ARI®
SIMULATION
A SUBSIDIARY OF ZEN TECHNOLOGIES

ZEN TECHNOLOGIES
being there...

SIMULATION & TRAINING SOLUTIONS

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LAND - SEA - AIR

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.

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

- International Maritime Organization (IMO)
- Standards of Training, Certification & Watchkeeping for Seafarers (STCW) 2010
- The Nautical Institute (NI)
- Offshore Petroleum Industry Training Organization (OPITO)
- Association of Marine Electronic and Radio Colleges (AMERC)
- International Marine Contractors Association (IMCA)

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.

Built on the proven and certified simulation technology, ARI's products are built to military standards and add a considerable set of unique defence related features. Our technologies are used by multiple armed forces all over the world. From operations to tactical and strategic evaluation; from electronic warfare to troop movement planning, our simulators can be deployed in a variety of roles. Participants can visualize tactical inputs, analyse multiple courses of action and evaluate a range of decision response scenarios in a combat or mobilization environment.

Product Portfolio

Integrated Complex

Bridge Operations Simulator

Fast Attack Craft Simulator

Action Speed Tactical Trainer (ASTT)

Combat Information Centre (CIC) Simulator

Submarine Operations & Navigation Simulator

Deep Submergence Rescue Vehicle (DSRV) Simulator

Coastal Security System

Helicopter Control Simulation

Machinery Operations Simulator

Tug Handling Simulator

Offshore / DP Simulator

Liquid Cargo Handling Simulator

Crane Simulators

Cloud Simulation

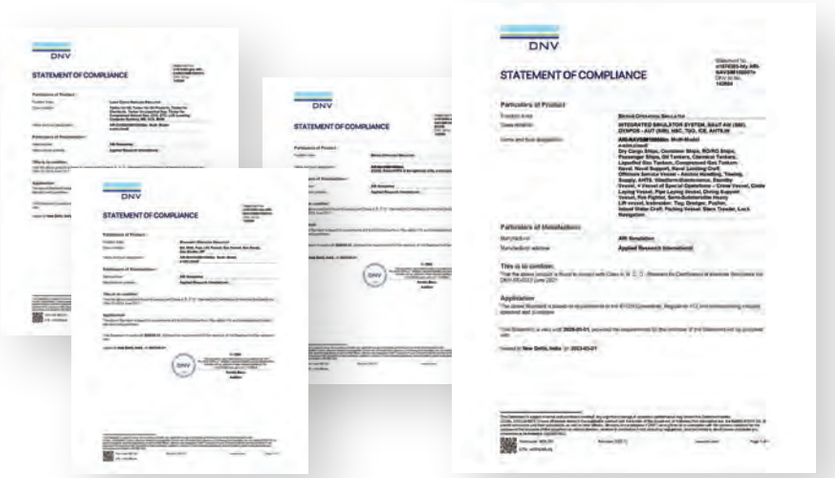
Mixed Reality Solutions

Global Approvals & Accreditations

Quality Certifications

DNV approval for the entire range of marine & offshore simulation products

2021 Standards



Certifications for Simulators,
Training, EMS (Environmental)
OH&S (Occupational Health & Safety)
ISMS (Information Security)

Other certifications and accreditations

Proven supplier to Defence establishments

55 plus copyrights in India globally recognized

Defence Portfolio of Simulation Products

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.

Bridge Operations

Fast Attack Craft Simulator

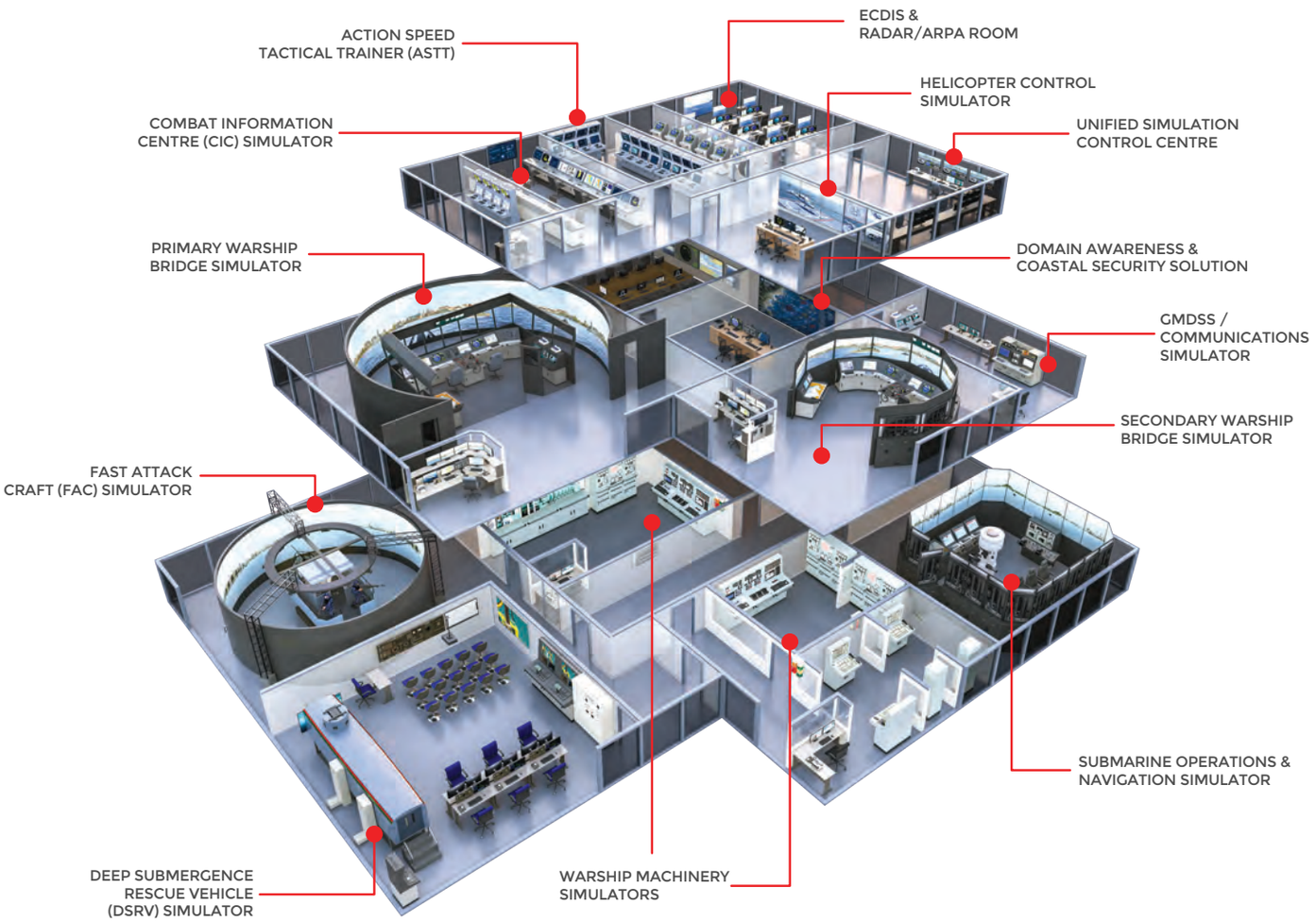
Action Speed Tactical Trainer

Submarine Operations & Navigation Simulator

Machinery Operations

Integrated Operations

Integrated Simulation Complex



ARI Naval 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.

With real-time data exchange, dynamic threat modeling, and synchronized operations, the complex enhances decision-making, tactical coordination, and operational readiness. Built for scalability and interoperability, ARI's Multi-Simulator Simulation Complex delivers an immersive, mission-ready training solution tailored to the evolving needs of modern defence forces.

Bridge Operations Simulator

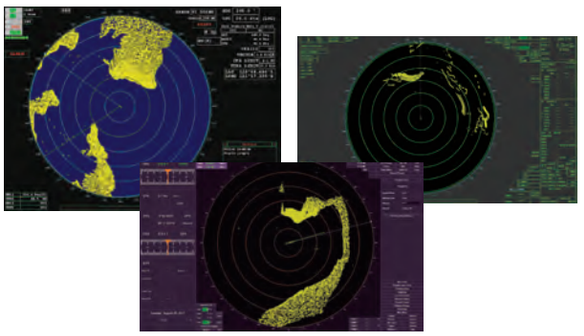
The ARI vessel bridge simulator completely recreates the environment of a naval vessel bridge down to the last detail. Combined with our state of the art visualisation systems and capable of being mounted on a motion platform, these simulators offer a completely realistic training environment for ship, convoy and fleet operations management.

The ARI vessel bridge simulator can be populated with a complete range of vessel management, maneuvering, navigation and communications systems including civilian band Radars, GPS and navigation tools military band Radars and position referencing systems, specific EWS scanning and jamming systems, weapon control systems, encrypted communications systems, subsea threat location tools and more.

ARI can provide completely customised solutions based around specific vessels including their specific performance and handling footprint. Our bridge simulators are also multifunctional and many different vessel types can be loaded into a bridge simulator allowing for training missions across all ship types.

The ARI bridge simulator can also be connected to propulsion and machinery control simulators, C&C simulators, weapon control and intelligence systems simulators as well as other bridge simulators allowing for whole-ship, convoy and fleet management training cases. From convoy and escort operations to tactical maneuvering and piracy response, the ARI bridge simulator offers an exceptional range of features.

RADAR / ARPA Simulator



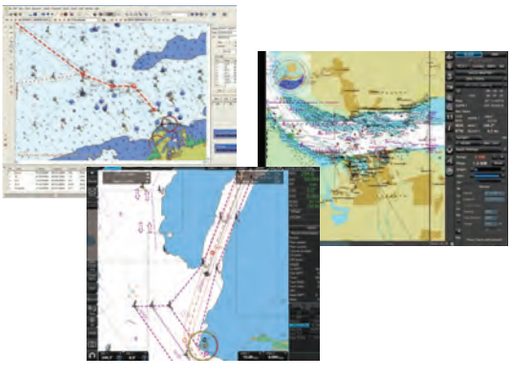
The Radio Detection And Ranging (Radar) / Automatic Radar Plotting Aids (ARPA) simulator is built to comply with the IMO performance standards for Radar equipment to be used on board seagoing vessels. The simulator is designed to meet the requirements of IMO Model Courses 1.07 and 1.08. It is suitable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

Multiple Radar / ARPA types – either real OEM equipment or emulated Radars - are available to choose from.

ECDIS Simulator

ARI Electronic Chart Display and Information System (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.

The ECDIS can be operated in either a standalone training mode or in conjunction with other necessary navigation aids and equipment.



The simulator provides a robust platform for training in ECDIS based navigation, including use of electronic charts, route planning and route monitoring. Administrations can use the simulator for competence demonstration, either in supervised or unsupervised modes.

Multiple OEM ECDIS, fully integrated with Navigation Simulators, are available to choose from.

GMDSS & Communication Simulator

The ARI Communications Simulator provides complete operational training in communication using equipment as found on sea-going vessels. The simulator complies with the Performance Standards for Simulators as defined by STCW and by DNV to the highest Class A Standard. Specific configurations are AMERC approved.

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

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: Immersive 360° horizontal field of view (HFOV) environment with dynamic maritime scenario rendering for enhanced awareness and tactical training.

Integrated Human-Machine Interface (HMI): Realistic vessel control interface with propulsion and steering systems for authentic operator interaction.

Weapon System Simulation: Optional integration with remotely operated stabilized weapon station for precise targeting.

Medium Machine Gun (MMG) simulation with recoil kit for realistic weapon training, covering target engagement, fire control, and tactical scenarios.

6-DOF Motion Platform: Synchronized six-axis motion system aligned with navigation and weapons modules for a fully immersive training experience.

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.

Immersive Simulation Environment

Provides a realistic, multi-threat training environment for naval tactical operations.

Supports training in:

- Anti-Submarine Warfare (ASW)
- Anti-Air Warfare (AAW)
- Surface Warfare
- Mine Warfare
- Amphibious Warfare
- Electronic Warfare (EW)

Includes data and voice communications, air operations (ship, carrier, and land-based), sonobuoy monitoring, Automatic Identification System (AIS) / Air Data System (ADS) / Identification Friend or Foe (IFF) tracking, and replenishment & logistics.

Simulates real-time combat situations involving situation assessment, information analysis, command decision-making, and reporting – mirroring actual naval operations.

Realistic Maritime Environment Including

- Offers an authentic 3D maritime environment with accurate coastlines, depth contours, and seabed profiles.
- Provides depth below keel indication, chart-based navigation, and grounding detection.
- Features realistic platform dynamics with sensor modeling based on physics, radar, sonar, and environmental equations.
- Includes advanced systems such as Radar, Sonar (Active/Passive), Electronic Support Measures (ESM), Communication Intercept, Sonobuoy, Variable Depth Sonar (VDS), Magnetic Anomaly Detector (MAD), and Visual Sensors.
- Supports weapon and countermeasure modeling, including torpedoes, missiles, guns, bombs, Electronic Counter Measures (ECM), and decoys (chaff & jamming).
- Simulates environmental and hydrological effects, damage assessment, and battle damage survivability.
- Enables data and voice communication, logistics and replenishment operations, and automated platform-level actions (mine/sonobuoy deployment, route search patterns).
- Provides dedicated sensor displays, real-time decision-making tools, and comprehensive briefing and debriefing facilities.

Combat Information Centre (CIC) Simulator

Purpose-built for warfare training centers, and active-duty surface combat units, our CIC Simulator provides a high-fidelity, immersive environment designed to replicate the complexity of modern naval combat. It enables personnel to train in real-world tactics, threat responses, and combat system operations with unmatched realism and precision.

Key Integrated Systems:

Surface Radar Modules: Advanced radar simulation for multi-target tracking, air/surface surveillance, and engagement prioritization.

Sonar Module: Acoustic detection and classification of underwater threats in dynamic maritime conditions.

Electronic Warfare Suite: Simulates real-time signal interception, electronic support measures (ESM), jamming, and countermeasures.

Fire Control System (FCS): A comprehensive simulation of shipborne weapon coordination and engagement processes. The FCS enables operators to manage threat evaluation, target designation, weapon selection, and dynamic engagement scenarios.

- Engage fast-moving surface threats with precision.
- Defend against incoming missiles and aircraft with rapid-reaction targeting.
- Simulate long-range precision strikes against surface, subsurface, and airborne threats.
- Train for underwater threat neutralization using realistic launch and guidance models.

Train your crews to dominate the battlespace—detect faster, decide smarter, and strike with precision.

Submarine Operations & Navigation Simulator

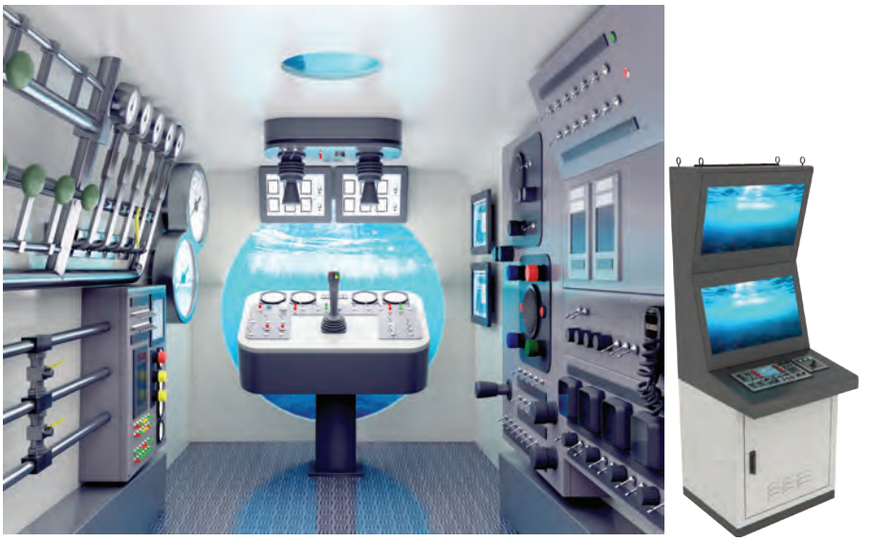
The Submarine Operations & Navigation Simulator from ARI is a cutting-edge, high-fidelity training platform built specifically for the operational and instructional needs of modern submarines.

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.

- Delivers high-fidelity, immersive training
- Navigation Systems
- Control Interfaces
- Operations Modules
- Platform Management System (PMS)
- Position Plotting System
- Periscope Simulation
- Scenario-Based Training
- Environmental Simulation
- Crew Coordination
- Performance Feedback

Deep Submergence Rescue Vehicle (DSRV) Simulator



SRV & LARS (Launch and Recovery System) Station

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.

ROV Station

Domain Awareness & Coastal Security Solution

A unified, real time naval surveillance and command solution delivering comprehensive awareness across maritime, air, subsurface, cyber, and space domains. The system fuses data from coastal sensors, naval platforms, tracking systems, and intelligence sources to generate a single, integrated operational picture.

Designed to support naval operations, it enables early threat detection, faster decision making, and effective mission execution across coastal and extended maritime areas. The system enhances operational readiness, supports 24×7 monitoring, and strengthens maritime security and sea control.

Key Capabilities

- Real time multi domain situational awareness
- Multi sensor & intelligence data fusion
- Early threat detection & identification
- Anomaly & behavior analysis
- Integrated Naval Command & Control (C2)
- Predictive analytics & real time alerts
- Secure information sharing
- Scalable, interoperable architecture
- Mission planning, rehearsal & response tools

Helicopter Control Simulation

The Helicopter Control Simulation module is a high-fidelity naval aviation training system designed to support ship–helicopter coordination and operations in complex maritime environments. The simulator enables helicopter controllers, pilots, and aircrew to plan, coordinate, and execute ship-borne helicopter missions under realistic sea, weather, and operational conditions.

The system allows crews to rehearse time-critical and multi-asset naval missions, including deck operations, airborne coordination, and mission execution. By replicating real operational workflows and safety constraints, the simulator enhances mission readiness, operational safety, and crew coordination without the risks and costs of live flying.

Key Capabilities

- Training for helicopter controllers and aircrew coordination
- Simulation of integrated ship–helicopter operations and deck procedures
- Support for Ship Controlled Approach (SCA), Search and Rescue (SAR), and maritime search planning
- Anti-Submarine Warfare (ASW), weapons delivery, and reconnaissance mission scenarios
- High-fidelity mission environments for safe, repeatable, and effective training

Machinery Operations Simulator

The ARI full mission machinery operations simulator recreates the operating environment of a naval vessel machinery operations centre down to the last detail. Combined with our state-of-the-art visualisation systems, these simulators offer highly realistic training environments for engineering operations management.

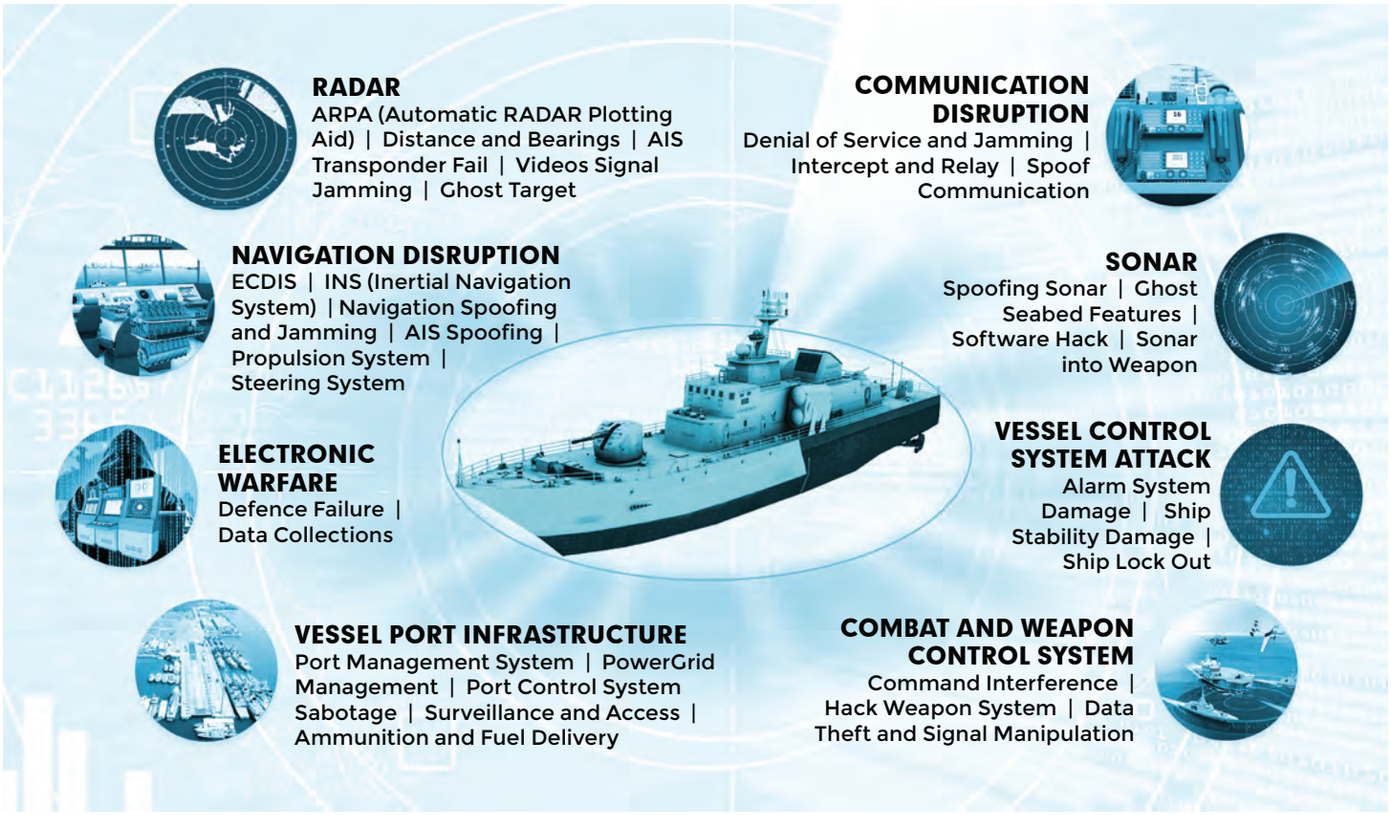
The ARI full mission machinery operations simulator includes high speed engines, turbine systems, waterjet propulsors, automation for machinery control systems, power plant with power management systems, weapon control systems and a complete set of domestic and utility equipment for vessel operation.

Facility for creating abnormal conditions through introduction of faults and malfunctions is built-in for training and assessment of senior machinery system operators.

A large set of instructor control tools for creation, control and monitoring of complex simulation scenarios is provided.

Reconfigurability options are fully supported.

Cyber Warfare Simulator



The ARI Cyber Warfare Simulator is an advanced mission oriented training and analysis platform designed to model cyber threats, vulnerabilities, and defensive operations across naval networks, platforms, and combat systems. It enables realistic simulation of cyber-attacks on shipborne systems, shore based infrastructure, command and control networks, and maritime communication links, supporting both operational readiness and strategic planning. By integrating scenario based training, threat emulation, and decision support, the simulator enhances cyber situational awareness, strengthens resilience of naval assets, and prepares personnel to operate effectively in contested cyber maritime environments across peacetime and conflict operations.

Joint Military Operations

ARI uses advanced technological tools like Common Databases and High Level Architecture (HLA) systems to build in interoperability into simulation systems. Multiple simulators and simulator types can be interfaced to permit platform, fleet and force level training scenarios to be executed.

Our simulators have the ability to record complete training sessions including equipment operation sequences, visual images, sensor data, CCTV views of the simulator rooms and voice communications. Outputs of all recording devices are fully synchronised and time stamped. All recordings can be replayed at any time including immediately after a live session for debrief or evaluation. Recordings can be replayed at variable speeds and can even be interrupted to resume a live session at any point from within the recording.

Interoperability between simulator systems for diverse forces is possible through the use of common database systems and common industry standard communication and storage protocols. Our distributed simulation infrastructure is fully compatible with operations across secured defence grade networks.

Every ARI simulator is equipped with advanced exercise management systems including tools for exercise creation and design, object modelling, environment modelling, weather models, assessment and evaluation, communications, recording and debriefing. Relevant simulation training can be integrated with respective service training curricula to provide the trainers and trainees with immersive, participatory and repeatable learning experiences.

Large Library of Naval Assets

www.arisimulation.com

Marine Portfolio of Simulation Products

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

ARI sets an industry benchmark by providing exceptionally realistic, immersive and interactive virtual environments. The fidelity of the mathematical and physics models combined with ARI's real time visualization presents a 'near real' experience for the trainees.

ARI Simulation offers scalable simulation solutions that range from standalone table-top simulators to fully integrated, large scale simulation systems that allow for combined training across multiple simulators. The successful outcome of an operation depends heavily on multiple teams working together in close coordination and cooperation.

Full Mission Ship Handling Simulator

Full Mission Offshore Bridge Simulator

Full Mission Engine Room Simulator

Full Mission Cargo Handling Simulator

Full Mission Tug Handling Simulator

Full Mission High Voltage Simulator

VTS Simulator

Crane Simulators

Mixed Reality Solutions

Advanced Mixed Reality (MR) Solutions for Defence Training

ARI's cutting-edge Mixed Reality (MR) solutions revolutionize defence training by delivering ultra-realistic, mission-ready simulations. By seamlessly integrating physical and digital environments, our MR platforms enhance combat readiness, tactical decision-making, and operational efficiency across various defence applications.

COMBAT AND TACTICAL TRAINING

Prepare military personnel with hyper-realistic battlefield scenarios, enabling soldiers to refine combat strategies, mission execution, and situational awareness in a risk-free yet highly immersive environment. ARI's MR solutions replicate diverse terrains, urban warfare settings, and high-stakes combat situations with unparalleled precision.

NAVAL OPERATIONS SIMULATION

Train naval officers and crews for real-world maritime defence challenges, including ship maneuvering, combat drills, emergency response, and strategic navigation. ARI's MR technology ensures lifelike simulations that enhance readiness for maritime security, anti-piracy, and defence operations.

ARI's defence-focused MR solutions provide the ultimate training advantage—bridging the gap between theory and real-world execution while maximizing safety, efficiency, and combat preparedness.

Tele-Robotic and Autonomous Systems

ROV Simulation

ROV Simulator provides a powerful maneuvering platform for your ROV operators to train in highly complex and dynamically evolving threat scenarios whilst preparing them to perform mission critical tasks efficiently.

The simulator uses state-of-the-art visualisation technologies to project highly photo-realistic and geo-specific 3D databases, thereby providing a realistic environment of multiple terrains, objects and features.

The simulator consists of a desktop application using a graphical user interface.

Replica controllers are provided for simulated driving of the ROV and for operation of the ROV's arm, wrist, and claw. Head lights and Tail lights can be operated with corresponding visual effects.

ARI ROV simulator allows training on handling Improvised Explosive Devices (IEDs) of different shapes and sizes using various claw arrangements, namely, 2- finger gripper, 3-finger gripper, flat attachment and hook attachment.

Four camera angles namely Front, Rear, Wrist and Payload views are incorporated. Other camera features such as zoom in / zoom out, camera light on / off and provision to take snapshots with respective date and time are also provided.

Terrain configurations include both rural and urban terrains with day and night mode in each of the configurations.

Assessment scoring is provided to the trainee on the basis of negotiations encountered and can be saved for later review / debriefing.

Cloud-based Solutions

ARI introduced amongst the first & the largest Cloud based simulation system for training and assessment nearly a decade ago. Using ARI cloud systems more than 75,000 certificates have been generated.

Cloud based simulator provides our customers with an effective digital environment to deliver learning, assessment and simulation virtually. The cloud based simulator solutions for education, training and assessments enable the instructor/ assessor to access the advanced simulators online, and to manage and distribute the simulation exercises to the students, who can practice and prepare anytime and anywhere.

CLOUD BASED SIMULATION OFFERINGS INCLUDE:

- Navigation and Bridge Simulator
- Engine Room Simulator
- Liquid Cargo Handling Simulator
- Port Crane Simulator
- GMDSS/Communications Simulator
- Assessment Modules
- LNG Powered Vessel Modules

KEY FEATURES

Real Results: Access industry-grade simulation environments without physical setup

Flexible Learning Modes: Switch between instructor-led sessions and self-directed practice

Anytime, Anywhere Learning

Secure & Scalable: Built with robust cloud architecture, ensuring performance, data privacy, and reliability

Automated Simulation Based Assessment (ASBA): Advanced supervised and unsupervised assessment modules

Customization

Customization has always been our strength – having designed and delivered a large number of customized solutions to meet niche simulation requirements that range from fully custom built vessels to complex multi-trainee and mission specific simulation.

We have established processes for recreating customer specific virtual environments across our entire range of simulators.

A range of operating parameters such as Assets, Equipment, Standard Operating Procedures, Environment, Physical modeling of simulated assets can be customized.

Real

Simulated

Prestigious Clients

Defence Establishments & Govt. Bodies

OEMs

Marine

Global Footprint

60+
Countries

1500+
Installations

Offices

- India (Delhi & Mumbai)
- US (California)
- Singapore

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A SUBSIDIARY OF ZEN TECHNOLOGIES

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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ZEN TECHNOLOGIES
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