JITC Strategic Partner Collaboration to Ensure Interoperability

AFCEA West 2025

Jan. 29 (9:45-10:45)

JITC Team

- Gordon Bradley, Technical Director
- Robin Murray, Chief Armed Services Division
- Capt. David N. Collins, Chief of Operations, Radio Test Facility
- Shawn Kelley, Chief Automations Branch

JITC Mission & Roles

Mission: JITC serves as the Department of Defense's (DoD) joint interoperability certifier, non-service Operational Test Agency (OTA), and developmental tester of Information Technology (IT) & National Security Systems (NSS) through continuous, risk-based test & evaluation (T&E) and certification services, tools, and environments to ensure joint warfighting IT capabilities are effective, suitable, interoperable, secure, and survivable to support global DoD requirements.

Vision: Experts in testing and certification, accelerating the Nation's IT dominance.

Joint Interoperability Certifier	Operational Test Agency	Developmental Test and Evaluation Agency	Warfighter and Coalition Interoperability Support
DoD's Information Technology (IT) & National Security Systems (NSS)	DISA & DoD Agency IT Capabilities	DoD & other Agency IT Capabilities	DoD Combatant Commands & Coalition Partner IT Capabilities

Services

Interoperability, Test, Evaluation, & Certification (IOP); Operational Test & Evaluation (OT&E); Developmental Test & Evaluation (DT&E); Compliance Test & Assessment; Standards Conformance Testing (SCT); T&E Scorecard; DoDIN Approved Products List (APL); Warfighter & Exercise Support; Integrated Cybersecurity T&E; Instrumentation & Automation;

Major Range & Test Facility Base

DoD, Federal government, private industry, and allies in support of command & control (C2), intelligence, and defense reform initiative

Testing Services

- IOP – JITC is DoD's sole Joint Interoperability Certifier

  - Certification of combat capabilities for acquisition decisions & Warfighter confidence IAW DoDI 8330.01

    - All IT/NSS with certified joint Net-Ready requirements
    - Addresses interoperability issues impacting operations; supports acquisition and fielding decisions
    - JITC Commander signatory

  - Joint Interoperability Certification of DoDIN Capabilities IAW DoDI 8100.04

    - Provides certified products for the DoD Information Network (DoDIN) APL
    - Complete cybersecurity and interoperability support

Testing Services (cont'd)

- OT&E – JITC is DoD's only Joint OTA
  - JITC plans, executes, and independently reports on the OT&E of IT Systems to determine they are operationally effective, suitable, and survivable
    - Effectiveness & Suitability is evaluated through testing with trained users and support staff to assess system capabilities within operationally realistic environments
    - Cyber Survivability is evaluated through Cooperative Vulnerability and Penetration Assessments and Adversarial Assessments within operational realistic environments

Testing Services (cont'd)

- DT&E – Developmental Test & Evaluation

  - Allows project managers to manage and reduce risks during development, verify product conformance/compliance with requirements, prepare for Operational Test and Evaluation (OT&E), and inform decision-makers throughout the program life cycle

  - Support for Traditional, Agile, and Development, Security, and Operations (DevSecOps); Unit Testing; Acceptance testing (User, System, and GOV); System Integration Testing (SIT); Functional/Performance Testing

  - Validating systems meet requirements, Key System Attributes (KSAs), & specifications

  - Verifies performance, conformance, and compliance

  - Cyber DT identifies issues related to resilience from cyber threats and facilitates early remediation

- Warfighter and Coalition Interoperability Support

  - JITC's support extends beyond DOD to COCOM's, regional partners, and allies.
  - Provides interoperability and cybersecurity T&E services
    - Coalition Test & Evaluation lab (CTEL)
    - Tactical Data Link (TDL)
  - Support to COCOMs via Exercise support
  - 1-800-let-jitc hotline

Agenda

- Today's briefing will discuss 'JITC Strategic Partner Collaboration to Ensure Interoperability' and present topics on:

  - Testing Support for Early Engagement
  - Interoperability
  - Standards Conformance
  - Test Instrumentation and Automation

JITC Testing Support for Early Engagement

Rapid acquisition programs focused on COCOM warfighting requirements

Pre-POR Initiatives

- Assessment of Pre-Program of Record (POR) Capabilities

  - Provide an early operational assessment of new capabilities and an accelerated means to deliver useful capabilities into the hands of our warfighters

  - Provide information to decision makers significantly farther to the left

  - Accelerate capability development for faster integration into a POR. Reduce test time and test cost when POR conducts joint interoperability testing

  - Assess pre-PORs and prototypes during joint exercises, COCOM exercises, and experimentation events

  - JITC delivered early operational assessment report that identified 50% of attempts to send Call For Fire messages to the Advanced Field Artillery Tactical Data System were unsuccessful

Pre-POR FY25 Exercise Support

- Chief Digital and Artificial Intelligence Office (CDAO) – Assessment of Common Operational Picture and Joint Fires Network capabilities

  - Global Information Dominance Experiments (GIDE) 12-15 – INDOPACOM
  - Valiant Shield 2025 – INDOPACOM
  - Project Convergence Capstone 5 (MCTSSA, MARFORPAC, USARPAC)

- OUSD (R&E) – Demonstration of Rapid Defense Experimentation Reserve (RDER) prototype technologies in joint environment

  - Balikatan 2025 – Philippines
  - Northern Edge 2025 – Alaska
  - T-Rex 25-1, T-Rex 25-2 - Indiana

Interoperability

JITC Support to Navy

Navy Efforts

- Link 22 Test Suite:

  - Link 22 Master Test Procedure (collaboration with NIWC-P)
  - Link 22 Training for Testers (available to NIWC-P and Partner Nations)
  - RF Test Suite (LMMT, TOD, SNC, LLC 7M, SPC, HF Radio, HF Antenna) in 2025
    - Support COMMEX with Link 22 Program Office (PEO C4I)

  - JITC Data Analysis Reporting Tool Suite (JDARTS) (shared with NIWC-P)

    - Receive, Parse, Analyze Link 22 Messages

  - JDARTS Link 22 usage in 2024:

    - USN LMMT during NATO testing
    - 9 Ships from 7 countries during RIMPAC 24

- IOP Certifications

  - CVN 78, LMMT, AMANPADS, T-AO, CTN, CMV-22, and P-8

LMMT – Link Monitoring and Management Tool
TOD – Time of Day
SNC – System Network Controller
LLC – Link Level COMSEC
SPC – Signal Processing Controller
COMMEX – Communications Exercise

CVN 78 – Future Aircraft Carrier (USS Gerald R. Ford)
AMANPADS – Advanced Man-Portable Air Defense System
T-AO – Fleet Replenishment Oiler
CTN – Composite Tracking Network
CMV – Cargo, Multi-mission, Vertical Takeoff and Landing
NIWC-P – Naval Information Warfare Center Pacific

Navy Efforts (cont'd)

- FY24/25 Exercises Supported:
  - Balikatan April/May 2024, Valiant Shield June 2024 in support of J-8, Trident Warrior/RIMPAC 2024. Balikatan 25, T-Rex 25, Gray Flag 25, Bold Quest 25, Northen Edge 25, Operation Highmast/Project Olympus 25

- MARFORPAC
  - DOD Test Resource Management Center (TRMC) Tasker to support CJADC2 Phase 1
  - Integrated Cloud Hybrid Edge-to-Enterprise Evaluation Test and Analysis Suites (CHEETAS) into INDOPACOM's All-Domain Network Integration and Verification Lab (ANVIL)
  - Resulted in approval to support future Link-16 and Variable Message Format (VMF) Combined Joint All Domain Command and Control (CJADC2) testing

Standards
Conformance

JITC Support Efforts

RF Standards Conformance Testing (SCT)

- Laboratories:

  - Very High Frequency /Ultra High Frequency Line of Sight (VULOS)
  - Ultra High Frequency Narrowband SATCOM
  - High Frequency

- Services:

  - Standard Conformance Testing
    - RF Radio/Terminal baseline testing repository comprised of JITC owned and collaborative agreements with Mission Partners to ensure consistent and repeatable testing

  - Radio Interoperability Assessment

    - Use of standards radio testing and test infrastructure baseline to ensure consistent and accurate testing evaluation across various customer systems
    - Interoperability Risk Mitigation
    - Tailor to Vendor/Program Office Requirements

VULOS Lab

- Service:

  - Ground, air, naval VULOS SCT; capable to test classified frequency hopping waveforms.

- Standards Actively Tested:

  - Tactical VHF Interoperability/Performance - MIL-STD-188-242
  - Tactical UHF Communications - MIL-STD-188-243
  - Single Channel Ground and Airborne Radio System (SINCGARS) - MIL-STD-188-241
  - HaveQuick I/II and Second Generation and Anti-Jam Tactical UHF Radio for NATO (SATURN) – Joint Information Engineering Organization (JIEO) 9120A / US and NATO Ed. 4

- Test Activity Trends:

  - 4 Simultaneous conformance tests; 2 Simultaneous radio Interoperability (IOP) assessments
  - 2-6 Conformance tests per year
  - 2-4 Radio IOP assessments per year
  - Average 1-2 tests concurrently

UHF SATCOM Lab

- Service:

    - CJCSI 6250.01G Mandates JITC Assessment / Certification for operational deployment
    - SATCOM Simulation toolset
    - Automated Waveform decoding toolset

- Standards Actively Tested:

    - Legacy DAMA - MIL-STD-188-181A/B, 182A, 183A
    - IW Phase 1 - MIL-STD-188-181C, 183B
    - IW Phase 2 - MIL-STD-188-181C, 182B, 183B
    - CIB – Integrated Broadcast Service (IBS) - MIL-STD-188-181C, 182B, 183B, 186A

- Test Activity Trends:

    - DAMA: 2 to 3 Concurrent Radio Tests
    - IW: 3 to 5 Concurrent Radio Tests
    - CIB: 1 Concurrent Radio Test

- Workload:
    - 20-25 conformance tests per year
    - Average 2-4 concurrently

RF Standards Policies

- DoDI 5000.02, Operation of the Defense Acquisition System

- DoDI 8330.01, Interoperability of IT, Including NSS

- DoDI 8310.01, Information Technology Standards in the DoD

- DODI 4630.09, Communication Waveform Management and Standardization

- CJCSI 6250.01G, Department of Defense Satellite Communications

- JITC Interoperability Process Guide

- JITCI 380-50-02, Interoperability and Standards Conformance T&E and Certification Instruction

- JITC Service Catalog

JITC Test Instrumentation and Automation
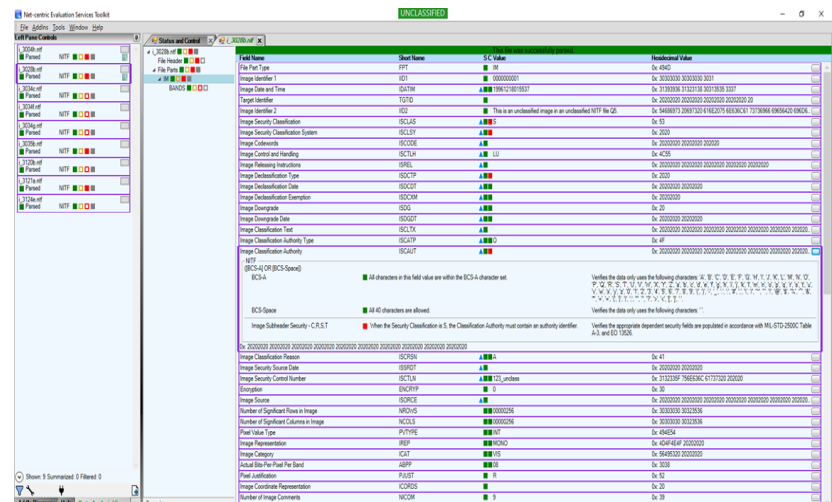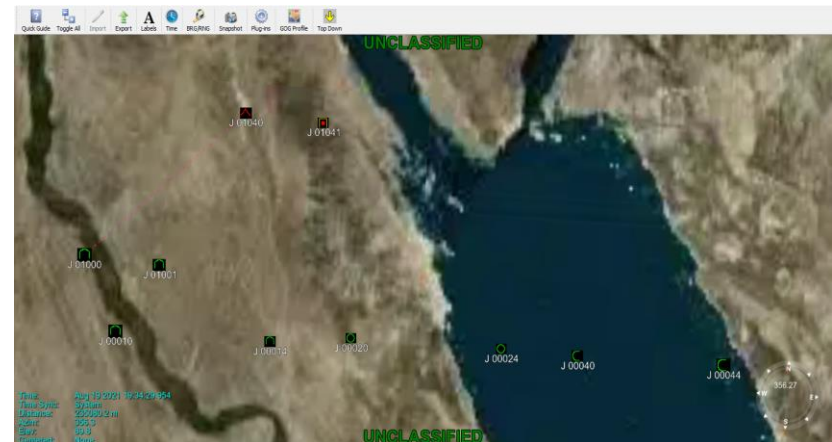
JITC Test Support Capabilities

Test Automation Tools

- JITC provides support and development of many cutting-edge tools/capabilities in support of JITC testing missions

- Capabilities Provided:

  - Data parsing
  - Ingestion
  - Logging
  - Validation
  - Visualization
  - Reports creation
  - Analysis
  - Storage
  - Others...

JANETT

Multi/All-Domain Mission Baseline Analyses (MAMBA) Toolkit

- MAMBA Toolkit - JITC is developing this All-Domain Test Range toolkit of data collection, generation, and analysis tools. These tools support the CJADC2 experimentation, testing, training continuum for all aspects of multi-domain operations. MAMBA is part of the TRMC Joint Mission Environment Test Capability (JMETC) effort. Primary MAMBA capabilities include the following with additional tools being piloted:

- JANETT – Joint Analysis Net-centric Evaluation Testing Toolkit - The JITC built and owned data parsing, collection, and analysis capability

- DGA – Data Generation and Analytics – Provides synthetically generated , operationally representative, and specifically modified data for meeting T&E needs

Formalizing a menu of enterprise GOTS capabilities supporting all-domain, continuous test, experimentation, and training
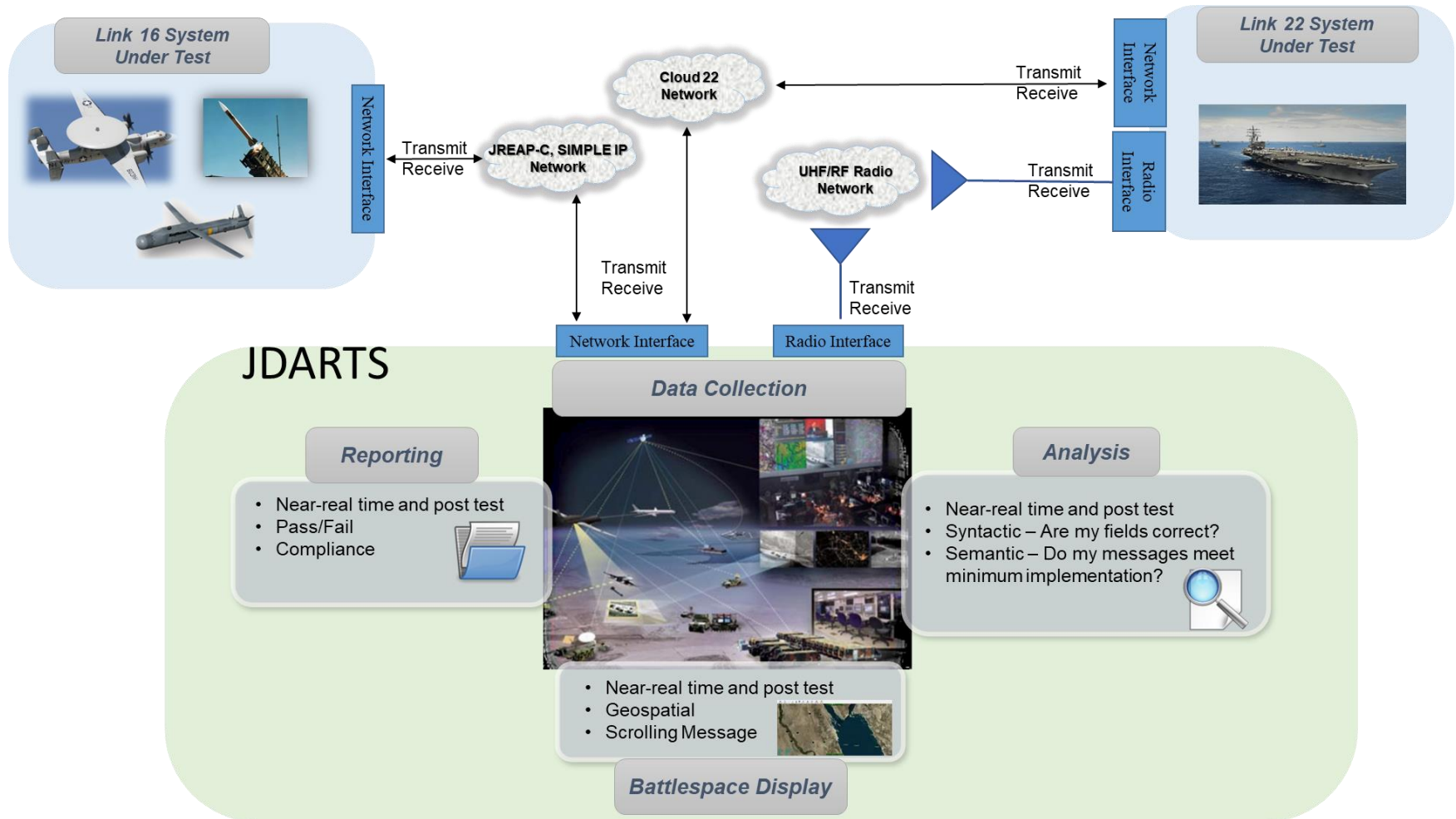
JITC Data Analysis Reporting Tool Suite

- Fills the U.S. capability gap to ensure conformance to NATO Standardization Agreement (STANAG) 5522/Military Standard (MIL-STD) 6022 Link 22

- Current Capability to collect, process, analyze, display, and report on Link 22 interoperability

  - Session Initiation Protocol for Instant Messaging and Presence Leveraging Extensions (SIMPLE) -22 capability during NATO tactical data link testing
  - High Frequency (HF) capability during Trident Warrior 24 and Rim of the Pacific (RIMPAC) 24
  - Link 22 Cloud capability during NATO tactical data link testing

- Future Capabilities

  - Transmit
  - Real-time Data Forwarding Analysis between Link 16 and Link 22
  - One-on-One Mission Thread transmit and receive analysis
  - Migration of other tools

JDARTS (Cont'd)

Link 16 System Under Test

Network Interface

Transmit Receive

JREAP-C, SIMPLE IP Network

Cloud 22 Network

UHF/RF Radio Network

Transmit Receive

Link 22 System Under Test

Network Interface

Transmit Receive

Radio Interface

Transmit Receive

Transmit Receive

Transmit Receive

Network Interface

Radio Interface

JDARTS

Data Collection

Reporting
- Near-real time and post test
- Pass/Fail
- Compliance

Analysis
- Near-real time and post test
- Syntactic – Are my fields correct?
- Semantic – Do my messages meet minimum implementation?

- Near-real time and post test
- Geospatial
- Scrolling Message

Battlespace Display

JITC provided the following USINDOPACOM Exercise Support during FY24:

- Collaboration with TRMC
  - Integration of JANETT with Cloud Hybrid Edge-to-Enterprise & Test and Analysis Suite (CHEETAS) in All-Domain Network Verification and Integration Lab (ANVIL)
  - First time demonstrating ingest of near real-time Link 16 data into CHEETAS
- In support of USINDOPACOM J8 FY24
  - Established Link 16 feeds
  - JANETT Data collection
  - Custom Reports
  - Dashboards
  - VIP Demonstrations
  - J8 Personnel Training

USINDOPACOM Exercise Support planned for FY25:

- In support of USINDOPACOM J8 FY25
  - Balikatan 2025, Forged Chisel 2025, Pacific Inferno 2025, Gray Flag 2025
  - JANETT Data collection (Link 16)
  - Custom Reports
  - Dashboards
  - VIP Demonstrations
  - J8 Personnel Training

- United States Air Force Warfighter Center for FY25
  - NEPTUNE HAWK 25
  - JANETT Data collection (Link 16)
  - Custom Reports
  - Dashboards
  - Training

Close Out

- JITC partner collaboration to support interoperability:

  - Pre-POR early engagement
  - Interoperability
  - Standards Conformance
  - Instrumentation and Automation

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