OCX implementation in an Intelligent GA Tool

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THE BASIC DESIGN STAGE IS FAST, ESSENTIAL AND ITS IMPACT IS HARD TO MEASURE

How to improve the simultaneous set of tasks and manage data in diverse software applications

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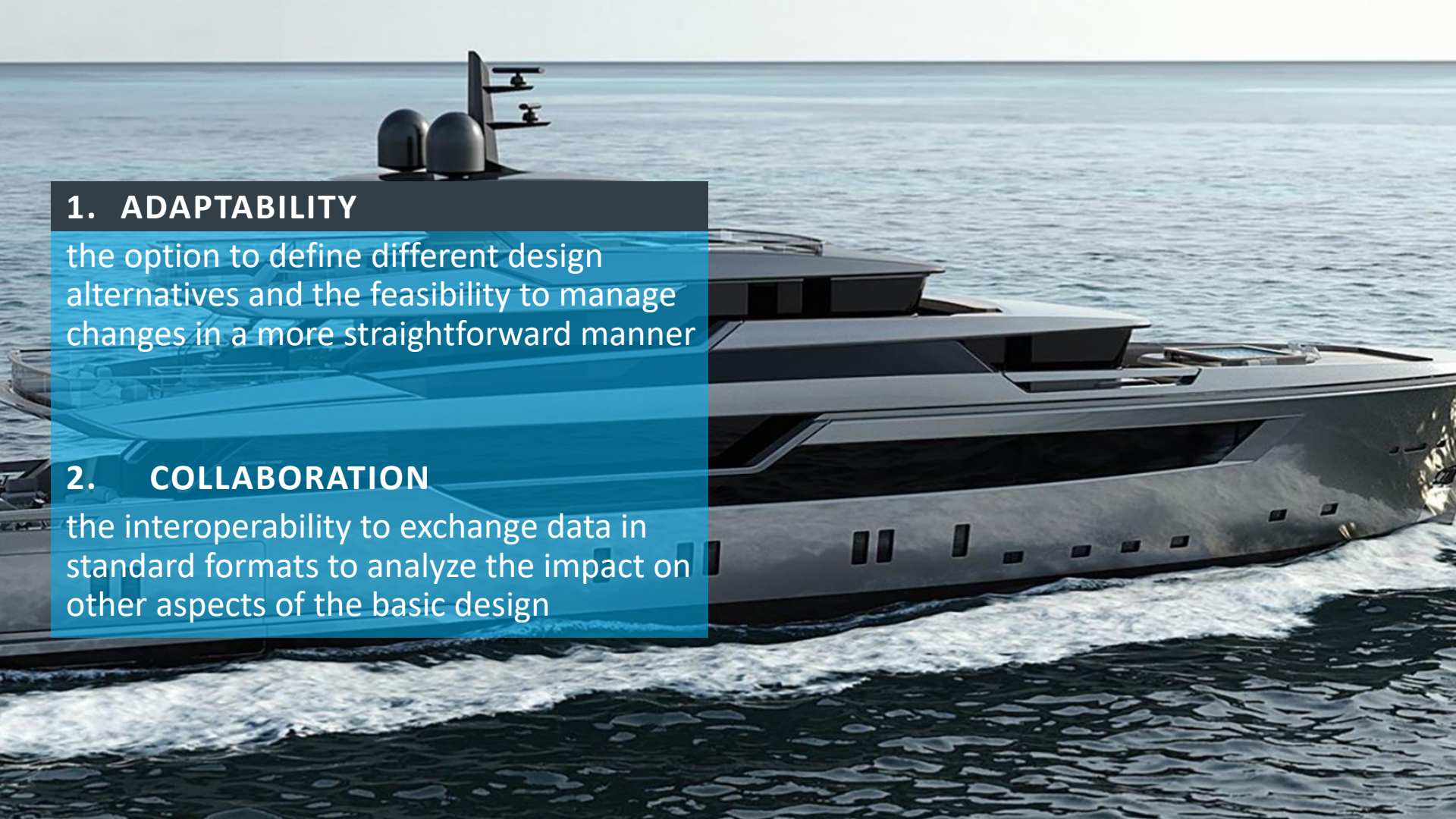


1. ADAPTABILITY

the option to define different design alternatives and the feasibility to manage changes in a more straightforward manner

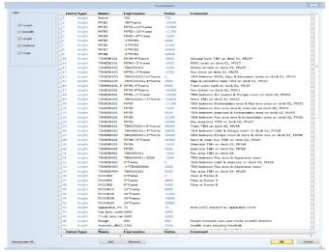
2. COLLABORATION

the interoperability to exchange data in standard formats to analyze the impact on other aspects of the basic design

THE 3D MODEL OF THE VESSEL MUST BE DEFINED SO THAT ANY CHANGES AT ANY TIMES TRIGGERS THE SYSTEM TO UPDATE THE WHOLE MODEL ACCORDINGLY

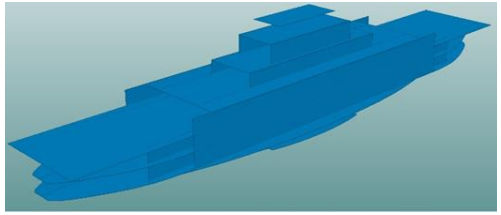
Several dimensions influence the main dimensions of the vessel

Main dimensions can be defined once as parameters, by means of fixed values of mathematical formulas



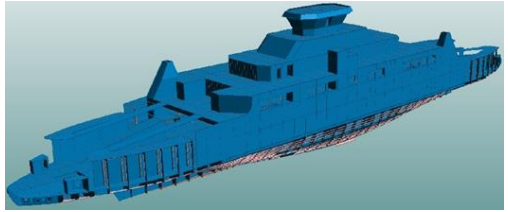
Conceptual surfaces can be used as the topological basis of the plate definition

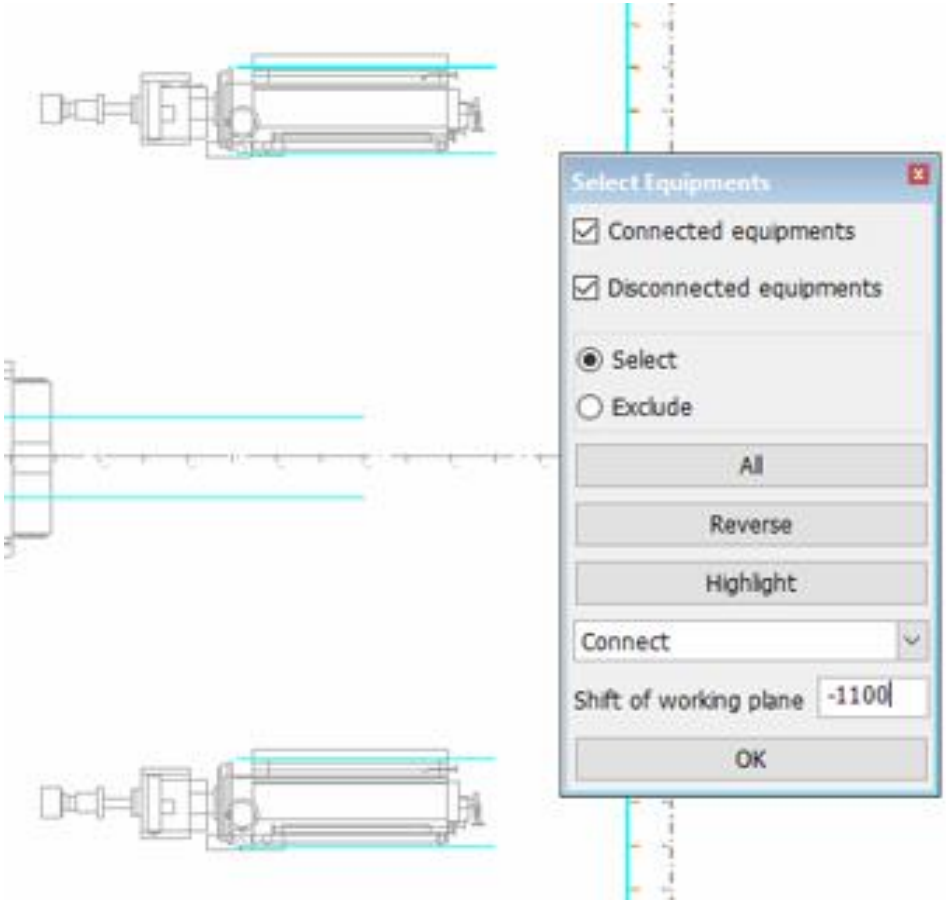
Properties such as thickness and material type



The actual steel structures cross-refer the reference surfaces and are given the same properties

They are updated accordingly when changes are made to the linked reference surface.





ADAPTABILITY TO NEW DESIGNS MUST BE EXTENDED TO OUTFITTING ELEMENTS

Heavy machinery layout significantly influences the ship's weight

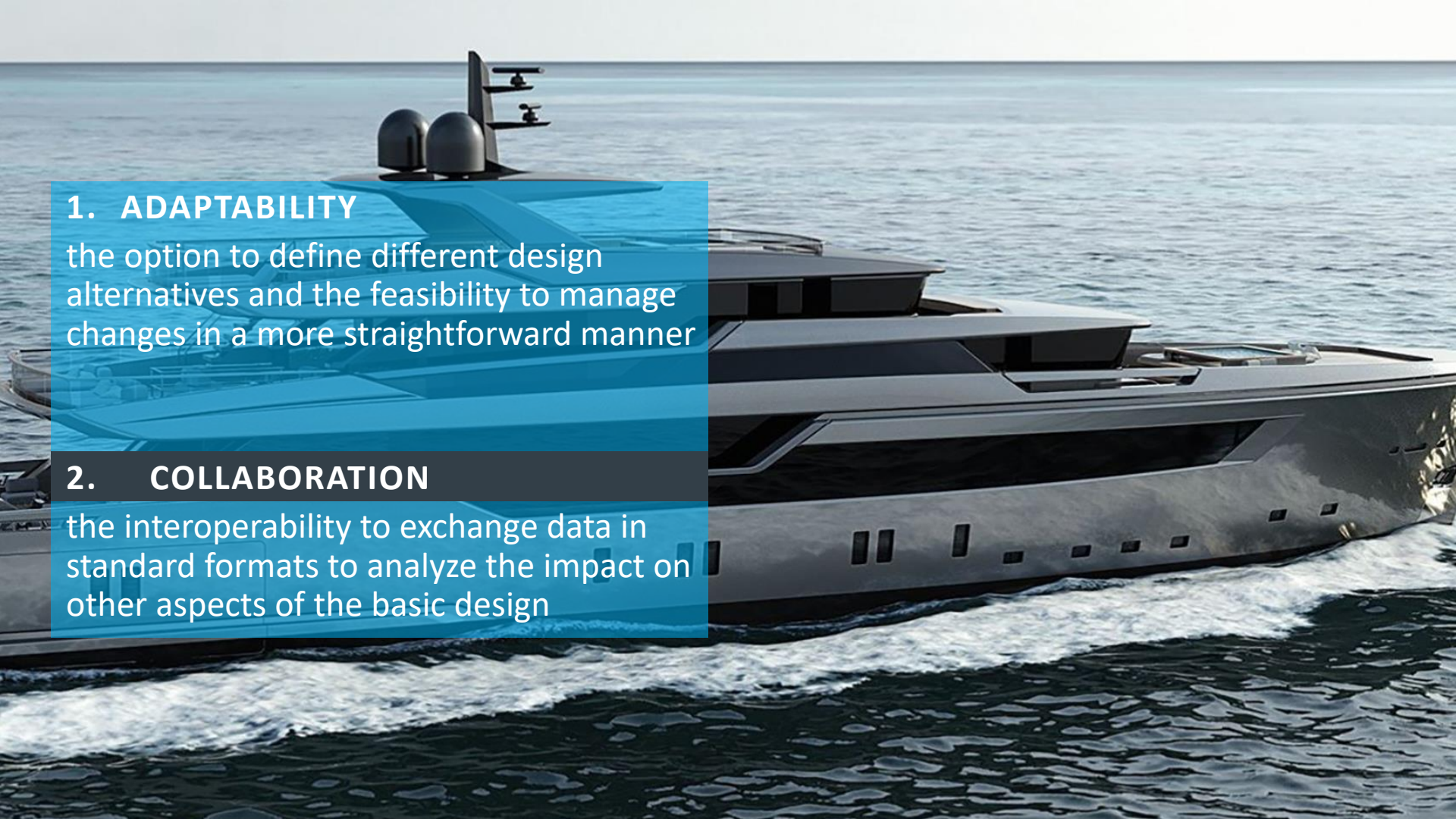
The solution proposed integrates the design disciplines so that the hull application has access to these elements via an equipment library.

An equipment library provides access to the outfitting database

The equipment is displayed in the hull view and can be positioned as required. Outfitting and piping disciplines can access the same model, making adjustments or changes according to machinery requirements.

The topology property is added to the equipment components via the level view

The equipment is connected to the level view (i.e., level drawing) in which the equipment is added. Level views are related to reference planes and thus updated when the reference surfaces changes, thereby updating the equipment.



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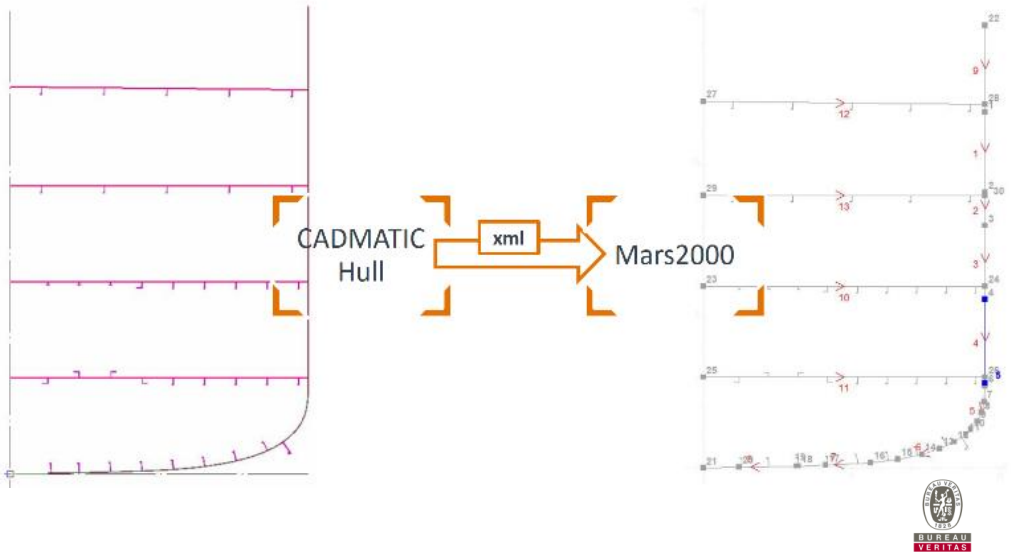
TO CREATE SOUND AND CONSISTENT STRUCTURES TO ENSURE SAFETY AND ECONOMIC VIABILITY, THE DESIGN DATA MUST BE CHECKED AGAINST WELL-KNOWN RULES AND REGULATIONS

Several classification societies can calculate the feasibility of the design in terms of scantling choices, plate and panel thickness, and the spacing of internal frames, bulkheads, and longitudinal stringers.



Schematic of hull design software and scantling analysis tool interface

Traditionally, scantling calculations are done based on data from frame views.

The primary data passed on to the scantling calculation software contains the description of the inner construction of the vessel and its variation along with the ship, translated to the calculator's specific protocol.

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In the absence of a standard format, considerable time is spent not only by shipyards and design offices to prepare the drawings but by CAD vendors as well in order to translate the model to each different file format.

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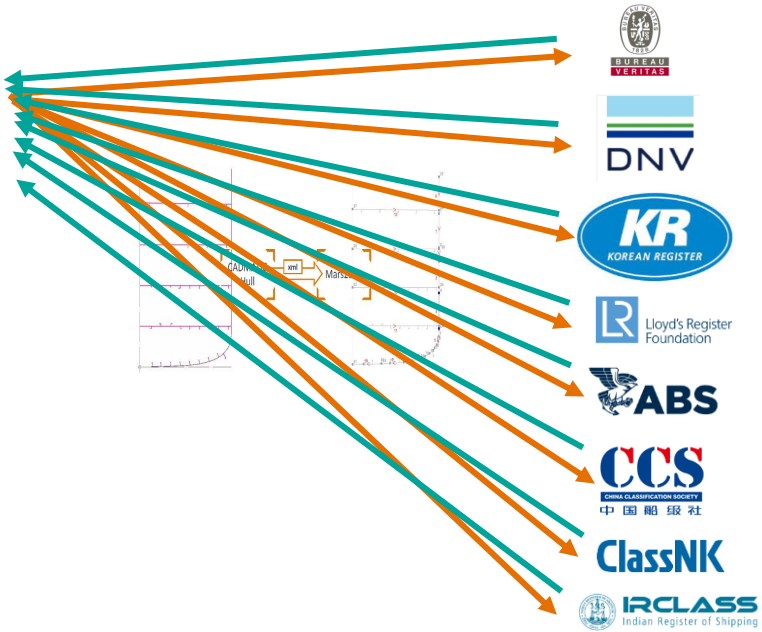

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TO ENHANCE THE CLASSIFICATION PROCESS, A SWITCH FROM A 2D-DRAWING BASED TO 3D MODEL-BASED PROCESS HAS BEEN DEFINED

Directly interfacing with the 3D design model optimizes the calculation process, ensures transparency and reduced amount of work

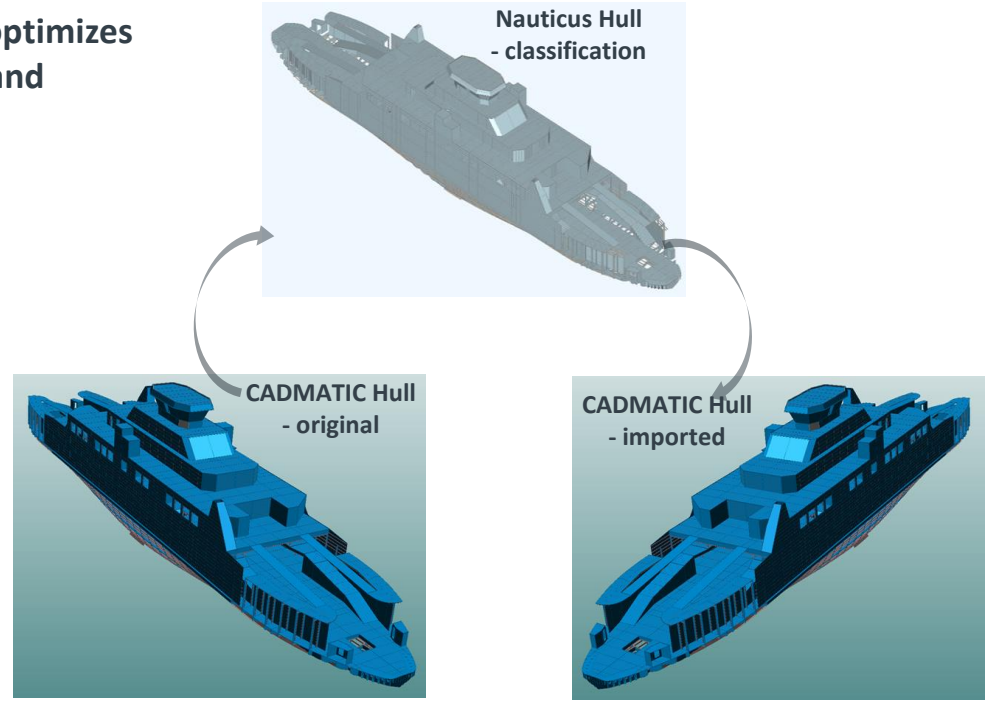
Having direct access to the 3D model also improves the understanding of the design.

The process improves the drawingless strategy in shipbuilding

All parties involved in the vessel have direct access to the model and the work is reduced by eliminating the need for creating dedicated drawings.

Several test cases running

We are running several test cases with customers



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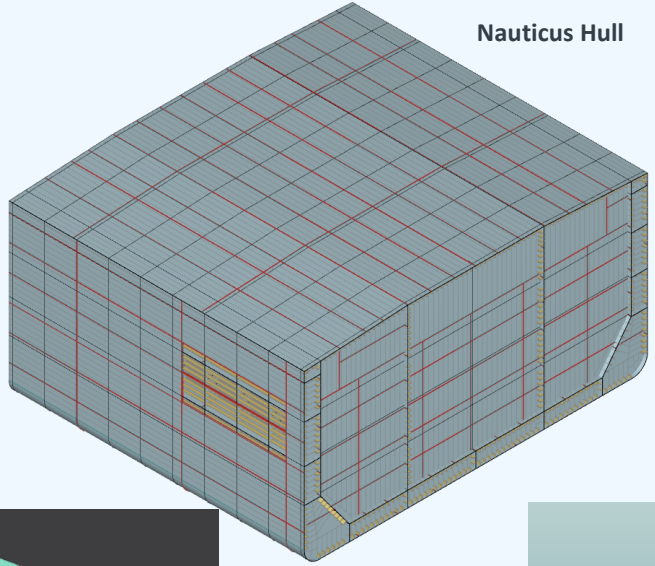
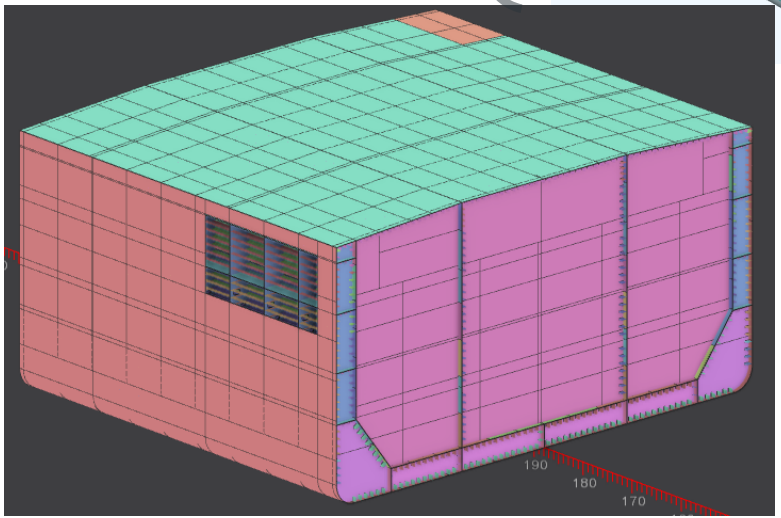
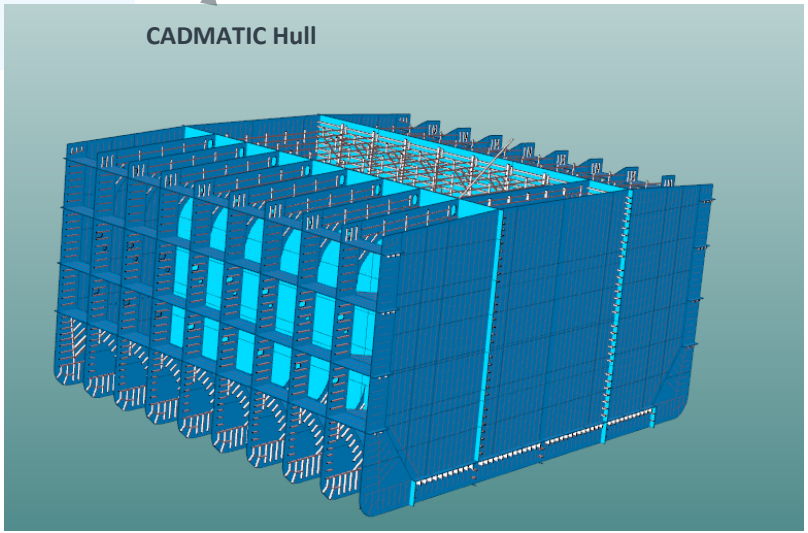
Nauticus Hull



NAPA



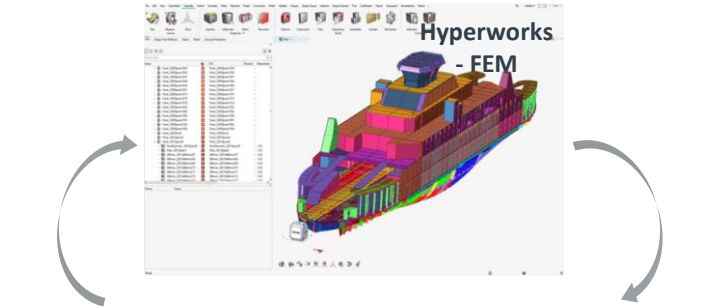
CADMATIC Hull

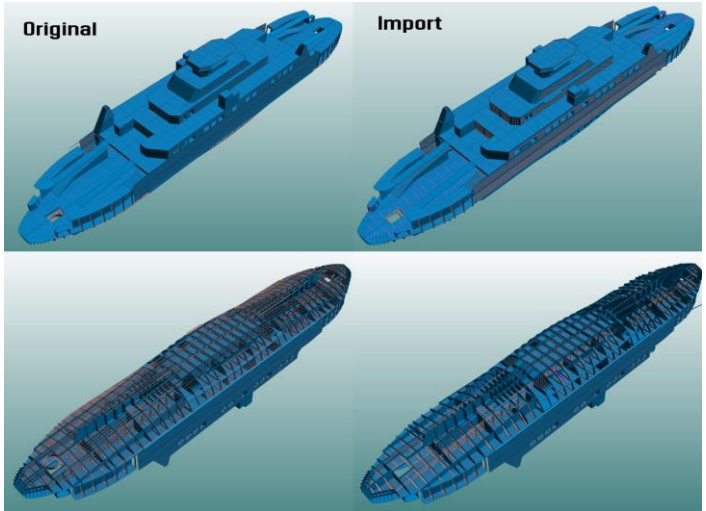


SIMPLIFY THE DESIGN PROCESS BY ELIMINATING THE NEED OF MESHING THE MODEL INSIDE THE CAD SOFTWARE

We believe in expanding the use of standard OCX format for FEM analysis as well.

Presently, the naval architect needs to prepare a meshed model of the vessel to study the steel stresses.





UPCOMING MONTHS WE WILL FOCUS ON USABILITY IN PRODUCTION

- Add the external geometry reference
- Fine-tune based on user feedback
- Investigate the feedback mechanism from DNV

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Feel Empowered

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