car model or it won't work (see the bones section how to do that). We suggest to name the models in a similar fashion as it is done in the example file because the ogre exporter creates the mesh files based on the names that those objects have in the scene.

On the collision layer you will see the collision model created for the taxi. It uses a Base/Default material. The material is visible in the 3DSMAX as a pink/black checker but in the game the collision model is not visible so it doesn't really matter how it looks like in 3DSMAX (see the collisions section how to create proper collision models).

All models (base car and upgrades) have pivot in the 0.0.0 point. Before exporting the model remember about resetting all transformations like rotations or scaling (reset xform and collapse the stack) and to set the pivot point of each part to 0.0.0 like it is done in the example taxi. For the main part that has the skin modifier you will have to do that before applying the skin modifier.

# 3 Texturing

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The taxi model uses two textures:

The main texture is called Manmade/car\_vw\_taxi\_yellow and it is defined in the Manmade.material script. In the game this material uses the Materials/Textures/Manmade/car\_vw\_taxi\_yellow.dds texture but inside the max file you can use the Photoshop or any other file format. The Ogre exporter uses only the material name (Manmade/car\_vw\_taxi\_yellow) and completely ignores what texture is assigned in the material slot so you can use whatever you want. Make sure that the material you use has a proper name (something like that: Manmade/car\_vw\_taxi\_yellow) and that his name is defined somewhere in the material scripts. If you will use a wrong material name that is not defined or the texture is not present you will see a white texture inside the game.



The second texture is used for the car windows. It is named Glass/glass\_taxi\_windows and it doesn't have any texture assigned inside 3DSMAX because as mentioned above, only the material name matters for the exporter.

## 4 Bones

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There are 5 bones in each car named accordingly:

- base
- wheel\_fr (front right)
- wheel\_fl (front left)
- wheel\_rr (rear right)
- wheel\_rl (rear left)

The base bone is located in the 0.0.0 point in the local model space. This is the root bone and all other bones are attached to it. When rigging you model you should attach everything except the car wheels to this base bone.

Wheel bones are located in the middle of each wheel and are attached to the base bone. They are used to rotate and turn the wheels when you turn your car. The animations are done from the code level so you just need to properly rig your model and name the bones (make sure the wheel bones are located inside car wheels otherwise the rotation will be wrong) .

In 3DSMAX you can use the skin modifier to rig the car model with your bones. Each wheel should be rigged to a proper wheel and the rest should be rigged to the base bone.

Please remember to keep proper rotation of your car model. In 3DSMAX the front should be along the x axis otherwise you might end up with some crazy results.

The bones need to be named as shown above. If you want to use different bone names you will have to change them also in the physics script for that car (Scripts\Cars\taxi.xml).

## 5 Collisions

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There is only one car collision model named taxi\_c1.nxs. This file is created by a special tool (will be added on the website very soon) out of the taxi\_c1.mesh.

The mesh file must be a convex mesh built out of one object.

The collision model must be named like it is done in the example so the game can recognize it as a collision model for this car. If you car name is taxi.mesh than a collision model for it needs to be taxi\_c1.nxs. The "\_c1.nxs" part is used to recognize it as a collision for this model.

Before exporting the collision model remember about resetting all xforms and pivot point like it is explained in the modeling section.

