

Vortex provides MARIN with platform for real innovation

Anyone who spends time trying to get any work done on or under the ocean's surface knows it can be daunting. With no light below 4 km, the subsea environment is darker than deep space. And considering the extreme pressures, it's just about as friendly. Topside, conditions are equally inhospitable, with frigid temperatures, sea ice, high winds, and formidable offshore waves.



Training for operations under these conditions needs to be designed on the assumption that mother nature, human error, and Murphy's law are going to combine in the worst possible way at the worst possible time. Being prepared is essential. MARIN, the Maritime Research Institute Netherlands, thrives on these challenges. The institute is a world leader in hydrodynamic and nautical research and development. "When we wake up in the morning," says Noel Bovens, "we basically ask ourselves: What is it that we can't do yet that the maritime sector needs?" A few years ago, MARIN was looking to perform heavy lift operation simulations, a task that is increasingly common in the maritime industry.

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MARIN is a world leader in hydrodynamics research — but heavy lift simulation straddles multiple domains, including precision hydrodynamics as well as high-fidelity multi-body and cable dynamics. In short, it's an extremely complex scenario to simulate, requiring high-quality multi-channel visuals, maritime visualisation capabilities, character animation for deck crew, and simulation of mechanical equipment, cranes, cables, hoisting, towing, anchor handling, and hydrodynamics. Other important requirements for MARIN included real-time performance for training applications, best-of-breed visuals, and dynamics simulation for maritime applications.

The Organisation

MARIN, the Maritime Research Institute Netherlands, is a world leader in hydrodynamic and nautical research and development.

The Situation

MARIN was looking to perform heavy lift operation simulations. This required real-time performance, best-of-breed visuals, and dynamics simulation.

The Solution

Vortex Software Solution enabled MARIN to replace the need to integrate multi-channel visual, animation and simulation tools separately.

That's a requirement set that CM Labs Simulations' Vortex Software Solution was designed to fulfill. With a single platform, MARIN was able to replace the need to integrate multi-channel visual, animation and simulation tools separately. They also replaced their existing visual system with best-of-class maritime visuals, integrated to their pre-existing simulator framework without major rework, and provided character animation for simulating deck operations.

The scalability and extensibility of the Vortex platform made it possible to integrate with MARIN's existing application framework, hardware control systems, and proprietary vessel dynamics simulation engine. With a wealth of features out of the box, the Vortex platform vastly reduced the need for custom development.



"We were pleasantly surprised with how far we could get with Vortex," Bovens says. "Anything to do with line handling, and anything that deals with collision handling is handled much more efficiently with the Vortex platform."

In addition, CM Labs' support of the full platform meant that, unlike with game engines, MARIN had access to all the tools and the expertise needed to make the project successful. "We were very pleased with the support in particular," Bovens says. "It was available when needed, which matches how we want to work. If we buy a high-end engineering-grade solution, we want expert advice on how to work with it and how to model our case properly in it, rather than being left on our own."

Based on the success of the heavy lift operation simulation, MARIN decided to integrate Vortex with their own hydrodynamics simulation solution going forward. MARIN now has the capacity to build coupled ship and crane dynamics simulation scenarios, such as tandem lifts and offloading operations. MARIN will also be able to develop immersive simulators that can be used to train crane operators, and applied as an engineering tool for operational planning in the engineering phase of a project. "Vortex opens up new simulation possibilities," says Bovens, "ranging from vessel involvement in ROV deployment and operations, to subsea mining." "It complements our mandate to provide innovations for the maritime sector."



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