



## The Pits rFactor Q&A Car-Building Tutorial

**Editor's Note:** *We realize that building cars from scratch is a painstaking project at times, and it seems like most of the time people don't realize how little we know when we start. Therefore we put together this question and answer session between Stan, Kev, Scott and other members of The Pits Crew in Stan's attempt to go from absolutely nothing to building and driving a self-built car in rF. We make no apologies for the wording, long-winded discussions or layout, we present this to you as a novel that you can make word searches on to hopefully answer some questions that you may have when starting car building from very little knowledge of 3dsMax or rFactor. Hopefully this will prevent you from losing as much of your hair as Stan did.*



Hi Jan,  
well mate, I'm hopefully in the final stages of prep prior to trying to get my Torana into rFactor.  
I wish the tutorials were just a bit more detailed but I think I have the process somewhat.

I've had a look at your Falcon files and compared them to the .mas files of a couple of other cars to get a general idea.  
Currently converting all my images to .dds format.

Questions:

1. are there any strict naming parameters for parts?
2. why .dds for some images and .tga for others?
3. how does the sim make gauges work?
4. do I need a .gmt and a .dds for each gauge that I want working?
- 4a. would a clock actually work? (that'd be cool)
5. build sequence:
  - \* export parts from max as 3ds to Zmod (save as 3ds then import)
  - \* save in Zmod as .gmt
  - \* then from Zmod as .mas, or do I use the mas tool

I'm not going for perfection first off and I prob wont even try to drive it, just get it in there.

regards

Stan.

=====

I'll start off hitting those first questions you asked and then move to the next email's set.

FWIW, gmt2 installed in 3dsMax is the export tool for making gmt files without having to bother with zmodeler.

>> >> Questions:

>> >> 1. are there any strict naming parameters for parts?

Only for the headlight and taillight objects that light up.

hl glo\_DS.gmt (headlight glow Driver Side)  
hl glo\_PS.gmt (headlight glow Passenger Side)  
bl glo\_DS.gmt (taillight glow Driver Side)  
bl glo\_PS.gmt (taillight glow Passenger Side)

>> >> 2. why .dds for some images and .tga for others?

.dds is a format developed by nVidia specifically for 3d graphics work. It supports compression (like a jpg, but with less user control). You will use dds format for most images. Since tga doesn't have compression, but does support an alpha channel, it is used when the game needs every pixel hard coded instead of interpolated from compressed data. Essentially you'll only use .tga for gauge backgrounds.

>> >> 3. how does the sim make gauges work?

This part is pretty slick. You create an object to be the face of the gauge and apply a texture to it. There is a "cockpitinfo.ini" file where you tell the sim what texture the gauge face is, and the sim will draw the needle on that face. There's a bit of a trick to setting up the material in 3dsMax for this to work (more on that in a minute), and you have to create a gauge needle texture as well. Here's a sample of a cockpitinfo setup for a tachometer:

```
TachometerRange=(0, 8000, 180, 0)
TachometerNeedle=(0.75, 0.75)
TachometerBackground=08_Mustang_Tach.tga
TachometerNeedlemap=08_Mustang_Needle.tga
```

The range works like this: First number is the bottom of the tach scale (0 rpm in this case). The second number is the top of the tach scale (8000 rpm in this case). The third number is the starting position of the needle in degrees, with 0 pointing straight to the right, 90 pointing straight up, 180 pointing straight left, etc. The last number is the ending position of the needle in degrees. The gauge automatically rotates clockwise unless you tell otherwise. So in this example, at 0 rpm the needle is pointing straight left and at 8000 rpm it's pointing straight right.

The needle parameter works like this: The two values are the size of the needle on the gauge face. I don't remember off hand, but I think the first number is the width of the needle and the second number is the length. If the gauge face object is a square, a needle setting 1.0, 1.0 will have the tip of the needle go to the edge of the square object and the width of the needle will be proportional to the length. So a value of 0.75, 0.75 means the needle is 75% as long and as wide as it would be if it covered the whole square.

The next two entries tell the sim what texture the tach face is and what texture the needle for the tach is. If all of your gauges use a look alike needle, you can use one needle texture and then just alter the size of it to fit the gauge.

>> >> 4. do I need a .gmt and a .dds for each gauge that I want working?

No and no (and a third no I'll add in). Since gauges have a texture drawn on top of them for the needle, you'll want to use .tga files instead of dds. The sim doesn't care if the tach mesh is stand alone or part of an entire cockpit gmt object. I usually include all of the gauges in on big object that covers the dash (and sometimes the whole cockpit). The exception would be if you want to have different gauge layouts, then you'd need to break up the gmts so you could make them interchangeable through upgrades.

You can use one texture for several gauges, however you have to add a new parameter beyond the sample ones for

the tach. By default the sim sets the gauge needle to pivot in the middle of the gauge face texture. If you have several gauge faces on one texture, you'll need to tell the sim (via the cockpitinfo.ini file) that the needle pivots somewhere else.

If you were sharing textures with the tach, you'd add a line:

TachometerCenter=(x.xx, x.xx) where 0.5, 0.5 is the center of the texture, and I think 0.0, 0.0 is bottom left, 1.0, 1.0 is top right.

Because of the need to calculate where to place the center of the needle, I almost always just create separate textures for each gauge.

>> >> 4a. would a clock actually work? (that'd be cool)

Yes it would be cool, but no, it won't work (there might be a way to sort of fake it, but it would require a huge amount of work, basically creating 120 or 180 frames of animation).

The gauges you can create (and the only ones that I know of for analog gauges) are as follows (I'm using the official names that work for the cockpitinfo.ini file):

Speedometer  
Tachometer  
WaterTemp (temperature)  
OilTemp  
OilPressure  
FuelLevel  
FuelPressure

All of the tachometer options listed above works with these gauge names, just replace rpm with kph for the speedo, temperature in degrees C (I think, might be F), pressure in psi, and fuel level ranges from 0 empty to 1.0 full.

>> >> 5. build sequence:

>> >> \* export parts from max as 3ds to Zmod (save as 3ds then import)  
>> >> \* save in Zmod as .gmt  
>> >> \* then from Zmod as .mas, or do I use the mas tool

You should be able to skip Zmod. The gmotor2 tools for 3dsMax allow you to export straight from 3dsMax. There are a couple of tricks on this and my sleeping pill is starting to kick in, so I'll keep it brief and try to catch up on the rest later.

When setting up your 3dsMax material you will need to create a "Multi/Sub-object" material. Then each sub material you create will be used for your car. The sub materials all have to be changed to type "gMotorMaterial" and then you get to pick what shaders you want to use (whether you just use a simple texture, or you want to add bump/normal maps, specular maps, reflection textures, etc.) This is probably the hardest part to pick up on quickly as different shaders work differently ingame. I'd offer to send you one of the street car models I've built, but it was done with 3dsMax r7 instead of r5, so it won't open for you. If you can get someone at the pits to hook you up with r7, I'll be happy to let you use the model for reference. I will package up the rFactor files so you have examples of what all you'll need (I'll go into more details on the file specifics in another email when I've got time).

On the meshes themselves, you can group multiple mesh objects together (using the "attach" function in max) and export as a single gmt file. The gmotor export does not support 3dsMax smoothing groups, so anything that you don't want smoothed together will need to be detached. I build my models using smoothing groups with everything welded together. Then when I'm done editing I select each smoothing group and "Detach to Element" so it stays part of the same object, but becomes a separate sub-object. Then the export gives me the results I expected.

Once you've got a part mapped, material built and applied, mesh object prepped for export, you can use the gMotor2 tools to export to gmt file.

For testing and building of the car ingame, you can skip the MAS file build at first. The MAS is rFactor's equivalent to the DAT file from Papy, it's just a compressed collection of files. You can setup your .ini and .gen files (.ini are

configuration files, .gen are graphics definitions) to look for the gmt and dds/tga files in specific folders on your hard drive. Then, when you've got everything working the way you want it, you put your files into a MAS file and change out the search paths/calls in the .ini and .gen files to call the MAS instead of the folders where everything is at. I always create a dds/textures folder and a gmt folder and point everything to those folders.

Hopefully this will get you a rough start.

Tah Tah For Now  
Scott (Tigger) Stockton

=====

Hi Scott,

I've never used Multi/sub object materials before but the help file looks easy enough to follow, I'll figure it out.

I'm assuming that with my dash and gauges I can use a single gmt for the whole instrument panel with the individual gauges applied with their own tga's.

\* so far I haven't found an export option for GMT.

I have a lot of reworking to do so I'm not concerned right now.

\* 'gMotorMaterial' type?

Is this something within GMT2 plugin features?

regards

Stan.

=====

Plugins for 3dsMax r6 do work for r7 as well, so you should be good to go on that.

Multi/Sub-Object is actually kind of neat. It basically creates a material shell where there can be as many sub-materials as you want/need to create. You apply the main material to every mesh object you make. You select faces on each object and assign which sub material those faces use. This makes it possible to have one mesh with multiple textures/materials being used. It's also a requirement for the gMotor plugins. And yes, you can use a single gmt object for the dash panel, with different sub materials/textures applied to each set of faces that make up a gauge face. Another application/example is that you can make the main body of the car use the paintjob sub-material yet have chrome parts use a different sub-material that simulates chrome, then have the chassis use another sub-material, but combine all of this into one gmt.

I guess gmt export is probably the wrong way to phrase it. If you've ever used any of the plugin tools/scripts like "texporter", then you'll be familiar with this. If not, you'll have a little bit of reading to do. Basically you have to run the gMotor2 plugin, and it will give you a set of options on the right side column where you can work with any selected meshes, change properties on the objects (for a car, you generally want to set the mesh to moveable and omni lighting, everything else gets adjusted with the text files for the car (the .gen files)). There are a number of features of this plugin that you won't need to use for what you're doing. I'll see about getting you a screen capture of which options you need.

Lastly, the gMotor2 Materials thing is set within the material editor in 3dsMax. When you select a sub material, there will be a button in the material options area, near the top right, that reads "Standard" or something like that. If you click that button, you will get a new menu pop-up that has a list of material types, including an option for multi/sub-object, standard, material library stuff, and an option for a gMotor Material (which of course is the one you will need to select).

There are parts of this where I think you're getting ahead of yourself already though. There are some other core model setup things you need to know or you'll have all sorts of issues when you get the car ingame.

The model of the car should be placed with the bottom of the car set at height zero in 3dsMax with no translation (in other words, when you select an object, it should show you the widget thing setting at location 0,0,0. If it is anywhere else, the car will get moved once ingame.) Any objects that aren't this way already (with the exception of wheels/tires/brakes and driver/helmet/steering wheel), will need to be adjusted. You can go into the 3dsMax mode where you adjust the pivot point of the object only, without moving the object, and set the pivot to 0,0,0 and you'll be set, but you have to do it one object at a time.

To make setting up the text files for the car (the .ini/.gen and physics files) easier, I'd also recommend positioning the car so that the front wheels and rear wheels are the same distance from the 0,0,0 point. In other words, if your wheel base is 274 cm, then have the center of the front wheels at -137 cm and the center of the rear wheels at +137 cm.

The steering wheel and the wheels and tires should have the pivot point set to where the wheel is supposed to pivot (in other words, in the center of the wheel). If the pivot point is off of center, the wheels will roll as if they are out of round. Once you've got the pivot point set for the wheels/tires, set the pivot point for disc brakes and calipers to the same location as the associate wheel.

Tah Tah For Now  
Scott (Tigger) Stockton

=====

I have Jan's Ford model complete (computer still OK) so I've been having a looksee in Zmod.  
Should Max import gmt's ?

Aligning the car at 0,0,0,placing the bottom of the car at 0,0,0,,I assume you mean the actual body with the wheels etc hanging below but still aligned at 0,0,0,?  
That's how Jan's car appears in Zmod.

regards

Stan.

=====

Basically yes on the alignment. Bottom of the car at 0 with the wheels hanging below 0.

There was some gmt import thing for max that someone made, but I never tried it and don't know anything more about it other than it was reported to exist.

Tah Tah For Now  
Scott (Tigger) Stockton

=====

Guys,  
I've got the Gmotor wizard installed I think correctly,it's showing materials options etc but I can't find any functions for exporting gmt's,anywhere.

I want to start getting a basic car through to rF just to get the process sorted,then I can refine everything else.  
Some screenshots might be a big help.

thanks

Stan.

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If you extract straight to your ...rFactor folder, this will place the files where they need to be to see the car ingame. It includes a generic "rfm" file that allows you to select a racing series that includes all cars and tracks, so you can select the Mustang. The 3dsMax model, 2d textures, etc are all in sub folders for the vehicle in the game. You should be able to find what you need by looking in ...rFactor\GameData\Vehicles\2008 Mustang

Inside there you'll find the 3d model inside the "Model" folder and the textures inside the "DDS" folder. When you open the 3d model in max, if it complains about not finding the textures, change the preferences/paths in 3dsMax and point it to that "DDS" folder.

Once you've got the model opened with textures and all, you should be able to open the materials editor and find the main multisub material that is used. I don't remember off hand whether I used a separate material for the wheels/tires or not (I often do). If I did, you should be able to find it fairly easy to. It, along with looking at the textures, will show you how I did the wheel/tire blur animation. The headlight materials and such should be part of the main car multisub material.

Anyway, hopefully this will give you enough to reference so that you can get a lot of answers just by looking at the example. Still, feel free to ask anything you can't sort out.

Tah Tah For Now  
Scott (Tigger) Stockton

=====

Scott,  
I dunno.

All I'm getting as a texture on anything is 'black', which means there is no texture.  
I made a cube, it won't accept the main multi-carbody texture, let alone all my attempts at getting a sub texture to work.  
I even tried this exercise in your's, at least it will place the main carbody texture on the cube, but nothing else.  
So then I tried bringing your carbody texture into my cars Mat ed, an error message-'DDS format cube map'.

I've done the 'mesh select' modifier every which way I can think of.  
I'm guessing there's something very basic that I'm missing, just wish I knew what it was.

Stan.

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Well guys,  
I'm still trying and still not getting very far, my 3rd straight day on this.

I have a simple cube, I can place my main multi-carbody texture to the cube which shows on the front face.

1. I can place sub object textures to both of the ends in the horiz wrap, if you follow me.
2. I cannot for the life of me get anything placed on the vert wrap, ie, top, back and bottom.

I can, simply by loading a different texture in the respective sub spots, change any of the textures in step 1., the instant the texture is changed.  
So part of it seems to be working properly.

I have sub textures that are just plain colors, have no joy at all with them, they simply don't work.

So I'm at a stand still, can't make any gmt's until I get this sorted out.

regards

Stan.

=====

Stan, I have to say, I don't know what on earth you're even talking about. I think that's an indication that you've gone off on some tangent that isn't needed...LOL

Are you saying that you created a cube shaped mesh and are now applying a material to it, or what?

Going in a different direction with this... The only reason the multi-sub material is set to a cube shape instead of a sphere is that any sub material you create with a reflection texture as one of the textures, will use a "cube map" for that reflection. Everything else is a standard looking texture, with an alpha channel that is either used to control certain properties (like reflection level), or isn't used for control, but is needed by rFactor.

Each sub material under your multi-sub mat will have a number next to it on the left under the "ID" column. That number is used to reference the sub materials. When you create a mesh object, you assign (via drag/drop) the entire multi-sub material to the object. Then you go into face editing mode on the mesh object and you select faces and assign them the appropriate number for the sub material you want to use. By default, all new faces created will use sub material #1. If your paint job is #1, then everything on a newly created mesh object will show the paint job. If you create a chassis texture that is sub material #2, then you would need to edit the faces on your mesh for the chassis and change the material number to 2 and those faces will use the chassis texture.

In setting up the material itself... Each sub material has to be individually changed to a gMotor Material. Then you have to select which "shader" level to work with (I always start with dx9 and then work through the others later, but since this is a personal project, use whichever ever shader level you run rFactor in). Then you have to select the actual shader. For getting started, using a simple "T1" shader will get you going. If you want reflections added in, then select "Cube Map Add Alpha Reflect T1". Then assign textures as needed. The Cube Map shader I mentioned will use the

alpha channel of the primary texture to control the reflection level. So if you use this shader for the main car body, you could have chrome parts with an alpha channel area painted white for total reflection and flat/matt finished areas with an alpha channel area painted black for no reflection. For starters, pull the generic reflection cubes from ISI's stuff by extracting out the textures in the "cmaps.MAS" file in the /GameData/Vehicles folder. You'll find several cube maps in there.

Within each sub material you'll have to click the checker board cube image for "Show Map in Viewport", if you want to see the texture applied to the mesh you're working on.

Tah Tah For Now  
Scott (Tigger) Stockton

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Hi Scott,

I created a simple cube to test and make sure I had the technique working OK before I start applying to the car itself. This morning I was able to assign a texture to all 6 faces of the cube, so at least I'm getting somewhere. I think my basic problem is that I don't fully understand what I'm doing, or WHY, this sub material stuff is all so different.

>> you assign (via drag/drop) the entire multi-sub material to the object.

By this do you mean the #1 material, in my case (and your Mustang) the main carbody, or the entire sub material set?

>> By default, all new faces created will use sub material #1.

>> If your paint job is #1, then everything on a newly created mesh object will show the paint job.

I assume then that only sub mat #1 is first applied to the mesh/object?

Do I simply select the object and assign the texture or do I have to select all faces first?

I'm asking all this because I think this is my main sticking point in the procedure.

I have the sub mat set up correctly, all are gmats etc.

I appreciate the info on shaders etc as this on one of many areas that I have very little knowledge of. I've only done very simple stuff in the past. This is a whole new learning curve.

The GMT conversion works fine, so much easier than Papy's stuff, so far. I only got one item converted then ran into sub mat issues.

thanks again

Stan.

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OK. That explains some stuff. I was afraid you were trying to get certain textures to show up on the cubes in the material editor, which I don't think you can control.

As far as the why on the multi-sub, it's got more to do with the way the gmt export works than anything else... but it's partially due to the limitations in 3dsMax that the gmt export had to adhere to. The quickie answer is that you can have one mesh/gmt object that uses different textures and shaders throughout its structure, and still export it as one single object. If you recall with the Papy stuff, you had to have a separate object every time you had a different texture/material. 3dsMax also has restrictions on having multiple materials on a single mesh object, so they created the multi-sub material. You assign one material to the object (the entire multi-sub material set), then you sort out which sub materials get used by which parts of the mesh object. I've got cockpit parts that use 15 different textures, but they exist as one single mesh object because they only use the one multi-sub material.

> By this do you mean the #1 material, in my case (and your

> > Mustang) the

> > main carbody, or the entire sub material set?

The entire sub material set. If you click on the image for the material, at the top of the material editor, then drag it to a mesh object, you're applying the entire material set to the object. Think of the multi-sub material as simply a material shell that holds a bunch of little materials. You get the shell applied to the object, then all of the little sub materials become available to that object. Then you sort out which faces get what texture/sub material using the mesh face edit.

>> I assume then that only sub mat #1 is first applied to the mesh/object?

When you apply a multi-sub material to an object, the entire material set becomes available to that object. Each sub material within the set is identified and used based on the ID number. When you create a new mesh object, or create new faces, they will default to using sub material ID #1. If you instead want those faces to use sub material ID #3, you select the faces and change the material ID using the face editing toolbar on the right side of the screen (it might be on the left side of the screen knowing how you aussies do stuff...LOL).

>> Do I simply select the object and assign the texture or do I have to select all faces first?

You should assign the full material set to the entire object. No need to get into face selection at this time. In fact, if you select faces it might not work the way you expect it to. So just drag the entire multi-sub material to the entire object, then edit the faces to change the sub material ID that's assigned.

Tah Tah For Now  
Scott (Tigger) Stockton

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Now it works.  
Solid plain colors and all,fantastic.

>> If you click on the image for the material, at the top of the material editor, then drag it to a mesh object, you're applying the entire material set to the object.

Took me a minute or so to understand that Mat #1 (the parent) of the multi sub/material set actually represents the entire set (children) listed below it and when applied is actually applying all of them,although they are not visible on the object.  
Then of course face by face all of the 'children' are then applied where required.

Sound about right ?

all the textures are going on fine.  
Had an issue when converting to gmt's with the wheels,no texture co-ords.  
Turned out I had a texture foul up,fixed easy enough.

I have all parts to the car body attached as 1 with only the 4 wheels as seperate parts.  
Not set up yet as a working car.

Next excercise is to get the basic car into rfactor and on the spinner for now.  
Then I'll do the interior and all the gauges etc and get it to roll.

thanks again mate.

Stan.

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Need some more help.  
Car isn't showing in rF.  
Took me a while to get the spinner to work,but no car on top of it.  
I appreciate it's almost impossible for you to pinpoint the problem from there.  
Got any tips please?

I've put everything into a mas file as I couldn't figure out how to do as you suggested.

Stan.



As far as getting the car to show up... There are a number of things that could be an issue, so let me get some more details first.

Are you able to find the listing for the car and select it?

If not, make certain you've selected the all vehicles racing series (I forget the specific name, it's likely got test or dev in it).

If you are able to select the car, but it doesn't show up...

Does rF give any sort of error about missing files/materials/textures/etc?

If no errors, is the spinner just blank or does rF sort of lock up?

The most likely issues are that the .veh file isn't setup right, the .gen file for the spinner isn't setup right, or the .hdv file is calling a tires/engine/suspension file that you don't have.

If you get an error about missing files, then that should help point you to where you need to look. If you don't get any error at all, then it's most likely that the game is trying to call one of the supporting text files (.gen, .ini, .hdv, etc) and isn't finding it.

Tah Tah For Now  
Scott (Tigger) Stockton

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Thanks mate.

1. car listing is OK,can select,doesn't show.
2. was getting error messages-deleted entries from files untill no more,some files have what I think is bare minimum,basically only calling the mas files.
3. spinner just blank,other cars show up OK-was locking up at first.
4. I think most likely the HDV file calling tires/engine/suspension as I haven't 'trimmed' that one yet.

thanks

Stan.

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I may be onto why it's not loading.

I haven't actually 'mapped' the car to the main carbody texture,just virtually dumped multi/sub object colors on it. That was fine for use in max but I'll bet it's not good enough in sim.

I was hoping to get away with it as creating a proper main texture from scratch is a long process,at least it is for me as I'm a damned perfectionist.

I can do it,just hoping I didn't have to at this point of creation.

Stan.

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When you creat an object, there's usually some sort of generic mapping already in place. If there's no mapping assigned at all for a mesh, the gmt export will give you an error in 3dsMax. So that's not likely the cause of the in-game issues.

Tah Tah For Now  
Scott (Tigger) Stockton

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Having a hard time figuring this out.

The car's still not showing on the spinner.

I've deleted all the config files and started again,editing the HTGTS files to suit,but less of them this time.

Just the gen files and of course the veh.

Do any of the ini files need editing?  
I haven't seen anything in them that I think I need to change.

It seems that the UCX.mas (UCX is the mod name) file is not being read so far as getting it on the spinner.  
However,in the UCX\_Spinner.gen,in the "instance" section,I can call up gmt's and they show up.  
If I change the mas file call from UCX.mas to HTGTS.mas I get errors about missing gmt's,so obviously the UCX.mas file is being read.

Stan.

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Stan,

I got the chance to look over your files. The first thing I'm seeing is that your .gen files only have the pointers to the mas file, they don't actually call any gmt references, so there isn't anything to show on the spinner.

The .gen files have a couple of parts to them. First you have the pathway to find files and the specific mas files that contain the gmts and textures you want to use. Below that there should be some "instances" that tell rFactor which gmts you want to display. The reason for a different .gen for the spinner is IF you have some different gmts you want to use in the spinner from the ones you use on track.

Let me take a look at your mas file and see if I can get you a quickie .gen thrown together that will work.

Tah Tah For Now  
Scott (Tigger) Stockton

=====

Yeah mate.

I seem to have stumbled on to that,calling the gmt's in the spinner gen.  
Am I too asssume that for the spinner I need a body that is welded up in one piece with all parts for the car to show?  
Yet mas files are full of heaps of parts?

Stan.

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Not really. You just have to call the gmts for them to show up. If you look at the spinner.gen file from the Mustang you'll see where it calls a number of gmts along with the body. If you have fenders separate from the body, then include calls to the fender gmts. If you have the hood separate, include a call to the hood gmt. If you have an object that can be swapped out by the user (ie an upgrade to the car, like an alternate hood with a scoop on it), then you define it in the upgrades.ini file and then you reference it in the .gen files the same way the exhaust, rear badge, and mirrors are referenced in the mustang spinner.gen.

Yes, the MAS file is just a container file that holds your gmts and textures.

Tah Tah For Now  
Scott (Tigger) Stockton

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Yeah,just need to keep it pretty simple at first.

I had probs getting your spinner file to work but it gave me some additional clues to what I'd already found out for myself.  
This morning I redid all the gmt's for the car and a new mas file in which I included a one piece body and a wheelset,so I sub'd that in your gen file in the first instance section and deleted the indiv wheel sections.  
Check the pic.

Now my next obvious task is to learn all about shading etc.  
What are cube maps in relation to shading parameters?

I haven't tried your Mustang,but I did try the HTGTS and it shows fine so I assume that there's a whole car version in one piece for viewing in the spinner.

Stan.

=====

You should not assume this. I don't know that particular mod well enough to say what is the case with it, but I can tell you that the TPSCC stock car mods do NOT use a one piece body for viewing in the spinner. They have various pieces of the body as separate grmts (including a hood that can be seen open or closed in the spinner as well as various parts that get swapped out depending on the track configuration, all viewable in the spinner). The reason I didn't give you a copy of the stock cars for reference is that they go WAY beyond what you need for getting started.

To answer the cube map question... If you remember the environment.mip file used by Papy, the cube map is basically the same thing, just executed slightly different. Basic gist is that the cube map is the reflection you see on an object and it moves around on the object according to the objects position and orientation.

The car's looking good so far, but you may have caused yourself some more problems by making the wheels/tires a single object and getting rid of the individual references. What you've got will work fine in the spinner, but the minute you try to take this car on track, you'll HAVE to make separate wheel objects again and follow my info on making the pivot point for the wheels in 3dsMax be the center of the wheel. Anything else will cause you all sorts of graphical issues.

Tah Tah For Now  
Scott (Tigger) Stockton

=====

Hi Scott,

>> If you remember the environment.mip file used by Papy, the cube map is basically the same thing,  
>> just executed slightly different.

Well,I never got that far unfortunately.  
Any info on creating and using will be much appreciated.  
I have a dds cube plugin now for Photoshop,just have to install and learn to use it.

At least though I've finally got the car on the spinner-see att pics.

I tried some shader etc settings with my main texture and ran into all sorts of graphics issues in sim.  
Also had,for reasons unknown,all my wheels/tires with flipped normals.

I'm slowly getting there.  
Next task is the cockpit and see if I can actually get on track.

Stan.

=====

At this stage, I wouldn't even bother with making your own cube, use the default ISI cube. A cube map is one of the trickiest textures you can even try to make as it's very easy to end up with a cube that doesn't transition well from one side to the next, or from the sides to the top.

If you look in the \rFactor\GameData\Vehicles folder you should see a "cmaps.mas" file. Inside that mas file are some common textures/maps that can be used by any mod/vehicle. There is a car cube you can use for the reflections. You just need to use the ISI MAS utility create a copy of those textures so you can link to them in 3dsMax. In the MAS util, select all textures, right click, then select the option to extract the files and point it to any folder you want to.

Tah Tah For Now  
Scott (Tigger) Stockton

=====

Thanks,  
I'll take a stab at those later on.  
Got the car on track but have a problem.  
Pit crew is bitch'n like mad cause I'm scrape'n holes in everything, car is bottoming out.  
Plus the steering wheel is pivoting about car's center at 0,0,0 instead of it's correct position on the steering shaft,as aligned.

Question.  
Why do some use carname.gen for main graphics call while others use upgrades.gen ?

Stan.

=====

Just a naming choice by the mod maker. The game doesn't require any naming convention other than the extension (.gen). That being said, most of the time, upgrades.gen is an indication that there is also an upgrades.ini file which is used to allow the player to change out parts of the car in the spinner and/or garage area. The original content ISI cars make use of the upgrades.

As far as riding on the ground goes, this is a physics issue. The first thing to check will be your tire file (.tbc). The tire file has a place where you can enter the radius of each tire (or both fronts and both rears). Once you've got that set correctly, the next step is to check the ride height setting in the garage (explaining how to adjust the defaults in the .hdv is more than I have time for right now).

Tah Tah For Now  
Scott (Tigger) Stockton

=====

The car ride height on track can also be adjusted via the line GraphicalOffset in the hdv.

The values in this entry can move the car left to right, up and down, as well as front to back.

An example from the NAGT Porsche hdv  
GraphicalOffset=(0.0,0.045, 0.0)

The 0.45 raises the car slightly to compensate for differences between the spinner and track.

Kev

=====

Tinkering with settings, this is going to be interesting.  
One last major problem to fix, getting the steering wheel to pivot where I've set it to.

Stan.

=====

Very cool Stan. If you're able to get accurate enough measurements, you can get really close to simulating the handling of your car through the options in the physics (starting with the .pm suspension file, where you can setup the front end geometry exactly like the real car as long as you're willing to get the data nailed down).

As far as the steering wheel, it's one of the other objects that needs its pivot point moved to some place other than 0,0,0. For the wheels/tires and the steering wheel, the pivot point in 3dsMax needs to be set to the actual point of rotation (center of the wheel, center of the steering wheel, etc). Once you've got that, there will likely be some tweaking to be done to get the wheel to rotate totally accurate. I've got a short tutorial at the Pits for this:

<http://www.thepits.us/board/viewtopic.php?f=19&t=4466>

Tah Tah For Now  
Scott (Tigger) Stockton

=====

Hi Scott,  
I have the steering wheel pivot set at the right point, smack in the center, at the right angle, I'll check your tutorial. Mind you, it's a blast to drive, take a lefty and the st whl dives out of view to the left, take a right and it dumps in you lap, has left me with a squeaky voice.

I've had a look through and made minor tweaks of the handling/engine/tire files, etc.  
I'm going to take a few cars for a test drive and whichever one feels close to my actual car I will use as a starting point. I'm using the HT Holden from the 69 er's at present and the thing is totally gutless up mountain straight, can't get up into 4th cog.  
The engine sound is sort of OK but the rest needs a lot of tweaking.

The front end geometry on my actual car is set up by myself,I do all that stuff,and the sim car is already set to it,just the spring/damper settings etc to tweek.  
For them I will most likely use AV8 settings as my actaul car is 'very' solid in it's suspension and bars,little softer in springs and bars at the rear end.  
She squats her back end very nicely.

This going to be interesting possibly frustrating fun.

Stan.

=====

Hi Guys,

I'm sorry,can't get the steering wheel to work properly no matter what I do.  
I have the pivot set exactly on it's rotation point and applied the angular adj as per the tutorial.  
My GEN file calls are set up almost exactly as per Scott's Mustang.  
Still it rotates about 0,0,0.  
Must be something more I have to do as well?  
Is it 'binded' to anything?

As for the car's handling.

The cars's performance was based on the HT Holden GTS and was totally gutless up mountain straight,not getting out of 3 rd cog.  
I sub'd the 69 Mustang engine into it and now it goes.  
Set up all the dims and tires etc as per my road car's  
Worked out how to set up the HDV entries plus the garage menu's and did some handling tweeking.

I think my sim car is now very,very close to my real car,although I don't drive my real car at these speeds.  
The tire grip over the HT is vastly improved without changing any of the tire file specs except sizes.  
Can control all types of slides.  
I drive across the top of the mountain at full throttle,no back off untill skyline,and 'the dipper' is a blast.  
It's very easy to drive very fast,much like my road car,feels good.

Stan.

=====

Stan,

If you are having issues with the rotation of the steering wheel in game you can also edit the lines in the cockpit.ini to adjust the rotation such that it looks straight and linear without having to fool further with the gmt, providing it is in the general neighborhood.

In the first header section of the file see entry  
SteeringWheelAxis=(0.0, 0.374, 0.927)  
Above is an example from the NAGT Porsche.

I had to do this with most all of the NAGT cars to get them correct. This can be viewed both in cockpit and external views as it rotates.

Kev

=====

Overall sounding good.

On the steering wheel, the first thing to check is on option when exporting. Get into the gmt export thing, select the wheel, click the button to chose the selected item. Then under options/properties stuff, see if the wheel has a check mark next to "Movable". If not, then check that and re-export.

If that's not the problem, then you've got an embeded transform in the wheel that you need to get rid of. Under the far right tab of the 3dsMax toolbar on the right, there are some buttons for various functions and one of them should be Reset Transforms (Reset XForms) or something similar. With the wheel selected, click that, then back under the mesh editing tab, there will be a transform item in the tree view of your object. Right click the item on the tree and select the option to merge or combine the transform into the main object (I forget the actual text of the option right now and I won't have access to 3dsMax for another 36 hours or so). Anyway, the point is to take the new transform object and make it

part of the main object.

Tah Tah For Now  
Scott (Tigger) Stockton

=====

> see if the wheel has a check mark next to "Movable"

That got it mate.

thank you so much.

I knew there had to be something I was missing, hope these work.

I guess one could spend a lifetime working with 3dsMax and still not know all the tricks, and I'm just scratching the surface.

Stan.

=====

Hey guys,

Got a problem, prob and mostly just understanding how everything works together.

Hopefully you will understand what I'm trying to describe.

- \* the vehicle viewer, some cars show and some don't, seems that ones that have been created by other than rFactor don't.
- \* My Material list, multi sub and Gmotor, no prob.
- \* With my first build and testing in game I used very basic materials.

My mat #1 was a simple 'white', which I applied to all objects on the car before assigning their desired colors.

The basic main body color was a sub object material that was white with a red stripe down it, worked fine for what I was doing.

\* I have now created the main Livery text map.DDS to which all parts of the car body are mapped, the main livery as called up in the VEH file.(UCX\_Livery.dds)

\* I have this file as multi/sub #1 on my material list, etc, etc.

My problem.

1. The only way I can get the car to show in the veh viewer is to include UCX\_Livery.dds in the UCX.mas file, and it has to be named as 'UCX\_Livery01.dds' ???
2. In game, I can't get any main livery file to work from the VEH file, it only shows the one in the mas file.
3. It's not my Livery dds file(s) as I can get them to work on every other car I've tried.

I've made my fair share of new cars and paint schemes etc for a variety of cars and the livery VEH file gave me no problems, easy stuff.

So, I'm obviously missing something?

regards

Stan.

=====

To say this prob has driven me nuts would be an understatement, however, persistence has paid off.

After trying many thoughts and looking at a lot of different cars, those that I could anyway, this prob solved and I can now move on and find some others-LOL!

Scott,

in checking your Mustang inside out and picking up 'snippets' of info from other sources, the final fix was naming the main car texture (multi/sub) as WCCARBODY, as your Mustang is.

I just didn't know why, just figured it was a name that you picked for yourself.

Another of those naming parameters.

Your Mustang doesn't show in Veh vew either,shows a page full of GMT errors,and all car bodys in game show as black.

As this was the only car I have that I could really look right into,it made it a little tough to figure out my problem.

regards

Stan.

=====

Hi Guys,  
have finally got around to getting my gauges working.  
Everything is looking just fine except the needle,it's not working as expected.  
If I call it 'needle.tga' it replaces the needle on the default hud tachometer with UCX\_Needle.tga and with what seems all the correct calls in .gen and cockpitinfo.ini files it fails to show.

Scott,  
in an earlier email you mentioned something about setting up the textures for gauges and needles in max.  
Is there anything 'special' I must do in this area?  
Apart from all being tga textures.

regards

Stan.

=====

Each of the gauge textures in the material editor needs to have the check box checked next to "Render Target". The same thing will apply to the rear view mirrors when you get to that point. Checking that option tells rF that something else will be drawn on top of the texture you have in place. In the case of the gauges, it will be the needle texture you define in the cockpitinfo.ini file. In the case of the rearview mirror it will be the stuff coming from defined camera for the rear view and it will completely cover the mirror texture you use (another hint here, when you do the mirror, the texture has to be named mirror.bmp for it to work (at least that's been my experience so far)).

Tah Tah For Now  
Scott (Tigger) Stockton

=====

Thanks Scott.  
After writing the email with the questions I went back into your mustang and scrutinised your texture settings for your gauges and picked up on the "Render Target" check box.  
They're working fine now.  
The tip for the mirrors is very welcome.

Another question.  
Does smoothing work with cockpit dash pads etc?  
Or is there just something different I must do?  
Struggling to get my dash pad looking anything more than a dark brown color blob.

regards

Stan.

=====

The smoothing in 3ds doesn't export well (if at all), regardless of the settings you use for the export. The way I make certain things look the way I want them to is to setup the model using smoothing groups, but when I get ready to export I select faces by smoothing group, one group at a time, and detach to element (this breaks the verts into multiple verts which will export properly). You can even select multiple objects in 3ds, then apply the "Edit Mesh" modifier and do the same select smoothing group and detach to element thing, then when you've finished all the smoothing groups you just collapse the Edit Mesh modifier and export your objects to gmts.

Tah Tah For Now

Scott (Tigger) Stockton

=====

Yeah mate,  
after following your previous tips on the ssMOOTHING subject I've got that process pretty much working OK.  
My current thing is getting smoothing to work on the dash pad.  
I have a feeling it wont look any good without shading applied,which brings me to my next question.

How are shading and cube maps made/set up?

I've read the max help files and tried to get max to make a cube map automatically but it keeps spitting the dummy on me.

regards

Stan.

=====

Hi guys,  
I'm slowly getting past all my obstacles.  
I've come to the conclusion that any sort of smoothing does not work with the interior,specifically,the cockpit view,after a few attempts to ensure I hadn't screwed up somehow.  
Created shaded texture maps to get it looking OK for thr dash pad,do the rest of it next.

I've been also working on the shading,bump maps etc,trying to figure them out.  
Getting some strange shapes on the car off the cube map.

The 'body\_s' specular shader is OK.

Tried Scott's setting of "bump cube specular map add alpha reflect T1"

The 'body\_b' map,the blue one.

\* what exactly does it do?

I assume from the 'relief' on the surface of most I've seen that it deals with depressions in the body surface,in that what appears as raised sections are actually dealt with as depressions ??

Got a 'do mesh' error when attempting to use one:  
"no textmap defined for stage 3 material WCCARBODY"

Am I to assume that the car body and parts have to be mapped to this texture map with UV Unwrap as with the main color texture map?

I imported a driver and helmet GMT from another mod through Zmod and out as 3DS to Max.  
Seemed to work OK untill in game on the spinner,the driver and helmet are transparent and the textures are being mapped to the opposite faces.  
That is,front is on back and vise versa.  
Have done the usual of flipping poly's etc to no avail,nothing seems set anywhere as transparent.

Does anybody have a decent driver/helmet that I could use please?

Is there a listing of multi/sub 'WC' functions? ie,WCCARBODY,WCWINDOWS,ISI\_DRIVER,WCDRIVER,WCHELMET.

regards

Stan.

=====

Sorry for the slow reply Stan, things are hectic to the point that a lot of things are falling through the cracks on my end lately.

Regarding item 1, I'll get you a 3dsMax file with a driver that is a modified version of the default ISI one (if you haven't gotten an email with



a file attached in the next couple of days, email me again because it means I forgot). As to what the issue is with your driver, it almost sounds like you've got transparency turned on again (like with the body of the car), in which case you'd need need to change your material from Source Alpha/Invert Source Alpha to One/Zero (I forget what the name of the field is).

>> Is there a listing of multi/sub 'WC' functions?  
ie,WCCARBODY,WCWINDOWS,ISI\_DRIVER,WCDRIVER,WCHELMET.

The ones I know of are documented here:  
[http://www.thepits.us/files/tutorials/ISI\\_named\\_materials\\_01.pdf](http://www.thepits.us/files/tutorials/ISI_named_materials_01.pdf)

Tah Tah For Now  
Scott (Tigger) Stockton

=====

NP mate,thanks for the info.

The transparent driver/helmet issue has really got me,checked all the material settings.  
The 'field names' you mentioned I'm sure are 'source and dest blend',and they checked out with one/zero.  
I actually tried using source alpha/inverse source alpha just for the hell of it and it sorta worked.  
Also tried double siding the materials and that too sorta worked.  
In the end the only thing that works is flipping all the normals,looks good in game but of course not in max anymore-  
LOL!  
Damned if I know.

I've actually created my own driver/helmet from scratch so you can hold off on the driver file-thanks.  
I've built mine to better suit the cars,no race seats in these so the driver sits a lot higher,and I'm 6' 2",my head near touches the roof.  
At least I can't be accused of pinching stuff from other cars-LOL!

Half tempted to rebuild the driver/helmet,and may come down to that yet.

The listing of Wild Cards is helpfull.  
One thing I discovered though.  
I was having some issues with driver/helmet materials not showing properly,sorta like it had 2 going on at once-wierd.  
Was using the WCDRIVER and WCHELMET with this result,same with the board with WCBOARD,which I figured was wrong anyway.  
Have a feeling that perhaps these WC's are for use with the stock ISI driver/helmets etc and not for custom items.

Then I switched to using the WCEXTRA's and solved the problem.  
Using WCEXTRA0 for the driver,WCEXTRA1 for the helmet,and WCEXTRA2 for the board.  
The V8 Factor cars gave me the clues on how they can be used.

Next task is getting my new cockpit graphics up and running and for that I will use a WCEXTRA so that different colors can be applied to different cars.

I'll send some more pics soon,it's looking not too bad.  
Talk about a time killer,spent near a whole day just making the new driver/helmet and near another day trying to solve all the problems.

thanks again

Stan.

=====

Hey guys,  
got a doozie for you this time,bugg'n the crap outa me.  
Check the attached pic.  
Notice that the Rotor discs and calipers are sitting well below wheel centre,and more at the front than the rear.  
Now I have set all pivots and everything else I can think (including the moon) to the centre of the wheels,everything

aligned spot on in max.

I have 2 wheel sets,one for the spinner and another for the race version as I have 2.5 neg camber on my front wheels and that setting doesn't run too good out on the track so the race ones are set dead square.  
yep,I tried the race set in the spinner too,and also 'IKED' (bind'd) the rotors and calipers to the wheel.

On initial looksee the race set is OK in veh viewer I haven't taken it out on the track yet,will prob do that tomorrow as I have to first transfer everything over to this computer first.

Any clues anybody please?

On another issue I may have a clue to my transparent driver/helmet---alpha's.  
Pretty sure I have white alpha's when I should have black.

regards

Stan.

=====  
I'd have to see your spinner.gen file to be of much help on the rotors and calipers. There's also questions about whether or not you've got any embedded transforms (repositions) on your objects that are causing them to be shifted in game from where they are in 3dsmax. My first guess would be that you do have some transform issues and resolving those is extremely difficult to explain in an email or over the phone. Some can be resolved simply by adjusting the pivot point only while others require you apply a "Reset Transform" function to the object, then open the tree view in the editor screen and zero out any values in the x,y,z area, then collapse the transform again. You also have to use certain instance names in the .gen files in order for the brake components to be positioned properly (although the rotors should fall under the lftire/rftire/lrtire/rtire and the caliper should be under the lfspindle/rfspindle/lrspindle/rrspindle).

As far as the driver/helmet thing... It shouldn't make any difference if the alpha channel is black or white, as long as it's present. There also is not a single WC material name that is for use only by ISI, the definition of the WC in the material name is "Wild Card" and it's so that you can replace the texture with any texture you want as long as it's named with the replacement for the wild card (ie the vehicle paintjob name) followed by the name after the WC in the material name. I'd have to look over your model in 3dsMax to sort out what is the problem with the driver/helmet.

Tah Tah For Now  
Scott (Tigger) Stockton

=====  
Hi Scott,  
here's my spinner.gen file.  
Pretty much the same as your Mustang's,which I used as a guide,only some names are different.  
V8 Factor use the same wheel component names as myself so that shouldn't be an issue.

I tried a 'reset transform' and reset centers that were out but it made no difference.

One work around I tried was to 'attach' the rotors and calipers to the wheels,that worked fine but I'd like to have it work how it's supposed to.  
For the spinner only that is.

I'm going to rebuild the rotors and calipers.

Stan.

=====  
////////////////////////////////////  
// This file specifies how to generate the vehicle graphics for the options car spinner only.  
// It is pointed to by one or more \*.veh files.  
//  
// All information except tokens are copied directly.  
// Tokens have the format "<value>" where value is one of the following:  
// ID - this is replaced by the proper slot identification (000, 001, etc.), or  
// 1,2,3,etc - this is replaced by the first 1,2,3 characters of the

```

//      vehicle filename
// VEHDIR   - this is replaced with the proper vehicles directory (e.g. E:\Data\season01\vehicles)
// TEAMDIR  - this is replaced with the proper team directory (e.g. season01\vehicles\williams)
// SPIN     - for the vehicle spinner in the options only
/////////////////////////////////////////////////////////////////

//-----

SearchPath=<VEHDIR>

MASFile=AUSBL\UCX.mas
MASFile=cmaps.mas

ReflectPlane=(0.0, -1.0, 0.0, 0.0)

//-----

Instance=SLOT<ID>
{
  Moveable=True
  MeshFile=UCX_BODY_A.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(1000.0) Reflect=True
  MeshFile=UCX_Backwindow.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(1000.0) Reflect=True
  MeshFile=UCX_Windscreen.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(1000.0) Reflect=True
  MeshFile=UCX_Sideglass_L.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(1000.0) Reflect=True
  MeshFile=UCX_Sideglass_R.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(1000.0) Reflect=True
  MeshFile=UCX_Interior_A.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(1000.0) Reflect=True
  MeshFile=UCX_Airdam_2.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(1000.0) Reflect=True
  MeshFile=UCX_Numberplate_F.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(1000.0)
Reflect=True
  MeshFile=UCX_Numberplate_R.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(1000.0)
Reflect=True
  MeshFile=UCX_Board.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(1000.0) Reflect=True

Actor=VEHICLE

  Instance=WHEEL
  {
    Moveable=True
    MeshFile=UCX_STWheel.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(500.00)
Reflect=True
  }

/////////////////////////////////////////////////////////////////Left Front Tire and Spindle/////////////////////////////////////////////////////////////////
  Instance=LFTIRE
  {
    Moveable=True
    MeshFile=UCX_WHEEL_LF_S.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(500.00)
ShadowCaster=(Dynamic, Solid, 64, 64) Reflect=True
  }
  Instance=LFSpindle
  {
    Moveable=True
    MeshFile=UCX_Rotor_LF_S.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(500.00) Reflect=True
    MeshFile=UCX_Caliper_LF_S.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(500.00) Reflect=True
  }
}

```

/////////////////////////////////Right Front Tire and Spindle/////////////////////////////////

```
Instance=RFTIRE
{
  Moveable=True
  MeshFile=UCX_WHEEL_RF_S.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(500.00)
ShadowCaster=(Dynamic, Solid, 64, 64) Reflect=True
}
Instance=RFSpindle
{
  Moveable=True
  MeshFile=UCX_Rotor_RF_S.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(500.00) Reflect=True
  MeshFile=UCX_Caliper_RF_S.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(500.00) Reflect=True
}
```

/////////////////////////////////Left Rear Tire and Spindle/////////////////////////////////

```
Instance=LRTIRE
{
  Moveable=True
  MeshFile=UCX_WHEEL_LR_S.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(500.00)
ShadowCaster=(Dynamic, Solid, 64, 64) Reflect=True
}
Instance=LRSpindle
{
  Moveable=True
  MeshFile=UCX_Rotor_LR_S.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(500.00) Reflect=True
  MeshFile=UCX_Caliper_LR_S.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(500.00) Reflect=True
}
```

/////////////////////////////////Right Rear Tire and Spindle/////////////////////////////////

```
Instance=RRTIRE
{
  Moveable=True
  MeshFile=UCX_WHEEL_RR_S.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(500.00)
ShadowCaster=(Dynamic, Solid, 64, 64) Reflect=True
}
Instance=RRSpindle
{
  Moveable=True
  MeshFile=UCX_Rotor_RR_S.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(500.00) Reflect=True
  MeshFile=UCX_Caliper_RR_S.gmt CollTarget=False HATTarget=False LODIn=(0.0) LODOut=(500.00) Reflect=True
}
```

/////////////////////////////////

```
Instance=driver //Driver
{
  Moveable=True
  MeshFile=UCX_Driver.gmt CollTarget=False HATTarget=False LODIn=(0.00) LODOut=(60.0)
ShadowReceiver=True
```

```

    }

    Instance=Helmet //Helmet
    {
        Moveable=True
        MeshFile=UCX_Helmet_OV.gmt CollTarget=False HATTarget=False LODIn=(0.00.0) LODOut=(60.0)
ShadowReceiver=True
    }

}

```

=====

Well mate,  
just remade all the rotors and calipers exactly on center from the start,and didn't have to reposition except for side to side (laterally).  
Cloned and mirrored for the opposite side,everything looked good in max.  
However,the end result was exactly the same,rotors and calipers sitting low.

Got me stumped!

Even pulled an assembled wheel apart to make sure all individual components were on center-perfectly.

regards

Stan.

=====

Fixed it mate.

I had set up my spinner.gen the same as you'd set up your mustang file,as per the file I sent,however it proved to not work.

I'd set up my race gen file the same and it had everything in correct alignment but when I checked a recent replay the rotors and calipers were spinning with the wheels,that looked hilarious.

OK then,checked your race gen file with tires and rotors grouped together and the calipers seperate,that looked better,calipers were stationary.

Then set my spinner gen likewise and problem solved.

Incredible just how much time can be wasted chasing down silly things with these models.

So here's where I'm at so far:

- \* car body is pretty much completed.
- \* interior still has some very minor stuff to complete.
- \* wheels and tires etc are NOW OK.
- \* still have driver/helmet thingo to fix.
- \* happy with engine/gears/tires/sound and physics,car drives and handles great.

car is almost good to go,but still have ahead:

- \* LOD's to build
- \* damage modelling
- \* upgrades

I'll probably struggle through OK but would appreciate any tips for my 'to do' list please.

regards

Stan.

=====

On your to-do list you can sort of strike one of the items off. There's no damage modeling for ISI games. There is a damage.ini file that you edit how far verts get moved, how much impact is required to knock pieces off, etc.

Tah Tah For Now  
Scott (Tigger) Stockton

=====

I'm probably not going to do very much to the damage ini.  
I spoke a little too soon about my wheels,rotors and calipers being fixed.  
It was probably the calipers causing the rotors to hang low as now only the calipers are sitting low.  
Both the original built set and the remade set are doing the same.  
I don't think it's max related anymore and I can't find any settings in any other files that could cause it.

I could easily offset them to sit visually correct in game but they will still bug me because they're not correct.

regards

Stan.

=====

Further to the caliper droop.  
I don't know why I didn't twig to this before,prob blind sided by other issues.  
My wheels are not sitting on the ground,spinner surface,and the fronts are higher off than the rears??  
The front calipers are sitting proportionately lower than the rears.  
All ground clearance settings and tire radii are same f to r/l to r

I did notice that a couple of items on the car are sitting a little below 0,0,0.  
Attached to the body is a drop tank sitting a bit lower than the body itself and the other is the aim dam but it is a separate item and shouldn't have an effect.  
Just about to go at it again,though earlier I moved the lowest point of the body up to zero and reset the pivot but it didn't change anything.

Might try detaching the drop tank as sep item and see if that makes any changes.

I come up with some good ones ey?

regards

Stan.

=====

Well,I've come to a dead end with the drooping calipers.  
Firstly,this set of rotors and calipers were rebuilt on the exact centers of the wheels,in side view.  
All were constructed from basic cylinders and of course reshaped and of course the calipers were then moved to their upper rear positions on the rotors.  
Their centers remained on the wheel 0,0.-and all pivots subsequently checked but no adj req'd.  
BTW,they behave exactly the same as the race set constructed the same way but out in space and moved to position with the pivots then adjusted.  
The rebuild an exercise in proving SFA.

- \* the wheels (with rotors) are sitting off the ground with the fronts a bit higher than the rears.
- \* the calipers appear associated (linked) with the car body which makes them appear to be drooping when it's actually the raised wheels creating the illusion.
- \* every which way I swap parts calls around in the spinner.gen,the overall conclusion is the same.
- \* I've searched through and compared with many other cars,settings in the HDV,TBC,PM files and can't find anything that would cause the wheels to sit off the ground.Even tried some crazy settings to see what they would do-nothing.

I checked the NAGT GTO,Scott's Mustang,the V8Factor cars and all are sitting firm on the ground.  
I have used files from,and my car is within this group,the AUSBL (the Bathurst 69's),and they are sitting off the ground.  
I therefore think that something somewhere in the AUSBL is causing this,just wish I knew where.

regards

Stan.

=====

First off, the calipers, rotors, and wheels are handled differently for on-track/race versus in the spinner, so similar reactions in both areas do not necessarily mean the same reasons behind them (great, even more to deal with eh?....LOL).

In the spinner (I'll cover the on-track/race version in a later paragraph), the wheels are treated like a unit, even though they have separate instances in the .gen file. The lowest point in the whole unit will set on the ground. If you have different diameter tires on the front versus the back, you will have to position the front tires lower in 3dsmax for the spinner version. The bottom of the front tires will have to line up with the bottom of the rear tires. One of the issues with the Mustang as an example car is that it uses the same size tires on all four corners, so it's not obvious that the bottoms are lined up. If all four wheels/tires are setting above the ground in the spinner, then you've got some other object that is setting lower or you've got some erroneous vertices that are making the tires appear bigger to the game than what you can see. My first guess is that it's an object. For the spinner version of the car, locate the tires so that the bottoms of all four tires are at the same exact height. Then locate your rotors and calipers in relation to the re-located tires (if the front tires are smaller diameter, then the calipers and rotors will end up with a lower center point than the rear ones). In 3dsmax, once you've got the tires, rotors, and calipers positioned, then position the body so that it sets at the proper appearing ride height, then make certain you re-zero the pivot point.

One little tip on moving things in 3dsmax, if you move an object by selecting all of it's verts and move those, you won't effect the pivot point, if you select the object without going into the editing of bit (verts, edges, faces, etc) and move it, it will move the pivot point too. So, for relocating the tires, move the whole object so the pivot points go with the tires. Same for the rotors and calipers. When relocating the rest of the car, select all of the verts and move them so the pivot point stays at 0,0,0.

For testing, comment out all of the car in the spinner.gen but the tires (just put a // in front of the instance calls you want to remove). Once you've got all four setting on the ground, add in the rotors and calipers. Once they are all aligned, then start adding in the rest of the car. Leave the driver and helmet out of the spinner until the very end. Any parts of the car that hang below 0,0,0 should not be an issue at this point. If, with the tires lined up in 3dsmax, they all float above the ground in the spinner (with the rest of the car commented out), then there's something you're not seeing that is sticking out below where you think the tires are at, so you'll want to do something like unhide all faces and verts and see if there's anything you need to delete. When you start adding things in, check it in the spinner at each change to see if anything you add causes the car/tires to float above the ground. If it does, then you need to check the pivot point, transforms, hidden faces/verts, etc.

As far as the on-track/race version goes... First off, the part of the car that needs to be positioned at 0 height is the part that you want to have as the measuring point for the physics. If your car needs to have 12cm ground clearance, then put the part of the car that the clearance is measured to at 0 height in 3dsmax and then when you set the height to 12cm in the garage,

that's the part of the car that will set at 12cm. It's OK to have parts of the car hang below that. I don't think the Mustang has anything below 0 height, but the stock cars I've built have quite a bit below 0 (side skirts that hang down, front splitter that hangs down, exhaust that hangs below the frame rails (since the official ground clearance is measured to the frame rails)).

The tires do not have to be properly positioned to the car in 3dsmax for the on-track/race versions. They just have to have their pivot points set to the proper point for rotation. If the tires are floating above the ground on-track, then it's because of the .tbc file (the tire file). There is a value in the .tbc file for the radius of the tire and that value is used to locate the tire's vertical position graphically. If your tire 3d model has a radius of 32cm and the .tbc file has the radius set to 25cm, then the tires will sink into the track. If the .tbc file has the radius set to 40cm, then your tires will float above the track. There should be a separate radius setting for the front and back tires, so you should be able to adjust each one accordingly (again, the Mustang wasn't the best example for this since all four tires are the same). The one warning here is that when you change the radius in the .tbc file, it will alter aspects of the physics (as you might expect), especially how the gearing feels.

If you do have any issue with hidden verts or faces on your tires, it will not effect the on-track look as long as the pivot point is set correctly and the .tbc file is setup to match the diameter that you think the tires are. If the tires look like they have a radius of 32cm, but hidden bits give them a real radius of 60cm, the game will still place the pivot point at 32cm above the ground as long as that's the value in the .tbc file.

Lastly, the caliper and rotor for each tire needs to be positioned the proper distance away from the pivot point of the tire, and needs to have the exact same pivot point as the associated tire. If the pivot point for the left front tire is at 75cm,130cm,20cm, then the pivot for the rotor and caliper has to be exactly the same.

I do realize some of this will be a repeat of things you've already heard and some of it is stuff you've already covered in your explanation of what you've done. I just wanted to make certain I didn't miss anything.

One last thing. If the tires are located at the wrong place along the length of the car, then you'll need to adjust the wheel base value in the .hdv file (which will also alter how the car drives in-game).

Tah Tah For Now  
Scott (Tigger) Stockton

=====

Ok, two things here that pertains, and I'm pretty sure one (or both) are your problems...

I do recall awhile back the realization that what was meant by 0,0,0 for the bottom of the car wasn't necessarily what we thought it was. I'm sure Scott or Kev can point it out, but that might be a culprit. You might also check some of the Tutorials as well as articles in Tigger's Tips since this problem crops up rather frequently and you might read it faster than Kev or Scott can get back to you on this.

Second, there is an adjustment within the HDV file to move wheels to a new location. This is kind've a 'fudge' in rF because since we're not building a real car, what the game thinks the ride height should be (given the components created for it) may not be realistic...hence the adjustment to make the graphical car look correct even if the physically calculated car is not. Make sense?

Cheers!



Jan

=====

>> I do realize some of this will be a repeat of things you've already heard and some of it is stuff you've already covered in your explanation of what you've done. I just wanted to make certain I didn't miss anything.

Yeah I have but I sure appreciate your time and effort to run through it all again for me.

1. HDV-I have my ride hgt set up for garage adjustment so it has a range of positions to choose from.I actually set it a little higher on track so the tires don't stick through the flares/fenders when the suspension is compressed,just a visual thing.

I will check in max and fix it at a set hgt in HDV,see what effect it has.

2. All 4 tires are exactly same size and I've gone to somewhat extreme lengths to set them and pivots exactly correct,so too the rotors and calipers.

Tires,rotors and caliper pivots are 0,0 on rotating center in side view,and in end/top are set in the center of the tire.

3. the fronts sitting higher off the ground than the rears is really got me scratching my head.

I will check for any stray verts etc as that is a remote possibility.

4. a puzzler is the calipers remaining relative to the body when the tires/calipers are lifting off the ground

5. I hadn't thought of // ing out all but the tires in the spinner and building back up from there.

thanks again mate.

Stan.

=====

Well,I tried #5 first.

Some strange results:

a. tires are well sunk into ground and there appears to be a second set sitting even lower.

b. the Mustang does the same !!

c. the V8 factor's do the same as well but as it's tires are just graphics and not 3D like ours can't tell if there's a second set sitting lower or not.

d. 'spinner' doesn't work until a car body is introduced-however:

1. Mustang needs the chassis introduced.

2. my car needed the 'undertray' settings added to HDV for it to work.

So it didn't really prove much.

I reset my HDV ride hgt and that did nothing too.

Tires still above the deck.

I'll go back into max and see what I can find.

> (great, even more to deal with eh?....LOL).

Understatement of the decade.

regards

Stan.

=====

<snip about 30 emails of Stan pulling out hair> :)

=====

Guys,

here's a sample of some of the stupid things going wrong that are driving me crazy,have ignored until today..

The calipers.

I made a new set of RIGHT side rotors and calipers.

Then cloned/mirrored them for the left side,NP done it a zillion times for all sorts of parts on the car,as have you guys I

guess.

All the new left side cal's and rotors have flipped normals-great.  
Go back again today (this is several times over couple of days).  
Try to figure out why I'm getting flipped normals,several sets of GMT's later.  
Even switched from max 5 to max7.

I got it,don't mirror the damned things.  
Easy for the calipers,just copy and slide them over.  
The rotors,just copy and rotate then slide them on over too.  
Go through double checking that all pivots are where they should be.  
NOW I've got the LF and the RR calipers siting underneath the car at 0,0,0.

Diagonally opposite and the RR is an original,not a copy.

Must have stepped over a dead chinaman's grave somewhere,haven't busted an mirrors lately or stepped under a ladder and haven't seen any black cats for yonks..

Stan.

=====

Guys,

I have the wierdest of problems with max/gmt export that has been bugging me for a while and up till now I've just worked around it.

It began with rotors and calipers,I make the original on the right side then clone/move/mirror to the other positions.  
Normal stuff and like probably everybody else just about every item on the car has been made for the opposite side in this way.

Now though,I'm getting flipped normals with everything I mirror to the other side of the car.

With the rotors I just cloned and rotated them then slid them over,for the calipers I ended up making them in situ.  
I've just made a new wheel assy and everything I try still gives me flipped normals on the opposite side.

I've tried all available settings combo's with cloning and mirroring.

I must have altered a setting somewhere,unwittingly.  
I'm reading to try to figure it out but it has me stumped so far.

Any clues?

I probably should mention that all is fine in max,no flipped normals.  
It's only after exporting the gmt's that is appears in game.  
I'm wondering if it's got anything to do with smoothing prior to mirroring as just about everything else I've mirrored the smoothing was done afterwards,as in right/left body panels etc.

regards

Stan.

=====

Are you collapsing the mirror modifier before exporting?

Tah Tah For Now  
Scott (Tigger) Stockton

=====

OK.

I assume by "collapsing the mirror modifier before exporting" you're ref to 'converting to ed mesh?  
Yes I am.

Cloning/mirroring right to left and left to right-same.

I've even tried just cloning then rotating to the other side,same deal-flipped normals.

I tried this before with the calipers for the same result.

The only way I got around it then was to create new ones in situ,same with the rotors.

I thought maybe something to do with smoothing,removed it all-same.  
I dunno,just something else to drive me nuts.

Tonight I'm going to take the airdam previously made same way,remove the cloned/mirrored right side and redo it and see what gives.

Stan.

=====

Solved it!!

After exploring a theory.

I cloned my existing airdam,deleted 1/2 then cloned/mirrored and welded it together,as per norm-EXCEPT!

I attached the original 1/2 to the cloned/mirrored 1/2 and in game the whole thing had flipped normals.

I then repeated the exercise except this time I attached the clone/mirrored 1/2 to the original 1/2 and in game it was perfect.

Always with my body panels etc I cloned/mirrored off the (mostly) left side then attached/welded to the original,in every case that I can recall,and didn't experience this problem untill recently with rotors and calipers.

Why I got away with it with my earlier wheel sets I dunno,or I did something different that I don't remember-KRAFT disease.

To the wheels.

Starting with the RR as the original,I kept the tires separate to the rim assy,then cloned the tire and slid it over to the left side.

Then cloned/mirrored the rim assy and aligned it with the L tire.

Then I attached the rim assys with the tires and set up the pivots.

Something is strange with mirroring I think,and it has something to do with an item made up of assy's which are not welded together as one,as my wheels are.

This is causing the normals to flip.

Therefore,by attaching mirrored items to non mirrored items,the normals attributes of the non mirrored are adopted.

In the case with the airdam,when I attached the original 1/2 to the mirrored 1/2 all the normals were flipped because the flipped attributes of the mirrored 1/2 were adopted.

When I reversed this all was OK again because the attributes of the original were adopted.

I have the same problem with my driver/helmet and I'll bet I've done the same with them which I will only prove when I redo them.

I don't know if my theory is correct or just something weird that's happening just to me for some reason,however,if it is the norm then perhaps it should be noted somewhere for ref for a future tutorial.

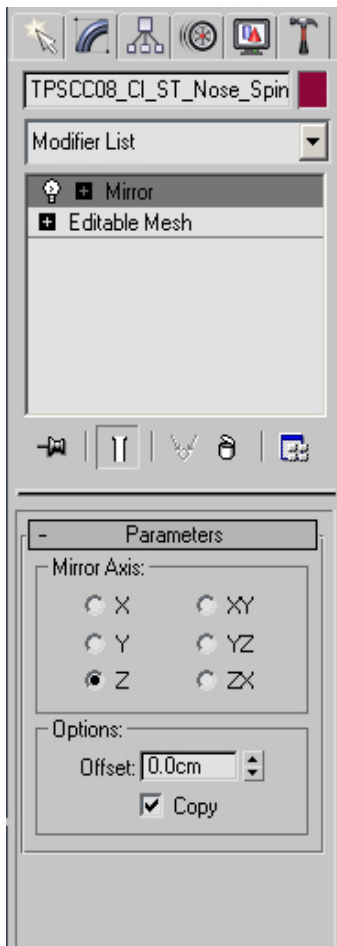
I remember in past projects having to create a simple box and attach a part to that box,join them together with a couple of polys,save the file,then delete the joining polys and delete the box to correct strange problems.

regards

Stan.

=====

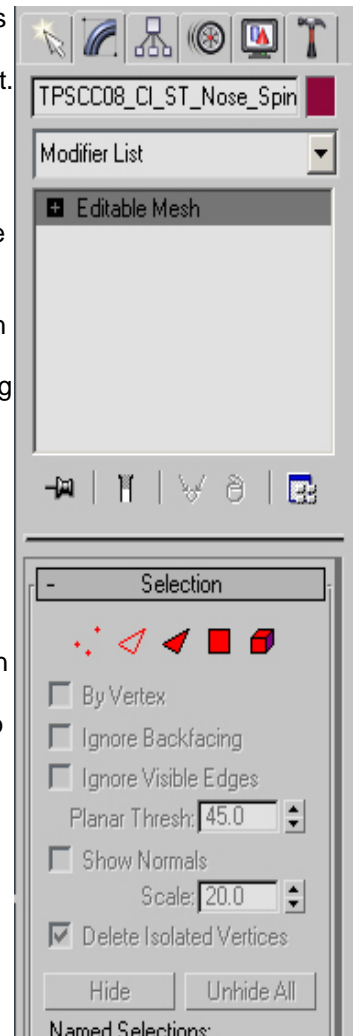
By collapsing the mirror modifier, I mean that when you apply the mirror modifier to the mesh, it appears in the Modifier List tree along with the "Editable Mesh" modifier. If you right click on "Mirror" in that list a popup menu will appear with various options, including "Collapse To" and "Collapse All". If you don't use one of the options then you have an embedded mirrored object that will not export properly (I always do a collapse all personally, which dumps everything down to an editable mesh). I'm attaching a couple of screen pics to help illustrate.



In the first image, the selected mesh has a mirror modifier as part of itself. If I click on the editable mesh or convert to editable mesh, the mirror modifier is still applied to the object. If I right click on "Mirror" in the modifier list and then select "Collapse All", the mirror modifier is merged down into the main mesh. The difference is that a collapsed modifier has it's modifications made permanent to the base mesh. An embedded modifier has it's modifications associated with the modifier rather than the mesh. When exporting the mesh object any modifiers that are embedded, but not supported specifically by the export plugin, will cause odd behavior with your final output. Parts of the modifier may be handled properly by the export plugin while others will not. Collapsing the modifier before exporting (see the second image Mirror Modifier Gone.jpg) will force the changes/modifications to become part of the core mesh and will allow the mesh to export with predictable results.

The same thing applies to the UVW Unwrap modifier. If you don't collapse it before exporting, you can end up with the mapping getting blown away on the final mesh object, especially if you've got any other modifiers also embedded in your mesh. In fact, the one way to make certain you don't have an issue with a modifier messing up your mesh is to do a collapse all as soon as you've finished using the modifier.

Tah Tah For Now  
Scott (Tigger) Stockton



=====  
Scott,  
thanks for the info mate.  
I don't actually use the same modifiers or same tech.  
I use 'edit-clone' from the top menu bar and 'tools-mirror' from same,then right  
click object 'convert to ed mesh'.  
I would assume it works the same.

>> If I click on the editable mesh or convert to editable mesh, the mirror modifier is still applied to the object.

But it looks like it doesn't so I will try your method.

After using any modifier I do the right click thingo.

Stan.

=====  
Hi Scott,  
I understand everything you've mentioned here and after giving it a go I have  
only one question.  
How does that particular mirror modifier actually work?  
I couldn't make it do anything except rotate my wheel slightly,it didn't mirror  
the object.

I then applied a 'collapse all' to my normal method and got the same  
result-flipped normals with the mirrored objects.

regards

Stan.

=====

Not sure what to tell you Stan. I've never encountered the issue you're having, so I have no idea what's causing it or how to fix it. I messed around with some mesh stuff today to see if I could duplicate the issue using your method and I can't.

As far as the mirror modifier I was using... You have to select the correct axis to mirror against. There are the check boxes for x, y, z, and for two axis mirroring. The z axis always works for me for rFactor stuff, but it can be different depending on the working view that has focus and whether or not you're in relative or absolute mode. Basically, select the mirror modifier, if the item isn't mirrored the way you expect, try checking a different axis until you get the result you're looking for. For wheels/tires specifically, if you have any kind of sidewall text on your tire texture, mirroring will result in the text being backward.

I use the clone/copy on a number of things too, but again, I've never had it cause an issue with flipping the normals around. It sounds like you're got some odd setting in 3dsMax or in the export tools that is causing the issue, but I've got no idea what it might be.

Tah Tah For Now  
Scott (Tigger) Stockton

=====

Hi Scott,  
it was the Z axis.  
Worked fine,no flipped normals.

I looked through everything yesterday and didn't see anything that really stood out,not that I really know what I'm looking for so I'll just have to put up with whatever is causing the problem.

At least your method works so I'm OK to go.

At one stage I was ready to dump max5 and reinstall,then I tried the wheels through max7 with the same flipped normals result.

I'd make a rough guess that something new I've installed is mucking around with win XP.

Stan.

=====

Hi guys,  
With the GMT 2 wizard tool there is a listing of ISI material names.  
I'm familiar with and use the common WC's plus the WCEXTRA's.  
I'm curious about others on the list and what they can be used for:

LEDLF  
LEDPSY  
LEDPSR  
LEDFB  
LEDFY  
LEDRL  
LEDFR  
LEDRL  
LED165  
LED170  
LED175  
LED182

Any clues

Stan.

=====

LEDLF = Low Fuel  
LEDPSY - Pit Stop Ready  
LEDPSR - Pit Stop Requested  
LEDFB = Blue Flag  
LEDFY = Yellow Flag  
LEDL = Overheating/Temperature Warning  
LEDFR - Black Flag  
LEDRL - Pits speed RPM  
LED165 - 182 REV lights for tachometer

Jeremy

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