Joint Mission Environment Test Capability (JMETC)

Mr. Bruce Bailey

Principal Deputy PM

Joint Mission Environment Test Capability

Test Resource Management Center

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The JMETC Mission

JMETC provides the DoD T&E Community the resident distributed test *expertise* and the persistent modern *network infrastructure* needed for the connection and use of distributed live, virtual, and constructive resources to augment the DT&E and OT&E of joint systems and systems-of-system.

JMETC Distributed Test Infrastructure Product Lines

- **Persistent connectivity**
- **Middleware**
- **Standard interface definitions and software algorithms**
- **Distributed test support tools**
- **Data management solutions**
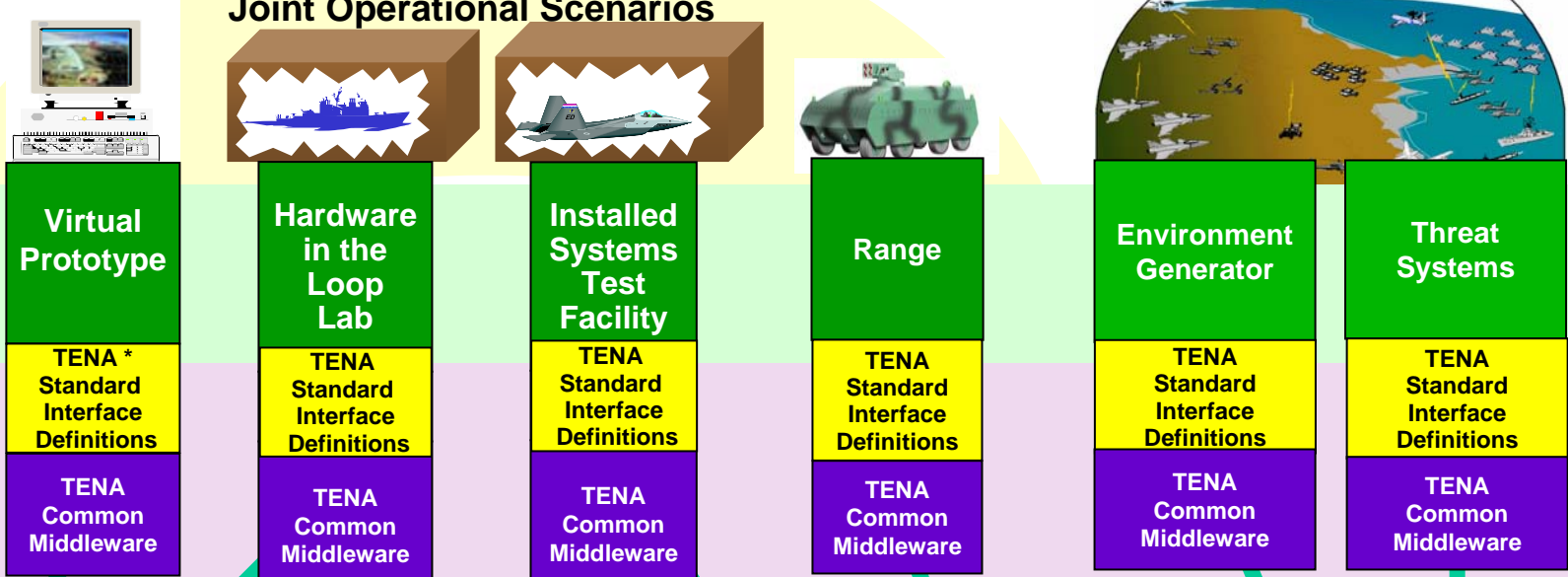- **Reuse repository**

JMETC Enables Distributed Testing

Joint Operational Scenarios

Systems Under Test

Integrated Test Resources

Virtual Prototype	Hardware in the Loop Lab	Installed Systems Test Facility	Range	Environment Generator	Threat Systems
TENA * Standard Interface Definitions	**TENA Standard Interface Definitions**	**TENA Standard Interface Definitions**	**TENA Standard Interface Definitions**	**TENA Standard Interface Definitions**	**TENA Standard Interface Definitions**
TENA Common Middleware	**TENA Common Middleware**	**TENA Common Middleware**	**TENA Common Middleware**	**TENA Common Middleware**	**TENA Common Middleware**

JMETC VPN on SDREN

Reuse Repository

JMETC Infrastructure

Distributed Test Support Tools

Data Management Solutions

Customer Support

* TENA: Test and Training Enabling Architecture

JMETC…
1. Reduces Technical Risk   2. Saves Time
3. Reduces Costs

- **People:** Experienced and highly skilled expertise forward deployed for distributed test planning and operations

- **Network:** Modern, tested, and reliable network capability already in place

- **Practices:** Integration and interoperability of test resources is proven practice *plus* a quarterly User's Group to capture technical requirements

- **Data Exchange:** Methodologies and solutions have already been tested, proven, and put in practice

- **R&D + S&T:** JMETC actively captures customer needs and requirements on a continuous basis and programs basic and applied research projects to improve distributed test capabilities for the Department

- **Lessons Learned:** JMETC is the T&E Communities' enterprise-level focal point for collecting and maintaining "lessons learned" as well as implementing resource "reuse" for improving the DoD's distributed test capability

- **Tools:** JMETC maintains a comprehensive suite of distributed test tools…in fact, the same tools used by the Joint Interoperability Test Command (JITC) for net-ready KPP "interoperability" certification"

JMETC Leadership & Governance

JMETC Chain of Command

Honorable John Young
USD (AT&L)

↕

Dr. John B. Foulkes
Director, Test Resource Management Center (TRMC)

Vacant
Principle Deputy, TRMC
Deputy Director, JIPP

↕

Chip Ferguson
JMETC Program Manager

↕

George Rumford
Senior Technical Advisor

JMETC Governance

Testing in a Joint Environment Roadmap Senior Steering Group

↔ connects to Dr. John B. Foulkes / Vacant box

- **Senior DoD Leaders**
- **Charter signed 26 Oct 07**

JMETC Advisory Group

↔ connects to Chip Ferguson box

- **Service/Agency reps**
- **Regularly held meetings to discuss/review plans, common issues, needed studies, etc.**

JMETC Users Group

↔ connects to George Rumford box
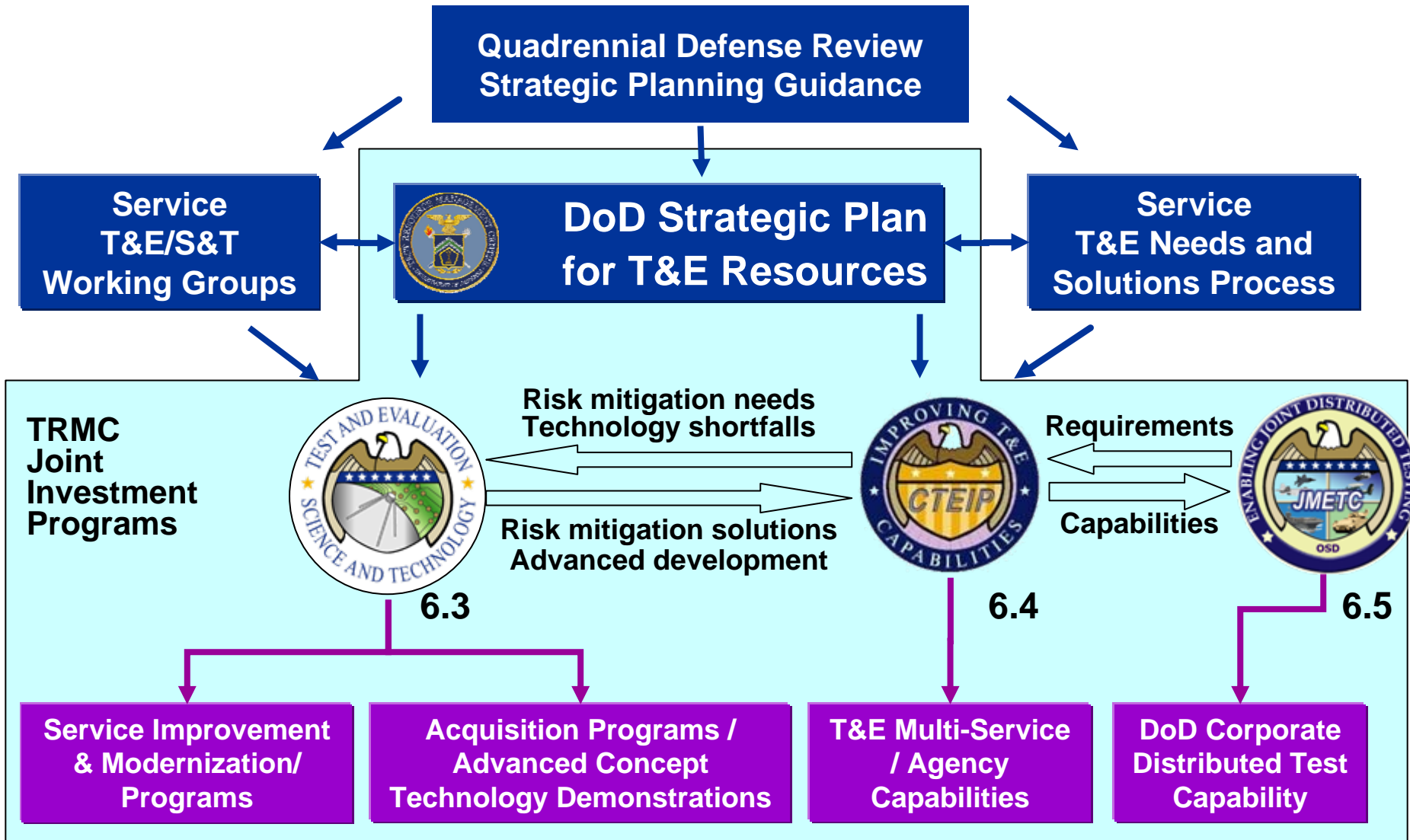
- **Technical representatives of customers and test resource owners**
- **Six meetings held to date**
- **265 participants at last meeting**

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Relationship within TRMC
Synergy through Aligned Investment

Quadrennial Defense Review
Strategic Planning Guidance

Service T&E/S&T Working Groups

DoD Strategic Plan for T&E Resources

Service T&E Needs and Solutions Process

TRMC Joint Investment Programs

Risk mitigation needs
Technology shortfalls

Risk mitigation solutions
Advanced development

Requirements

Capabilities

6.3

6.4

6.5

Service Improvement & Modernization/ Programs

Acquisition Programs / Advanced Concept Technology Demonstrations

T&E Multi-Service / Agency Capabilities

DoD Corporate Distributed Test Capability

TRMC Investment Programs Overview

T&E/S&T

- Established in FY2002
- Develops technologies required to test future warfighting capabilities
- 6.3 RDT&E funds
- ~$95M / year
- 7 current focus areas
  - Directed Energy
  - Hypersonics
  - Netcentric Systems
  - Unmanned Systems
  - Multi-Spectral Sensors
  - Non-intrusive Instruments
  - Spectrum Efficiencies

CTEIP

- Established in FY1991
- Develops or improves test capabilities that have multi-Service utility
- 6.4 RDT&E funds
- ~$140M / year
- 52 current projects
  - 27 projects developing core Joint capabilities
    - 2 projects improving interoperability test cap.
- 9 projects improving threat representations used in testing
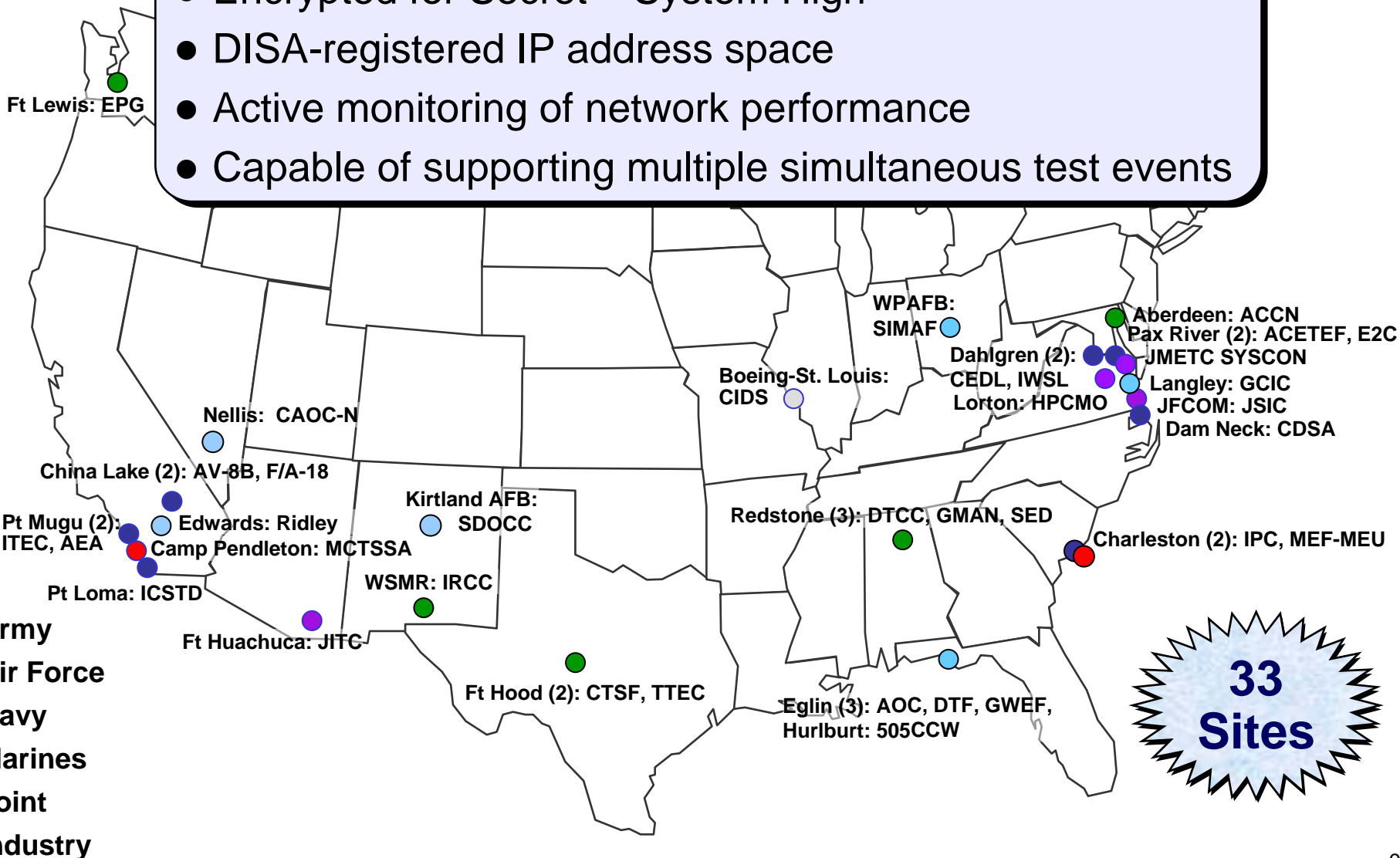- 16 projects addressing near-term OT shortfalls

JMETC

- Established in FY2007
- Provides corporate infrastructure for distributed Joint testing
- 6.5 RDT&E funds
- ~$10M / year
- 33 current sites
  - Expanding to 42 sites
- Maintains
  - Network connections
  - Security agreements
  - Integration software
  - Interface definitions
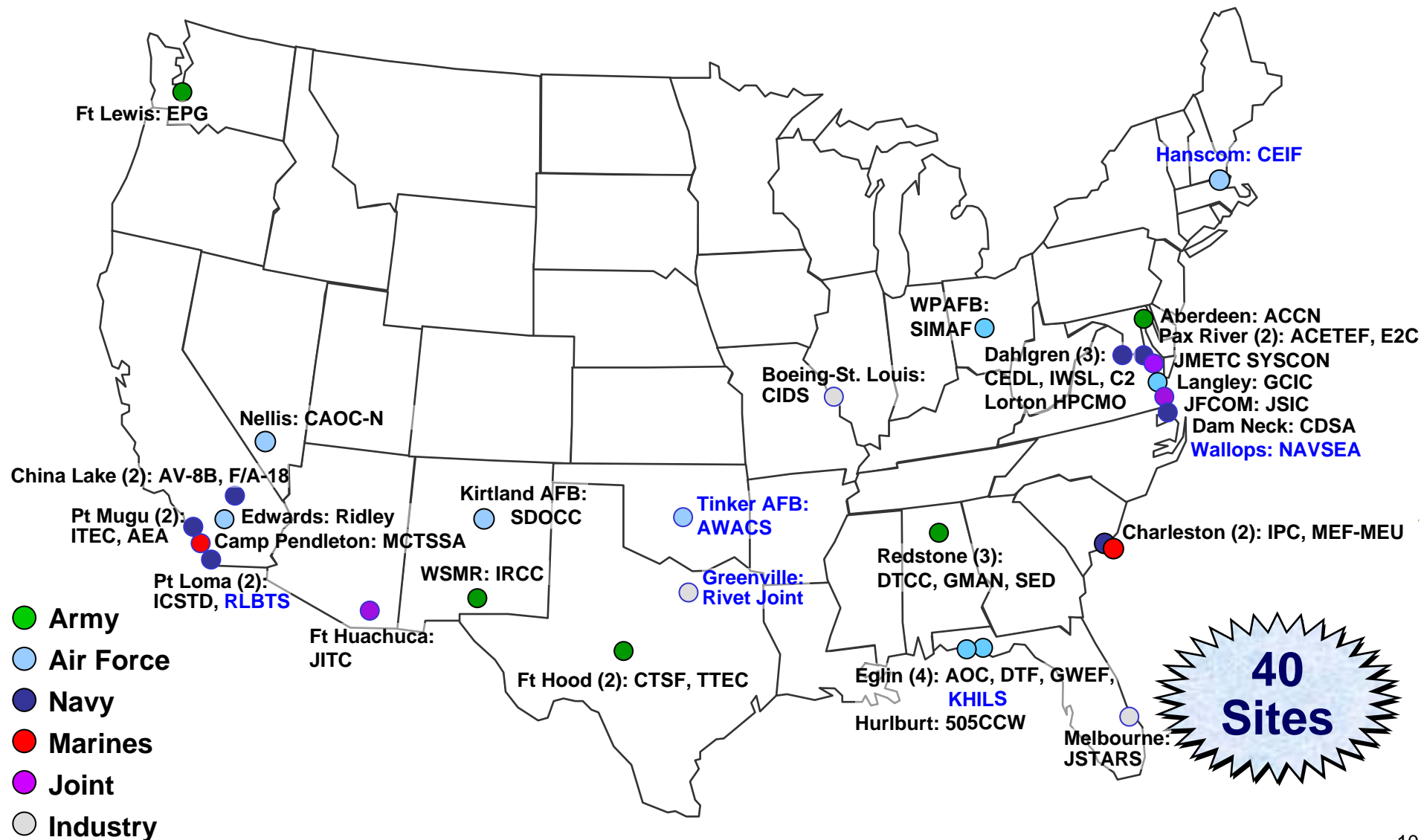 - Distributed test tools
  - Reuse repository

Current JMETC Connectivity

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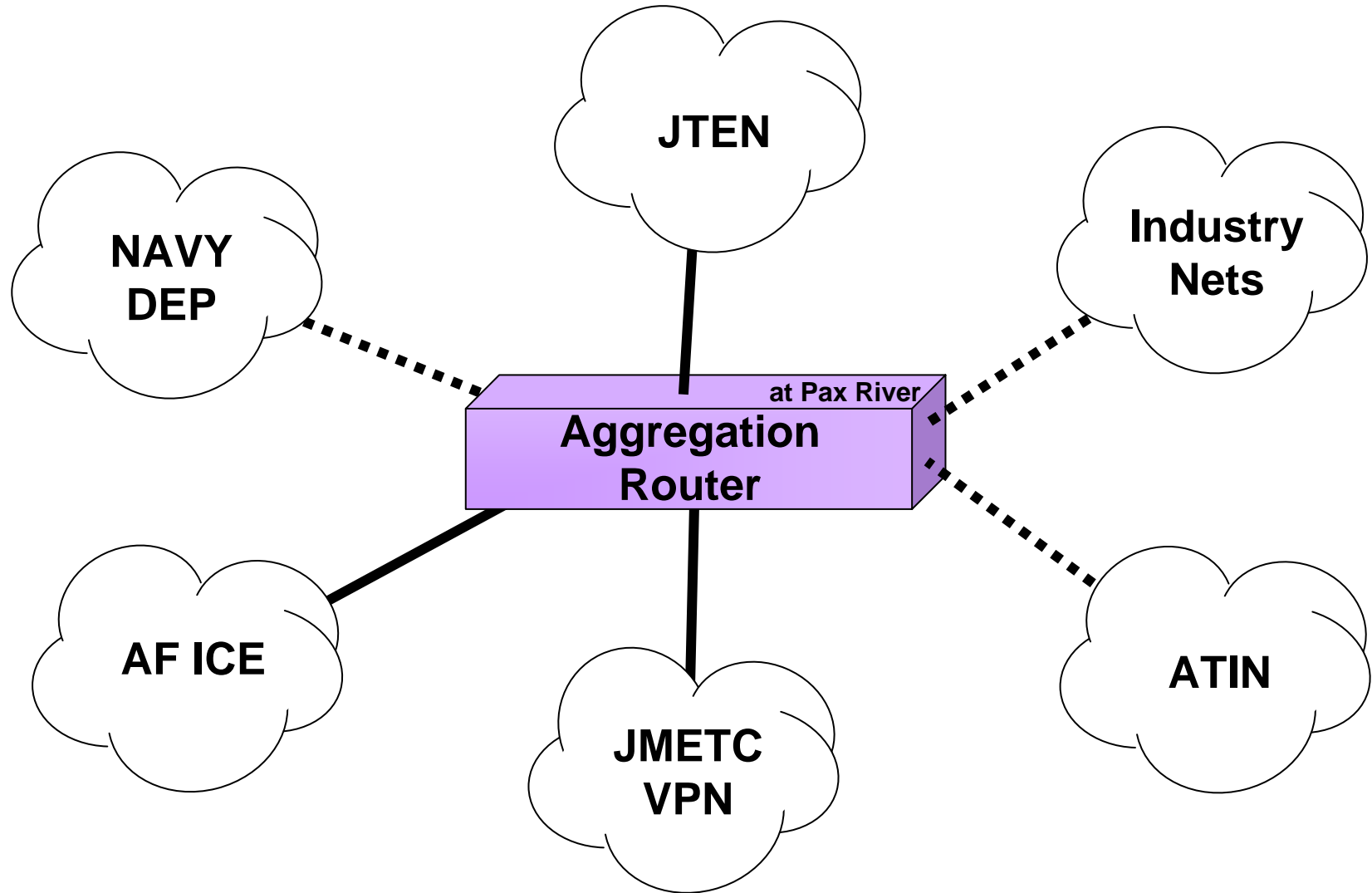- Capable of supporting multiple simultaneous test events

Ft Lewis: EPG

WPAFB: SIMAF

Aberdeen: ACCN
Pax River (2): ACETEF, E2C
Dahlgren (2): CEDL, IWSL — JMETC SYSCON
Lorton: HPCMO
Langley: GCIC
JFCOM: JSIC
Dam Neck: CDSA

Boeing-St. Louis: CIDS

Nellis: CAOC-N

China Lake (2): AV-8B, F/A-18

Kirtland AFB: SDOCC

Redstone (3): DTCC, GMAN, SED

Pt Mugu (2): ITEC, AEA
Edwards: Ridley
Camp Pendleton: MCTSSA

Charleston (2): IPC, MEF-MEU

Pt Loma: ICSTD

WSMR: IRCC

Ft Huachuca: JITC

Ft Hood (2): CTSF, TTEC

Eglin (3): AOC, DTF, GWEF,
Hurlburt: 505CCW

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

33 Sites

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Planned JMETC Connectivity

Ft Lewis: EPG

Hanscom: CEIF

WPAFB: SIMAF

Aberdeen: ACCN
Pax River (2): ACETEF, E2C
JMETC SYSCON
Langley: GCIC
JFCOM: JSIC
Dam Neck: CDSA
Wallops: NAVSEA

Dahlgren (3):
CEDL, IWSL, C2
Lorton HPCMO

Boeing-St. Louis: CIDS

Nellis: CAOC-N

China Lake (2): AV-8B, F/A-18

Kirtland AFB: SDOCC

Tinker AFB: AWACS

Pt Mugu (2): ITEC, AEA

Edwards: Ridley

Camp Pendleton: MCTSSA

Charleston (2): IPC, MEF-MEU

Redstone (3): DTCC, GMAN, SED

Pt Loma (2): ICSTD, RLBTS

WSMR: IRCC

Greenville: Rivet Joint

Ft Huachuca: JITC

Ft Hood (2): CTSF, TTEC

Eglin (4): AOC, DTF, GWEF, KHILS

Hurlburt: 505CCW

Melbourne: JSTARS

Legend

- 🟢 **Army**
- 🔵 **Air Force**
- 🔵 **Navy**
- 🔴 **Marines**
- 🟣 **Joint**
- ⚪ **Industry**

40 Sites

Network Aggregation
Bridging Networks

JTEN

NAVY DEP

Industry Nets

at Pax River

Aggregation Router

AF ICE

JMETC VPN

ATIN

JMETC FY08 Customers

- Future Combat System (FCS) Combined Test Office
- Joint T&E Methodology (JTEM) JT&E
- InterTEC
- Single Integrated Air Picture (SIAP) JPO
- Air Force Datalink Studies

JMETC FY08 Accomplishments

- Expanded network from 8 sites to 32 sites
- Supported multiple tests simultaneously
- Realized reuse from persistent agreements
  - 51 times avoided the cost of re-doing site connection paperwork
- Characterized JMETC network performance (latency, throughput, etc.) in detail
- Enhanced the JMETC toolbox with test tools for OTH-G and USMTF message protocols

Insight Gained by the DoD

- Timeliness of C2 processes
  - Joint Fires
  - Joint Close Air Support
  - Combat ID
- Airspace deconfliction studies
- Battlespace management between Army and Air Force
- Link-16 implementation differences between Navy and Air Force
- Improvements to Combat Airborne Networking gained from using FAST over Link-16
- Operational Test Assessment of the Capability Test Methodology
- Suitability of FCS test resources to support FCS Milestone C decision
- Suitability of test strategy for SIAP integration software

FY09 JMETC Support Schedule

Customer	Event	Dates
Air Force	Persistent Fire 01	October 08 – December 09
OSD/TRMC	CTEIP TENA R6	October 08 – February 09
Air Force	JEFX 09-02	October 08 – February 09
Air Force	JEFX 09-03	February 09 – April 09
Joint Program	Single Integrated Air Picture (SIAP)	October 08 – June 09
OSD/TRMC	InterTEC Tools Development	FY09 – Periodic
Navy	Joint Surface Warfare JCTD	October 08 – February 09

Discussions for possible future teaming:

Gerald R. Ford Class (CVN-21)   Joint Strike Fighter (JSF)

Multi-mission Maritime Aircraft (MMA)   Net-Enabled Command Capability

Future Combat System

Example:
Single Integrated Air Picture

Single Integrated Air Picture (SIAP)

- **Real time, fire control quality**
- **Exploit the full range of our weapons**
- **Reduce the risk of fratricide and counter emerging threats**

Special Interest Program

Congressional Item of Interest

AWACS:
2 Known Friendly
2 Known Hostile
1 Known Cruise Missile

E-2:
2 Known Friendly
2 Known Hostile
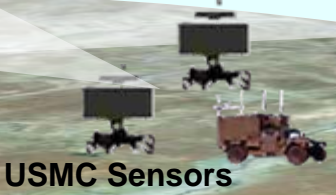1 Known Cruise Missile

JLENS

AEGIS:
2 Known Friendly
2 Known Hostile
1 Known Cruise Missile

HOSTILE

CVN (SSDS)

Patriot Launcher

USMC Sensors

CAC2S:
2 Known Friendly
2 Known Hostile
1 Known Cruise Missile
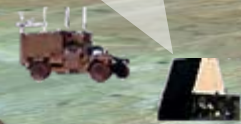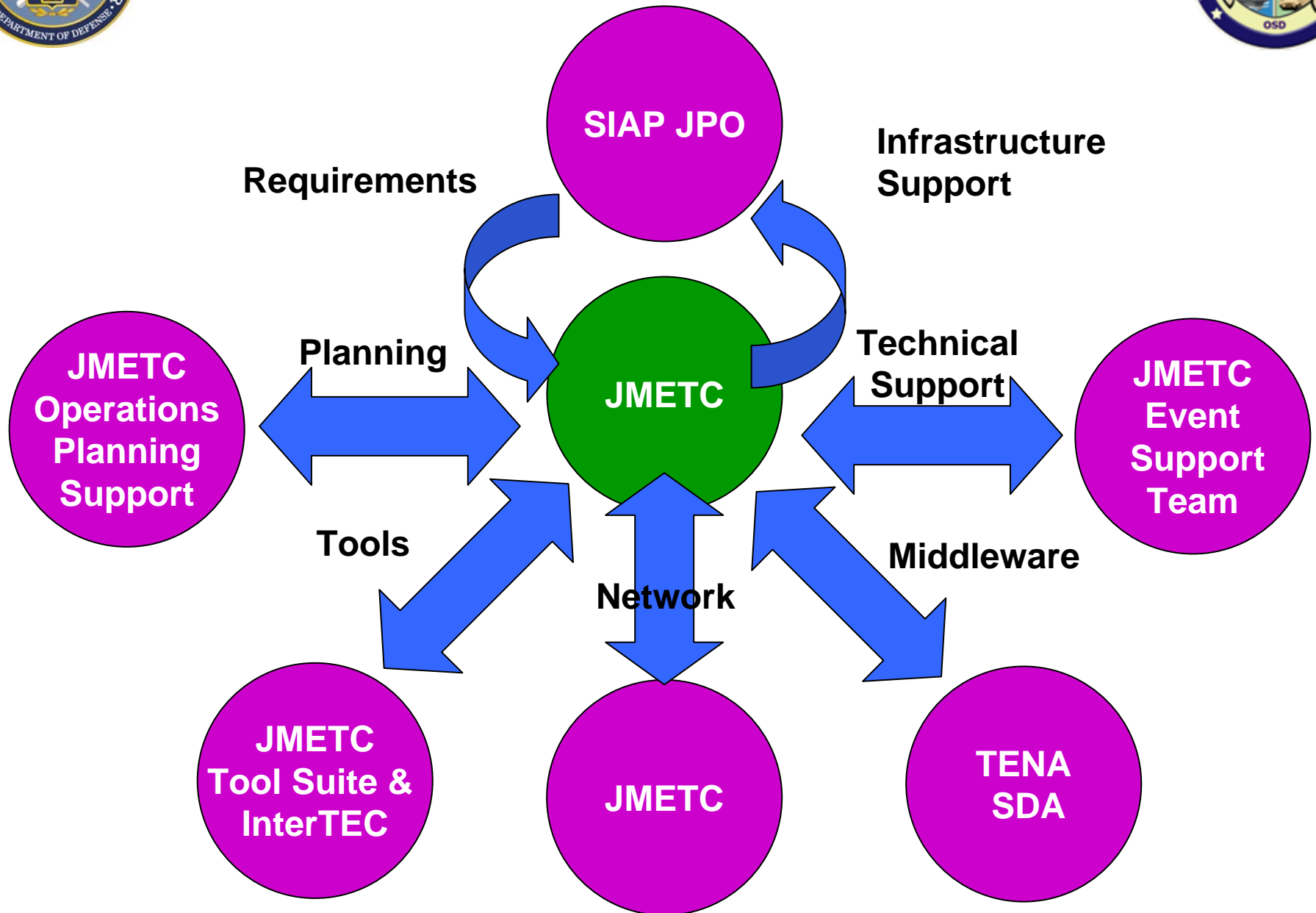
Sentinel

Patriot Radar

IBCS:
2 Known Friendly
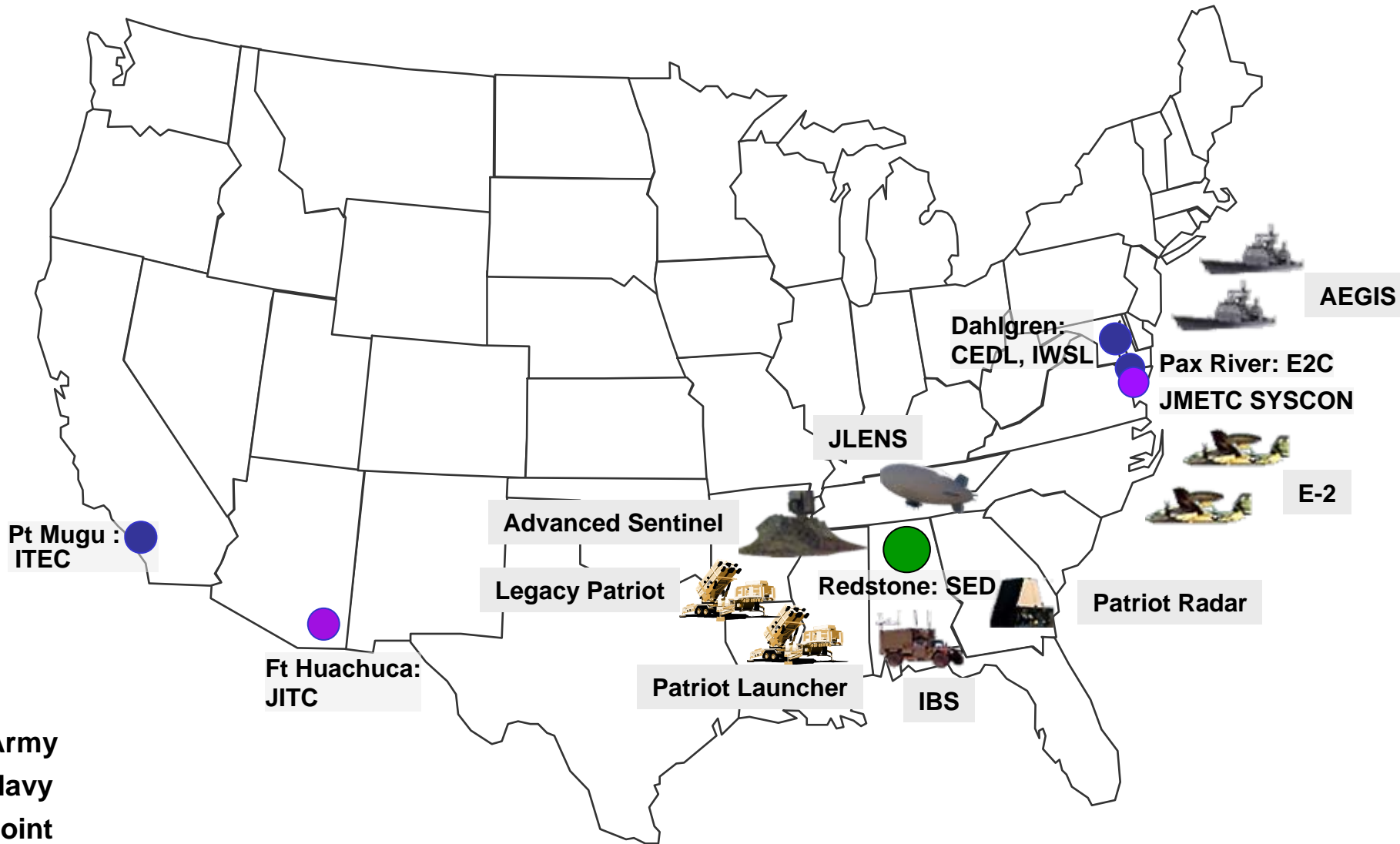2 Known Hostile
1 Known Cruise Missile

BCS

JMETC SIAP Support

JMETC VPN Sites
Support to SIAP
Joint Combined HWIL Event (JCHE) 5

AEGIS

Dahlgren:
CEDL, IWSL

Pax River: E2C

JMETC SYSCON

JLENS

E-2

Advanced Sentinel

Pt Mugu :
ITEC

Legacy Patriot

Redstone: SED

Patriot Radar

Ft Huachuca:
JITC

Patriot Launcher

IBS

● Army
● Navy
● Joint

JMETC SIAP Support

- JMETC provides persistent support to the JPO throughout entire JCHE-5 schedule

- JMETC distributed and Joint testing expertise enables tailor-made test recommendations to SIAP

- **Payoff Example:** JMETC involvement enabled early integration testing of Wrap-Around Simulation Program (WASP) Real-Time Data Distribution System (DDS)
  - "Idea-to-Execution" in just two weeks
  - Tactical simulation traffic over the JMETC VPN five months before scheduled distributed site integration testing
  - **Issues discovered and resolved much earlier in test schedule**

JMETC Positive Impact
JEFX 09-01: Persistent Fire

<u>Global Cyberspace Integration Center Perspective</u>

JMETC-AF partnership accelerated WWF acquisition timeline

- Extended limited budget resources to obtain best bang for the buck: able to move rapidly from concept path to OT

- Reduced certification and accreditation issues that hamper developmental activities

- Afforded greater opportunities to inject direct warfighter input without cost of reestablishing network infrastructure

- Greater access to simulation network capabilities increased number of test cases with single event

JMETC Initiatives

- **Streamlining the Network Accreditation process**
  - *Tiger Team: The DoD Information Assurance Certification and Accreditation Process (DIACAP)*
- **Cross-Domain Solutions**
  - Unified Cross Domain Management Office (UCDMO)
  - Information Operations Range
  - Joint Improvised Explosive Device Defeat Organization
- **West Coast Aggregation Router**
- **Mobile Node Capability (Transportable Node)**

Summary

- **JMETC supports the full spectrum of Joint testing, supporting many customers in many different Joint mission threads**

- **JMETC is being built based on customer requirements**
  - JMETC event support can be tailored to customer needs

- **JMETC is partnering with Service activities and leveraging existing capabilities**

- **JMETC is coordinating with JFCOM to bridge test and training capabilities**

- **JMETC Users Group provides an open forum to present emerging requirements as well as new technologies & capabilities**
  - **Next JMETC Users Group 24-26 March, San Destin, FL**

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