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# **Net Centric Operations Conference**

## ***“Achieving the Goals for the Net Centric Information Environment”***

**Norfolk, Virginia**

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**Director, Operational Test and Evaluation**

**March 7, 2007**



# Overview

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- **DOT&E Oversight of Net Centric Programs**
  - GIG Net Centric Information Environment – DOT&E Oversight Programs
- **Net Centric T&E Challenges**
- **DOT&E Net Centric Policy and Guidance**
  - Six-Step OT&E Process to Assess IA
  - Determining Level of Test for Software Intensive Systems
- **DOT&E Net Centric Pilot Initiatives**
  - Net Centric Enterprise Services (NCES) Program
  - Net-Enabled Command and Control (NECC)
- **DOT&E Involvement in Other Net Centric Initiatives**
  - IO Range Site Status
- **Summary**



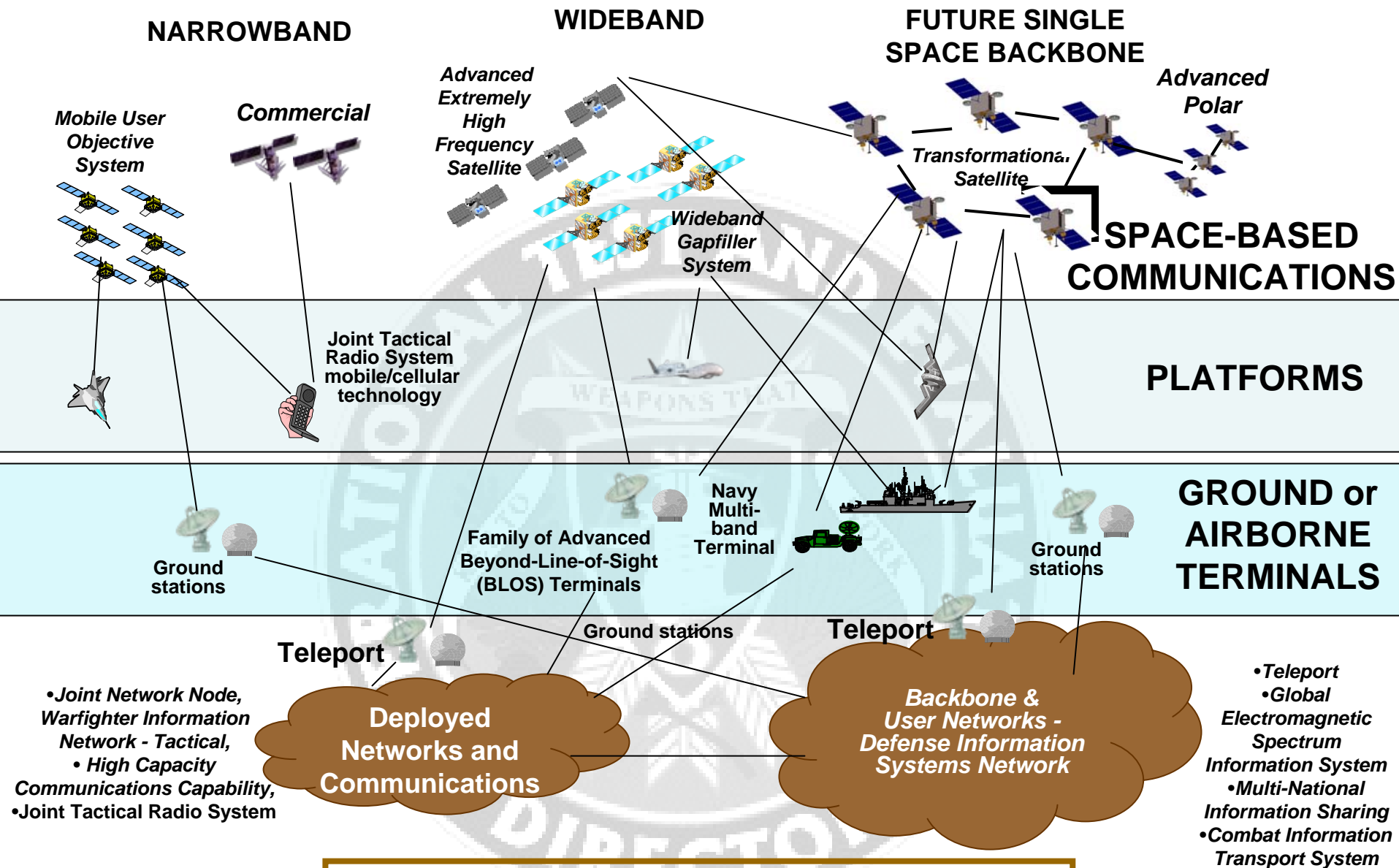
# DOT&E Oversight of Net Centric Systems



- **Significant Net Centric Systems under DOT&E oversight:**
  - **DoD/Joint:** Net Centric Enterprise Services, Net-Enabled Command and Control, Distributed Common Ground System family, Defense Travel System, Business Systems Modernization
  - **Army:** FCS, Joint Tactical Radio System-Ground
  - **Air Force:** Air Operations Center, Battle Control System
  - **Navy:** Cooperative Engagement Capability
- **Net Centric initiatives placed under DOT&E oversight by Congress:**
  - Assess Information Assurance and Interoperability at the Combatant Commands
  - Oversee testing to support DoD's transition to IPv6
- **Significant commonalities:**
  - Intensive software development and/or "commercial-off-the-shelf" hardware
  - Incremental development with spiral releases
  - Shorter development, fielding timelines than "standard" weapons development

***Soon, many oversight systems will be considered "net-centric" because they share data across a network or through a web page to support execution of a mission.***

# GIG Net Centric Info. Environment – DOT&E OS Programs



**“It’s all about the network!”**



# Net Centric T&E Challenges



- **Capabilities documents do not provide a meaningful link between technical performance measures and operational mission performance**
- **Operational Test Adequacy - Defining the relevant operational environment**
- **Joint environment not clearly defined**
- **Determining suitability**
- **No clear evaluation methodology for capabilities in the net centric environment**
- **Linking the testing of Information Assurance with the testing of Net Centric capabilities is still a work in progress**

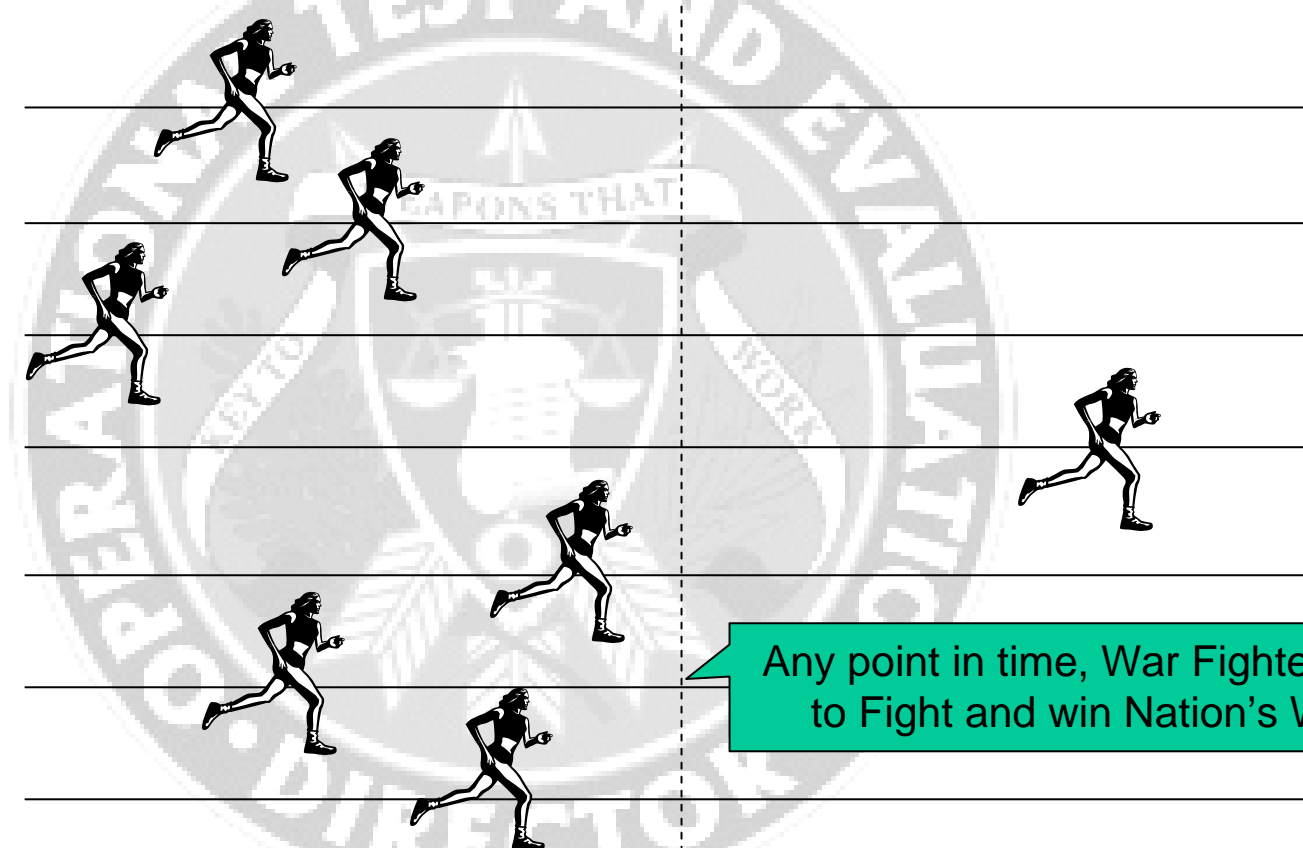


# Net Centric T&E Challenge - Technology Development vs. DOTMLPF

Accelerated  
Development  
and Fielding for



- Doctrine
- Organization
- Training
- Materiel
- Leadership
- Personnel
- Facilities



Any point in time, War Fighter able to Fight and win Nation's War

***We are all experimenting on how best to do T&E of Net Centric Systems. Cooperation will get us there!***



# DOT&E Net Centric Policy and Guidance

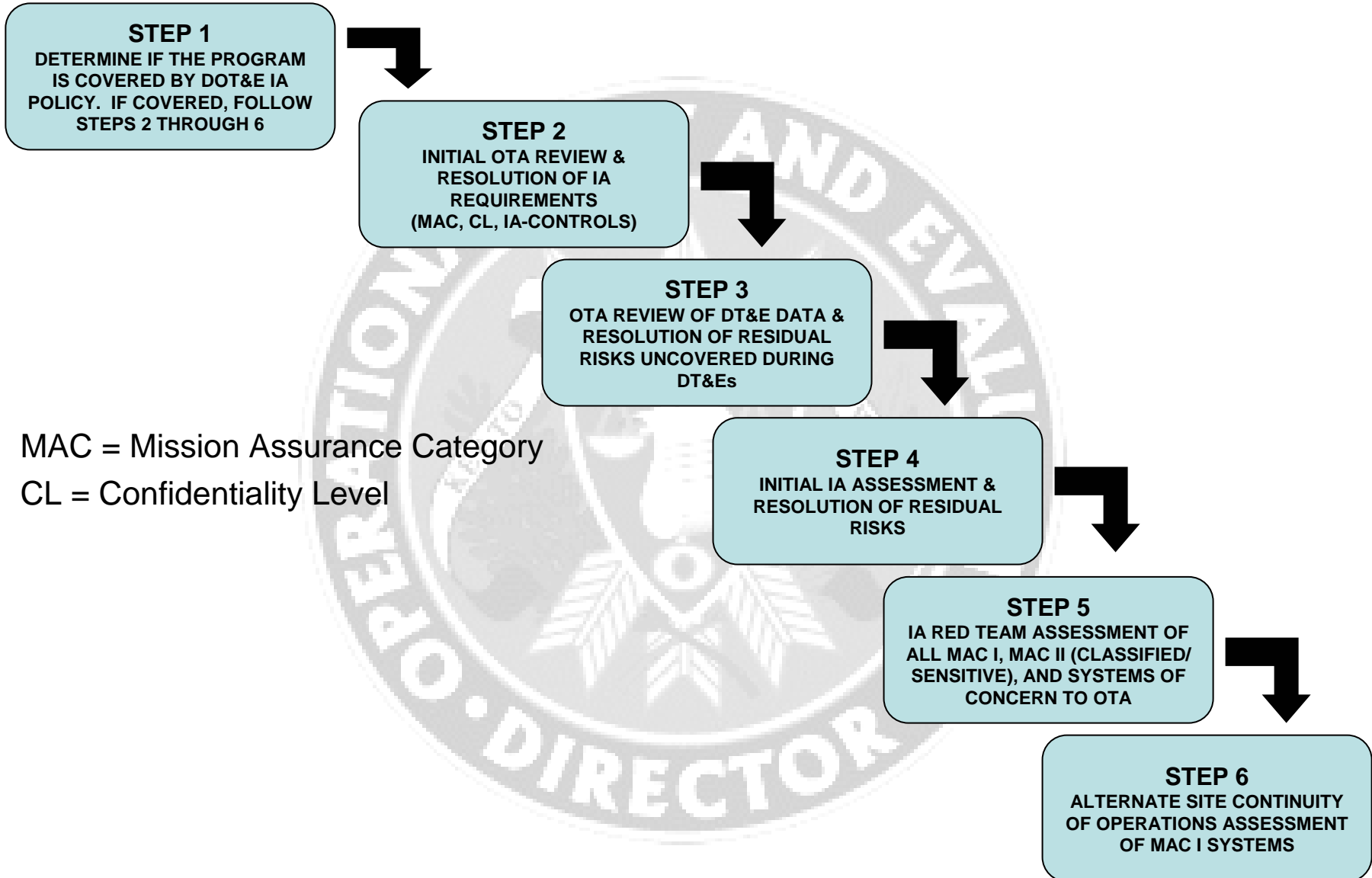
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- **Policy for Operational Test and Evaluation of Information Assurance in Acquisition Programs – signed 21 November 2006**
  - The Test and Evaluation Master Plan must contain an operational test and evaluation strategy for IA assessment.
  - This policy addresses IA end-to-end, taking into account the ability to detect, defend, react, respond, and restore.
- **Guidelines for Conducting Operational Test and Evaluation (OT&E) for Software-Intensive System Increments – signed 16 June 2003**
  - Guidelines for tailoring pre-deployment test events to the operational risk of a specific system increment acquired under OSD oversight
    - For insignificant to moderate risk increments, these guidelines streamline the OT&E process by potentially reducing the degree of testing.
    - Applies to all increments of software-intensive systems except the “core increment,” which undergoes full operational testing.



# Six-Step OT&E Process to Assess IA



MAC = Mission Assurance Category  
CL = Confidentiality Level





# Determining Level of Test for Software Intensive Systems



|                   | Effect on Mission |                  |                  |                     |
|-------------------|-------------------|------------------|------------------|---------------------|
| Failure Potential | Minor Impact      | Moderate Impact  | Major Impact     | Catastrophic Impact |
| Insignificant     | Level 1 test      | Level 1 - 2 test | Level 2 - 3 test | Level 3 – 4 test    |
| Low               | Level 1 – 2 test  | Level 2 - 3 test | Level 3 – 4 test | Level 4 test        |
| Moderate          | Level 2 - 3 test  | Level 3 – 4 test | Level 3 – 4 test | Level 4 test        |
| High              | Level 3 – 4 test  | Level 3 – 4 test | Level 4 test     | Level 4 test        |

- Level 1 test is DT
  - Level 2 test is combined DT/OT
- Level 3 test is Operational Assessment
  - Level 4 test is IOT&E level

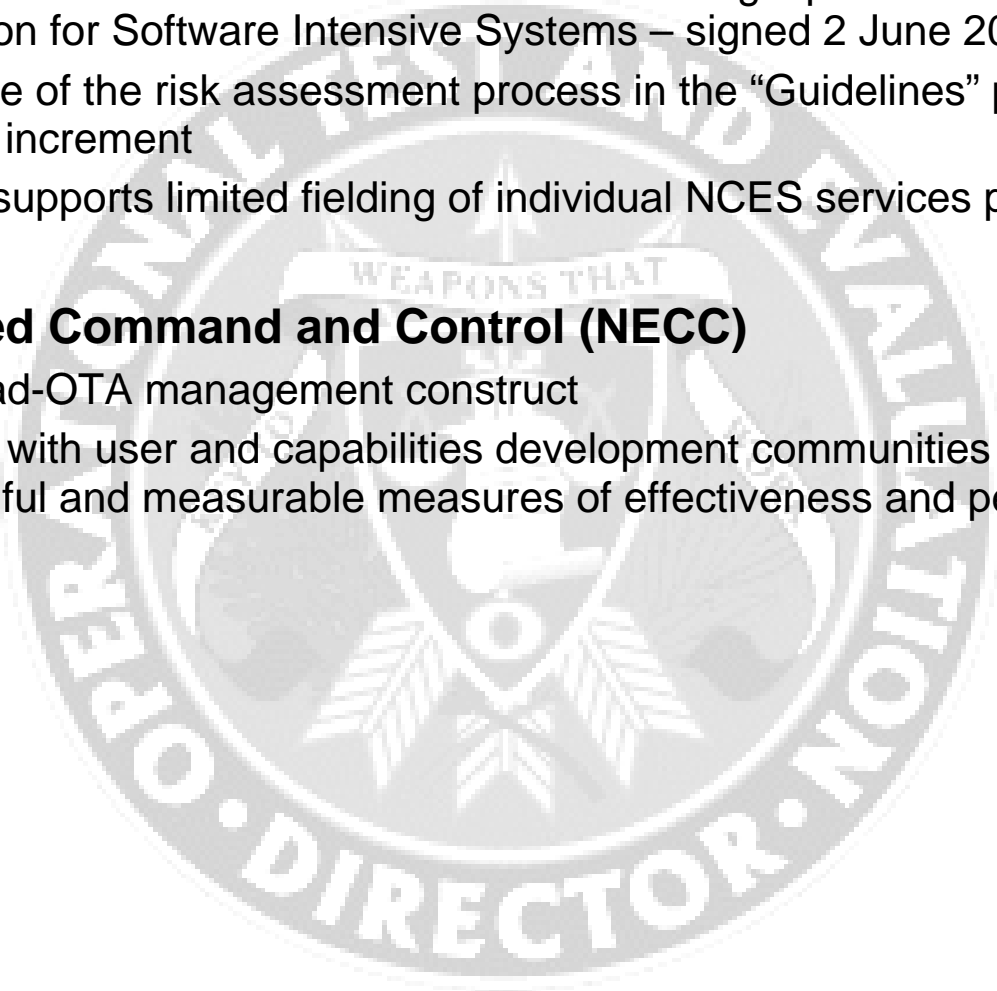


# DOT&E Net Centric Pilot Initiatives

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- **Net Centric Enterprise Services (NCES) Program**
  - New application of the Guidelines for Conducting Operational Test and Evaluation for Software Intensive Systems – signed 2 June 2006
  - Pilots use of the risk assessment process in the “Guidelines” prior to fielding of the core increment
  - Testing supports limited fielding of individual NCES services prior to IOT&E
- **Net-Enabled Command and Control (NECC)**
  - New Lead-OTA management construct
  - Working with user and capabilities development communities to develop meaningful and measurable measures of effectiveness and performance.





# DOT&E Involvement in Other Net Centric Initiatives

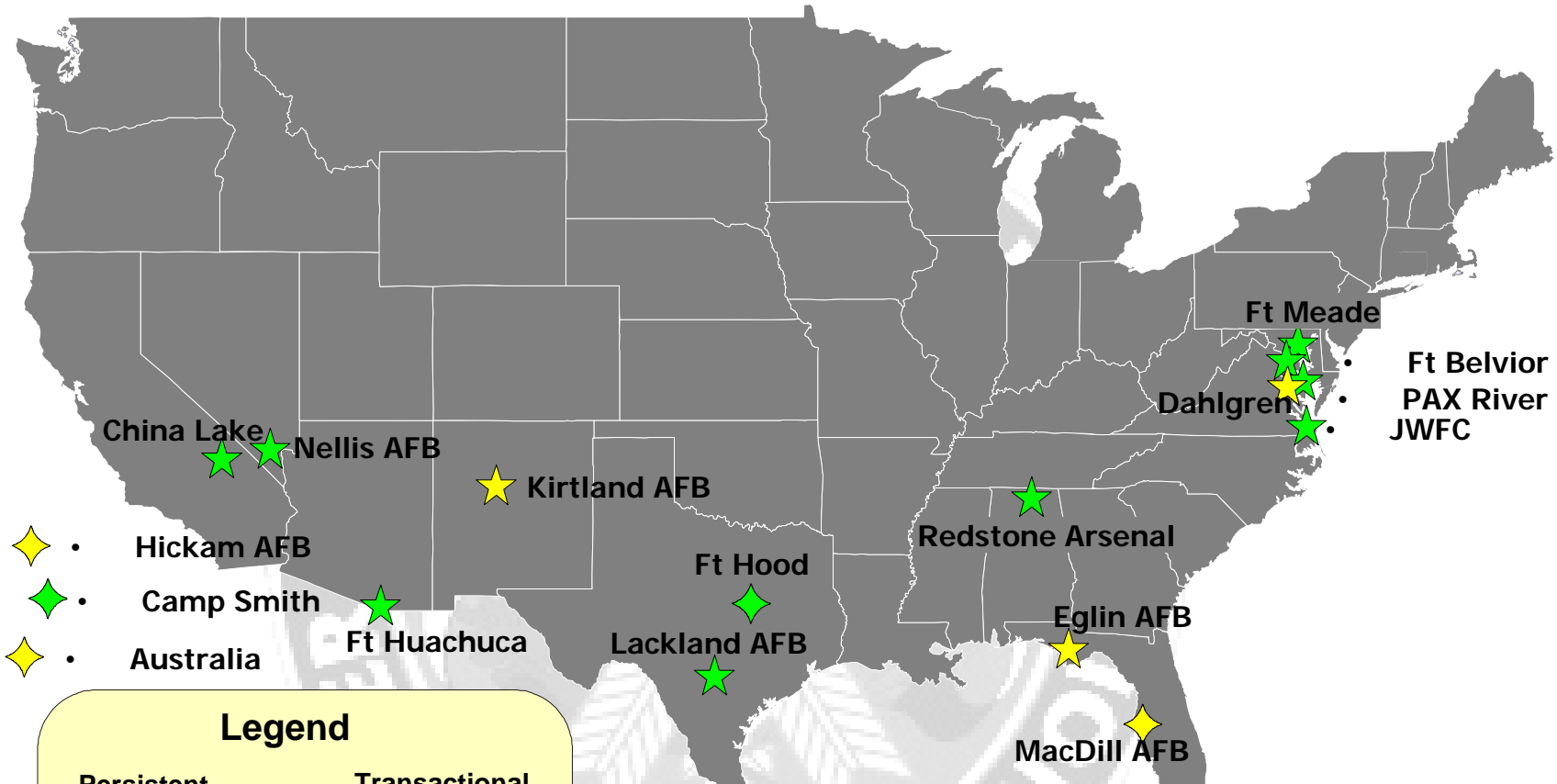
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- **Information Operations (IO) Range**
  - A flexible, seamless, and persistent environment to assess and train
    - 15 geographically separated sites are fielded
  - End state is a fully integrated network of ranges used by Services, Combatant Commands, and Agencies, to test, train, exercise and demonstrate tactics, techniques, and procedures of emerging IO capabilities.
- **Information Operations Network Analysis Model**
  - To optimize the planning and execution of operational tests, and extrapolate beyond available test conditions to support operational evaluations.
  - The IO Range and other communities will use it for training, experimentation, and planning for IO systems to be tested on the IO Range.
  - Provides three major capabilities:
    - **Network Visualization.** A visual depiction of the network that also provides a means for evaluators to do operational network analysis.
    - **Network Scenario Development.** Develops scenarios of different topologies that accurately represent diverse communications plans and architectures to rapidly change network attributes and perform excursions and sensitivity analyses.
    - **Network Analyzer.** What areas of the network are most sensitive to operational stresses and attacks?



# IO Range Site Status



- Hickam AFB
- Camp Smith
- Australia

**Legend**

|               |                 |
|---------------|-----------------|
| Persistent    | Transactional   |
| ★ Installed   | ◆ Transactional |
| ★ In Progress | ◆ Transactional |

- **15 Sites Fielded to Date**
  - 9 Service Delivery Points (SDP)
  - 3 Sub-sites (located at Ft Meade)
  - 3 Transportable SDPs (TSDP)

Current as of: 21 February 2007

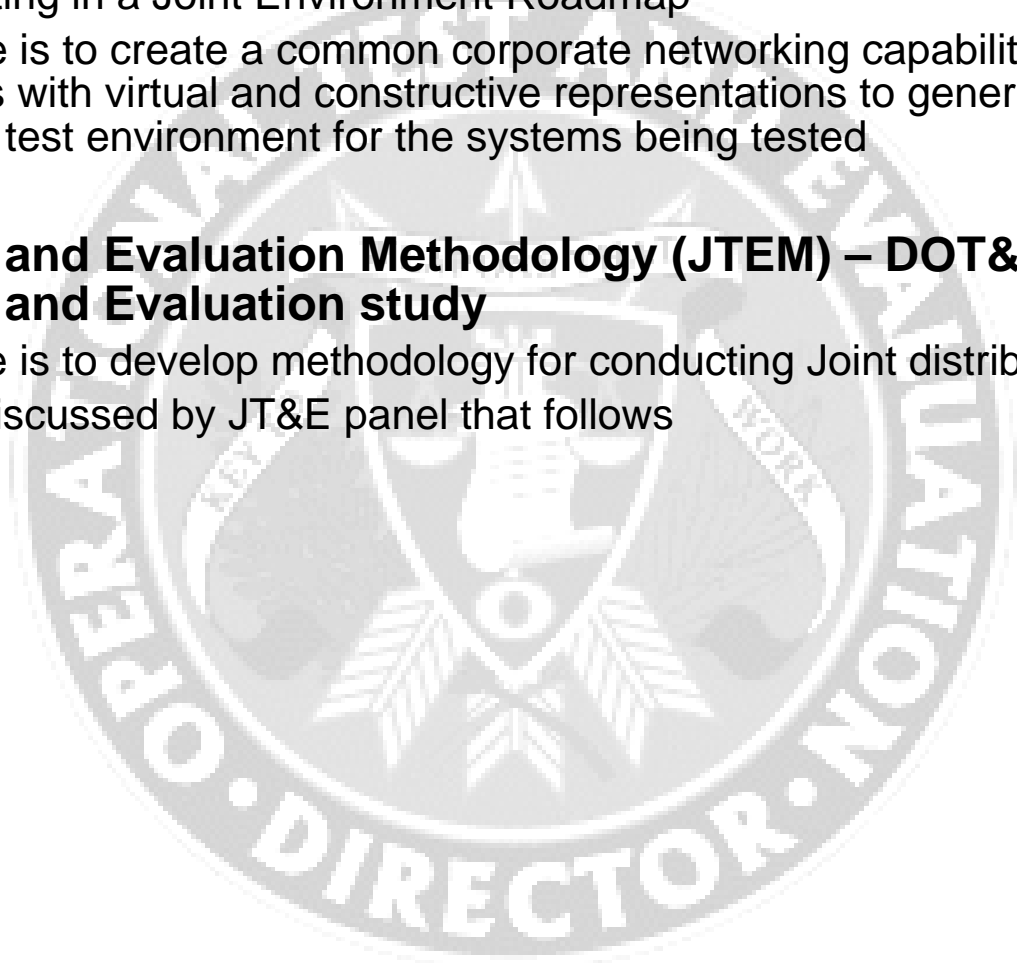


# DOT&E Involvement in Other Net Centric Initiatives - Continued

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- **Joint Mission Environment Test Capability (JMETC)**
  - Working with the USD(AT&L) Test Resources Management Center to execute the Testing in a Joint Environment Roadmap
  - Purpose is to create a common corporate networking capability to link live systems with virtual and constructive representations to generate a realistic joint mission test environment for the systems being tested
- **Joint Test and Evaluation Methodology (JTEM) – DOT&E sponsored Joint Test and Evaluation study**
  - Purpose is to develop methodology for conducting Joint distributed testing
  - To be discussed by JT&E panel that follows





# Summary



- **DOT&E is experimenting with methods to determine how best to test and evaluate net-centric systems**
- **But this is an evolving process....**
  - Requires close coordination between the user, material provider, and the test and evaluation communities
  - Material providers must understand fielding a net-centric capability cuts across the entire DOTMLPF spectrum (doctrine, organization, training, material, leadership and education, personnel, facilities), its not just about material or software

***DOT&E is open to suggestions from industry on how to improve our T&E processes for net centric systems.***



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**Land Combat Systems**  
**Rotary & Tilt Rotor**  
**Aircraft**  
**Land Munitions**  
**Land Combat Tactical**  
**UAVs**  
**Chem-Bio-Rad-Nuc**  
**Systems**

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**Integrated Resource**  
**Analysis Team**  
**Threat Systems Office**

**Air Combat Systems**  
**Strategic Air Combat**  
**Sys.**  
**New Aircraft Carriers**  
**Air Launched Munitions**  
**Strategic, Operational**  
**UAVs**

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**Joint T&E Program**  
**Center for**  
**Countermeasures**  
**Joint Test Roadmap**

**Surface Combatants**  
**Amphibious Ships**  
**Submarines**  
**Naval Munitions**  
**Space & Strategic Sys.**  
**Strategic C4ISR Sys.**  
**Major Automated Info**  
**Sys.**

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**Information Operations**  
**Information Assurance**

**All LFT&E (Lethality &**  
**Survivability)**

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**Joint Live Fire Program**  
**Joint Aircraft**  
**Survivability**  
**Program**  
**Joint Technical**  
**Coordinating**  
**Group—Munitions**  
**Effectiveness**