



Joint Architecture Federation

*Realizing the Vision of Leader-Centric,
Net-Enabled Command and Control (C2)*

Marty Westphal, SES
Executive Director
Joint Capability Developer FWD
US Joint Forces Command, J8F

Kim Frisby
Chief, Joint Architecture and
Engineering Division
US Joint Forces Command, J89



Joint Capability Development

C2 Capability Portfolio Management (C2 CPM)*

- Collaborative, inclusive partnerships with COCOMs/Services/Agencies/M-Nat'l
- Engage across DOTMLPF-P Spectrum
- Increase interoperability & operational effectiveness for C2 stakeholders

“Joint Integrator” Per UCP '08

- Joint Requirements
- **Joint Architectures**
- Data Strategy
- Joint Integrated Fires
- Multi-National Capability Development

Operational Sponsor for Global C2 Systems-Joint (GCCS-J) and Net-Enabled Command Capability (NECC)

- Direct coupling of capability requirements to materiel developers
- End-to-End Warfighter Engagement
- Holistic DOTMLPF-P Integration Focus
- “Do No Harm” transition to SOA-based capabilities

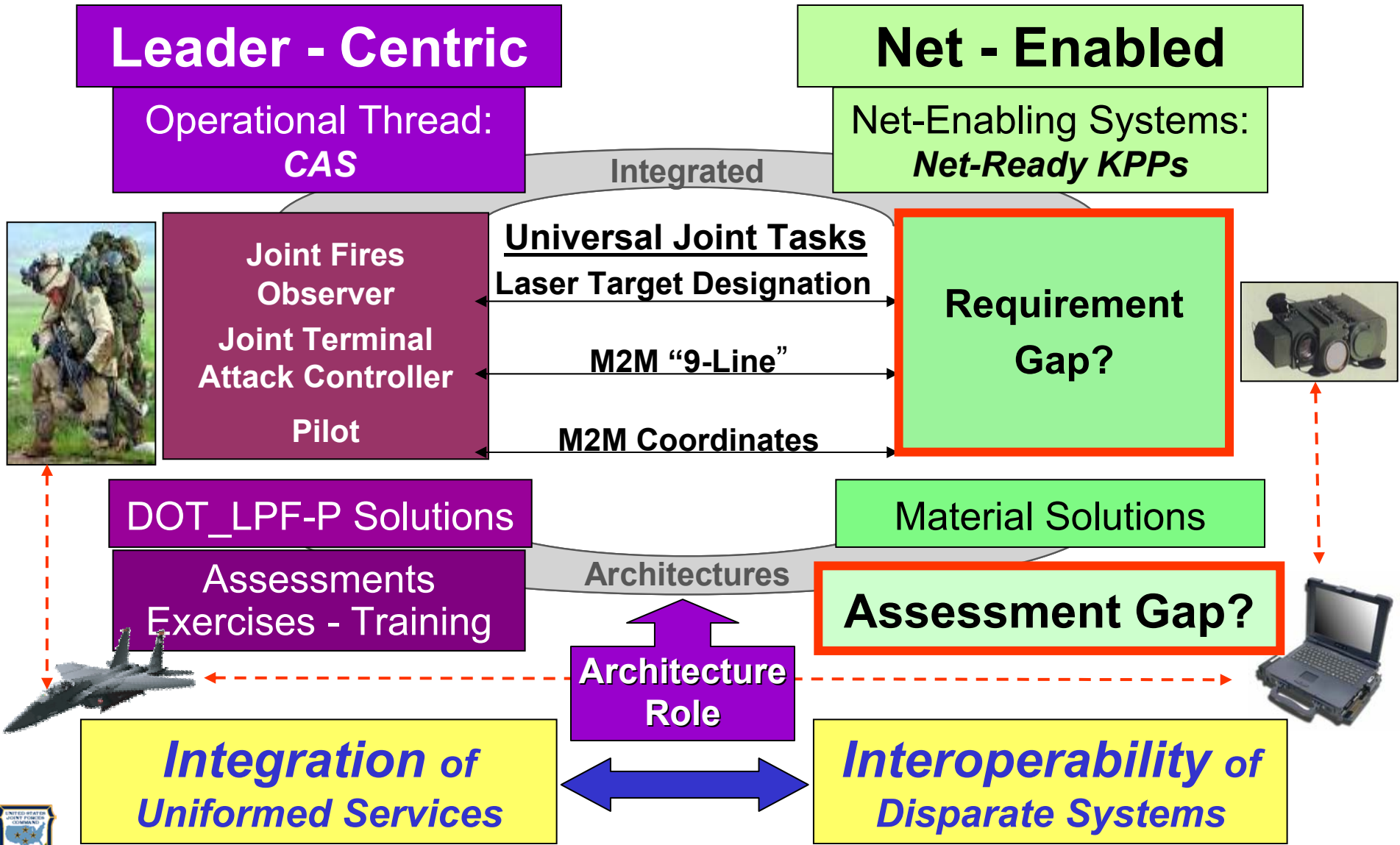
* CPM governance processes are contained in DoD Directive 7045.20, Sept 25, 2008

DOTMLPF-P = Doctrine, Organization, Training, Material, Leadership & education, Personnel, Facilities and Policy

UCP = Unified Command Plan

Shaping & Assessing C2 Capability

Example: Net-Enabled Close Air Support (*Digital CAS*)

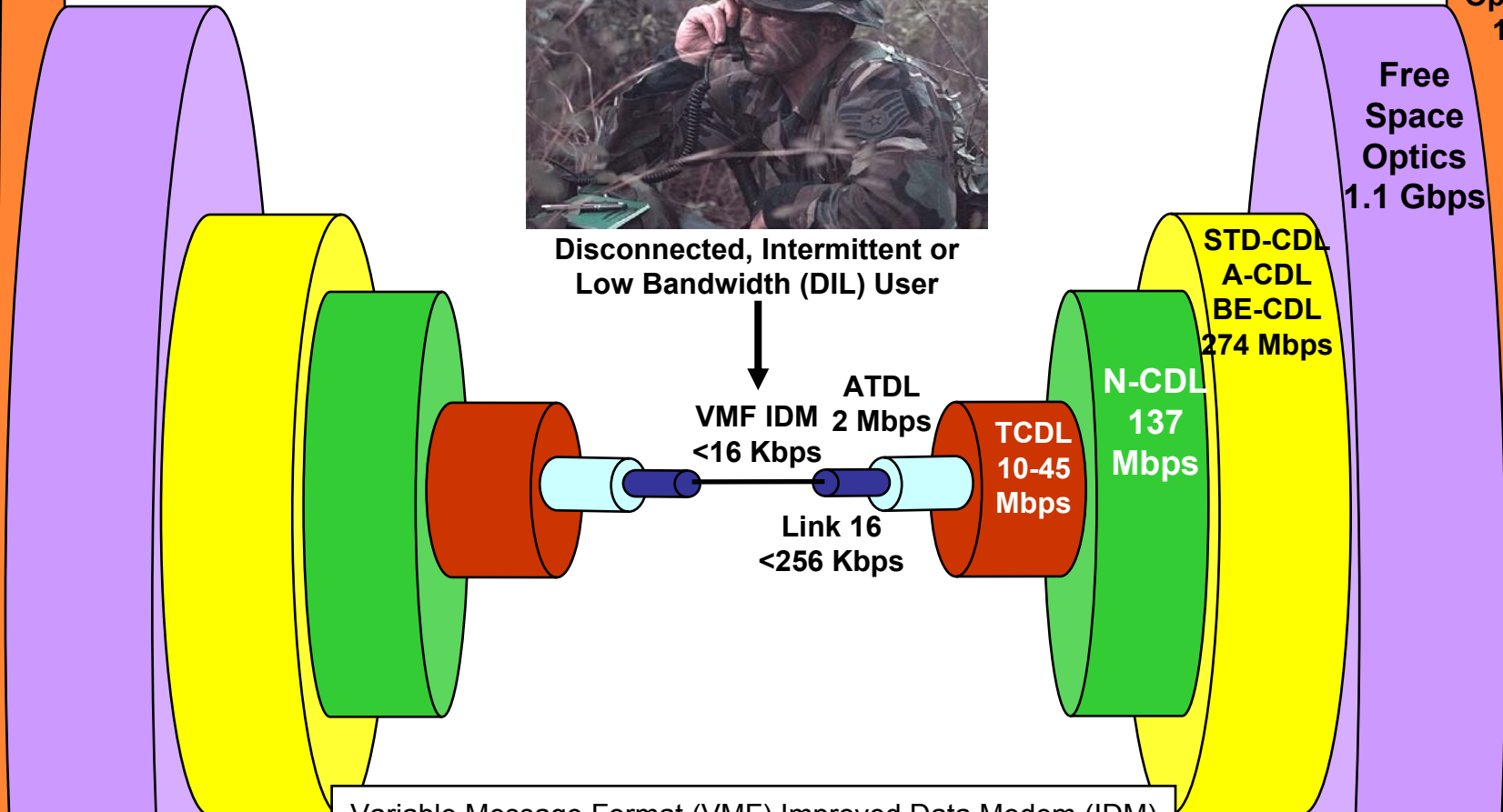


Relative Comm Pipe Sizes

The Physics of "Net Enabling"

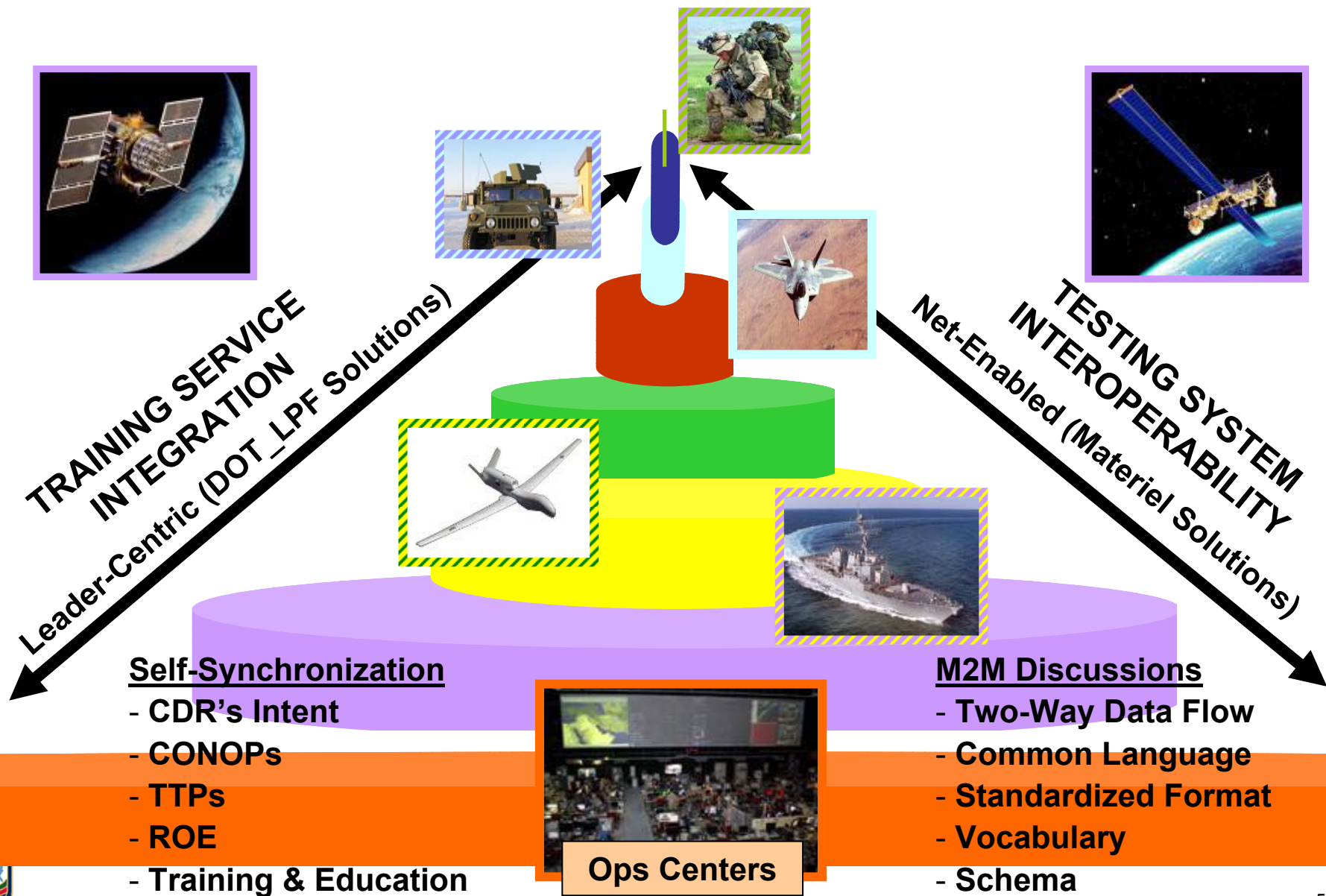


Disconnected, Intermittent or Low Bandwidth (DIL) User



- Variable Message Format (VMF) Improved Data Modem (IDM)
- Advanced Tactical Data Link (ATDL)
- Tactical Common Data Link (TCDL) (terminal)
- Networked Common Data Link (N-CDL)
- Standard Common Data Link (STD-CDL)
- Advanced Common Data Link (A-CDL)
- Bandwidth Efficient Common Data Link (BE-CDL)

Robust & Agile C2...the Physics: Self-Synchronization & Machine-to-Machine (M2M)



Capability Mapping Baseline

“Periodic Table” for Operational DOTMLPF-P Analysis

Policy

Standards

Joint Capability Areas (JCAs)

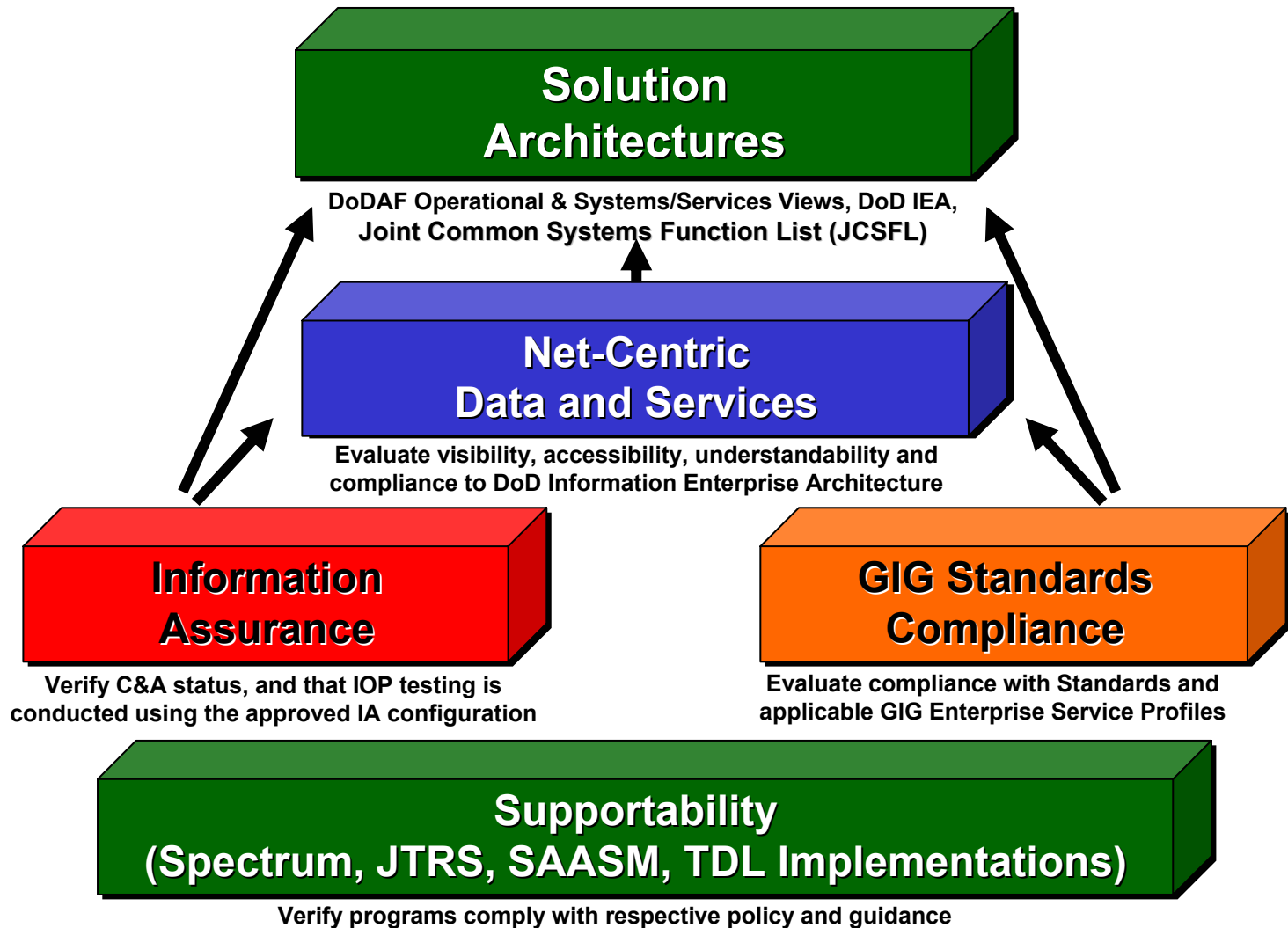
Systems Functions

**Architecture Elements
That Provide
A
Common, Joint Language
Under
the JCA Umbrella**

**“Deep Dive”
Architecture-Driven
Analysis that
Extends
the Common,
Joint Language**

Joint Integration
& Interoperability
Recommendations
via *Detailed*
DOTMLPF Analysis

Net-Ready Key Performance Parameter (NR-KPP) Elements in CJCSI 6212.01E



Interoperability Certification is based on NR-KPP Requirements in Capability-Based Acquisition Documents

Capability Information Sharing Challenges

- **Lack of “master, federated database” for JCIDS documents, including the e-ISP**
- **Inability to exchange information elements that keep lexicon, taxonomy, and ontology in-tact**
- **“Atomic Elements” of information exchange are not in-place to allow for dynamic re-composition, according to end-user requirements**

***Architecture Federation Pilot –
Addresses Capability Information Sharing Gap for
Joint Warfighting Missions***



Federation Background

- Decision makers at all levels of the DoD require access to the information provided by architectures in order to make informed decisions.
- Standards and guidance have existed to some extent for architecture development, however:
 - The tools methods for storing and sharing the data vary greatly between organizations.
 - Enormous amounts of architecture data has been collected in stove-piped, proprietary environments.
- As an example JFCOM's architecture environment that is rich with information designed to support standing up and certification of a Joint Task Force HQ.

Use of proprietary, stove-piped environments has hampered collaborative architecture development



Architecture Federation Purpose

- Maximize limited resources and eliminate and reduce duplication of effort
- Improve the speed of development for architecture products by reusability
- Share Data Between Various Organizations, Tools and Environments
 - Encourage more effective collaboration
 - Create more efficient architecture development and analysis processes in support of DoD initiatives
 - Improve relevancy to key decision processes (JCIDS, POM, etc.)

The logo for the Joint Architecture Integration Working Group (JAIWG) is located in the top left corner. It consists of a central circular emblem with the text "Joint Architecture Integration Working Group (JAIWG)" around it, surrounded by several smaller circular icons representing different military services and agencies.

JAIWG Architecture Federation Goal

Establish the ability to discover authoritative data in federated Joint/Service repositories in order to access, visualize, and use/reuse the data in support of the Warfighter.

CREDIBILITY: Key to the reuse of architecture information is the use of valid authoritative sources



Federation Sub-WG (SWG) Members

Participants

USJFCOM J89/J87*

Army Architecture Integration &
Management Division
(AIMD)*

Marine Corps Systems
Command*

ASD(NII)/DoD-CIO DoDAF
MetaModel (DM2) Team

Johns Hopkins University
Applied Physics Laboratory

Siemens Government Services

Advisory

Defense Architecture Registry
System User Group

Federated Joint Architecture
Working Group

Department of Defense
Architecture Framework Core
Management Group

USJFCOM J3/4 Force
Management Improvement
Program Architecture Team

Navy RDA-CHENG Mission Architecture IPT representative sits on SWG meetings

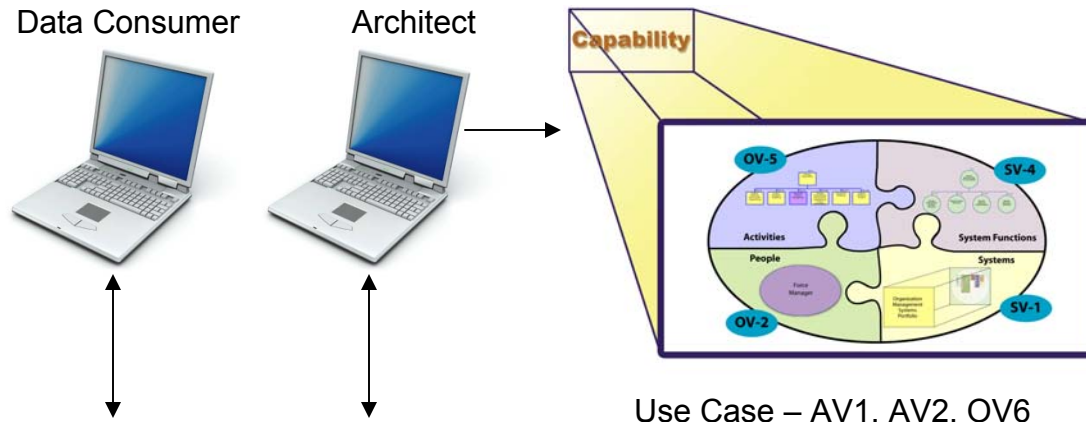
Air Force Aeronautical System Center (Wright Patterson) engaged with J89 to
become participant, post June 2009 demo

• *Indicates organizations with data repositories in Proof of Concept Demonstration*

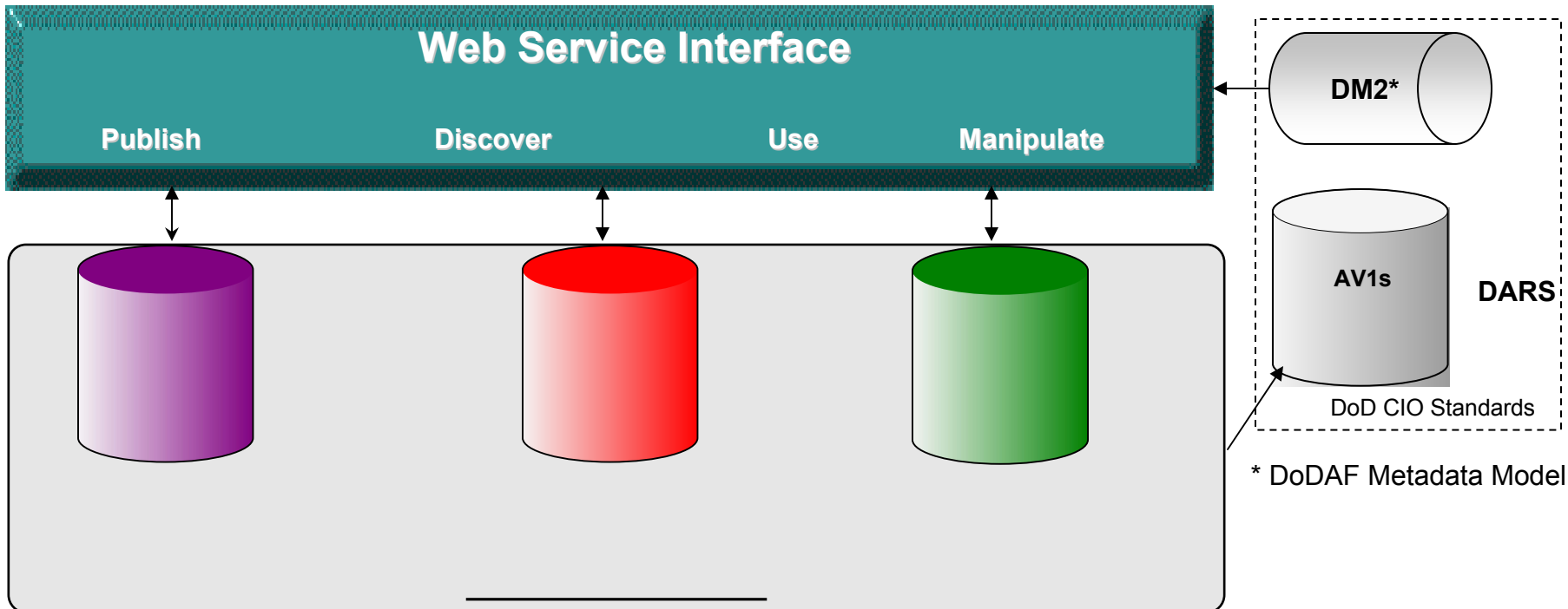


Federation Pilot Concept

1. User Searches for Data
2. Directory Service Returns Search Results from Registered Services to User
3. User Connects to Service Provider Through Data Translation Services
4. Service Provider Authenticates User and Returns Data to User (Use DKO/JKO)
5. User Displays Required Data



Use Case – AV1, AV2, OV6





Federation Return On Investment

- Standardized User Interface across web services
- Reduced architecture development/maintenance costs
- Authoritative sources/pedigreed information sets
- Improved governance to facilitate web mediation
- Scalable, customizable solutions for a wide variety of information consumers

Increase speed of architecture development by collaborative reuse of capability-based information



Points of Contact

- Kim Frisby margery.frisby@jfcom.mil
 - Phone: (757) 836 -7702
- William Piazza william.piazza@jfcom.mil
 - Phone: (757) 836 - 2725
- Warren Clark warren.clark@us.army.mil
 - Phone: (757) 788 - 5853
- JAIWG JKO Portal
 - <https://www.us.army.mil/suite/page/512915>
- JAIWG Federation Working Group JKO Portal
 - <https://www.us.army.mil/suite/page/596533>

See the Federation Pilot Demo in the Gateway V Meeting Room



Questions?