SYSTEM ENHANCEMENT

Options

CUSTOMIZE YOUR TDL SYSTEM:
THREE KEYS TO SUCCESS

1. **Ensure Interoperability:** TCG’s up-to-date Military Standards-based enhancements for Link 16, Link11, JREAP, SIMPLE, SADL, and DIS reduce integration costs and ensure interoperability.

2. **Employ COTS Hardware:** Beyond link control, monitoring, and best-in-class simulation, TCG offers Terminal Housing Racks, External Time Reference kits, and Cockpit Situation Display options.

3. **Deploy Productivity Enhancement Tools:** 3D Viewers, Scenario Development Toolkits, DERG Viewers, and Line-of-Sight Visualizers are some of the many productivity tools offered.

TCG provides comprehensive solutions for tactical data link control, operations, training, testing, integration, & simulation. Our entire product line of GTS®, BOSS®, LinkPRO®, and ATR solutions can be enhanced and customized with multiple options to meet the needs of the 21st century Tactical Data Link (TDL) operator, trainer, tester, and warfighter.
MULTI-PROTOCOL OPTIONS

TCG offers Link 16 and Link 11 data link support for MIDS Platforms A, D, J, I, MIDS-JTRS, and Class II terminals. Additional protocols are available as options:

STANDARD INTERFACE FOR MULTIPLE PLATFORM LINK EVALUATION (SIMPLE)

The SIMPLE option implements the NATO Standardization Agreement (STANAG) 5602 Standard Interface. SIMPLE is primarily used for TDL interoperability testing for exchanging Link 11 and Link 16 messages over Ethernet.

SITUATIONAL AWARENESS DATA LINK (SADL)

The SADL option supports the transmission and reception of data over a SADL interface using the EPLRS radio with an embedded gateway. It can act as a forwarder or router with a Link 16 network.

DISTRIBUTED INTERACTIVE SIMULATION (DIS)

The DIS option implements the IEEE 1278.1-1995 or SISO-STD-002 protocol for the exchange of data between multiple Link 16 and DIS networks to support Live, Virtual, and Constructive (LVC) simulation and training. Entity State, Transmitter and Signal Protocol Data Units (PDU) are supported as are Broadcast, Multicast, and Unicast modes.

TACTICAL SITUATION FROM MULTIPLE VIEWPOINTS

COCKPIT SITUATION DISPLAY

Adding the Cockpit Situation Display to our standard Tactical Display enables ground personnel to view the tactical situation that F-15 Pilots and Weapons System Officers are seeing and gain further insight into the tactical situation.

3D VISUALIZATION

The 3D visualization option provides the ability to visualize the live or simulated environment from multiple perspectives. It enhances situational awareness, simulation debugging, and after action reviews.

Simplified Productivity Tools

LINE-OF-SIGHT CALCULATIONS

The dynamic Line of Sight (LOS) option provides visualization and calculation based on terrain data in DMED and DTED formats.

REAL-TIME/OFFLINE ANALYSIS

Display, monitor, record, filter, color, playback, and analyze all data link messages to and from the BOSS in real-time and offline in accordance with the Multi-TADIL DERM format.

REMOTE SCENARIO DEVELOPMENT

The BOSS Script Developer’s Toolkit (BSDT) allows for the creation of BOSS test scenarios in parallel with test execution and analysis. Multi-seat configurations are available.
GOING BEYOND LINE-OF-SIGHT

JREAP-A
The JREAP-A option enables a BOSS/GTS to communicate beyond line of sight on multiple Link 16 networks. Communicating over a Demand Assigned Multiple Access (DAMA) satellite connection, it can operate as a Network Controller, Alternate Network Controller, Network Participant, or Network Listener. AN/ARC-210, AN/PRC-117, and PSC-5 DAMA radios are currently supported.

JREAP-C
The IP-based beyond line of site transmission protocol for Link 16, known as JREAP-C, is the most requested optional interface for the BOSS/GTS. The option implements TCP/IP client, TCP/IP server, UDP unicast and UDP multicast.

DRIVING MULTI-TERMINAL INNOVATION

GROUND-TO-GROUND MIDS TERMINAL CONNECTIVITY typically requires airborne relays. These relays add to timeslot usage, delay, complexity, and the need for continuous airborne relay operation. While using JREAP can help, the Mil-Std-3011 is written for multi-network, not to extend the range of one common Link 16 network. To achieve full ground-based coverage without the use of airborne relays is the goal of Multi-MIDS. However adding MIDS terminals can result in coverage overlap, duplicate messages, and multi-path issues.

The BOSS/GTS with the Multi-MIDS options can solve these challenges. The BOSS/GTS can control multiple Link 16 terminals from a single operator station. These terminals can be local, within a few hundred feet, or can be at remote sites with Ethernet connectivity. The BOSS/GTS provides a simplified User Interface for the initialization, control, and monitoring of each terminal, thereby significantly reducing operator workload.

Up to 20 terminals can be controlled from a single BOSS/GTS.
The automatic message processing handles many of the complications that can occur when terminals are positioned within line of sight of each other, such as redundant message processing, addressed message routing to a single terminal, and separate geographic filters for each terminal.

OPERATIONS THE “BIG PICTURE”
When you are in an operational deployment, and you have questions, you need answers RIGHT NOW.
When you have a TCG system, you also have access to our trained JICO team for on-site support anywhere in the world. Our international team of operations specialists and data link trainers have decades of military tactical data link experience. Many of our support staff are trained JICOs. If you have operational, tactical, or technical questions they are ready with the answers.
HARDWARE OPTIONS

EXTERNAL TIME REFERENCE (ETR)
The ETR option implements the External Time Reference capability. The kit includes software, GPS antenna, cable, Trimble Resolution T GPS receiver, and pulse shaper/signal conditioner.

TERMINAL HOUSING CASE (THC)
A Terminal Housing Case is available in a transportable case or fixed cabinet configuration. The housing case provides all power, cooling, and cables necessary to operate a terminal (MIDS-LVT (1), (2), or (3)/FDL families). An optional UHF L-band antenna and any number of client workstations can also be included.

CLIENT WORKSTATION
Client workstations allow a user to remotely operate the BOSS/GTS. The client communicates to the server over Ethernet, so the user does not have to be co-located with the Link 16 terminal. Additional workstations may be added for multiple users at multiple locations.

COMPANY INFORMATION
TCG is the leading independent supplier of tactical data link software solutions for military communications systems. TCG’s comprehensive portfolio of TDL testing, training, simulation and battlefield operations solutions provides the warfighter proven multi-link communication capabilities to optimize performance and increase mission effectiveness.

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AFFORDABLE, LINK 16, LINK 11, JREAP, SIMPLE, SADL, AND DIS OPERATIONS, TRAINING, AND INTEGRATION FOR TODAY’S WARFIGHTER

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