



Naval Defense Skill Enhancement Simulators and Training Solutions

Systems to enhance navy vessel bridge operations, engine room, small arms, fire control, and communications

VSD – Who we are and what we do

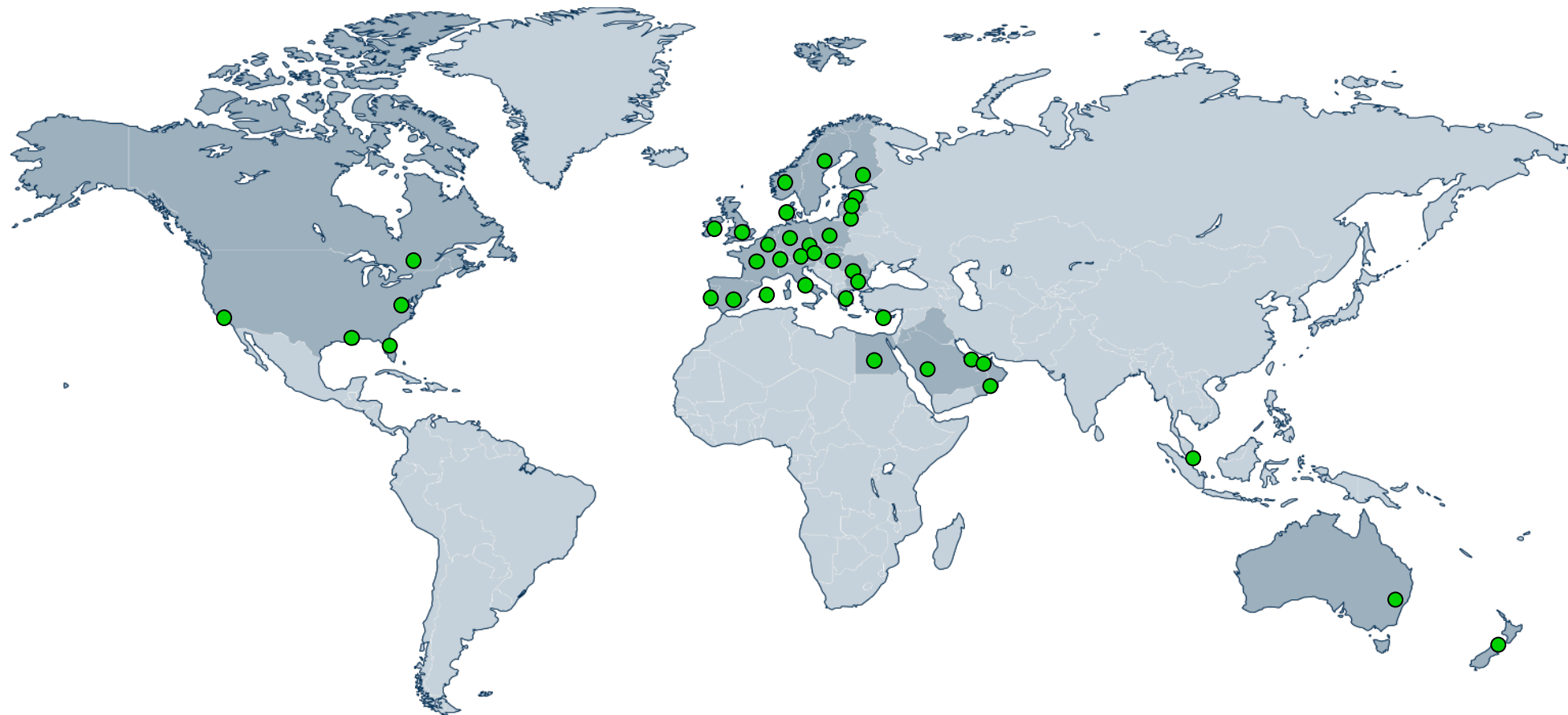
Company	VSD, LLC (U.S.A.)		
Founded	2001	Standards:	DTM is ISO 9001:2007 Quality Control Accredited
Subsidiaries	VSD Global (KSA) VSD Global Reg. Office (UAE) VSD International, LLC (US-DE) DTM Global, WLL (UK)	Simulator & Training Solution range:	<ul style="list-style-type: none"> • Simulator-based learning systems • Computer-based training solutions • Instructor-led training solutions • Total “blended” training solutions • Performance improvement solutions
Major Areas of Expertise	<ul style="list-style-type: none"> • Naval operation training (navigation, bridge, watch, command) • Engineering & Auxiliary Training (power, generation, electrical, propulsion) • Special Systems Training (weapons, communications, driving, sensors) • Operations & Maintenance Training • Sourcing & Procurement 	VSD training course availability	2,000,000 student granted access to VSD DTM online courses worldwide every year.
Employees	60, with resource pool of over 100 additional subject matter experts, instructors, designers, & developers	Number of students using VSD training products:	~ 81,600 individuals in 2011
Additional Resources	Teaming agreements for <ul style="list-style-type: none"> • Specific OEM equipment training • CONOP-specific defense & security training • Expertise in identifying and screening international equipment OEMs and specialty subcontractors 	Number of students trained since inception	~ 550,000 individuals trained
		Number of courses in VSD's CBT inventory	~ 85 complete courses in the current inventory
		CBT & ILT curriculum hrs	~ 2,150 hrs of courseware in the current inventory



VSD – Who we are and what we do

Countries/Multilateral Security Organizations we have served:

VSD's group of companies have delivered in 14 countries and for two alliances (NATO and EU Security).



Program Delivery Partner Organizations:

BAE Systems (defense)	Computer Science Corp	Kidde (firefighting SIM)	Q.E.D. Systems	Saudi Aramco/APC
Bluedrop (Helo combat SIM)	DAS (combat effectiveness)	L3 Communications	Raytheon	Sperry Marine (NG)
Boeing (defense)	DTM Global	Lasershot (combat effectiveness)	RiverHawk Marine	Swiftships
Booz Allen Hamilton (defense)	Fireblast (firefighting SIM)	Lockheed Martin	Rolls Royce	Westland Helicopter
Chemring (Chem-bio)	Kratos (defense systems)	Northrop Grumman	SAIC	World Weaver (Model & SIM)





Our Qualifications to develop Naval Defense Skill Enhancement Simulators and Training Solutions



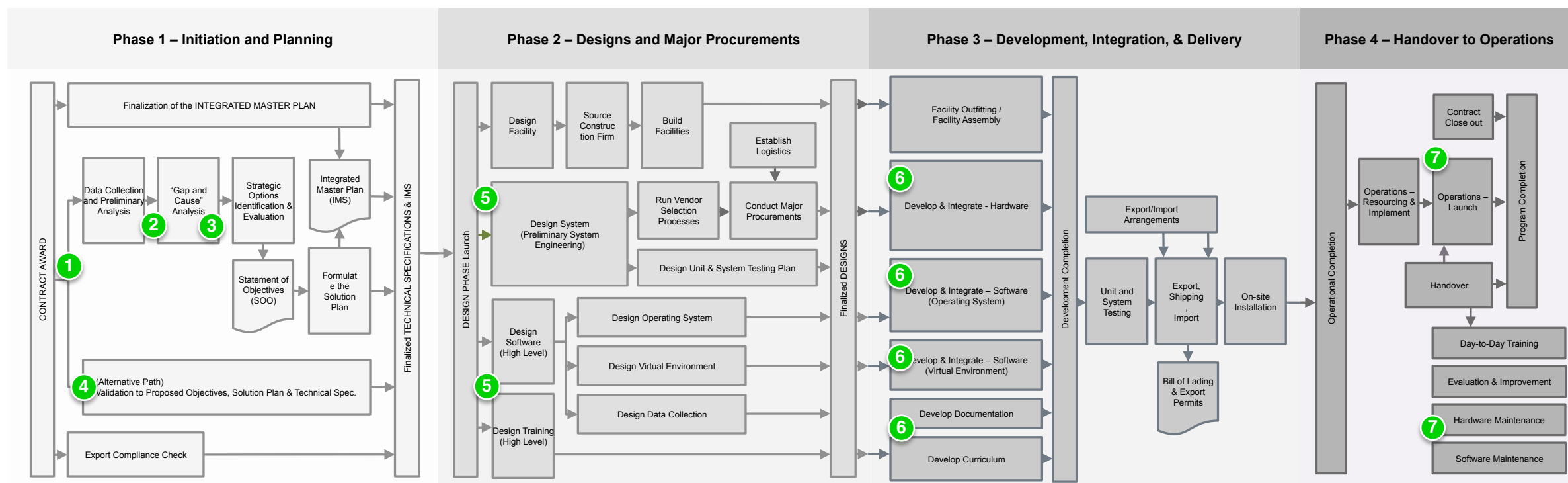
Over a decade of comparable program delivery experience
with training solutions installed in the defense and security forces of 14 nations and 2 defense alliances
including defense and security forces in the U.S., U.K., Germany, Saudi Arabia, UAE, Qatar, Oman, and Iraq.

#	VSD VSDG Recent Project Descriptions	Client	Period of Performance
1	Coastal Patrol Boat Simulator with a Weapons Combat Effectiveness Trainer, Curricula, and Instructor Team	Iraqi Ministry of Defense	2009 – present
2	Naval Defense Offshore Support Vessel Simulator with a Weapons Combat Effectiveness Trainer, Curricula, and Instructor Team	Iraqi Ministry of Defense	2010 – present
3	Security Assessment (Oil & Gas Infrastructure)	Saudi ARAMCO	2011
4	Naval Operations & Communications SIM & Training	Royal Omani Navy	2010 – present
5	Threat Recognition & Electronic Warfare System & Training	Royal Saudi Airforce	2008 – present
6	Threat Recognition Simulator System & Training	UAE Naval Force	2009 – present
7	Fast Missile Patrol Craft Training	Egyptian Navy	2009 – present
8	Naval Operations, Communications, Electronic Warfare Simulators & Training	Royal Saudi Navy	2009 – present
9	Threat Recognition Simulator & Training (through DTM subsidiary)	Royal Guard, Royal Army, Royal Airforce	2005 - present
10	Threat Recognition Systems & Training (through DTM subsidiary)	Royal Saudi Airforce Intelligence	2010 - present
11	Threat Recognition Simulator System & Training	Qatar Emiri Air Force	2001 – present
12	Threat Recognition SIM Systems & Training	Royal Omani Armed Forces	2000 - present

Our Qualifications to develop Naval Defense Skill Enhancement Simulators and Training Solutions

Over 4,000 individual task items and stage gates are reflected in the typical Integrated Master Schedule that we utilize to manage our client's complex simulator and training system development efforts

VSD | VSDG's Proprietary Systems Integration and Solution Development Process



Points in the process where VSD | VSDG creates unique value for its clients:

1. Capacity to engage with clients quickly and at their unique starting point in the system development process
2. Guru level understanding of how these systems increase capabilities and improve performance
3. Proprietary processes and knowledge for assessing performance issues and capability constraints
4. Significant international experience and deep knowledge of international regulations
5. Balanced emphasis on all components that drive system efficacy, and a lean production philosophy
6. VSD In-house capacity across multiple production and integration workstreams, reducing subcontractor risks
7. VSD-developed products and services that seamlessly integrate with system, and make the training operations concept a sustainable reality



MODULAR NAVAL DEFENSE OPERATIONS SIMULATOR

NAVAL SHIP SIMULATOR

Better Systems Design = Better Solution, Better Value

Objective-driven Design & Engineering Process

All training solutions that VSD builds are tailored in one manner or another to fit the unique circumstance of their intended deployment.

Student throughput requirements, platform layout, weapons selection, and even interior color schemes require consideration. In most instances, we tailor to actual OEM Bridge, Engine Control Room and Auxiliary System equipment throughout. This tailoring occurs during the initial planning stage and becomes very precise through the evolution of a series of system-defining documents: the Statement of Objectives, the Statement of Work, and the Preliminary Technical Specification.

VSD makes available to its clientele highly experienced analysis and planning experts to aid in documenting, prioritizing, and organizing objectives. We employ a structured analysis and planning approach that has evolved over decades of naval operations and individual/crew/force-level training experiences. The output of this effort is always a unique set of objectives that will define the training solution to be built, and, equally important, how it will be built and what degrees of fidelity are required. With this clarity of objectives, VSD is responsible for translating the stated objectives into specific, technical system requirements that then become the basis for moving forward with detailed engineering design and development.

Though every national defense and security situation is unique, it has been our experience that there are certain elements of sophisticated, simulator-based training solutions that simply make good sense and provide better value: integration and interoperability; modularity and mobility; upgradability and reconfigurability; and operability.

Superior Outcomes

Integration & Interoperability

These are the capacity of diverse subcomponents, or, in this case, independent trainers, to work together. VSD has achieved—through the VSD Integrated Virtual Environment—complete end-to-end compatibility to the point where the actions undertaken in one trainer are linked in real time to the results and visuals across the entire ship simulator.

- Critical ship's command and control systems integrated into a common virtual environment
- Common operating environment promotes team skills
- Interoperability promotes over training system stability
- Integrated environment allows assessment of individual and team skills

Operability (Including Economic Operability)

Operability is the fundamental capacity that the total training system will always be able to support the training mission for which it was designed; that the equipment and the complete system can be maintained in a safe and reliable functioning condition.

Economic operability, in this context, is the lower cost to operate, maintain, repair, replace, and refurbish elements of the system throughout its operating life as a result of system design choices.

- Superior technical maintenance and systems documentation aids in defining life cycle support decisions
- Smart engineering and systems design decisions increase reliability and availability
- Intelligent layout reduces maintenance and repair cost

Modularity & Mobility

Modularity in training system design is an approach that divides the total training system into smaller parts (modules) that can be independently created and then used in different system configurations to deliver multiple functionalities.

Mobility, in this context, requires that the naval ship simulator is self-contained and can withstand overseas shipping and intermodal transportation, so it may be easily relocated to a new location or operations area.

- Modular training systems can be deployed to forward operating forces
- Configured for the specific unit training situational requirement or linked up for multiple unit training
- Constructed from common carrier modular unit design
- Self-contained, powered by modular generator

Upgradability & Reconfigurability

The total training system is easily upgradeable as new technologies and equipment becomes available.

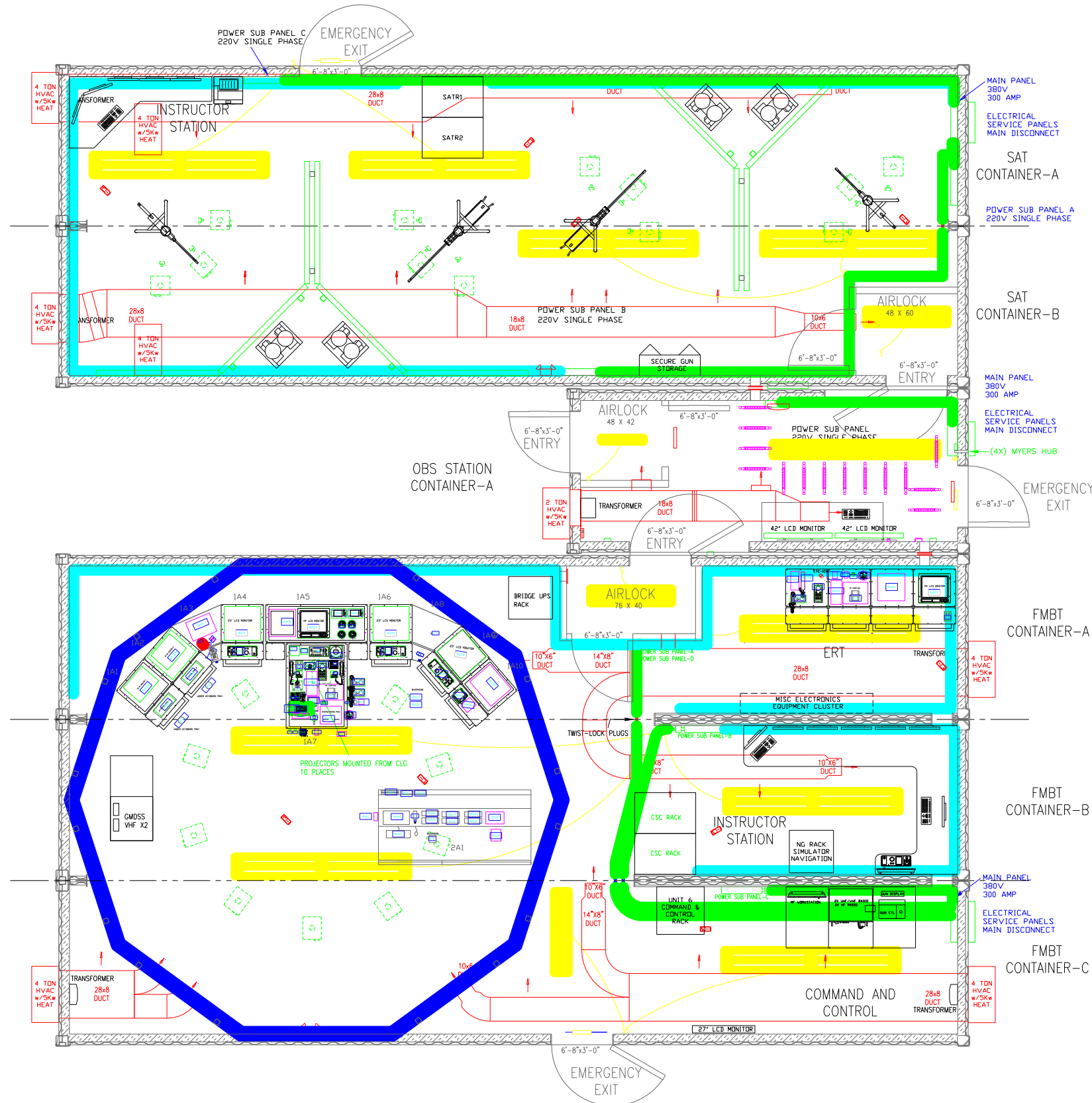
The total training system's elements or settings are reconfigurable to accommodate new configurations or the introduction of new elements.

- Actual ship system components (OEM parts) used as interfaces with the virtual environment
- Geographical and ship model databases are easily updated
- Common operating environment promotes ease of updates



MODULAR NAVAL DEFENSE OPERATIONS SIMULATOR

PRINCIPLE-DRIVEN SYSTEMS ENGINEERING



SUMMARY INFORMATION

Engineering Design Principles

- Meets the minimum requirements specified in the final technical specification document (when produced)
- Is free of safety hazards to students and operation and maintenance personnel
- Is upgradable
- Allows for new technology insertion
- Is environmentally considerate (during construction, installation, operation, and disposal)
- Is supportable throughout the systems projected life
- Has low life cycle support costs
- Is electromagnetically compatible with its own components and the facility in which the training system operates
- Provides a level of security (physical, information systems, etc.) appropriate for the level of information that will be processed, distributed, or displayed by the training system
- Is uniquely identified and marked per Unique Identification (UID) requirements

Considerations in the System Engineering Process

- Software Development
- Interoperability
- Information Assurance
- Reliability
- Maintainability
- Quality
- Configuration Management
- System Safety
- Electromagnetic Environmental Effects (E3)
- Electrostatic Discharge Control
- Parts Management
- Formal Technical and Design Reviews

NAVAL DEFENSE OPERATIONS TRAINING SIMULATOR

MODULAR FACILITY OVERVIEW

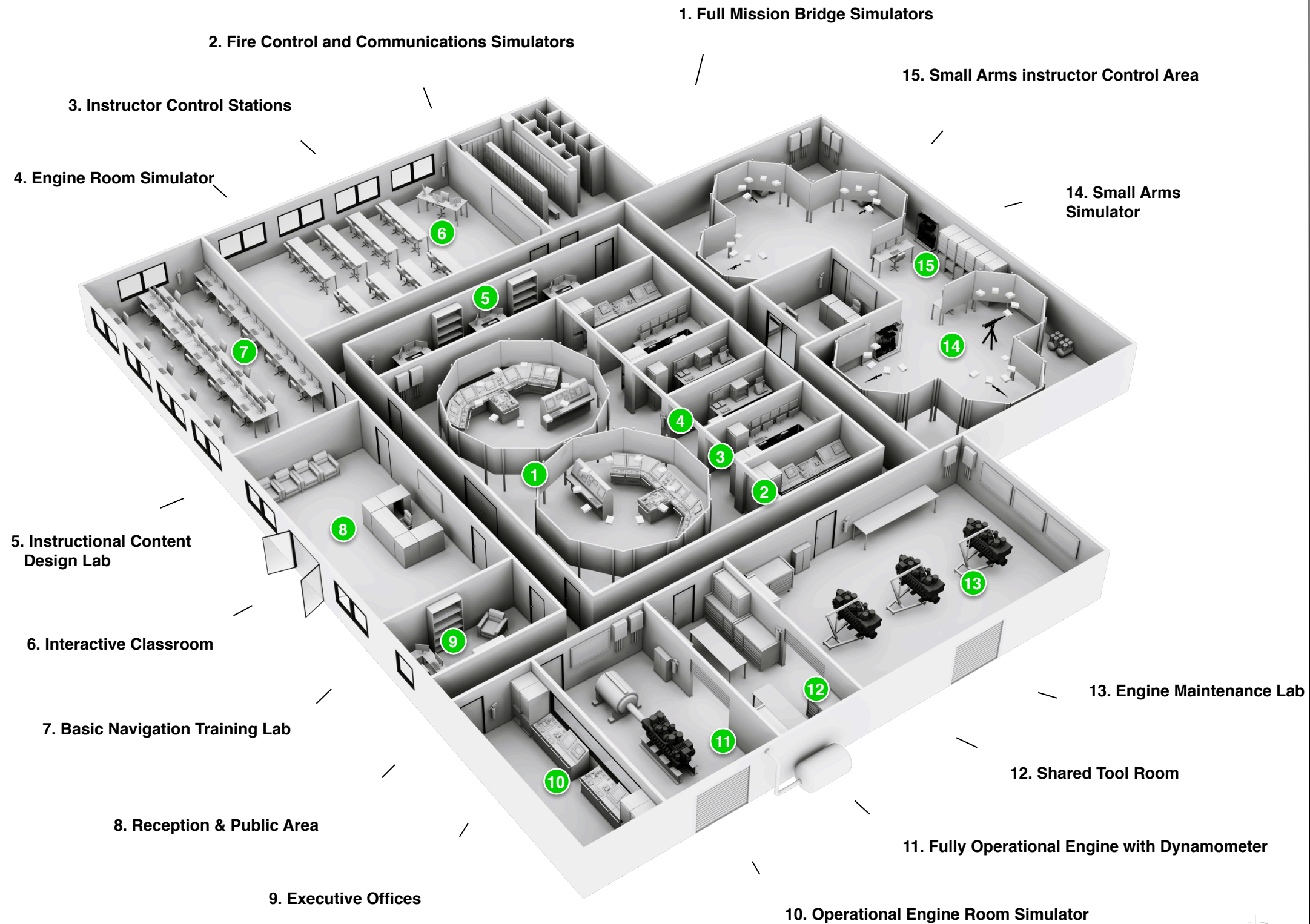
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MODULAR NAVAL DEFENSE TRAINING CENTER

NAVAL OPERATION TRAINING CENTER IN A FIXED FACILITY CONFIGURATION

Training Solutions that can be built within a fixed facility



SUMMARY INFORMATION

Training System Objectives

- Operating the naval ship
- Executing normal procedures
- Recognizing malfunctions and abnormal indications
- Executing corresponding emergency procedures
- Executing mission procedures in a realistic tactical environment
- Executing interior-interior and interior-exterior communications
- Familiarization with platform-specific instrumentation
- Familiarization with targets

Basic System Configuration

- Integrated virtual environment for all shipboard operations familiarization training
- Integrated Full Mission Bridge, Ship's Canon Fire Control, Engine Room and Small Arms weapons trainer
- Integrated scenario training in a common operating environment at all crew stations with a central visual environment
- Modular and mobile facility allowing rapid relocation
- Hardware and software including operations and maintenance documentation
- Installation and testing
- One year parts and service warranty
- Technical handover to training facility operator

Additional Training System Options

- Electronic Warfare Trainer
- Helicopter Deck Operations Trainer
- Radar and Sensor Trainer
- Firefighting Trainer (stand-alone)
- Platform-specific UAV Trainer
- Target Recognition Training Laboratory
- Navigation Training Laboratory
- Platform-specific Communications Trainer

Training Delivery Options

- Curricula for classroom, simulator, and shipboard familiarization training
- Certified instructors for classroom, simulator, and shipboard training
- Training facility operations and maintenance service

NAVAL DEFENSE OPERATIONS TRAINING SIMULATOR

FIXED FACILITY OVERVIEW

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NAVAL DEFENSE OPERATIONS TRAINING CENTER

NAVAL OPERATION TRAINING CENTER IN A FIXED FACILITY CONFIGURATION

SUMMARY INFORMATION

Training System Objectives

- Operating the naval ship
- Executing normal procedures
- Recognizing malfunctions and abnormal indications
- Executing corresponding emergency procedures
- Executing mission procedures in a realistic environment
- Executing communications
- Familiarization with platform-specific instrumentation
- Familiarization with targets

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- Target Recognition Training Laboratory
- Navigation Training Laboratory

Training Delivery Options

- Curricula for classroom, simulator, and shipboard familiarization training
- Certified instructors for classroom, simulator, and shipboard training
- Training facility operations and maintenance service

2. GMDSS System Console

- Nonintrusive training scenario monitoring
- Peer-to-peer observations for training activities
- Train-the-trainer observation
- Streaming of observation video and audio through Internet

3. Dynamic Positioning System Console

- OEM-stimulated or simulated controls and displays
- Weather fax, INMARSAT-C and NAV-TEX displays
- VHF/MF/HF and radio telephone with distress calling

4. Helm Console

- Fully functional throttle controls, steering, and instrumentation
- Helm equipment fully customized to actual ship's configuration
- PLC-based interface reconfigurable to ship types
- Engineering indicators and alarms panel
- Navigation lighting panel
- Bow thruster controls
- Fire and flooding alarm systems
- Internal and external communications interface



5. Navigation Console

- OEM-stimulated or simulated radar displays
- OEM-stimulated or live electronic chart display and information system (ECDIS)
- OEM-stimulated or simulated autopilot
- Digital Global Positioning System
- Configurable with either OEM-stimulated or simulated controls and displays



6. Fire Control & Comms Trainer

- Simulated displays and fire control system
- Fully integrated with virtual environment
- Interior comms with bridge, exterior comms and tactical data link
- High-fidelity weapons tracking and ballistics



7. Instructor Controls

- Controls to operate and modify in real-time the scenarios in the virtual environment
- Live-action individual/crew feedback
- Performance data collections and reporting
- Control over marine environment, equipment faults, and opposing forces



1. Full Mission Bridge Trainer (2 units)

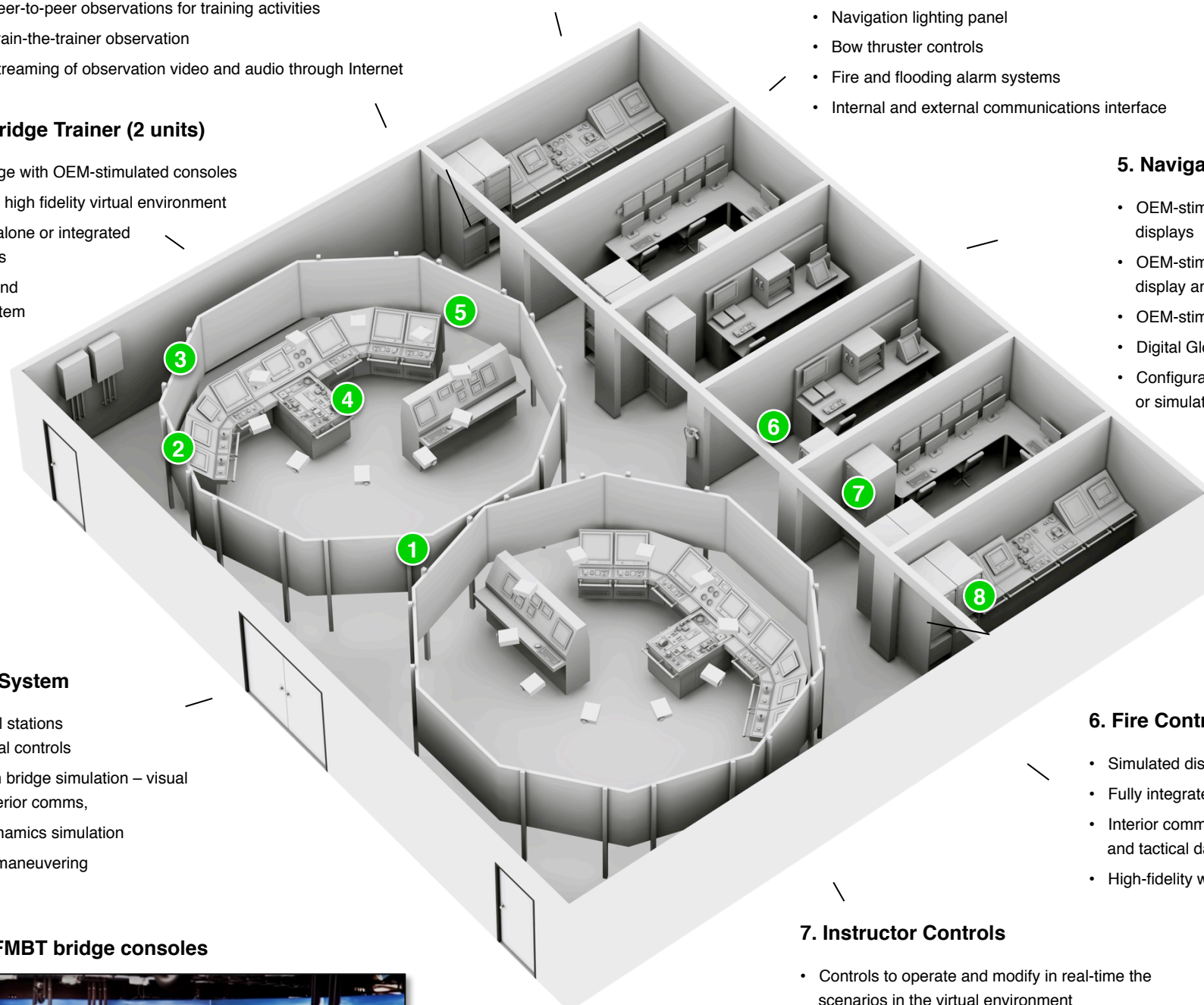
- Fully functional bridge with OEM-stimulated consoles
- Fully integrated to a high fidelity virtual environment
- Operable as stand-alone or integrated with all other trainers
- 360-degree visual and surround sound system



8. Engine Room System

- Engine room control stations utilizing OEM-original controls
- Fully integrated with bridge simulation – visual displays, sound, interior comms,
- Propulsion plant dynamics simulation
- Emergency vessel maneuvering

View of a VSD - FMBT bridge consoles



NAVAL DEFENSE OPERATIONS TRAINING SIMULATOR

FIXED FACILITY OVERVIEW

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NAVAL DEFENSE OPERATIONS TRAINING CENTER

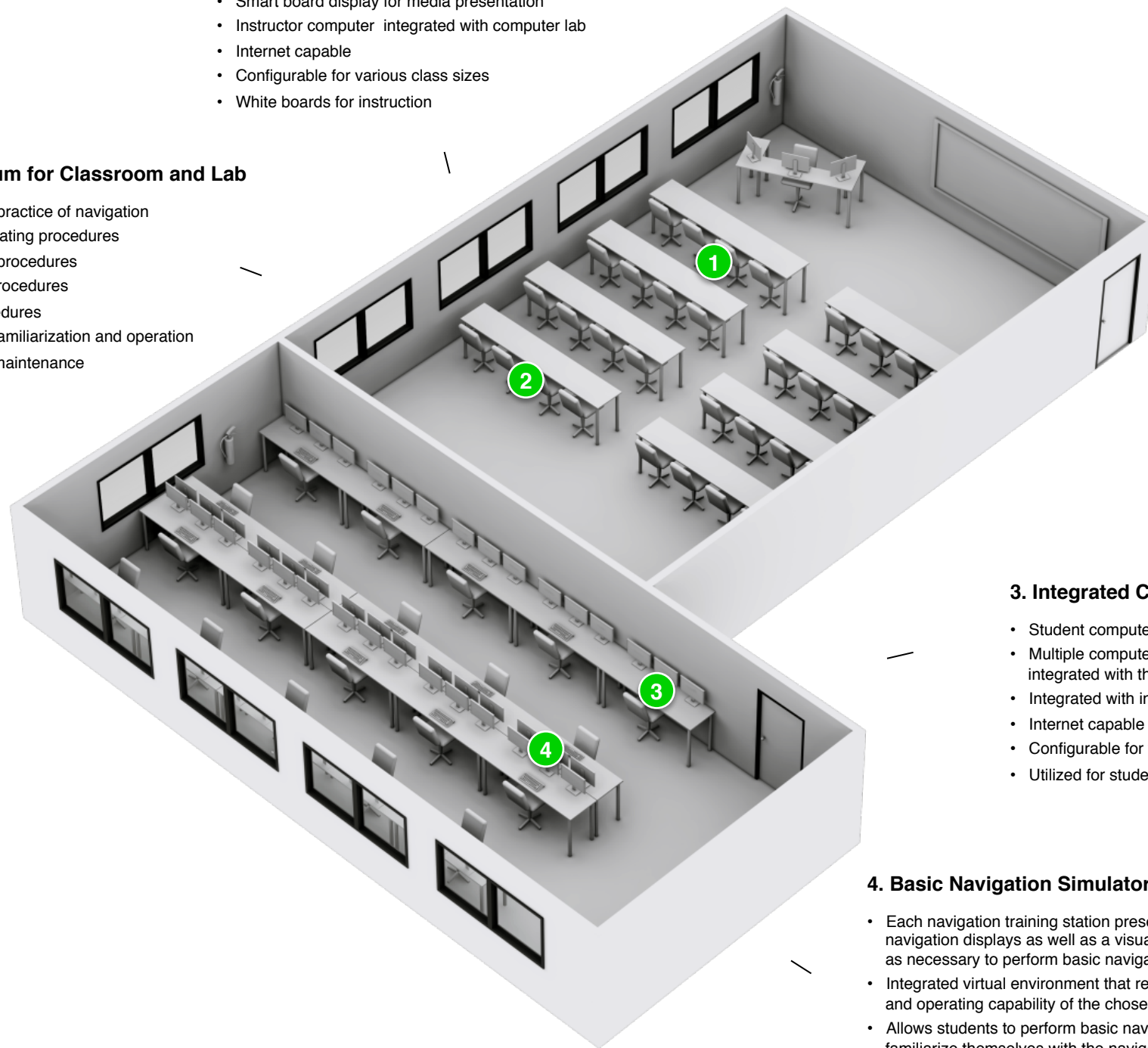
NAVAL OPERATION TRAINING CENTER IN A FIXED FACILITY CONFIGURATION

1. Student Classroom

- Instructor desk & computer
- Student tables & chairs
- Smart board display for media presentation
- Instructor computer integrated with computer lab
- Internet capable
- Configurable for various class sizes
- White boards for instruction

2. Curriculum for Classroom and Lab

- Theory and practice of navigation
- Normal operating procedures
- Emergency procedures
- Underway procedures
- Safety procedures
- Equipment familiarization and operation
- Equipment maintenance



3. Integrated Computer Lab

- Student computer stations, tables & chairs
- Multiple computer displays for scenario training integrated with the Full Mission Bridge environment
- Integrated with instructor computer station
- Internet capable
- Configurable for various class sizes
- Utilized for student testing & computer based training

4. Basic Navigation Simulator

- Each navigation training station presents the common navigation displays as well as a visual "out the window view" as necessary to perform basic navigation tasks
- Integrated virtual environment that reflects the true physics and operating capability of the chosen vessel
- Allows students to perform basic navigation missions and to familiarize themselves with the navigation information displays
- Capable of operating in a standalone or in an integrated mode with other students to perform group navigation exercises

SUMMARY INFORMATION

Training System Objectives

- Facilities for effective teaching of critical theory and knowledge as needed to perform ship-board tasks
- Basic navigation theory and practice
- Basic navigation procedures
- Basic navigation commands
- Recognizing navigation-related malfunctions and abnormal indications
- Executing corresponding emergency procedures
- Executing basic navigation procedures in a realistic environment
- Familiarization with platform-specific instrumentation

Classroom Configuration

- Instructor desk & computer station integrated with computer lab stations
- Smart board display & projection unit
- Student desk & chairs configured for client needs
- White board
- Book cases for technical reference storage

Integrated Computer Lab

- Integrated virtual environment stations for navigation and team training
- Integrated with the Full Mission Bridge simulator
- Integrated scenario training in a common operating environment at all student stations
- Modular and configurable seating and desks allowing rapid rearrangement
- Configurable for student testing & computer based training
- Hardware and software including operations and maintenance documentation
- Installation and testing
- One year parts and service warranty
- Technical handover to training facility operator

NAVAL DEFENSE OPERATIONS TRAINING SIMULATOR

FIXED FACILITY OVERVIEW

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NAVAL DEFENSE OPERATIONS TRAINING CENTER

NAVAL OPERATION TRAINING CENTER IN A FIXED FACILITY CONFIGURATION

1. Weapons Stations

- Any individual/crew-served weapons configuration using modified OEM weapons to exactly match ship's armament (weapons like the M240, .50-cal, AK-47, or M9)
- Stand-alone or integrated operation
- Weapon's discharge sound simulation with physical recoil action via silent-running compressors



2. Instructor Control Station

- Virtual environment controls
- Dynamic scenario generation and integrated exercise preparation
- Active participation via controls of opposing force and their tactics
- Observation, data recording, after-action reviewing, and reporting
- Allows instructor to insert weapons faults like jamming, overheating, hot gun, etc.

3. Small Arms Trainer Network

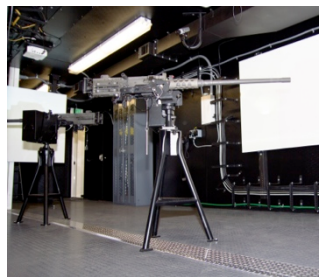
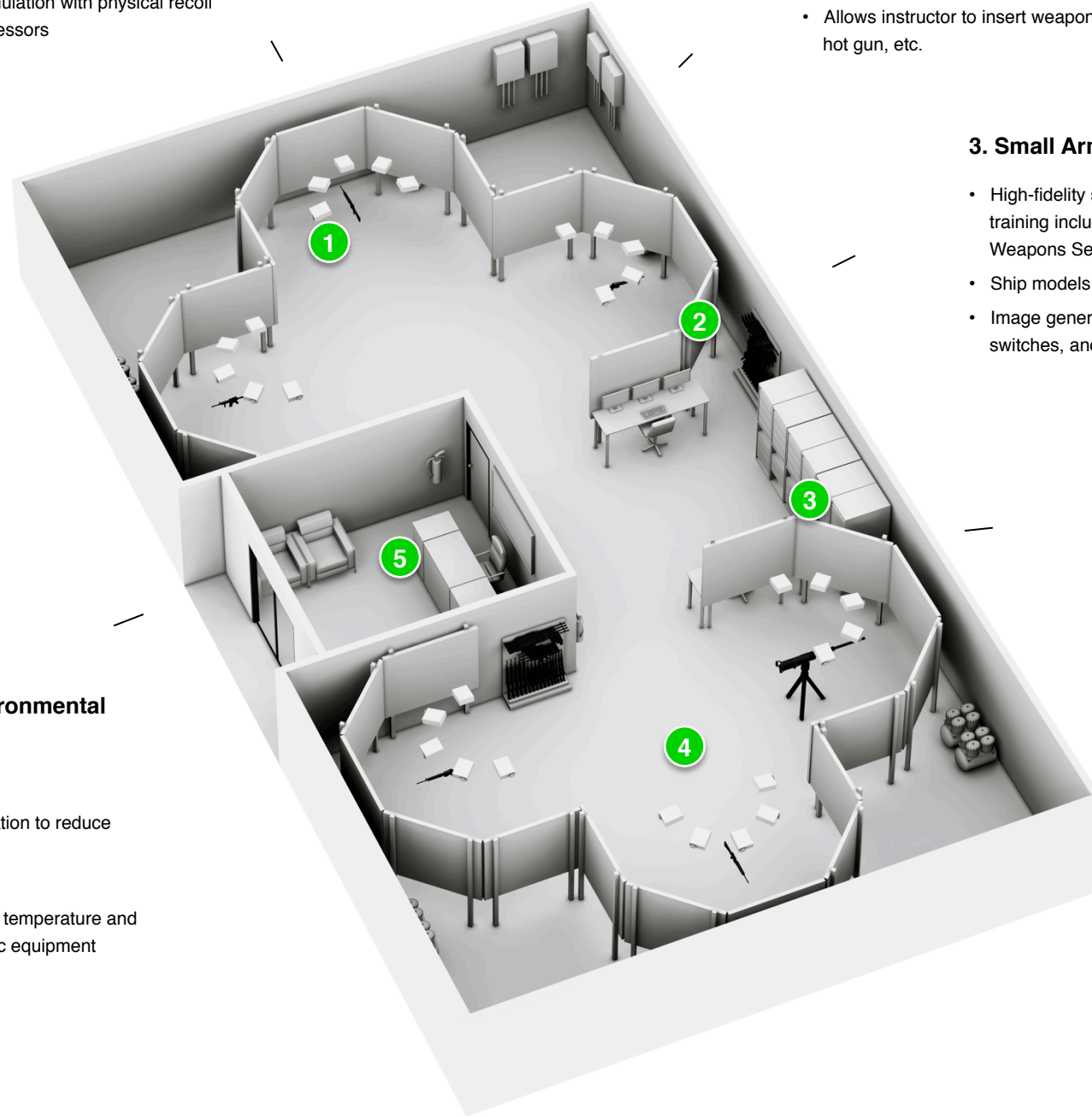
- High-fidelity simulation software set for small arms training including interface and integration with Weapons Server and Full Mission Bridge Trainer
- Ship models and geographic area database sets
- Image generation PCs and network equipment, switches, and cabling

4. Multichannel Visual Displays & Surround Sound

- Visual displays reconfigurable up to 360-degree field of view
- Surround sound for realistic 3-D weapons discharge

5. Safety, Security & Environmental Features

- Trainee check-in area
- Airlocks and positive pressurization to reduce maintenance costs
- Weapons lockers
- HVAC to maintain safe ambient temperature and humidity ranges for all electronic equipment



SUMMARY INFORMATION

Training System Objectives

- Integrated virtual environment
- Individual/crew-served weapons fighting qualification
- Team training
- Fire support training

Basic System Configuration

- Integrated virtual environment
- Simulation environment for small arms training specific to the ship's armament
- Combinable with the Full Mission Bridge Trainer and its ancillary trainers
- Integrated/stand-alone small arms training
- Modular and mobile facility, allowing rapid relocation
- Hardware and software including operations and maintenance documentation
- Installation and testing
- One year parts and service warranty
- Technical handover to training facility operator

Training Delivery Options

- Curricula for small arms operation training include multiple mission scenarios
- Certified instructors for simulator and live training
- Training facility operations and maintenance service
- Train-the-trainer course design and delivery
- Ship's weapons doctrine
- Officer's training for weapons deployment
- Small arms rules of engagement and tactics
- Integrated combat systems processes
- Anti-piracy/anti-terrorist training curricula

NAVAL DEFENSE OPERATIONS TRAINING SIMULATOR

FIXED FACILITY OVERVIEW

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NAVAL DEFENSE OPERATIONS TRAINING CENTER

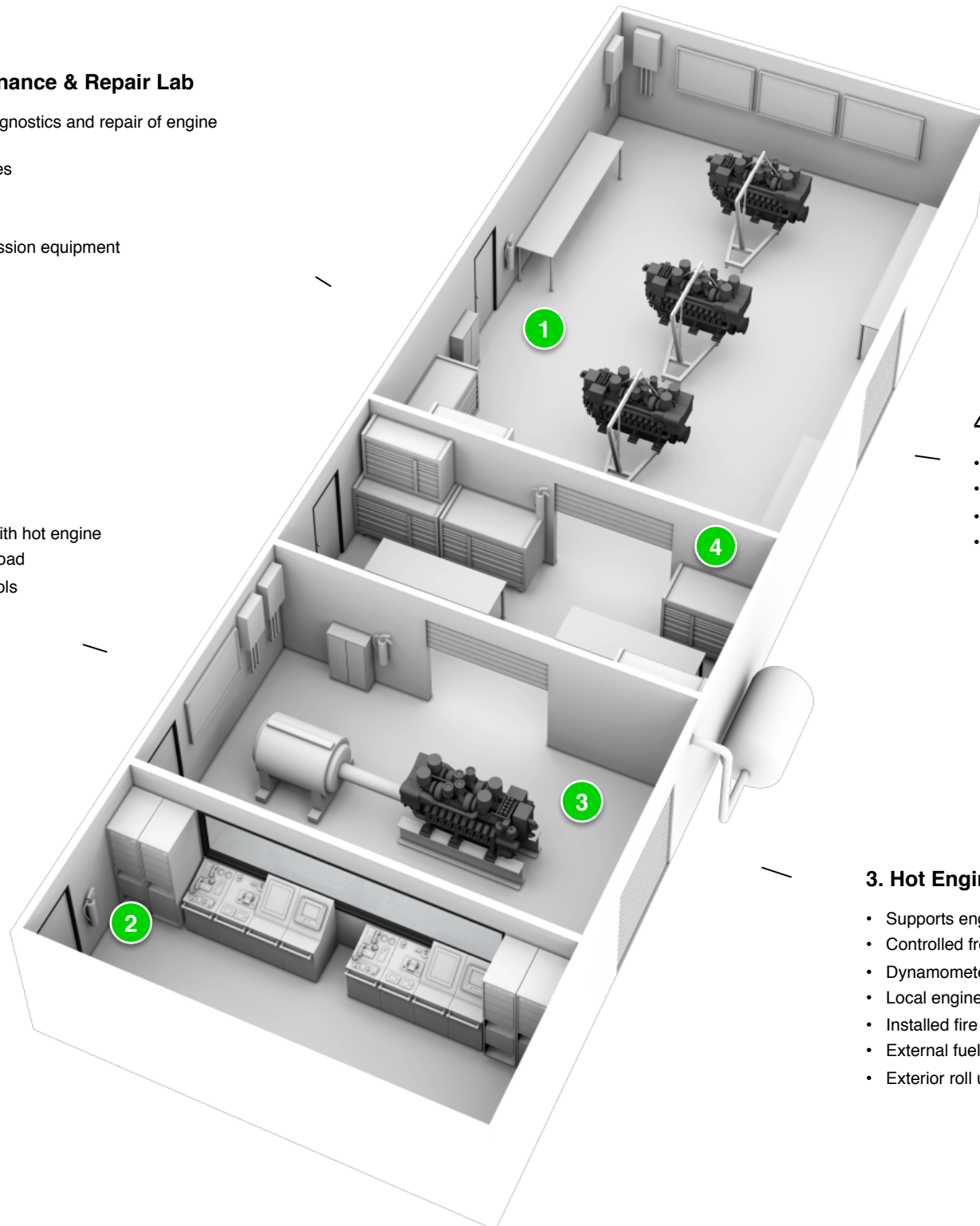
NAVAL OPERATION TRAINING CENTER IN A FIXED FACILITY CONFIGURATION

1. Engine Maintenance & Repair Lab

- Supports engine diagnostics and repair of engine subassemblies
- Various OEM engines
- Work benches
- Lifting equipment
- Installed fire suppression equipment
- Exterior roll up door

2. Engine Control Lab

- Control console interface with hot engine
- Dynamometer to simulate load
- Engine diagnostics & controls
- Visual control interface
- Engine monitoring display



4. Tool Room

- Tool boxes and required hand tools
- OEM specialty tools
- Work benches
- Diagnostic equipment for fuel and lube oil analysis

3. Hot Engine Lab

- Supports engine diagnostics and trend analysis training
- Controlled from the engine control room
- Dynamometer install to provide varying engine loads
- Local engine monitoring display
- Installed fire suppression equipment
- External fuel supply
- Exterior roll up door

SUMMARY INFORMATION

Training System Objectives

- Engine and design and function
- Engine Plant Operations
- Identify and rectify engine faults
- Perform preventive OEM maintenance tasks
- Removal & replacement of all subassemblies
- Operating engine diagnostics & control system
- Maintaining engine plant records

Basic System Configuration

- Engine Control Console
- Hot Engine Plant integrated with ECC and load dynamometer
- Tool Room and work bench area
- Cold Engine lab for maintenance and repair of major assemblies
- Exterior fuel tank for hot engine
- Installed fire suppression systems
- Installation and testing
- Hardware and software including operations and maintenance documentation
- One year parts and service warranty
- Technical handover to training facility operator

Training Delivery Options

- Curricula for classroom, simulator, and lab
- Certified instructors for classroom, simulator, and lab
- Training facility operations and maintenance service

NAVAL DEFENSE OPERATIONS TRAINING SIMULATOR

FIXED FACILITY OVERVIEW

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MODULAR NAVAL DEFENSE OPERATIONS SIMULATOR

INTEGRATED NAVAL SHIP SIMULATOR

Training Solutions that can be built within a module / portable facility

2. Small Arms Trainer

- Integrated virtual environment
- Individual/crew-served weapons tactics and procedures
- Tactical engagement communications
- Weapons malfunction training
- Team training
- Fire support training

3. Observation Deck

- Nonintrusive training scenario monitoring
- Peer-to-peer observations for training activities
- Train-the-trainer observation
- Streaming of observation video and audio through Internet

4. Engine Room Trainer

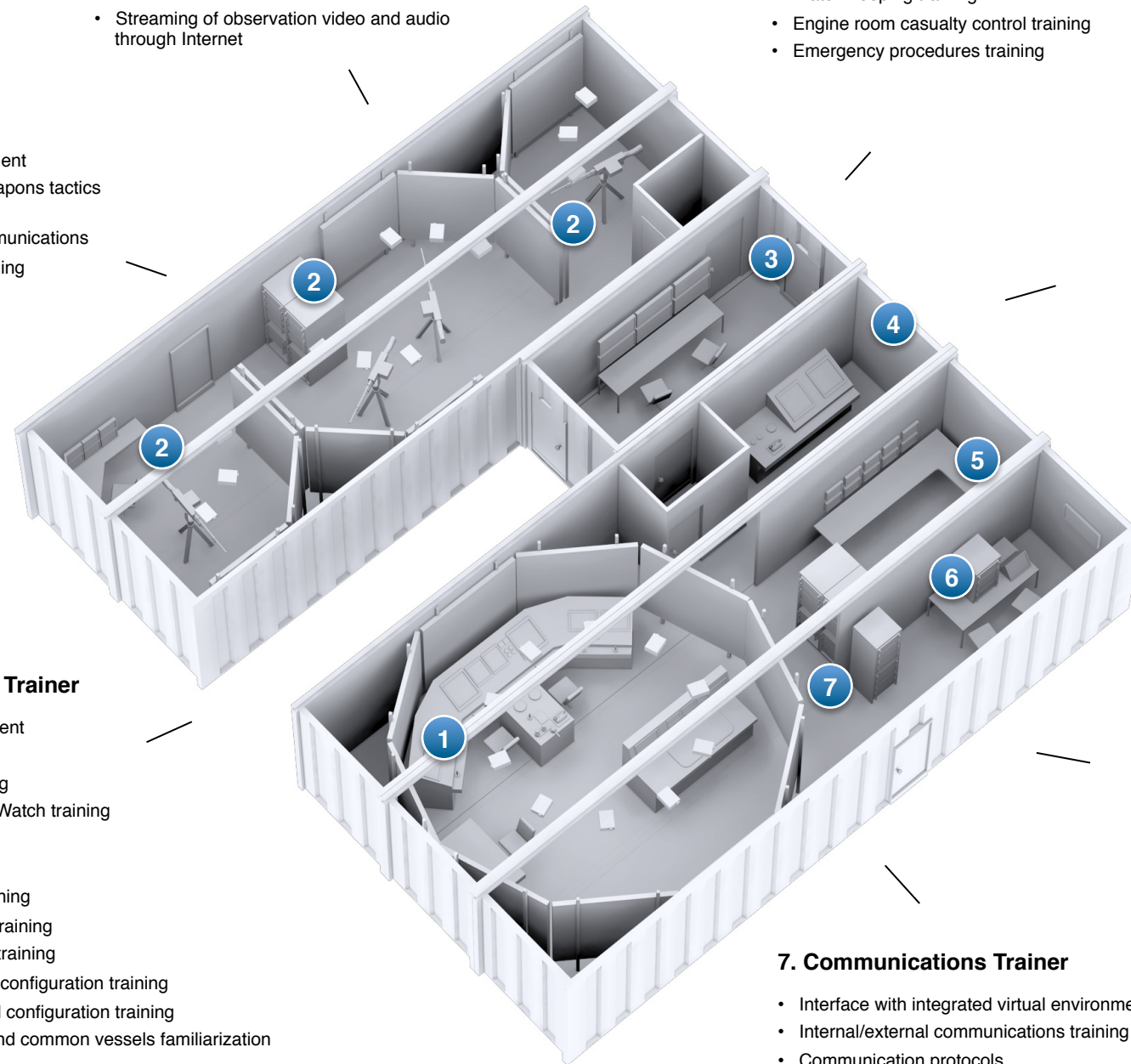
- Interface with integrated virtual environment
- Engine room modeling software
- Normal engine room operations training
- Watch-keeping training
- Engine room casualty control training
- Emergency procedures training

5. Instructor Stations

- Integrated virtual environment controls
- Dynamic scenario generation and integrated exercise preparation
- Battle damage mode selection
- Data recording, playback, and reporting
- Communications station for active exercise participation
- Controls for fault insertions throughout the integrated simulator

1. Full Mission Bridge Trainer

- Integrated virtual environment
- Bridge watch team training
- Officer of the Watch training
- Engineering Officer of the Watch training
- Navigation system training
- Battle operations training
- Emergency operations training
- Tactical link management training
- Communications systems training
- Instrument monitoring and configuration training
- Bridge instrumentation and configuration training
- Waterway, harbor, ports, and common vessels familiarization



7. Communications Trainer

- Interface with integrated virtual environment
- Internal/external communications training
- Communication protocols
- Ship/portable radio communications

6. Fire Control Trainer

- Integrated virtual environment
- Individual/team training on weapons
- Full integrated fire support training
- Communications station for tactical engagement
- Reconfigurable to multiple weapons

SUMMARY INFORMATION

Training System Objectives

- Operating the naval ship
- Executing normal procedures
- Recognizing malfunctions and abnormal indications
- Executing corresponding emergency procedures
- Executing mission procedures in a realistic tactical environment
- Executing interior-interior and interior-exterior communications
- Familiarization with platform-specific instrumentation
- Familiarization with targets

Basic System Configuration

- Integrated virtual environment for all shipboard operations familiarization training
- Integrated Full Mission Bridge, Ship's Canon Fire Control, Engine Room and Small Arms weapons trainer
- Integrated scenario training in a common operating environment at all crew stations with a central visual environment
- Modular and mobile facility allowing rapid relocation
- Hardware and software including operations and maintenance documentation
- Installation and testing
- One year parts and service warranty
- Technical handover to training facility operator

Additional Training System Options

- Electronic Warfare Trainer
- Helicopter Deck Operations Trainer
- Radar and Sensor Trainer
- Firefighting Trainer (stand-alone)
- Platform-specific UAV Trainer
- Target Recognition Training Laboratory
- Navigation Training Laboratory
- Platform-specific Communications Trainer

Training Delivery Options

- Curricula for classroom, simulator, and shipboard familiarization training
- Certified instructors for classroom, simulator, and shipboard training
- Training facility operations and maintenance service

NAVAL DEFENSE OPERATIONS TRAINING SIMULATOR

MODULAR FACILITY OVERVIEW

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MODULAR NAVAL DEFENSE OPERATIONS SIMULATOR SMALL ARMS TRAINER SECTION

1. Weapons Stations

- Any individual/crew-served weapons configuration using modified OEM weapons to exactly match ship's armament (weapons like the M240, .50-cal, AK-47, or M9)
- Stand-alone or integrated operation
- Weapon's discharge sound simulation with physical recoil action via silent-running compressors

2. Instructor Control Station

- Virtual environment controls
- Dynamic scenario generation and integrated exercise preparation
- Active participation via controls of opposing force and their tactics
- Observation, data recording, after-action reviewing, and reporting
- Allows instructor to insert weapons faults like jamming, overheating, hot gun, etc.

3. Small Arms Trainer Network

- High-fidelity simulation software set for small arms training including interface and integration with Weapons Server and Full Mission Bridge Trainer
- Ship models and geographic area database sets
- Image generation PCs and network equipment, switches, and cabling

4. Safety, Security & Environmental Features

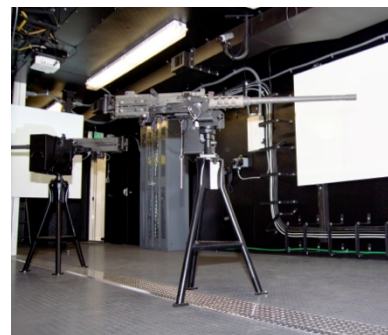
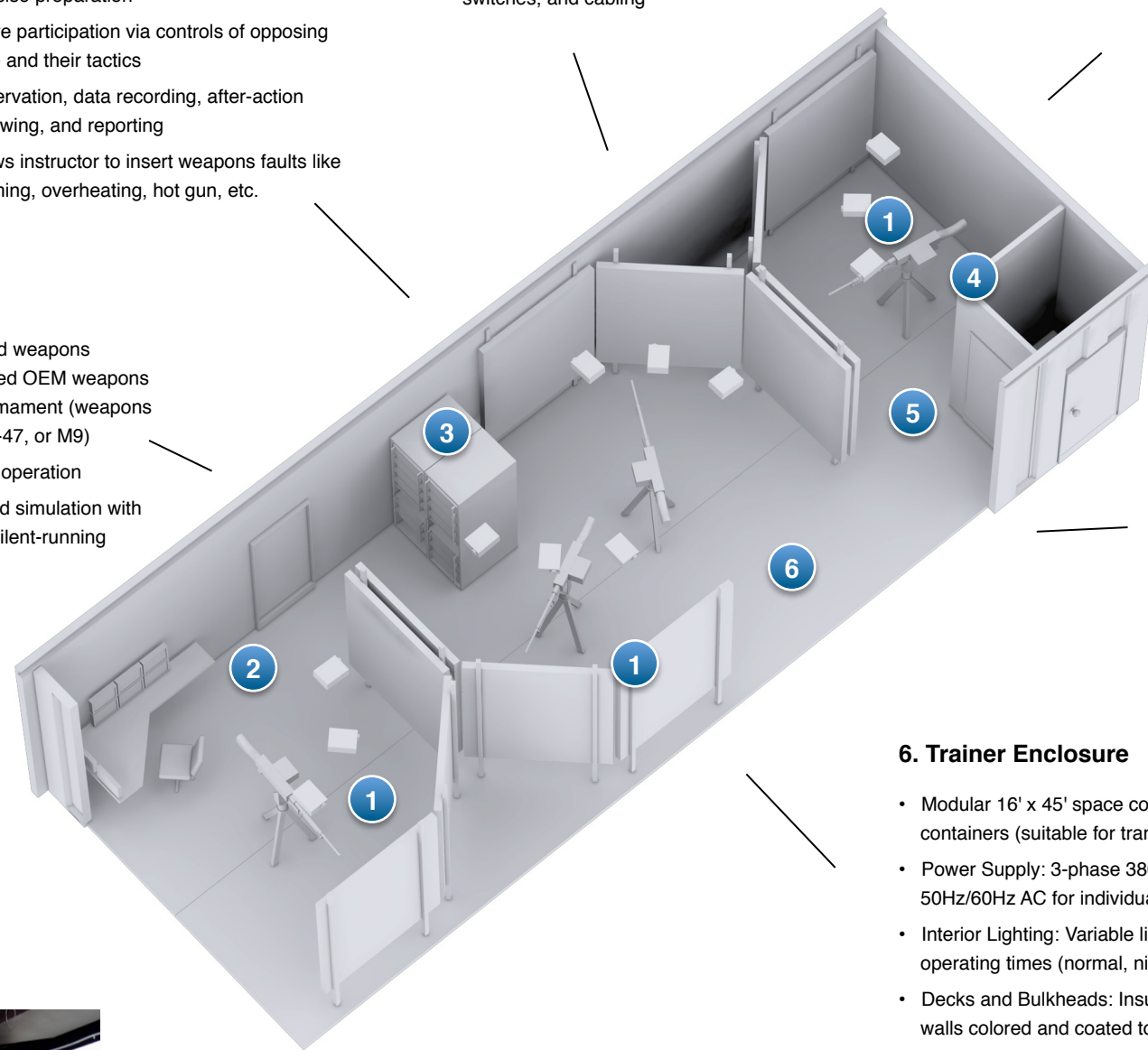
- Airlocks and positive pressurization to reduce maintenance costs
- Ship-standard safety and battle fighting equipment
- Weapons lockers
- HVAC to maintain safe ambient temperature and humidity ranges for all electronic equipment

5. Multichannel Visual Displays & Surround Sound

- Visual displays reconfigurable up to 360-degree field of view
- Surround sound for realistic 3-D weapons discharge

6. Trainer Enclosure

- Modular 16' x 45' space comprised of two 8' x 45' ISO-standard high cube containers (suitable for transportation by marine, road, or rail)
- Power Supply: 3-phase 380 V/50Hz/60Hz AC to individual power panels 220V/50Hz/60Hz AC for individual equipment sets
- Interior Lighting: Variable lighting to reflect shipboard standard at various operating times (normal, night, off)
- Decks and Bulkheads: Insulated exterior steel walls and interior coated FRP walls colored and coated to reflect shipboard standards
- Wiring & Cabling: Standard shipboard wiring with exposed cableways for easy identification and access; standard wiring identification schema



SUMMARY INFORMATION

Training System Objectives

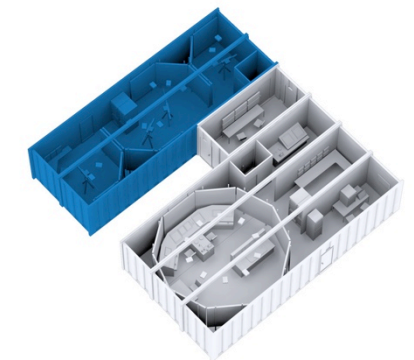
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- Team training
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Basic System Configuration

- Integrated virtual environment
- Simulation environment for small arms training specific to the ship's armament
- Combinable with the Full Mission Bridge Trainer and its ancillary trainers
- Integrated/stand-alone small arms training
- Modular and mobile facility, allowing rapid relocation
- Hardware and software including operations and maintenance documentation
- Installation and testing
- One year parts and service warranty
- Technical handover to training facility operator

Training Delivery Options

- Curricula for small arms operation training include multiple mission scenarios
- Certified instructors for simulator and live training
- Training facility operations and maintenance service
- Train-the-trainer course design and delivery
- Ship's weapons doctrine
- Officer's training for weapons deployment
- Small arms rules of engagement and tactics
- Integrated combat systems processes
- Anti-piracy/anti-terrorist training curricula



NAVAL DEFENSE OPERATIONS TRAINING SIMULATOR

MODULAR FACILITY OVERVIEW

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MODULAR NAVAL DEFENSE OPERATIONS SIMULATOR OBSERVATION STATION SECTION

1. Real-time Observation Area

- Video and audio outputs and recording from CC-TV locations
- Duplication of instructor screens
- Real-time viewing of individual/crew performance

2. Platform for Teaching Through Observation

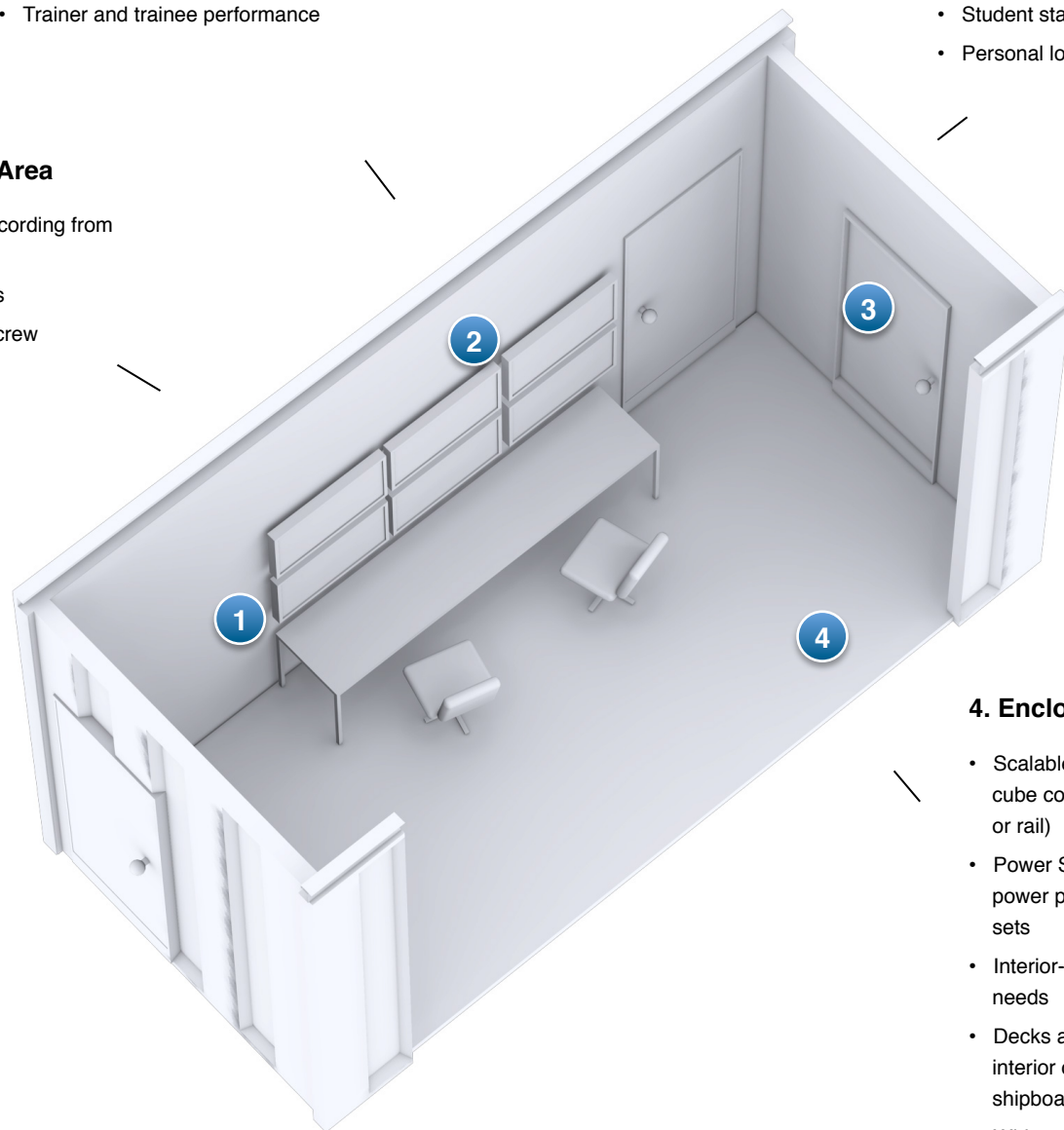
- Focus discussion on chosen object, a definite task, a weakness, a point of view, or an individual/crew problem
- Develop problem identification and prioritization skills
- Trainer and trainee performance

3. Safety, Security, and Environmental Features

- Airlocks and positive pressurization to reduce maintenance costs
- Secure entry point
- Administrative activity area
- Student staging and orientation area
- Personal lockers

4. Enclosure

- Scalable up from 8' x 20' space utilizing a custom-built high cube container (suitable for transportation by marine, road, or rail)
- Power Supply: 3-phase 380 V/50Hz/60Hz AC to individual power panels 220V/50Hz/60Hz AC for individual equipment sets
- Interior-light to reflect standard classroom/observation deck needs
- Decks and Bulkheads: Insulated exterior steel walls and interior coated FRP walls colored and coated to reflect shipboard standards
- Wiring and Cabling: Standard shipboard wiring with exposed cableways for easy identification and access; standard wiring identification schema



SUMMARY INFORMATION

Training System Objectives

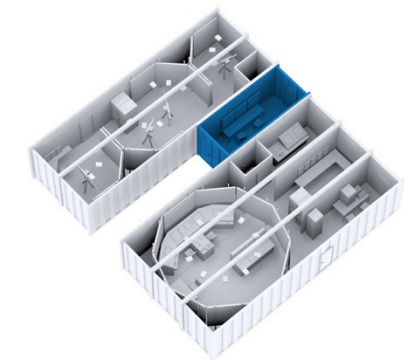
- Nonintrusive training scenario monitoring
- Peer-to-peer observations for training activities
- Train-the-trainer observation
- Streaming of observation video and audio through Internet

Basic System Configuration

- Multichannel, multi-screen video displays and audio output
- Workstations and seating
- Recording and playback devices
- Installation and testing
- One year parts and service warranty
- Technical handover to training facility operator

Additional Training System Options

- Additional monitoring capabilities
- Train-the-trainer curricula to improve performance analysis capabilities, crew problem-solving, and individual coaching capabilities



NAVAL DEFENSE OPERATIONS TRAINING SIMULATOR

MODULAR FACILITY OVERVIEW

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MODULAR NAVAL DEFENSE OPERATIONS SIMULATOR ENGINE ROOM TRAINER SECTION

SUMMARY INFORMATION

Training System Objectives

- Interface with integrated virtual environment
- Engine room software model
- Normal engine room operations training
- Watch-keeping training
- Engine room casualty control training
- Emergency procedures training

Basic System Configuration

- Interfaces to integrated virtual environment
- Engine Room Control Station
- Propulsion plant dynamics simulation
- Emergency vessel maneuvering controls
- Installation and testing
- One year parts and service warranty
- Technical handover to training facility operator

Training Delivery Options

- Curricula for engineer training include multiple mission scenarios
- Certified instructors for engineering training
- Training equipment operations and maintenance service
- CBT and ILT curricula for propulsion maintenance
- CBT and ILT curricula for power plant maintenance
- Power plant and propulsion maintenance laboratory

2. Propulsion Plant Dynamics Simulation

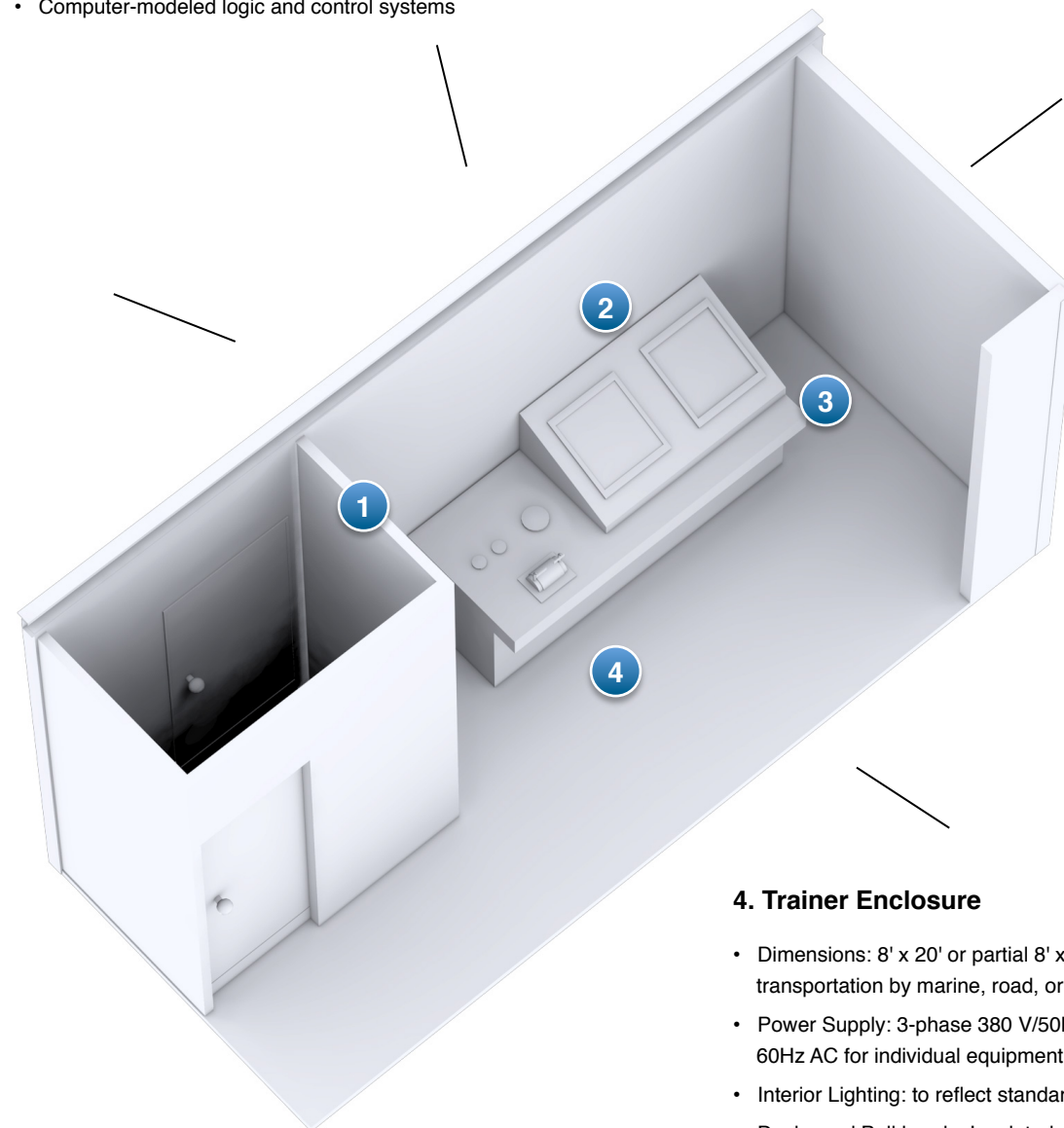
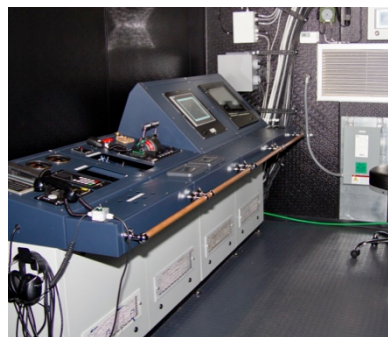
- Computer-modeled power plant fluid dynamics
- Computer-modeled electrical distribution
- Computer-modeled logic and control systems

3. Emergency Vessel Maneuvering

- Throttle controls
- Steering controls
- Bow thruster controls
- ECDIS/radar display

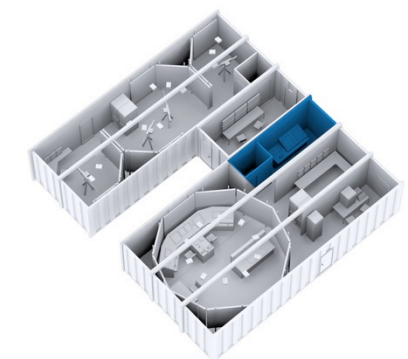
1. Engine Room Control Station

- Controls for ship-standard diesel propulsion plant
- Monitoring devices for auxiliaries
- Customized to specific vessel's engineering plant
- Main diesel engine gearbox control and monitoring console
- Alarm panels
- Engine room-to-bridge communications



4. Trainer Enclosure

- Dimensions: 8' x 20' or partial 8' x 45' shipping high cube container (suitable for transportation by marine, road, or rail)
- Power Supply: 3-phase 380 V/50Hz/60Hz AC to individual power panels 220V/50Hz/60Hz AC for individual equipment sets
- Interior Lighting: to reflect standard classroom/observation deck needs
- Decks and Bulkheads: Insulated exterior steel walls and interior coated FRP walls colored and coated to reflect shipboard standards
- Wiring and Cabling: Standard shipboard wiring with exposed cableways for easy identification and access; standard wiring identification schema



NAVAL DEFENSE OPERATIONS TRAINING SIMULATOR

MODULAR FACILITY OVERVIEW

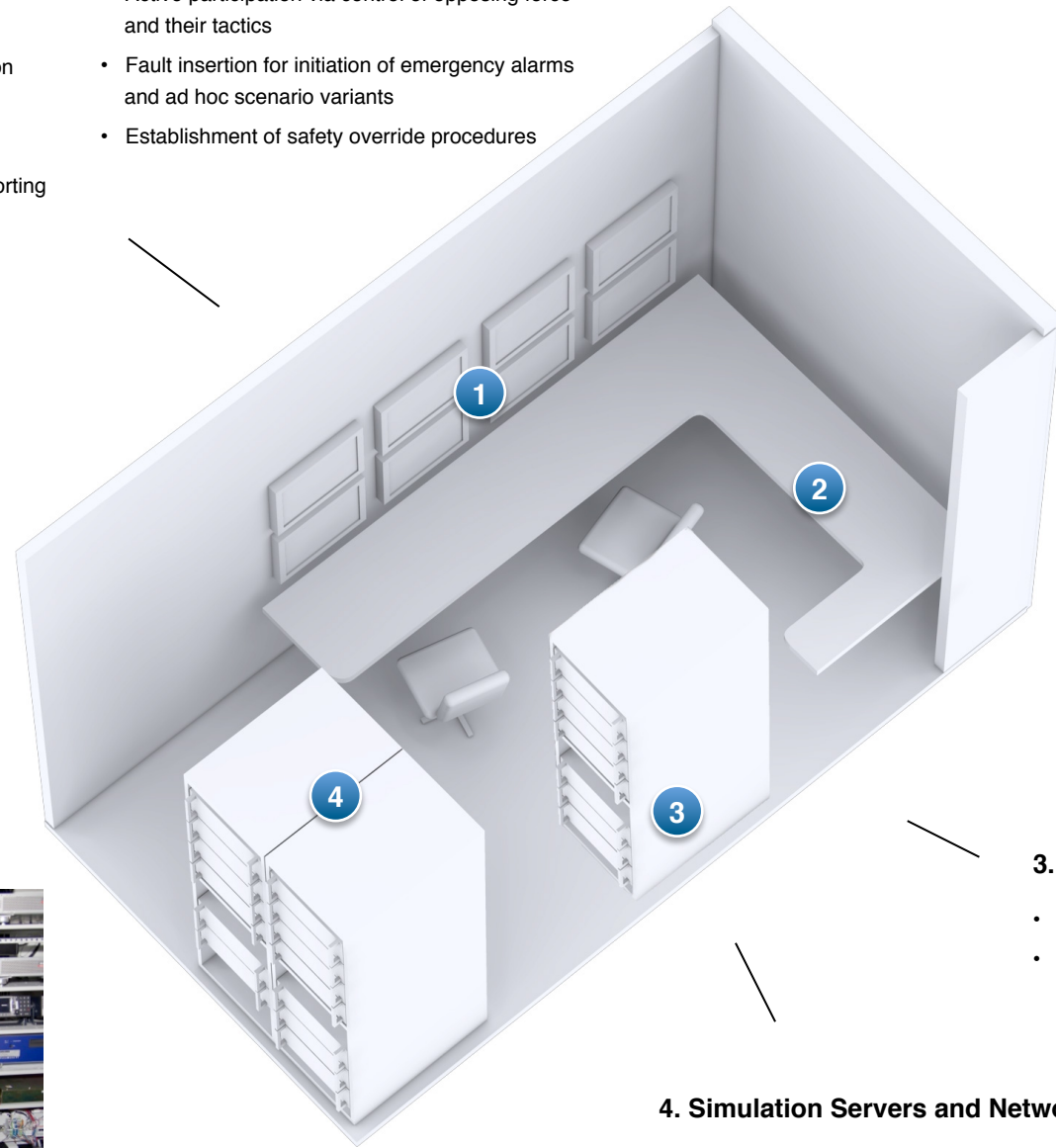
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MODULAR NAVAL DEFENSE OPERATIONS SIMULATOR INSTRUCTOR STATION SECTION

1. Master Simulator and Teaching Controls

- Scenario programming
- Overall exercise commencement
- Overall exercise monitoring and observation
- Overall exercise recording and playback
- Live-action individual/crew feedback
- Crew performance data collection and reporting
- Command and control simulation
- Control over environmental conditions
- Active participation via control of opposing force and their tactics
- Fault insertion for initiation of emergency alarms and ad hoc scenario variants
- Establishment of safety override procedures



2. Trainer Enclosure

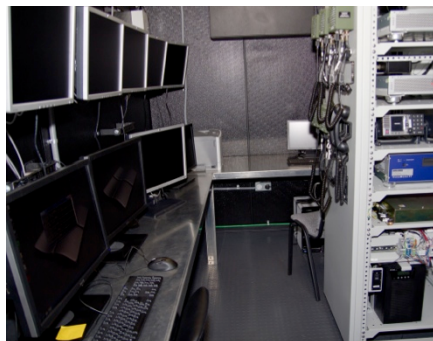
- Dimensions: Scalable within a 3' x 8' space utilizing space within one of the ISO-standard 8' x 20' or 8' x 45' shipping high cube containers (suitable for transportation by marine, road, or rail)
- Power Supply: 3-phase 380 V/50Hz/60Hz AC to individual power panels 220V/50Hz/60Hz AC for individual equipment sets
- Interior Lighting: to reflect standard shipboard operations (normal, night, off)
- Decks and Bulkheads: Insulated exterior steel walls and interior coated FRP walls colored and coated to reflect shipboard standards
- Wiring and Cabling: Standard shipboard wiring with exposed cableways for easy identification and access; standard wiring identification schema

3. Communications

- Internal/external communications
- Integrated Tactical Datalink System

4. Simulation Servers and Networking Equipment

- Simulation server and visualization PCs
- Network switches
- Network cabling



SUMMARY INFORMATION

Purposes

- Full control over the integrated virtual environment driving the scenarios across the simulator
- Scenario generation and exercise preparation
- Ability to select various battle damage modes to simulate different ship conditions
- Data recording, playback, and reporting for after-action reviews
- Observation, monitoring, and communications with individuals/crew

Basic System Configuration

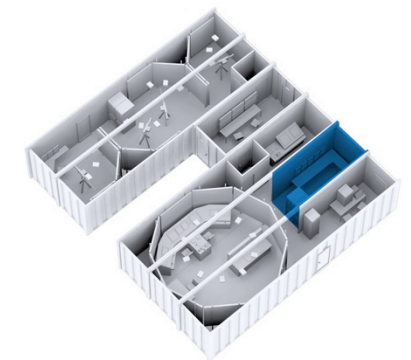
- Integrated virtual environment control console
- Master control console
- Training scenario console
- ERT control interface
- Fire control interface
- FMBT control interface
- Small Arms Trainer control interface
- ECDIS simulation interface
- Communications interface
- Installation and testing
- One year parts and service warranty
- Technical handover to training facility operator

Additional Training System Options

- Customized performance data collection, analysis, and reporting systems
- Scenario database specific to evolving doctrines and new threats
- Geographical databases (land, port, harbor)

Training Delivery Options

- Total force training and integration with army, air force, and homeland security forces



NAVAL DEFENSE OPERATIONS TRAINING SIMULATOR

MODULAR FACILITY OVERVIEW

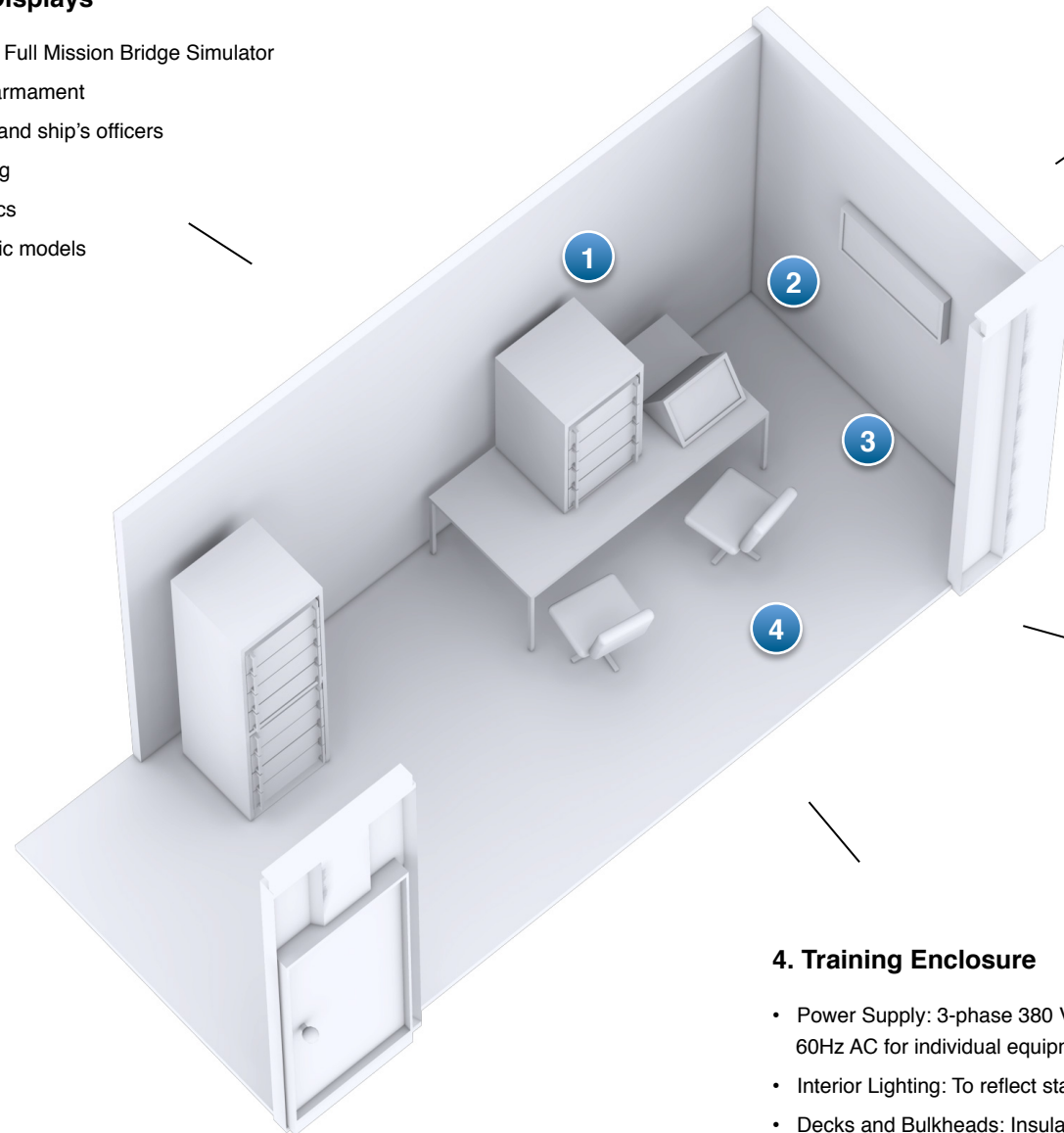
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MODULAR NAVAL DEFENSE OPERATIONS SIMULATOR FIRE CONTROL TRAINER SECTION

1. Fire Control Console and Displays

- Integrated targeting and display with Full Mission Bridge Simulator
- Targeting controls specific to ship's armament
- Interior communications with bridge and ship's officers
- High-fidelity, weapon-specific tracking
- High-fidelity, weapon-specific ballistics
- Customizable to any standard ballistic models



2. Target Simulation

- Multiple target types based on real-world threat library and land mass representations of geographic areas
- Realistic target maneuvering
- Own ship maneuvering to engage targets
- Varied battle conditions: sea state, environmental

3. Dimensions

- Scalable within a 5' x 5' space utilizing space within one of the ISO-standard 8' x 20' or 8' x 45' shipping high cube containers (suitable for transportation by marine, road, or rail)

4. Training Enclosure

- Power Supply: 3-phase 380 V/50Hz/60Hz AC to individual power panels 220V/50Hz/60Hz AC for individual equipment sets
- Interior Lighting: To reflect standard shipboard operations (normal, night, off)
- Decks and Bulkheads: Insulated exterior steel walls and interior coated FRP walls colored and coated to reflect shipboard standards
- Wiring and Cabling: Standard shipboard wiring with exposed cableways for easy identification and access; standard wiring identification schema

SUMMARY INFORMATION

Training System Objectives

- Integrated virtual environment
- Individual/team training on weapons
- Fire support training

Basic System Configuration

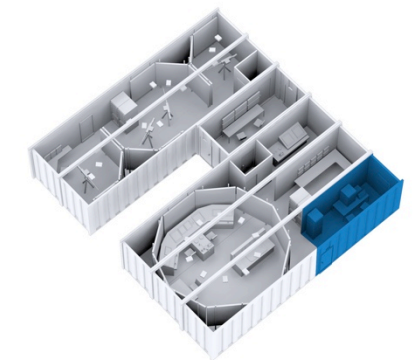
- Integrated virtual environment
- Simulated fire control console for a 30mm canon
- 12-threat database (marine, air)
- Installation and testing
- One year parts and service warranty
- Technical handover to training facility operator

Additional Training System Options

- Customized threat database
- Customized ballistics characteristics
- Customized fire control layouts
- Integration to standard HLA/DIS-compliant simulation systems
- Customized locales and environments

Training Delivery Options

- Curricula for fire control operator training include multiple mission scenarios
- Certified instructors for fire control training
- Fire control simulator operations and maintenance service



NAVAL DEFENSE OPERATIONS TRAINING SIMULATOR

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MODULAR NAVAL DEFENSE OPERATIONS SIMULATOR COMMUNICATIONS TRAINER SECTION

1. Internal Communications

- Customized to ship's communications equipment suite
- Training on live equipment as per ship's installed communications gear
- Supports regular shipboard intercom and station-to-station communications training
- Supports gunnery circuit communications training for simulated tactical environment

2. Tactical Datalink

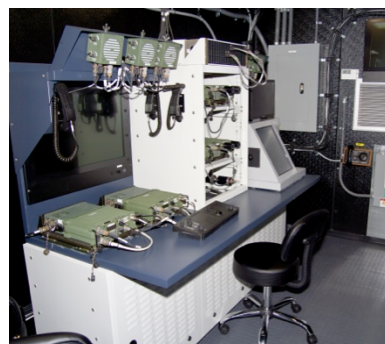
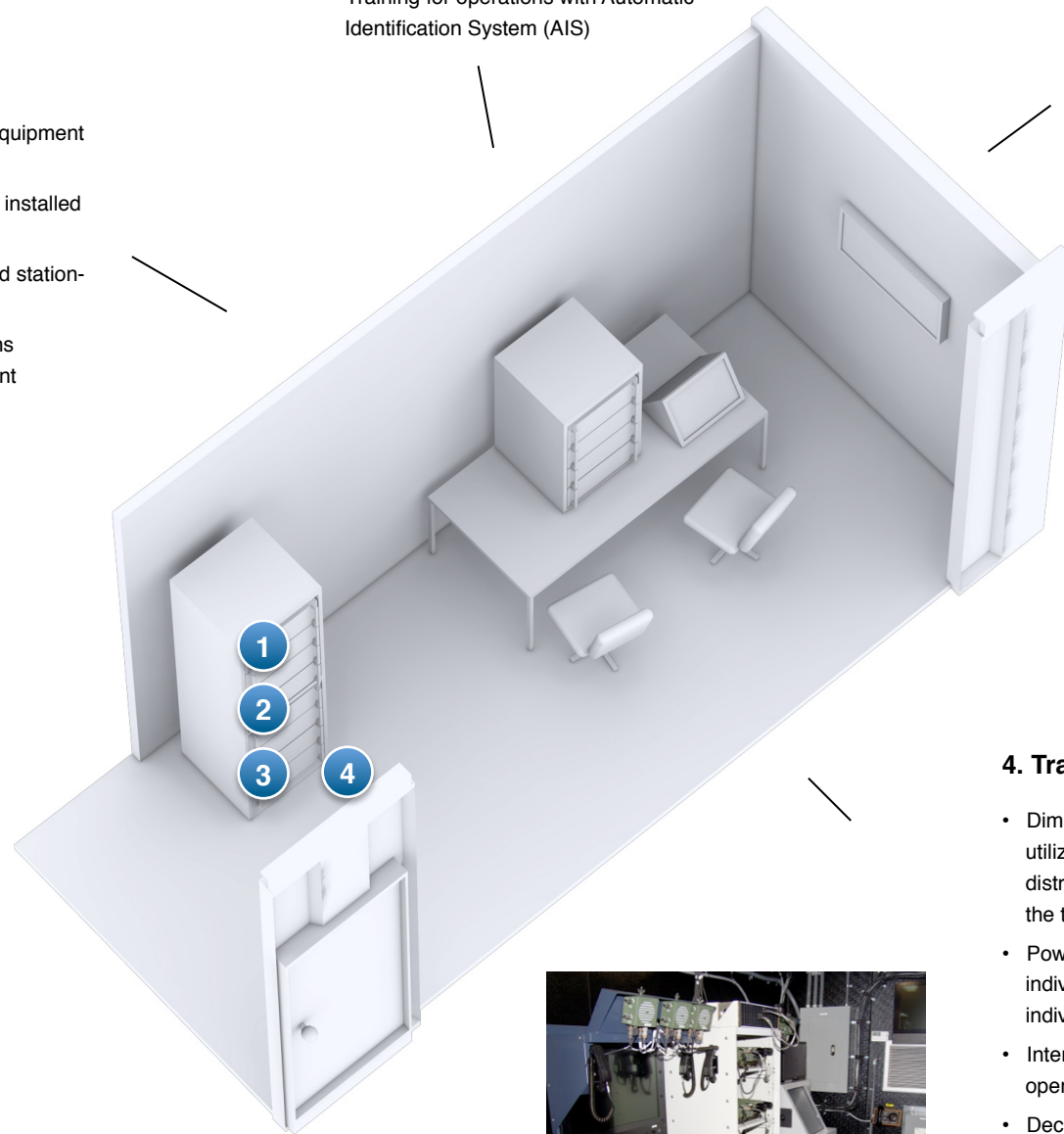
- Allows radar track sharing between ships
- Training for operations within an integrated tactical radar environment
- Training for operations with Automatic Identification System (AIS)

3. External Communications

- Supports ship-to-ship communications for normal, battle, and emergency operations communications training
- Supports ship-to-shore and ship-to-air communications for normal, battle, and emergency operations communications training
- Supports HF/MF/VHF voice and data communications training - Global Maritime Distress Safety System (GMDSS)

4. Trainer Enclosure

- Dimensions: Communication suite 3' x 2" space utilizing space, however, communications stations are distributed throughout the trainer
- Power Supply: 3-phase 380 V/50Hz/60Hz AC to individual power panels 220V/50Hz/60Hz AC for individual equipment sets
- Interior Lighting: to reflect standard shipboard operations (normal, night, off)
- Decks and Bulkheads: Insulated exterior steel walls and interior coated FRP walls colored and coated to reflect shipboard standards
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SUMMARY INFORMATION

Training System Objectives

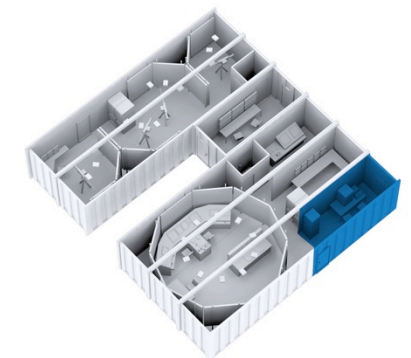
- Integrated virtual environment
- Bridge watch team training
- Officer of the Watch training
- Engineering Officer of the Watch training
- Navigation system training
- Battle operations training
- Emergency operations training
- Tactical link management training
- Communications systems training
- Instrument monitoring and configuration training
- Bridge instrumentation and configuration training
- Waterway, harbor, ports, and common vessels familiarization

Basic System Configuration

- Integrated virtual environment
- Helm Console - Navigation Console
- Global Maritime Distress Signaling System (GMDSS)
- Dynamic positioning system
- 360-degree visual displays utilizing short-throw projection systems
- Commercial-grade surround sound system
- Installation and testing
- One year parts and service warranty
- Technical handover to training facility operator

Training Delivery Options

- Curricula for full bridge training to include familiarization and multiple mission scenarios
- Curricula and systems for threat identification and combat mission effectiveness training
- Certified instructors for bridge training
- Simulator equipment operations and maintenance service



NAVAL DEFENSE OPERATIONS TRAINING SIMULATOR

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MODULAR NAVAL DEFENSE OPERATIONS SIMULATOR

FULL MISSION BRIDGE TRAINER SECTION

SUMMARY INFORMATION

Training System Objectives

- Operating the naval ship
- Executing normal procedures
- Recognizing malfunctions and abnormal indications
- Executing corresponding emergency procedures
- Executing mission procedures in a realistic environment
- Executing communications
- Familiarization with platform-specific instrumentation
- Familiarization with targets

Basic System Configuration

- Integrated virtual environment for all shipboard operations familiarization training
- Integrated Full Mission Bridge, Ship's Canon Fire Control, Engine Room and Small Arms Weapons trainer
- Integrated scenario training in a common operating environment at all crew stations
- Modular and mobile facility allowing rapid relocation
- Hardware and software including operations and maintenance documentation
- Installation and testing
- One year parts and service warranty
- Technical handover to training facility operator

Additional Training System Options

- Electronic Warfare Trainer
- Helicopter Deck Operations Trainer
- Radar and Sensor Trainer
- Firefighting Trainer (stand-alone)
- Platform-specific UAV Trainer
- Target Recognition Training Laboratory
- Navigation Training Laboratory

Training Delivery Options

- Curricula for classroom, simulator, and shipboard familiarization training
- Certified instructors for classroom, simulator, and shipboard training
- Training facility operations and maintenance service



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3. Helm Console

- Fully functional throttle controls, steering, and instrumentation
- Helm equipment fully customized to actual ship's configuration
- Programmable logic controls (PLC)-based interface reconfigurable to ship types
- Engineering indicators and alarms panel
- Navigation lighting panel
- Bow thruster controls
- Fire and flooding alarm systems
- Internal and external communications interface

4. Navigation Console

- OEM-stimulated or simulated radar displays
- OEM-stimulated or live electronic chart display and information system (ECDIS)
- OEM-stimulated or simulated autopilot
- Digital Global Positioning System
- Configurable with either OEM-stimulated or simulated controls and displays

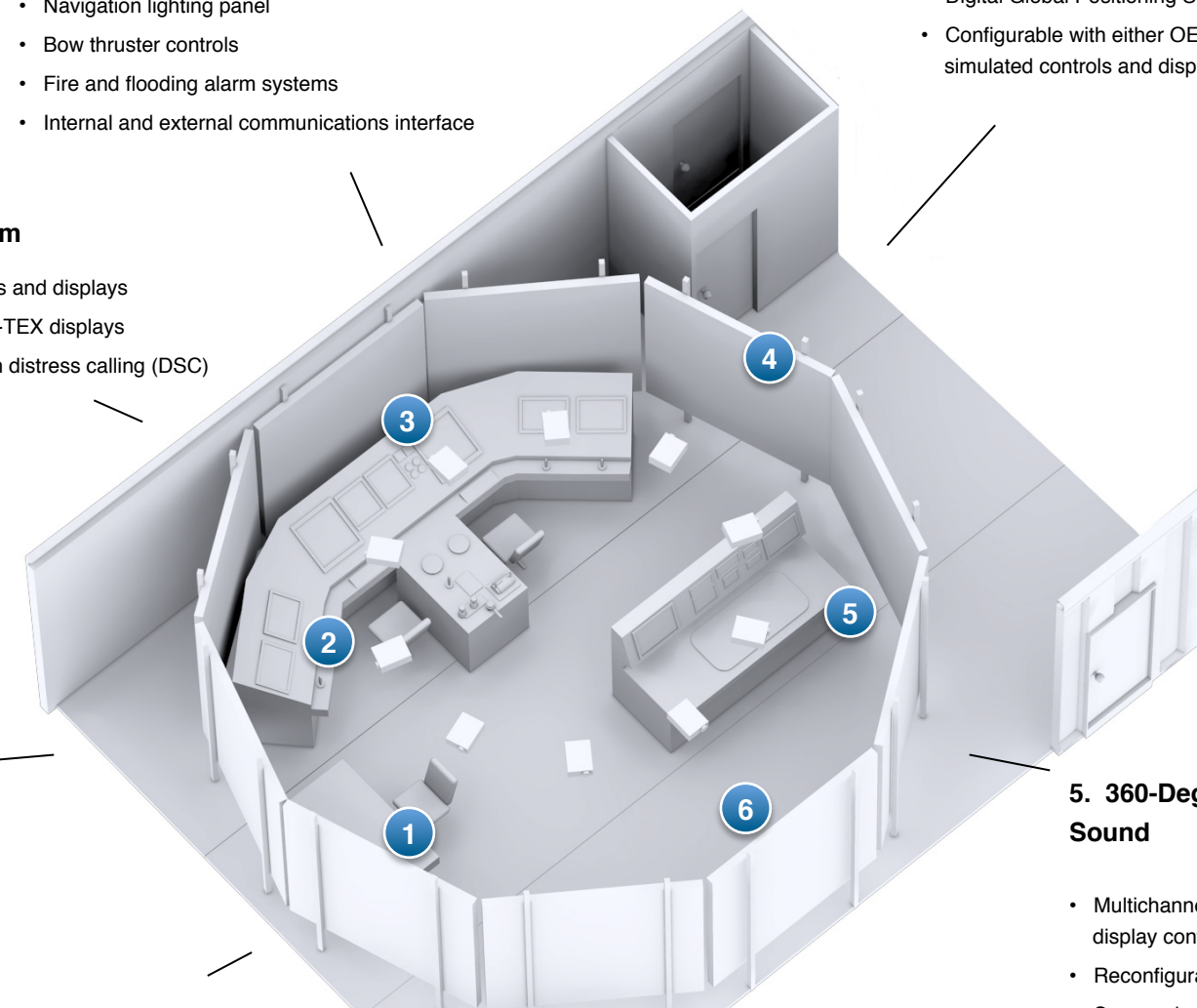


2. Dynamic Positioning System

- OEM-stimulated or simulated controls and displays
- Weather fax, INMARSAT-C and NAV-TEX displays
- VHF/MF/HF and radio telephone with distress calling (DSC)

1. Global Maritime Distress Signaling System (GMDSS)

- Nonintrusive training scenario monitoring
- Peer-to-peer observations for training activities
- Train-the-trainer observation
- Streaming of observation video and audio through Internet



5. 360-Degree Visual Displays & Surround Sound

- Multichannel visual display suitable for a variety of video display configurations
- Reconfigurable for platform-specific field of view
- Surround sound for realistic 3-D sounds

6. Trainer Enclosure

- Dimensions: Scalable from 16' x 16' with a 180-degree field of view to 24' x 24' with a 360-degree field of view utilizing space within three ISO-standard 8' x 45' shipping high cube containers (suitable for transportation by marine, road, or rail)
- Power Supply: 3-phase 380 V/50Hz/60Hz AC to individual power panels 220V/50Hz/60Hz AC for individual equipment sets
- Interior Lighting: to reflect standard shipboard operations (normal, night, off)
- Decks and Bulkheads: Insulated exterior steel walls and interior coated FRP walls colored and coated to reflect shipboard standards
- Wiring and Cabling: Standard shipboard wiring with exposed cableways for easy identification and access; standard wiring identification schema



MODULAR NAVAL DEFENSE OPERATIONS SIMULATOR EXPANSION UNITS SECTION

NAVAL DEFENSE OPERATIONS TRAINING SIMULATOR

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3. CLASSROOMS

Mobile classroom configured for instructor-led training. Equipped with supporting audio/visual and computer equipment.

- Shipboard Management, Command and Control courses
- Deck Operations courses
- Combat Systems courses
- Engineering and Auxiliary Systems courses
- Navigation courses
- Communications courses
- Radar courses
- Damage Control/Firefighting courses
- Environmental and Hazardous Materials Handling courses
- Chemical, Biological and Radiological Defense courses
- Engineering Plant Maintenance courses
- Engineering Plant Operations courses
- Leadership and Management courses

4. MODULAR AND MOBILE ENCLOSURES

- All training enclosures built using ISO-standard high cube steel containers suitable for transportation by marine, road, or rail.

1. LABORATORIES:

• Deployable Electronic Warfare Environment Training Laboratory

A state-of-the-art, dynamic electronic warfare (EW) simulation training system with the unique ability to accurately replicate multiple EW equipment performance within COTS PC-hardware. Designed to train basic EW; tactics and countermeasure development, synergistic EW training; and mission planning and rehearsal.

• Target Recognition & Combat Identification Training Laboratory

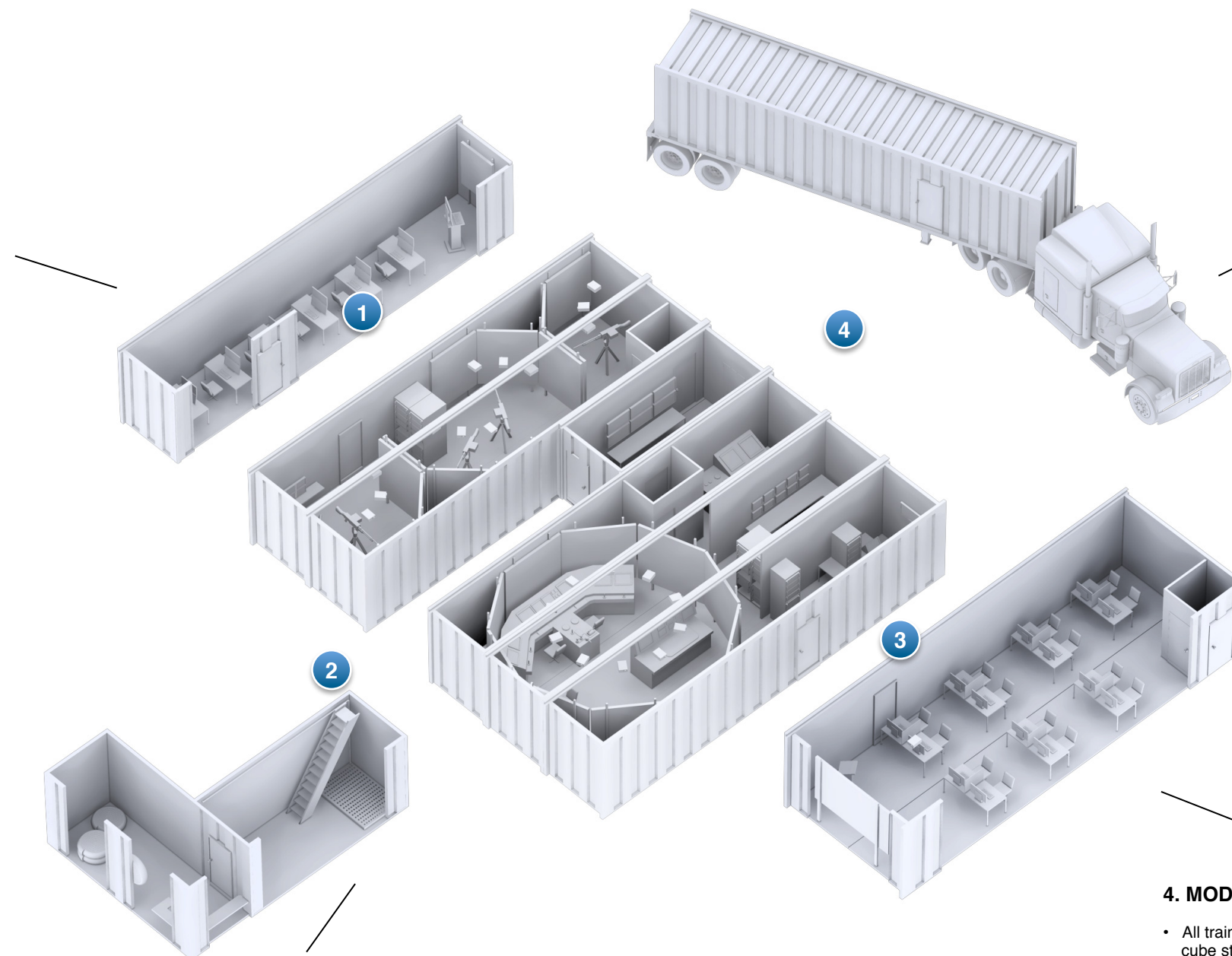
Realistic-3D simulation trainer used to reduce friendly fire and increase combat mission effectiveness with recognition training tools for pre-deployment training, intelligence training, and mission rehearsal.

• Helicopter Flight Deck Operations Training Laboratory

Train helicopter controllers in safe tactical control of small ship helicopter flights, exercise flight safety, correct response to emergencies, passing of information, homing of lost or distressed aircraft, interaction with Weapon Directors, timely recovery and briefing.

• Computer-based Training Laboratory

Mobile training facilities that can be used to deliver self-paced, team and instructor-facilitated computer-based training. Assembled using COTS PC and include a server-based Learning Management System, audio/visual equipment, and teaching aids.



2. FIRE FIGHTING SIMULATOR

- Simulates Class a, b and c type fires; relevant for disaster, terrorist, and war fighting situations. Suitable for personnel rescue and recovery training.



MULTIBRIDGE "TOTAL FORCE" NAVAL OPERATIONS SIMULATOR

NAVAL SHIP SIMULATOR

NAVAL DEFENSE OPERATIONS TRAINING SIMULATOR

MODULAR FACILITY OVERVIEW

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From Doctrine to Decks: Squadron, Battle Group, Total Force, and Coalition Training

VSD excels in the highly technical task of translating mission doctrine into training exercises to improve multi unit force performance. As recent wars have taught us, individual ships often have very different mission profiles even when they are tasked with working together against a shared threat. The tools and methodologies for creating effective ship-level training are

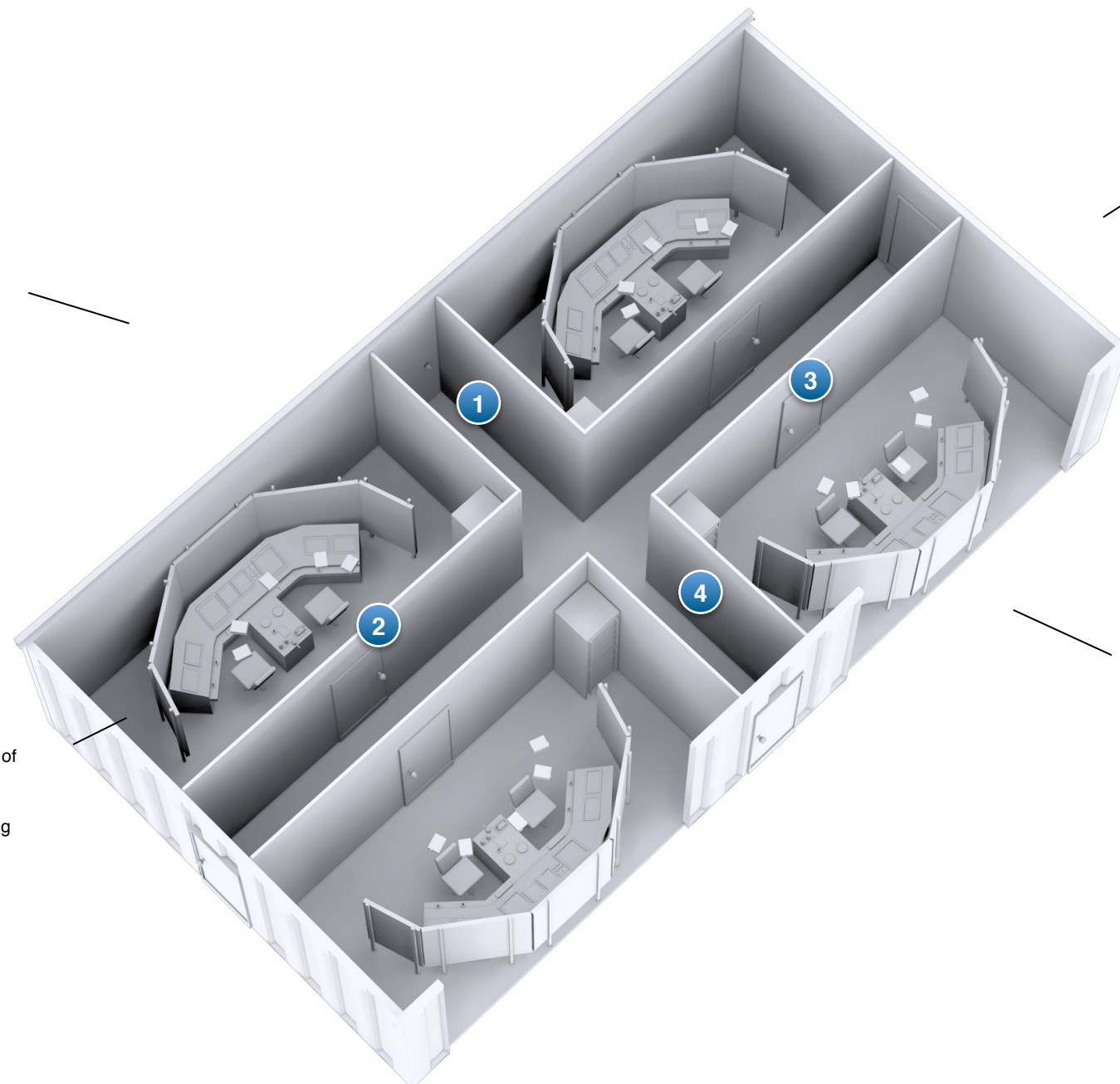
important; however, they are only part of the equation in the fleet-level setting. It has been our experience that force command competencies, force-level training expertise, and a truly integrated virtual environment with E2C-standard (easy to connect) components are equally essential elements of the total force training solution.

1. Multi-mission Training for Multiple Platforms

- Multiple force requirements
- Multiple units involved
- Multiple threats
- Multiple geographic locations
- Mission procedure execution
- in a realistic safe environment
- Client-defined and validated

2. Force-level Performance Evaluation and Improvement

- Evaluation of total force performance
- Evaluation of force tactics and underlying tactical theories
- Evaluation of individual unit performance in support of total force objectives
- Integrated environment allows assessment of total force by outside observers
- Force-level training in a virtual environment saves costs of mobilizing large-scale training operations



3. Single Virtual Environment for Multiple Trainers

- Multiple equipment platforms and systems to execute total force missions - all integrated
- Integrated force-level communications
- Integrated operational logistics: planning and execution
- Mission execution against multiple threats in multiple environments
- Mission execution as a total force of integrated systems

4. Total Force Training Strategies and Tools

- Mission Requirements Analysis
- Total Force Training Plan Development
- Total Force Curriculum Support
- Total Force Training System Planning
- Total Force Training System Integration
- Total Force Training System Life Cycle Support





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The contents, descriptions and information contained herein are subject to change without notice. References available.

