# Optimize Number of Nodes

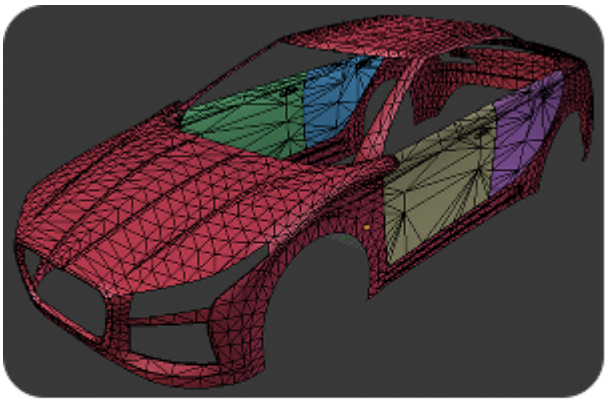
A reduced number of nodes lead to fewer node-related render state activations that have to be processed. Thus, whenever geometry can be safely combined to a single node like e.g. a mesh, then this way should be favoured. For instance a tire and a rim form a logical group sharing the same transformation. In that case the designer can unify separate geometries in a single mesh with the aid of a digital content creation (DCC) tool.
Consequently, the rim and tire do their texture lookup in a single texture, which further leverages performance gains by texture caching.

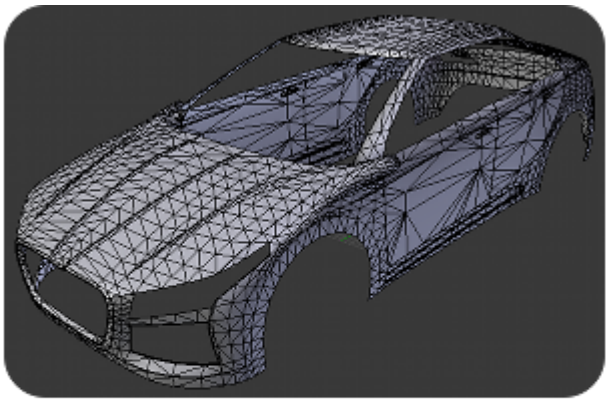


Example: Low-polygon wheel model consisting of tire, rim and brakes. The textures have been combined in a single texture atlas instead of using 3 separate textures.

See below crucial prerequisites for combining Nodes:

- Nodes share same transformation (position, rotation, scale).
- Nodes share the same Appearance (textures, shaders, material, render-mode, render-order)
- Nodes are within the same render-order bin.





Example: Instead of having 5 separate nodes for the chassis and doors, they can be combined into a single mesh if they don't need to move independently (i.e. the doors can't open) and have the same appearance (i.e. a car-paint).

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