

# **PEO/SYSCOM Conference**

**Program Execution, Issues and Challenges**

*Fort Belvoir, Virginia*

## **Sessions A5 and B5**

*Army's Future Combat System, Implementing Net  
Centricity to the Tactical Edge: A Net-Centric Look  
at the FCS Program*

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**November 15 and 16th, 2005**

## *Today's Session*

### Panelists:

- **Moderator: COL George Eveland, Acquisition Directorate, OASD(NII)**
- **Panelists:**
  1. **Mr. John Kreger, Mitre Corp, OASD(NII) System Engineering Team**
  2. **LTC David Bassett, US Army, PM for Future Combat Systems (Brigade Combat Team) Software Integration**

## *Today's Agenda (15 Nov 05)*

### **1600-1615: COL Eveland**

- Opening Remarks
- FCS Review Methodology

### **1615-1640: Mr. John Kreger**

- Net Centric Requirements
- Conduct of the FCS Net Centric Review

### **1640-1705: LTC Bassett**

- Net Centric Implementation and Findings
- PM's Perspective

### **1705-1715: COL Eveland**

- Wrap-up

## *Today's Agenda (16 Nov 05)*

### **1045-1100: COL Eveland**

- Opening Remarks
- FCS Review Methodology

### **1100-1125: Mr. John Kreger**

- Net Centric Requirements
- Conduct of the FCS Net Centric Review

### **1125-1150: LTC Bassett**

- Net Centric Implementation and Findings
- PM's Perspective

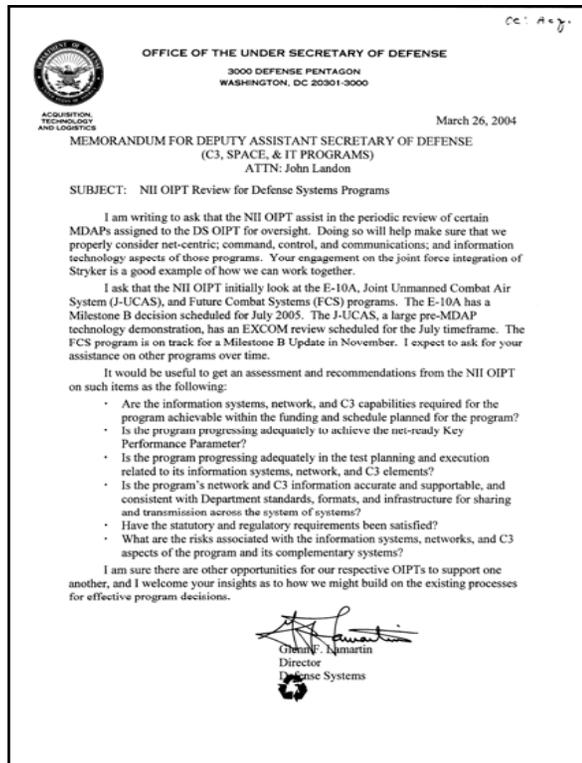
### **1710-1715: COL Eveland**

- Wrap-up

# FCS Network Centric Review

## The Task

### Dr. Lamartin's March 26, 2004 Memorandum to Mr. Landon



- Request the NII OIPT assist in periodic review of selected MDAP programs assigned to the DS OIPT for oversight

- FCS
- J-UCAS
- E-10A

- Ensure Adequate Consideration of Net-Centric, C3, and IT aspects

- Provide NII OIPT Assessment & Recommendations

- Information Systems, Network, and C3 Capabilities
- Progress towards Net-Ready KPP
- Progress in network-related test planning and execution
- Adequacy of Network and C3 planning—consistent with Department standards, formats, and infrastructure
- Statutory and regulatory requirements
- Network-Related Risk Assessment

## ***Challenges***

- **Tightly-Integrated/Aggressive Schedule leading to November 2004 DAB review**
- **Newly-Introduced Spiral FCS Acquisition Strategy**
- **Unresolved Issues from AT&L Lead JFIRT**
- **Understanding FCS Data Strategy**
- **Emerging Transport Issues**
- **Synchronizing NCES and FCS System of Systems Common Operating Environment (SoSCOE)**
- **Congressional Interest**

# ***FCS Network Review Methodology***

## **NII OIPT Leader's Guidance**

- Review FCS Networks using Net Centric Checklist as departure point
- Utilize NII (MITRE) Systems Engineering Team for Technical Review

### **OIPT Objectives:**

- **Understand Overall CONOPS for C2, Comms, and ISR**
- **Outline of Networking & Transport (address reach-back, latency, etc)**
- **Understand Data Strategy**
  - Access to both Internal and External Databases (NGA, GCCS-J, JC2)
  - Assuming Connectivity—can Army fully access all data and applications via the Net
  - Impact of limited bandwidth and throughput
  - Knowledge Management Systems
  - Disconnected Operations
- **FCS Network Baseline and Migration Strategy**
  - Understanding the End-State
  - Identifying Opportunities for Increasing Capability
  - Immediate Focus on the first spiral

# **Net Centric Tenets**

(NII Net Centric Checklist v 2.1.3., 12 May 04)

**Corresponding NII/MITRE FCS Systems Engineering Team**

## **Data Tenets—Data/Applications Team**

- Make Data Visible
- Make Data Understandable
- Make Data Accessible
- Make Data Trustable
- Make Data Interoperable
- Be Responsive to User Needs

*How to “organize” the data*

## **Service Tenets—Enterprise Services Team**

- Service-Oriented Architecture
- Open Architecture
- Scalability
- Availability
- Accommodate Heterogeneity
- Decentralized O&M
- Enterprise Service Management

*How to “use” the data*

## **Information Assurance—IA Team**

- Identify Management and Authentication
- Mediate Security Assertions
- Cross Security Domains Exchange
- Manage Identity and Privileges
- Encryption and HAIPE
- Employment of Wireless Technologies

*How to keep it “honest”*

## **Transport Tenets--Transport Team**

- IPv6
- Packet Switched infrastructure
- Layering, Modularity
- Transport Goal
- Network Connectivity
- Concurrent Transport of Information Flows
- Differentiated Management of Quality of Service
- Inter Network Connectivity
- JTA
- Joint Net Centric Capabilities
- Operations and Management of Transport and Services

*How to “move” the data*

# **FCS Network Review Construct**

- Multiple Reviews

- Four Net Centric (NC) Review Teams
- NC Tiger Team & WIPT
- Network IIPT
- Network OIPT

- Four Net Centric Review Teams

- Detailed Reviews
- Net Centric Checklist is start point modified for FCS as necessary
- Focused on 4 NC Checklist Areas:
  - Transport
  - Enterprise Services
  - Data & Applications
  - Information Assurance
- Chaired by MITRE Team Leaders
- Corresponding Army Program Ofc leads
- Focused on key Complimentary Programs
- NII PSA and MITRE Lead coordinate across teams as required

- Net Centric Tiger Team

- Chaired by MITRE Team Lead And Deputy PM UA NSI
- Lengthy/Detailed Reviews of all 4 NC Review Team activities
- Initial integration of Team Activities
- Validates Key Issues for WIPT
- Army OSD, Army, Service/Agency reps

- Network WIPT

- Chaired by NII PSA and PM UA NSI
- Each NC Review Team Lead Briefs WIPT
- Provides Feedback and Focus to each NC Review Team
- Works/Integrates Key Issues into overall IIPT/OIPT construct
- Ensures sound IIPT/OIPT methodology

- Network IIPT

- Chaired by NII PSA and D/PM UA
- Finalize OIPT Brief & Recommendations
- Socialize Key Issues
- Facilitates Prep of OIPT Principals

**Network OIPT** — Provides FCS Network Recommendation to DAB

## ***FCS Networks Review Participants (Tiger Team & WIPT)***

- **OSD NII**
  - **Communications Programs—OSD PSA**
  - **C2 Programs**
  - **Acquisition Directorate**
  - **Deputy CIO Office**
  - **NII Systems Engineer**
- **NII/MITRE Systems Engineering Team**
- **OSD AT&L (DS)**
- **USD(I) (ISR Programs)**
- **OSD PA&E**
- **DOT&E**
- **Joint Staff (J2/J6/J8)**
- **JFCOM**
- **Service Reps (USN, USMC & USAF)**
- **NGA**
- **DISA**
- **NSA**
- **Army G2/G3/G8**
- **Army G6/CIO**
- **Army SAE (C4 & Systems Integration)**
- **PM Unit of Action Network Systems Integration (PM UA NSI--Lead PM)**
- **FCS Lead Systems Integrator (LSI)**
- **PM WIN-T**
- **JTRS JPO**
- **PM DCGS-A**
- **Army R&D Command/CERDEC**
- **PEO IEWS**
- **PEO C3T**
- **Army TRADOC**

## *Integrated FCS Review Schedule Leading up to November 2004 FCS DAB*

<u>Action</u>	<u>Date</u>
Present Plan	14 June
Kick-off Mtg - Establish NC Tiger Team (TT)	21 June
Network Review Planning meeting--Army Staff, AT&L and NII	24 June
Network TT Meeting #1	13 July
ASD(NII) Net Centric Review--SOSCOE Brief	16 July
AT&L DS IIPT	21 July
TT Meeting #2	12 Aug
Network WIPT	17 Aug
AT&L DS IIPT	18 Aug
Army FCS ASARC	23 Aug
AT&L DS OIPT	25 Aug
Network TT #3	2 Sep
Network WIPT	9 Sep
AT&L DS IIPT	22 Sep
Network TT #4	22 Sep
Network WIPT	28 Sep
Network IIPT	7 Oct
Network & System Army ASARC	15 Oct
AT&L DS IIPT	19 Oct
Network OIPT	20 Oct
AT&L DS OIPT	28 Oct
<b>MS B Update to DAB</b>	<b>18 Nov</b>

Note:           Items in Blue are Network Driven Review Events  
                       Items in Black are System Driven Review Events

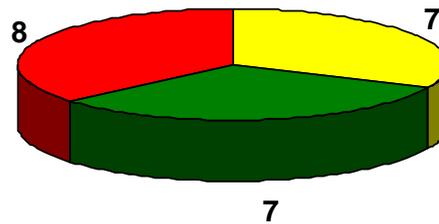
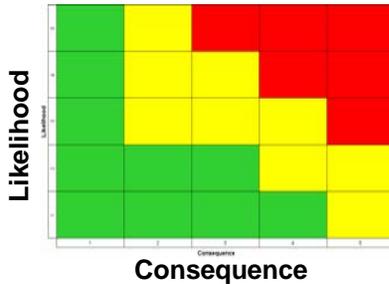
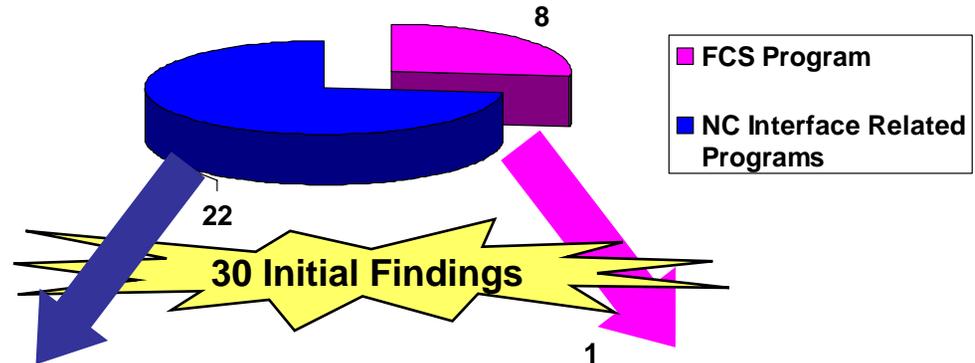
# ***FCS DAB Agenda—18 Nov 2004***

- ✓ Introduction Dr. Lamartin
  
- ✓ Program Overview BG (P) Cartwright
  - ✓ Progress to Date
  - ✓ Spiral-outs
  
- NC OIPT Overview Mr. Landon
  
- Issues and Way Ahead Dr. Lamartin
  - Systems Engineering
  - Spin-off of Capabilities

# FCS Net Centric Findings November 2004 DAB

	Internal To Army	External To Army	Interface Program	FCS Program
Technical	9	6	10	5
Resources	5	1	6	0
Synchronization	5	4	6	3

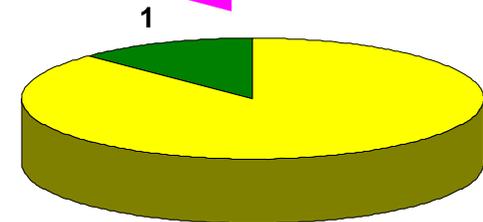
**Total FCS NC Assessment Findings**



**Related to NC Interface Programs**

### Key Actions

- Establish COIs & Community Data Standards
- Fund for IPv6 Transition, SRW Porting, JTRS Compliant solutions, Teleport Interfaces
- Define Network Management Interfaces
- Define Operational Threads--for End to End Performance Thresholds
- Develop approved JTRS Migration Strategy
- Develop Testable Key Interface Profiles
- Synchronize NCES and SoSCOE
- Establish Info Assurance Architecture SWG



**Related to FCS Program**

### Key Actions

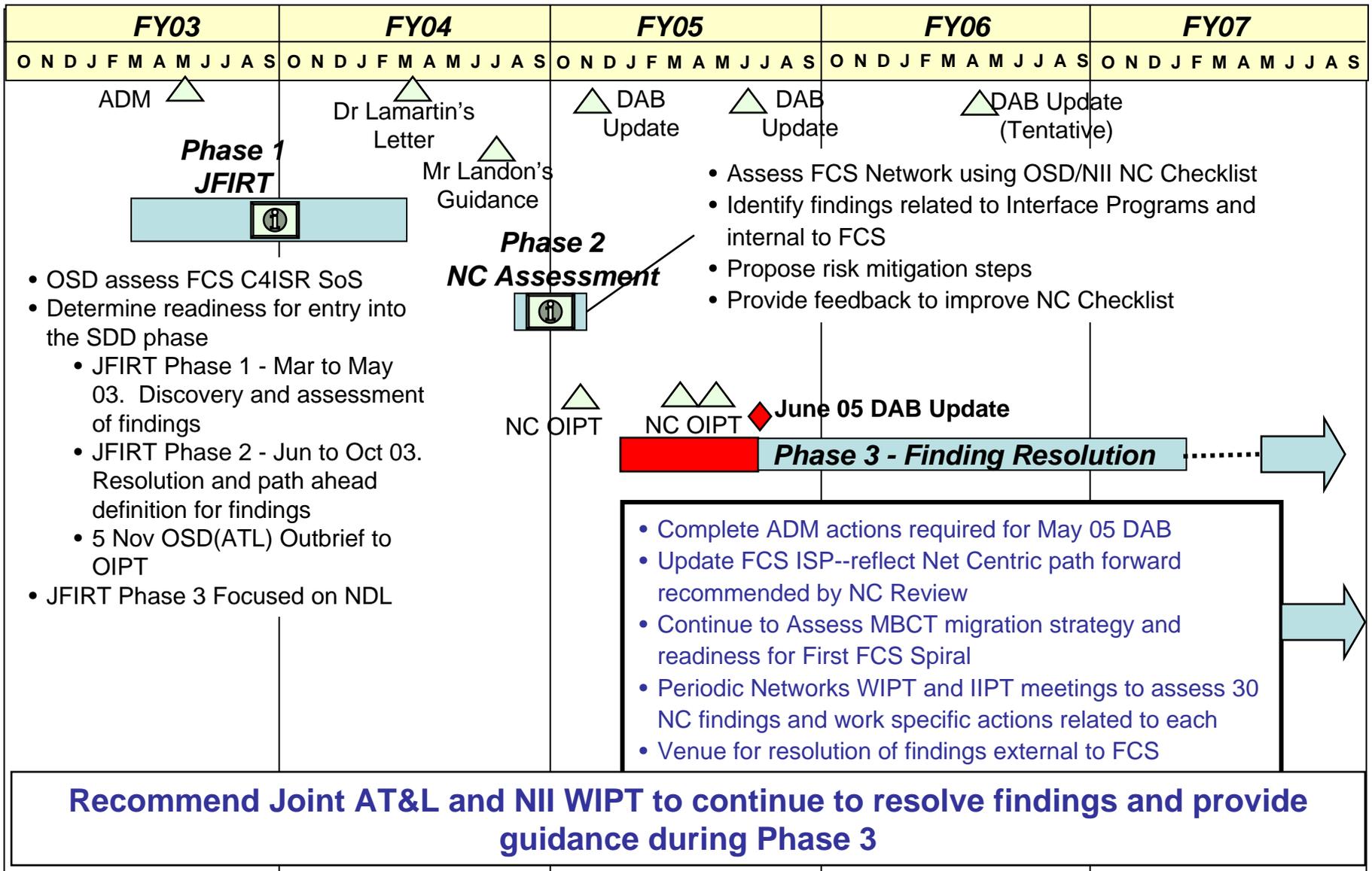
- Identify/Manage FCS Data Model
- Develop FCS Use Cases & Data Schemas
- Identify NCES Dependencies
- Develop ES Strategy
- Define FCS IA Architecture in more detail
- Decide Tactical PKI Design
- Develop Policy in support of Unanticipated Users

**FCS can achieve  
Net Centric Capability**

**FCS Network Centric Review**  
***Outcome of the Nov 2004 DAB***

- **OASD(NII) Networks OIPT continue assessment of FCS Network maturity**
- **Coordinate activities with the Defense Systems OIPT**
- **Include consideration of Network's ability to mitigate effects of EMP**
- **Networks WIPT and Army to jointly develop a detailed risk management plan to resolve the 30 findings (1 Apr 2005)**
- **Joint Staff continue to closely coordinate with Army on development of:**
  - **Key Interface Profiles (KIPS)**
  - **Joint Integrating Concepts (JIC) in support of FCS**

# FCS Networks Review Way Ahead



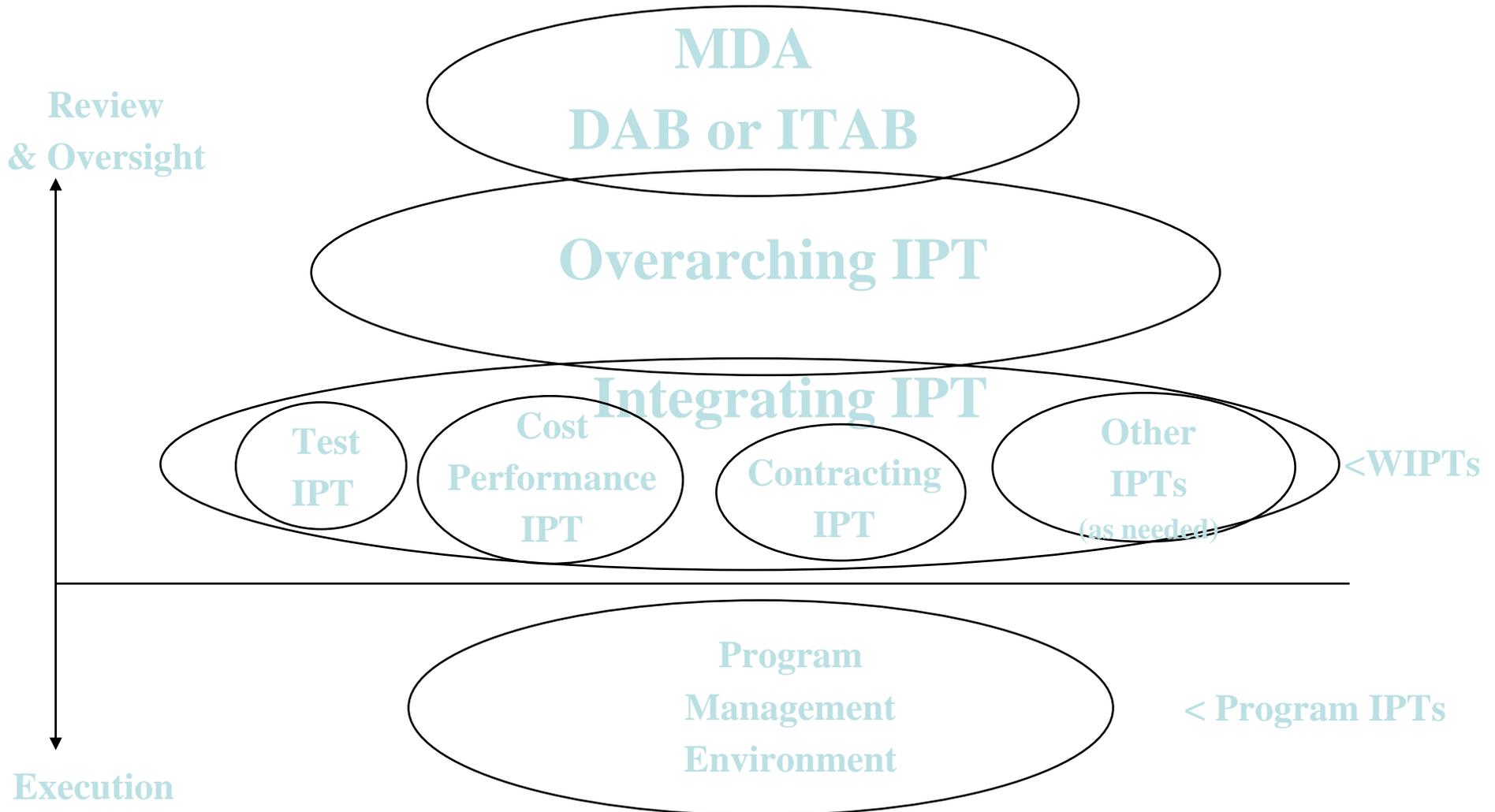
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***BACK-UP Slides***

# ***IPT Structure***



- MDA (Milestone Decision Authority)
- DAB (Defense Acquisition Board)
- ITAB (Information Technology Acquisition Board)

# OSD Acquisition Oversight

## ACAT ID Programs

Milestone Decision Authority:  
USD(AT&L)

Defense Acquisition Board  
DAB

## ACAT IAM Programs

Milestone Decision Authority:  
ASD(NII)/DoD CIO

IT Acquisition Board  
ITAB

**Additional Advisors**  
 PDUSD(AT&L)  
 GC  
 L&MR  
 CAIG  
 DP/AP  
 IP  
 SI  
 USD(AT&L)  
 Special Asst  
 D, Innovation  
 (NGA) as req'd  
 CAEs  
 OIPT Leader

**Chair: USD(AT&L)**

**Co Chair: VCJCS**

USD(C)  
 DOT&E  
 USD(P)  
 ASD(NII)/DoD CIO



USD(I)  
 D, PA&E  
 USD(P&R)  
 Service Secretaries  
 D, AR&A

OSD PSA  
 Joint Staff  
 DASD(Dep CIO)  
 OSD, GC  
 Component CIO  
 Component Acquisition Executive  
 Component User Representative



USD(I)  
 OUSD(AT&L)  
 OUSD(C)  
 OSD(PA&E)  
 DOT&E  
 OIPT Leader

Others as appropriate

**Defense Systems OIPT**  
**Glenn Lamartin**  
**OUSD(AT&L)**  
 Defense Systems  
**33 ACAT ID**  
 Includes: Pre-MDAPs

**Networks and Information Integration OIPT**  
**John Landon**  
**OASD(NII)**  
 C3ISR & IT Systems  
**24 ACAT ID & 39 ACAT IAM**  
 Includes: Pre-MDAPs/Pre-MAIS

USD(C) - Funding  
 USD(C) - BMMP Certification (MAIS)  
 USD(P) - Policy  
 USD(P&R) - Training/Personnel/System Engineering  
 USD(AT&L) - Acquisition Strategy/Dev Test & Evaluation/Acquisition Management/Resources Analysis/Logistics/System Integration/Environmental/TRA  
 USD(I) - Intelligence Support  
 DOT&E - Operational Test/Evaluation  
 DIA - Threat Assessment

OIPT Leader



**OIPT/IPT Membership**

Component Acquisition Executives  
 OSD PSA/Domain Owner - Functional Area  
 Joint Staff - Requirements/Functional Area  
 OSD(PA&E) - Alternatives/Economic Analysis  
 OSD(CAIG) - Independent Cost Estimate (MDAP)  
 OGC - General Counsel - Legal  
 ASD(NII)/DoD Net-Centricity/Clinger-Cohen/Information Support Plan/Spectrum/Information Assurance  
 NGA - Imagery

# NII OIPT Leader Feedback

## *NII OIPT Programs & Oversight*

**Oversight: More than 200 Active Development Programs (various ACATs)**

### **MDAP Programs** (Supporting the USD(AT&L) and DAB)

- **C3 Programs:** JTRS, WIN-T, MCS, HPCM, etc
- **ISR Programs:** DCGS, Cobra Judy, Global Hawk, etc
- **Net Centric (NC) Support to DS OIPT Leader:** FCS Networks, E-10, J-UCAS, JSF
- **Special:** preparations for recent SBIRS Nunn-McCurdy DAB Reviews

### **MAIS Programs** (Supporting the ASD(NII) and ITAB)

- **C2 IT Programs:** GCCS-Joint, DJC2, Air Force MPS, etc
- **Business IT Systems:** DIMHRS, CHCS-2, Navy ERP, GCSS-Army, etc
- **Intelligence & Security IT Programs:** PKI, KMI, etc

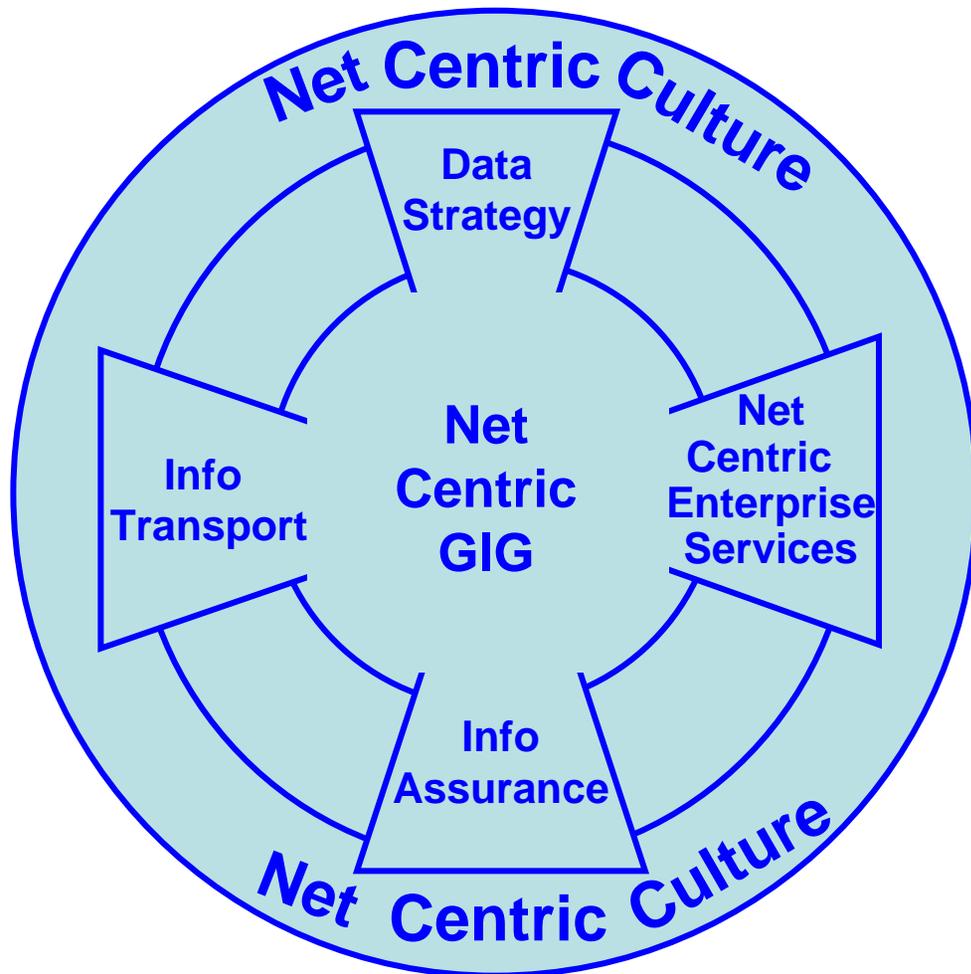
### **Space MDAP Programs** (all are Air Force ACAT 1C)

- **NII is OSD Principal Staff Activity (PSA) for Space**
- **Facilitates OSD-Wide Coordination of Space Acquisition Documents**
- **Space Acquisition Program Oversight:** TSAT, AEHF, GBS, NPOESS, GPS, SBR, etc.
- **Review & Coordinate on Space Acquisition Policy Development:** NSS Acq Policy 03-01

### **Intelligence Programs**

- **Cooperative Oversight of Defense Intelligence Agency Acquisition Programs**

# Net-Centric GIG Framework



## KEYSTONES (4 NC tenets)

- **Data Strategy:**
  - *How to “organize” the data*
- **Info Assurance:**
  - *How to keep it “honest”*
- **NC Enterprise Services:**
  - *How to “use” the data*
- **Info Transport:**
  - *How to “move” the data*

# FCS Networks Review

## Findings by Net-Centric Category & Risk -- November 2004

### Interface Program Findings

#### Data and Apps (DA) Findings

- (DA1) Immature COI's
- (DA2) Geospatial COI
- (DA3) Implementation of Enterprise Identifiers
- (DA4) E2E Performance & Scalability

#### Enterprise Services (ES) Findings

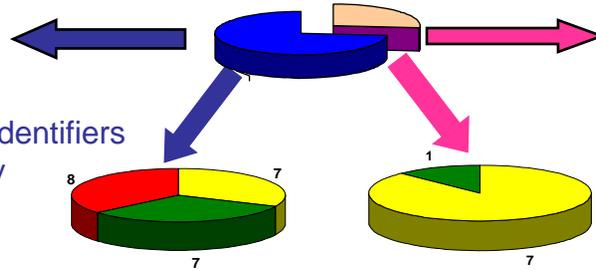
- (ES1) Immature Net-Centric Architecture and Governance
- (ES6) Net-Ready KPP Testability

#### Information Assurance (IA) Findings

- (IA1) High End Assurance IP Encryptors

#### Transport (T) Findings

- (T1) IPv6 Funding Plan
- (T2) Soldier Radio Waveform (SRW) Porting to Cluster 1
- (T3) Net Data Link (NDL) Hardware Funding
- (T4) NDL Size, Weight, and Power for UAV
- (T5) JWNM to manage SRW and NDL
- (T7) Routing Architecture Definition
- (T8) HETNET for SRW and NDL
- (T9) Transport Interoperability for Voice and Video
- (T10) Internet Protocol (IP) Connectivity to Teleports
- (T11) Quality of Service (QoS) Management
- (T12) WIN-T Radio Frequency (RF) Subsystem
- (T13) Data Exchanges Among Net Managers
- (T14) Dynamic Assignment of RF Resources
- (T15) JTRS protocols in Joint Technical Arch (JTA)
- (T16) Interim JTRS Cluster 5 Solution



### FCS Program Findings

#### Data and Apps (DA) Findings

- (DA5) Web Services Support
- (DA6) Metadata & Discovery Support

#### Enterprise Services (ES) Findings

- (ES2) Undefined ES Dependencies
- (ES3) FCS and NCES Reuse
- (ES4) Support of Unanticipated Users
- (ES5) Undefined ES Management

#### Information Assurance (IA) Findings

- (IA2) Tactical PKI Implementation
- (IA3) Joint and Army IA Architecture Definition

