



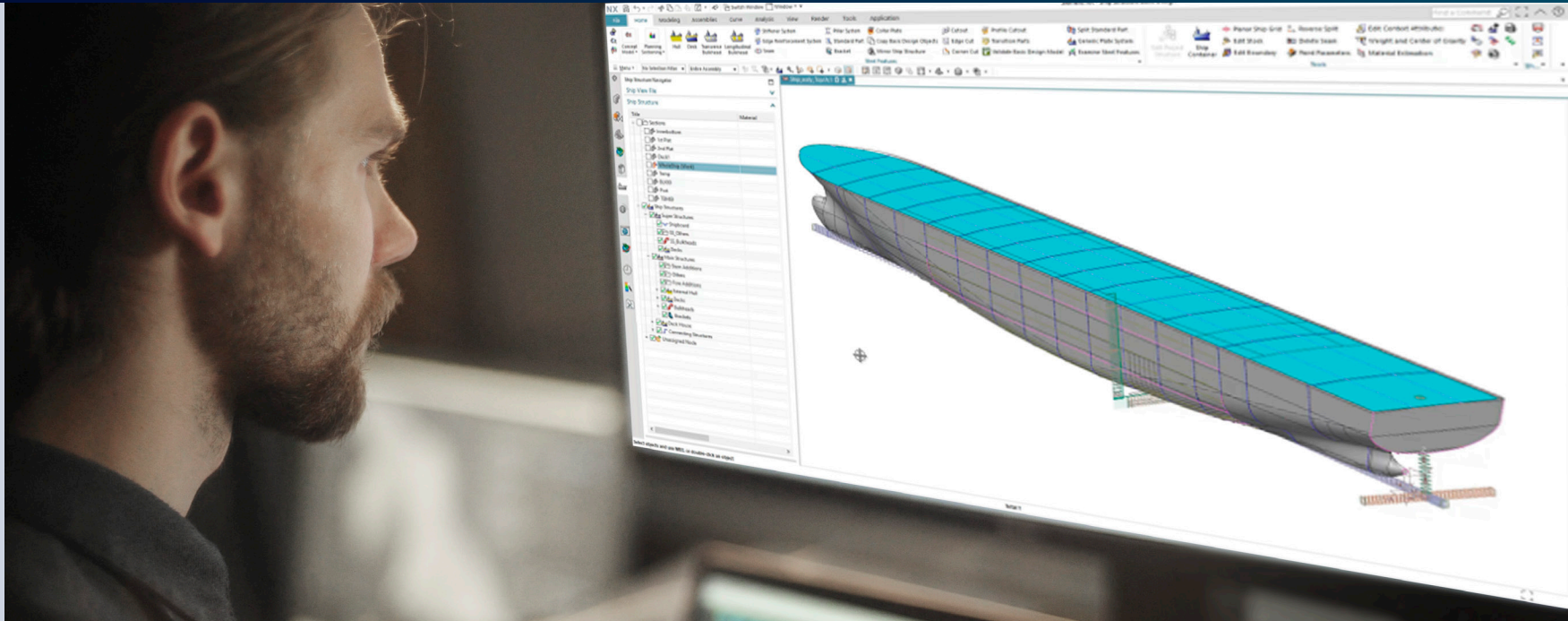
DIGITAL INDUSTRIES SOFTWARE

Design for tomorrow with
future-ready marine design
and engineering solutions

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SIEMENS

Anticipate the market's evolution and address needs faster



Competition is intensifying in the shipbuilding industry. In a highly volatile market, delivering the most technologically advanced ships in the shortest amount of time, while being on a budget, is more critical than ever. Developing these technological innovations requires digital solutions that overcome the limitations of traditional design and development software.

Because ship owners and operators must comply with stricter environmental regulations, they demand more sustainable vessels with lower

maintenance needs and lower costs of ownership. To meet standards for reduced greenhouse gas emissions, shipbuilders are exploring alternative fuel sources and developing new propulsion systems. Finally, the marine industry has adopted the trend toward electric and autonomous vessels. As a result, traditional design approaches are no longer able to meet the needs of an industry in transformation.

Building a modern vessel generates massive amounts of engineering data. But when shipbuilders adopt niche tools for each development task, the data overload becomes uncontrollable. Translating the data

from bespoke applications to universal formats creates extra steps and is prone to errors.

In the global economy, many ship design teams are now more physically separated than ever. Without a connected and collaborative design approach, design teams run the risk of operating out of step with each other. This can lead to long design cycles, possible delays due to rework and missed delivery dates. Legacy tools and traditional processes are now hindering companies that want to take on today's and tomorrow's challenges.

Discover a multidisciplinary approach to design and engineering



A fresh approach to ship design and development creates new opportunities, moving teams further through digital transformation and allowing them to manage the complete ship design in one collaborative environment.

Imagine entering the initial design phase of a project with easily accessible and customizable preliminary hulls and superstructures, available for out-of-the-box selection. Designers can setup a new ship project faster than ever. The design and engineering data flows easily from one design stage to another: the 3D modeling of the structures and the general arrangement design evolve synchronously, along with additions like brackets, openings, cutouts, clips and collars. Designers easily place and modify features as they need. The new design can reuse individual parts or whole systems from previous projects, regardless of which design tool was used to create them.

The design teams can create subsystems within the ship model, where they add and examine secondary structures and granular details. Working within a fully integrated environment, they constantly consider the relationships of all evolving subsystems in the context of the complete vessel.

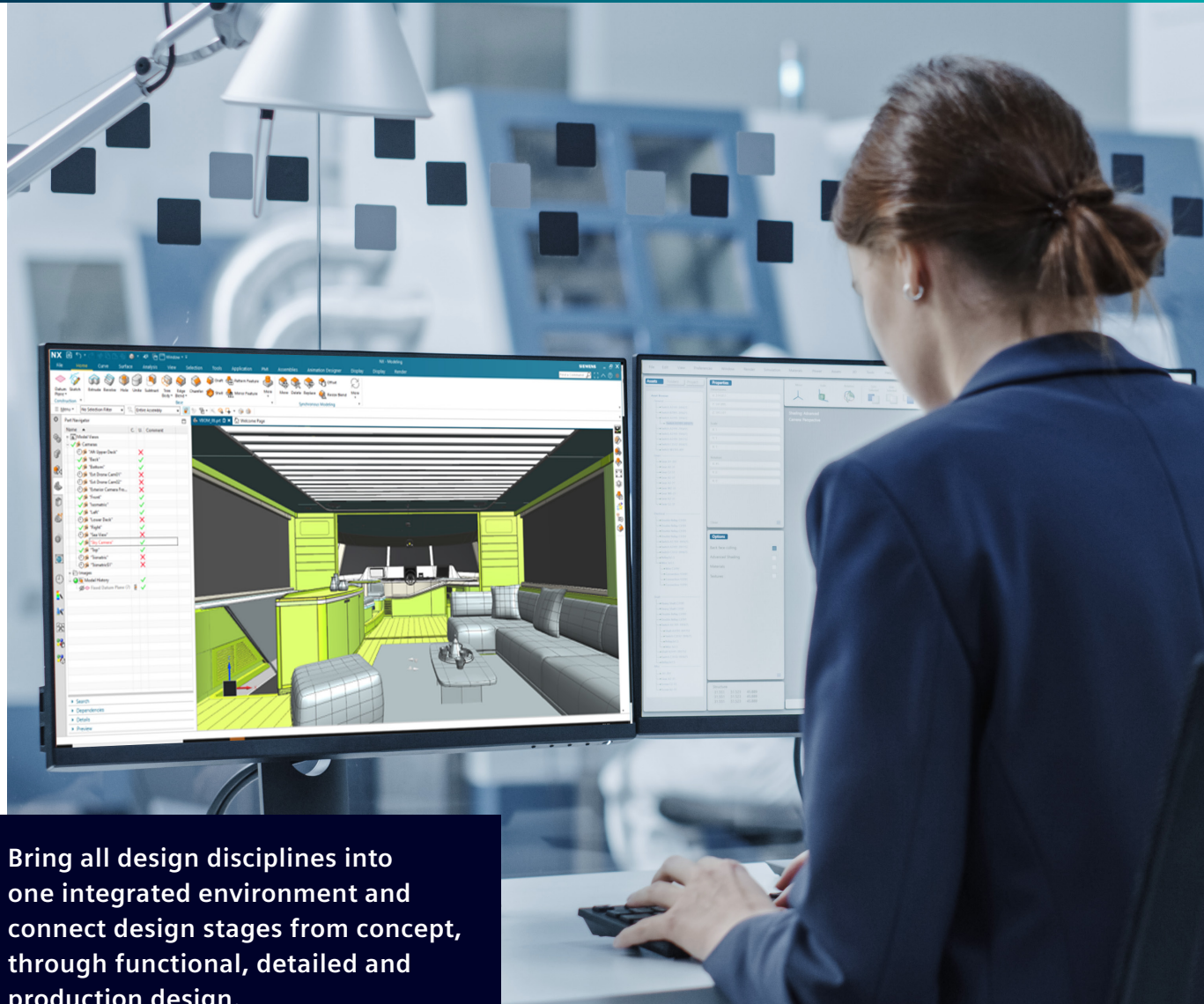
Beyond design, teams can enter the world of computer-aided engineering (CAE) and perform optimization studies, hydrostatic draft calculations, computational fluid dynamics (CFD) and finite element analyses (FEA). Thanks to a first assessment of the ship's performance, the downstream workload and the risks of errors are reduced.

Break the barriers to shipbuilding innovation

The next generation of design and data management tools enables teams to work within one cohesive design and engineering platform to develop the entire ship. Working within a network where all digital tools speak the same language opens a new world of possibilities, allowing teams to obtain a complete multidisciplinary digital twin of the vessel. A tsunami of data can transform into efficient process flows and actionable data exchange in a collaborative environment.

Structures, general arrangement, piping, electrical/electronic systems, heating, ventilation, and air conditioning (HVAC) systems and cable routing are all designed in one common platform. Each step can be designed, tested and verified along the way, which aligns and optimizes the development process from start to finish. Upon completion of the design, teams can unleash the capabilities of the comprehensive digital twin by enabling virtual reality (VR) and augmented reality (AR) walkthroughs and flyover tours of the new vessel.

By connecting data across the enterprise and throughout the supply chain, innovative shipbuilders achieve a new level of operational efficiency. The multidisciplinary design solution is part of a holistic approach to planning, design, construction and supply. It improves both the shipbuilding processes and the performance of the final products.



Bring all design disciplines into one integrated environment and connect design stages from concept, through functional, detailed and production design.

Reconnect teams and tools



One collaborative, multidisciplinary environment allows shipbuilders to move confidently from concept to completed vessel more quickly than ever.

The power of the comprehensive digital twin and its collaborative environment extends beyond design and engineering. Manufacturing teams can communicate with designers to inform on manufacturability. When involved from the beginning of development, the production teams already understand the intent at the time of design handoff.

The solution uses finalized designs to generate production and manufacturing plans automatically. It can automate the outputs for plate bend templates, weld positive material identification (PMI) and ping jig creation.

The capabilities of internet of things (IoT) and cloud computing technologies help enterprises invest at scale to match product and market requirements. They can utilize new technologies quickly and cost-effectively, learn and keep pace with new solutions, collaborate securely across engineering domains and leverage the shipbuilding ecosystem as a network of innovation partners, all in an accessible, scalable and flexible form.

Your benefits



A multidisciplinary design approach enables modern shipyards to:

- Integrate all design tools across teams and disciplines to create optimized designs faster
- Manage structures, mechanical, electrical and production software in one collaborative environment
- Reveal potential design errors or incompatibilities earlier
- Minimize the risks of delays, cost overrun or quality issues



NX gives us speed, efficiency and design freedom, and Teamcenter enables us to control information. We can all view a complex product design and make sense of it.

Princess Yachts



Before using NX, we were struggling to design and develop two new models per year. Now that there is less onus on the shop floor, NX is giving us the freedom to do what we do best and we are introducing between three and five new models per year.

Sunseeker



The exchange of data between the NX CAD and Teamcenter environments and the ERP environment enables all our divisions to open up the same drawings, the same specifications.

Royal IHC

A comprehensive solution for ship design and engineering

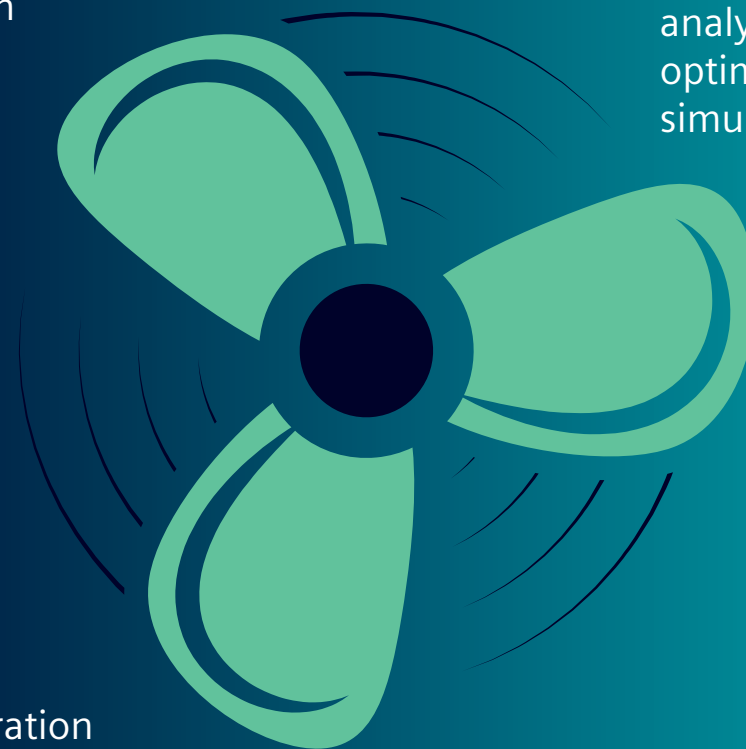
Multidisciplinary design is one of the key capabilities of Siemens' integrated ship design and engineering solution, a fully integrated solution that enables seamless process execution from initial design to detailed production design. It enables ship designers to reduce costs, time-to-market and risks by breaking down traditional disciplinary silos and fostering innovation in ship design.

Siemens integrated ship design and engineering is part of the Siemens Xcelerator business platform of software, hardware and services and offers as-a-service capabilities. Using Siemens Xcelerator as a Service (XaaS) helps shipyards scale their design, simulation, manufacturing and internet of things (IoT) capabilities by offering full flexibility, accessibility and scalability with minimal deployment efforts and costs and maximized security.

Multidisciplinary design

Performance analysis and optimization simulation

Integration and orchestration across domains



Siemens Digital Industries Software helps organizations of all sizes digitally transform using software, hardware and services from the Siemens Xcelerator business platform. Siemens' software and the comprehensive digital twin enable companies to optimize their design, engineering and manufacturing processes to turn today's ideas into the sustainable products of the future. From chips to entire systems, from product to process, across all industries, [Siemens Digital Industries Software](#) – Accelerating transformation.

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