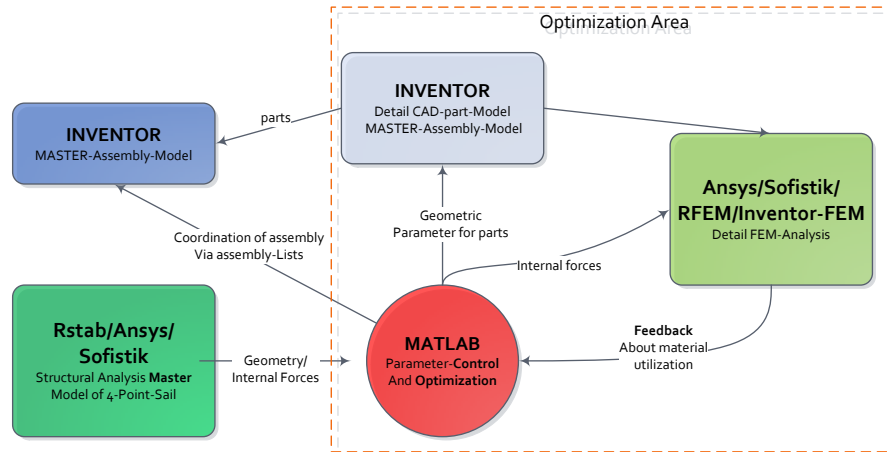# Coupling parametric modeling with analysis and optimization methods

Project Characteristics

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

INVENTOR
Detail CAD-part-Model
MASTER-Assembly-Model

parts

INVENTOR
MASTER-Assembly-Model

Ansys/Sofistik/
RFEM/Inventor-FEM
Detail FEM-Analysis

Geometric
Parameter for parts

Internal forces

Coordination of assembly
Via assembly-Lists

**Rstab/Ansys/
Sofistik**
Structural Analysis **Master**
Model of 4-Point-Sail

Geometry/
Internal Forces

MATLAB
Parameter-**Control**
And **Optimization**

Feedback
About material
utilization

Optimization Area

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

Javier R. Jubierre – jubierre@bv.tum.de   André Ihde, Chair of Structural Design, a.ihde@lrz.tum.de