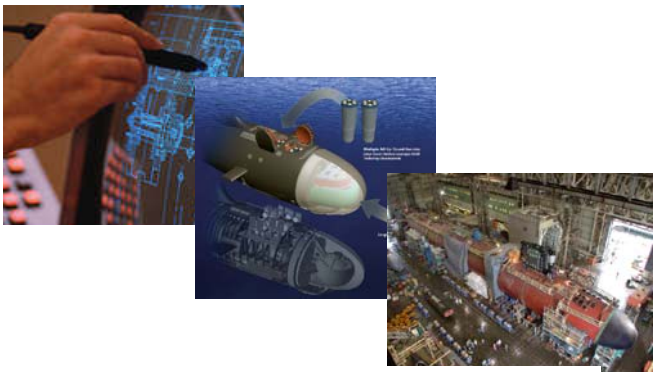
Design-for-Production – Design Alternatives

Identifying Alternatives to Reduce Costs

A critical step towards reducing the new construction shipbuilding costs for the VIRGINIA-Class Submarine platform commenced March 4th, 2008 at the Electric Boat Shipyard in Groton, CT. The General Dynamics-Electric Boat (EB) project team kicked off a $441K project as part of their Design for Production (DfP) initiative. DfP is the process of identifying, capturing, managing and re-using improved manufacturing criteria. This effort seeks to capture the best lean manufacturing capabilities, transform them into design standards and cost metric tools, and make them readily available for application during design activities. This is the fourth DfP project funded by CNST.



This project will identify cost drivers in the submarine manufacturing process.

During the current design/build process, VIRGINIA designers and engineers gather input from operations personnel at key stages of the design process to ensure that the resulting product meets basic producibility requirements. As recognized in recent Congressional testimony, U.S. shipyards must continue to evolve and develop the DfP processes to support creation of designs and practices that result in the lowest production costs. This project will focus on two key DfP areas: (1) cost-based design drivers during the design phase, and (2) manufacturing best practices for design standards. To ensure success, the project team will examine cost drivers and rules by work cell and product, investigate and collect manufacturing best practices and standards, and determine key assembly/testing cost drivers. Finally, the team will validate findings through a proof-of-concept demonstration, applying DfP data models to several existing manufactured products that are currently being redesigned. This effort will not only prove the concept, but will also quantify potential cost savings.

Upon successful completion, this project will allow design teams the ability to consider alternatives based on manufacturing costs and/or to standardize best manufacturing practices for re-use in design. It is crucial for the design and engineering community to understand manufacturing capabilities, best practices, shop floor lessons learned, and costs associated with product development and operations at the earliest stages of design. This will also allow design personnel to be aware and take advantage of new manufacturing equipment capabilities through the use of rule-based, cost-based, standardized designs to improve the process for ships' systems.

About CNST

CNST is a Navy ManTech Center of Excellence, chartered by the Office of Naval Research (ONR) to identify, develop and deploy, in U.S. shipyards, advanced manufacturing technologies that will reduce the cost and time to build and repair Navy ships. For additional information on this and other CNST projects, please visit www.cnst.us.