Chair of Computational Modeling and Simulation
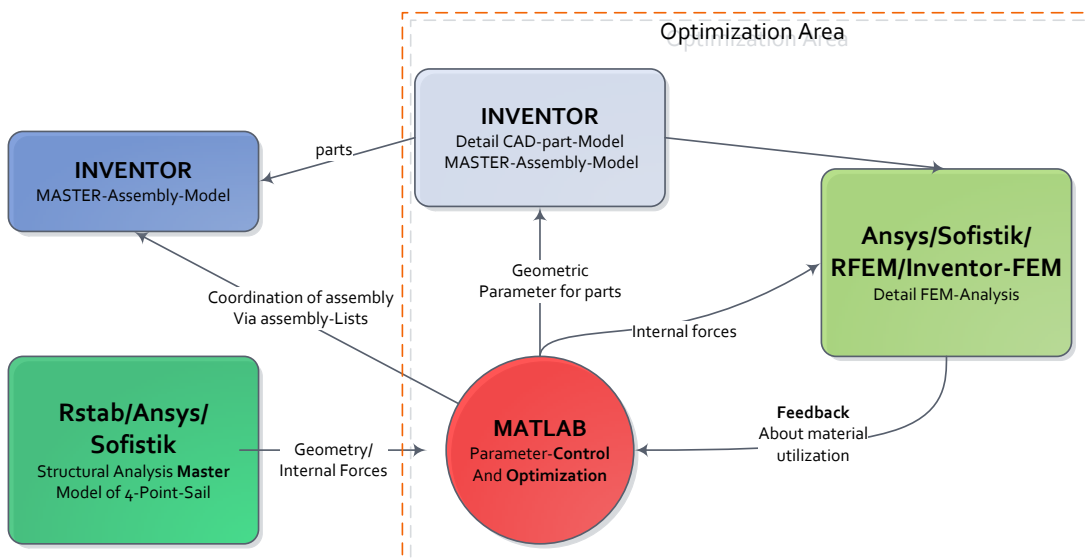Prof. Dr.-Ing. André Borrmann

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Software Lab:

Modeling: ★★☆☆☆
Mathematics: ★★★☆☆
Programming: ★★★★☆

Coupling parametric modeling with analysis and optimization methods

Setting

Every parametric CAD systems employ parameters to model geometry. However this information is lost at the time the geometry is exported to simulation software, in which parameters and additional information must be reintroduced. In an optimization process this iterations should be made manual which is time consuming and error prone.

One possible solution to overcome this problem is to take advantage of CAD systems and

to use them as a pre- and post-processors.

One objective of this SoftwareLab is to connect a parametric CAD system with MATLAB in order to export/import the needed information to perform a simulation. As a second goal the students should implement optimization algorithms for examples provided by the supervisors. The third task is to develop a tool, which will help to assemble the Inventor Part-models into a Master-Assembly-Modell.

This Software Lab will be performed in close collaboration with the faculty of Architecture.

Task

The thesis will include the following tasks:

- Getting familiar with model parameters and CAD-API programming
- Getting familiar with optimization methods
- Develop a software tool that enables to export / import the information into MATLAB
- Develop examples for optimization of cable-structure-Details
- Develop an automatic list-based assembly-tool for Inventor

Supervisors

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