

Joint Architecture Federation Pilot

“SOA In Action - for Joint Warfighter Capabilities”



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Architecture Federation Purpose

- Reduce Rework and Eliminate/Reduce Duplication of Effort
- Share Data Between Various Organizations, Tools and Environments
 - Encourage a More Effective Collaboration Environment
 - Create More Efficient Architecture Development and Analysis Processes in Support of DoD Initiatives
 - Improved Speed of Development

Architecture Federation Project Background

- Architecture information, if properly developed, informs decision-making and *assists in visualizing* complex warfighter capability relationships and business processes
- Some standards and guidance for architecture development exist, however:
 - Data is “stove-piped” in various proprietary tools and repositories
 - Information sharing is difficult
- Use of proprietary architecture information has hampered the DoD’s capability to re-use and integrate previously developed architectures



Joint Architecture Integration Working Group (JAIWG)

- The Joint Architecture Working Group (JAIWG), membership was opened to all Service, COCOM, and Agency joint warfighting architects October 2006.
- *Goal is developing and integrating architectures for joint warfighters, scoped to the Joint Task Force (JTF)*
- Current members include cross-DoD organizations. Voting executive members are:
 - Army (TRADOC ARCIC)
 - USAF (GCIC)
 - Navy (NETWARCOM)
 - Marines (MCCDC & MARCORSSYSCOM)
 - OASD(NII) Enterprise Architectures & Standards
 - Joint Staff J65
 - *Business Transformation Agency (BTA)*

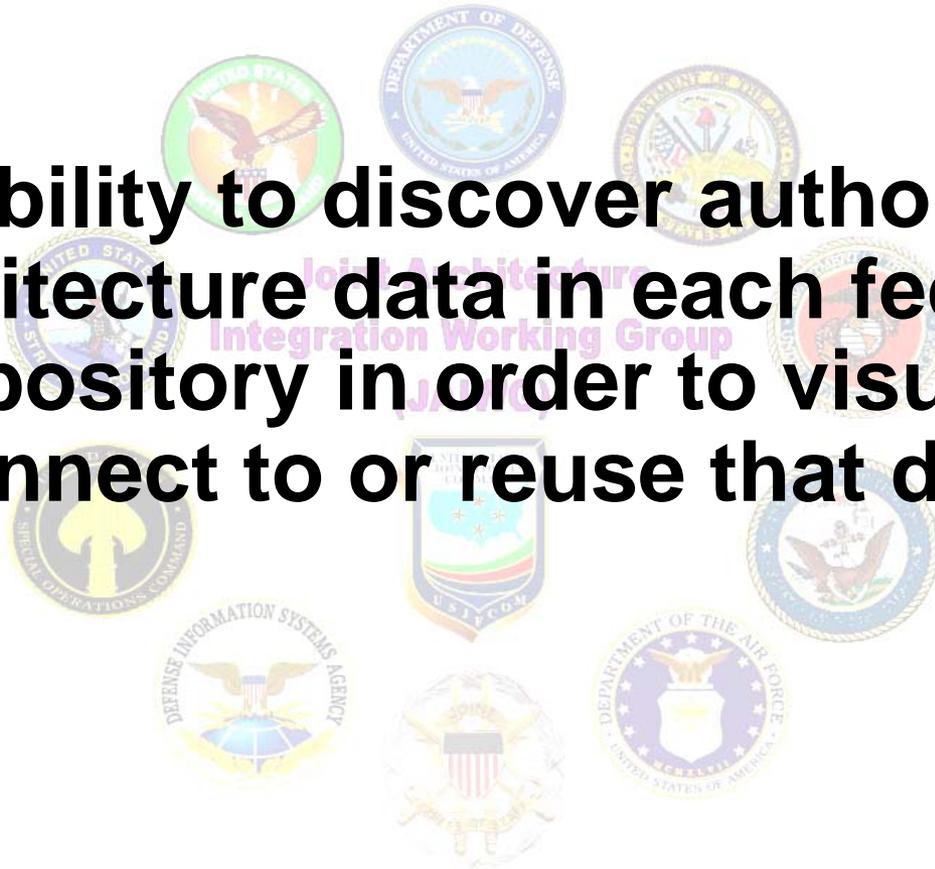


Joint Architecture Integration Working Group (JAIWG)

- Standing JAIWG Sub-Working Groups (SWG)
 - Joint Common System Function List (JCSFL) SWG
 - Joint Architecture Federation SWG
 - Pilot project is underway
 - Membership includes *OSD-NII, USJFCOM, Army, USMC, JHU-APL*
- JAIWG DKO/AKO Websites (Requires CAC or AKO Account):
 - Joint Architecture Integration Working Group (JAIWG):
<https://www.us.army.mil/suite/page/512915>
 - Joint Common System Function List (JCSFL):
<https://www.us.army.mil/suite/page/419489>
 - Joint Architecture Federation SWG:
<https://www.us.army.mil/suite/page/596533>

Architecture Data Federation Goal

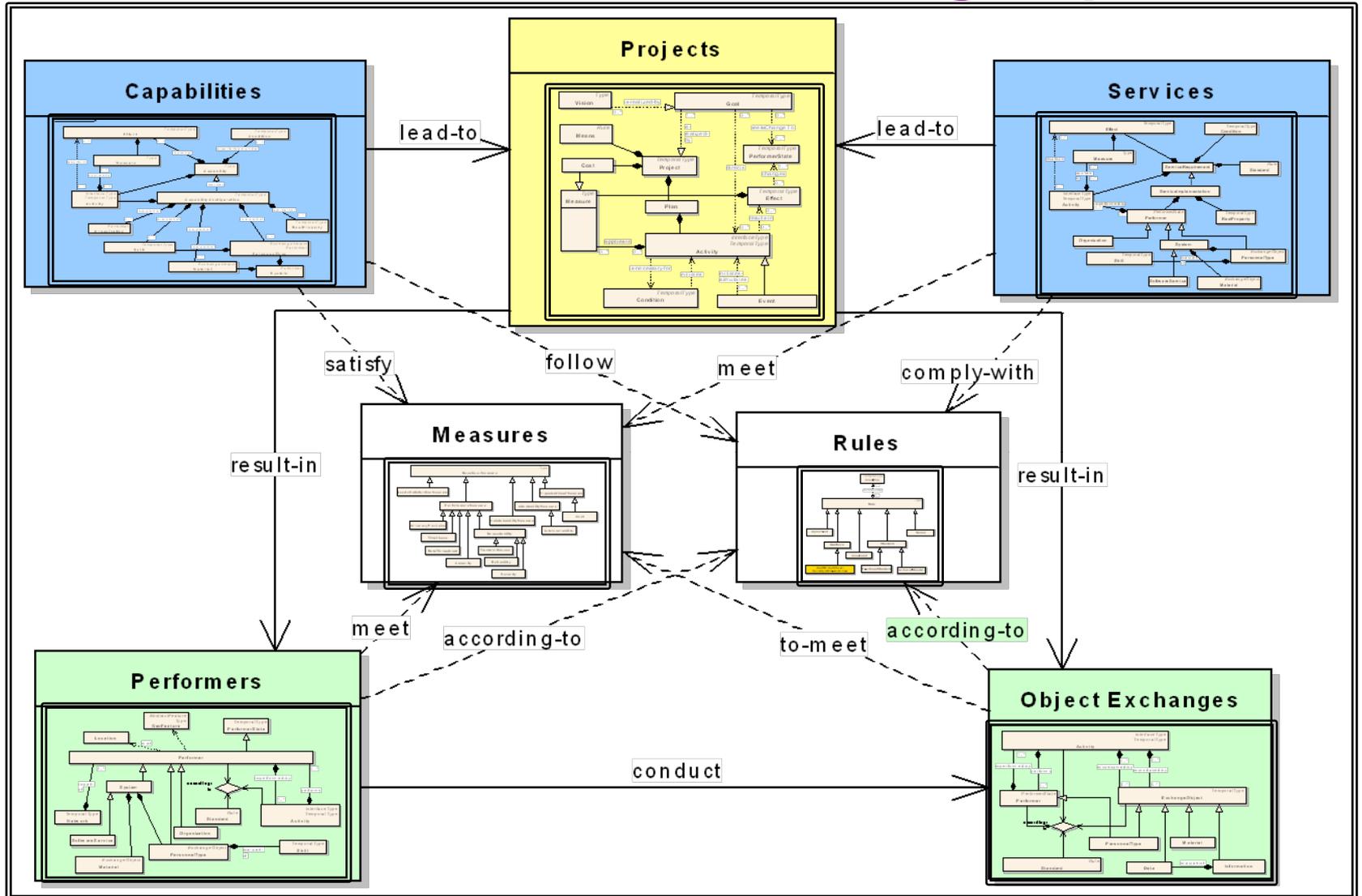
The ability to discover authoritative architecture data in each federated repository in order to visualize, connect to or reuse that data.



DoDAF 2.0

- Development facilitated by OASD(NII), through working *group* members from across the DoD architecture community
- DoDAF 2.0 Format:
 - VOLUME I, DoDAF Conceptual Data Model (CDM)
 - *Core Concepts, Definitions, Relationships*
 - VOLUME II, DoDAF Logical Data Model (LDM)
 - *Attributes, specializations, and association reifications*
 - VOLUME III, DoDAF Physical Exchange Model (PES)
 - *Specific data types, implementation attributes, sample XSD's*

DoDAF Metamodel (DM2)* Logical Data Model Standard Lexicon & Data Exchange Specification



* Released as part of DoD Architecture Framework (DoDAF) 2.0



U.S. Joint Forces Command

Joint C2 (JC2) Architecture and Capability Assessment Enterprise (JACAE)



The Joint Command and Control (JC2) Architecture and Capability Assessment Enterprise (JACAE) provides:

- A collaborative architecture development and integration environment
- Employment of a standard framework and repeatable processes to generate reusable operations, systems, technical architecture & capability standards, and enterprise reference architecture data
- Support to USJFCOM, COCOM, Services, and joint mission areas, including USJFCOM's overall mission of guiding transformation.

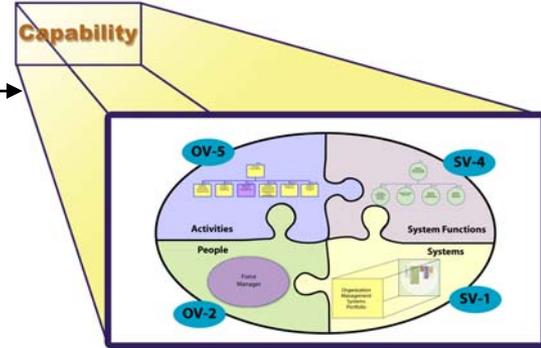
Federation Pilot Concept

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

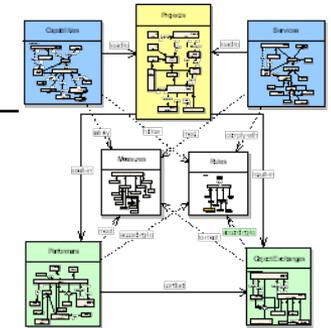
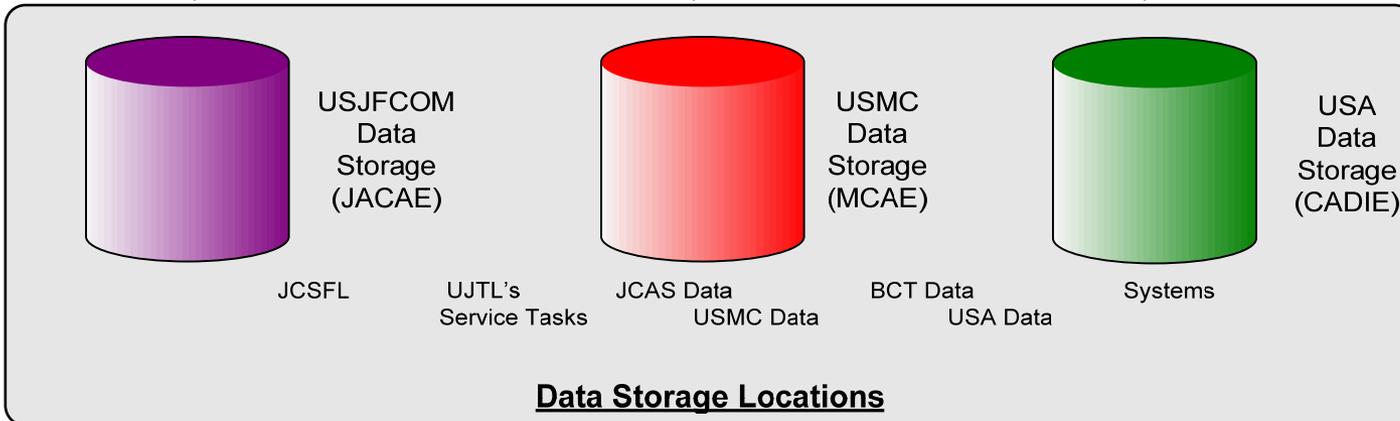
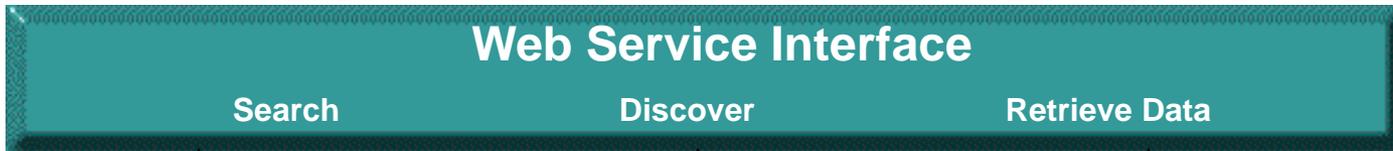
Data Consumer



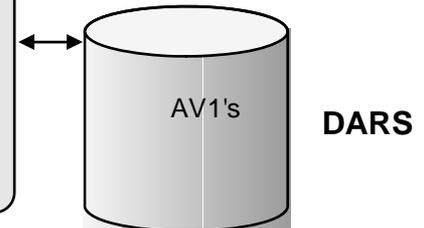
Architect



Use Case – AV1, AV2, OV6



DM2 Logical Data Model



Three Vinegar Tasters



Philosophical Approach

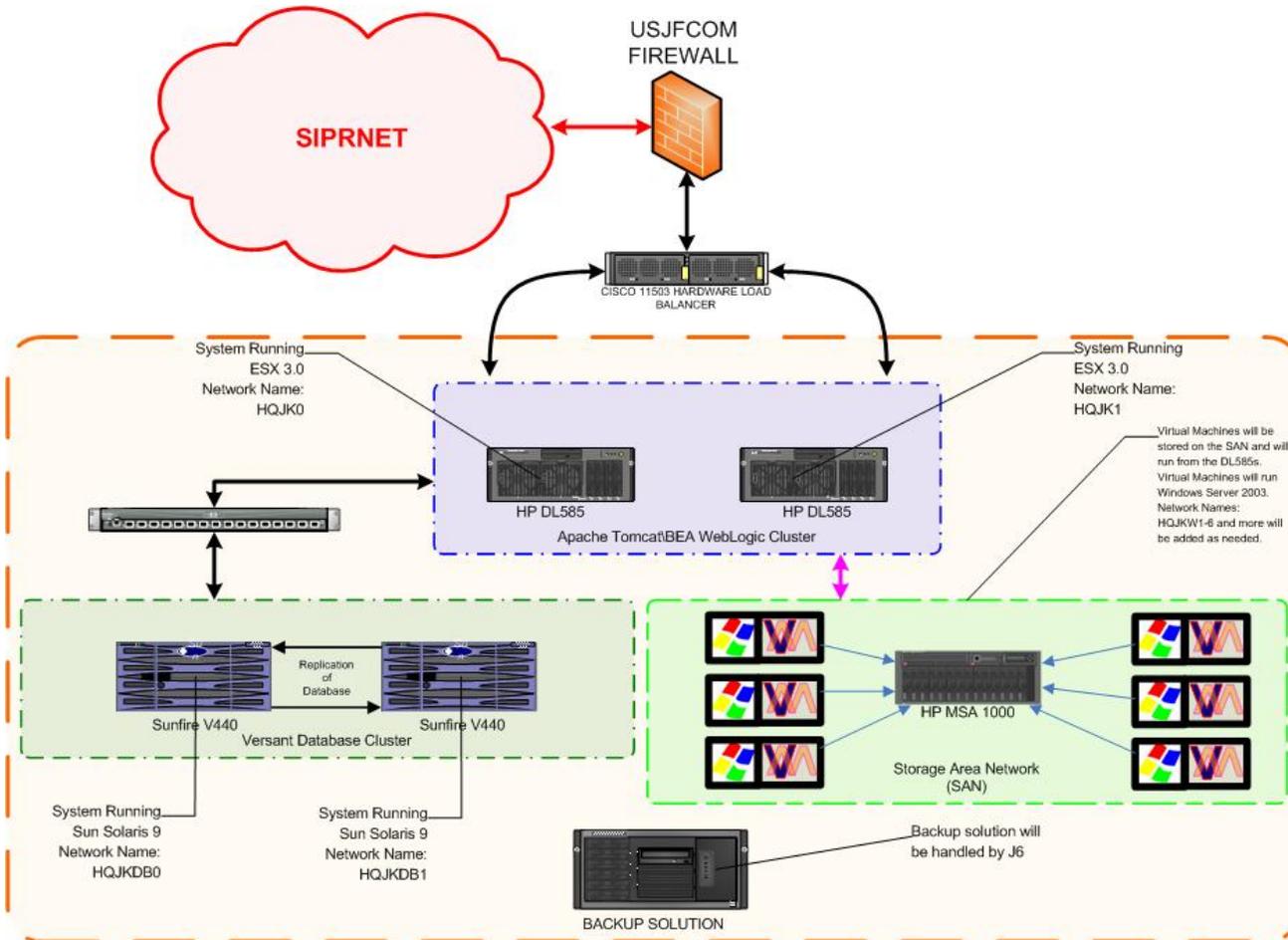
- The J89 division of JFCOM is driven to help the warfighter.
- Kim Frisby leads the J89 division with this line of thinking.

“Take calculated risks to provide efficient , effective, and innovative solutions to meet joint warfighting needs.” *Kim Frisby*

Planning

- JFCOM Systems Engineering and Architecture Division J89 has a plan.
- Applying Business and Engineering Concepts.

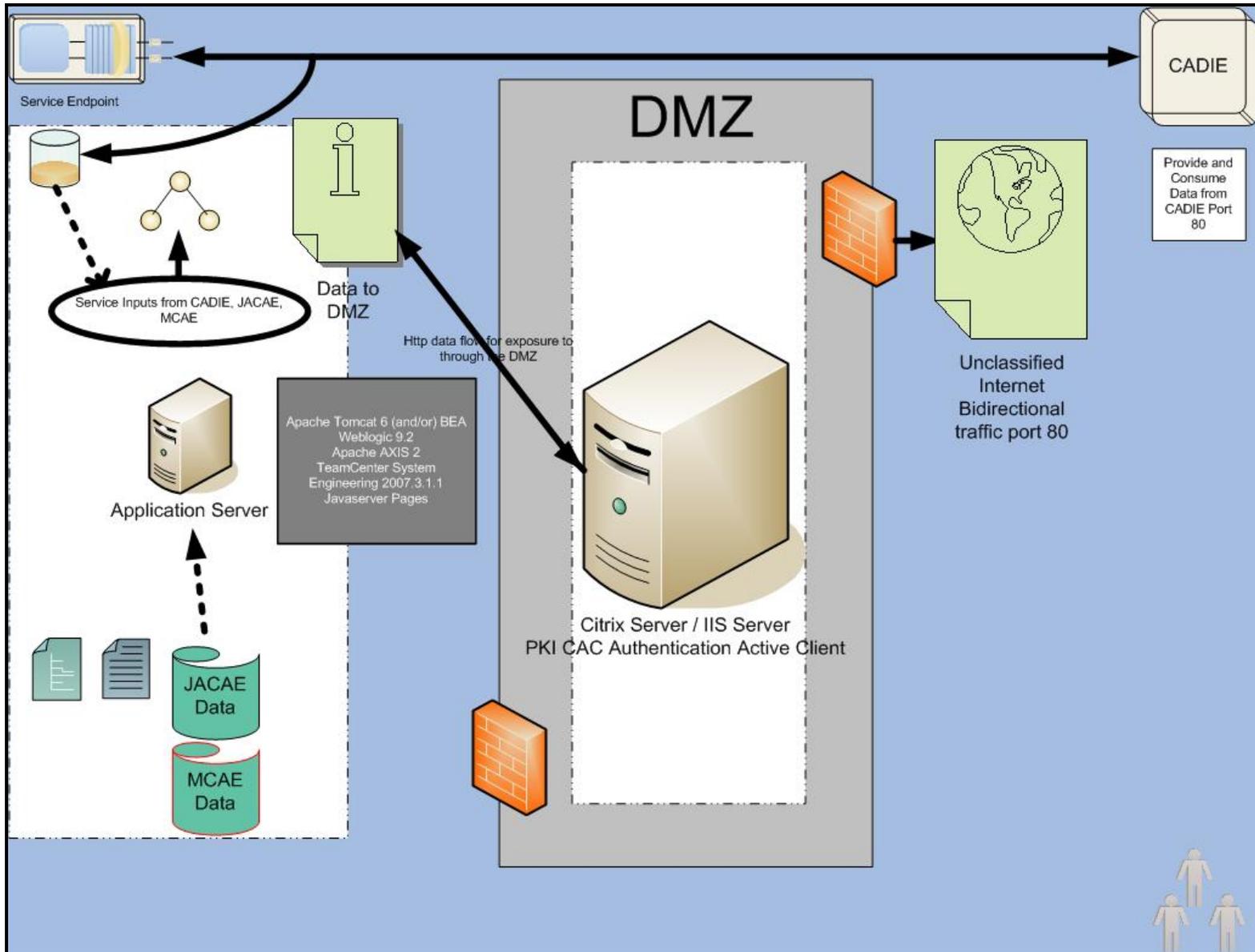
Moving Parts



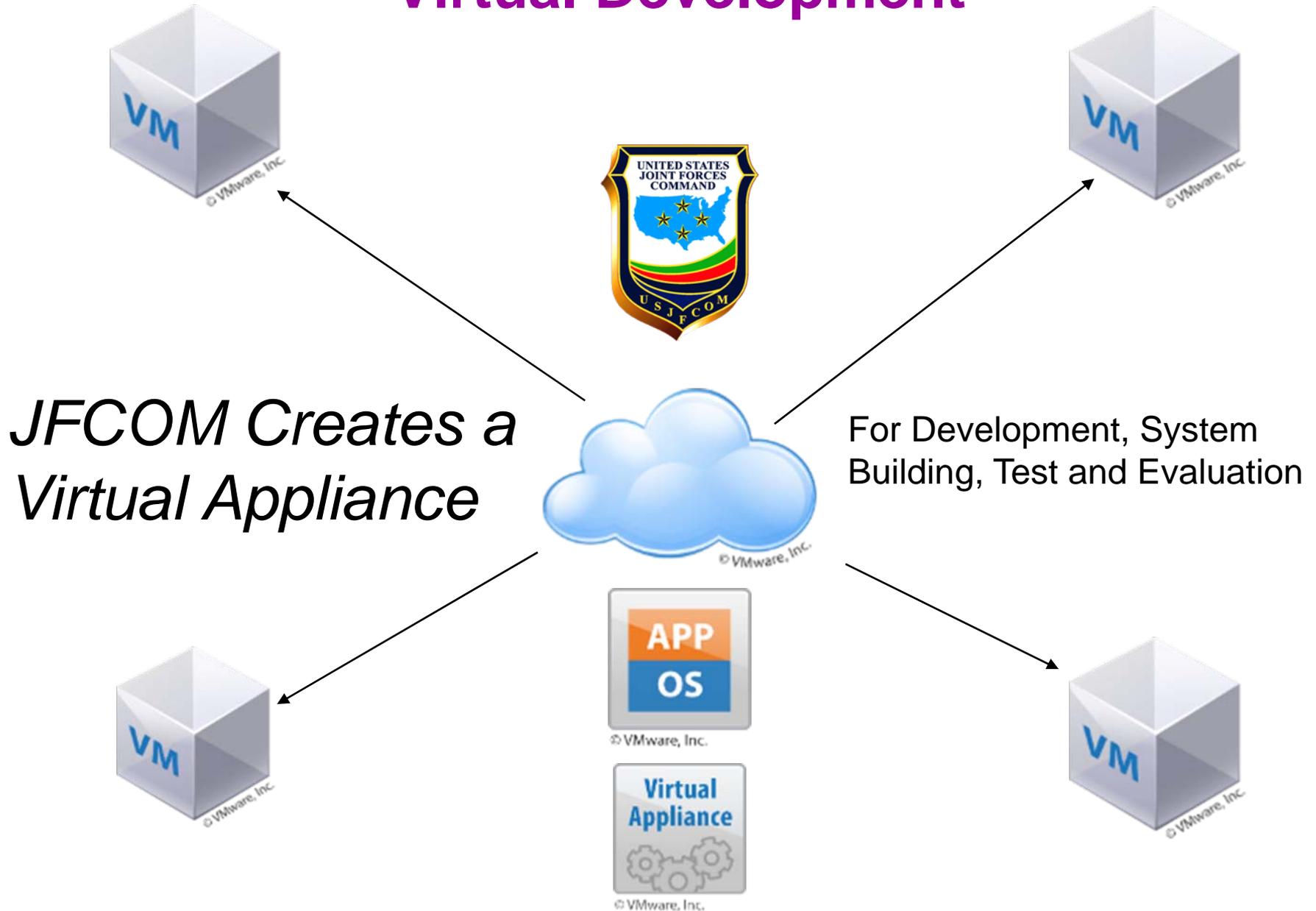
Core Components

- JACAE / SGS Teamcenter API
- Apache / Weblogic Application Server
- Versant Object Oriented Database
- AXIS 2
- JSP's developed by John's Hopkins University
- WSDL / XML/ XSD developed by John's Hopkins

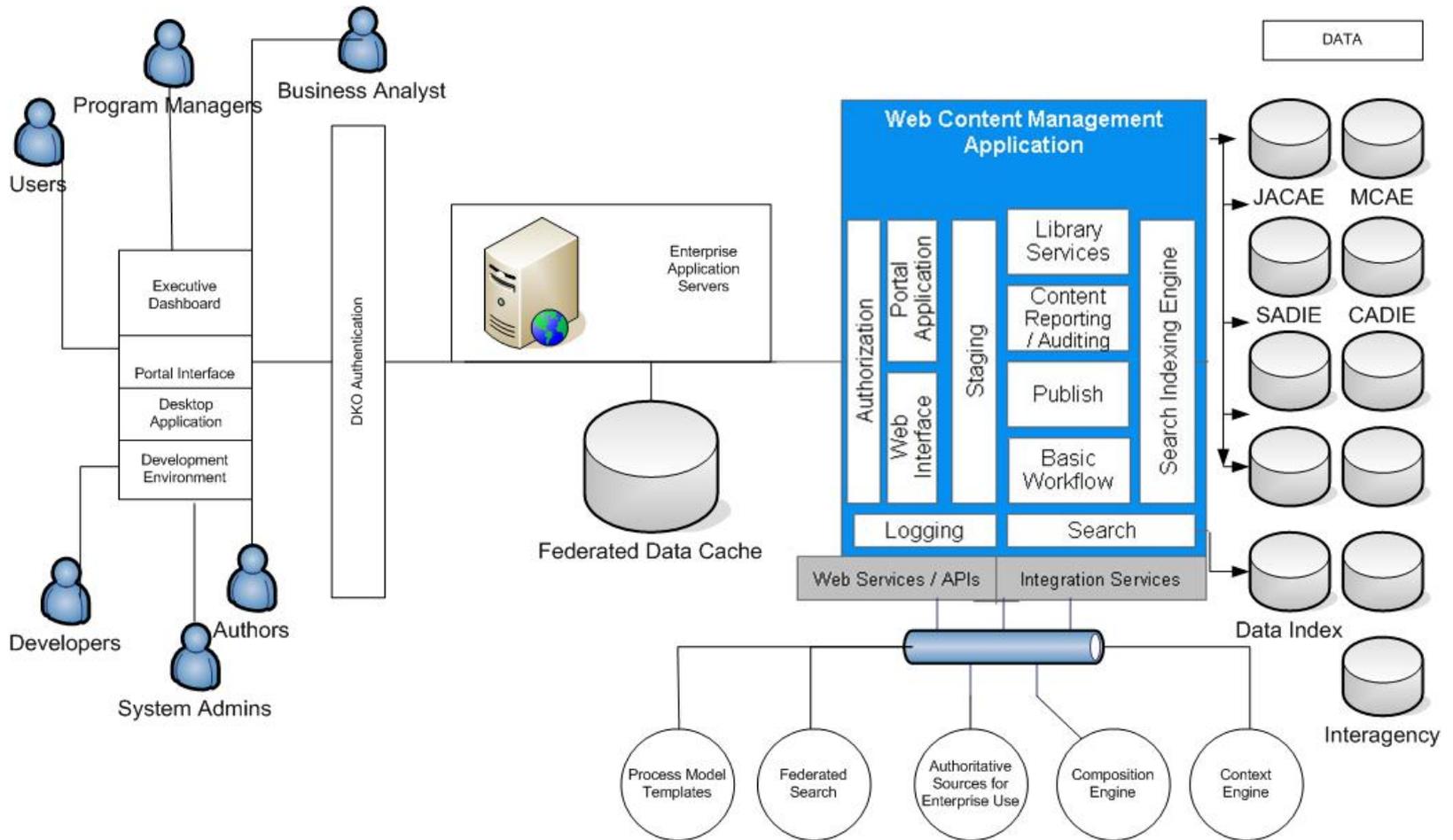
Technical Approach



Virtual Development



End State



Information for Reference

- Please use the following slides for reference.

High Level Guidance

- **DoD Directive 8320.02, Data Sharing in a Net-Centric Department of Defense, April 23, 2007**
- **Department of Defense Chief Information Officer, Department of Defense Net-Centric Service Strategy, May 4, 2007**
- **Global Information Grid (GIG) Architecture Federation Strategy, 01 August 2007**

Architecture Federation Guidance

- **Business Transformation Agency (BTA), BMA – Federation Strategy and Roadmap, 26 September 2006**
- **US Army Regulation (AR) – 71, Force Development Architecture (Draft) 10 September 2008.**
- **DoD Instruction 8210.aa (Draft), Architecting the DoD Enterprise, 22 September 2008**
- **DoD Manual 8210.11 (Draft), DoD Architecture Federation, 22 September 2008**
- **DoD Metadata Registry and Clearinghouse Version 7.0 Federation Specification**
- **DoD Architecture Framework (DoDAF) 2.0 (Draft)**

Policy & Guidance

- **DoD Directive 8000.1, “Management of DoD Info Resources”, November 21, 2003**
- **DoD Manual 8020.1-M, “Functional Improvement Process”, August 1992**
- **DoD Directive 8100.1, “GIG Overarching Policy”, September 19, 2002**
- **DoD Directive 8100.2, “Wireless Technologies and the GIG”, April 14, 2004**
- **DoDI 8110.1 “Multinational Information Sharing Networks Implementation”.**
- **DoD Directive 8115.1, "I.T. Portfolio Management", October 10, 2005**
- **DoD Manual 8320.1-M, “Data Administration Procedures”, March 1994.**
- **DoD Manual 8320.1-M-1, “Standard Data Element Development”, May 1992.**
- **DoD Directive 8320.2, “Data Sharing in DoD”, December 2, 2004.**
- **DoD Directive 8320.03, “Identification Standards”, March 23, 2007.**
- **DoD Directive 8500.1, “Information Assurance”, October 24, 2004.**
- **DoD Net-Centric Data Management Strategy: Metadata Registration, April 3, 2003**
- **DoD Net Centric Strategy, May 9, 2003**
- **Department of Defense Discovery Metadata Specifications**
- **DEPSECDEF Memorandum on “Information Technology Portfolio Management”,**
- **March 22, 2004**
- **Director of Central Intelligence, “Intelligence Information Sharing”, June 9, 2004**

Policy & Guidance

- **DoD CIO Executive Board (CIO EB)**
- **Military Communications and Electronics Board (MCEB)**
- **GIG E2E Systems Engineering Advisory Board (SSEB)**
- **IT Standards Oversight Panel (ISOP)**
- **Information Assurance Senior Leadership Group (IASLG)**
- **Interoperability Senior Review Panel (ISRP)**
- **GIG Waiver Board and Panel**
- **DISN Flag Panel**
- **DISN Designated Approving Authority (DAA)**
- **DISN Security Accreditation Working Group (DSAWG)**
- **DIAP (Defense-Wide Information Assurance Program.)**
- **Joint Battle Management Board (JBMC2 BoD)**
- **Defense Business Systems Management Committee (DBSMC)**
- **CCB (Configuration Control Board)**

BACKUP

Summary of CPM Architecture Support

- Manages complexity in a system-of-systems environment
- Identifies cross-portfolio issues and impacts through C2 CPM capability mapping strategy and execution
- Provides analytical rigor for C2 CPM analyses and assessments (highlights gaps, overlaps, and dependencies and provides complete DOTMLPF analysis framework)
- Demonstrates C2 CPM decisions' impacts on the JTF enterprise environment
- Supports repeatable process for collaborative analysis for all stakeholders, including unanticipated users

Decision makers at all levels of the Department of Defense (DoD) require access to architecture information in order to analyze and make critical warfighter capability needs decisions and business determinations. These decisions rely heavily on the accuracy of that information. Architecture development, in order to be effective and efficient, relies on the reuse of architecture data and products. “The capability to globally search, vertically or horizontally, for architectures that may be relevant for analysis or for specific architecture development efforts” (BTA, 2006) is a critical path for DoD architecture development efforts.

Architectures are developed for the DoD under guidance provided by the DoD Architecture Framework (DoDAF) by using multiple types of Commercial-Off-The-Shelf (COTS) software and proprietary tools. While standards and guidance have existed to some extent for developing these architectures, the tools used and methods for storing and sharing the data vary greatly between organizations. Enormous amounts of architecture data has been collected in stove-piped, proprietary environments.

The use of these proprietary, stove-piped environments has hampered the ability to connect architecture development efforts. In some circumstances, these environments were purpose designed to protect information. Through data federation, architecture development efforts will be able to securely share data between various organizations, tools and environments.