Reviving Japanese and U.S. shipbuilding

Vision for the next 3 years

The shared starting point

- Decline in the shipbuilding workforce
- Meeting the demands of increasingly complex vessels
- Inefficiency caused by redesigning each new ship

Guiding principle **Sustaining and expanding shipbuilding capacity through productivity improvements**

Measures for the next 3 years

1. Take a holistic view of the entire design and production process, identify critical bottlenecks, and invest in the technological solutions to address them.
2. Address design workforce shortages with AI, and production workforce shortages through automation and robotics.
3. Establish a digital backbone that enables a digital thread across design, procurement, production planning, production, and O&M.
4. Pursue modularization, distributed manufacturing, design for manufacturing and design for O&M

Goal in three years An integrated and more productive shipbuilding system—from design and supply chain to production and O&M—supported by a skilled workforce.

Aligned with Phase 1 of Japan's shipbuilding revitalization roadmap (MLIT, Dec 2025), America's Maritime Action Plan (Feb 2026), and the Japan–U.S. shipbuilding cooperation MOU (Oct 2025).

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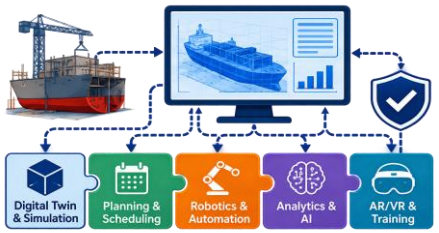
Monohakobi Technology Institute

NYK GROUP

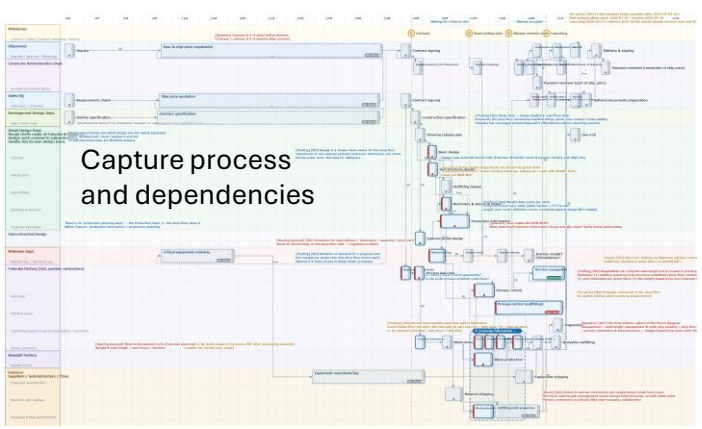
Proposal for Japan–U.S. Collaborative Research on AI-Enhanced Ship Design and Robot-Ready Production

Integrate & Validate BRIDGE Solutions

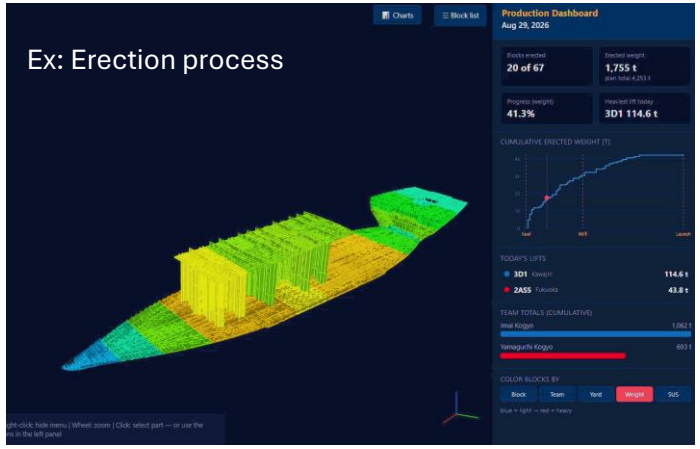


Use real-world shipyards as testbeds to assess the feasibility of AI and robotics solutions for ship design and production. Integrate these solutions through process modeling, simulation, and on-site validation to quantify their combined impact. The expected outcome is a validated approach to AI-enhanced, robot-ready shipbuilding, applicable to both Japanese and U.S. shipyards.

1 Capture Current Processes



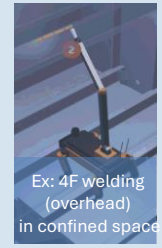
2 Model Future Processes



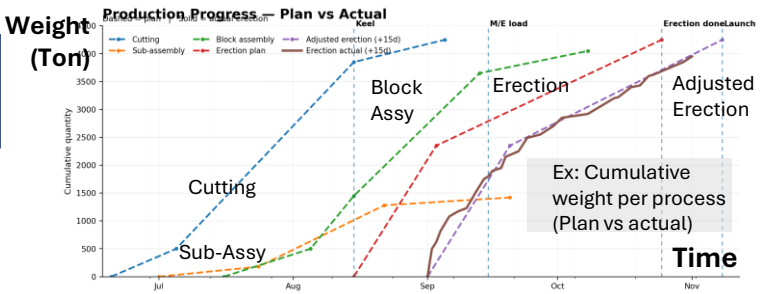
3 Test Alternative Scenarios

- Construction process scenarios
- Welding robot for hard-to-reach areas
- AI-Assisted design support
- Supply chain optimization





4 Quantify Expected Benefits



5 Implement and Validate Solutions



6 Monitor Performance and Improve



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Key messages

MESSAGE 1 — TRANSFORMATION

Our goal is not simply to introduce AI and robots into existing shipyards. We aim to **rethink ship design and production processes** to fully leverage these technologies.

MESSAGE 2 — COLLABORATION

By working together, Japan and the United States can develop, test, and validate new approaches to ship design and production, **combining our expertise and practical shipyard experience**.

Let's work together to turn AI and robotics innovations into real improvements in shipbuilding productivity.

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