Key Features:

High fidelity target model

Realistic acoustic propagation

Flexible instructor GUI for scenario definition and simulation control

Replica shipboard consoles with same 'look and feel' as operational equipment

Real-time audio and video monitoring of student performance

Post-training debrief capability

Tap into Array's World - Class Sonar Expertise

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Acoustic Simulator and Trainer

Array has over 15 years of experience designing, developing and deploying high-fidelity sonar simulation and training systems based on Commercial Off-The-Shelf (COTS) equipment. We offer customized training systems to suit any type of sonar deployment – including surface ship and submarine mounted sonars and fields of sonobuoys. Both active and passive sonar systems may be modeled. The simulation may include multiple sonar systems such as: hull-mounted sonar (HMS), flank arrays, conformal arrays, towed arrays, active intercept sensors, passive ranging systems and a number of sonobuoy types including omni, DIFAR, DICASS and VLAD. The analyst displays may also be customized so that they are identical in appearance to the displays presented by the shipboard consoles.

Student Station

High-Fidelity Acoustic Simulation - the system can accurately model realistic target signatures and environmental effects

Proven Instructor Interface - mature GUI that allows instructor to create and manage sophisticated acoustic signature databases

Integrated Record and Playback Capabilities - sonar console displays are recorded digitally for easy debrief

The Acoustic Simulator and Trainer is Array's latest sonar training platform. It evolved from Array's successful Canadian Towed Array Sonar System (CANTASS) Mission Simulator (CMS). The CMS is an advanced acoustic simulator which has been in continuous service with the Canadian Navy for over ten years. The CMS is used as an advanced AN/SQR-19 towed-array trainer for sonar operators and senior analysts on the Halifax-class frigates.

The Acoustic Simulator and Trainer consists of four major subsystems:
- Instructor Workstation(s)
- Virtual Environment Generator(s)
- Student Station(s)
- Debrief Recorder(s)

Each subsystem consists of standalone COTS components. The use of COTS hardware makes the system design very flexible and offers almost unlimited scope for future expansion. Customers can replace or upgrade any subsystem without affecting the others. This method of design ensures lower life-cycle costs for the entire system.

Instructor Workstation

The system includes at least one Instructor Workstation, which is hosted on industry-standard PC hardware. Sonar instructors use these workstations to define training scenarios and to control the execution of ongoing training sessions. The Instructor Station software provides a graphical user interface which allows the instructors to define the key elements of the scenario: Ocean Model, Target Model and Target Dynamics.

Virtual Environment Generator

The Virtual Environment Generator performs the task of computing signals that correspond to the requested noise sources and modeling the propagation of those signals through the ocean to the sonar sensors. The ocean simulation uses a ray-path model to trace the propagation of acoustic energy. This model accounts for non- linear propagation due to variation of sound speed with depth in the ocean, and is able to both direct and indirect (surface- or bottom-bounce) propagation paths. Multiple instances of the Virtual Environment Generator may be provided, allowing more than one scenario to be simulated at any time.

Student Station

The Acoustic Simulator and Trainer includes one or more Student Stations. Typical Student Stations, such as those used on the CMS, have multiple high-resolution displays and custom-designed input peripherals arranged in the same manner as the shipboard consoles. The Student Station software is customized to present the sonar displays and user-interface components to the operator in a manner indistinguishable from the shipboard console.

Debrief Recorder

The debrief recorder captures the video from all Student Station displays as well as all Student Station audio channels and records the data to a hard drive. Once the mission simulation is complete, an instructor may initiate a 'debrief' session.

Key Benefits:

Maximizes the effectiveness of sonar operator and analyst training

Significantly reduced costs when compared to performing training at sea

Easy to train students under different scenarios tailored to particular targets of interest, an expected tactical scenario, or a specific ocean type and sound velocity profile

Mimicry of the shipboard console at a low cost using COTS hardware

Feedback to students during training session as well as through the Debrief facility for effective learning

Contact Us

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