

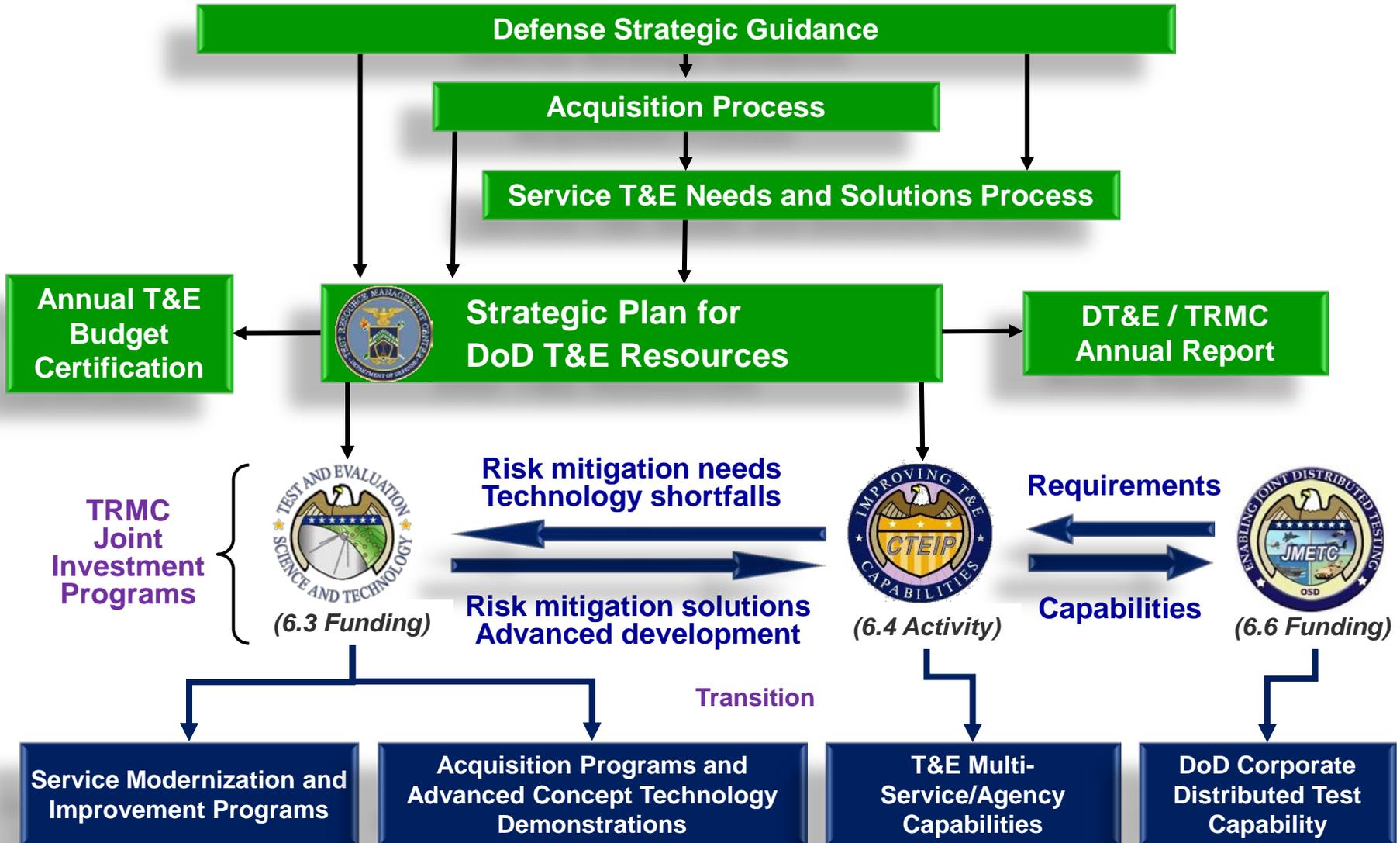
# Joint Mission Environment Test Capability (JMETC)



## Overview Briefing



# The TRMC “Blueprint”: Putting Test Capabilities on the DoD Map





# What is Distributed Testing?



A process, preferably persistent and continuous, for linking various geographically separated live, virtual, and constructive sites and capabilities together in a distributed environment, for use across the acquisition life cycle, to support and conduct the Test and Evaluation (T&E) of a system or systems-of-systems in Joint and Cyberspace environments.

**A new concept for many in the T&E  
Community**



# Why Consider Distributed Test?



- Is there a requirement to exchange data within your system or within a system-of-systems (SoS)?
- Do you have a requirement/need to address SoS interoperability issues early in the acquisition process?
- Do you have adequate numbers of systems under test for live testing?
- Do you have adequate numbers of, or the resources for, the “supporting cast” (supporting systems, C4ISR assets, etc.) for live testing?
- Do you have adequate threat types, fidelity, and density in realistic numbers at realistic ranges for live testing?



# The JMETC Mission



JMETC provides the ***persistent and robust infrastructure (network, integration software, tools, reuse repository)*** and ***technical expertise*** to integrate Live, Virtual, and Constructive systems for test and evaluation in Joint Systems-of-Systems and Cyber environments

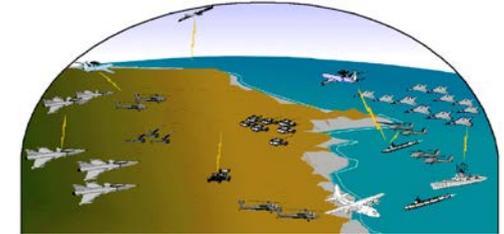


# JMETC

## Distributed Test Architecture

### Joint Operational Scenarios

Systems Under Test



Integrated Test Resources

Virtual Prototype

Hardware in the Loop

Installed Systems Test Facility

Range

Environment Generator

Threat Systems

TENA Standard Interface Definitions

TENA Common Middleware

JMETC Infrastructure on SDREN

Reuse Repository

Distributed Test Support Tools

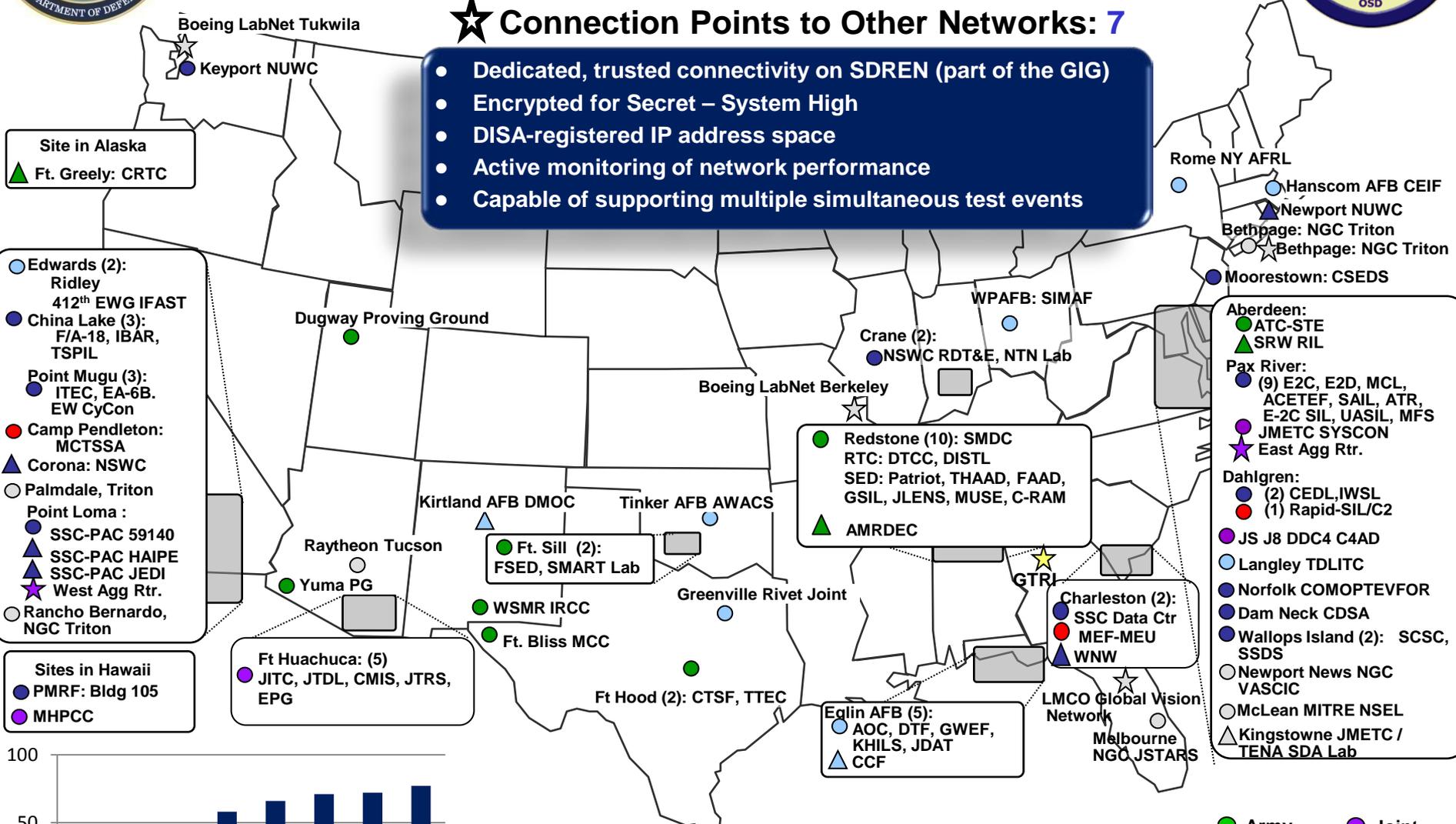
\* TENA: Test and Training Enabling Architecture



# JMETC Connectivity

- Functional Sites: 77
- △ New Sites Planned: 11
- ★ Connection Points to Other Networks: 7

- Dedicated, trusted connectivity on SDREN (part of the GIG)
- Encrypted for Secret – System High
- DISA-registered IP address space
- Active monitoring of network performance
- Capable of supporting multiple simultaneous test events



- Edwards (2): Ridley, 412<sup>th</sup> EWG IFAST
- China Lake (3): F/A-18, IBAR, TSPIL
- Point Mugu (3): ITEC, EA-6B, EW CyCon
- Camp Pendleton: MCTSSA
- ▲ Corona: NSWC
- Palmdale, Triton
- Point Loma : SSC-PAC 59140, SSC-PAC HAIFE, SSC-PAC JEDI, West Agg Rtr.
- Rancho Bernardo, NGC Triton

- Sites in Hawaii
- PMRF: Bldg 105
- MHPCC

- Ft Huachuca: (5) JITC, JTDL, CMIS, JTRS, EPG

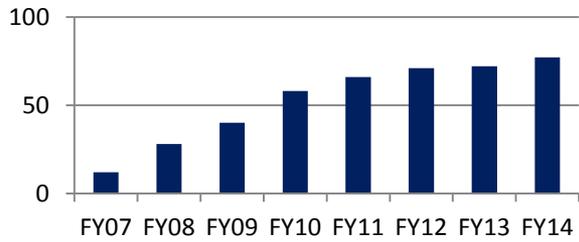
- Redstone (10): SMDC, RTC: DTCC, DISTL, SED: Patriot, THAAD, FAAD, GSIL, JLENS, MUSE, C-RAM
- ▲ AMRDEC

- Ft. Sill (2): FSED, SMART Lab
- WSMR IRCC
- Ft. Bliss MCC

- Eglin AFB (5): AOC, DTF, GWEF, KHILS, JDAT, CCF

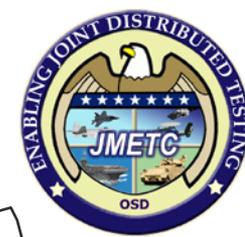
- Charleston (2): SSC Data Ctr, MEF-MEU, WNW

- Aberdeen: ● ATC-SITE, ▲ SRW RIL
- Pax River: ● (9) E2C, E2D, MCL, ACETEF, SAIL, ATR, E-2C SIL, UASIL, MFS, ● JMETC SYSCON, ★ East Agg Rtr.
- Dahlgren: ● (2) CEDL, IWSL, ● (1) Rapid-SIL/C2
- JS J8 DDC4 C4AD
- Langley TDLITC
- Norfolk COMOPTEVFOR
- Dam Neck CDSA
- Wallops Island (2): SCSC, SSDS
- Newport News NGC VASCIC
- McLean MITRE NSEL
- △ Kingstowne JMETC / TENA SDA Lab



As of 09 Jun 2014

- Army
- Air Force
- Navy
- Marines
- Joint
- Industry
- Academia



# Sampling of Available Assets

## Hardware-in-the-Loop (HWIL) Availability



**All Accessible via JMETC**

- Army
- Air Force
- Navy
- Marines
- Joint
- Industry



# The Future of Distributed Testing: Test-Fix-Test



Outline Distributed Testing and JMETC requirements in TEMP

Rapid Acquisition, Developmental Test, Operational Test, Interoperability Certification, Net-Ready Key Performance Parameters testing, Joint Mission Capability Portfolio testing



Pre-Systems Acquisition

Systems Acquisition  
(Engineering & manufacturing development, demonstration, LRIP & production)

Sustainment

Enables early verification that systems work stand alone and in a Joint Environment

Helps find problems early in acquisition – when they are less costly to fix

Creates robust environment for common prototype analysis

Provides subject matter expertise to integrate distributed facilities

JMETC enables continuous testing across the acquisition life cycle

JMETC reduces acquisition time and cost

By Providing

- Readily-available, persistent connectivity
- Standing network security agreements
- Common interoperability software for integrating test assets
- Certified test tools for distributed testing



# JMETC Benefits Acquisition Programs, Testers, & Evaluators



- Enables early verification that systems work in a Joint Environment
  - Test whether systems work well together
- Supports all aspects of testing
  - Rapid acquisition, Prototyping, Developmental Test, Operational Test, Interoperability Certification, Net-Ready Key Performance Parameters testing, Joint Mission Capability Portfolio testing
- Helps find problems early in acquisition – when they are less costly to fix
  - JMETC Customers have run as many as 20 independent test runs in a day and fixed interoperability issues overnight
- Reduces acquisition time and cost
  - Readily-available, persistent connectivity with standing network security agreements
  - Common integration software for linking sites
  - Accredited test tools for distributed testing
- Support to Acquisition Programs
  - Expertise to integrate distributed test facilities

**JMETC is identified in TEMPs as the distributed infrastructure to be used to conduct Joint testing**



# JMETC Network: Reusable Persistent Connectivity



- Reuse enables the customer to avoid:
  - Acquiring network equipment
  - Processing the security agreements
    - Obtaining Authority to Connect (ATC)
    - Obtaining Authority to Operate (ATO)
  - Generating agreements to connect with test partners
  - Testing the equipment installation
  - Testing the network configuration
- Reuse enables the customer to:
  - Test capabilities early and often
  - Execute Unscheduled / Unplanned testing whenever needed
  - Focus on the test rather than the network

**Customer time and dollars not spent on  
infrastructure by leveraging JMETC**



# JMETC Support Capabilities



# JMETC Event Support Services



- Pre-Test / Test Integration Emphasis:
  - Test Development/Design
    - Convert customer infrastructure requirements into JMETC-provided infrastructure solutions
  - Network Engineering
    - Designs, configures, establishes, and baselines connectivity solutions for test customers
  - IA Engineering
    - Ensures strong security posture for entire JMETC infrastructure
    - Works with JMETC sites directly to mitigate risks associated with IA and security
  - User Support
    - Ensures JMETC sites have the knowledge, skills, abilities, and site-specific examples to address test resource interoperability issues
    - Realizes test workarounds to event-specific interoperability issues
- Test Execution Emphasis:
  - JMETC SYSCON
    - Verifies infrastructure readiness and proactively troubleshoots problems as they are discovered
    - Partnership with NAVAIR AIC 5.4.1
  - Event Support
    - Provides direct support to customer test activities on an as-needed basis
- Post Test Emphasis:
  - Capture Lessons Learned and Infrastructure Gaps/Limitations



# JMETC Connectivity Services



- JMETC SYSCON
  - JMETC Personnel available to test, monitor, and troubleshoot network connectivity
  - Web-Based Help Desk and Phone Support
  - Assistance with site Ports, Protocols & Services management
  - Assistance with site device configuration
  - 9x5 and after hours support (as necessary)
- Inter-Site Collaboration
  - VoIP Call Manager
  - Chat Server (XMPP)
  - Secure File Transfer Protocol (SFTP) Server
  - Adobe Connect
- Information Assurance Compliance
  - Linux and Windows Patches (YUM and WSUS)
  - Anti-virus (McAfee, Symantec, TrendMicro)
  - Scan/STIG tools (SRR, Gold Disk, Retina, etc.)
- Registered IP Address Space
  - Must use routable IP Addresses
  - Request IP Addresses through the JMETC SYSCON
- JMETC Domain Name Service (DNS)
  - Primary DNS IP Address (S.S.47.251)
  - Domain: JMETC.SMIL.MIL

**Continue to expand services offered based on community requirements**



# Network Optimization & Proactive Troubleshooting



- Every JMETC Network equipment stack includes an Active Measurement Program (AMP) device
  - The AMP is used to collect Network Performance statistics
    - Throughput (daily)
    - Latency (minimum / mean over 24 hour interval)
    - Packet Loss (% over 24 hour interval)
  - Analysis is done each day to look for potential issues or to see if issues have been resolved
    - More extensive testing occurs to characterize any issues
    - Issues have been disparate but, except for a few cases, have been largely found to be within the local infrastructures
- JMETC can generate Unclassified Network Characterization reports (performance and analysis) for sites participating in specific events



# Network Troubleshooting Support Roles & Responsibilities



- Delineation of troubleshooting responsibility
  - SDREN NOC: Resourced to resolve WAN issues (SDP to SDP)
  - JMETC SYSCON: Resourced to diagnose and help resolve end-to-end infrastructure issues
    - Work with site(s) to isolate, identify and resolve issues
    - Coordinate with all necessary parties (local infrastructure, Red NOC, Black NOC)
- New Site and Pre-Event Testing
  - Performed before any new site is brought online
  - Performed with all participating sites prior to an event (as requested)
  - Ensure infrastructure performs as expected
    - End-to-end network performance
    - Firewall restrictions
    - Application testing



# Information Assurance



- Assist sites with SDREN Connection Approval Process (CAP)
  - Explain the process, timelines ,and requirements
  - Act as liaison to HPCMO Security Team on behalf of the site
  - Review documentation and provide course correction
- Assist sites through the CSA process
  - Active participation in pre-CSA process
  - De-confliction of schedules
  - On-site support (as necessary)
- Amend IA policy to address unique T&E mission requirements
  - Member of DoD Risk Management Framework (RMF) Technical Advisory Group (TAG)
  - Provide comments and feedback on upcoming policy revision
    - e.g., DoDD 8500.01, DoDI 8500.02, DoDI 8510.01, DISA Enclave Security Technical Implementation Guide (STIG), NIST SP 800-30, NIST SP 800-137
  - Developing RDT&E tailored IA Control list
    - Coordination and socialization with DISA, Services (Joint RDT&E WG), DoD CIO



# JMETC-TRMC Tools



- Cover all common infrastructure aspects required for both intra-facility and distributed testing
- Are available for use in Unclassified and Classified environments
  - Most available for Coalition partners today
- Cost nothing to download or use the tools
- Are downloadable from the JMETC Reuse Repository
  - (User Log-In Required)



# Supported Events



# Major FY13 Events



Customer	Event	Execution Dates	Onsite Support
Navy	Accelerated Mid-Term Interoperability Improvement Program (AMIIP)	Oct 2012 - Sep 2013	Yes
Joint	JITC Joint Interoperability Tests (JIT)	Oct 2012 - Sep 2013	Yes
Air Force	Air Force Systems Interoperability Test (AFSIT)	Oct 2012 - Sep 2013	-
Navy	MQ-4C TRITON	Oct 2012 - Sep 2013	Yes
Joint	Joint Track Manager Concept - Demonstration (JTMC-D)	Oct 2012 - Sep 2013	Yes
Joint	JIAMDO Correlation/De-correlation Interoperability Test (C/DIT) Coalition and U.S. only	Oct 2012 - Sep 2013	Multiple
Joint	JIAMDO Joint Tactical Air Picture (JTAP)	Oct 2012 - Sep 2013	Multiple
Air Force	AGILE Fire Phase VII	Jan 2013 - Mar 2013	Multiple
Joint	InterTEC Cyber Event (ICE) FY13	Oct 2012 - Feb 2013	Multiple
Navy	Virtual Rapid Prototyping Laboratory	Jan 2013 - Feb 2013	Yes
Joint	Red Flag	Jan 2013 - Mar 2013	Yes
Navy	Joint Distributed IRCM Ground test System(JDIGS)	Oct 2012 - Sep 2013	-
Air Force	AIM9x	Feb 2013	Yes
Marine Corp	G/ATOR	Feb 2013 - Apr 2013	Yes
Air Force	AGILE Fire Phase VIII	Jun 2013 - Sep 2013	Multiple



# Major FY14 Events



Customer	Event	Execution Dates	Onsite Support
Navy	Joint Distributed IRCM Ground test System(JDIGS)	Oct 2013	-
Navy	Accelerated Mid-Term Interoperability Improvement Program (AMIIP)	Ongoing	Yes
Joint	JITC Joint Interoperability Tests (JIT)	Ongoing	Yes
Air Force	Air Force Systems Interoperability Test (AFSIT)	Ongoing	-
Navy	MQ-4C TRITON	Ongoing	-
Navy	Virtual Rapid Prototyping Laboratory	Jan 2013 – Feb 2013	Yes
Air Force	AGILE Fire Phase VIII	Oct 2013 - Feb 2014	Multiple
Joint	Snakehead	Oct 2013 - Dec 2013	Yes
Navy	Advanced Anti-Radiation Guided Missile (AARGM)	Ongoing	Yes
Navy	Multi Site Training Capability Test (MSTCT)	Ongoing	-
DOT&E	Enterprise Cyber Range Environment (ECRE)	Dec 2013 - Jun 2014	Multiple
Joint	JIAMDO Correlation/De-correlation Interoperability Test (C/DIT) Coalition	Dec 2013 - Jan 2014	Multiple
Army	Apache Block 3 JIT Risk Reduction	Mar 2014 - Apr 2014	Yes
Navy	Integrated Warfare Center (IWC) LVC Demo	Apr 2014 - May 2014	Multiple
Air Force	F-35 Information Exchange Requirements (IERs) Test	Jun 2014	TBD



# Acquisition Programs & PEOs



## Actively Supporting

F-35 Data Link

Air Force Special Operations Command (AFSOC)

Joint Space Operations Center (JSpOC) Mission System (JMS)

TRITON

P-8A

Littoral Combat Ship (LCS)

Advanced Anti-Radiation Guided Missile (AARGM)

Integrated Defense Electronic Countermeasures (IDECM)

APACHE w/ L-16

Army Integrated Air & Missile Defense (AIAMD)

Joint Tactical Networking Center (JTNC)

Common Aviation C2 System (CAC2S)

Ground/Air Task Oriented Radar (G/ATOR)

Tactical Mobile (TacMobile)

Combat Operations Center (COC)

## Actively Engaged

Small Diameter Bomb (SDB) II

Three-Dimensional Long-Range Radar (3DELRR)

Consolidated Afloat Network Enterprise Services (CANES)

CVN-78

Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS)

Tomahawk

PM Unmanned Aircraft System (UAS)

Counter-RCIED Electronic Warfare (CREW)

Indirect Fire Protection Capability-Increment 2 (IFPC INC 2)

F-22



# Acquisition Programs/PEOs Supported via Distributed Test Venues



<u>Air-to-Ground Integrated Layer Exploration (AGILE) Fire</u>	<u>JITC Joint Interoperability Test (JIT)</u>	<u>Air Force System Interoperability Test (AFSIT)</u>
Advanced Aircraft Network Integration (AANI)	B-2B	E-3 AWACS (30/35)
Joint Air Ground Integration Cell (JAGIC)	PATRIOT Missile System	Battlespace Command and Control Center-Theater (BC3-T)
Net-Enabled Weapon (NEW)	E3 Airborne Warning and Control System (AWACS)	Joint Surveillance Target Attack Radar System (JSTARS)
Net Enabled Weapons Controller Interface Module, Situational Awareness Assessment, Analysis, and Archiving (NEWCIM SA)	Thermal High Altitude Area Defense (THAAD)	C-130 E/H Special Information System Senior Scout (SIS(SS))
Counter Rocket Artillery and Mortar (C-RAM)	E-2C	F-15 C/D
Selectable Effects Munition (SEM)	E-2C (Hawkeye 2000)	F-15 E
Dynamic Air Space Management (DASM)	Joint Surveillance Target Attack Radar System (JSTARS)	F-16
Advanced Field Artillery Tactical Data System (AFATDS) and Tactical Air Control Party – Close Air Support System (TACP – CASS)	Advanced MANPADS	F-22
Network Enabled Weapons Controller Interface Module, Situational Awareness (NEWCIM SA)	F-16 (Block 40/50)	B-2
Advanced Field Artillery Tactical Data System (AFATDS) and Tactical Air Control Party – Close Air Support System (TACP – CASS)	E/A-18G	B-1
Network Enabled Weapons Controller Interface Module, Situational Awareness (NEWCIM SA)	Ship Self Defense System (SSDS)	AC-130
Friendly Force Tracker (FFT)	Aegis	CV-22
Digitally Aided CAS (DACAS)	Aegis Ballistic Missile Defense System	HH-60
Global Positioning System/Inertial Navigation System (GPS/INS)	MH-60R	
Joint Tactical Air Picture (JTAP)	Rivet Joint Special Information Systems (SIS)	
Precision Fires Rockets and Missiles System (PFRMS)	Joint Tactical Ground Station (JTAGS)	
Small Diameter Bomb, Increment II (SDB II)	Forward Area Defense C2 (FAAD- C2)	
	Battle Control System – Fixed	
	Littoral Combat Ship (LCS)	
	Unmanned Aerial System (UAS)	
	Extended Range Multi-Purpose (ERMP)	
	Common Air Command and Control System (CAC2S)	



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Small Diameter Bomb, Increment II (SDB II)	Forward Area Defense C2 (FAAD- C2)	
	Battle Control System – Fixed	
	Littoral Combat Ship (LCS)	
	Unmanned Aerial System (UAS) Extended Range Multi-Purpose (ERMP)	
	Common Air Command and Control System (CAC2S)	
	F-15	



# MQ-4C Triton



JMETC POC: Mike Lilienthal

## Program: ACAT ID



## Program Status/Events:

- Triton sites are: NGC Bethpage, NGC Rancho Bernardo, NGC Palmdale, SSC PAC, SSC LANT, NGC Hollywood, NGC Camarillo, NGS Charleston, NAS Patuxent River
- JMETC supported Contractor Developmental Testing since 2010 – weekly bulk data transfers to Pax River
- NGC lead. June 2013 – IOC Pax Lead
- Interoperability and Cyber testing planned for FY 14 and beyond

## Program Description:

Triton is an integrated Systems of System that will provide multi-sensor persistent maritime ISR to the Maritime Patrol and Reconnaissance Force

**Program POC:** Jeff Sappington, Triton T&E Lead (NAVAIR) Pax River, MD

## Issues/Comments:

- P8 & Triton IPT teams met on Sept 4th to discuss areas of mutual interest related to JMETC and NCR
- JMETC and NCR agreed on two NCR risk reduction tests
- Triton is coordinating with PMW-160 before finalizing two more NCR test events (Nov 2013)

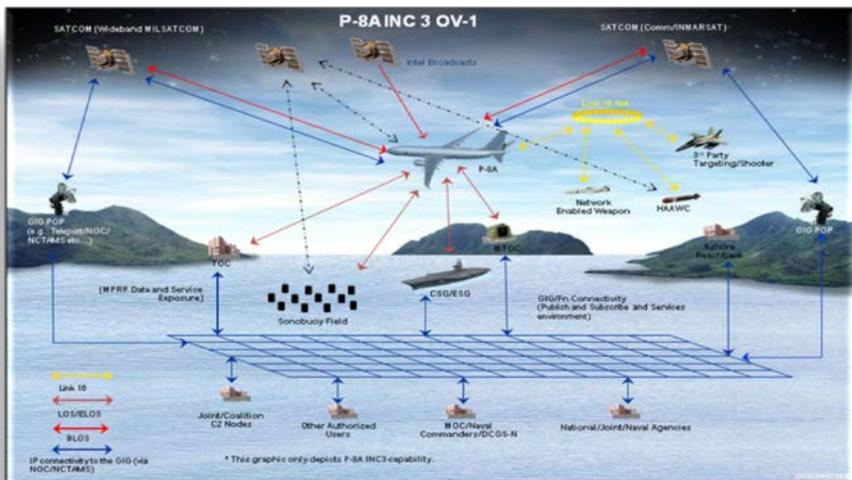


# P-8 Poseidon Multi-Mission Maritime Aircraft (Increment 3)

JMETC POC: Lilienthal



## Program: Pre-MDAP (ACAT ID)



## Program Status/Events:

- **P-8 possible sites:** SPAWAR C4I San Diego, Prototype Lab – SPAWAR Charleston, Developmental & Integration Lab – Pax River, Contractor Lab(s) (TBD), COMOPTEVFOR, JITC, Triton LBTSS
- **P-8A schedule:**
  - Land Based Integration Tests begin FY15
  - Possible risk reduction opportunity in FY14

## Program Description:

Increment 3 enables Net Ready capability, utilizes the Tactical Operations Center/Mobile Tactical Operations Center (TOC/MTOC) as a gateway to the Global Information Grid (GIG) and will demonstrate interoperability with off-board sensors such as MQ-4C Triton Broad Area Maritime Surveillance (BAMS) to enhance SUW and ISR mission areas.

**Program POC:** Paola Pringle, Engineering Lead, NAVAIR, Pt. Mugu, CA

## Issues/Comments:

*“Capabilities-Based Test and Evaluation (CBTE) will be conducted at the PAXSIL facility. It involves the other systems required to deliver the Warfighting capability. For these reasons, P-8A laboratories will require connectivity over existing infrastructure (i.e. JMTEC, SDREN, JIOR) for LVC T&E in a Joint SoS environment” (Quote from TEMP)*

- Participating in bi-weekly telecom
- Arranging for Sandia National Lab meeting with IPT
- Working agenda for NCR visit to NAS Pax River (Oct 2013)



# Joint Tactical Networking Center (JTNC)

JMETC POC: Steve Palmer



## Host Programs: ACAT 1D



## Program Status/Events:

- **Planned JRIL sites:** JTRS labs at SPAWAR Systems Command (SSC), San Diego CA; JTRS Lab at Ft. Huachuca, AZ; Aberdeen Proving Ground, MD; and SPAWAR Charleston, SC
- Leverages capabilities of Digital Fast Fourier Transform (DFFT) – digitized RF for transmission over IP (See Next Project Slide for details)

## Program Description

Formed from the deactivated Joint Tactical Radio System Program Executive Office (PEO) Technical Waveform managers for JTRS waveforms - New waveforms include Soldier Radio Waveform (SRW), Wide-Band Network Waveform (WNW) and Mobile User Object System (MUOS). JTNC is the parent organization of the Joint Reference Implementation Labs (JRIL) that will perform configuration management of the waveforms and supply the waveforms to vendor hardware developers.

**Program POC(s):** Dr. North (Technical Director), and Greg Adams (Test Lead)

## Issues/Comments:

- Deliberate, incremental steps required to bring JRIL Labs online in JMETC infrastructure
- Continuing to address bandwidth requirements, cost, and SDREN connection approval process at the JRIL sites
- Strong support from JTNC and MUOS program due to significant cost savings (tens of millions of dollars) in using JMETC (Letter of Commendation received for our cooperative efforts)

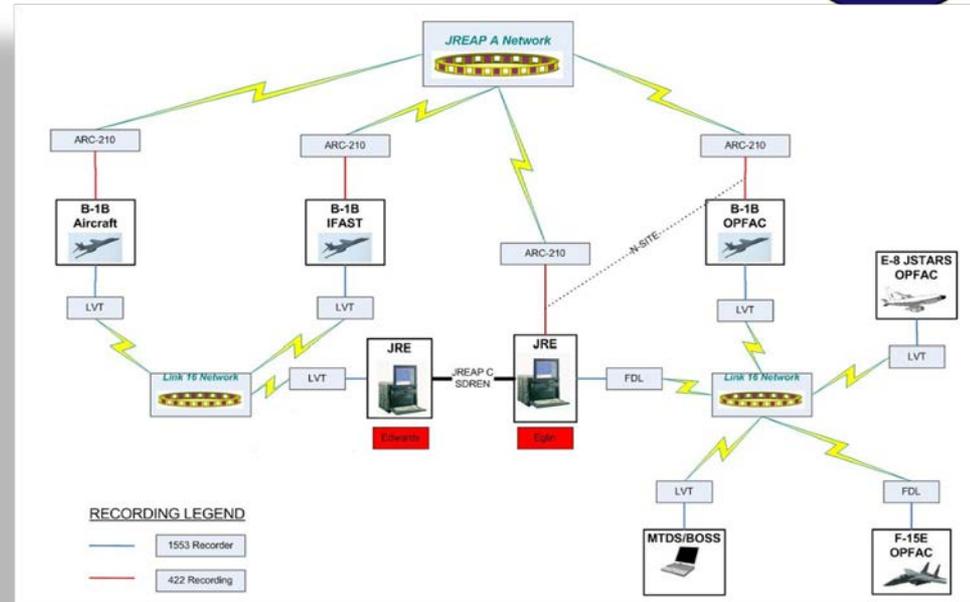


# JMETC Customer Testing Success



## B-1 Fully Integrated Data-Link (FIDL) Testing

- FIDL PM requested testing of fixes made on issues identified in previous distributed test
- JMETC connected 46 TS Datalinks Test Facility at Eglin AFB to Ridley Mission Control Center
- B-1 flew in the Edwards airspace and received Link 16 data from distributed sites
- Allowed for weather and maintenance delays without incurring additional test costs
- Follow-on from 2009 testing



## IMPACT

- Significant cost savings
- Tested Link 16 data exchange with several platforms using a single live fly asset
- Supported over 30 hours of live fly test time
- 2009 distributed testing showed system not ready

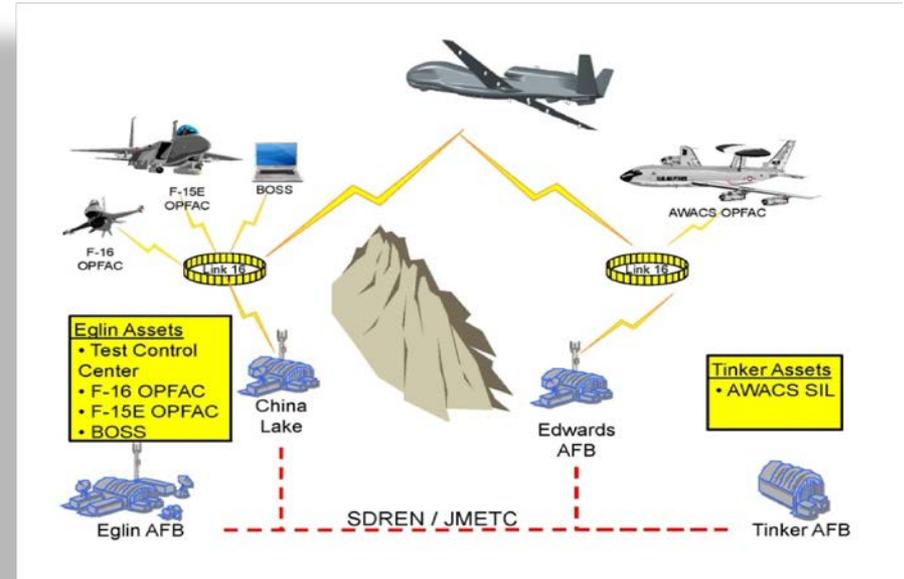


# JMETC Customer Testing Success



## Battlefield Airborne Communication Node (BACN) Joint Urgent Operational Need

- Integration of BACN payload onto multiple platforms for solution to urgent in-theater need :
  - Combat requirement for beyond line-of-sight comm
  - Relay, bridge, and range extension for ground forces and supporting aircraft
- Distributed Testing in Fall 2010 included Live-fly , DT, and Operational Utility Evaluation



## IMPACT

- Efficient integration of DT and OT
- Testing completed despite many of the required assets not being available on-site
- Distributed Testing saved “\$1.2M” (OTA)
- Urgent capability fielded-quickly!

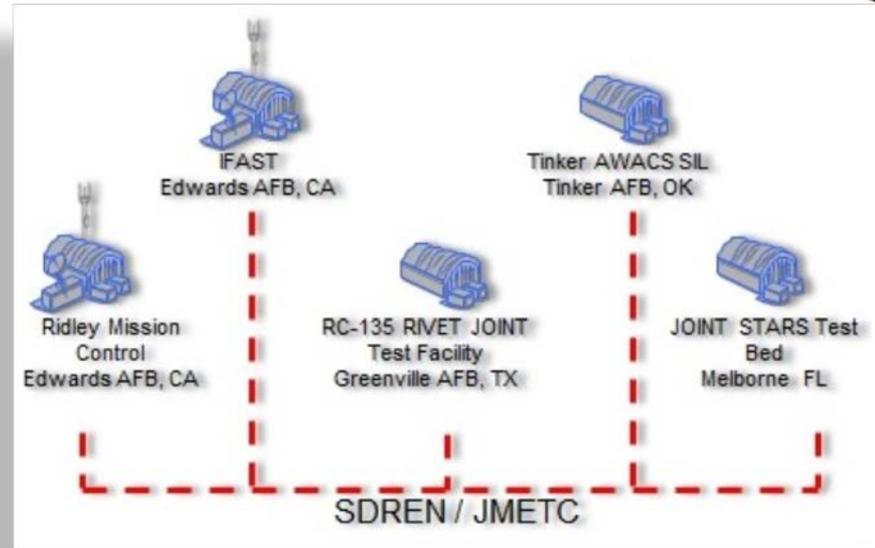


# JMETC Customer Testing Success



## B-52 Combat Network Communications Technology (CONNECT) Ground Interoperability Test

- Regression testing of software upgrades made based on previous tests
- Demonstrated JREAP interoperability TDL network messages between several weapon systems
- Connected HWIL facilities at Edwards AFB, Tinker AFB, and Melbourne, FL



## IMPACT

- Increased B-52 operational effectiveness
- Provided improved mission flexibility, increased situational awareness, new network-centric capabilities
- JMETC infrastructure supported rapid test-fix-test cycle of the CONNECT messaging capabilities



# JMETC Customer Testing Success



## Correlation / Decorrelation Interoperability Test (C/DIT) Coalition Testing

- A Joint Integrated Air and Missile Defense Organization (JIAMDO/J8) Joint Distributed Engineering Plant (JDEP) sponsored event
- Assess correlation/de-correlation interoperability of STANAG 5516 Ed 4 and Mil-Std 6016D for the E-2C and E-3D.
- Assess STANAG 5602 Ed 3 interoperability between the US & UK platforms using their SIMPLE protocol communication devices



## IMPACT

- Improved Coalition Interoperability
- US: HE2K (E2C), ESTEL, Pax River, MD
- UK: E3D (baseline UK04v10), RAF Waddington
- Demonstrated JMETC ability to connect to Coalition partners.



# JITC Sponsored Joint Interoperability Test (JIT)



## A Distributed Test Venue

- Sponsored by the Joint Interoperability Test Command (JITC)
- JITC conducts interoperability assessments, standards conformance, and interoperability certification testing of joint tactical data links in HWIL and operationally realistic environments to validate the implementation of approved standards in a Joint environment.
- Typically 4-5 events per year



## IMPACT

- Joint Interoperability
- FY 12 & 13 Systems Under Test: B-2B, PATRIOT, E3 AWACS, THAAD, E2 Hawkeye 2K, JSTARS, Advanced MANPADS, F-16 (40/50), E/A-18G, Aegis 5.3.9, Aegis 6.3.3, Aegis 7.1.3, AEGIS 7.1R.1, Aegis BMD 4.0.1, Aegis BMD 4.0.2, ROBE, MH-60R, Rivet Joint SIS (MSCS), JTAGS, FAAD C2, BCS-F, MCE, LCS-1, MCE, UAS ERMP

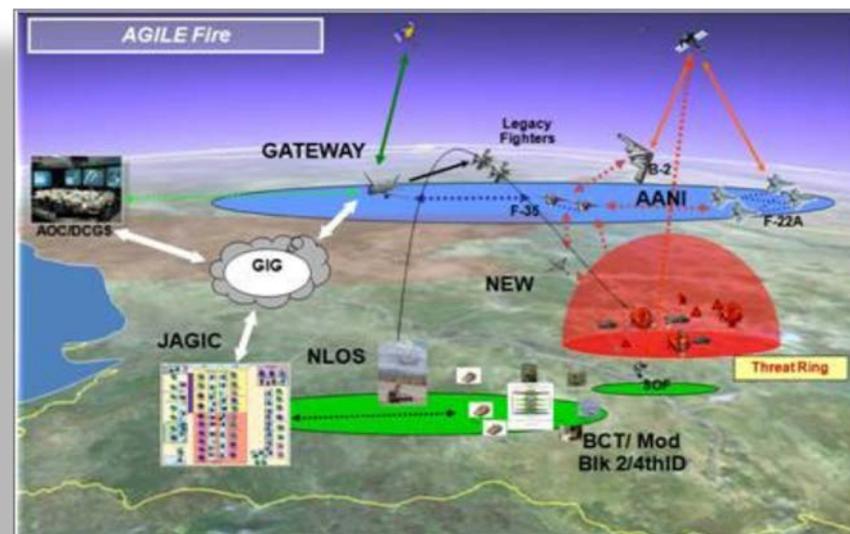


# SIMAF Sponsored Air-to-Ground Integrated Layer Exploration (AGILE)



## A Distributed Test Venue

- Sponsored by the Simulation and Analysis Facility (SIMAF), USAF Air Systems Command (WPAFB, OH)
- Distributed venue for selected initiatives to explore Joint airspace integration procedures and data exchange requirements within and between Air and Ground domains to execute Joint Fires
- Provides bi-annual robust integrated LVC environment for capturing data based on project requirements
- JMETC provides infrastructure and technical support for all AGILE events
  - Only JMETC sites are used
  - 12-15 sites each cycle
- AGILE VII: 25-29 March, 2013



## IMPACT

- T&E Efficiencies
- Since FY 12 & 13, programs Included: Network Enabled Weapon (SDB II); Common Aviation Command and Control System (CAC2S); Counter Rocket, Artillery, and Mortar (CRAM); Friendly Force Tracker (FFT); Joint Air-to-Ground Integration Cell (JAGIC)
- AGILE VI (Sept 2012) included 13 Initiatives and four operationally realistic mission threads



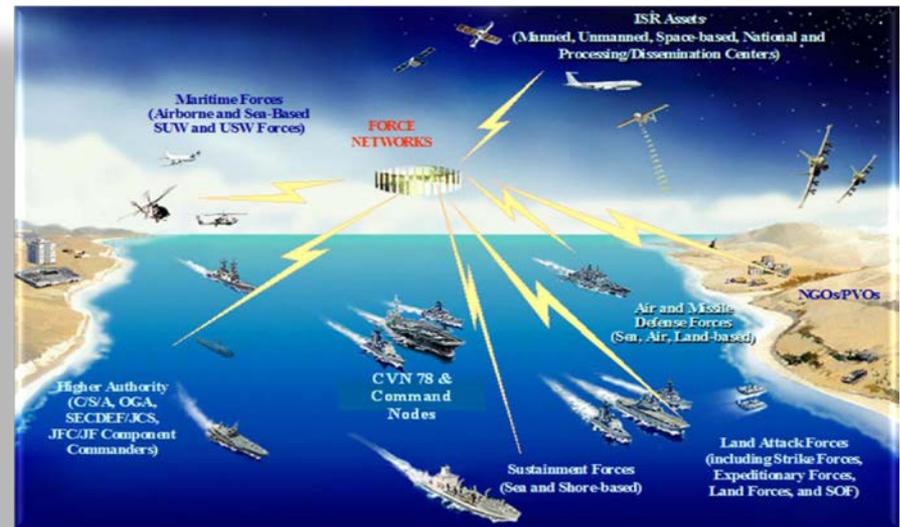
# JITC Sponsored Joint Interoperability Test (JIT)



## A Distributed Test Venue

FY 10 through FY 13 (On-going)

- Sponsored by the Joint Interoperability Test Command (JITC)
- JITC conducts interoperability assessments, standards conformance, and interoperability certification testing of joint tactical data links in HWIL and operationally realistic environments to validate the implementation of approved standards in a Joint environment.
- Supports NR-KPP Assessment
- Typically 5 events per year



## IMPACT

- Joint Interoperability could not be evaluated on this scale without a distributed LVC environment
- The Joint Tactical Data Link Community of Interest (COI) moved to JMETC in 2010 due to cost savings and increase flexibility



# SIMAF Sponsored

## Air-to-Ground Integrated Layer Exploration

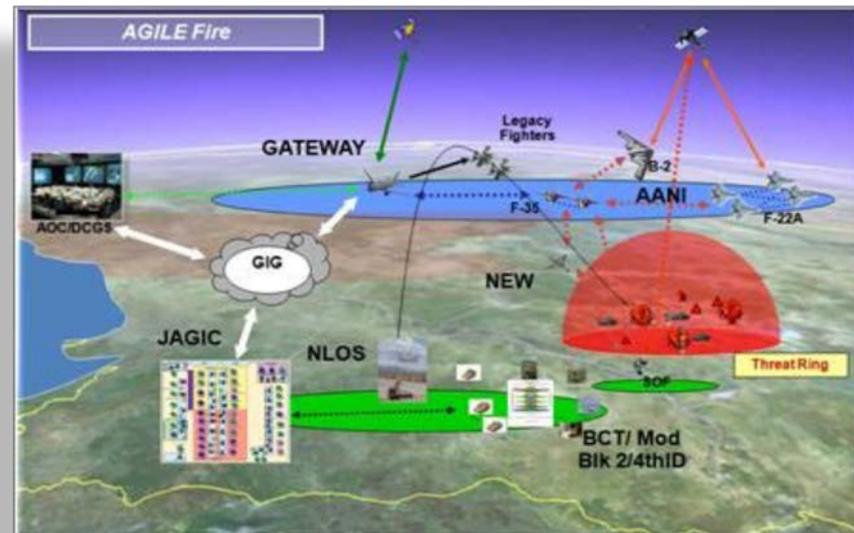
(AGILE)



### A Distributed Test Venue

FY 07 through FY 13 (On-going)

- Sponsored by the Simulation and Analysis Facility (SIMAF), USAF Air Systems Command (WPAFB, OH)
- Distributed venue for selected initiatives to explore Joint airspace integration procedures and data exchange requirements within and between Air and Ground domains to execute Joint Fires
- Provides bi-annual robust integrated LVC environment for capturing data based on project requirements
- Committed to JMETC for infrastructure and technical support for all AGILE events
  - Only JMETC sites are used
  - 12-15 sites each cycle
- AGILE VII (March 2013) included 10 Initiatives and 17 participating sites
- AGILE VIII: 11-13 Dec, 2013



### IMPACT

- T&E Efficiencies
  - Air Force Integrated Collaborative Environment (AF-ICE) network stood down to move to JMETC – Air Force could focus on planning while JMETC focused on the infrastructure support
- Programs and Initiatives routinely evaluate systems and C2 process in operationally realistic scenarios using Joint Mission Threads



# NAVSEA Sponsored Aegis “Accelerated Mid-Term Interoperability Improvement Project” (AMIIP)



- AMIIP is the implementation and testing of a set of critical and urgent Interoperability improvements between Aegis and cooperative platforms. Testing is conducted on Aegis, Ship Self Defense Ship (SSDS) and Hawkeye E2C Live and Hardware-In-the-Loop systems in a full Cooperative Engagement Capability (CEC) net in a Battle Group environment. JMETC supported distributed testing of systems is verified in follow-on live Sea Tests.
- 5 Sites, 9 Labs, 10 HWILs, Live Fly includes E-2C and F/A-18s
- Never achieved in Aegis Testing before JMETC
- Addresses 4 of the “Big 6” Fleet interoperability issues
  1. **Track ID / IFF**
  2. **Link Track Correlation**
  3. **TDL Filtering**
  4. **Link 16 / Link 11 Pairings**
  5. Digital Air Control
  6. IFF Mode 5 Fielding



## IMPACT

- Testing efficiency, reduced risk & minimized costs to find/fix problems
- True “Test-Build-Test” rapid turnaround
- Moved data to the analyst versus moving analyst to the data

AMIIP Lockheed Martin PM and TD:  
“Utilizing SDREN(JMETC) has provided an unprecedented environment for Strike Group like testing”; “Data analysis efforts following have proved very beneficial”



# JMETC Customer Testing Success



## AIM-9X Air to Air Missile Captive Carry Tests (On-going)

- Capability to remotely observe live seeker head video and real-time position of the test aircraft presented in a 'gods-eye' view of the China Lake Range
- Remotely monitor live aircraft communications between the test aircraft and China Lake Range Control
- JMETC connects Naval Air Warfare Center Weapons Division China Lake, CA Open Air Range to the COMOPTEVFOR Norfolk, VA via the Integrated Battlespace Arena (IBAR)



## IMPACT

- Increased capability for Operational Testers to observe more DT & OT test flights ( 20 captive carry tests and 10 live fire tests)
- Reduced COMOPTEVFOR's OTA's test observation time from 3 days (including travel) to actual range test time
- Utilized existing JMETC infrastructure, IA and engineering expertise in coordination with Navy MRTFB facility to deliver capability with no additional cost to Operational Testers



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# Questions?

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