# Implementation of geometry visualization using the Open-Cascade visualization classes for the mesh-generator DoMesh

The mesh-generator **DoMesh** was developed by the **chair for Computation in Engineering** and is integrated in the commercial engineering software **SOFiSTiK**. In the commercial version **DoMesh** is just used as a meshing-library, while visualization and user interfacing are provided separately by the software-package of **SOFiSTiK**. For the research version of **DoMesh** there exists a graphical user interface (GUI) which is based on the GUI-libraries of **Qt** and the visualization toolkit **OpenGL**.
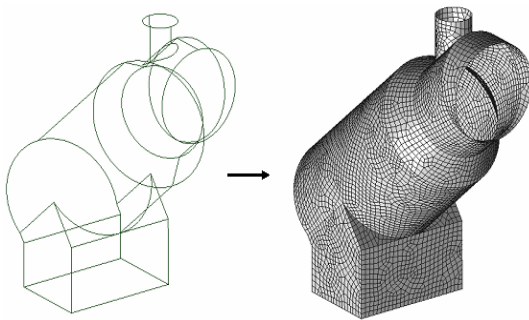

Since the visualization of geometric objects with **OpenGL** is just briefly solved in the actual code version, the visualization will be switched to direct object visualization based on the libraries of the integrated geometry kernel **Open-Cascade**. For this purpose complex geometric objects such as shaped edges and surfaces may be directly visualized and accessed, by sending the involved objects to a **Open-Cascade** based viewport, which may be integrated in the graphical user interface developed with **Qt**.

Tasks

- Getting familiar with object-oriented programming in C++
- Getting familiar with the graphical user interface (GUI) **QT**
- Getting familiar with the geometric modeller **Open CASCADE**
- Implementing the direct object visualization based on **Open CASCADE**
- Implementing interactive user options (turning, picking, setting parameters)
- Implementing interactive geometry creation (points, edges, surfaces, …)
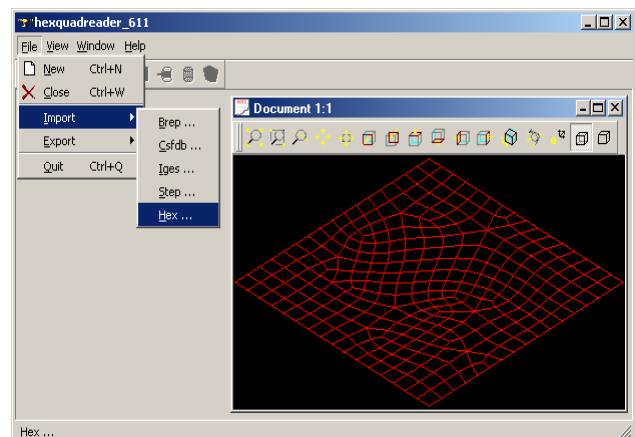
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References
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[3] C. Sorger: Revision concept and refactoring process for the mesh-generator
            DoMesh