



Defense Information Systems Agency

**A Combat Support Agency**

# **JITC Standards Conformance Process**

---

**Engineering & Policy Branch  
Joint Interoperability Test Command  
7 Dec 2009**

# Agenda



- **Definitions**
- **Standards Conformance & Joint IOP Cert Process**
- **General SC Testing Guide & Staffing / Distribution Process**
- **JITC Standards Conformance / Compliance Testing Capabilities / JRAD**
- **Example SC Testing (CDL)**



# Definitions

# Definitions (DoDI 4630.8)



- **System Standards Profile** A system-specific list of all technical standards and guidelines for their use.
  - To meet IT and NSS interoperability needs, the system standards profile should be built from applicable standards drawn from the DoD IT Standards Registry (DISR)  
This is the StdV-1 (previously TV-1); not to be confused with a standards profile associated with a single or related group of standards
- **Standards Compliance** Confirmation that an IT and NSS has undergone standards testing and exhibits a specified degree of standards conformity.

# Definitions (DoDI 4630.8) (Cont)



- **Standards Conformance Certification Confirmation by DISA (JITC) that an IT and NSS has undergone information technology standards testing and exhibits IT standards-based implementation.**
  - IT standards include standards for information processing, information content (such as standard data definitions), information formats, and information transfer.

**Standards conformance certifications are produced by an organization authorized by the standards body (not always JITC)**

# Definitions DISR



- **DoD Information Technology Standards Registry (DISR)**
- **Defines service areas, interfaces, and standards applicable to all DoD systems**

# Definitions DISR (Cont)



- Provides a web-based capability for creating compliant profiles
  - Password protected site, CAC enabled
  - Can be used to build artifacts (TV-1, TV-2, StdV-1, or StdV-2)
  - <https://disronline.disa.mil/a/DISR/index.jsp>
  - DISA maintains the site
  - FAQ provides a lot of useful information
  - Note some info is slightly out of date (KIPs, TV)
  - Migrating to GTG Federation

**We don't build TV-1/2 (StdV-1/2), but we must be aware of the processes, including waivers, OUS, etc.**



- **DoDI 4630.8**
  - **Procedures for Interoperability & Supportability of Information Technology and National Security Systems, 30 June 04**
  
- **CJCSI 6212.01E**
  - **Interoperability and Supportability of Information Technology and National Security Systems, 15 December 2008**



# SC & Joint IOP Certification Process

# Testing Types and Environments



## Certification



### Standards Conformance

- Ability to adhere to rules contained in applicable standards
- Increasing emphasis on data implementation IAW DoD Data Strategy

### Laboratory

Comprehensive data collection for multiple tests under controlled conditions. Can include early user tests, Beta testing, etc.



### Joint Interoperability

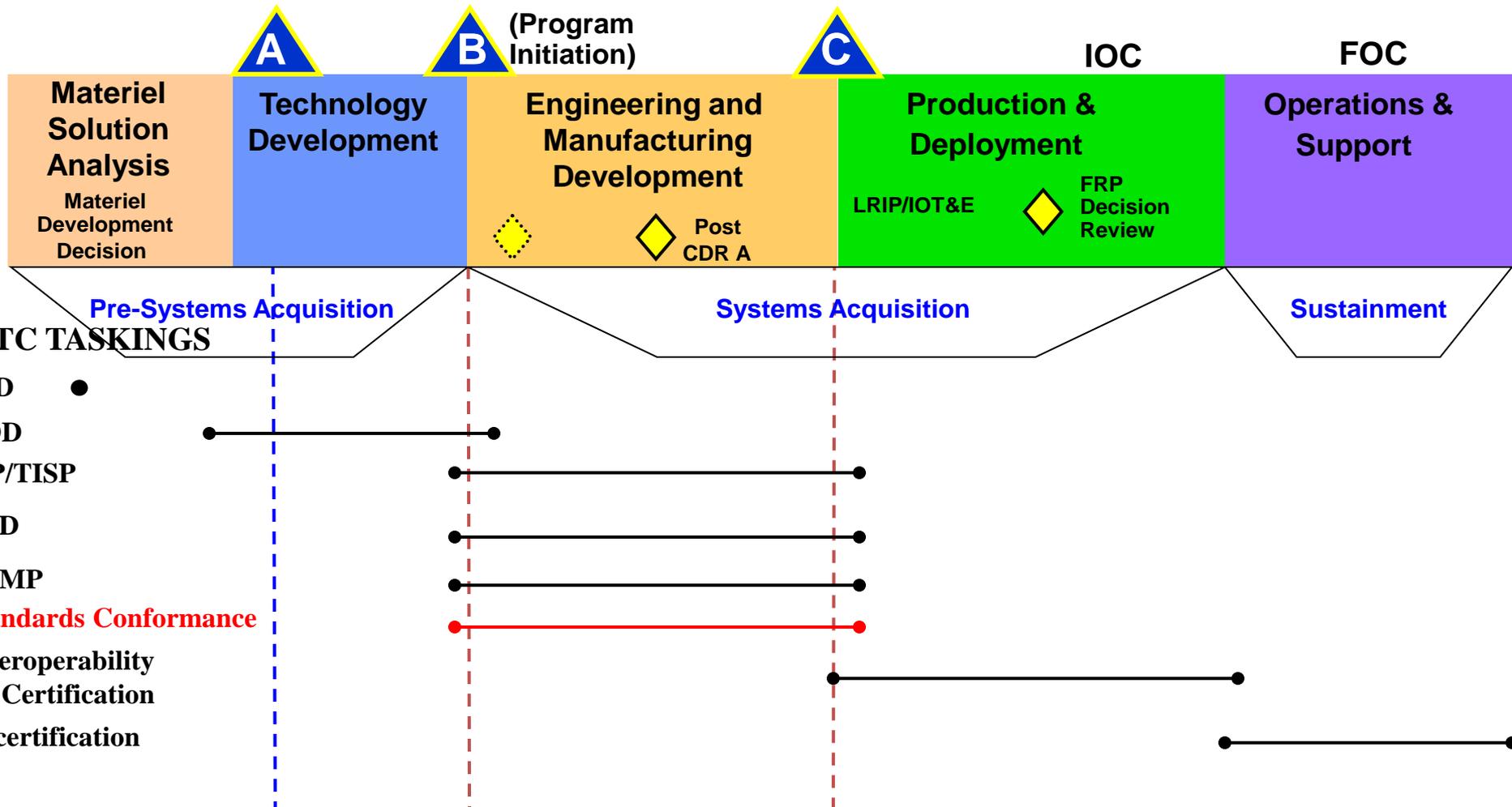
Ensures a system effectively exchanges information with other participants in a Net-Centric environment

### Live Exercise

Test ability to effectively exchange information in an exercise or test environment with conditions as realistic as possible. Ensures end-to-end interoperability.

Standards provide a necessary building block for ensuring interoperability, but are not sufficient to ensure that systems are interoperable in a joint environment

DoDI 5000.02



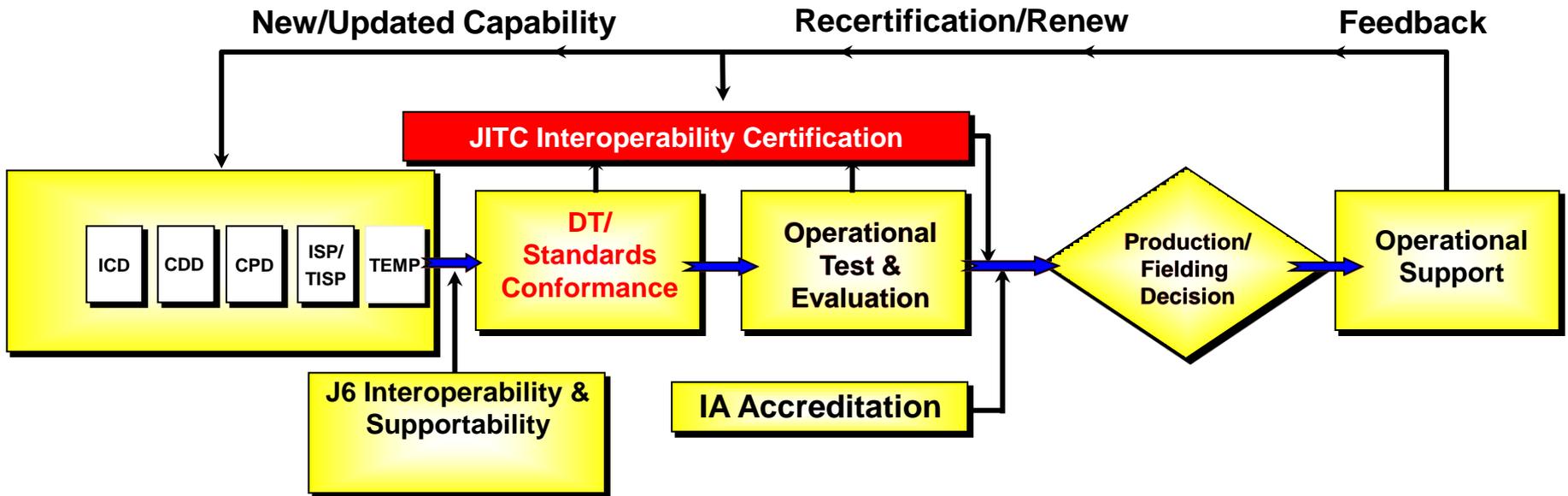
# System Life-Cycle Certification Process



Capability Certification

DT / Standards Conformance, OT&E, and Interoperability Certification

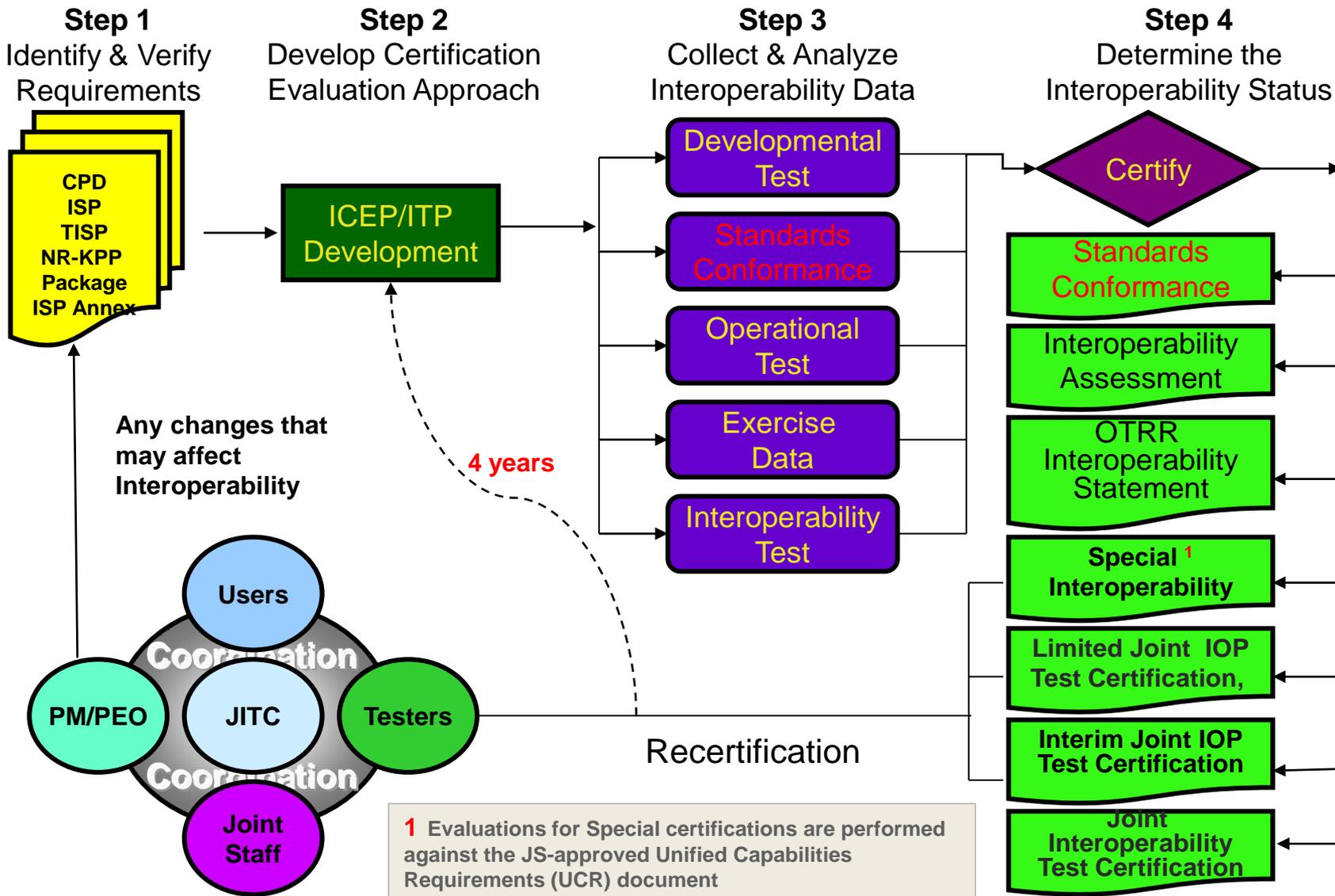
Operational Verification



**“...future capabilities must be born joint.”**

**Admiral E. P. Giambastiani, Commander, US Joint Forces Command**

# Interoperability Certification Steps





# D/E NR-KPP Compliance



A Combat Support Agency

IOP Category	6212.01D NR-KPP	6212.01E NR-KPP	Impact / Interoperability Evaluation
<b>Net-Centricity</b>	Compliance with the Net-Centric Operations and Warfare (NCOW) Reference Model (RM) enterprise services	Compliance with net-centric data and services strategies, DoD IEA	<p><b>Strengthen NC Data/Service Strategy Compliance</b></p> <ul style="list-style-type: none"> <li>- Evaluate Data/Service visibility, accessibility, understandability</li> <li>- Evaluate compliance with business rules and principles of DoD IEA</li> </ul>
<b>Interfaces / Information Exchanges</b>	Operationally effective information exchanges	Compliant solution architecture products including specified operationally effective information exchanges	<p><b>Use of DoDAF, JCSFL, Enterprise Architecture, etc.</b></p> <ul style="list-style-type: none"> <li>- Verify E2E info exchange IAW the solution architecture</li> </ul>
<b>Standards Compliance</b>	Compliance with: <b>Global Information Grid (GIG) Key Interface Profiles (KIPs) GIG IT standards and profiles identified in the TV-1</b>	Compliance with <b>GIG Technical Guidance (GTG), including TV-1 (Std-V1), GESPs (KIPs until GESPs available)</b>	<p><b>KIPs transition to GESPs and combined with DISR compliance into GTG element</b></p> <ul style="list-style-type: none"> <li>- Evaluate applicable GESPs/KIPs via SC/IOP testing</li> <li>- Evaluate standards compliance</li> </ul>
<b>IA Compliance</b>	Compliance with DoD information assurance requirements	Compliance with DoD IA requirements	<p><b>Verification that IA requirements met – no change</b></p> <ul style="list-style-type: none"> <li>- Verify C&amp;A status</li> <li>- IOP testing is conducted using the approved IA configuration</li> <li>- JITC IA testing where applicable</li> </ul>
<b>Supportability</b>	Compliance with Spectrum Supportability and E3, Joint Tactical Radio System (JTRS), Selective Availability Anti Spoofing Module (SAASM) [Part of J-6 System Validation and not NR-KPP]	Compliance with Spectrum Certification and E3, SAASM, and JTRS requirements	<p><b>Added Supportability to NR-KPP compliance</b></p> <ul style="list-style-type: none"> <li>- Verify current DD 1494 (spectrum cert) and E3 compliance</li> <li>- Verify GPS SAASM compliance or waiver</li> <li>- Verify JTRS compliance or waiver</li> </ul>

# Interoperability Test & Certification Products



Certification	Description	System can be fielded (Y/N)?
<b>Standards Conformance Certification</b>	<b>System is certified for conformance to a standard/standards profile</b>	<b>No</b>
<b>Joint Interoperability Test Certification</b>	<b>Full system certification. System meets at least <u>all critical</u> interoperability requirements</b>	<b>Yes</b>
<b>Limited Joint Interoperability Test Certification</b>	<b>System meets <u>subset</u> of critical interoperability requirements</b>	<b>Yes, with ICTO</b>
<b>Interim Joint Interoperability Test Certification</b>	<b>A capability module has adequately demonstrated interoperability for at least <u>all critical</u> threshold requirements identified for the increment</b>	<b>Yes</b>
<b>Special Interoperability Test Certification</b>	<b>Based on other J-6 approved requirements (i.e., no NR-KPP) -- E.g., use of UCR for voice switches</b>	<b>Yes</b>
<b>Non-Certification</b>	<b>Critical operational impacts expected Provides a warning to the warfighter</b>	<b>No</b>
<b>Interoperability Assessment</b>	<b>PM would like to determine the interoperability status System may lack J-6 certified requirements</b>	<b>No</b>



# General SC Testing Guidelines & Staffing / Distribution Process

# Standards Conformance Testing Guidelines



- **Standards conformance testing establishes the extent to which a system conforms to a standard/standards profile**
  - Standards conformance is necessary, but not sufficient to ensure interoperability
  - JITC may provide a standards conformance certification based upon an evaluation of data collected by other test agencies. This data must be sufficient to determine conformity to the specified standards/standards profiles.
- **JITC may certify conformance to standards for systems (IT/NSS or non-US) that implement standards that can possibly impact interoperability**
  - DoD and Commercial customers
  - Conformance to various standards
    - UHF DAMA SATCOM, HF Radio MIL-STD, Secure Fax, etc.

# Standards Conformance Testing Guidelines (Cont)



- **JITC SME will determine which standards require testing vs. some other evaluation method**
- **JITC may also evaluate conformance to NATO STANAGs and issue a standards conformance certification**
- **Standards Conformance Certifications do not normally expire**
  - **A specific hardware/software version is certified conformant to a specific version of a standard**

# Standards Conformance Testing Guidelines (Cont)



- **Certifications and assessments include:**
  - Requirements were met, not met, or not tested
  - Analysis of any discrepancies
  - Any exceptions to standards conformance and recommendations for meeting interoperability requirements
- **Standards conformance is the foundation for interoperability test certification**
  - It is necessary but not sufficient to ensure interoperability
- **Division/Portfolio chiefs sign all standards conformance certification letters**

# Standards Conformance Testing Guidelines (Cont)



- **Compliance is characterized with a matrix showing whether an implementation meets the individual mandatory and optional requirements specified in the standard**
- **Certification is confirmation that the system meets – as a minimum – all mandatory requirements and that there are no critical discrepancies**

# Standards Conformance Testing Guidelines (Cont)



- **GESP (or KIP) Declaration contained in certified CPD, ISP, ISP Annex, TISP, or NR-KPP package, TV-1 (StdV-1) from DISROnline.**
  - List of applicable GESPs/KIPs, GESP/KIP profiles, and implementation options, and TV-1 (StdV-1) standards
- **JITC reviews applicable standards called out by GESP/KIP/TV-1 (StdV-1).**
  - Identify standards/profiles that require testing vs. other evaluation methods.
  - Collect data to support standards conformance certification.
  - Analyze and roll up the results.
- **Information exchanges across key interfaces verified IAW performance parameters during interoperability testing.**
- **Available GESP/KIP/standards information:**
  - DISRonline to select DISR GESP/KIP profiles, TV-1 (StdV-1) standards

# Standards Conformance Testing Guidelines (Cont)



- In general, AOs should test DoD unique features
- Even some commercial standards may be critical
  - For instance, a DFAS finance system requires absolute accuracy. Compliance with commercial transfer protocols may be a reasonable test to consider for this type of system.
- AOs need to determine what is necessary for each specific system

# Standards Conformance Testing Guidelines (Cont)



- **Work with PM and developer to determine which standards / standards profiles apply to COTS / GOTS components and which apply to components being developed**
- **Determine if conformance data is available for COTS / GOTS items. (No further testing required.)**
- **For remaining standards / standards profiles, determine method to verify conformance**
  - **Analysis**
  - **Inspection**
  - **Demonstration**
  - **Test**



- **Who selects the standards for the system standards profile (TV-1/StdV-1)?**
  - The PM.
- **Who decides if standards selected by the PM are IAW DISR?**
  - GE33 has the primary responsibility to review standards/StdV-1, but all JCPAT-E assessors as part of the requirements document (e.g., CDD, CPD, ISP/TISP) review process.
  - The Joint Staff provides the final approval for the entire set of requirements which includes DISR compliance. The Component Acquisition Executive (CAE) or Acquisition Authority has the ultimate responsibility for ensuring DISR compliance.



# **JITC Standards Conformance/ Compliance Testing Capabilities/ JRAD**



- **JITC performs/supports standards conformance testing and certification in the following areas:**

Standard	POC
Mil-Std 6011/6016 (Link 11/16)	Robin Murray
Mil-Std 6040 (USMTF)	Gordon Devos
Mil-Std 6017 (VMF)	Lauro Teran
Mil-Std 188-110 (HF Data modems)	Sandra Maldonado
Mil-Std 188-141 (Med & HF Radio Equipment)	Sandra Maldonado
Mil-Std 188-161 (Digital Facsimile)	Steve Sones
Mil-Std 188-181/182/183 (UHF DAMA)	Lisa Fardsalehi
Mil-Std 188-181c/182b/183b (IW)	Norma Vega
JTRS (Multiple Standards)	Bill Craig
XML (Multiple Standards)	Elester Jackson

# Other Standards Compliance



- **JITC performs standards compliance testing in the following areas:**

<b>Standard</b>	<b>POC</b>
IBS	Andy Blomstrand
CDL	Barry Balderston
NITFS, GMTI	Jim Durham
Motion Imagery (Full Motion Video)	Randy Richard
Advanced IP Technologies (IPv6, IPv4, etc)	Todd Beckman
PKI	Sonny Milloy

# What is J-RAD?



- **JITC Risk Assessment Database**
- **Standards analysis tool and standards information repository**
- **Data from the National Center for Geospatial Intelligence Standards (NCGIS) and the Joint Interoperability Test Command (JITC)**
- **Compiles known data for each standard**
- **Enables analysts to locate standards data and conduct risk assessments accurately and efficiently**

# Database Objectives



- **Recommend best practices for the risk-based testing of Net-Centric standards**
- **Provide a JITC-recommended risk level for standards**
- **Identify Net-Centric standards in the DISR**

# Risk Analysis Process



- **Apply analysis criteria**
- **Consider “threat to success” factors**
- **Determine inherent vs. contextual risk**
- **Evaluate the impact**
- **Assign an appropriate level of risk**



## STANDARDS



Version: 01.00.27, 12/30/2008

Currently linked to backend database: T:\NGMS\DataEngineering\U\_SGSDb\_be\_Prod.mdb

*Welcome Cinda Caparulo*

### ADD/EDIT

Standards

Test Methodologies

Products / Test Tools

Producers

Interest Groups

Sources

Open Links to Sources

Contacts

Edit My Profile

NCGIS Stoplight Form

### QUERIES

Standards TOC

Standards w/ TTV Families

### REPORTS

Standards w/ TTV Families

Testing Organization Form Temporarily Unavailable



Close
Save

[NCGIS](#)
[DISR](#)
[ASSIST](#)
[ISO](#)
[ITU](#)
[JITC](#)

## STATE OF STANDARD

See NCGIS Standards Only
Add New
General Report
NCGIS Stoplight Report
General Report w/ NCGIS Checklist

Select Standard:

Identifier:

Title:

DISR

Abstract

Applicability

Details

NCGIS

Checklist

Checklist Stoplight

NOTES

0 General Notes

CONTACTS

0 Contacts for Standard

INTEREST GROUPS

Risk/Testing Info

TTV

Families/Technologies

JITC

JITC Risk Analysis Worksheet

**DISR Status** 
**Document Type** 
Last Updated in DISR:

**Service Area**

\*

**Secondary Interest**

\*

**Primary Owner**

**Focus Group Steward**

**SOURCE**
Add A Source
See All Sources
Source Query

Select the type of source and enter source file as a hyperlink

<input type="text" value="Local Copy"/>	<input type="text" value="I:\ISG\PROJECTS_OR_PROGRAMS\NGA\DBs\MiscStandards\AAF\aafojects-spec-v1.1.pdf"/>	
<input type="text" value="Get Copy"/>	<input type="text" value="http://www.aafassociation.org"/>	
* <input type="text" value=""/>	<input type="text" value=""/>	

JITC Information for Advanced Authoring Format Version 1.1

**0 Notes**
Portfolio:

Inherent Risk:

Testing Priority:

Rationale:

Portfolio POC:

Testing Approach:

JITC Test Capability:

JITC Test Proc Tool:

Used in Enterprise:



## Standard: Advanced Authoring Format Version 1.1

### AAF Object Specification

**Primary Owner**

Geospatial Intelligence TWG (GWG)

**Service Area(s):**

GE OINT: Motion Imagery

**Secondary Interests:**

None Given

**Focus Group** None

**Price:**  ISO Withdrawn

**Abstract**

The Advanced Authoring Format (AAF) is a professional file interchange format designed for the multimedia, post production, and authoring environment. AAF solves the problem of multi-vendor, cross-platform interoperability for computer-based digital production. AAF does a number of things. 1) it allows complex relationships to be described in terms of an object model, 2) it facilitates the interchange of metadata and/or program content, 3) it provides a way to track the history of a piece of program content from its source elements through final production, 4) it makes it possible to render content downstream (with appropriate equipment), 5) it provides a convenient way to "wrap" all elements of a project together for archiving. By preserving comprehensive source referencing, and abstracting the creative decisions that are made, AAF improves multimedia production workflow and simplifies project management. The AAF standard consists of the following components:  The AAF Object Specification, which defines the way AAF stores metadata and essence  The AAF API Specification, which defines how software engineers can write applications  The AAF Reference Implementation, which implements both these specifications in a completely cross-platform manner  The AAF Software Development Kit (SDK), which includes developer utilities and validation test suites  The AAF Example software which demonstrates how to use the AAF SDK to produce AAF files  The AAF sample files created by working AAF implementations with the accelerating progress of digital technologies, an open interchange standard is essential to enable the digital production facilities of the future. The lack of integration of multi-vendor products has proven to be a significant obstacle to the rapid acceptance of computer based digital tools for professional production. AAF represents a broad industry initiative to remove those obstacles.

**Applicability**

Application areas for AAF include: media libraries, exploitation systems, television and movie post production systems, non-linear digital editing systems, media archive systems, media dissemination systems.

**Profile Questions:**

Does your system exchange motion imagery data with external systems or does your system task, collect, produce, process, catalog, store, read, exploit, or disseminate digital motion imagery?

**Relevant Information:**

Companies and organizations developing AAF-enabled applications are encouraged to join the AAF Association. Participation provides a unique opportunity to influence working practices of the future that will have a fundamental impact on the markets for their products. Additionally, member benefits include access to AAF sample files, tutorials, example codes and UML. Members also are allowed to participate in Awareness Events and receive priority listing in the Developer Resource Directory. The AAF Association has four classes of membership: Principal, General, Associate and Developer. Principal Members: - Enjoy all the benefits of General Membership - Are eligible for election to the Board of Directors General Members: - May appoint voting representatives to each of the AAF Association committees - May propose new extensions and additions to the AAF Specifications - Receive electronic copies of all AAF specifications and publications - Receive support for the AAF specification and associated Software Development Kit Associate Members: - May appoint non-voting representatives to each of the AAF Association committees - Receive electronic copies of all AAF specifications and publications - Receive support for the AAF specification and associated Software Development Kit Developer Members (with five or fewer employees): - May appoint voting representatives to each of the AAF Association committees - May propose new extensions and additions to the AAF Specifications - Receive electronic copies of all AAF specifications and publications - Receive support for the AAF specification and associated Software Development Kit Note that in addition to the four classes of membership listed above, the AAF Association may also

NCGIS GEOINT Standards Risk Assessment Stoplight Report as of 12/30/2008 12:59:29 PM

CAT 2.0.1

OpenGIS® Catalogue Service (CAT) Implementation Specification (2.0.1), 20 May 2005

STATE	RISK	CHECKLIST ITEM	SUMMARY
<b>GENERAL LEVEL</b>			
Fully adequate / sufficient	Low	Standard is Published by an open, consensus-based standards organization.	Reference number: OGC 04-021r3
Not adequate / sufficient	High	Standard is cited in the DoD ASSIST Database.	Not in DoD ASSIST Db
Fully adequate / sufficient	Low	Standard is cited in the DISR.	Verified
Unknown / TBD	TBD	Standard has a published Abstract Test Suite (ATS).	
Unknown / TBD	TBD	The ATS is sufficient for NSG deployment of the standard.	Cannot determine - requires SME evaluation.
Fully adequate / sufficient	Low	An Executable Test Suite (ETS) is available in support of the ATS.	CSW 2.0.1 Compliance Test Suite is based on the following OGC specifications: OGC Catalogue Services Specification, version 2.0.1 [OGC 04-021r3] OpenGIS Web Services Comm on Specification, version 1.0.0 [OGC 05-008c1] Filter Encoding Implementation Specification, version 1.1.0 [OGC 04-095] Geographic information – Geography Markup Language, version 3.1 [OGC 03-105r1]
Unknown / TBD	TBD	The ETS is sufficient for NSG deployment of the standard.	Cannot determine - requires SME evaluation.
Fully adequate / sufficient	Low	A Reference Implementation (RI) is available to support testing.	RI exists
Fully adequate / sufficient	Low	Sample data conforming to the standard is available.	See CSW-2.0.1 test data at OGC site. <a href="http://cite.opengeospatial.org/test_engine/csw2.0.1/">http://cite.opengeospatial.org/test_engine/csw2.0.1/</a>
Unknown / TBD	TBD	Conformance test services are available.	
<b>IMPLEMENTATION LEVEL</b>			
Unknown / TBD	TBD	NSG Enterprise-wide applicability	
Unknown / TBD	TBD	Web-based Secure Enterprise Infrastructure (WSE)	Cannot determine - requires SME evaluation.
Unknown / TBD	TBD	Geospatial Intelligence Knowledge Base (GKB)	Cannot determine - requires SME evaluation.
Unknown / TBD	TBD	Knowledge Production and Exploitation (KPE)	Cannot determine - requires SME evaluation.
Unknown / TBD	TBD	Resource Tasking and Marketplace (RTM)	Cannot determine - requires SME evaluation.
Unknown / TBD	TBD	Mission and Corporate Support (MCS)	Cannot determine - requires SME evaluation.

# Benefits to JITC



J-RAD has the potential to:

- extend the reach of SMEs supporting the workforce
- disseminate new knowledge within the organization
- transfer group and individual knowledge across the organization
- Offer “one-stop-shopping” for all information needed to test the DISR standards
- Provide flexibility in determining which standards to prioritize during the test by giving them a set of criteria to evaluate low and high risk standards



# Example SC Testing

# CDL Test Process

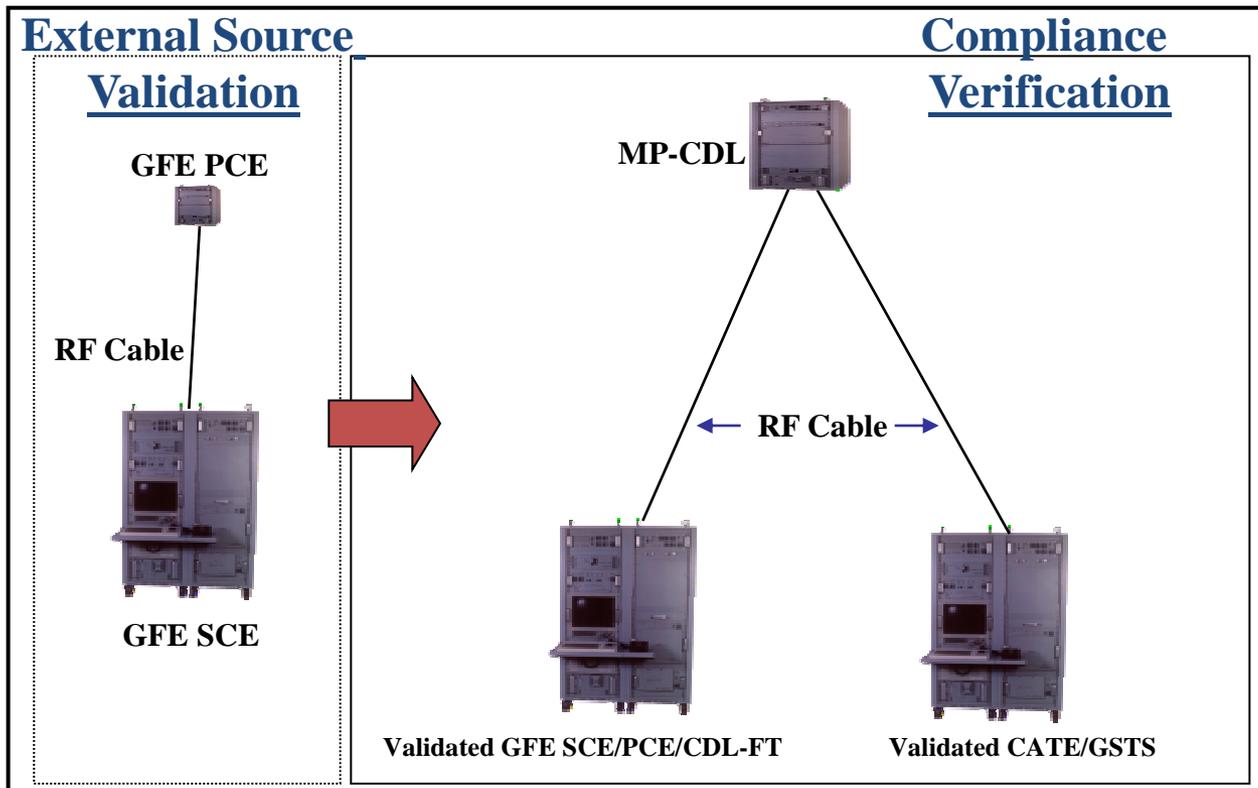


- **Compliance tests are normally conducted in a laboratory environment on an RF cable at the vendor's facility or at JITC**
- **Interoperability testing is in an operational environment, Line-of-Sight, over the air RF, demonstrating maximum slant range requirements and antenna pointing**

# Compliance Test Process



- The CDL SUT is tested to a JITC validated CDL system for waveform compliance



**Example MP-CDL  
Compliance  
Verification Test**

# Compliance Test Process (Cont)



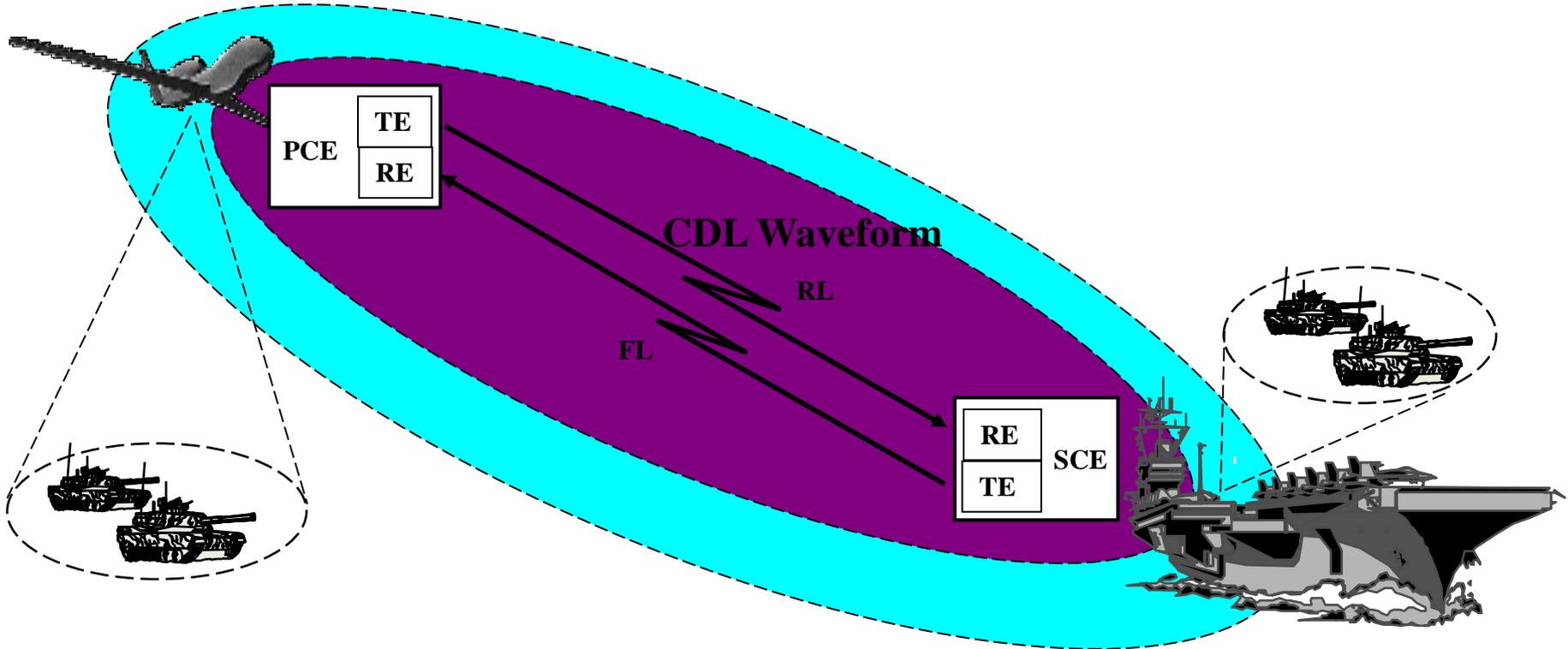
## Four Phase Test

1. **Modulation Off**
  - Frequency Accuracy
2. **Modulation On**
  - Channel BER
  - Digital Functions
  - PN Codes
  - Audio
  - Network
  - IDL/MIDL
3. **Encryption/Decryption**
  - Key Retention
  - Bypass
  - Channel BER
4. **SND**
  - Compare NAV data

# Compliance Test vs. IOP



ISR Airborne Sensor Platform



ISR Sensor Processor Platform

**Legend:**

- CDL = Common Data Link
- FL = Forward Link
- ISR = Intelligence, Surveillance, and Reconnaissance
- PCE = Platform Communications Element
- RE = Receive Element
- RL = Return Link
- SCE = Surface Communications Element
- TE = Transmit Element

 = CDL Waveform Compliance (Lab test)

 = CDL Interoperability (Operational environment)

