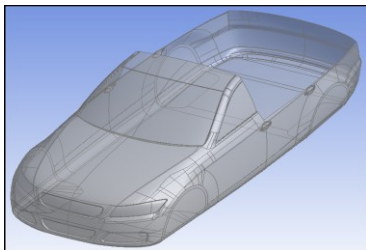# Creation of a high performance 3-D viewer application

The discretization of geometric domains with geometric primitives such as triangles, quadrilaterals, tetrahedral, hexahedra, etc. is a fundamental step in engineering analysis. ANSYS Inc.[1] provides a large number of sophisticated tools for discretizing arbitrary geometric structures by such elements. One of the key prerequisites in developing and applying mesh generation tools is the possibility to visualize the generated elements. Due to the continuously growing problem and mesh sizes (several million elements) the visualization of the generated data has become a limiting factor.

In this software-lab project you will develop a high performance 3-D scene viewer application using the high performance visualization engine of Creation Platform[2]. The implementation will include the development of a graphical user interface (GUI) including a visualization window as well as additional widgets for hierarchical displaying (tree-views) and user interactions such picking, selecting, activating, etc. We will provide you a large number of 'real life' test-cases containing models with millions of elements to test the performance and the scalability of the developed viewer application.
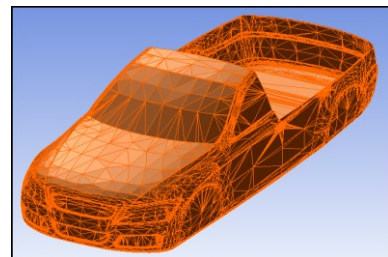
Tasks:

- Getting familiar with script based programming in **Python**[3]
- Getting familiar with **Creation Platform** (**Fabric Engine**)[2]
- Getting familiar with basic GUI programming concepts
- Implementing a viewer application (GUI) including a 3-D visualization window
- Implementing additional widgets and user interactions
- Testing the performance of the viewer application on 'real life' model examples provided by ANSYS Inc.[1]

Supervisor

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References

[1] http://www.ansys.com/
[2] http://fabricengine.com/creation/
[3] http://www.python.org/