

Sequencing and Scheduling (Outfit Process)

This General Dynamics Electric Boat (EB)-led CNST project took on the challenge of improving tools to enable better planning and sequencing of the various tasks involved in outfitting a VIRGINIA-Class Submarine (VCS) hull. This project began in June 2009 and has recently come to a successful completion. It is expected that when fully implemented, this project will result in a savings of \$1.3M per VCS hull.

The major objectives of this project were to develop an advanced visualization application and capability to validate build sequence and ensure critical scheduling and sequencing of work. In



support of this project, the team advanced the functionality of EB's *OneStop* Software, a tool that extracts geometric data for the VCS structure and facilitates the planning process. The project was executed in two Phases. During Phase I the team successfully integrated *OneStop* visualization capability with the manufacturing resource planning (MRP) order processing system in support of work sequence and location re-engineering. They also incorporated piping design

discipline into the *OneStop* program, which formerly supported only structural disciplines. These developments provided the ability to quickly and easily analyze where work was being accomplished and ensure that it was being done in the correct sequence and as early as possible in the manufacturing and outfitting schedule.

During Phase II the team focused on further enhancing the capabilities of *OneStop*. They were successful in generating a complete ship view (at least 80%) including all disciplines. This addition to the software makes it considerably easier for users to automatically find opportunities for re-sequencing. It also simplifies communication between the planners who recommend changes and the planners who must then enter that data into the business system. Implementation of this project's results is currently underway at EB's Quonset Point, RI facility.

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.