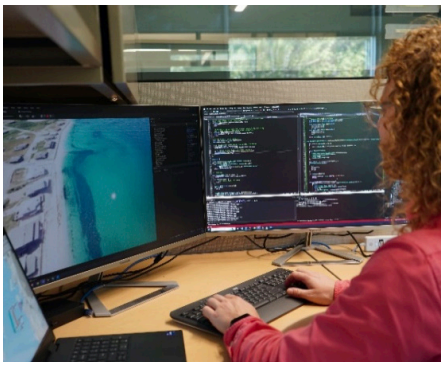
ODYSSEY SIM

A Maritime Simulation Environment for Uncrewed Vehicles

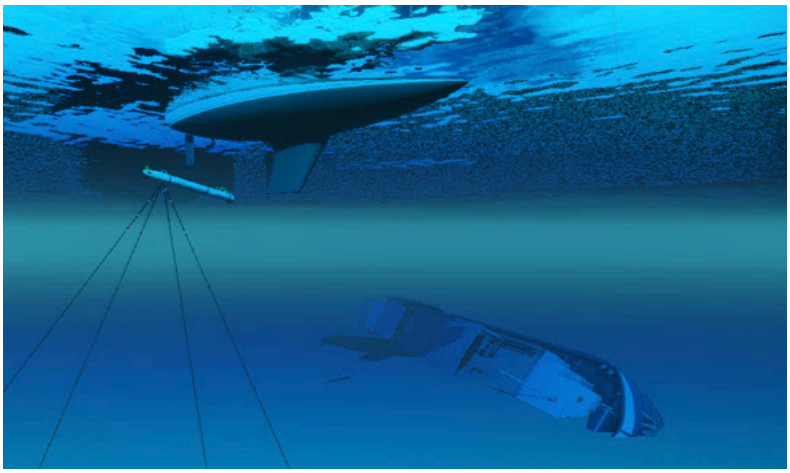
Enables the virtual deployment of systems in operational environments around the globe.



HII develops, maintains and implements simulation capability to support design, development, integration and test of uncrewed vehicles in maritime environments. Odyssey Sim's robust virtual world platform, physics-based simulation models and modular architecture make it an effective virtual testbed for surface and undersea vehicles. This maritime simulation environment is used to assess vehicle performance and enables timely analysis of alternatives regarding design or operating conditions.

MARITIME VIRTUAL WORLD

Odyssey Sim's virtual world platform offers 3D models that simulate vehicle and sensor interactions with their environment and serve as visual aidsIt features real and synthetic terrains, obstacles and targets, with real-time updates for dynamic environmental conditions like waves and currents. Users can customize it to create realistic environments.



Odyssey Sim's virtual world platform allows execution of vehicle missions in unforeseen environments or known operating conditions that are hard to reproduce for in-water testing. Whether conducting undersea real-time maneuvering, collaborative surface vessel operations or navigation in complex flow regimes, Odyssey Sim can support operational planning/training demands.

3D View · Bathymetry · Obstacles · Collisions · Modular Vehicles · Sensors · Ocean Effects

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HII is a global, all-domain defense provider. HII's mission is to deliver the world's most powerful ships and all-domain solutions in service of the nation, creating the advantage for our customers to protect peace and freedom around the world. As the nation's largest military shipbuilder, and with a more than 135-year history of advancing U.S. national security, HII delivers critical capabilities extending from ships to unmanned systems, cyber, ISR, AI/ML and synthetic training. Headquartered in Virginia, HII's workforce is 44,000 strong. For more information, visit HII.com.

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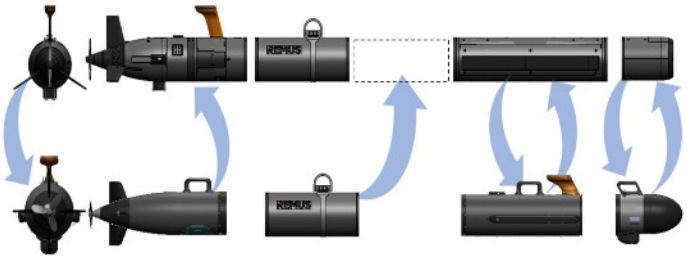
PHYSICS-BASED

Hydrodynamics. The hydrodynamic solver integrates ocean effects as part of modeling the vehicle dynamics in six degrees of freedom. HII uses an array of characterization methods, including computational fluid dynamics, ensuring accurate vehicle response in complex flow regions.

Mathematical Sensor Models. Each vehicle is outfit from a full suite of emulated actuator, sensor, and acoustic communication components that simulate accurate behavior and replicate hardware specifications.

MODULARITY

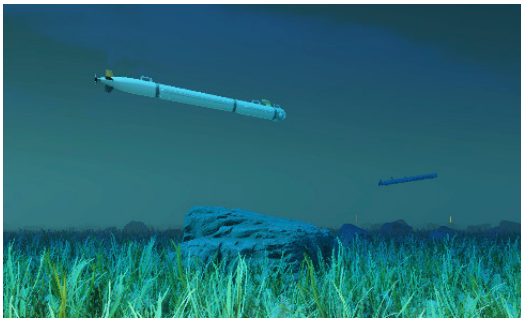


Configuration. Odyssey Sim is built with a modular architecture for customization and expandability of simulations. A simulated vehicle can exercise any sensors in any configuration and be deployed in a virtual environment uniquely crafted by the operator.

Virtual-Hardware Hybrid. The Odyssey Sim architecture promotes a hybrid system configuration comprised of both physical and simulated components. Modular controller systems and communication protocols enable the ability to start with a complete virtual solution and transition to hardware as it becomes available.

Spotlight: REMUS Digital Twin

HII's REMUS Digital Twin simulates realistic vehicle operations and is validated by extensive sea trial data. Each digital twin is comprised of a set of models, including mechanical, hydrodynamic, and sensor components that interface to accurately represent a REMUS vehicle. The REMUS 300 digital twin has been integrated throughout the production lifecycle, from hardware subsystem testing through full vehicle software regression testing.



Odyssey Sim components can seamlessly transition between software and hardware-in-the-loop operation modes. This capability allows for wide system test coverage in virtual operational environments before sea trials and enables customers to plug in 3rd party autonomy or payloads for rapid integration. The use of digital REMUS has led to a reduction in required test days at sea and expanded available services for REMUS customers with accurate mission verification.