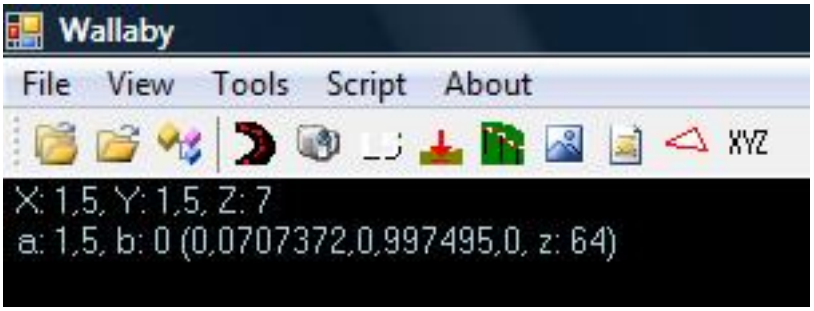
Wallaby

Pozn.: Update 30. 4. 09 beta, written for Wallaby 029 beta 2
Pozn.2: Installed DirectX 9 June 2005 and Microsoft .NET framework 2.0 are necessary.

Controls:
Arrows – move („walk“)
PgUp, PgDw – vertical move
Right click – change of view direction
Any move + shift – faster move
Delete – deleting
Left click – selection
Left click + Ctrl – multiple selection
Left double-click on object (general, movable) – open object properties in Object Browser

Main toolbar:



icons from left:Open files at once – open whole track
Open file – open single file e.g. binary import of collision (*.cms)
Object Browser – track database and properties
Driveline editor – track-line editor, it defines track
Camera creator – cameras editor
Pacenotes editor – pacenotes editor
Object Placer – place car, finish area and new animation
Fence Builder – strips editor
Material editor – surface physics editor
Run script – script starter
Vertex editor – edit some geometric paramaters
Change position – move on coordinates

Track definition:
- every track has unique number = slot
- it’s defined by 8 files

For example track on slot 100 is defined by following files:
track-100_N.col - include „nonmovable“ collisions („ground“ objects)
track-100_N.dls - include scripts (animations), cameras
track-100_N.fnc - include strips and nets
track-100_N.ini - include texture information
track-100_N.lbs - include track geometry and settings
track-100_N.mat - include physical surface definitions based on textures
track-100_N.trk - include driveline definition, collisions („general“ and „movable“ objects)
track-100_N_textures.rbz – include textures

Types and properties of objects:

„ground“ - Nonmovable and nonselectable geometry. You can change only visible mode. It isn't transparent – alfa channel isn't used. Visible only from one (normal) side. You can generate col file based on ground geometry (next versions). Shadows are generated on „ground“ meshes.

„general“ - General type of geometry. Nonmovable in game. You can link with nonmovable collision.

„movable“ - Movable geometry in game. You can link with movable collision.

„collision“ - Object represented by mass and physics properties (depends on size and volume). Without texture – nonvisible. It links to „general“ and „movable“ objects.

„far scenery“ - Nonmovable and nonpickable mesh. It's „background“ which is always visible.

„clipping planes“ – Planes (or surfaces) defining what will be loaded in memory – viewed. Saves requirements on hardwere. From any place what is behind, is not viewed (but stays in memory) – except "far scenery".

All these objects are imported through Direct X files. You can create model geometry in any 3D software which can export Direct X file (recommended 3DS MAX 7,8). But large geometry (like ground mesh) you have to split. This script is originally written for 3DS MAX 7 but works also in 8.

Note: For „movable“ and „far scenery“ objects you need to have all map coordinates positive (that means in interval <0,1>)! If not your map coordinates will be switched in game. This is done by Microsoft exporter (see Export to Direct X file).

Ini file structure

- Include information about used textures.
- First generate in Object Browser, right click on Texture and „Export ini“.
- Next editions do manualy.
- Textures order must be the same like in Object Browser. Otherwise you will have switched textures in game.
- Have the same parameters like in Object Browser.
- When exporting ini from Object Browser there is parameter „IsGroundTexture“ – default value is „false“. If a texture has to be ground texture, you have to correct to „true“!
- Ground textures are located in subfolders new/normal/worn in rbz file. The game can find them here only if parameter „IsGroundTexture=true“. These textures are loaded according chosen wear.
- Other textures (with parameter „IsGroundTexture=false“) are located „upstairs“ – that means in subfolders dry/damp/wet in rbz file.
- For every change don't forget control „NumTextures“ parameter in ini file.
- Every texture is defined in this format [Texture“number“=name of texture]. Every name has to be placed in texture detail too (including suffix).

Example of the simplest ini file with one ground texture:

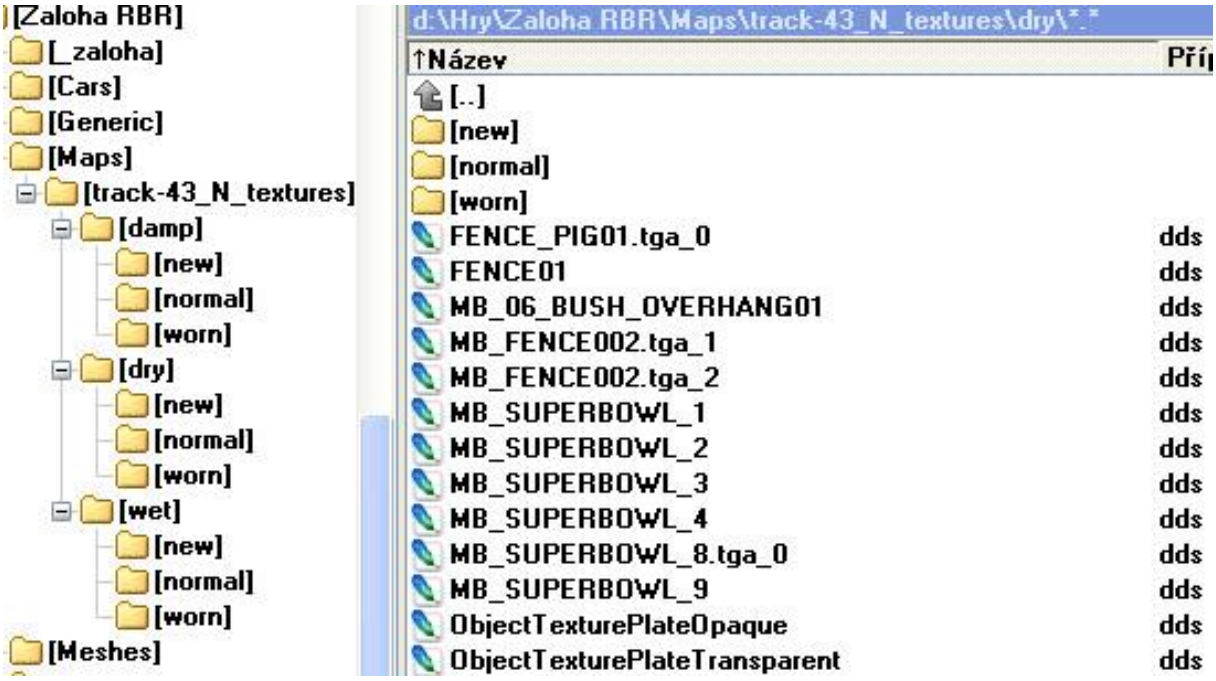
```
[TextureInfo]
NumTextures=1
Texture0=TrackTexturePlateOpaque.dds
NumShadowTextures=0
NumSpecularTextures=0
[TrackTexturePlateOpaque.dds]
MipLevels=3
Dynamic=true
```

OpacityMap=false
OneBitOpacity=false
IsGroundTexture=true
MipFilter=Linear
MinFilter=Point
MagFilter=Point
TextureFormat=DXT3

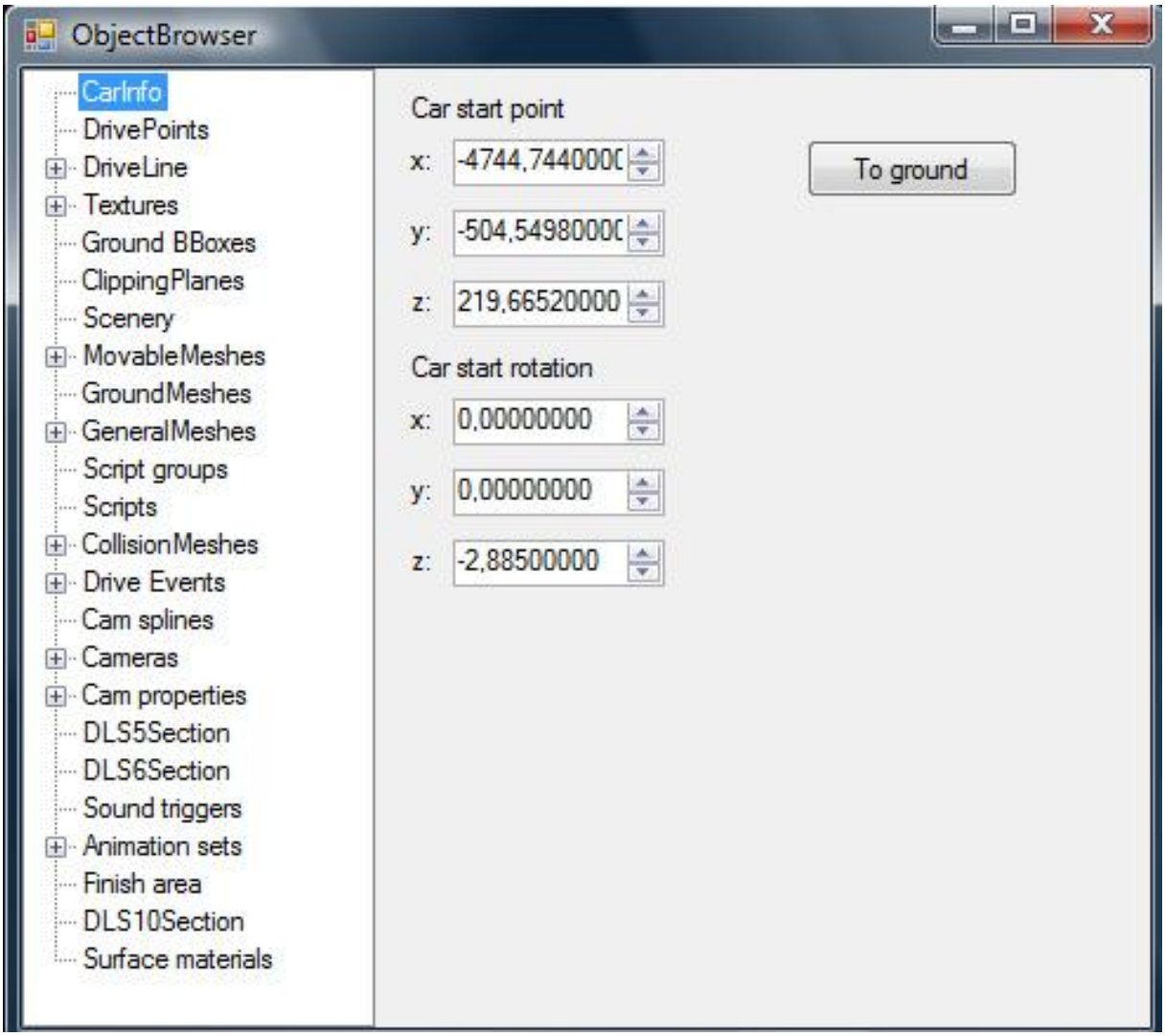
Rbz file structure

- Here are saved used textures.
- On the level of folders dry/damp/wet generated shadow files are saved.
- In folders dry/damp/wet every texture, which don't change with surface wear, is located.
- Every dry/damp/wet folder has it's own subfolders - new/normal/worn which set surface wear. In these folders there are saved ground textures – it is controled by IsGroundTexture" parameter in ini file.
- Of course not every combination, e.g. damp/worn, wet/worn, must exists.
- Rbz file is renamed zip archive. You can extract to maps folder. Than this folder has priority before rbz file when game loading textures.

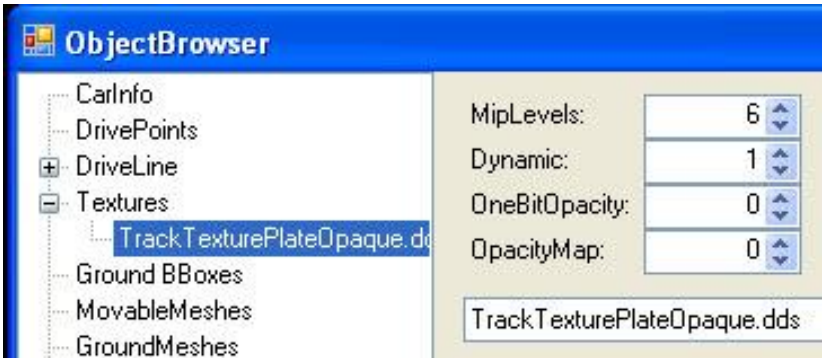
Note: For 3DS Max you can have textures wherever you want. To see textures in Wallaby you have to have textures in rbz file (or extracted). But game finding textures according ini file!



Object browser



- Include information and options about all objects.
- You can set here Carinfo, Finish area, Start, Checkpoints, Finish:
    - **Carinfo**: first car position (note: quick set through Object placer).
    - **Finish area**: time control area behind finish, after driving here stage ends (note: quick set through Object placer).
    - **Start, Checkpointy, Finish**: parts of „pacenotes“, you can set them in Driver Events/section0/Track triggers.
- Contains used textures information.
- Textures must be in the same order as they are defined in ini file! Otherwise they are switched in game.
- When deleting textures, delete from last one! And texture can not be used anymore – otherwise editor crash.
- Adding new texture – right click on Textures/“new“
    - „Miplevels“ means number of miniatures in dds file. Lower number can cause stucking (e.g. driving into valley) – to avoid this rise Mipmaps number.
    - „Dynamic“ means, that dynamics effects are shown on texture, e.g. car wheel on track (1-yes, 0-no).
    - „OneBitOpacity“: opacity sets by one Bit (using isn’t known).
    - „OpacityMap“: opacity defined by alpha canal in texture (1- yes,0- no).



Mat file

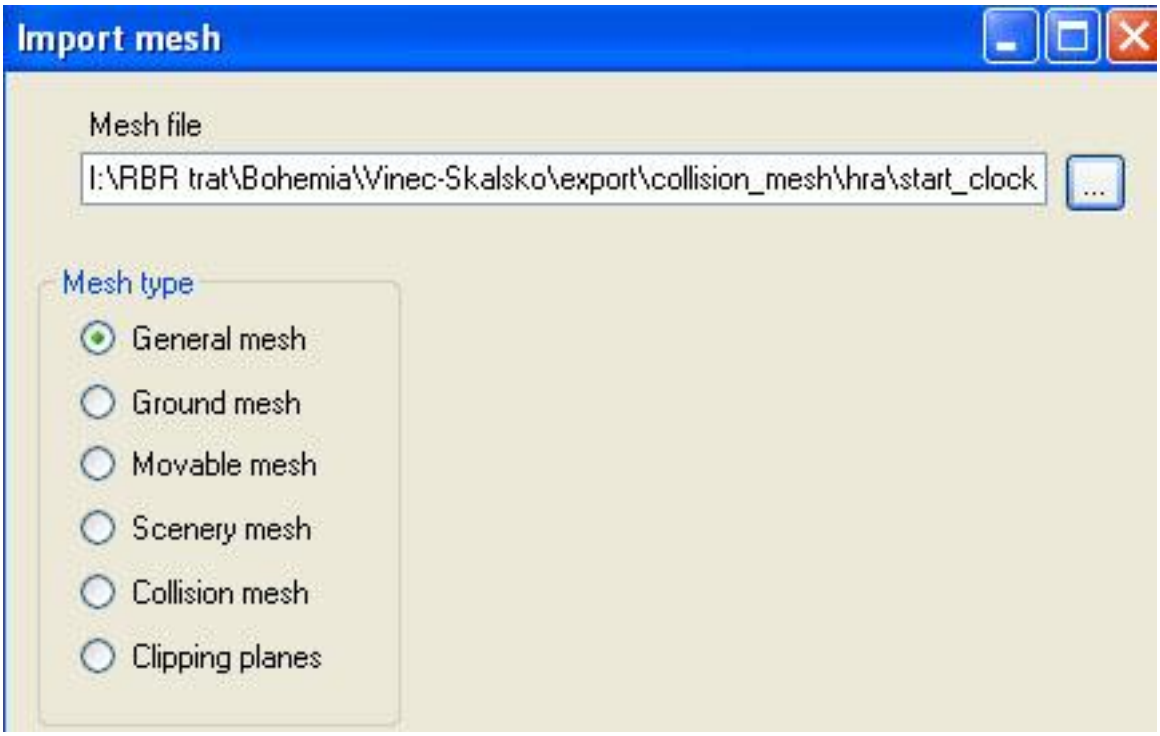
- see Cameras and Surface materials.
- Assign specific physical properties to the every part of texture.
- Col file is generated on the mat file base.
- Important is material on slot 0. If you generate col file with some non defined parts of texture than material on slot 0 is used instead of all non defined physics. It is recommended to sets grass on slot 0.
- You can use more track textures (not only „tracktextureplateopaque.dds“).
- You can create different materials by combining various surfaces, e.g. sand + wet tarmac.

Driveline creation

- Defines tracks. Tracks length is calculated from it’s length.
- Cut penalizations are based on distance from driveline. It should be in the middle of the track.
- New point is always connected with the other nearest point!
- More points in corners.
- You can show length coordinates View/Visibility/Show texts.

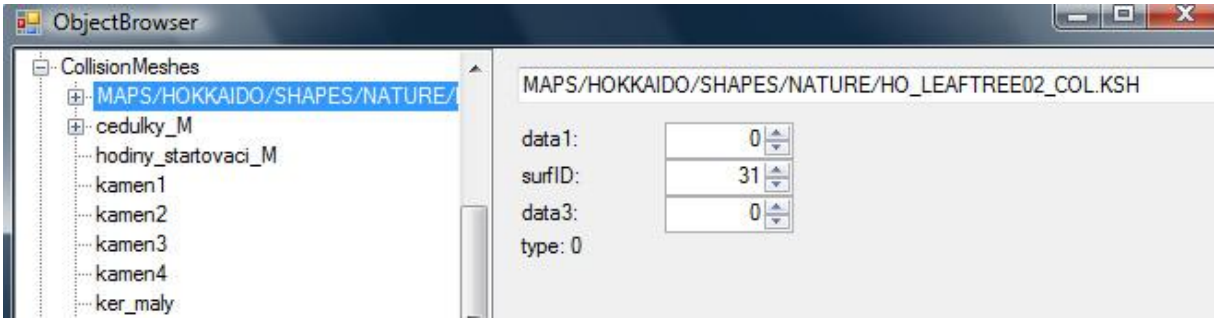
Mesh import

- New geometry insertion - File/Tools/ Mesh import
- Pick Direct x file and choose geometry type.
- After choosing „ground“ there is option, if you want to delete all previous ground meshes (note: doesn’t work in 029b2 yet, you have to delete previous ground meshes in Object Browser – right click on Groundmeshes/“clear section“).
- After choosing „general“ there is option, if you want object to be placed on original coordinates or infront camera.
- After choosing „movable“ there is an option, if you want to centre geometry. Centering means that object exported from any coordinates is grabbed at coordinate system origin and moved by these coordinates! If not, You may handle the object by it's geometrical center. - After choosing „collision“ there are the same option as „movable“.
- You have to import „Clipping planes“ as single (joined) object.



Collisions

- Represent physical properties of other objects.
- You can assign coll. mesh to general object (right click – „Assign coli mesh“). Assigning coll. mesh to movable object is done during importing. It is not possible to assing collision mesh to other objects.
- Physical properties depend on collision volume and data1 parameter (represents „density“).
- data1=0 means nonmovable = hard object, only to „general“ meshes! Other numbers (1-9) are reserved for „movable“ objects. This is good to differ by e.g. suffix *_M, see below.



- „surfID“ parameter sets surface of collision (e.g. wood, metal, …).
- Parameter list here.
- You can get collision:
  a) import from another track – using binary export and import throught „open file“.
  b) in Object Browser right click on „CollisionMeshes“/„New collision box“ – only box; you can set length parameters – for simple objects.
  c) create your own specific collision in 3DS Max, than import throught Direct x file (doesn’t work properly at all).
- If you make your own collision in 3DS, do it the simplest! Example bar substitute by 4-side bar, gate substitute by block, …
- Number and complexity of colissions affect track requirements.
- Collision may cause errors and problems sometimes – before cloning try it in game, otherwise it may be a waste of time.

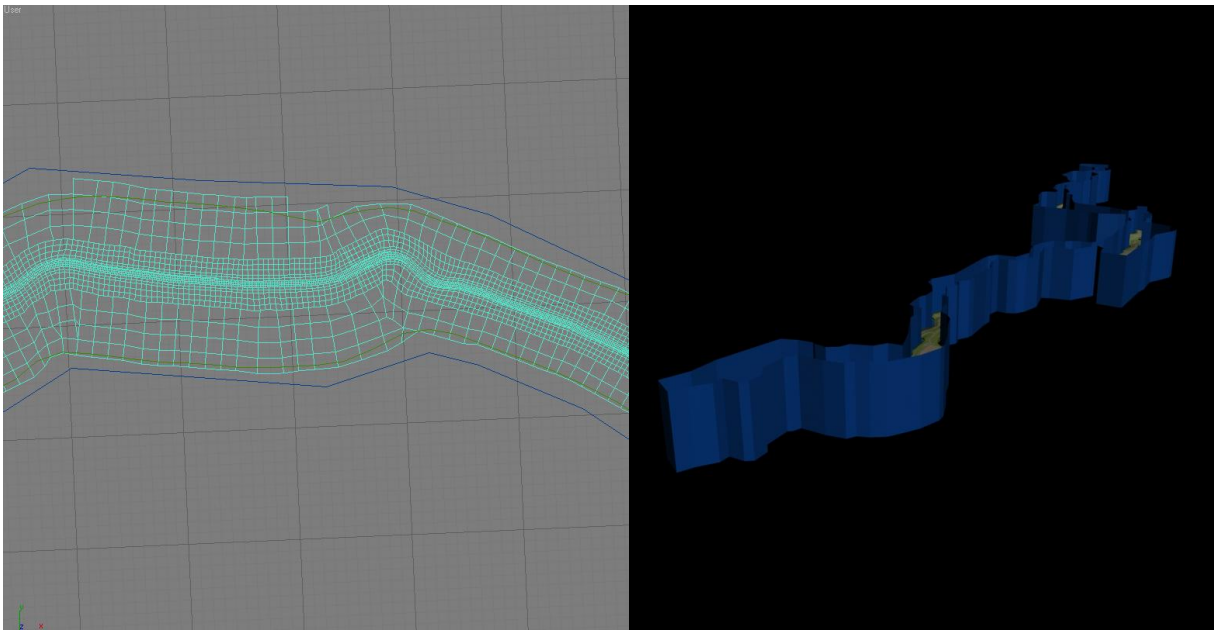
- Pay attention to object centring! It is the same as for „movable“ objects. Geometry centering means that object exported from any coordinates is grabbed at coordinate system origin and moved by these coordinates! If not, You may handle the object by it's geometrical center. This feature could be used at nonsymetric objects, but more likely it would cause additional problems. Since that I recommend You to export object always from coordinates 0,0,0 (geometric pivot point).

Scripts

- Events, which are action based, e.g. bird, marschals, start clock, …
- Adding new script:
    1) Object Placer/new animation.
    2) Choose animation and start place.
    3) In ObjectBrowser/scripts is showen your animation. „New trigger“ button sets start action.
    4) ObjectBrowser/scriptsgroups/Add new item – add new group. Here it sets animation ID. „Random“ means randomness (0 – nonrandom, 1 – random). „Probability“ means chance, that script will be active on track (0 – randomness generated by PC, other number is percent chance of appearance).
- If you want to have more scripts with the same appearance chance, it is needed to fill the same ID group to "Ref" (from script groups).
- If you want to extend new animations list, you have to edit scripts.txt in Wallaby folder.
- View animations in Viev/visibility/animations. Animations are showen only in start positions. Exact positions are needed to check in game.
- For viewing it‘s searched for SGS folder, which has to be placed one level under opened track, e.g. track is in RBR/MAPS/track*.* and SGS folder has to be in RBR/SGS.

Clipping planes

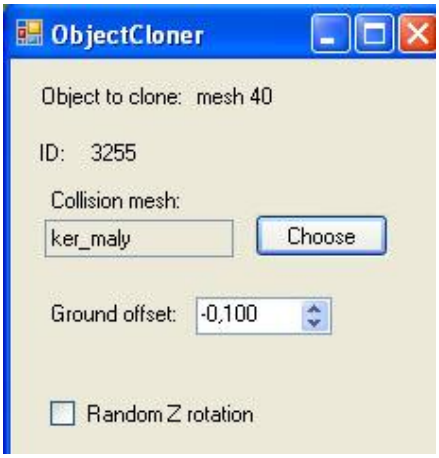
- Planes (or surfaces) defining what will be loaded in memory – viewed. Save hardware requirements. From any place, what is behind clipping planes is not displayed (but stays in memory) – except far scenery.
- Make along entire track.
- Sometimes you have to make clipping planes inside if track is a circuit type.
- The simplest creation method is draw a line along track in 3DS, than use „extrude“ modificator. Import as single object.



Far scenery (background)
This background is always visible. „General“, „movable“ and „ground“ objects are hided in some distance, than you can see only far scenery. Threshold distance depend on graphic settings (mostly about 150m). From this reason making terrain more than 200m from the road (mostly) is a waste of time. I recommend You to make far scenery after vagetation planting. You can have texture in file – couse of that you can join mesh into one object, that‘s advantage.
Possible making methods:

a) Like in original tracks (superbowl textures). Copy mapped polygons and weld them into few objects. Poly lenght about 50-100m.
b) Using rough terrain mesh (see Vašek Šourek method). Difference is smaller polygons (10m) due to shaping accord contour lines.
c) Panorama mapped on cylinder „jacket“ (see all Pribram tracks).

Object cloning
- Only „general“ and „movable“ objects are clonable – right click and „clone“.
- Left click to make copy.
- You can add collision to cloned objects.
- You can set „Ground offset“ which says offset from ground mesh.
- You can click on „Random Z rotation“ (good for vegetation planting).



Cameras
- see Cameras and Surface materials.
- When having complete ground modeling, create few cameras along whole track for quick movement in editor.
- It is recommended to create final cameras after finishing all vegetation and far scenery.
- Try to avoid camera view at far scenery becouse far scenery has small resolution.

Pacenotes making
- In editor Object Browser/Driver Events/section0/Track triggers – add single signs. Place signs on right place, e.g. L3 sign place into curve peak.
- Or use rbrdll.exe to create pacenotes.
- The simplest editing is through Pacenotes editor.

Making safety tapes
- Make in final phase, after creating spectators which are used as a clue.
- You can see only poles when making in editor (tapes and pole types here).
- Intensive for harware (at nonoptimized geometry) – it’s recommended to optimize geometry before tape making. Optimize geometry in Object Browser, than make tapes and save only fnc file (not lbs). You have to reload track to apply changes.
- Make tapes opposite to drive direction if it’s possible – couse of displaing.
- „Temporary“ item is created in Object Browser when making tapes. You can delete it before saving. After saving you can delete it in Object Browser/Fences – contains created groups of tapes.
- When you make more groups at once it’s necessary to finish every group by repeating „Fence Builder“ button. If not, editor doesn’t recognize new group and make tapes to old group.

Export to RBR

Save files through File/Export to RBR. It is necessary to save only those files which are changed.

1) Mark files you want to export.
2) Col file generating (nonmovable collision of ground), if it's thicked. It's possible generate it according x file or all ground objects in track (doesn't work yet).
3) Optimizing. Turn it on when making „final" versions. You can make it separately in Object Browser too (before export,for „general" and „ground"). There are two kinds of optimalization. "Optimize mesh only" join meshes only. „Optimize" join meshes and remove redundant vertexes. Editor join general meshes to large groups when optimize. This geometry isn't editable any more!
4) Shadow generating (doesn't work yet). Do it as final step when you are sure that you won't move with objects anymore. It generates shadow map which will take effect on every ground object (couse of that it's important to have regular square mesh). Shadow makes only „general" objects („ground" in next generation maybe). It's temporarily possible to elude by importing some ground parts as general mesh.

Later editing

- Ground mesh change – delete original ground meshes, import ground and generate new col file.
- Nonmovable „general" objects you can place (import) on the same positions as in 3DS MAX or place direct in editor. I prefer to make the most and to place in 3DS. Deleting whole forest one by one tree is very slow. So i recommend make often backups, try in game and than go on.
- „Movable" objects you can place only in editor. After adding few movable objects try function of collision in game.
- I recommend edit ini file only manually after first generating. Don't generate again becouse editor writes to every texture „IsGroundTexture=false".
- Mat file edit through material editor after fist creation. Use the original one if you don't change it.

Starting brand new track

1) File/New
2) Define new texture and generate first ini file.
3) Import new ground mesh (from x file, mesh import).
4) Define at least two points of driveline.
5) Define first slots in material editor (e.g. grass on 1st slot, on 2nd road). You needn't do that if you use other mat file.
6) Save all files except ini and col (File/Export to RBR)
7) Reload track (couse of reloading new mat file).
8) Generate col file (File/Export to RBR)
9) Other settings and loading to game. You don't do that if you will use existing track slot (e.g. track-71_M – Rally school).

Pozn.: If you have troubles with creating new track save this „basic" track and edit it.

Other setting

- For loading track in new slot in Shakedown you have to put some parameters to Tracks.ini:

[Map96]	- Map"slot" (necessary)
TrackName="Maps\track-96"	- Maps\track-„slot" (necessary)
Particles="Maps\ps_british"	- Used particles system (necessary)
StageName="Sosnova"	- Name in Shakedown
Surface=0	- Basic surface (0- gravel, 1- tarmac)

Length=7.1 - Length in Shakedownu
SplashScreen="Textures\Splash\Sosnova-splash.dds" - Loading picture
- Into tracksettings.ini put information about weather e.g. :

[96E_crisp_clear]
AmbientBlue = 0.500000
AmbientGreen = 0.510000
AmbientRed = 0.520000
Car_Ambient_Lighting = 1.610000
Car_Diffuse_Lighting = 1.410000
Car_Lighting = 1.700000
Car_Shadow_Alpha = 0.290000
Character_Lighting = 1.000000
CloudName = Us_clear
Cloud_Scale = 10.000000
DiffuseBlue = 0.500000
DiffuseGreen = 0.500000
DiffuseRed = 0.490000
Extinction = 0.320000
FogBlue = 0.920000
FogEnd = 1500.000000
FogGreen = 0.890000
FogRed = 0.890000
FogStart = 760.000000
Greenstein_Value = 1.000000
Inscattering = 0.220000
Mie_Multiplier = 0.001000
MipMapBias = -3.000000
MipMap_Bias = -2.000000
MipMip_Bias = -0.000000
Particle_Lighting = 1.000000
Rayleigh_Multiplier = 0.065555
SkyboxName = Evening_clear
SkyboxSaturation = 0.800000
Skybox_Scale = 100.000000
Specular_Alpha = 0.160000
Specular_Glossiness = 4.000000
SunDir = 0.002019 -0.078888 0.29000
SunOffset = 0.440000
Sun_Intensity = 100.000000
SuperbowlFogEnd = 10000.000000
SuperbowlFogStart = 40.000000
Superbowl_Scale = 0.250000
Terrain_Reflectance = 0.130000
Terrain_Reflectance_Blue = 0.560000
Terrain_Reflectance_Green = 0.530000
Terrain_Reflectance_Red = 0.540000
Turbidity = 0.400000
UseFog = false

Note.: letter shorcuts in tracks: M - morning, N - noon, E - evening, O - overcast
Note 2: If track contains both tarmac and gravel than is necessary set some gravel particles system to see some dust behind car.

Tips

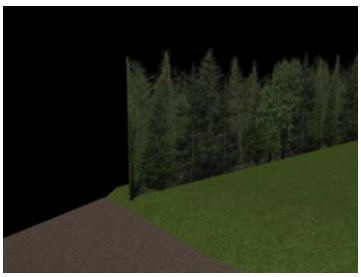
- Set start of track near 0,0,0. Becouse when you start editor you appear on this origin. It's hard to find further geometry (isn't visible).
- „Movable" and „collision" objects export after geometric centring of pivot and moving to origin point (Hiearchy/Pivot/Center to Object). You will save your effort when finding moved geometry in space.
- Place few cameras along entire track to easy „teleporting". It's faster than use „walk" from origin. Or use „Change position" if you know coordinates.
- If you model anything using two close surfaces (not solid) be aware of minimal distance (min 5-7cm) otherwise surfaces can fade into one another in game.
- Thank to different content of track files it's good to save only changed files. For example if you want plant some collisions, but you don't want so much objects there, you can do this way. Add collision to some object e.g. grass, clone it where you need, save trk file - it saves only collisions but not grass geometry. After next track loading there will be only new collisions but not grass geometry.

- Do regular backups! Mostly it is enough to save only lbs and trk file which are changed most often. Other files in case of change.
- You can optimize ground mesh, but do it as final step. Becouse ground update is through deleting old ground and loading new one. General objects optimize only when you are sure of no changes. You can not edit general objects after optimalization anymore!
- I recommand to have these X files on track updating containing:
  a) All objects which will have hard collision (on col file generating), e.g. ground + walls + house walls…
  b) File containing splitted ground (use for import to editor, splitted by RBR Split).
  c) Other objects (except splitted ground) used for col file generating e.g. walls, house walls according to single villages when exporting to X file (to avoid texture switching).
  Note: b) + c) = a)
  d) Objects which will be used as „general" objects in editor e.g. house roofs and other objects. Again according to single villages.
- Further edges (= planes in forest) which won't have collision in game plant in 3DS. It's better. Vegetation without collision you can place both in 3DS and in editor. I recommend to plant vegetation with collision in editor.
- Snap mode don't count with opacity (so far). Couse of that it is almost impossible pick small object under big one. It's up to you if you will plant small objects (e.g. grass) first and than big ones (e.g. trees). Or plant trees first, than bush and grass, try in game if all is correct. If not load backup. I prefer this way. Unfortunately there is no undo yet.
- You can add „grass effect" to any „general" object – it makes texture „animation" (grass moving in the wind). Doesn't work yet.
- You can take advantage by saving empty general objects „folder" in Object Browser. This is usefull if you want to start planting general objects from scratch.

Examples of track makers methods

Vratislav Honzálek (The Mask):

0) Ideas about track (making way, number of surfaces, textures, track size, nuber of objects, …)
1) Data preparation (GPS, photodocumentation, video, maps etc.)
2) Track textures creation (other textures during track making, when need)
3) Track prefabricates creation
4) Ground creation (one file = 2- 4 km of track)
   a) Road creation in 2D
   b) Surroundings creation in 2D
   c) Joining to one object
   d) 3D shaping
   e) Complete problem places (bridges, serpentines, …)
5) Creating „Driveline"
6) Creating objects in order „nonmovable"/ „movable", that means houses, walls, railing, columns,…/fences, tags, signs,… except spectator's places
7) Creating „border" from planes (in forest)
8) Creating „Clipping planes"
9) Planting vegetation in order: trees, bush, grass
10) Creating „Far scenery"
11) Spectator's places (vehicles first, other objects, spectators)
12) Creating „tapes"
13) Creating cameras
14) Creating scripts
15) Shadow generating
16) Tuning weather settings



17) Betatesting and error revealing

Note: After finish whole ground and houses i dettach house's walls which will be used for col file generating. The rest of houses import as „general" – so in game it has no physics. In general i have groups in 3DS – 1st group for col file generating, 2nd import as „general", … It's important to sort objects to groups to preserve order! Use function „Edit Named Selection Sets". For another simplification i'm using prefixes according object type e.g. gr- ground, z- wall, obj-general objects, … I model ground as in Modelling of track and surroundings.

Vašek Šourek

Ground creating:

1) Creating helper track surface in 3D from level curves (rough mesh – side about 10m). You can use this surface as „Far scenery", but you have to count with it from start.
2) Creating track prefabricates with various textures (60m). Light pre-sahping in z-axe (track buckling).
3) From these prefabricates making track in 2D. Creating ditches (using smaller net becouse of final smoothing). Curve's shape making by using „bend" modificator.
4) Finishing 2D track shape from helper surface in 3D. Don't take road deformation in transverse direction into account.
5) Smoothing whole track by using function „make planar" (with „Soft selection" turned on).

Possible problems

All work well in editor, but when loading in game there is an error message (something like runtime error, rbr_sse.exe).

There is probably some problem in ini or rbz file. Check ini if all textures all defined, number of textures, parameter „IsGroundTexture=true" (for ground textures). Check rbz file if all textures are on right place. Other option is some missing track file.

Textures are showen right in editor, but in game randomly splitted and sometimes transparent.

You probably used two textures with the same name. You can fix it by creating new material in 3DS. This material assing to everything what shloud has this material (use „assing to selection").

Example:

This X file section says, that it was done from two textures:

```
 Material {
    0.588000;0.588000;0.588000;1.000000;;
    0.100000;
    0.900000;0.900000;0.900000;;
    0.000000;0.000000;0.000000;;

    TextureFilename {

"I:\\\\RBRTRA~1\\\\KUBAHO~1\\\\test1\\\\TrackTexturePlateOpaque.dds";
    }
   }

   Material {
    0.588235;0.588235;0.588235;1.000000;;
    0.100000;
    0.900000;0.900000;0.900000;;
    0.000000;0.000000;0.000000;;

    TextureFilename {
     "D:\\\\Richard Burns Rally\\\\My mods\\\\tracks\\\\Mladcova - Paseky -
Frystak\\\\Textures\\\\FR1\\\\damp\\\\new\\\\TrackTexturePlateOpaque.dds";
    }
```

}

Fences with wires set as „movable“ are displayed wrong in game. Wires aren’t proper visible.

You have to use higher texture resolution, DXT1 format.

I see moved, switched and damaged polygons after import ground meshes in game.

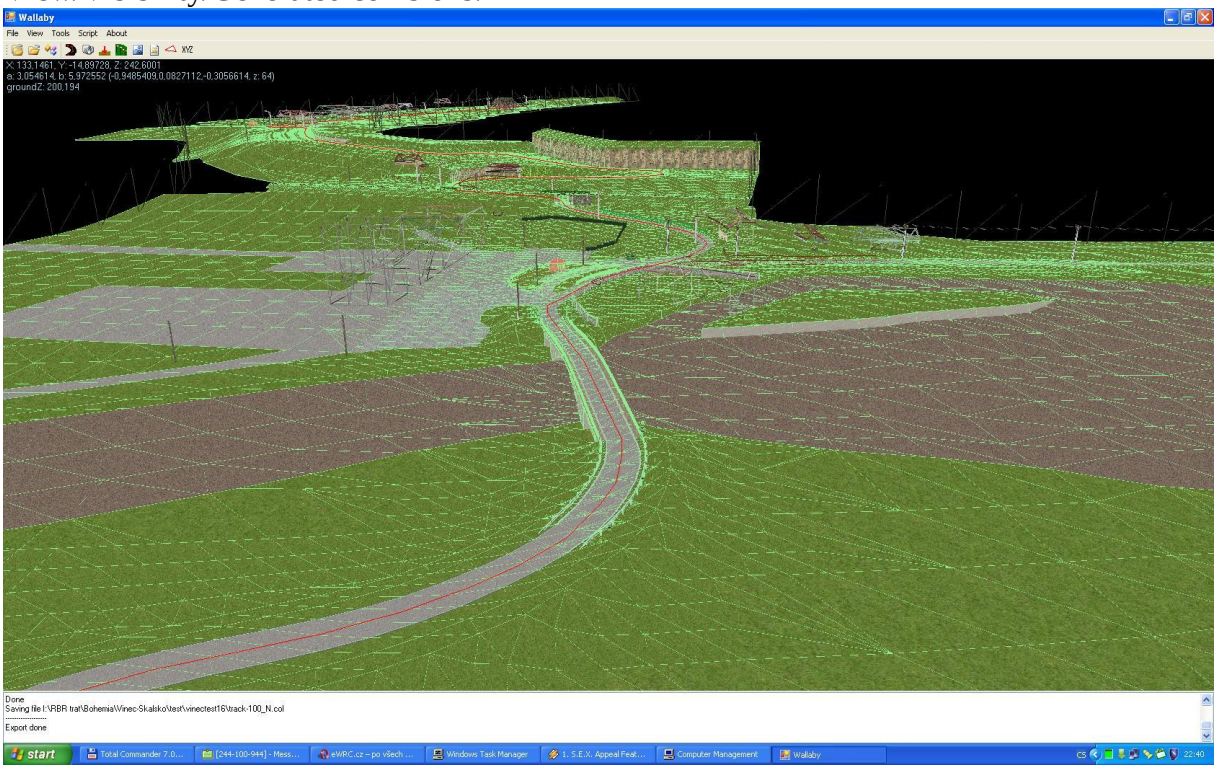
This problems is caused by version 028 and 029. It’s possible solve it by importing ground meshes in older versions (e.g. 024), save it and generate col file in newer version.

Car is falling down through ground somewhere.

Rough mesh. If you want to fix it, you have to make finer polygon mesh there. Use functions cut/inset/tesallete.

Almost all geometry crash after col generating.

That’s normal and nothing is wrong. It should works in game without problems. This „crush“ is there becouse of viewing col file mesh (green edges). You can switch it off - View/Visibility/Generated collisions.



Imported „general“ object is moving in game.

This is error in version 028. „Grass effect“ is set on object. You have to use other version to avoid that. This efect can’t be remove yet.