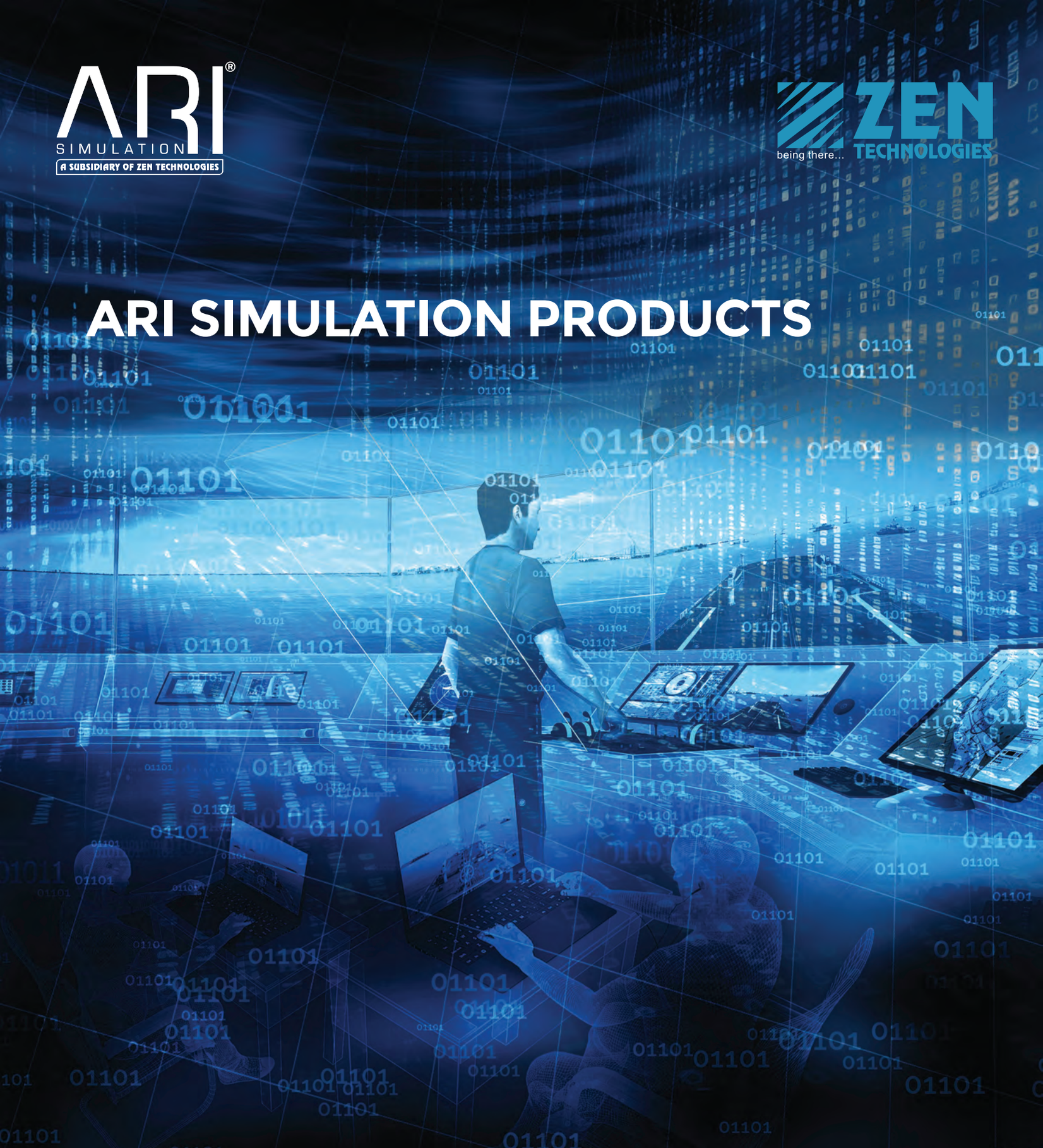
ARI®
SIMULATION
A SUBSIDIARY OF ZEN TECHNOLOGIES

ZEN TECHNOLOGIES
being there...

ARI SIMULATION PRODUCTS



YOUR WORLD - OUR WORLD®

www.arisimulation.com

OVERVIEW

Applied Research International (ARI), the naval and marine simulation arm of Zen Technologies Limited, is a global leader in the production of sophisticated simulation and virtual reality training solutions for the defence, marine & offshore industries.

MARINE & OFFSHORE		DEFENCE
Marine Suite	**Offshore & Sub Sea Suite**	**Defence Suite**
• > 20 types of marine & offshore simulators • > 30 types of crane simulators • Ports & terminals • Entire marine & offshore range is DNV certified		• Different types of defence simulators for a range of weapon systems, air assets & naval platforms

At the forefront of innovation, our simulators stand as the pinnacle of excellence, meticulously crafted to adhere to the highest international standards set by respected industry authorities like the International Maritime Organization (IMO), Standards of Training, Certification, and Watchkeeping for Seafarers (STCW) 2010, The Nautical Institute, Offshore Petroleum Industry Training Organisation (OPITO), Association of Marine Electronic and Radio Colleges (AMERC), International Marine Contractors Association (IMCA), and more. Our marine, offshore, and crane simulation solutions have achieved the prestigious Class A Standard certification from Det Norske Veritas (DNV), exemplifying our commitment to excellence.

Full Mission Ship Handling Simulator

Full Mission Engine Room Simulator

Full Mission Cargo Handling Simulator

Full Mission Tug Handling Simulator

Full Mission Offshore Bridge Simulator

Cloud Simulation

Crane & HEMM Simulators

Defence Simulators

MARINE SIMULATION

The ARI Marine & Logistics Simulation product portfolio covers the entire range of marine operations including Bridge, Engine, Cargo and Communication.

Navigation Simulation

The ARI Full Mission Ship Maneuvering Simulator is designed, built and installed in accordance with the requirements of IMO, STCW 2010 and is approved by DNV to the highest Class A Standards.

It is a complete maritime navigation training solution for all training needs related to navigation and ship handling. The elements include RADAR-ARPA, ECDIS and navigational equipment. Training is conducted in a compelling immersive atmosphere with full visual, instrument and aural clues available to the trainees.

ARI's Navigation Simulators are available in a large number of configurations ranging from tabletop and part task trainers to large scale installations with 360° field of view with various navigation equipment integrated into the simulation systems.

The Navigation Simulators fully provide for specialized navigation operations such as Integrated Bridge Systems, Ice Navigation, Ship-to-Ship operations, SBM operations, VTIS operations and others as required to meet specific training and assessment requirements.

Tug Simulation

The ARI Tug Handling Simulator provides an excellent training platform for both new and experienced tug operators to improve their tug handling skills and practice for emergency maneuvers and response. Available in multiple configuration types, the simulator closely resembles the layout and equipment of a modern tug maneuvering station and navigating bridge. Multiple tug types, including ASD tugs, are available in the vessel library and the sophisticated behavioral model ensures that complex tug maneuvers are performed to a high degree of accuracy and reliability under a variety of environmental and operational conditions.

VTS Simulation

The ARI VTS simulator has been designed, built and implemented to meet and exceed the relevant recommendations as prescribed in IALA model courses V-103. The simulator provides a platform to carry out consistent, quality training of Vessel Traffic Service (VTS) operating personnel.

The simulator is designed to train the candidates to deal with real world vessel traffic management situations under normal and emergency situations in simulated environments.

Training sessions can be based on pre-prepared scenarios each of which can be designed to allow fulfillment of specified training objectives. The scenarios can be graded in complexity so as to meet the training requirements for operators who may have considerable spread in their individual experience levels.

GMDSS Simulation

The ARI GMDSS Simulator provides complete operational training in communication using GMDSS equipment as found on marine and offshore units. The simulator complies with the Performance standards for simulators as defined in Section A-I/12 and B-I/12 of STCW 2010 and DNV to the highest Class A Standard. Specific configurations are AMERC approved.

The ARI GMDSS Simulator provides an operating environment for the trainee similar to that of operating a GMDSS station on a modern ship. It is suitable for the purpose of training navigators at all levels, for handling distress and routine communication at sea using satellite and terrestrial communication equipment.

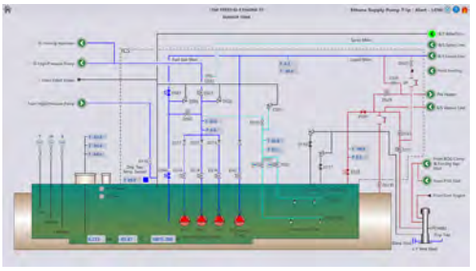
Engine | Propulsion | Machinery Space

The ARI Full Mission Engine Room Simulator is a multi- functional training solution suitable for training Marine Engineers at Watch-Keeping, Operational and Management levels.

Multiple propulsion and engine room types are modeled including slow, medium & high-speed diesel engines, electric propulsion, azimuth propulsion, waterjet engines and others. The engine room comprises a Main Engine Control Room, Electrical Switch Board, and Simulated Machinery Space including a Mimic Pipeline Panel, and Local Operating Stations.

Simulation of specialized systems such as High Voltage, Power Management, Fire Fighting and Offshore vessel specific sub systems for the handling of mud, brine and cement are also available.

New Engine Models



New Engines/ Green Fuel/ Decarbonization

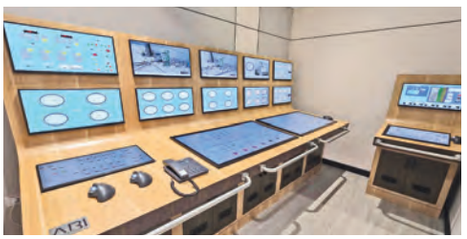
- XDF (LNG)
- ME-GIE (High Pressure Gas Injection - Ethane)
- ME-LGI-M (Methanol)
- ME-GA (Low Pressure LNG Gas Admission)
- MEGI (High Pressure Gas Injection - LNG)
- Medium Speed LNG Dual Fuel Diesel Electric Propulsion

Emission control systems:

- HP SCR (High Pressure SCR)
- LP SCR (Low Pressure SCR)
- EGR (Exhaust Gas Recirculation - BP & TC)

Process & Cargo Handling Simulator

The ARI Liquid Cargo Handling Simulator simulates the real time process flow control systems used in the storage and transfer of potentially hazardous bulk liquids from shore to ship and vice versa, and is capable of being used for training over the full range of situations from routine operations to emergencies with catastrophic potential.

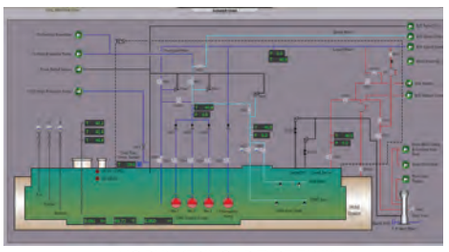


The simulator is an advanced training solution for officers at the operational and management levels. It is a scalable solution starting with a single PC instructor-less solution ranging up to full mission configurations comprising cargo control consoles, instructor stations, mimic pipeline panels and more.

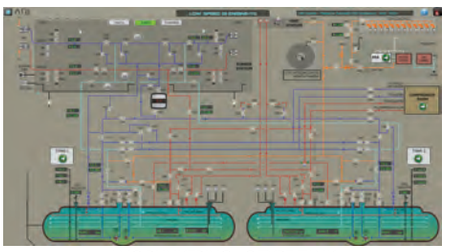
The ARI Liquid Cargo Handling Simulator is considered to be amongst the most versatile and flexible training tools of its kind in the world. The model library includes Oil Tankers, VLCC, Product Tanker, Chemical Tanker, LPG Carriers and LNG Carriers. Each simulated vessel is equipped with a fully functional load calculator. The mathematical model that drives fluid behavior in the simulator is exceptionally powerful and ensures that accurate and reliable results are observed under every condition likely to be experienced during vessel cargo operations.

LNG & Methanol Bunkering

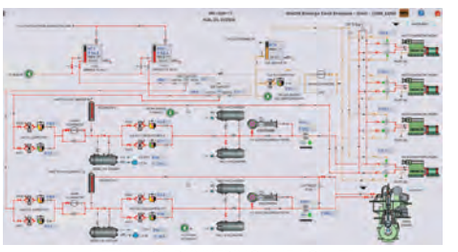
Designed to advance training in liquefied natural gas and Methanol operations. Experience cutting-edge technology for a safer and more efficient bunkering process.



LNG BUNKERING - B TYPE TANK



LNG BUNKERING - C TYPE TANK



METHANOL BUNKERING - ME-LGIM T1

OFFSHORE SIMULATION

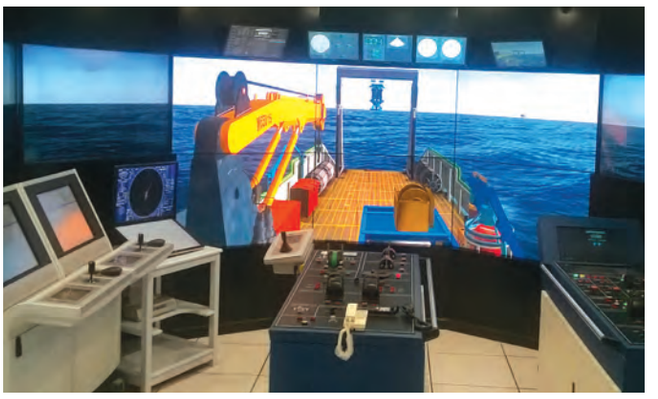
The ARI Offshore Bridge Simulator recreates the complete experience of operating on the bridge of an offshore vessel, with both fore and aft bridge stations coupled with an extremely high level fidelity visual system.

Our Multifunctional Offshore Bridge Simulator delivers an immersive virtual reality experience so real you'll believe you are actually there. A broad range of offshore vessels can be provided in the system including fully functional PSVs, AHTSVs, MPSVs, MSVs and more. These vessel models are available with a variety of control and propulsion systems including conventional telegraphs, azimuth controls, Z-drives, thrusters and joystick controls.

DP Simulator

The ARI Dynamic Positioning Simulator provides a powerful platform for DP training and certification that fully complies with NI and DNV to the highest Class A Standards.

The ARI DP Simulator is a scalable product that can be provided as a standalone trainer in a classroom, a multi - station configuration or integrated into the ARI Offshore Bridge Simulator where it can deliver the complete experience of DP/DP-2 or DP-3 operations in a bridge environment.



We work closely with several DP equipment manufacturers and can offer simulator solutions in which OEM DP systems are interfaced to our simulator for those clients that require real DP systems for their training programs.

Anchor Handling Simulator

MULTIPLE VESSELS | COMPLEX MISSIONS

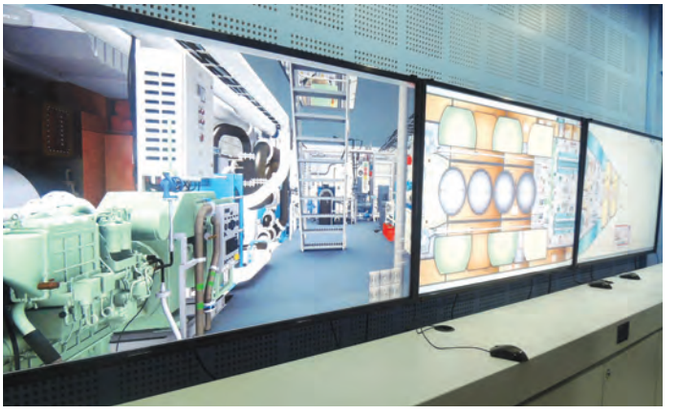
The ARI Anchor Handling Simulator is an add on module for the offshore bridge simulator providing complete anchor handling capabilities supporting basic and advanced AH operations.

The simulator provides a richly detailed, physics based simulation of the anchor handling process: from transmission of the anchor pattern, interpretation and planning; picking up pennant wires and anchors to deployment and retrieval of anchors in position.

A full set of winch controls are provided which operate in parallel with the vessel handling control systems. Single and multiple vessel missions can be executed.

Machinery Simulator

The ARI Machinery Simulator recreates the propulsion and machinery plant of an offshore vessel providing a comprehensive platform for training & assessment of operating personnel.



The ARI Machinery Simulator simulates all the machinery related processes of an offshore vessel and fully supports conventional and diesel electric azimuth propulsion systems. The system also supports offshore systems such as FIFI, cargo handling systems, hydraulic system controls and implements a complete power management system.

The entire machinery space of the vessel, with all equipment, machinery and controls is also available in 3D and can be used as a separate familiarization platform or in a fully interactive mode linked to the running simulation.

Subsea / ROV Simulation

The ARI ROV Simulator is certified by DNV to the highest Class A Standard, and meets the requirements for Class A simulator according to IMCA guidelines pertaining to ROV simulator classes, their performance and viability for training.

The simulator can be used by ROV manufacturers, operators, oil companies and others for tasks such as field visualization (as built), mission planning, dive plan development / evaluation, as well as subsea equipment design and testing for ROV missions prior to field deployment. As a training tool, the simulator is a vital aid for equipment specific, mission specific or site specific ROV pilot training.

The simulator provides an opportunity for pilots and potential pilots, to gain ample ‘stick time’, without risking ROV systems, tying up expensive field equipment, or causing wear and tear to equipment that could otherwise be employed on jobs offshore.

The simulator is deployed on networked PCs, with distributed processing of simulated camera graphics, sonar data, controls interface, and the hydrodynamic modeling software component. The simulator supports multiple dynamic objects (including two ROV systems), large umbilical lengths (deep water operations) and fully interactive manipulators.

CLOUD SIMULATOR & DIGITAL TECHNOLOGIES

ARI's digital suite of products represents the pinnacle of cutting-edge technology, seamlessly complementing the comprehensive range of physical simulators.

Automated Scenario/Simulation Based Assessment

ARI's Automated Scenario/Simulation Based Assessment (ASBA) platform sets the standards for digital assessment and overcomes all the limitations of the current assessment-based products for the maritime industry.

- Smart, Adaptive, Scenario Based Question Banks
- Engagement Monitoring
- Dashboard for Analysis
- Report Generation
- Shorter Test Cycles & Immediate Results
- Precise and Fair Scoring
- Secure
- Enhanced & Convenient Candidate Experience
- Can be used for Training, Screening, Assessment & Competency Development
- Enhanced Post test Analysis
- Supports Scenario Based Adaptive Testing for a Range of Industry Verticals
- Different Levels of Proctoring available

Cloud Based Simulation Training

Using ARI cloud systems more than 75000 certificates have been generated. ARI is amongst only 3 globally certified simulation companies to be approved by both IADC & the IWCF for the critical cloud-based assessment of drilling & well control operations. ARI's Marine range of Cloud based simulation modules are DNV Approved. As a part of its digital cloud initiative all versions of simulators in ARI's portfolio are available through ARI's Cloud Based Simulation Training.

- Fully online version – candidates need not visit examination centre at any stage
- Can be extended to include conduct of digital examinations at authorized examination centres
- Hybrid versions
- Supports all formats of written examinations, including pen & paper
- All existing formats can be supported

Simulators With Hybrid / Blended Capability

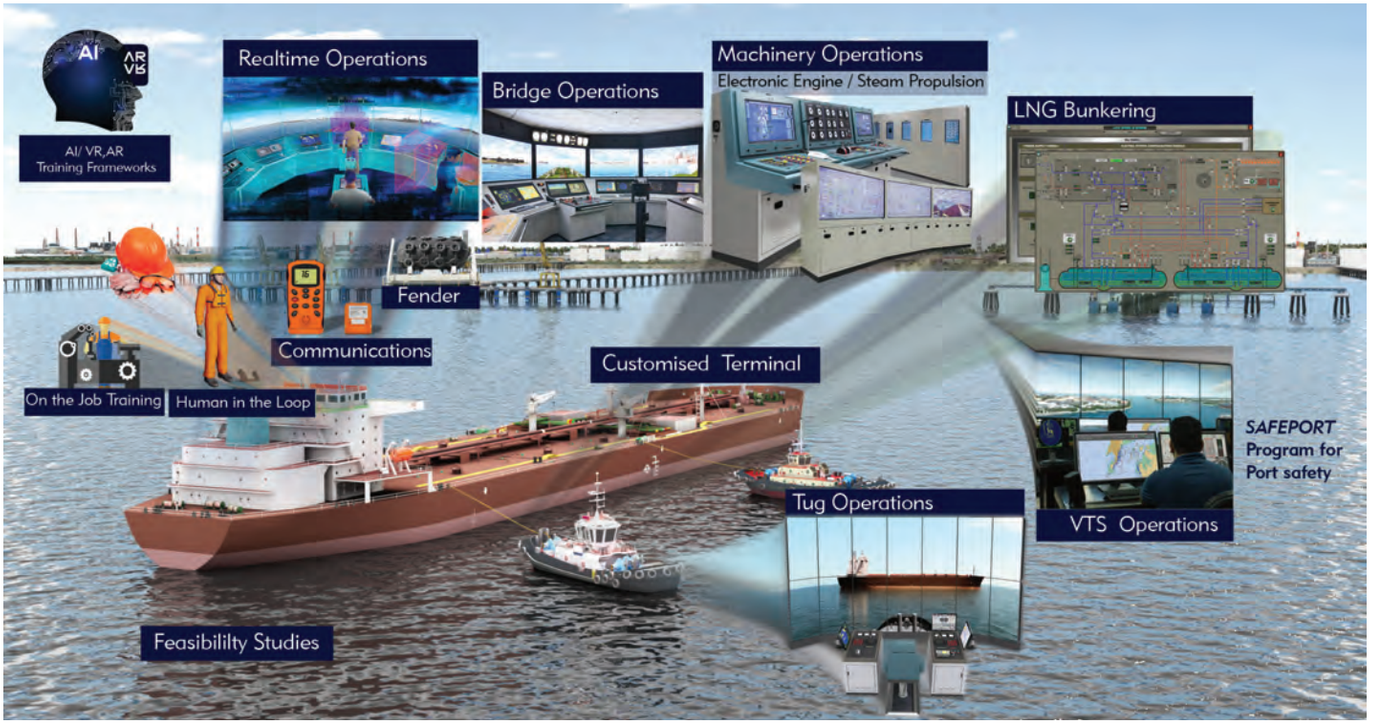
Operations in Hybrid Mode - Remote participant within a bridge team training environment

Physical Participants

Remote Participants

Simulators enable remote trainees to fully engage in training, accessing the same functionalities as on-site participants through video, RADAR, ECDIS, and more. Instructors can monitor all participants, ensuring a sustainable and future-proof training experience.

Integrated Training Scenarios



Visualization

FEASIBILITY STUDIES

Simulation Studies

Simulation studies for vessel navigation and maneuvering are an integral part of any Port development project – be it a Greenfield or Brownfield port, harbour, berth, river, terminal or inland waterway.

The ARI SAFEPORT program is designed to help in studying the feasibility of safe navigational operation of the intended vessel type(s) in the proposed maneuvering area before large resources are committed to the development of waterways and port infrastructure.

This solution is now successfully being used in the industry to conduct simulation studies to analyse the following:

- Ability of vessels to maneuver in the approach channel/turning circle in a safe, timely & efficient manner under the combined effects of current, wind, tide & swell.
- Ability of vessels to arrive & depart from proposed berths.
- Confirm the size, power & number of tugs to assist the vessels during transit, turning, berthing and un-berthing including the ability to assist the vessel during emergency conditions.
- Ability of river boats, including barge convoys, to negotiate the bends and turns of river sections including entering and leaving lock area, if required.

Simulation study in progress for inland waterway / large river area

VR | AR | MR Based Simulator Training

ARI's cutting-edge Mixed Reality (MR) solutions redefine training and operational efficiency in the marine, offshore, and crane industries. By seamlessly integrating the physical and digital worlds, our MR platforms offer immersive, interactive simulations that enhance learning, safety, and decision-making.

VR Training solutions offered by ARI provide a wholly immersive and integrated environment where the Trainee can familiarise with and gain a deeper appreciation of the working environment to fully assimilate the interplay between equipment, environment and the procedures required to complete a defined objective or task, within prescribed limits of procedural efficiency and safety standards.

The complete VR solution package includes wireless VR glasses (Head Mounted Display or Headset), wireless handheld controllers and ARI's custom VR Simulation software, customised to meet the requirements of each training module.

Each training package is characterised by an ultra-realistic visual display of machinery components and a 360° immersive and interactive working environment. Using the handheld controllers, the trainee can virtually move through the space and carry out specific functions related to operations such as opening valves, turning knobs, pressing buttons, moving levers, and other similar operations to master the procedures required to operate the machinery or equipment.

DEFENCE SIMULATION

ARI Simulation offers a range of sophisticated simulator products suitable for armed forces and smaller response units for use in training, tactical proving, mission rehearsal and other defence related applications.

The simulators are designed and built to deliver a high degree of integration and interoperability, enabling the practice of missions involving multiple force elements performing in their own individual roles towards a common objective.

The simulators have been delivered to a significant number of global armed forces. Our Naval Simulation Suite - a collection of training platforms each of which provides a complete learning experience for specific naval warfare operations - is known to be one of the most powerful Naval simulation platforms available.

Each simulator can be operated in an individual mode, and multiple simulators can be combined into different configurations to create team training opportunities as well as whole ship training and even multiple collective whole-ship training platforms.

We have been audited and certified to the exacting ISO 14001 and ISO 9001 standards which include assessment of our confidential data protection systems.

Naval Bridge Operations

Naval Machinery Operations

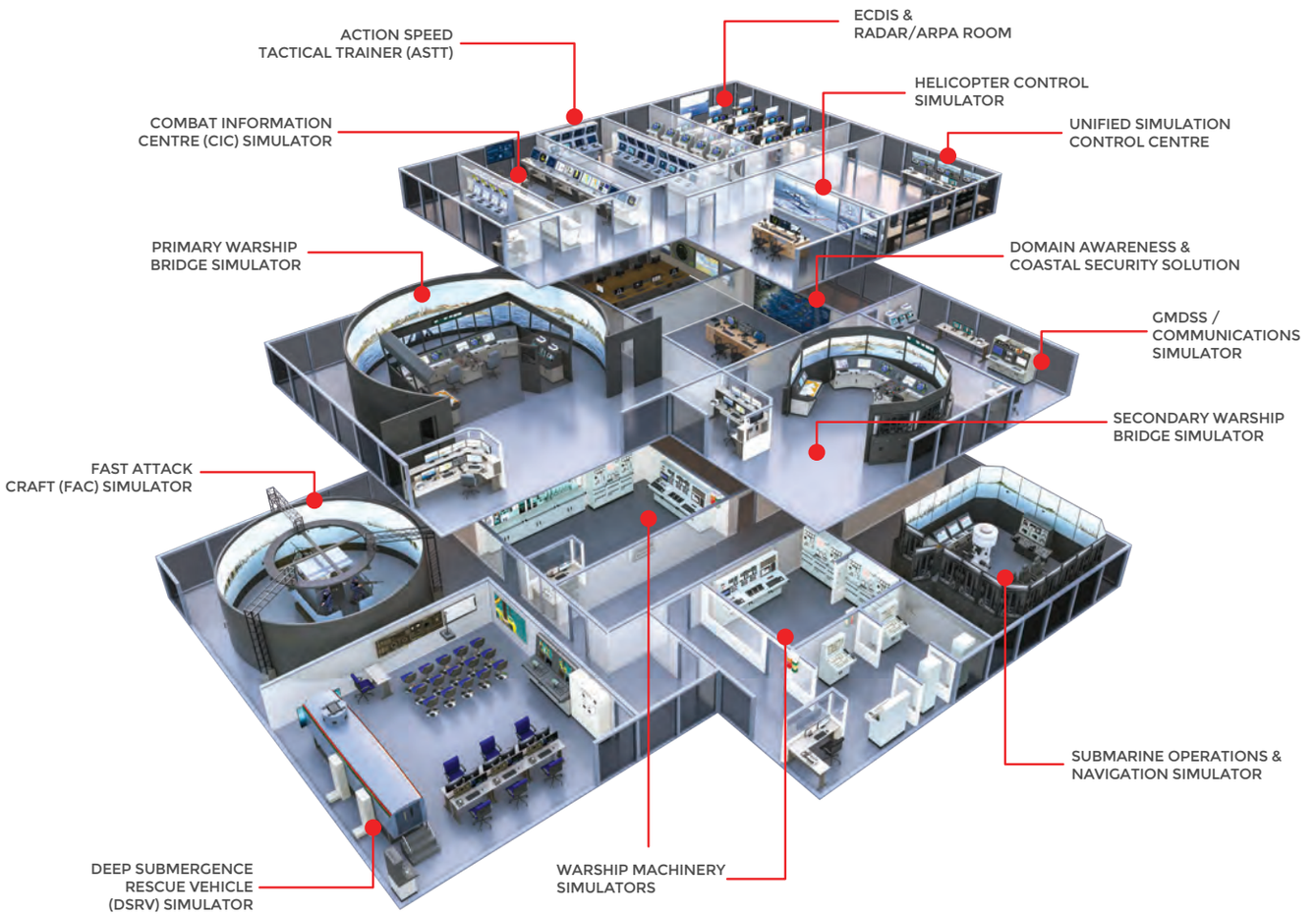
Submarine Operations & Navigation Simulator

Fast Attack Craft Simulator

Deep Submergence Rescue Vehicle

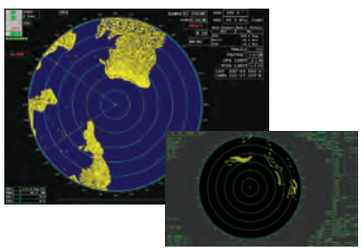
Integrated Operations

Integrated Simulation Complex



ARI Simulation's Multi-Simulator Simulation Complex is a cutting-edge training environment designed to seamlessly integrate multiple high-fidelity simulators into a unified ecosystem. This advanced system enables joint training across naval, air, land, and subsurface forces, connecting Bridge, Engine Room, Command & Control and Platform Management Simulators for realistic, mission-oriented exercises.

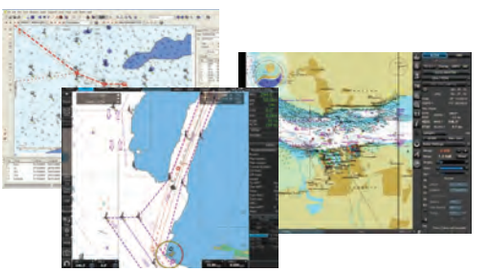
RADAR / ARPA Simulator



The Radar/ARPA simulator is built to comply with the IMO performance standards for Radar equipment to be used on board seagoing vessels. The simulator is designed to meet the requirements of IMO Model Courses 1.07 and 1.08. It is suitable for competence training and assessment in the operation and use of Radar equipment in accordance with STCW '2010 simulator based training requirements.

ECDIS Simulator

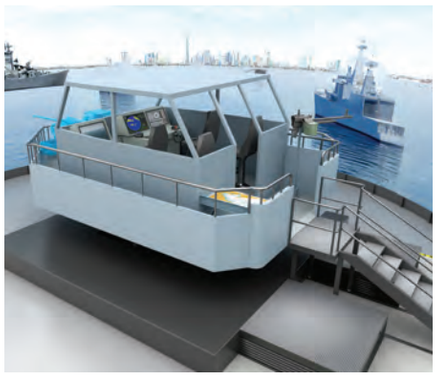
ARI ECDIS Simulator is a comprehensive training solution designed to comply with the relevant requirements of latest STCW amendments (2010 Manila amendments), under section(s) A-I/12, A-II/1 and A-II/2. Requirements of IMO Model Course 1.27 related to the use of simulation are fulfilled.



Action Speed Tactical Trainer (ASTT)

The ASTT delivers immersive, high-fidelity naval training for ships, submarines, and aircraft command teams. It enables forces to practice, refine, and test tactics across domains including Anti-Submarine, Anti-Air, Mine, Amphibious, and Electronic Warfare – enhancing readiness, coordination, and combat effectiveness in a true-to-mission environment.

Fast Attack Craft (FAC) Simulator



The FAC Simulator is a high-fidelity, fully integrated training solution designed to replicate the operational environment of modern FACs. Engineered for realism, safety, and repeatability, the simulator provides naval operators and combat crews with immersive training in ship handling, combat tactics, navigation, and remote weapon engagement.

- High-Fidelity Visualization
- Integrated Human-Machine Interface (HMI)
- Weapon System Simulation
- Medium Machine Gun (MMG)
- 6-DOF Motion Platform

Submarine Operations & Navigation Simulator

The Submarine Operations & Navigation Simulator from ARI is a cutting-edge, high-fidelity training platform built specifically for the operational and instructional needs of modern submarines.

Developed with inputs from experienced naval personnel, the submarine operations & navigation simulator replicates the complex dynamics of submarine missions—from navigation and propulsion to sonar tracking and emergency procedures—within a safe and immersive virtual environment.

Purpose-built for training commands teams on board submarine, this simulator delivers a true-to-life submarine environment- empowering naval personnel to train, rehearse, and perfect mission-critical operations with unmatched realism.

Deep Submergence Rescue Vehicle (DSRV) Simulator

Deep Submergence Rescue Vehicle (DSRV) Simulator is a state-of-the-art training solution designed to enhance the skills required for critical underwater rescue operations. Built with high-fidelity hydrodynamic modeling and immersive visualization, the simulator accurately replicates real-world submersible dynamics, mission scenarios, and environmental conditions. It enables operators to train in deploying, maneuvering, and recovering the DSRV in challenging deep-sea rescue situations. With advanced control interfaces, realistic mission planning, and emergency response training, ARI's DSRV Simulator ensures that naval and maritime personnel are prepared for high-risk underwater rescue missions with precision and confidence.

PORTS & TERMINALS

The ARI Crane Simulators provide a realistic reproduction of the visual, behavioral and operational of various crane types while making the operation of the simulator extremely simple and intuitive for trainees and instructors.

ARI offers a broad range of crane simulators for operational training in all essential aspects of container, offshore and bulk handling operations across various crane types including: QC (Quay Crane), RTG (Rubber Tired Gantry), RMG (Rail Mounted Gantry), SG (Ship Gantry), PC (Pedestal Crane), SC (Straddle Carrier), Mobile Telescopic Boom Crane, Tower Type Construction Crane, Floating Barge Crane, Offshore Pedestal Crane, Knuckle Boom Crane, Vessel Mounted Crane, and other client specific cranes and equipment types.

ARI has crane simulation solutions to suit all requirements and budgets, from low cost desktop installations through kit based portable multipurpose trainers and up to multiple PC, instructor controlled, full mission solutions.

Desktop Edition

02 Channel Edition

03 Channel Edition

05 Channel Edition with Motion System

Cabin Based Full Mission Edition

Swappable Replica Crane Control Consoles and steering & pedals

Crane control consoles emulate those on a real crane and are designed as plug and play devices that can be swapped based on the crane type, make and model.

Visual System

The multi-channel visual system for the operator cabin view provides the trainee with a realistic out of the cabin view.

The visual system is completely integrated with the simulation exercise, motion, sound system and crane controls and thus provides the necessary depth in the visual perspective.

Motion System

The operator cabin can be installed on a motion platform.

Variety of Crane Types


Ship to Shore Crane


Straddle Carrier


Rubber Tyred Gantry Crane


Rail Mounted Gantry Crane


Mobile Harbour Crane

Forklift


Offshore Pedestal Crane


Knuckle Boom Crane

HEMM Training Simulators

ARI Heavy Earth Moving Machinery (HEMM) Simulators for high quality training of personnel engaged in mining operations.


Tippers


Dozers


Dumpers


Wheel Loaders


LHDs


Shovels


Backhoes


Excavators

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Applied Research International Pvt. Ltd.

SALES & CUSTOMER SERVICES

ARI WORLDWIDE

With operations, partners and representatives around the world, an ARI representative is only a mouse click away.
Drop us a mail at info@arisimulation.com and an ARI representative will get back to you promptly.

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