As the West Coast's largest new construction shipyard, General Dynamics NASSCO is a market leader in the design and construction of ships for the U.S. Navy and commercial customers. Playing a key role in maintaining this strong presence in the U.S. shipbuilding industry is NASSCO's emphasis on pre-production planning and analysis. With hundreds of thousands of parts flowing through the shipyard each year, however, traditional spreadsheet analysis methods can only provide modest assessment of how those parts, ranging from a hand-sized piece of steel to a fully outfitted deckhouse weighing hundreds of tons, interact with labor, machinery, and workspace to govern NASSCO's overall shipbuilding throughput and capacity.

With AnyLogic simulation software as the centerpiece, NASSCO utilizes a custom-built analysis system called the Large Scale Computer Simulation Modeling System for Shipbuilding (LSMSe) to provide highly detailed and accurate capacity analyses for both current production and potential new work. Developed over a four year period, the LSMSe includes:

- A simulation model of the entire shipyard modeled in AnyLogic
- Software utilities to define facilities, processes, schedules, labor, and products
- Links to product design, scheduling, and business systems software
- Optimization software to control parallel scenario analysis over networked computers

Implementation of the LSMSe has reduced NASSCO's recurring analysis labor costs by 75% compared to the former spreadsheet analysis approach with increased detail in the analyses. While significant, an even greater impact is achieved with the ability to identify and eliminate bottlenecks across the integrated shipbuilding system, develop optimum labor assignments across the shipyard, and "right-size" facilities to meet production demand with appropriate capital investments, potentially saving millions of dollars with implementation of the analysis results.

AnyLogic's object-oriented approach to model building and use of the JAVA programming language were instrumental in meeting the design goals of the LSMSe, providing a modular framework for ease of maintenance and future growth, as well as, supporting the programming capability to model and simulate the hundreds of thousands of entities and resources defined in each analysis scenario.