HEXAGON

# Sailing the Seas of Uncertainty

## Maximizing Efficiency Across the Entire Shipbuilding Project Lifecycle

# Contents

Challenges Facing the Shipbuilding Industry ..... 4

Introducing Enterprise Project Performance ..... 6

How EcoSys™ Enterprise Project Performance Helps the Shipbuilding Industry to Face the Future ..... 7

Customer Case Study ..... 8

About Hexagon ..... 9

Recent upheavals and global uncertainty have shown the importance of digital transformation in the shipbuilding industry. Digitalization and automation are now crucial to helping your business adapt to changing circumstances. Gains in these areas deliver proven results, as does the use of digital twin models to improve design and project execution before, during and after construction.

More than simply addressing business pressures, however, shipbuilders are also expected to decrease greenhouse gas emissions related to their activities. Increasing operational agility and automation will also help builders make their operations more environmentally friendly.

However, an over-reliance on legacy processes and systems means that shipbuilders are now struggling to keep pace with industry change. A lack of operational visibility makes it harder than ever to meet customer requirements and regulatory demands while containing costs and maintaining profitability.

**So what is at stake and what must shipbuilders do to regain control of their project management and budgets?**

# Challenges Facing the Shipbuilding Industry

Despite the uncertainty created by the COVID-19 pandemic, the shipbuilding industry is expected to achieve compound annual growth of 5.7% through 2026. This will see the market value top $178 billion[1] – good news after the impact of COVID-19 on new vessel orders in recent years.

At the same time, customers are demanding a fundamental change to ship design. They want eco-friendly, efficient, cost-effective alternatives for the movement of goods. Shipping has always offered a superior load-to-cost ratio than other transportation methods, but the ecological impact of traditional ship designs will need to be reduced to meet customer and regulatory demands.

The key to overcoming these challenges is to improve the way your organization uses information. Following the lead of other industries, digitalization and digital transformation – using data to make more accurate strategic decisions more quickly – will be essential.

There are three key operational challenges that need to be addressed as part of any digitalization efforts by shipbuilders.

[1] Shipbuilding Market By Product Types– Global Industry Analysis, Growth, Share, Size, Trends, And Forecast 2021 – 2028 – DATAINTELO - https://dataintelo.com/report/shipbuilding-market/

## 1. Assessing Risk Management

Successful project management demands accurate estimation at the very earliest stages of the process. Shipbuilders often struggle to achieve a suitable level of accuracy when estimating cost, time and resource requirements, busting budgets and causing project overruns.

Too often shipbuilders lack the required insight to manage risk throughout the complete project lifecycle. The problem is compounded when there is no standardized way to work between different disciplines.

## 2. Managing Cost and Schedule

As a project progresses, change management also becomes a headache. Every deviation from the project plan needs to be captured, along with the effect on other variables. Soaring material costs, delivery delays and design changes all increase costs and delay final delivery of the project. But with more detailed visibility it is easier to identify and quantify problems earlier, offering opportunities to better contain costs and impact.

These issues are further compounded by limited yard capacity – an overrunning construction will delay the beginning of other projects. This scenario can be repeated across multiple shipyards, making it even harder to control costs.

Without the ability to easily aggregate data from multiple sources, shipbuilders will not be able to make accurate assessments or informed decisions. A lack of information visibility leads to “Best Guess” decisions that rarely yield optimal results.

## 3. Data Handling Issues

Many shipbuilding operations exist in silos. A lack of integration between disciplines and no end-to-end visualization of processes creates errors in resource planning for instance. Meanwhile limited re-use of existing data leads to inefficient quality management and materials overrun and waste.

With no access to reliable information and limited data integration capabilities, there are few opportunities to automate fabrication and production. And continued reliance on disconnected, manual processes is more expensive, risky and likely to result in project overruns.

# Introducing Enterprise Project Performance

Many of the problems that shipbuilders face are caused by outdated tools that limit project visibility. Excel spreadsheets are still commonly used throughout the industry, creating information silos that complicate project management. Similarly, standalone ERP solutions provide some degree of insight into operations, but they lack visibility across the entire supply chain, limiting planning potential.

These silos are then replicated in the shipbuilding project processes. Key project performance indicators like budgeting, forecasting and cost control take place in silos, often using incomplete data sets.

Enterprise project performance tools are specifically designed for sharing project data across the business. With a single, central repository for project-related data, all of your stakeholders are empowered to make smarter decisions that improve project outcomes and cost control.

# How EcoSys™ Enterprise Project Performance Helps the Shipbuilding Industry to Face the Future

EcoSys™ Enterprise Project Performance (EPP) software from Hexagon's PPM division combines project portfolio management, project controls and project management software into a single platform. By integrating key processes throughout the full lifecycle of projects and portfolios, EcoSys helps to drive better business outcomes for every shipbuilding activity.

Shipbuilding project managers will find these Enterprise Project Performance (EPP) features particularly useful:

## Estimation Tools

EcoSys provides several tools to assist with estimation - cost libraries, labor, resource and material estimation for instance. This functionality solves the current inability to calculate different opportunities and the choice between different projects – even from the earliest stages of planning.

## Portfolio Management

Shipbuilding projects do not typically exist in isolation. EcoSys offers the ability to track many projects and resource simultaneously. You can then use the capacity planning tools to reallocate resources and quickly identify the best shipbuilding projects to take on.

## Project Excellence

EcoSys provides end-to-end visibility of your projects, from scheduling and budgeting, to progress tracking using NESTIX data. Using Industry 4.0 concepts, NESTIX combines all the functionalities required for work preparation, component arrangement and numerical control (NC) with load balancing for materials and resources in a single integrated solution. Forecasting and reporting tools then allow you to make on-the-fly improvements and adjustments – and to assess impact of changes before they are implemented.

## Predictability

Timely forecasts allow your decision-makers to course-correct earlier. As well as minimizing project delays, early warning capabilities provide an opportunity to better control costs. At the same time, your business will enhance its reputation and credibility by avoiding chronic delays and cost overruns – hallmarks of a reliable, trustworthy partner for your customers.

EcoSys EPP provides integrated digital connectivity between Engineering, Production and Project Performance. All of your stakeholders have total visibility, empowering them to make informed strategic decisions that accelerate shipbuilding activities, improve shipyard safety and deliver higher quality ships to customers, faster.

# Customer Case Study

Our client, a modern shipbuilder and in-service ship support provider in North America, provides efficient building, fabrication, conversion and servicing of vessels and offshore platforms. They are currently contracted to build several next-generation vessels for a national navy.

In working for government clients, they are often required to comply with EIA-748 Earned Value Management (EVM) standards. These procedures provide a guide for scope definition, schedule and cost objectives, the establishment of baselines, and reporting. The techniques are used to measure productivity, better identify problems, implement corrective actions and control changes. To successfully implement these EVM practices, the client must be able to report on earned value (EV), quickly track Cost Performance Index (CPI) and Schedule Performance Index (SPI) and deliver accurate Estimates at Completion (EAC).

As part of these obligations, our client began looking at software to replace their existing in-house solution for EVM. They needed a system robust and flexible enough to handle all the associated data, processes, and reporting to be fully EIA-748 compliant. The EPP software also had to integrate with Primavera P6, their design program, and their financial systems.

After a thorough evaluation of available solutions on the market, the EcoSys Enterprise Project Performance platform was chosen because of its Excel-like feel, ease of use, flexibility and integration capabilities. Program stakeholders liked how easy it was to extract and trade information between EcoSys and other data sources. Other competing systems that were more modular were rejected for being too difficult to work with. Our client was particularly impressed by how flexible EcoSys is, allowing users to configure the software and tailor processes to their needs, rather than having to rely heavily on IT (Information Technology) for support.

Our client uses Primavera P6 to create its Work Breakdown Structures (WBS) and work packages. They then load work packages, baselines and actuals into EcoSys to calculate earned value and report to stakeholders. EcoSys is currently handling 25 million transactions (working forecasts) with another 2 million actual transactions.

Among the realized benefits of EcoSys are:

- More accurate, structured and uniform work processes – with no possibility of data being manipulated without proper authority
- Efficient and accurate tracking of budget through the Benefit-Cost Ratio process
- Ability to create and tailor spreadsheets and reports as needed
- Flexibility for exporting data
- Ease of use – employees can get up to speed with little learning curve
- Compared to other systems, EcoSys is amazingly easy for non-technical users to learn and configure
- EcoSys easily integrates with other sources of project/ program data

# About Hexagon

Hexagon is a global leader in digital reality solutions, combining sensor, software and autonomous technologies. We are putting data to work to boost efficiency, productivity, quality and safety across industrial, manufacturing, infrastructure, public sector, and mobility applications.

Our technologies are shaping production and people-related ecosystems to become increasingly connected and autonomous – ensuring a scalable, sustainable future.

Hexagon's PPM division empowers its clients to transform unstructured information into a smart digital asset to visualize, build, and manage structures and facilities of all complexities, ensuring safe and efficient operation throughout the entire lifecycle.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 21,000 employees in 50 countries and net sales of approximately 3.8bn EUR. Learn more at hexagon.com and follow us @HexagonAB.