



General Dynamic Electric Boat is Enhancing a Lean Paperless and Tablet Based Work Package Process

Project Snapshot

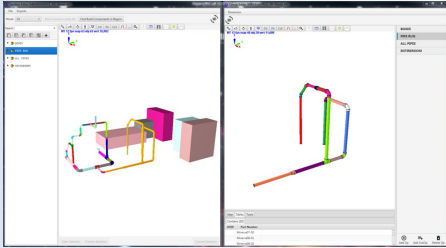


Photo courtesy of General Dynamic Electric Boat

Project Lead:

General Dynamics Electric Boat

Project Dates:

Jul 2019 – Jul 2021

Objectives:

- Create a digital build sequence from the legacy VCS product model. This digital build sequence would include only the operations, material, joints and views that a worker would need to accomplish a particular unit of work.

Estimated Savings:

- \$1.07M annually and a five-year savings of \$5.3M. ROI is 4.23
- Reduce labor hours for work instructions by an estimated 9000 hours annually.
- Increase annual eMAP production by 25%

The U.S. Navy and General Dynamics Electric Boat (GDEB) have a joint initiative to reduce the construction cost of the VIRGINIA Class Submarine (VCS) and COLUMBIA Class Submarine (CLB). The Navy ManTech Program is participating in this initiative with specific focus on improving manufacturing processes for ship construction.

Electric Boat (EB) is moving away from paper drawings and 2D build plans, such as Manufacturing Assembly Plans (MAPs). MAPs are a detailed construction/assembly sequence for a given drawing that captures “best practice” information not normally documented on drawings or work orders. For CLB EB is utilizing a lean tablet based work instructions that can be broken down to shift level work assignments. In order to make this transition a seamless and enriched process certain objectives need to be considered and developed. The *Model Based Build Plan* (MBBP) project’s main objective is the development and viewing of the electronic Manufacturing Assembly Plans (eMAPs).

A previous ManTech project, *Mobile Computing Design Build Process* (S2653), developed tools such as the Build Plan Editor (BPE) to help fill this gap for VCS structural build plans. However, there are still several gaps and enhancements that need to be addressed. Some of these gaps include both the developers of these work instructions or eMAPs, and the trade’s personnel. The goal of the Model Based Build Plan project is to use the eMAP in conjunction with the BPE for the development of MAPs rather than the current process (2D MAPs). The MBBP project will create a digital build sequence from the legacy VCS product model. This digital build sequence would include only the operations, material, joints and views that a worker would need to accomplish a particular unit of work.

The project will be executed in two phases. During Phase I requirements will be defined and analyzed to help develop the BPE. This will consist of collecting requirements for “shift level” and other work instructions. Build Authority graphics will need to be developed to help collect graphics requirements to be analyzed. This phase will also see the enhancement to the BPE. During Phase II, the integration of the 2D MAPs to eMAPs will begin. The prototype work package will be executed and validated. A Phase II report will be created and presented during a review at GDEB during which system functionality will be demonstrated via simulation.

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