

Tips und tricks for handling with very large taraVRbuilder projects

1 Basics

The taraVRbuilder can get „slower“ by using suboptimal hardware (see document „taraVRbuilder - recommended hardware“) and by building very large projects (amount of 3D objects > 1000) That appears in a slow respectively jolting navigation or animation in the 3D scene and in a slowed reaction rate of the product line (e.g. span of time between mouse click and interaction > 1 second). In extreme cases the available main memory respectively graphics card memory won't be enough and error messages follow.

Main cause for these effects is the administration and interaction of the 3D scene. Two reasons can be located:

- The amount of polygons in the 3D scene is too high
- The amount of separate objects is too high

Reduction of the amount of polygons

The 3D objects in the libraries of taraVRbuilder are already simplified in its level of detail to keep the amount of polygons as low as possible. Therefore the amount of polygons is first problematic, when the user imports many very detailed external 3D objects in the 3D scene. To avoid this problem we recommend when importing external objects to use our software taraVROptimizer or different programs to reduce polygons like e.g. Deep Exploration of the company Right Hemisphere.

Reduction of the amount of objects

Is the amount of 3D objects in the taraVRbuilder scene too high, the program needs too much time to analyze this 3D structure. Because this analysis is necessary at every interaction with the 3D scene, slower reaction rates and jolting animations appear. In the following special methods and program adjustments will be explained, which preferably reduce this problem.

2 Hardware

Of course performance problems with the taraVRbuilder appear earlier by using suboptimal hardware. Therefore CPU, graphics card and main memory of the computer should not meet the minimum requirement but our hardware recommendations (see document "taraVRbuilder – recommended hardware").

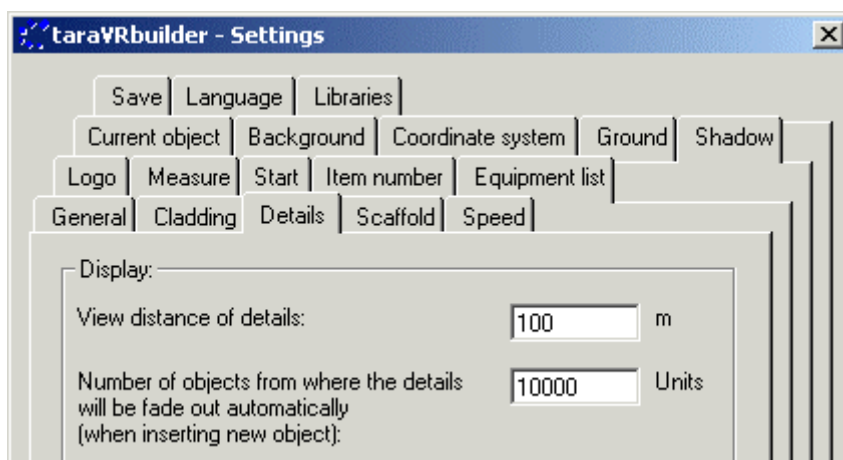
3 Program adjustments

If your taraVRbuilder scene runs noticeable slow, you can increase the performance with the help of different program adjustments. Following adjustments are explained:

- Using dynamic level of detail (LOD)
- Switching the detailed supporting means to textures
- Deactivating shadows
- Fading out partitions of the 3D scene
- Working in partitions and merging partitions

Using dynamic level of detail (LOD)


In the taraVRbuilder every 3D object of the library has at least 2 levels of detail. External imported 3D objects automatically get an abstract level of display for the import. The user can activate these levels of detail against the distance of the viewer and the amount of objects. At the menu File – Settings ... - Details



In the input field „View distance of details” the user can define, at what distance from the viewer 3D models change its detailing automatically. In the upper example all 3D objects that are more than 100 m away from the viewer will be displayed as abstract automatically e.g. at the flying through the entire scene.

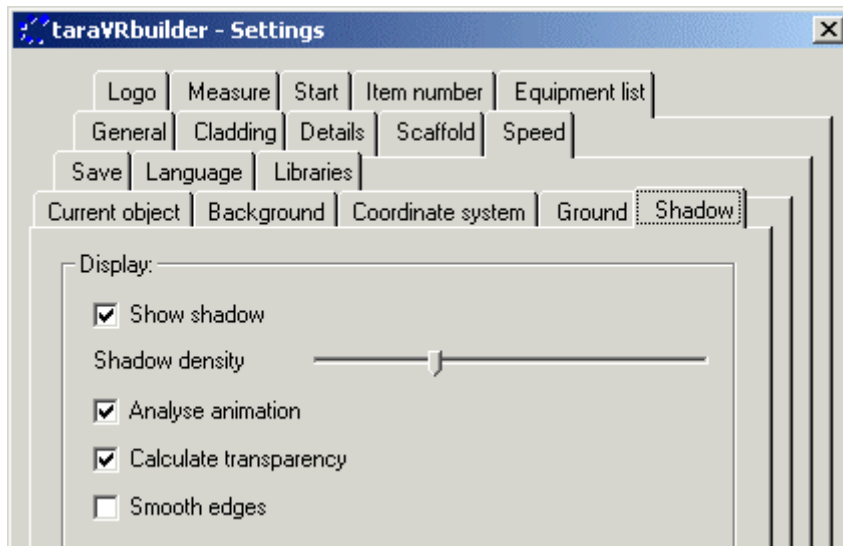
Switching the detailed supporting means to textures

A huge handicap for the hardware is the display of detailed supporting means of the materials handling (here especially rolls, minirollers etc.). It is recommended for large projects to switch these detailed 3D supporting means (if texture equivalents are

available) to textures. With the button “Insert scaffold on/off”  the user can switch all 3D supporting means to textures with one click and vice versa. (The global dispatcher is available from version 7.0.12)

Deactivating shadows

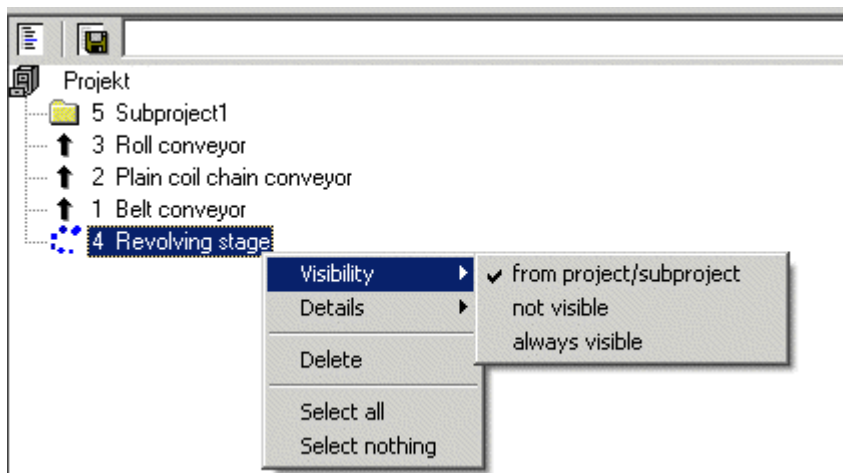
In the taraVRbuilder 3D objects and the animated transported materials cast shadows at the floorage. For the calculation of shadows the CPU and the graphics card need processing power, that can be used for the display of large scenes if shadows are deactivated. The shadow can be deactivated at the File – Settings – Shadows.



With the buttons „Calculate transparency“ and „Analyse animation“ sub-functions of the shadow can be deactivated, which also release processing power. With the button “Show shadow” the complete shadow can be deactivated.

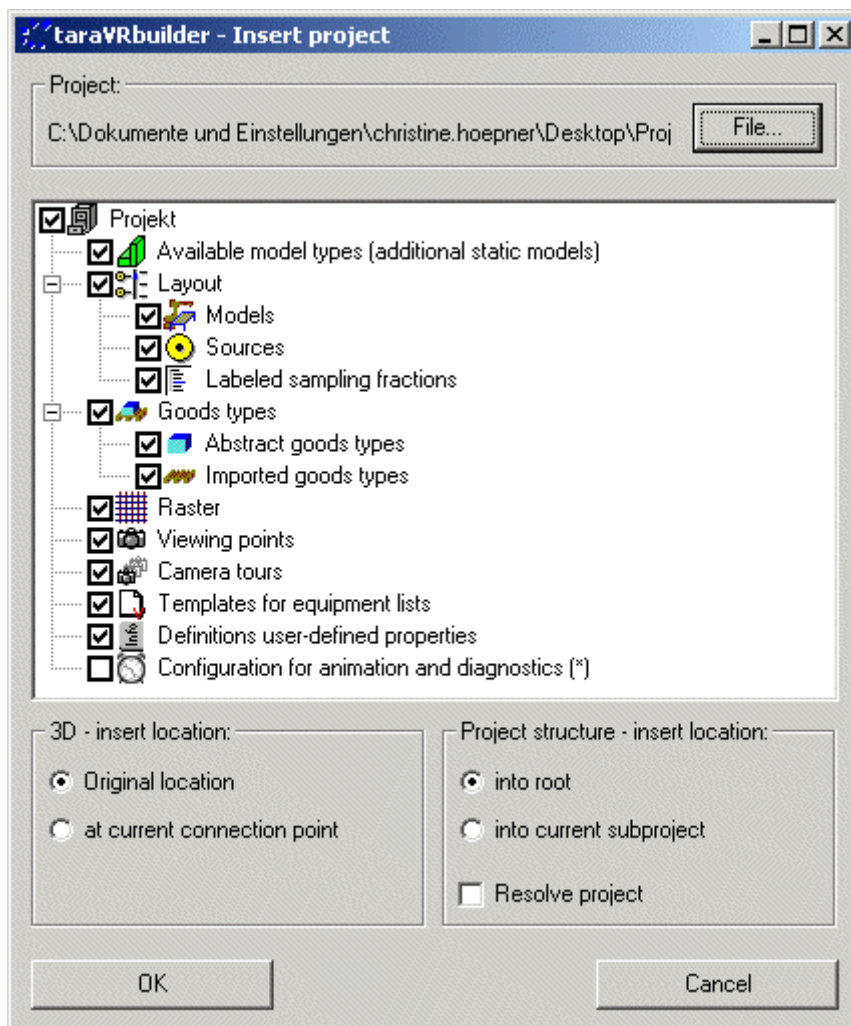
Fading out partitions of the 3D scene

All 3D objects and also entire (particular) projects can be made invisible in the taraVRbuilder using its visibility in the project structure. Invisible 3D models or even entire subprojects don't load the graphics card. This is recommended e.g. for partitions of a 3D scene, those already have a certain planning status and the user doesn't need to work on for the moment. Animations of goods also run on invisible 3D objects, but won't be shown.



Working in partitions and merging partitions

Since faded out 3D objects still perform animations even if invisible, you still load the CPU of the computer even if you discharge the graphics card. So the next consistent step is a splitting of the entire scene in partitions and a working with these individual subareas. The resulting TPD-files can be handled simpler and faster and can be merged to an entire scene again at the end of the planning process. While merging e.g. transitions of the materials handling will be identified automatically and the animation of the entire scene will run automatically. With the following dialogue you can insert single TPD-files to a (master) project. (File – Insert project):



4 taraVROptimizer

The taraVROptimizer can simplify complex structures in 3D objects and discharge graphics cards considerably this way. A CAD export e.g. can be made up of thousands of individually geometries, who charge the graphics card with the analyzing of these geometries very much. Long loading times, very jolting navigation up to the crash of the program with storage overflow failures are the result.

Within a 3D object the thousand individually geometries can be merged to a few large geometry blocks automatically with the taraVROptimizer. The graphics card can cope with this kind of simplified 3D object very good.

The taraVROptimizer comes with a wizard that is very easy to handle, and that makes a preparing of 3D objects for an optimal demonstration without any deeper basic knowledge possible in a short time.

So it is recommended for complex CAD data to simplify these data with the taraVROptimizer before importing in the taraVRbuilder. This is also essential for large 2D layouts. Even here the taraVROptimizer can simplify the line geometries without any loss of data!

A further use case for the taraVROptimizer in combination with the taraVRbuilder is the merging of finished partitions to one geometry.

The idea here is also the reducing of the amount of the 3D geometries again. You can export e.g. a storage with 10 shelves and a hundred goods each as statical export out of the taraVRbuilder, optimize it in the taraVROptimizer then and import the entire storage afterwards as a 3D object in the taraVRbuilder again.