

Public Summary

NAVAIS combines the concepts of Model Based Systems Engineering, Platform-Based Design (PBD) and Modular Design (MD), assuming a context of Model-Based Systems Engineering (MBSE) with the RFLP approach as conceptualised by Dassault Systèmes (DS). In task T5.3 The modularisation principles for the two demonstrators in NAVAIS, the modular e- ferry and the modular workboat have been defined, derived from available internal and external sources, and compiled in close interaction with the development of the demonstrators.

Modularisation is not only applicable to Configure-To-Order (CTO) processes, but also Engineer-To-Order (ETO) processes, when modules can even be applied across product platforms and product families. This requires the Design and Engineering tooling platform (e.g. PLM/PDM/CAD) to have the functionality to identify re-usable modules based on requirements and functions, as well as allowing a Pick / Assemble / Validate approach to the design process in 'LEGO' fashion – involving both the logical and physical design levels.

The best way to define a modularisation strategy for shipbuilding is to define a common core platform, by defining and extracting commonality between different ship types within a family and mapping that in a common core architecture.

A Modularisation Strategy is needed, to be able to identify and design candidate modules, to facilitate a new MD-enhanced Ship Design and Engineering process, and to enable the associated tooling platform to be configured.

Modularisation Principles consist of a description of modularisation concepts, modularisation types and module variation approach and have been applied to a -E-ferry and a workboat, resulting in two functional structures, showing that the modularisation principles are practicable for shipbuilding. The provided Principles and Guidance are feasible for the subsequent Tasks and Workpackages in the NAVAIS program. However, the principles and guidance provided need much elaboration, to be undertaken in conjunction with the two demonstrators and the platform, for the objective of NAVAIS to be reached.

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