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I-SIM®

ATM Simulator

High-Fidelity Airspace and Air-Traffic Simulator

Originally developed for the FAA as the Air Traffic Control Advanced Research Simulator (ATCARS), I-SIM® is a high-fidelity simulation system used for Air Traffic Control Training, Air Space design/analysis, advanced Computer-Human Interface (CHI) and Human-Machine Interface (HMI) development, and to support UAS integration into civil airspace. I-SIM is also used to model high-density airspaces for commercial airspace design.

Train With All Current ATM Systems

The I-SIM® system is a high fidelity radar simulation system which supports both en-route and terminal operations. The system is delivered with fully functional ERAM and ARTS/STARS display applications.

These display applications have been thoroughly tested and evaluated at some of the country's largest and busiest facilities including SoCal, Phoenix, Cleveland / Detroit, Denver, and Florida Metroplex sites, and recently for the Atlantic Coast Route Program for ZBW, ZDC, ZNY, ZJX, and ZMA.

The I-SIM Embedded Trainer application was completed and delivered to the US Navy and deployed on the first ship in 2016. I-SIM is now being deployed to all US Navy aircraft carriers and amphibious assault ships. All Air Traffic Control training on US Navy ships will now be carried out on I-SIM systems.

I-SIM deployed in a classroom setting for ATC training

Unsurpassed Simulation Fidelity

I-SIM is the leading platform for ATC training and is used by a variety of institutions, including Embry Riddle Aeronautical University. I-SIM reproduces ERAM and ARTS/STARS applications, airspaces, and user interfaces with absolute fidelity to the actual working systems. When used in conjunction with modified ERAM/STARS keyboards and I/O devices, the I-SIM system simulates actual NAS systems with unsurpassed accuracy and fidelity.

Support for Multiple Data Formats

I-SIM is unique in its ability to import multiple data formats for use in simulation scenarios. Among others, I-SIM supports the FAA Performance Data Analysis Reporting System (PDARS) format, and can leverage actual traffic data as the building blocks to explore "what if?" scenarios for evaluating airspace changes and design concepts, or for developing immediate scenarios for training purposes.

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The system is flexible, and is capable of replaying and simulating any combination of en route and terminal operations simultaneously. Computer-Human Interface (CHI) Development Tools I-SIM includes additional software tools to modify, add, investigate, research and build Computer-Human Interface (CHI or HMI) changes to both ARTS/STARS and ERAM systems. Currently, the FAA is conducting Human Factors Engineering on prototype workstations and investigating automation tools for use in the next generation NAS system. Evaluations by controllers are made easier by allowing changes to the CHI/HMI to be assessed during prototyping sessions with immediate feedback.

I-SIM can be deployed on any Windows OS computer and is scalable from one to any number of working positions with simultaneous en-route and terminal operations.

As part of the I-SIM service, we will provide trained technicians to help configure the I-SIM simulations to your purposes, and help to develop and modify the software tools we provide to accurately model the parameters of a specific airspace or a particular HMI configuration.

When delivered as a system, I-SIM includes Pilot Positions and a Supervisor/Instructor position which manages the simulation exercise. The system includes both RADAR (R) and Data (D) positions when operated in an en-route configuration. Any position in the system can run on a laptop computer which is especially useful when running remote operations and/or mobile configurations.

Additional I-SIM Modules

I-SIM Connect (voice communication system simulator)

I-SIM Connect gives you the flexibility to simulate authentic voice-control communication between controllers and pilots over the Internet, in an environment incorporating virtually every feature of today's most common VCS systems.

I-SIM Connect employs advanced VOIP technology to minimize cost and leverage existing infrastructure - so students can train from home, without the need for a classroom environment.

I-SIM VRR (Voice Recognition/Response)

I-SIM VRR provides an automated alternative for live pseudo-pilot operators when used in ATM/ATC training.

I-SIM VRR accepts verbal commands from the air traffic controller and executes them as the aircraft should, providing voice responses to the operator as it does so. The VRR module requires very little voice recognition "training" when being used by a new operator, and provides nearly 98% comprehension of voice commands with most operators out of the box.

I-SIM VRR is a useful tool for training environments where there is limited space or personnel, and is currently in-use as part of the Air Traffic Control Training System on all U.S. Navy aircraft carriers and amphibious assault ships.

Technical Features

- Reproduces FAA UI environments with perfect fidelity
- Simulates ERAMS, STARS, ARTS, and URET environments
- Imports a variety of data formats, including PDARS
- Tools to build scenarios and simulations using real data
- Supports run-time CHI changes for Human Factors Engineering
- Available modules for voice communications and VRR
- Runs on any Windows® OS system
- Simulates any combination of en route and terminal operations
- Installed systems include positions for pseudo pilots and instructor
- Easily add positions as your requirements change
- Includes robust, responsive customer support


I-SIM VRR in use in the US Navy Embedded Trainer

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