REDONDO SYSTEMS INC

Mobile TacSIM

Tactical Communications Simulator

Mobile TacSIM is a man portable version of RSI's Tactical Communications Simulator (TacSIM). Mobile TacSIM is an off-the-shelf PC based tactical communications simulation system supporting the systems integration, test and training missions for U.S. and allied armed forces, and major defense suppliers around the world. Mobile TacSIM has been validated by the U.S. Army for use in interoperability testing on Link 16 (TADIL J), Link 11 (TADIL A) and Link 11B (TADIL B). Mobile TacSIM is highly configurable by utilizing RSI's Simulation Core user interface package and then layering multiple tactical data link, simulation data link and/or radar interfaces from RSI's Interface Package Library (IPL). New customer application-specific requirements are easily accommodated.

Redondo Systems Incorporated (RSI) has been a leading provider of products and services in the areas of tactical data link and radar interface processing for over 20 years. RSI's product lines include fielded tactical data link and radar communications systems, radar and data link simulation systems, as well as stand-alone software packages and custom hardware solutions. RSI's major customers include:

- U.S. Army
- U.S. Air Force
- U.S. Navy
- U.S. Marine Corps
- Raytheon
- Northrop Grumman
- Lockheed Martin
- Rockwell Collins
- Thomson CSF
- EADS
- BAE
- SAIC

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Mobile TacSIM Interface Capabilities Include:

Data Links

- Link 16
  - *MIL-STD-6016E*
  - *MIL-STD-6016D*
  - *MIL-STD-6016C ch1*
  - *JTIDS TIDP*
  - *Smart Host and terminal/network emulations:*
    - *Class 2H (ADDSI)*
    - *Class 2M (ADDSI)*
    - *MIDS (LVT (J,A,D)*
    - *3011 (JREAP B & C)*
    - *S-TADIL J (SATJ)*
- Link 11, Link 11B
  - *MIL-STD-6011D*
  - *MIL-STD-6011C*
  - *STANAG 5511 Ed5*
  - *TDS and DTS/ network emulations:*
    - *NTDS (Parallel)*
    - *ATDS (Serial)*
    - *MIL-STD-188-203*
    - *MIL-STD-188-212*
- NATO Link 1
  - *STANAG 5501 Ed 4*
- ATDL-1
  - *MIL-STD-6013A*
- FAAD Data Link
- NATO Link 14
- USMTF 2000
- TIBS
- VMF
- IDL
- UDL
- MBDL
- Lateral Tell
- Forward Tell
- TESS
- ICAO

Simulation Data Links

- DIS (IEEE 1278.1)
- TCL

Data Forwarding

- Link 16 ◄► Link 11/11B
- DIS ◄► Link 11/11B, Link 16, FDL, ATDL-1

Radars

- PATRIOT
- FAAD/GBS
- CD2
- ATSERIX
- AN/APG-71
- AS/APS-138
- AN/APY-2
- AN/APX-76
- AN/APX-100
- AN/APX-103
- AN/ARN-118
- AN/ARN-118A
- AN/ASN-130
- AN/FPS-117 (LRR)
- AN/MPQ-51 (ROR)
- AN/MPQ-55(CWAR)
- AN/MPQ-57
- AN/TPS-32
- AN/TPS-43E (DAR)
- AN/TPS-70
- AN/TPS-75
- AN/TPX-46
- AN/UPX-23
- AN/UPX-27
- SPS-96/125
- SPS-48C
- IHAWK Phase III
  - *AN/MPQ-50 (PAR)*
  - *AN/MPQ-61 (HIPIR)*
  - *AN/MPQ-62 (CWAR)*
  - *M192 Launcher*

Interface Protocols & Standards

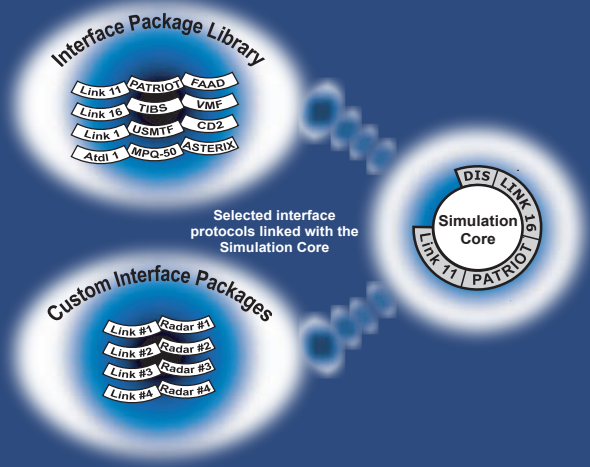
- RS-232
- RS-422
- RS-449
- RS-485
- EIA-530
- EIA-530A
- SIMPLE
- V.35
- V.36
- X.25
- HDLC
- ADDSI
- TCP/IP, UDP, MULTICAST

Mobile TacSIM Features

- **User Interface**
  - Multiple tactical displays
  - Multiple hook readouts
  - Operator input dialogs
  - System status
- **Hardware Configuration**
  - Ruggedized chassis
  - Off-the-shelf I/O cards
- **Simulation Object Database**
  - 2000 objects (minimum)
- **Network Support**
  - Multiple workstations
  - Distributed processing
  - Integrated situation awareness
- **Scenario Processing**
  - Automated creation
  - Nested scenarios
  - In-line documentation
  - In-line operator prompts
  - Selectable playback rate
  - Perform all manual actions while scenario executes
  - JTIDS network download files
- **Data Recording**
  - All message traffic
  - All operator actions
  - Errors recorded for analysis
  - Millisecond accuracy time tags
- **Data Analysis**
  - Real-time statistics
  - ODBC database source
  - Can process recorded data
- **Data Reduction**
  - Real-time and post-test data reduction (DERG compliant)
  - Extensive filters
  - Prose, hex, octal and binary
  - Operator actions
- **GPS Interfaces**
  - GPS Sync, IRIG-B
- **Motion Modeling**
  - Default motion profiles
  - Real-time operator control
- **Route Planning**
  - Aircraft/Missile characteristics
  - Terrain following using DTED
- **Radar Simulation**
  - Line-Of-Sight, Field-Of-View
  - Probability of Detection
  - Rotating/Non-Rotating radars
  - Jamming
  - Tracker module (optional)
- **Playback**
  - Processes recording files
  - Recreates tactical displays
  - Recreates online DX
- **Negative Testing**
  - Hex/Binary/Octal messages
  - Transmit/Receive filters

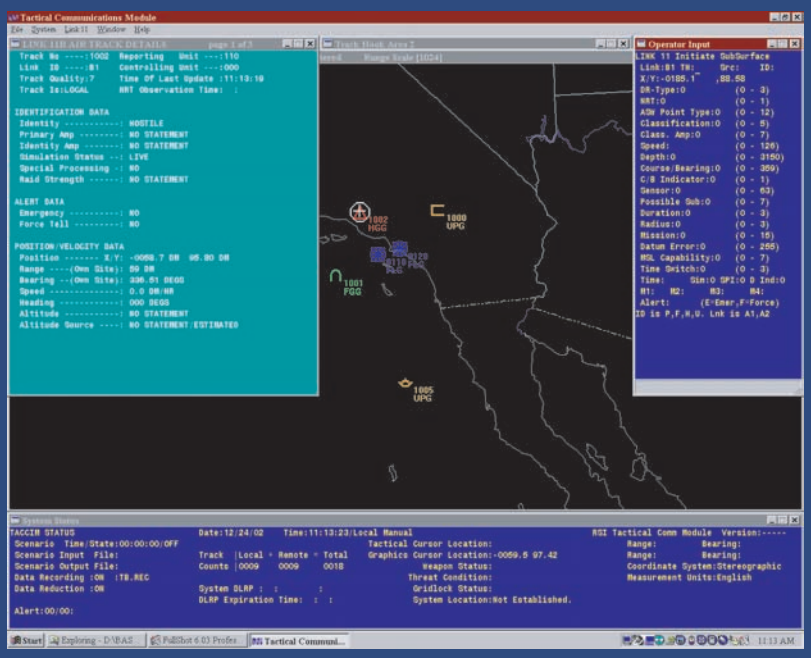
Mobile TacSIM System Description

Mobile TacSIM is a PC based portable tactical communications and radar simulation system that uses ruggedized, commercial off-the-shelf hardware configurations for enhanced reliability and durability. Mobile TacSIM functions much like an actual Tactical Data System (TDS) except that the Simulation Object Database from which messages are generated is initiated through manual operator actions, scenario events, and/or simulation data link input (e.g. DIS) rather than from sensor inputs. External interfaces configured into the TacSIM independently scan the Simulation Object Database and generate the appropriate primary and amplifying messages for each object. Message generation is based on the visibility of the object (e.g. radar coverage area), availability of data, and requirements of the associated specification (e.g. MIL-STD-6016E). Data received over a configured external interface is validated for errors and processed for automatic link responses (R^2 shifts, ID conflict processing, command processing, etc.), presentation of new data in hook readouts, real-time data reduction, and automatic alerts. Non-periodic message traffic such as Data Update Requests, ID Differences, etc. are generated in response to operator actions (and scenario events) as well as in response to received messages.



The Interface Package Library (IPL) is a risk reduction technology providing an object-oriented suite of interface protocol packages which can be easily integrated with a Simulation Core package to create custom system configurations. IPL packages and the Cores are implemented using the Ada programming language ensuring high reliability and reusability.

Pull-down and context specific pop-up menus facilitate definition of the simulation environment which comprises realistic models of real world entities. Entity types include air, land, surface, and subsurface surveillance objects, unit platforms/radar sites, missiles (ballistic and non-ballistic) and EA/ES objects. Predefined world maps, user defined map areas, and digital terrain maps provide enhanced visualization. Extensive user-friendly controls allow operators to filter the tactical situation displays as well as both real-time and post-test data reduction, providing optimal data visibility for observation and analysis. Mobile TacSIM's scenario generation facility allows users to automatically capture all operator actions as a scenario. Scenario files are plain text and are easily modified with any text editor. Users retain full interactive control of Mobile TacSIM during execution of a scenario and may perform any mix of scenario driven and manually initiated events, providing real-time control of the simulation environment at all times.



Mobile TacSIM is configured as a man portable workstation supporting multiple radar and data link interfaces. The number of external interfaces supported by a single Mobile TacSIM is virtually unlimited. Since Mobile TacSIM has the same features as the full TacSIM system, it can be configured to participate in a TacSIM network simply by connecting it to the TacSIM LAN. In this configuration, Mobile TacSIM can take advantage of the distributed processing and operator controls of a full TacSIM network, while maintaining fully integrated situation awareness and data availability at each workstation.