

Automation of Stability Calculations in a 3D-General-Arrangement-Tool using NAPA

Master's Thesis

In the shipbuilding industry ship owners usually have very exact ideas about the ship they want to build. With these ideas, they approach shipyards and engineering offices to develop a design/specification which is the basis of the building contract. In this short phase, the ship design has to be developed as far as possible to minimise the risk of assured but not met characteristics.

A tool (*3DGA*) to create the ship concept design in a 3D-CAD-System has been developed at the chair of ship design. With this tool it is possible to develop the ship design in 3D from the beginning. Part of the concept design is a verification of the intact and damage stability which is calculated with the software *NAPA*. To shorten the time needed for these verifications an interface between those software system shall be developed. In the *3DGA*-tool it should be possible to trigger stability calculations and view the results with this semi automated interface.

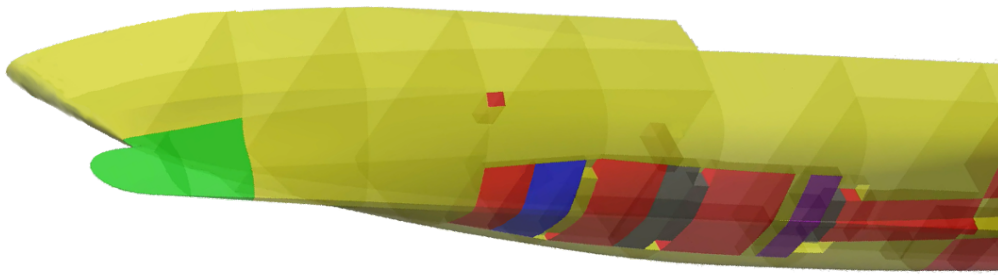


Figure 1: Compartmentation of a ship colourized by their content type

Scope of work is the development of methods and tools to enable the *3DGA*-tool with stability calculations carried out by the *NAPA*-software.

The following work packages will be dealt with as part of the thesis.

1. Familiarisation with the *3DGA*-tool as well as stability calculations with *NAPA*
2. Development of macros in *NAPA* for the stability calculation
3. Design and testing of different approaches to interface the *3DGA*-tool with *NAPA*
4. Definition and implementation of the interface

Prerequisites:

- Sound programming knowledge (preferable in *C#*)
- Experience in the development of macros (E.g. *Basic*, *bash*, *Batch*, ...)

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