The Digital Shipyard of the future is here

Is your enterprise software ready?

Enterprise software is essential to cut through complexity as organizations move to the truly digital shipyard.

Major shipyards and product lifecycle management vendors are excited about the emergence of the digital shipyard–a streamlined operation with improved information sharing and substantial efficiencies over traditional shipbuilding.

Starting with the design process, contract management functionality in ERP is crucial because it helps ensure delivery according to the agreed requirements. And because design is an iterative process, changes to the design must be communicated from the design tool through to other parties as quickly and efficiently as possible.

Keys for success

Four key components to ensure a successful shift to the digital shipyard:

Digital Engineering Strategy
Digital engineering is an integrated digital approach using authoritative sources of system data and models as a continuum throughout the development and life of a system. Digital engineering updates traditional systems engineering practices to take advantage of computational technology, modeling, analytics, and data sciences.

Product Lifecycle Management
To ensure the viability of the product lifecycle management (PLM) solution in use, meet the unique requirements of the shipbuilding industry, and to manage every stage of a customer project to achieve profitability, the supporting enterprise resource planning (ERP) software must go beyond traditional ERP and PLM software.

Project Management and Finance
Most shipbuilders today make heavy use of Excel as they do not have a project-centric ERP solution. This lack of integration hinders their journey towards digital shipyard status because there is no simple or efficient way to reconcile the work breakdown structure and the cost breakdown structure. Key questions like what project steps have been completed, how those steps correspond to project milestones and payment events and, ultimately, whether a project is on track to make or lose money cannot be reliably answered without fully integrated, project-driven shipbuilding ERP.

Sustainability
From efficiency, to sustainability, to safety, the digital shipyard of the future requires a reduction of vessel environmental impact, related to production, operation, disposal (including emissions, underwater noise, and material utilization), and affordable and sustainable operation. The World Ports Climate Action Program is a coalition of 11 port authorities–Antwerp, Barcelona, Gothenburg, Hamburg, Le Havre, Long Beach, Los Angeles, New York and New Jersey, Rotterdam, Vancouver, and Yokohama–that are taking action to reduce greenhouse gas emissions from the marine industry. The goal of the program is to support several collaborative working groups to accelerate progress towards the use of low carbon fuels. The coalition also calls upon the shipping industry to support the International Maritime Organization's climate action target.

The market is changing. And so should shipbuilders.

Shipbuilders can see the benefits, but to adapt to change they need ERP systems that adapt and grow with them. These changes may center around the technology they use on a project, but more and more, it is the technology embedded within the projects that is evolving faster.

Vessels are becoming more complex and are likely to include IoT elements designed to drive condition-based, preventive, and predictive maintenance. This means a shipbuilder will be required to consider how to use data from sensors as part of an asset lifecycle service program. Over the lifecycle of the vessel, data from IoT and changes made to specifications during maintenance and refits should be added to a digital twin of the asset, so the owner has full information that helps them get the most out of their investment.

Industry vendors such as Rolls-Royce, General Electric, and Honeywell–and customers like the U.S. Navy–are also working towards a goal of autonomous surface ships, which are expected to become viable by 2028. IBM claims a smart port, fitted with cloud and IoT capabilities, will be ready to host autonomous ships by 2025.

Setting sail for the digital shipyard

Commercial and defense shipbuilding is leaving behind traditional processes and embracing a digital future. Key to crossing this digital chasm will be leveraging new technologies, keeping increasingly complex projects on time and on budget, securing a digital supply chain ecosystem and maintaining sustainable operations with industry-specific ERP at its foundation will be the cornerstone of the digital shipyard of the future.