

Ingalls Perfecting Unit Lay-Down Advisor with Capacity Planning Automation

Status: Implemented

PROBLEM / OBJECTIVE

Lay-down placement and assignment of units through successive shipyard work stations was done through a laborious, manual process. Approximately 30% of previously planned units/assemblies required re-planning. Due to the large amount of complexity usually associated with large planning problems, this re-work often required a complete reiteration of the entire real estate allocation process. Some software tools were in place, but they were not automated. Automating the real-estate allocation process saves time in capacity planning, provides savings due to better lay-down coordination, reduces excessive movement of units, provides higher confidence in capacity forecasting, and increase capacity planning process efficiency. An automated solution that enables (re)creating the real estate allocation in significantly fewer man-hours reduces the cost of performing the required processes.

ACCOMPLISHMENTS / PAYOFF

Process Improvement:

The Capacity Planning Automation project created an automated, rules-based capacity planning system used in the allocation of lay-down space and the creation of real-estate utilization documentation. This automated planning system permits a scheduling analyst to rapidly assess multiple changes from the current allocation of units to lay-down areas, largely mitigating the weaknesses of the previous manual allocation process.

Ingalls Shipbuilding work instructions define the processes and responsibilities for the proper allocation and optimization of real estate (lay-down spaces) for structural units and assemblies under construction, while providing forward visibility for scheduled or potential overloads to capacity. However, the old capacity planning processes were tedious and overly time-consuming. Resulting real estate allocations were seldom optimal and often required substantial rework. One of the achieved goals of the automated process was to develop a unit layout and schedule allowing the construction of as many units as possible under cover, versus outside.

The system uses an applied artificial intelligence in the form of a rules-based 'Expert-System' to produce an efficient utilization of available lay-down real estate.



Implementation and Technology Transfer:

Ingalls completed Phase I, identifying and defining the user needs and requirements. Phase II developed the system solution and piloted it in the production environment. The new solution proved to be much better than previous manual processes and the new AREAS tool has been implemented in production environment well ahead of schedule, with all Capacity Planning now done with this innovative tool. This implemented technology is expected to exceed its target to reduce real estate allocation processing time by 30% and increase in number of units constructed under cover by 20 units. The project team reports activities historically taking 10 weeks to complete are now completed in less than one hour. The estimated cost savings increased to \$1.1M per year and are expected to increase more over the next two years.

Expected Benefits and Warfighter Impact:

- Reduce Central Planning effort by 470 man-hours per month
- Improve Production efficiency by increasing total 'covered' units in fabrication (20 additional units) annually

TIME LINE / MILESTONES

Start Date:	June 2014
End Date:	December 2015

FUNDING

Current Navy ManTech Investment:	1.1M
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PARTICIPANTS

Navy ManTech
Huntington Ingalls Industries, Inc.-Ingalls Shipbuilding
Naval Shipbuilding and Advanced Manufacturing Center