Joint Air and Missile Defense Community of Interest (JAMD COI) Net-Centric Migration Activities

JAMD COI

Joint Air and Missile Defense Community of Interest (JAMD COI)
"The Hub of Net-Centric Migration Activities for Joint IAMD"

Co-Directors

Ole Knudson
BG, USA
Program Executive Officer,
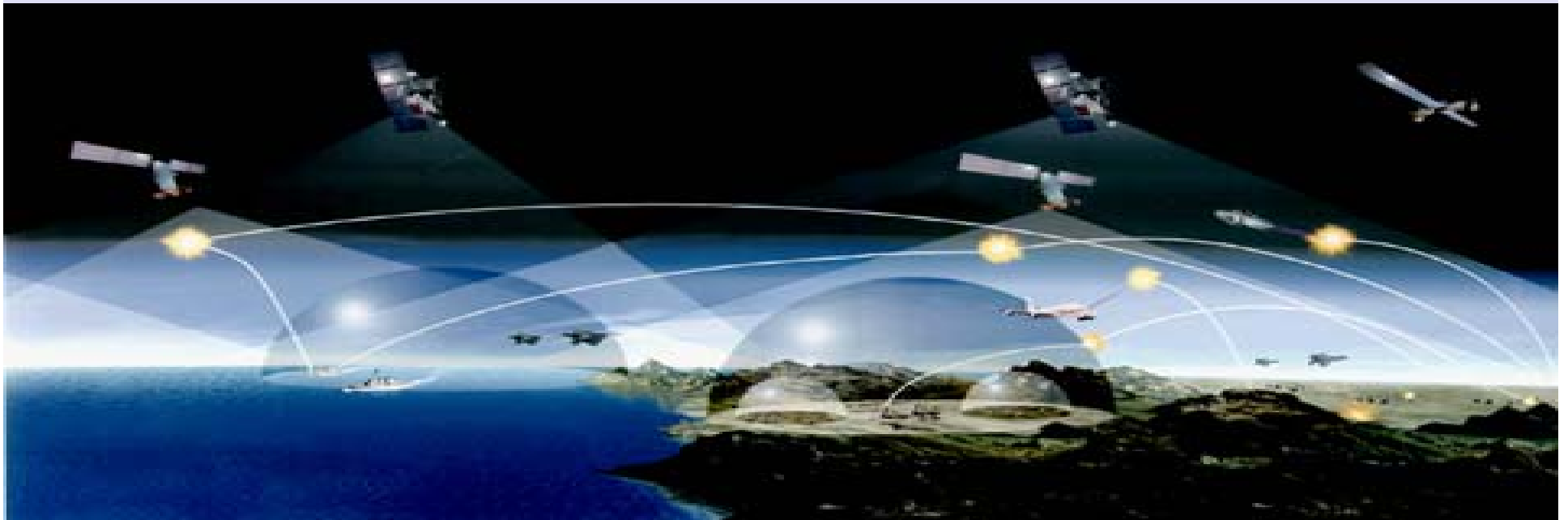Missiles and Space (PEO MS)

Evan J. Hoapili
Senior Executive Service (SES)
J8A
USSTRATCOM

Distribution Statement A – Cleared for Public Release

Purpose

Provide an Overview of JAMD COI Joint and Multinational Net-Centric Integration/Migration Activities to Include Establishment of Common Net-Centric Products to include the IAMD XML Schema (CIXS) XML Standard
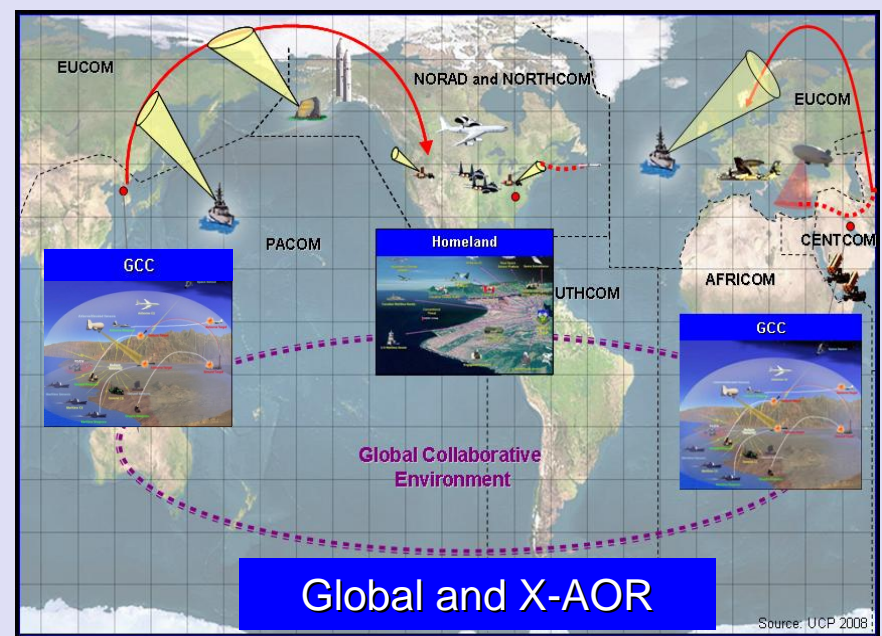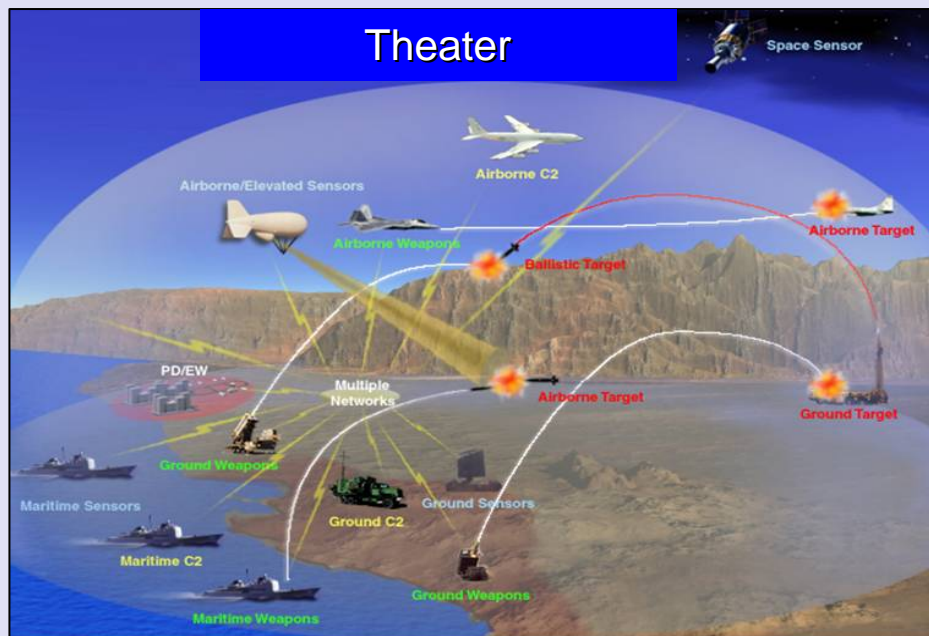
Joint Air and Missile Defense Community of Interest
Mission

- **Support migration of the Joint and Multinational IAMD communities toward Net-Centric Operations and Warfare through *the development of a single common data standard/ vocabulary for the JIAMD community as well as other JIAMD Net-Centric Products***

- **Establish a strategy for programs within the JAMD COI portfolio to *actively address the Net-Ready KPP* and to *support the PMs with Net-Centric expertise and artifacts/tools***

- **Establish a framework that *supports PMs in leveraging DoD and industry technologies* to bring services-oriented architecture (SOA) capabilities to the Joint IAMD Warfighter (i.e., web technologies)**

Theater

Space Sensor
Airborne/Elevated Sensors
Airborne C2
Airborne Target
Airborne Weapons
Ballistic Target
Airborne Target
Ground Target
PD/EW
Multiple Networks
Ground Weapons
Ground Sensors
Maritime Sensors
Ground C2
Maritime C2
Ground Weapons
Maritime Weapons

Global and X-AOR

EUCOM
NORAD and NORTHCOM
EUCOM
PACOM
Homeland
CENTCOM
GCC
SOUTHCOM
AFRICOM
GCC
Global Collaborative Environment
Source: UCP 2008

Background

"Copernican Shift" in Interoperability - Integration

In the beginning…
We had it all wrong…

Data

Apps

Apps

Common Data is the Basis for Interop - Integration

Apps

Put the "smarts" in the data… watch what happens…
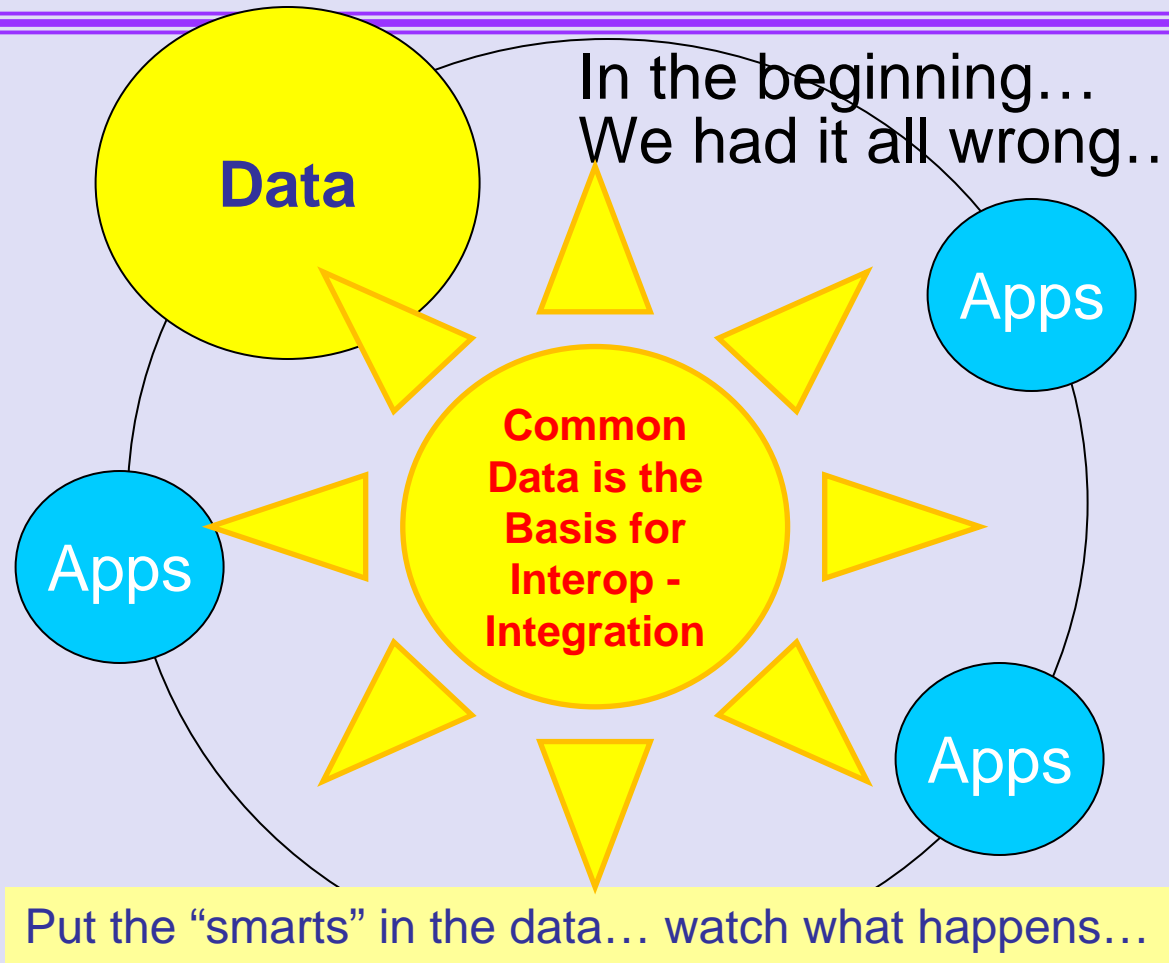
"It's the data, stupid! Break down the vertical cylinders of excellence."
-Gen. Cartwright, JIAMD Summit-07

The Role of Common Data / Mission Services
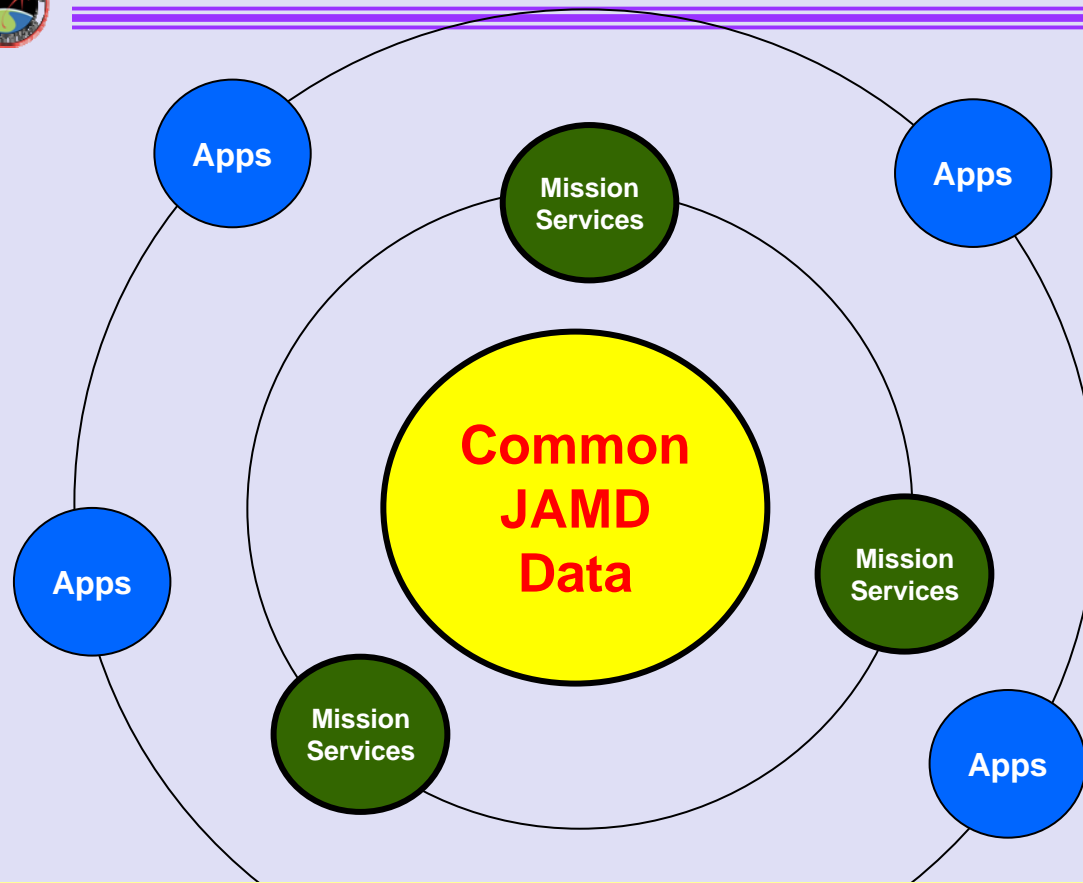
The Service-Oriented Architecture (SOA) component of the Net-Centric Data Strategy Requires…

…Building Applications that leverage common Mission Services built on common data!

Develop Mission Services Based on Common Data…

Break Down the Stove Pipe CPs, Dedicated Radios and Networks… Mission Services Available to All Authorized Users.

Key Components of the DOD Net-Centric Data Strategy

Department of Defense Chief Information Officer

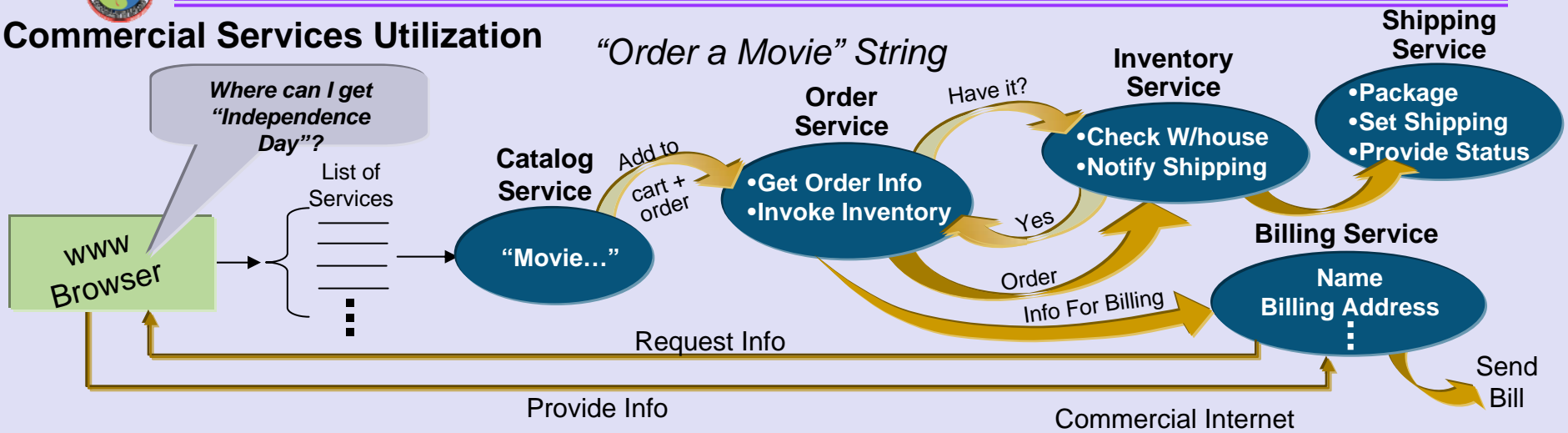|	
Make Data Visible	Is an information resource discoverable by end-users?
Make Data Accessible	Is it connected to the network(s), and are tools readily available to use and allow assured access to it?
Make Data Understandable	Can it be used intelligibly? Are the semantics well documented?
Make Data Governable	Are data processes governed with sustained leadership?
Enable Data to Be Trusted	Is the authority (pedigree, security level, and access control level) known and available?
Make Data Interoperable	Can it be easily combined or compared with other information and/or mediated?
Be Responsive to User Needs	Are users involved in COIs? Are robust, direct user feedback mechanisms in place?

Creating an Information Advantage

JIAMD Mission Services
(Use Commercial Approach)

Commercial Services Utilization

"Order a Movie" String

Where can I get "Independence Day"?

WWW Browser

List of Services

Catalog Service
"Movie…"

Add to cart + order

Order Service
•Get Order Info
•Invoke Inventory

Have it?

Yes

Inventory Service
•Check W/house
•Notify Shipping

Shipping Service
•Package
•Set Shipping
•Provide Status

Billing Service
Name
Billing Address
⋮

Order Info For Billing

Request Info

Provide Info

Send Bill

Commercial Internet

JIAMD Services Utilization

USA IBCS or AOC WS

GUI Client

IAMD Planning Service

"Defense Design"

"Keep Out" Thread

SIPRNET/Tactical Internet

Where can I find an IAMD Keep Out Alt.?

DoD Browser

List of Services

(May have to Register)

Exchange Initialization Data & Results

Request Keep Out

Keep Out By Weapon

Threat Keep Out Altitude Service
Calculate Keep Out Altitude

NBC Threat

Plume Data Matrix

Chemical Effects Service
Calculate Plume

Current?

Winds Matrix

Weather Service
Winds Aloft

Vendor A

Vendor B

Vendor C

JAMD Net-Centric Migration
Hierarchal Dependencies

MSSET

JIAMD SoS System Arch

Key Enabling Requirements:

- **DoD Establishment of SOA-Friendly Acquisition Model for Labs and PORs**

USASMDC Leading Mission Services WG

JAMD COI

AMD IA
Coordination & Oversight (USSTRATCOM)

JROC-Chartered Focus Groups

(JIAMDO)

Coordination/ Alignment Activities

Joint IAMD Net-Centric Operations

Joint Use Mission Services

JOINT IAMD MISSION SERVICES

Branch-Specific Mission Services

XML REPRESENTATION — CIXS

DATA

CIDS — COMMON DATA SET

OPERATIONAL VIEWS — JCOA-IEs

OPERATIONAL ARCHITECTURE

Operational Concept

CONCEPTS
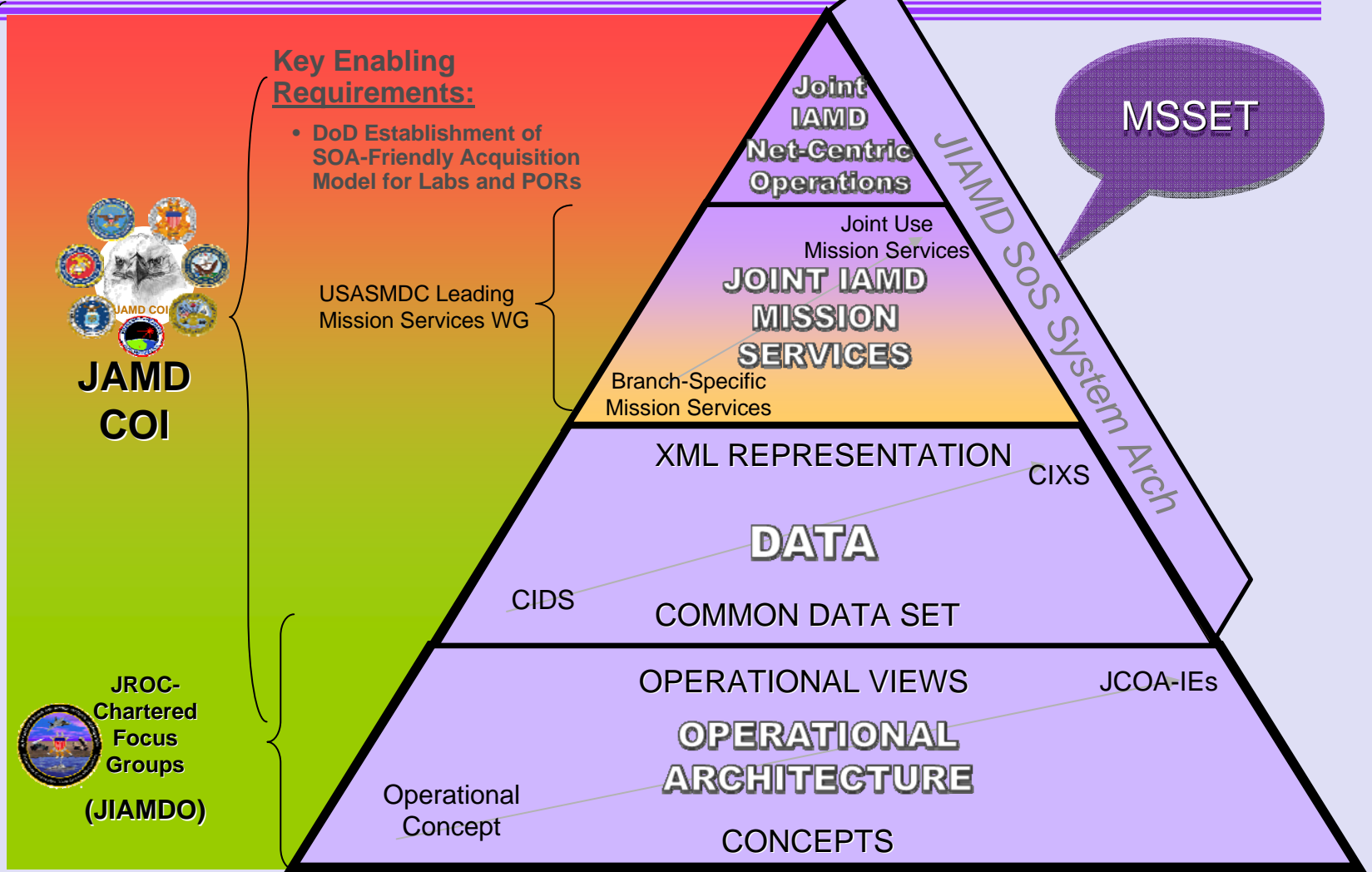
Acronyms: **AMD IA**-AMD Integrating Authority; **POR**-Program of Record; **CIDS**-Common IAMD Data Set; **CIXS**-Common IAMD XML Schema; **JCOA-IEs** - Joint Critical Operational Activities -Information Exchanges; **JIIM**- Joint, Inter-Agency, Inter-Governmental, Multi-National

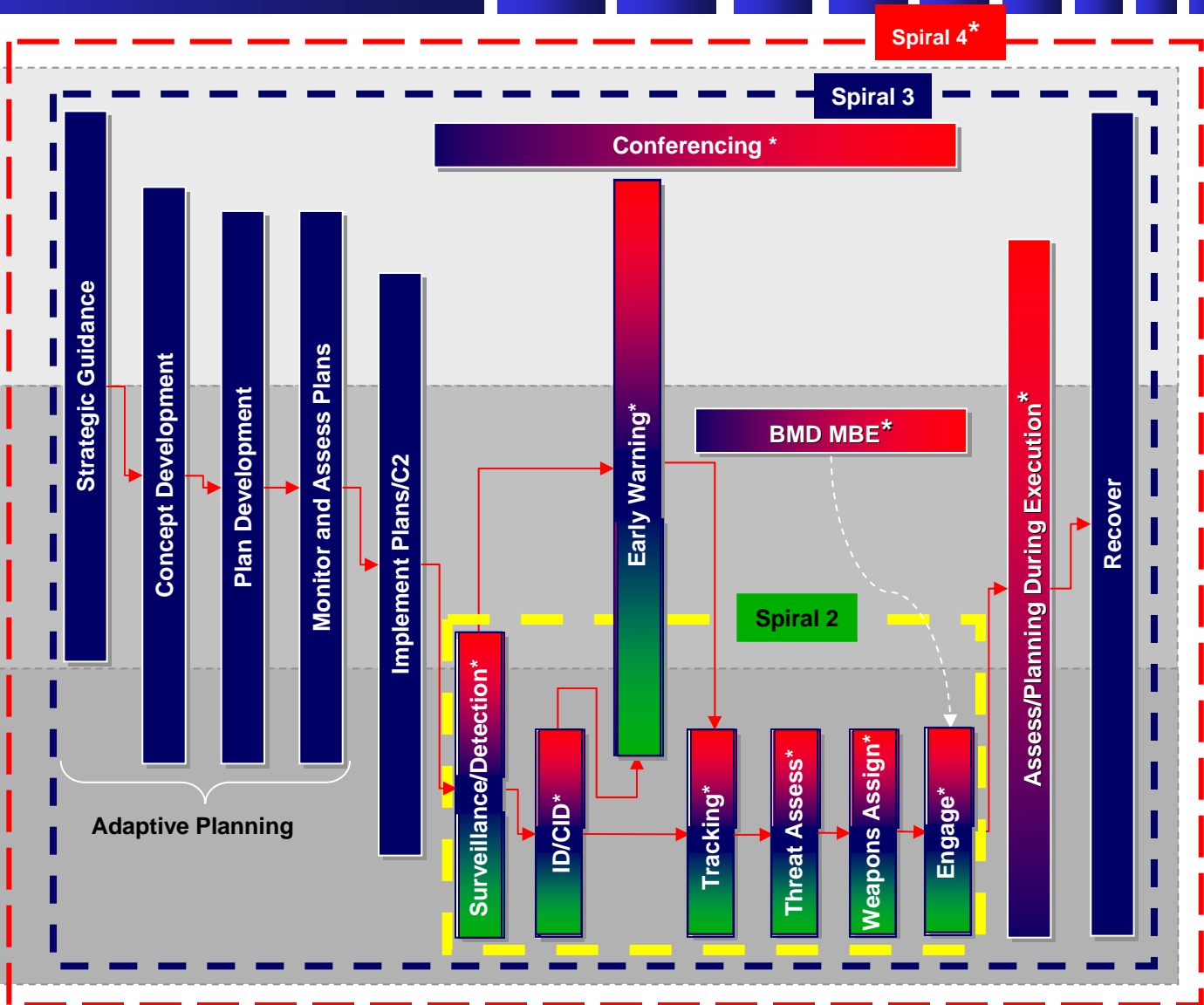# JIAMD Operational Architecture Scope (U)

Strategic
- Supported / Supporting Commander(s)
- Functional COCOM
- JFC, JFACC

Operational
- AADC & ACA Roles of JFACC

Tactical
- Joint Service Level Units
- Weapons, Sensors, Tactical Operations

Spiral 4*

Spiral 3

Conferencing *

BMD MBE*

Spiral 2

Strategic Guidance

Concept Development

Plan Development

Monitor and Assess Plans

Implement Plans/C2

Surveillance/Detection*

ID/CID*

Early Warning*

Tracking*

Threat Assess*

Weapons Assign*

Engage*

Assess/Planning During Execution*

Recover

Adaptive Planning

UNCLASSIFIED

10

Net Ready Migration
-Notional Example-
(Note: This chart may be slow to animate)

JAMD COI
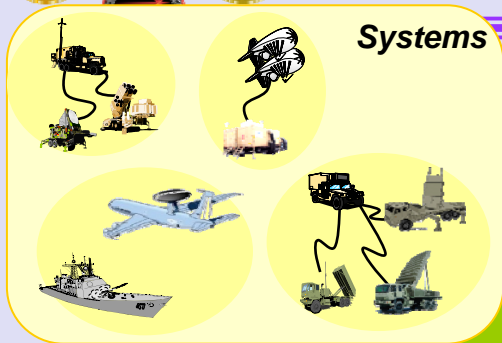
Systems

Net-Ready Architecture

JIAMD

PLATFORMS & SENSORS

APPLICATIONS
- Training
- IDD
- EOM
- Joint Track Mgt
- Logistics
- P&F Application
- Weapon Control
- Sensor Control

SERVICES
- COE
- IAMD Mission Services
- CWMI
- CDLIS
- P&F Services
- Interoperability Services
- Web Services
- Data Store

TRANSPORT
- IPV-6
- JTRS
- GMR
- HMS
- IFC Net Radio
- WIN-T
- SOAP
- EPLRS
- WSDL

STANDARDS
- Common IAMD Data Set (CIDS)
- Doctrine
- Engineering
- Spectrum
- OACE
- Common IAMD XML Schema (CIXS)
- TDL
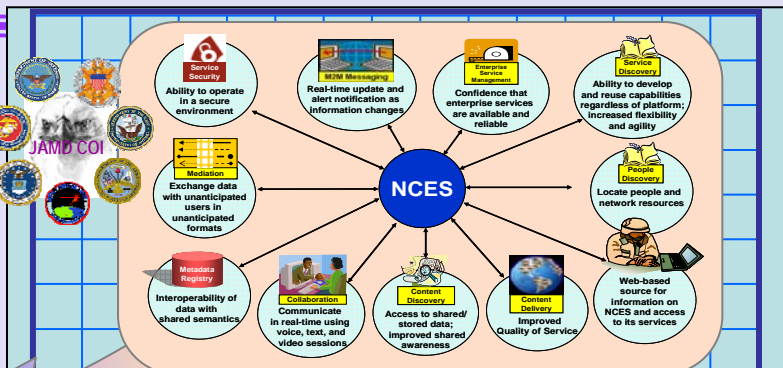- Policy
- Architecture
- Standards
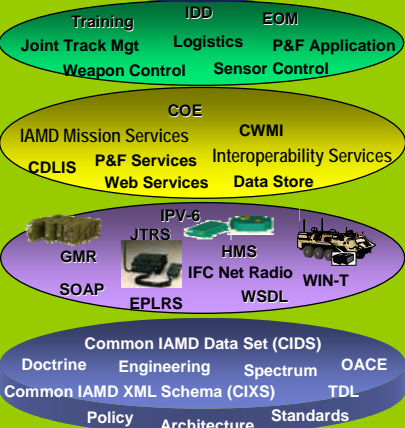
Mine Components and Services

NET READY =
Provide/Consume Data and **Mission Services** using **Web Technology/SOA** Distributed to **Many Users** on the **GIG/Tactical Internet** to **Accomplish the Mission!**

Utilize Joint Data, Services and Web Technology

Provide Data and Services to External Users

Transform into Net-Ready Components and Services

Incremental Drops

Incremental Drops

JAMD COI

NCES

- **Service Security** — Ability to operate in a secure environment
- **M2M Messaging** — Real-time update and alert notification as information changes
- **Enterprise Service Management** — Confidence that enterprise services are available and reliable
- **Service Discovery** — Ability to develop and reuse capabilities regardless of platform; increased flexibility and agility
- **Mediation** — Exchange data with unanticipated users in unanticipated formats
- **People Discovery** — Locate people and network resources
- **Metadata Registry** — Interoperability of data with shared semantics
- **Collaboration** — Communicate in real-time using voice, text, and video sessions
- **Content Discovery** — Access to shared/stored data; improved shared awareness
- **Content Delivery** — Improved Quality of Service
- Web-based source for information on NCES and access to its services

AOC Services
JFLCC Services
BCT Services

GIG / Tactical Internet

Services
Services
Services
Services
Services
Services
Services
Services

IAMD Net

LEGEND
GIG: Global Information Grid
NCES: Net-Centric Enterprise Services
IFC: Integrated Fire Control
SOA: Service-Oriented Architecture
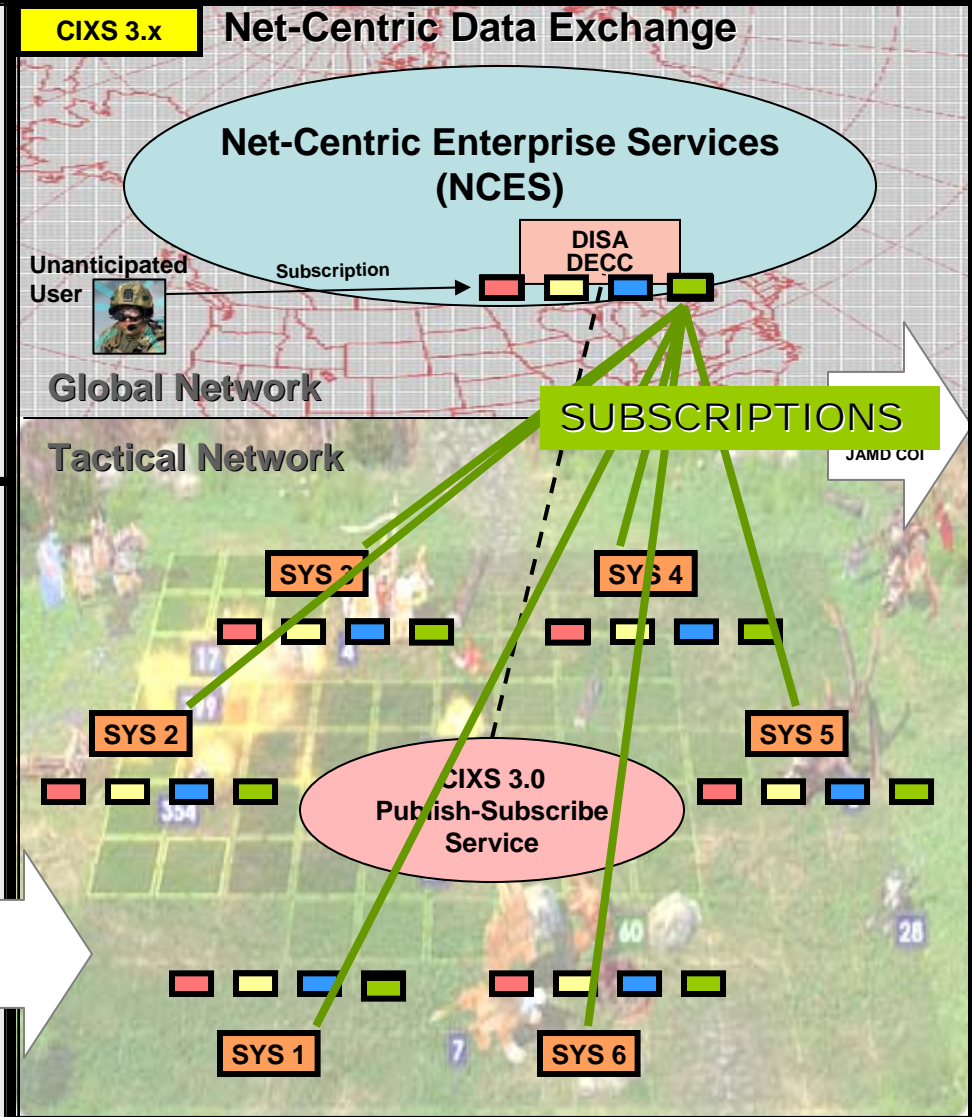
Evolution of IAMD Data Exchange

From Legacy Stovepipes to a Service Oriented Architecture

(NOTIONAL)
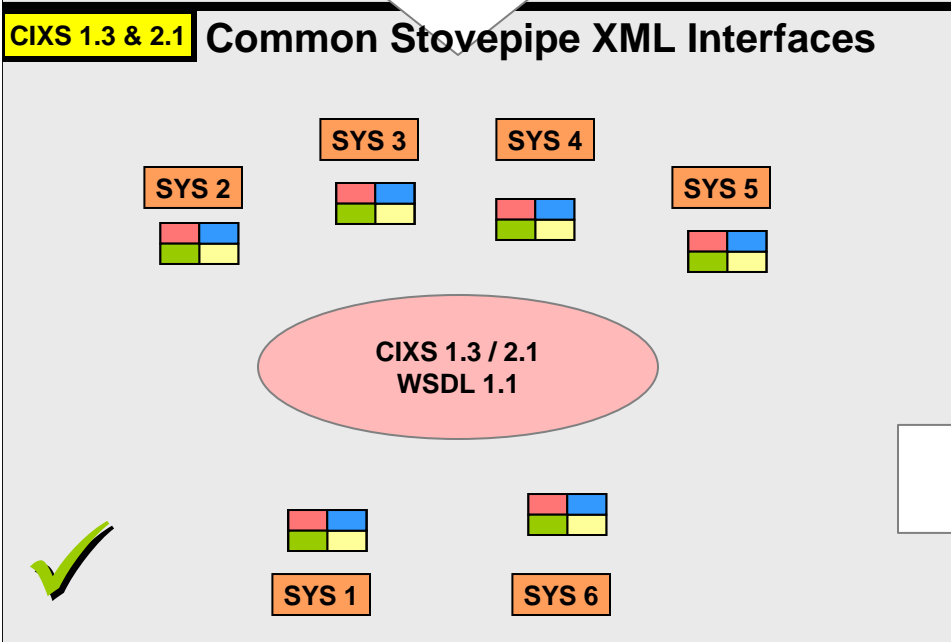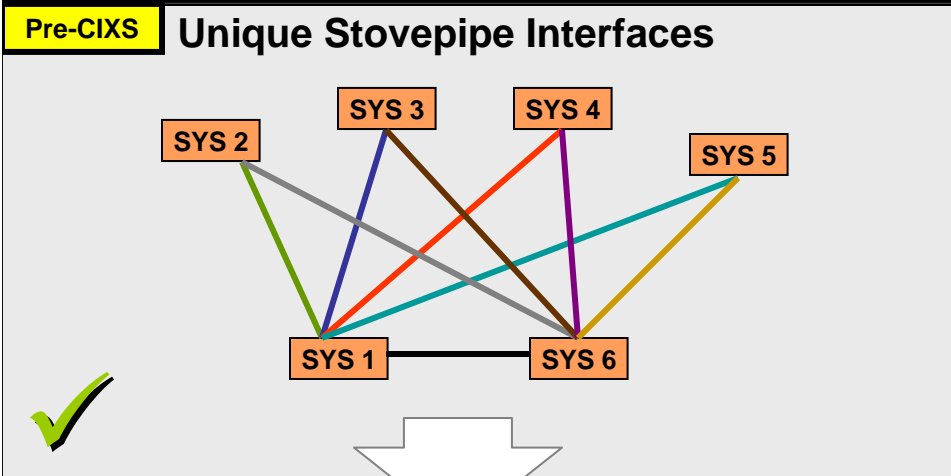
Pre-CIXS — **Unique Stovepipe Interfaces**

SYS 2
SYS 3
SYS 4
SYS 5
SYS 1
SYS 6

CIXS 1.3 & 2.1 — **Common Stovepipe XML Interfaces**

SYS 2
SYS 3
SYS 4
SYS 5

CIXS 1.3 / 2.1
WSDL 1.1

SYS 1
SYS 6

CIXS 3.x — **Net-Centric Data Exchange**

Net-Centric Enterprise Services
(NCES)

DISA
DECC

Unanticipated User
Subscription

Global Network

Tactical Network

SUBSCRIPTIONS

JAMD COI

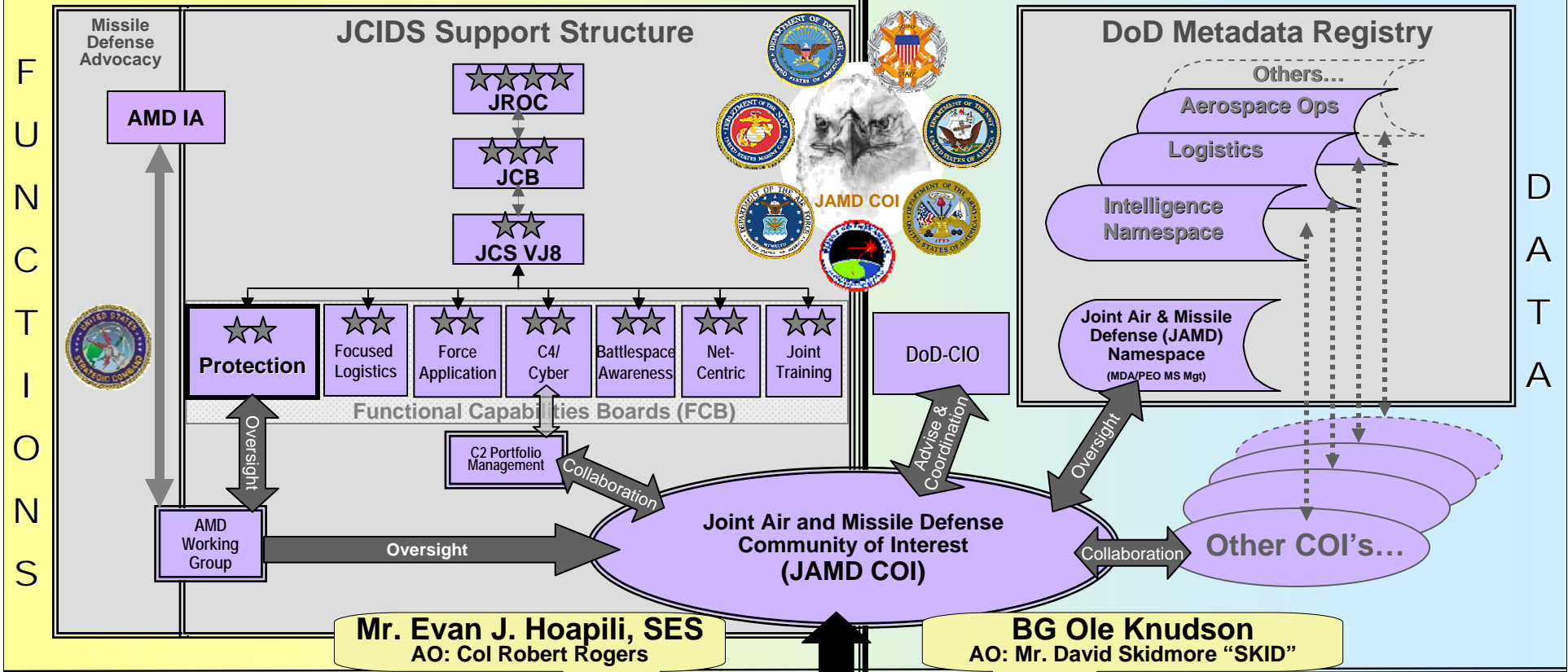SYS 3
SYS 4
SYS 2
SYS 5

CIXS 3.0
Publish-Subscribe
Service

SYS 1
SYS 6

Joint Air and Missile Defense Community of Interest
JAMD COI Collaboration

AMD MS/ JCIDS METHODOLOGY

DoD DATA STRATEGY

F U N C T I O N S

D A T A

JCIDS Support Structure

Missile Defense Advocacy

AMD IA

JROC

JCB

JCS VJ8

Protection

Focused Logistics

Force Application

C4/ Cyber

Battlespace Awareness

Net-Centric

Joint Training

Functional Capabilities Boards (FCB)

Oversight

C2 Portfolio Management

Collaboration

AMD Working Group

Oversight

DoD-CIO

DoD Metadata Registry

Others…

Aerospace Ops

Logistics

Intelligence Namespace

Joint Air & Missile Defense (JAMD) Namespace
(MDA/PEO MS Mgt)

Advise & Coordination

Oversight

Joint Air and Missile Defense Community of Interest (JAMD COI)

Collaboration

Other COI's…

Mr. Evan J. Hoapili, SES
AO: Col Robert Rogers

BG Ole Knudson
AO: Mr. David Skidmore "SKID"

MEMBERSHIP

MEMBERSHIP

JIAMDO	Other CCDRs	MDA MDA-BC	STRATCOM J8A	USA PEO MS	USAF ACC/AFSPC	USMC MARCORSYSCOM	USN PEO IWS
			Co-Director	Co-Director			

13

JAMD COI Governance/Advocacy

Recommended OSD/NII COI Governance Structure
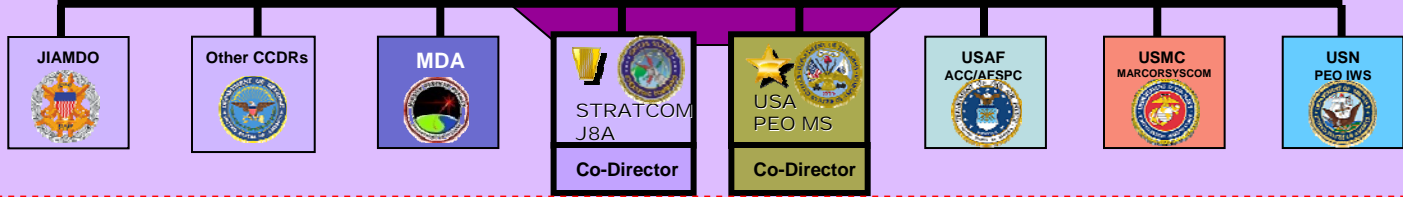
Air and Missile Defense Integrating Authority (AMD-IA) ⭐⭐⭐⭐

IAMD-Specific Coordination

Protection FCB ⭐⭐

AMD Working Group (STRATCOM-J85 / JIAMDO)

Executive Board ⭐⭐

NC Migration Issues / Resolution | COI Products | Capability Descriptions | IAMD Architecture Products

Advice & Coordination

OASD/NII DoD-CIO

Data & SOA Strategy/Guidance

JAMD COI Co-Directors
(PEO MS / STRATCOM-J8A Co-Chairs)

AO's (0-6) for PEO MS & STRATCOM-J85

Steering Committee Forum ⭐

MEMBERSHIP | MEMBERSHIP

| JIAMDO | Other CCDRs | MDA | STRATCOM J8A | USA PEO MS | USAF ACC/AFSPC | USMC MARCORSYSCOM | USN PEO IWS |

Co-Director | Co-Director

Tailored Working Groups Comprised of Relevant Members/SOIs

| **JAMD Data Management Working Group (CIXS CCB)** | **Joint IAMD Mission Services Working Group** | Joint IAMD Implementation Working Group | **GSIN Working Group** | Other Adhoc Working Groups (As Needed) |

COI Working Groups

Common Functionality

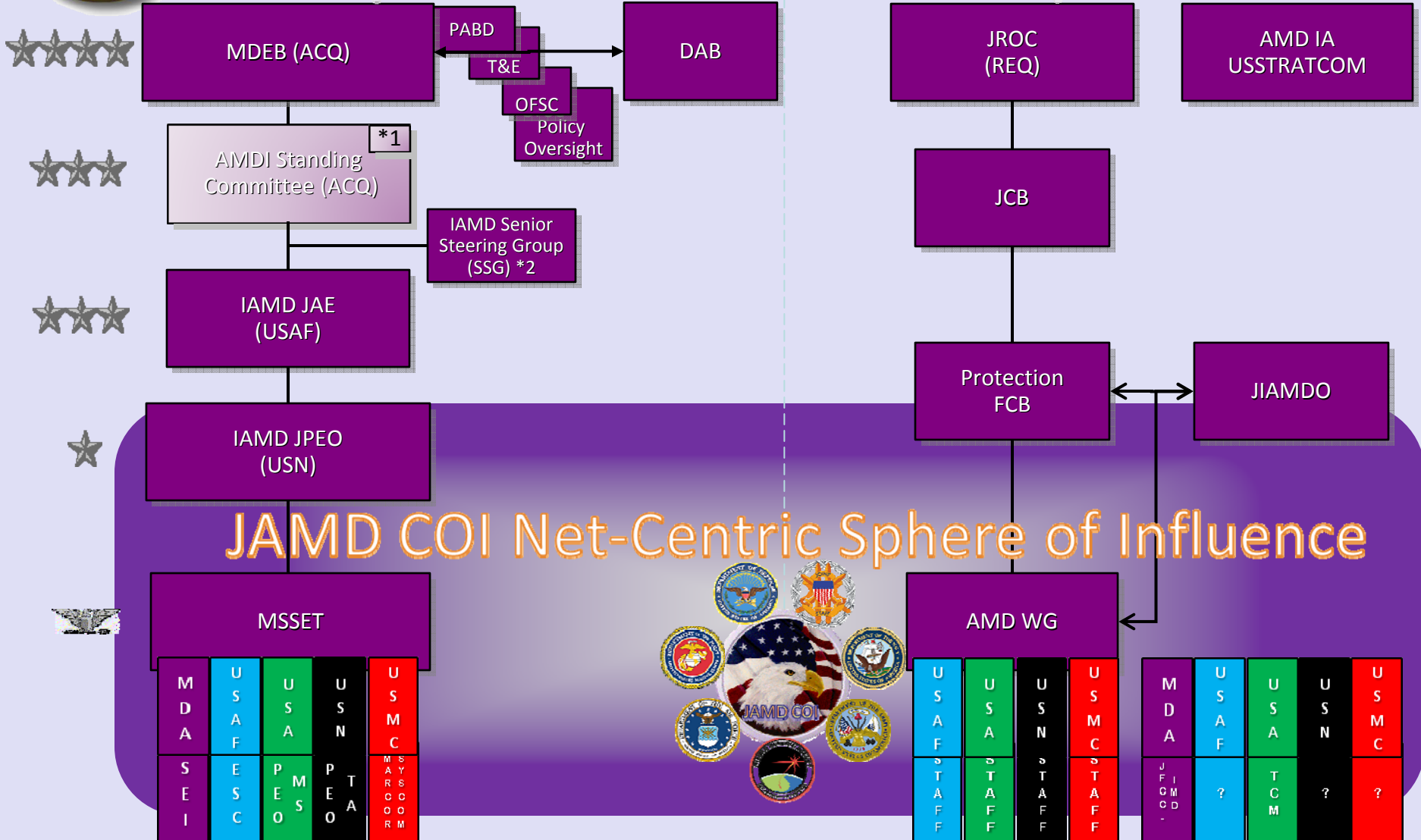|	SOI	SOI	SO	SOI		SOI	SOI		SOI	SOI		SOI	SOI	SOI		SOI	SOI	SOI	SOI
BMC4	BMC4	BMC4	BMC4	BMC4		BMC4	BMC4		BMC4	BMC4		BMC4	BMC4	BMC4		BMC4	BMC4	BMC4	BMC4
Sensor		Sensor	Sensor	Sensor		Sensor	Sensor		Sensor	Sensor		Sensor	Sensor	Sensor		Sensor	Sensor	Sensor	Sensor
Shooter	Weapon	Weapon	Weapon		…	Weapon		…	Weapon	Weapon	Weapon		Weapon	Weapon	Weapon		Weapon		Weapon

SOI = Systems of Interest
Derived from the Fundamental Systems List (FSL)

Modified Joint Integrated Air and Missile Defense Governance

Acquisition

Operational

★★★★

MDEB (ACQ)	PABD		DAB
	T&E		
	OFSC		
	Policy Oversight		

JROC (REQ)

AMD IA USSTRATCOM

★★★

AMDI Standing Committee (ACQ) *1

IAMD Senior Steering Group (SSG) *2

JCB

★★★

IAMD JAE (USAF)

Protection FCB

JIAMDO

★

IAMD JPEO (USN)

JAMD COI Net-Centric Sphere of Influence

MSSET

AMD WG

M D A S E I	U S A F E S C	U S A P E O M S	U S N P E O T A	U S M C M A R C O R S Y S C O M

JAMD COI

U S A F S T A F F	U S A S T A F F	U S N S T A F F	U S M C S T A F F

M D A J F G C D -	U S A F ?	U S A T C M	U S N ?	U S M C ?

Joint Air and Missile Defense Community of Interest
Multinational Integration Activities

- **NATO ALTBMD Programme Office**
  - Collaboratively developed XML messages to support evolution of CIXS 3.0
  - Released CIXS 3.1 to NATO in Mar 2009 in support of ALTBMD schedule; CIXS 3.3 Released Jul 2010
  - Participated in Web Service Workshops on 3-4 June and 7-8 Oct 09 to establish common approach for Web Service development.
  - CIXS data workshop with NATO 7-9 Sep 2010 to satisfy NIDD IER requirements
  - CIXS 3.5 on contract for NATO ACCS/Air C2IS interface to C2BMC Planner
  - ALTBMD Programme recommended changes to CIXS 3.5 received 22 Nov 2011; Update process complete
- **NATO C3 Agency (NC3A)**
  - Released Common IAMD XML Schema (CIXS) to NC3A Nov 2005
  - Collaboratively planned Multinational IAMD Planning Pilot executed at JPOW-X
    - Implemented CIXS in NATO Planning Tool (PlaTo)
    - Demonstrated new defense planning Web Service utilizing CIXS 1.3 – Very Successful
  - Conducted pilot during JPOW-2010 using CIXS 3.1 pub/sub web service – Very Successful
- **NATO Joint Capability Group (JCG)-Ground Based Air Defense (GBAD)**
  - USA PEO MS providing IAMD Net-Centric Integration expertise in support of JCG-GBAD activities
  - Germany, Britain, and US SHORAD conducted experiment as part of 2010 Tri-Partite MOU, using CIXS for sensor and weapon data exchange
  - Follow-on USA-DEU-GBR Trinational Experiment currently being explored
  - Finland has expressed interest in obtaining CIXS for assessment in addressing future interoperability

- **Plus…**

JAMD COI Team Coordination

Forums Led

- JAMD COI ****

- CIXS CCB ***

- CIXS Work Shop

- Net-Centric TIM

- GSIN Data Harmonization WG

- Net-Centric Deep Dive for PM

**** = USSTRATCOM & PEO MS are Co-Directors

*** = PEO MS is Chairman

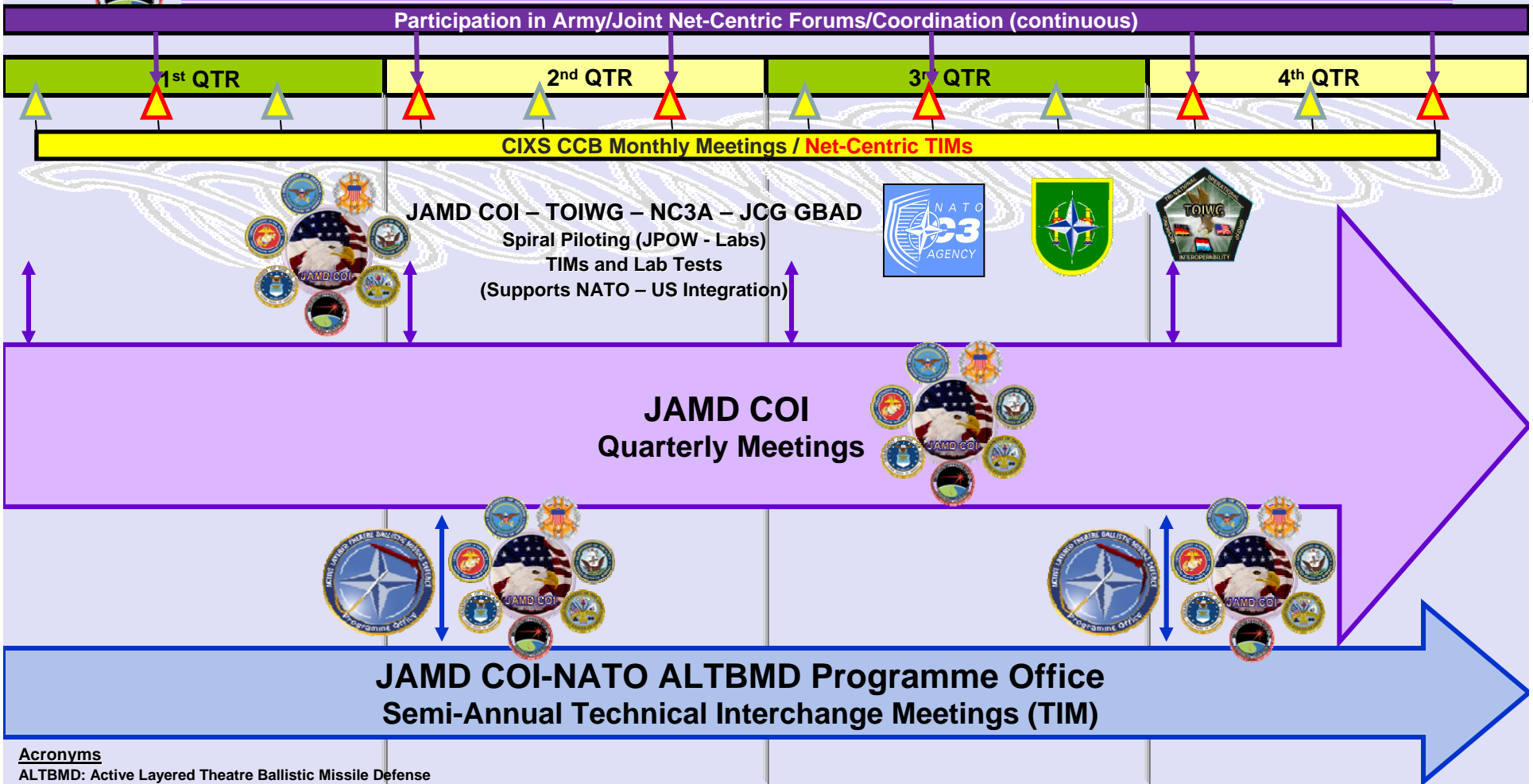** = PEO MS is voting member

* = MDA is Namespace Manager

Forums Supported

- AMD Integrating Authority (Technical Advisor)
- DoD COI Forum
- DoD Metadata WG*
- DoD Architecture Framework Plenary (DoDAF 2.0)
- IAMD Architecture Task Force/Focus Group
- C2 Data and Services Steering Committee (DSSC)
- C2 Authoritative Data Source WG
- Net-Centric Data Exchange Standards Committee (NCDESC)
- Global Sensor Integration on Networks WG and CCB
- OSD-CIO Data Transformation WG
- USAF Air Operations COI/Data Management WG
- NSA IA Metadata Community of Practice WG
- MSSET Architecture WG
- MSSET End-to-End Engineering WG
- USAF Net-Centric Sensors and Data Sources WG
- NATO ALTBMD PO web services WG
- NATO Joint Capability Group-Ground Based Air Defense
- Tri-National Operational Interoperability Working Group**
- CENTCOM IAMD Center Working Group (UAE)
- Army Common Operating Environment (COE) IPTs
- Army/MDA MOU WG

Joint Air and Missile Defense Community of Interest
Battle Rhythm

Participation in Army/Joint Net-Centric Forums/Coordination (continuous)

1st QTR	2nd QTR	3rd QTR	4th QTR

CIXS CCB Monthly Meetings / Net-Centric TIMs

JAMD COI – TOIWG – NC3A – JCG GBAD
Spiral Piloting (JPOW - Labs)
TIMs and Lab Tests
(Supports NATO – US Integration)

JAMD COI
Quarterly Meetings

JAMD COI-NATO ALTBMD Programme Office
Semi-Annual Technical Interchange Meetings (TIM)

Acronyms
ALTBMD: Active Layered Theatre Ballistic Missile Defense
COI: Community of Interest
JAMD: Joint Air and Missile Defense
JPOW: Joint Project Optic Windmill
JCG GBAD: Joint Capability Group – Ground-Based Air Defense
NC3A: NATO Consultation, Command & Control Agency
TOIWG: Tri-national Operational Interoperability Working Group

18

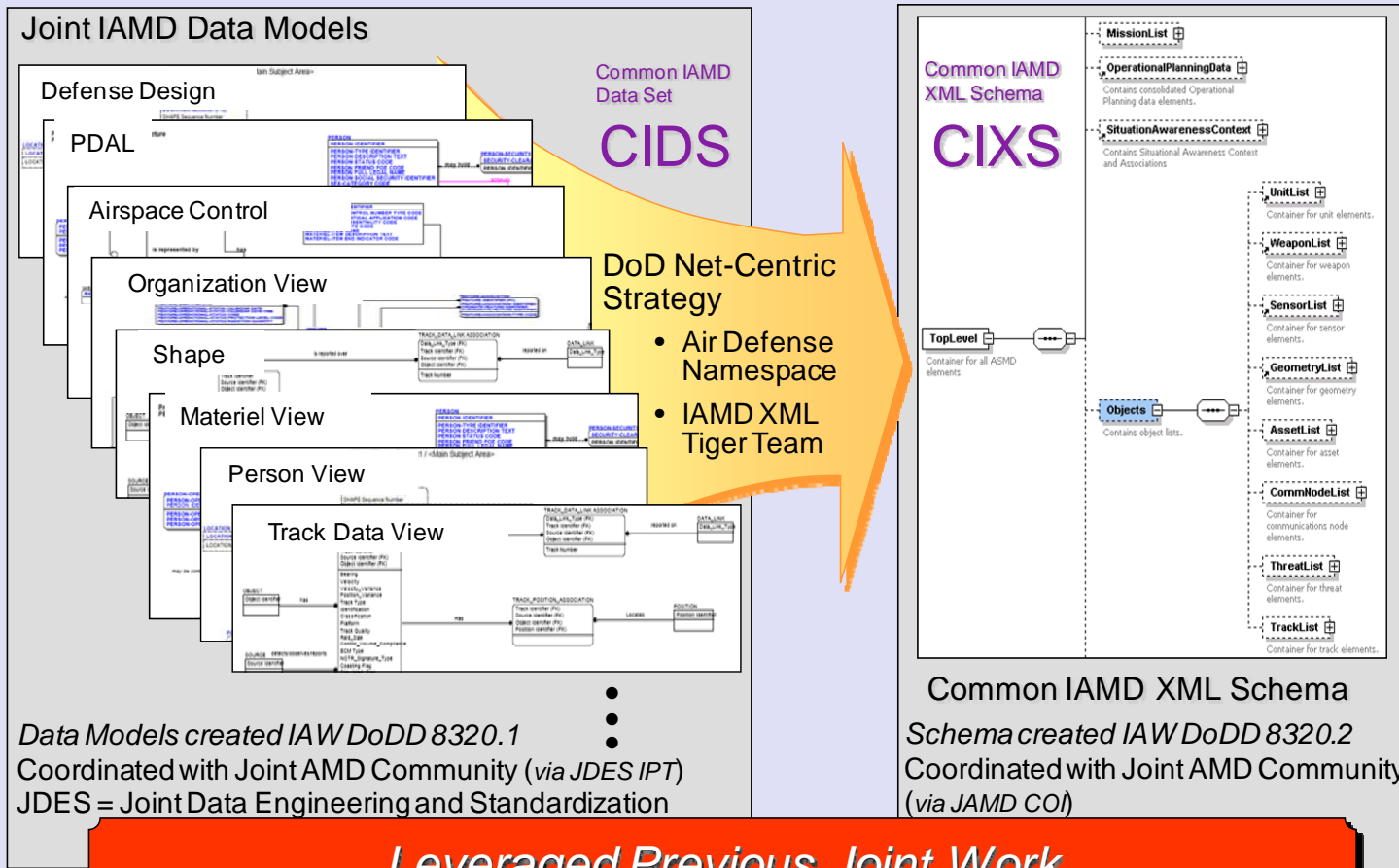# *JAMD COI*

PRODUCTS

JAMD COI Product Set Overview

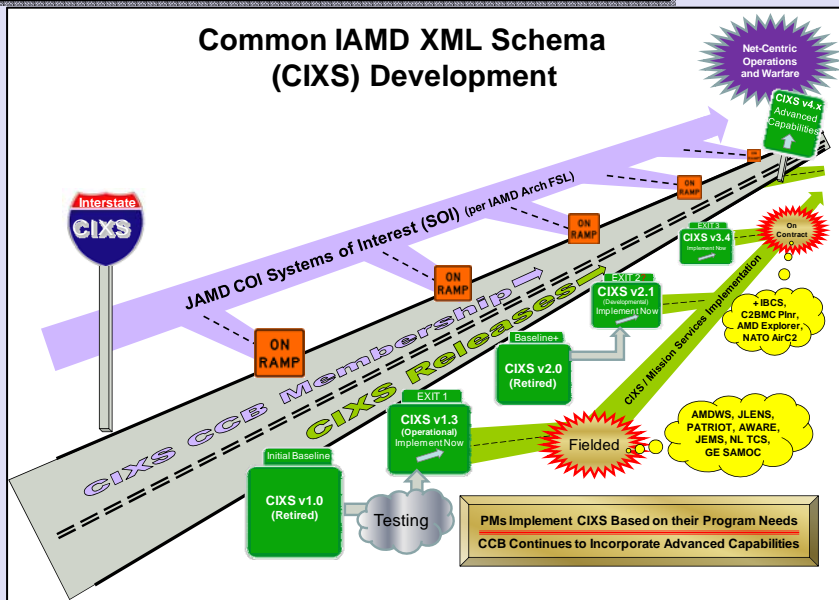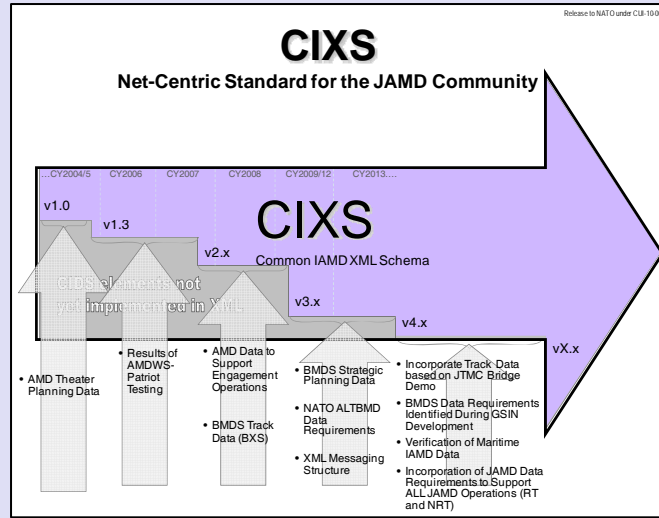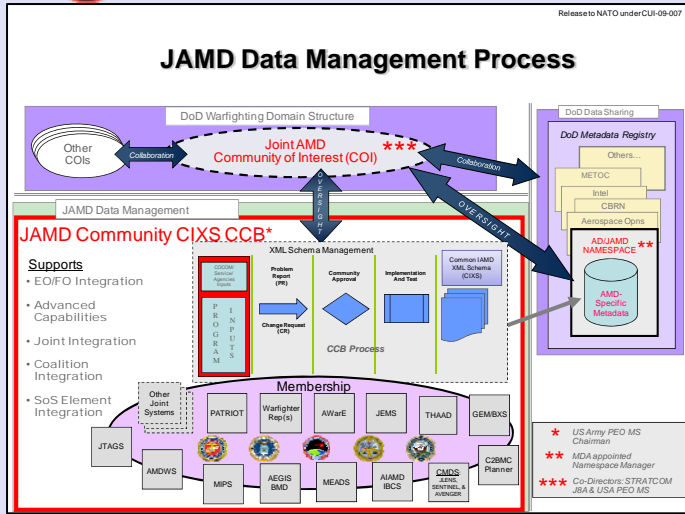| Product	Status	Estimated Completion	Notes
Common IAMD Data Set (CIDS)	Complete/ Maintaining	Ongoing	Being updated based on CIXS PR/CRs…To be assessed against Joint IAMD OA
Common IAMD XML Schema (CIXS)	Complete/ Evolving for Advanced AMD Capabilities	Ongoing	v1.3 – Operational – Released to NATO V3.5 – Developmental – Released to NATO
Mapping of CIXS to IAMD OP Architecture	Complete/ Maintaining	Ongoing	Mapped CIXS Messages to the Spiral 3 IAMD OA –To be extended to the data level
Global Sensor Integration on Networks (GSIN)	OPS Drop 1 Complete/ Evolving	Ongoing	V1.2 – Secret - Operational
JAMD Metacard Template	Complete / Maintaining	Ongoing	
JAMD COI Net-Centric Migration Roadmap	Started	4QFY12	
JAMD Data Pedigree Business Rules	Complete / Maintaining	--	Being updated with Pedigree Data Model
JAMD Pedigree Data Model	Complete / Maintaining	--	USN PEO IWS Led Development
JAMD Data Development/Discovery Taxonomy	Complete / Maintaining	Ongoing	To be updated to comply with CIXS v3.5
JAMD Vocabulary	Approved / Maintaining	Ongoing	Extended from STRATCOM GMD lexicon plus twelve core source documents.
JAMD Net-Centric Assessment Toolkit	Piloting of NCAT Started	4QFY12	Two programs to pilot for community. AFSPC tool updated based on current DoD directives.
JAMD Mission Service Survey	Approved		Led by USA SMDC/ARSTRAT
JAMD TRACK Data Model	Working in conjunction w/MSSET effort	4QFY12	Leverage JTMC and leverage GSIN
JAMD Authoritative Data Source Matrix	Pending	4QFY12	Dependent on JAMD COI SOI List Verification
JAMD Mission Svc Stnrds/Implementation Guidance	Started	4QFY12	Developed in collaboration with NATO ALTBMD. Intent to vet through CIXS CCB.
JAMD COI Introduction Package	Approved		Public Release obtained

Common IAMD Data Set (CIDS)

Evolution to the Common IAMD XML Schema

Joint IAMD Data Models

Defense Design
PDAL
Airspace Control
Organization View
Shape
Materiel View
Person View
Track Data View

Common IAMD Data Set

CIDS

DoD Net-Centric Strategy
- Air Defense Namespace
- IAMD XML Tiger Team

Common IAMD XML Schema

CIXS

MissionList
OperationalPlanningData — Contains consolidated Operational Planning data elements.
SituationAwarenessContext — Contains Situational Awareness Context and Associations

TopLevel — Container for all ASMD elements

UnitList — Container for unit elements.
WeaponList — Container for weapon elements.
SensorList — Container for sensor elements.
GeometryList — Container for geometry elements.
Objects — Contains object lists.
AssetList — Container for asset elements.
CommNodeList — Container for communications node elements.
ThreatList — Container for threat elements.
TrackList — Container for track elements.

Common IAMD XML Schema

Data Models created IAW DoDD 8320.1
Coordinated with Joint AMD Community (*via JDES IPT*)
JDES = Joint Data Engineering and Standardization

Schema created IAW DoDD 8320.2
Coordinated with Joint AMD Community (*via JAMD COI*)

Leveraged Previous Joint Work

Common IAMD XML Schema (CIXS)

JAMD Data Management Process

Release to NATO under CUI-09-007

CIXS
Net-Centric Standard for the JAMD Community

Release to NATO under CUI-10-002
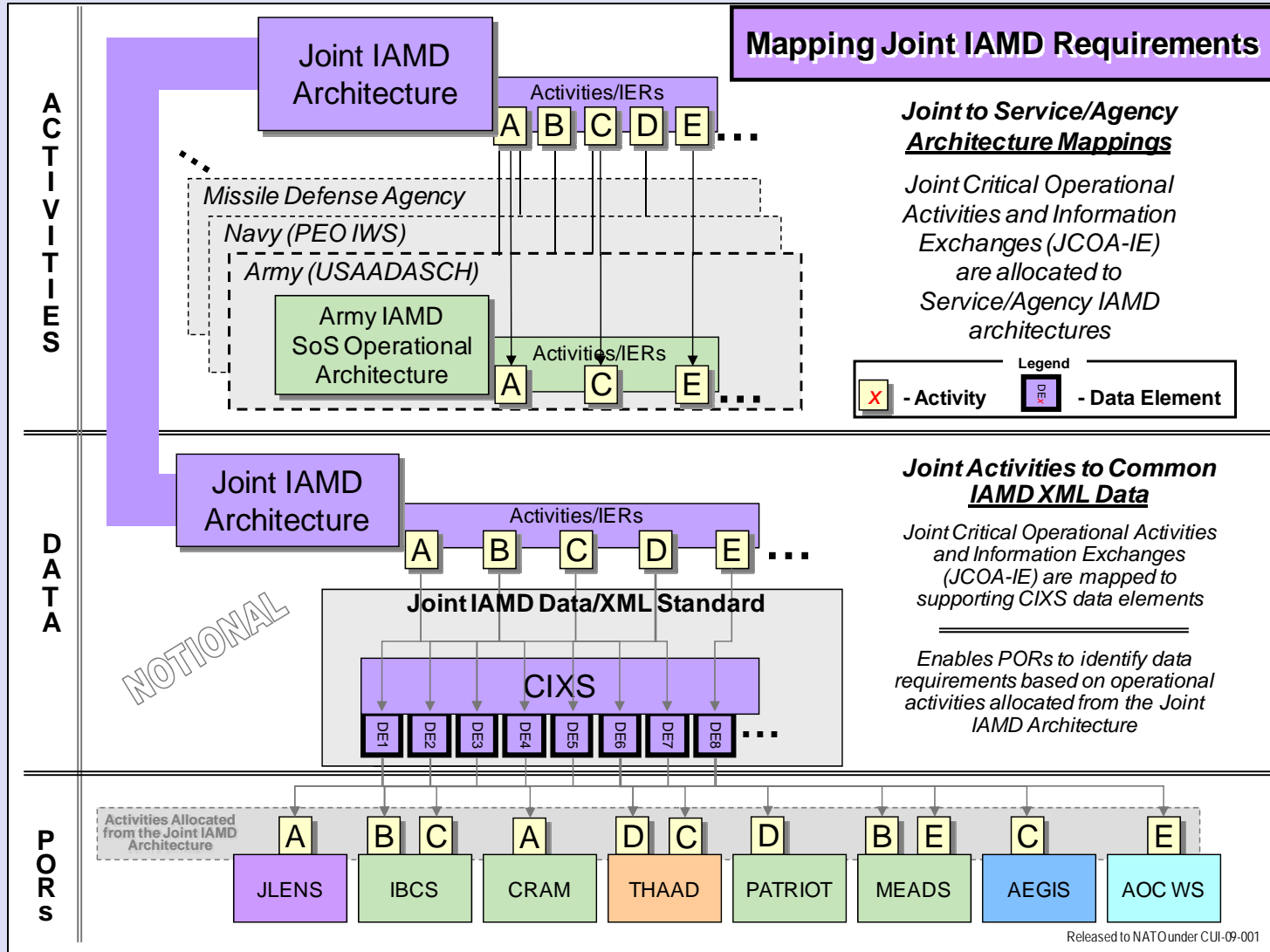
Common IAMD XML Schema (CIXS) Development

Joint Air and Missile Defense Community of Interest
Guiding Principles

- Accept DoD *Net-Centric Data Strategy as directive*
- *Data Development is "Capabilities Based"* IAW JCIDS and *determined by each community's warfighter functional requirements*
- **Use the most effective & efficient means of transferring technical data** (*machine-to-machine*)
- *Present the user anything he/she wants via the warfighter display (GUI)*
- *Capture objective data definitions and metadata using XML* to support:
  - Near-term implementation
  - Future implementations of advanced capabilities
  - Data exchange in support of Service Oriented Architectures and Militarized Web Technology
- Implement objective data in *XML as technology allows* (e.g. OTA bandwidth limitation)
- *A common data set that supports all activities of the JAMD Warfighter.*
  - *Enables planning/weapon systems initialization integration*
  - *Seamless near real time replanning with engagement operations*
- *Use legacy TDL/MTF elements if they support operational data requirements* to achieve NCOW objectives
- *Eliminate costly redundant and inconsistent legacy data elements*
- Intent of Joint Capabilities Integration and Development (JCIDS) can only be met by *collaborative Joint Material Development* (e.g. Joint Track Manager-JTM)

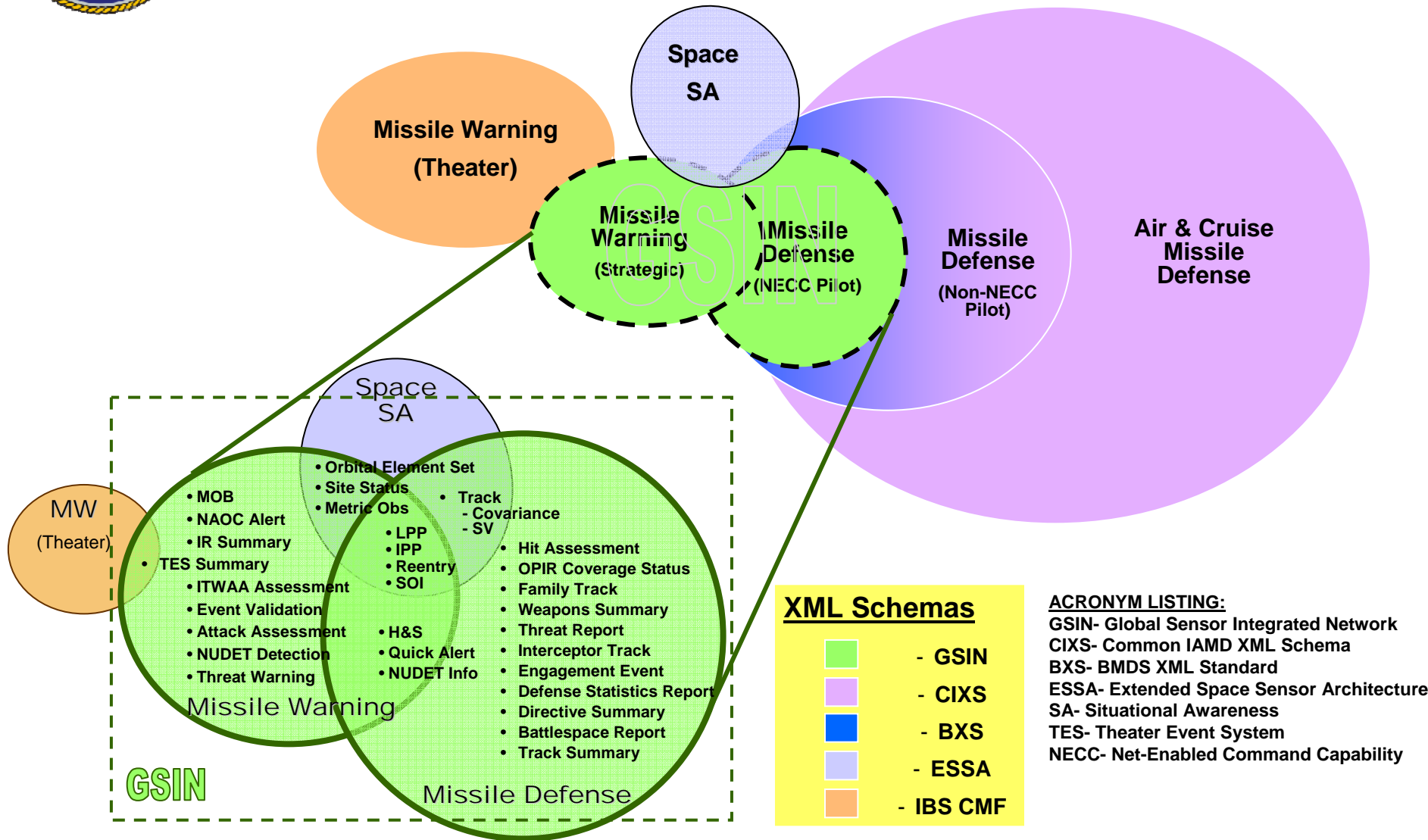*Guiding Principles Evolved From Joint Data Development Experience*

Mapping of CIXS to IAMD Operational Architecture

ACTIVITIES

Joint IAMD Architecture

Activities/IERs

A B C D E ...

Missile Defense Agency

Navy (PEO IWS)

Army (USAADASCH)

Army IAMD SoS Operational Architecture

Activities/IERs

A C E ...

Mapping Joint IAMD Requirements

Joint to Service/Agency Architecture Mappings

Joint Critical Operational Activities and Information Exchanges (JCOA-IE) are allocated to Service/Agency IAMD architectures

Legend

X - Activity   DE - Data Element

DATA

Joint IAMD Architecture

Activities/IERs

A B C D E ...

NOTIONAL

Joint IAMD Data/XML Standard

CIXS

DE1 DE2 DE3 DE4 DE5 DE6 DE7 DE8 ...

Joint Activities to Common IAMD XML Data

Joint Critical Operational Activities and Information Exchanges (JCOA-IE) are mapped to supporting CIXS data elements

Enables PORs to identify data requirements based on operational activities allocated from the Joint IAMD Architecture

PORs

Activities Allocated from the Joint IAMD Architecture

A | B C | A | D C | D | B E | C | E

JLENS | IBCS | CRAM | THAAD | PATRIOT | MEADS | AEGIS | AOC WS

Released to NATO under CUI-09-001

Space SA

Missile Warning (Theater)

Missile Warning (Strategic)

Missile Defense (NECC Pilot)

Missile Defense (Non-NECC Pilot)

Air & Cruise Missile Defense

GSIN

MW (Theater)

Space SA

- Orbital Element Set
- Site Status
- Metric Obs

- MOB
- NAOC Alert
- IR Summary
- TES Summary
- ITWAA Assessment
- Event Validation
- Attack Assessment
- NUDET Detection
- Threat Warning

- LPP
- IPP
- Reentry
- SOI

- H&S
- Quick Alert
- NUDET Info

- Track
  - Covariance
  - SV
- Hit Assessment
- OPIR Coverage Status
- Family Track
- Weapons Summary
- Threat Report
- Interceptor Track
- Engagement Event
- Defense Statistics Report
- Directive Summary
- Battlespace Report
- Track Summary

Missile Warning

Missile Defense

GSIN

XML Schemas

🟩	- GSIN
🟪	- CIXS
🟦	- BXS
🔵	- ESSA
🟧	- IBS CMF

ACRONYM LISTING:
GSIN- Global Sensor Integrated Network
CIXS- Common IAMD XML Schema
BXS- BMDS XML Standard
ESSA- Extended Space Sensor Architecture
SA- Situational Awareness
TES- Theater Event System
NECC- Net-Enabled Command Capability

UNCLASSIFIED

JAMD Metacard Template

JAMD Metadard Template Supports Data Visibility

JAMD Data Catalog

Meta-card

Enterprise Search

Federated Search

COI Data Catalog

DDMS

Primary Category	Data Field	Obligation	Recommended Field Value
Security	Security Marking	Mandatory	Not Applicable (N/A)
Title	Title	Mandatory	N/A
	Subtitle	Optional	
Identifier	Identifier Quanifier	Mandatory	N/A
	Identifier Value	Mandatory	N/A
Creator	Creator (See also Person, Organization, or Web Service)	Mandatory	Platform Identifier/IP Address (Default)
Publisher	Publisher (See also Person, Organization, or Web Service)	Optional	Platform Identifier/IP Address (Default)
Contributor	Contributor (See also Person, Organization, or Web Service)	Optional	N/A
Date	Date Created	Optional	N/A
	Date Posted	Optional	N/A
	Date Valid Til	Optional	N/A
	Date Info Cut Off	Optional	N/A
Rights	Privacy Act	Optional	N/A
	Intellectual Property Rights	Optional	N/A
	Copyright	Optional	N/A
Language	Language Qualifier	Conditional	American (Default)
	Language Value	Optional	English (Default)
Type	Type Qualifier	Conditional	N/A
	Type Value	Optional	N/A
Source	Source Qualifier	Optional	N/A
	Source Value	Optional	N/A
	Source Schema Qualifier	Optional	N/A
	Source Schema Href	Optional	N/A
Subject	Category Qualifier	Optional	TBD
	Category Code	Optional	TBD
	Category Label	Mandatory	TBD
	Keyword	Optional	N/A
	Geographic Identifier	Mandatory unless not Applicable	N/A
	Geographic Bounding Box	Optional	N/A
	Geographic Bounding Geometry	Optional	N/A
	Postal Address	Optional	N/A
	Vertical Extent	Optional	N/A
	Facility BE Number	Optional	N/A
	Facility Osuffix	Conditional	N/A
	Region	Optional	N/A
	Name	Optional	N/A
	Westbound Longitude	Conditional	N/A
	Eastbound Longitude	Conditional	N/A
	Northbound Latitude	Conditional	N/A
	Southbound Latitude	Conditional	N/A
	Polygon	Optional	N/A
	Point	Optional	N/A

JAMD Metacard Data Mapped to DoD Metadata Specification (DDMS) supports Enterprise and Federated Searches
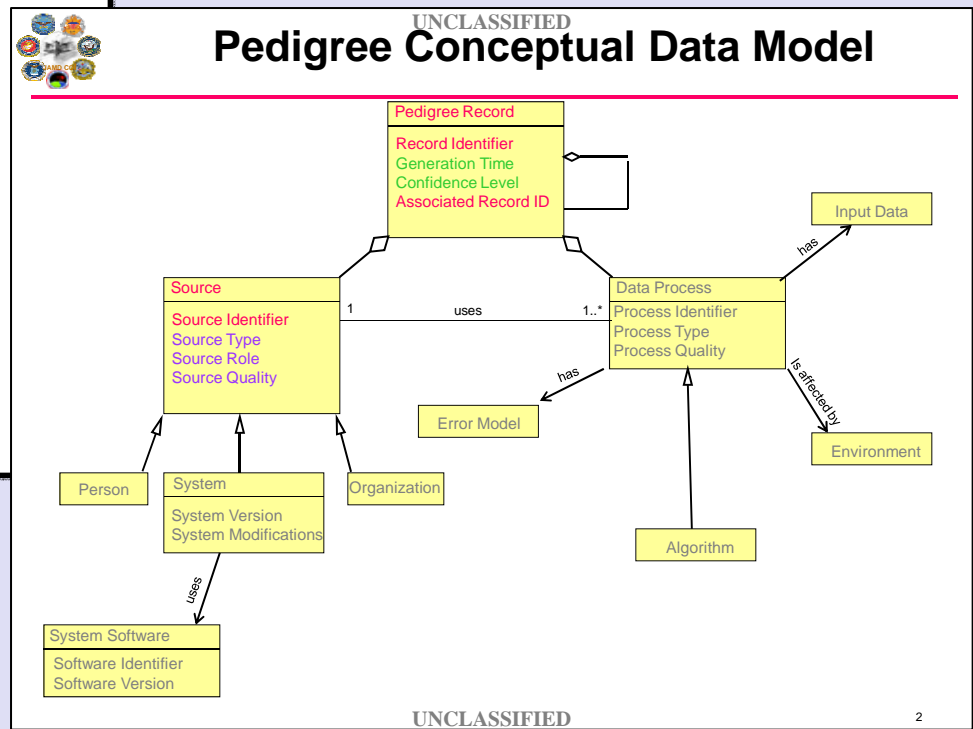
JAMD Data Pedigree Business Rules/Data Model

Pedigree Data Business Rules

1. A **Pedigree Record** is associated with zero, one or more **Pedigree Records**.
2. A **Pedigree Record** has only one **Source**.
3. A **Pedigree Record** has zero, one or more **Data Processes**.
4. A **Person** is a type of **Source**.
5. A **System** is a type of **Source**
6. An **Organization** is a type of **Source**.
7. A **System** uses zero, one or more instances of **System Software**.
8. A **Source** uses one or more **Data Processes.**
9. A **Data Process** has one or more **Input Data**.
10. A **Data Process** has zero, one or more **Error Models**.
11. A **Data Process** is affected by zero, one or more **Environments**.
12. An **Algorithm** is a type of **Data Process.**

Pedigree Conceptual Data Model

Pedigree Record
Record Identifier
Generation Time
Confidence Level
Associated Record ID

Source
Source Identifier
Source Type
Source Role
Source Quality

1   uses   1..*

Data Process
Process Identifier
Process Type
Process Quality

Input Data

has

Error Model

has

Environment

Is affected by

Person

System
System Version
System Modifications

Organization

Algorithm

System Software
Software Identifier
Software Version

uses

2

26

JAMD Data Development/ Discovery Taxonomy

	Data Element/Tag	Association	Associated Concept	DOD Core	
1					
2	Platform	is_subclass_of	Equipment	Yes	
3	CommandAndControlPlatform (CommandAndControlPlatformType)	is_subclass_of	Platform		
4	Type	is_part_of	CommandAndControlPlatform		
5	AddressNumber	is_part_of	CommandAndControlPlatform		
6	URN	is_part_of	AddressNumber		
7	STN (STNType)	is_part_of	AddressNumber		
8	STN1	is_part_of	STN		
9	STN2				
10	STN3				
11	CommunicationNod				
12	CommunicationNod				
13	TypeOfCommPlatfo				
14	TransmissionCapab				
15	CommunicationsDe				
16	Transmission				
17	Hardwired (HardWir				
18	Transmission				

7	Threat			is_subclass_of	Equipment	Yes
8	EnemyUnit (EnemyUnitType)			is_instance_of	Military Forces Organization	Yes
9	EnemyUnit (EnemyUnitType)			is_subclass_of	Threat	
0	Location			is_part_of	EnemyUnit	
1	Point			is_part_of	Location	
2	OperatingArea			is_part_of	EnemyUnit	
3	Circle			is_part_of	OperatingArea	
4	MastgerIntelKey			is_part_of	EnemyUnit	
5	Confirmation					

360						
361	Shape					
362	AirShape		is_subclass_of	Shape		
363	Orbit (OrbitType)		is_part_of	AirShape		
364	PointList		is_part_of	Orbit		
365	Point					
366	Alignment					
367	Width					
368	MinHeight					
369	MaxHeight					
370	Corridor (CorridorType)					
371	SegmentList					
372	Segment					
373	WayPoint (WayPointTyp					
374	Point					
375	SegmentBoundary					
376	UpperAltitude					
377	LowerAltitude					
378	LeftWidth					
379	RightWidth					
380	TransitInstructions (Tran					
381	MinSpeed					
382	MaxSpeed					
383	DirectionCode (Directio					
384	DirectionTolerance					
385	Buffer					

Left inner column (numbered):
5	Confirmation
6	DescriptiVertex
7	Mobility
8	Speed
9	Direction
0	Method
1	MovementAuth
2	BallisticMissileT
3	Threat (ThreatT
4	DescriptiVertex
5	Countermeasur
6	Countermeasur
7	Attributes

583						
584	Feature		is_subclass_of	Geolocation		Yes
585	BasicFeature (BasicFeatureType)		is_subclass_of	Feature		
586	TypeOfBasicFeature (TypeOfBasicFeatureType)		is_part_of	BasicFeature		
587	attribute		is_part_of	TypeOfBasicFeature		
588	polMil		is_part_of	attribute		
589	PropertyList		is_part_of	BasicFeature		
590	Property (PropertyType)		is_part_of	PropertyList		
591	CompositeFeature (CompositeFeatureType)		is_subclass_of	Feature		
592	Feature		is_subclass_of	Geolocation		Yes
593	Feature (FeatureType)		is_subclass_of	Feature		
594	Shape		is_part_of	Feature		
595	CountryCode		is_part_of	Feature		
596	BENumber		is_part_of	Feature		
597	DescriptiVertext		is_part_of	Feature		
598						
599	Documentation					
600	DocumentationStructure		is_part_of	Documentation		
601	ProseTextType		is_part_of	DocumentationStructure		
602	TermTextType		is_part_of	DocumentationStructure		
603	FullName		is_part_of	DocumentationStructure		
604	Description		is_part_of	DocumentationStructure		
605	Note		is_part_of	DocumentationStructure		
606	Units		is_part_of	DocumentationStructure		
607	Omission		is_part_of	DocumentationStructure		
608	ReferenceFrame		is_part_of	DocumentationStructure		
609	Reference		is_part_of	DocumentationStructure		
610	Synonym		is_part_of	DocumentationStructure		
611	Acronym		is_part_of	DocumentationStructure		

JAMD Vocabulary

Vocabulary-Philosophy

STRATCOM's GMD Lexicon

- **Basis for common understanding**
- **Supports Conops Development**

Feedback

Terms & Definitions

JAMD COI Vocabulary

Terms, Definitions, Synonyms, & Contextual Information

JAMD Operational Dictionary
(Includes Synonyms and contextual descriptions)

Machine-to-Machine Data Transport

- **CIDS/CIXS** • **WSDL/ DED**
- **Supports Service Implementation**
- **Posted on Metadata Registry**

Data & Metadata Definitions

JAMD COI Data/Metadata Dictionary (CIXS 3.1)

Conceptual Description of JAMD Domain

JAMD Domain Ontology

(Domain-specific description of JAMD types, properties, and relationships)

- Improves the accuracy of web searches by enabling searches for concepts instead of keywords.
- Supports implementation, search, and discovery of JAMD mission services

JAMD COI Vocabulary, v 1.0

Joint Air and Missile Defense Community of Interest (JAMD COI)

JAMD COI

Vocabulary

Version 1.0

20 July 2010

i

Net-Centric Assessment Tool

Net-Centric Transformation Process
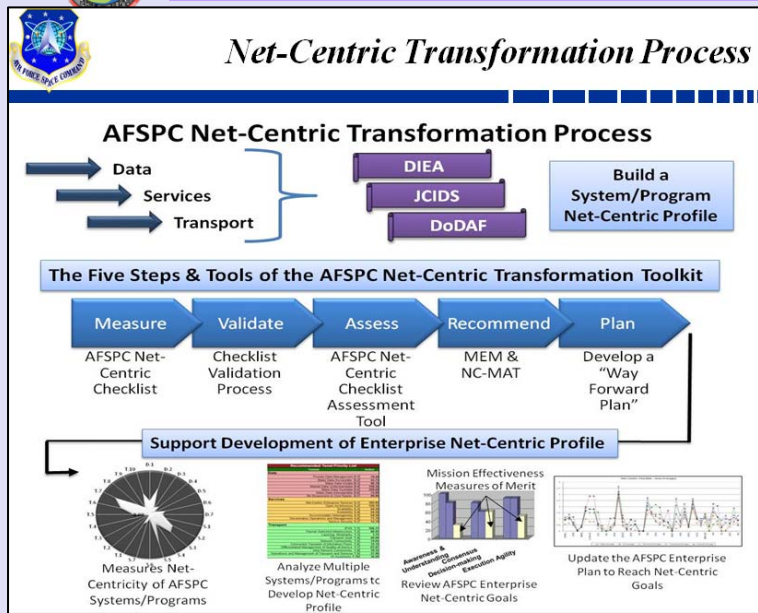
- Leveraging the USAF Space Command (AFSPC) Net-Centric Assessment Tool to support Net-Centric assessment of JAMD programs

- Based on PM self-assessment using the DoD NC Checklist as the baseline

- Provides recommended actions to PM to increase mission effectiveness through Net-Centric improvements

- Mission Effectiveness Model (MEM) enables PMs to prioritize enhancements to net-centricity

  - What is the projected impact on mission effectiveness of a proposed net-centric enhancement?

  - What options provides the greatest ROI?

- AFSPC POC is Mr. Ed Strecker, Edward.strecker@peterson.af.mil

AFSPC - Mission Effectiveness Model
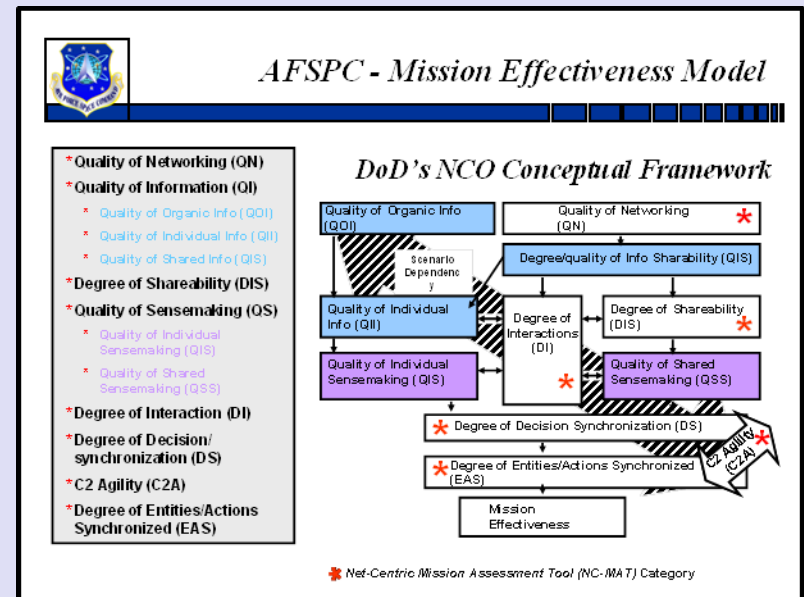
JAMD Mission Services Survey

Publically Released by SMDC Release Number: 0133

U.S. Army Space and Missile Defense Command/
Army Forces Strategic Command

JIAMD Web Service Survey & Assessment

2009-2010 Assessment

JIAMD 2009 WS Survey

- Web Services Responses Include:
  - USAF — 22
  - US Army — 22
  - US Navy — 7
  - ALT BMD (NATO) — 6
  - MDA — 6
  - STRATCOM — 2
  - IBS — 1
  - DISA — 1
- Total JIAMD Web Svcs. — 67

ANSWERS for IAMD Architecture

Map to

IAMD ARCHITECTURE

JIAMD Activities: 544

Also Done

IAMD Activities Mapped to COCOM Capability Gaps

GAP TABLE

IAMD Activities

IAMD Capability Gaps

Next Step: COMPARE

Results

Table 1 - *What IAMD activities are satisfied by JIAMD Web Services?*

Table 2 - *What JIAMD Web Services support the same IAMD activities?*

PLANNING:	177
ENGAGE:	186
ASSESS:	18
Activities Mapped:	197*

*Many activities mapped to more than one category

IAMD Activities Covered by JIAMD Web Services

TABLE 1 IAMD Activities

JIAMD Web Services

TABLE 2 - Reverse Mapping

What Web Services Will Satisfy JIAMD Gaps?

"Secure the High Ground"

41

Consensus to update during Apr 2012 MSWG meeting

30

JAMD Track Schema Update
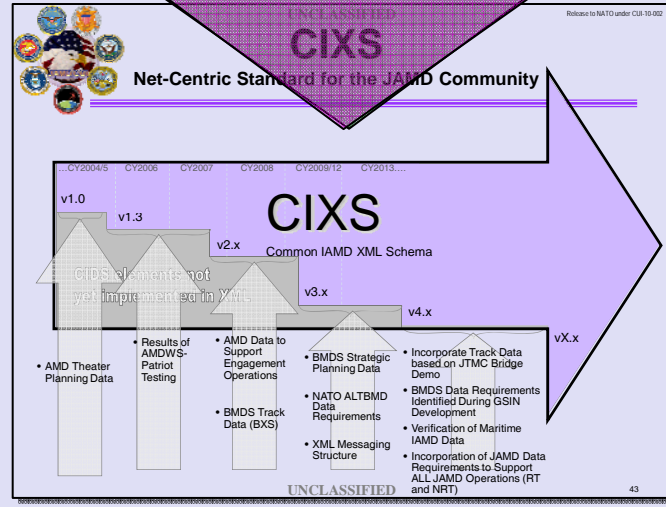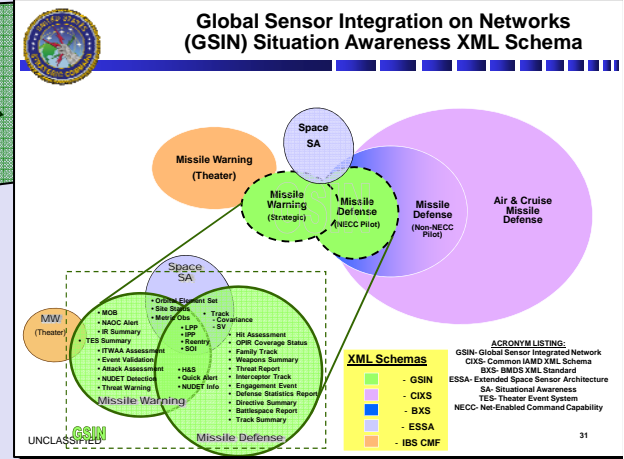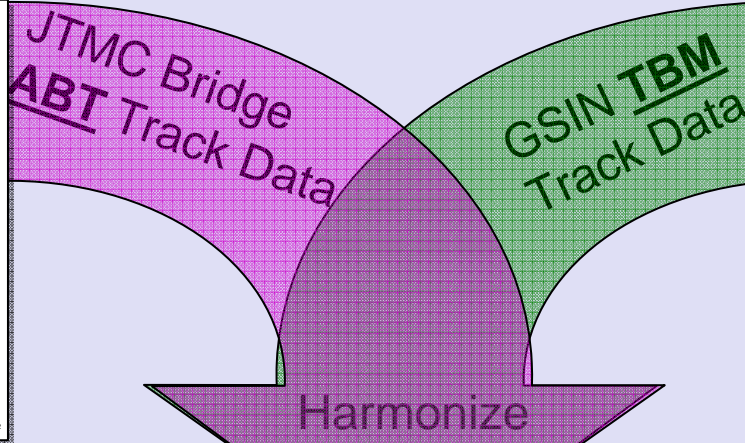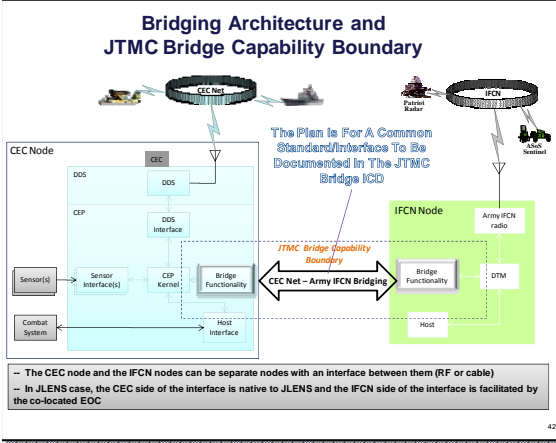
Objective: Leverage and Harmonize ABT and TBM Track Data/Schema

Joint IAMD Authoritative Data Sources (ADS)

Objective: Identify authoritative sources for IAMD data based on the Joint IAMD Operational Architecture and IAMD Roadmap in support of Joint Staff Enterprise ADS effort

Global Information Grid (GIG)

Strategic C2/BM Systems

C2BMC

Operational C2/BM Systems

AMDWS   GCCS-M   AOC WS/TBMCS   GEM/C2BMC

Tactical C2/BM Systems

AMDWS   Patriot ICC   MIPS

Weapon Systems

AEGIS   THAAD

Pending Concurrence of JAMD COI Systems of Interest

JAMD COI DKO Workspace
(URL: https://www.us.army.mil/suite/page/498325)

| Home | My Account ▾ | Favorites ▾ | Quick Links ▾ | Self Service ▾ | | Search... | AKO Content ▾ | Search |

Joint Air and Missile Defense (JAMD) COI Home (Related Content ▾)

🔲 Remove from Favorites   Options ▾

AKO Home > DoD Organizations > Office of the Secretary of Defense > DoD CIO > Joint Air and Missile Defense (JAMD) COI > Joint Air and Missile Defense (JAMD) COI Home

Welcome to Joint Air and Missile Defense (JAMD) COI   Options

Joint and Missile Defense (JAMD) COI Leader's Message   Options

Welcome to the JAMD COI Workspace
On behalf of the Co-Directors of the Joint Air and Missile Defense Community of Interest: Mr. Evan Hoapili, US STRATCOM and BG Ole Knudson, USA PEO Missiles and Space: WELCOME! Our Mission: Joint (Integrated) Air and Missile Defense Customer: Any Warfighter - Anywhere - All the Time!

» AO for JAMD COI

Joint Air and Missile Defense (JAMD) COI Announcements   Options

4 Oct 2011 13:58 GMT
Last JAMD COI meeting was hosted by the U.S. Air Force Space Command (AFSPC) on 31 August - 01 September in Colorado Springs. Presentations from that meeting are available in the document library.   » Next JAMD COI Meeting

Next JAMD COI meeting is scheduled to be hosted by the Missile Defense Agency on 07-08 December in Huntsville, AL.

Current   « Previous | Next »   Archived

JAMD COI Intro Brochure   Options

📁 **JAMD COI Information**
Fundamental information concern the JAMD COI mission, organization, products, and activities.

Joint Air and Missile Defense (JAMD) COI Links   Options

📄 **Joint Air and Missile Defense (JAMD) Namespace**
Link to the Joint Air and Missile Defense (JAMD) Namespace within the DoD Metadata Registry and Clearinghouse (MDR&C). If already signed into the MDR&C, this link will take you directly to the JAMD Namespace. If not already logged into the MDR&C, you will be directed to the Homepage. Once logged in to the MDR&C, choose View-Namespaces, open the DODENT-DoD Enterprise folder, and select "JAMD-Joint Air and Missile Defense." The JAMD Namespace contains the Joint Air and Missile Defense Community of Interest (JAMD COI) Common IAMD XML Schema (CIXS) and supporting WSDL and Common IAMD XML Message Set. Dr. Timothy Kearns (MDA BCE/ MITRE), 719-277-4174 is the JAMD Namespace Manager; Mr. Joe Velasquez, 256.864.7038, (PEO MS/BAE Systems) is the Namespace Administrator. Metadata is posted to the JAMD Namespace as authorized by the CIXS CCB. The CIXS CCB serves as the Data Management Working Group under the Joint oversight of the JAMD COI.

📄 **JIAMD Mission Services Forum**
This forum is the home for the Joint Integrated Air and Missile Defense (JIAMD) community to coordinate operational development of Web Services to support the JIAMD Warfighter. This site identifies current Web Services that exist and those planned to support JIAMD capabilities. The site will also provide a forum for the collaboration of work efforts and any other assessment and reference products. The JIAMD Web Services Forum serves as the Joint IAMD Mission Services Working Group for the JAMD COI.

JAMD COI Calendar   Options

Upcoming Events

Full Month View   Add Event

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☐	📁 JIAMD Summit	Folder	👤 gerald.skidmore	114 files	Mar 2, 2009 10:39 PM	

Joint Air and Missile Defense (JAMD) COI Knowledge Center

JAMD COI 📁 Joint Air and Missile Defense (JAMD) COI Files

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☐	📁 Cross-COI Coordination	Folder	👤 walter.t.judd
☐	📁 JAMD COI Charter and Associated Processes	Folder	👤 larry.darryl.smith
☐	📁 JAMD COI Meetings	Folder	👤 gerald.skidmore
☐	📁 JAMD COI Products	Folder	👤 gerald.skidmore
☐	📁 JAMD Portfolio Systems of Interest (SOI)	Folder	👤 larry.darryl.smith
☐	📁 JAMD-Related XML	Folder	👤 larry.darryl.smith
☐	📁 Navy Coordination	Folder	👤 larry.darryl.smith

Joint Air and Missile Defense (JAMD) COI Knowledge Center

JAMD COI Meetings 📁 JAMD COI

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☐	📁 JAMD Mission Service WG	Folder	👤 gerald.skidmore
☐	📁 JAMD Net-Centric Assessment ToolKit	Folder	👤 gerald.skidmore
☐	📁 Mapping to IAMD Operational Architecture	Folder	👤 gerald.skidmore

JAMD COI
→ ALL INVITED ←

- ## JAMD COI Meetings are Held Quarterly
  - Rotated among members
  - First Day: Devoted to Status of Net-Centric Products
  - Second Day: Devoted to Status/Coordination of IAMD Systems
  - **Note**: Need Participation by USMC
  - JAMD COI is oversight body for <u>CIXS CCB and GSIN CCB</u>

- ## CIXS CCBs/Workshops Meetings are held monthly
  - Vote by System
  - **Note**: Need USAF Voting Systems

- ## Net-Centric TIMs are held Bi-Monthly
  - Purpose is to Share Net-Centric Developments of Interest to the JIAMD Community

Summary

- JAMD COI is focused on the Development/Coordination of Common IAMD Data/Mission Services for the JAMD community
  - Currently 16 PORs Vote Monthly on the Common Data Standard for the JIAMD community (CIXS)
- JAMD COI is leading our community's migration to JIIM IAMD Net-Centric Operations and Service Oriented Architectures (SOA)
  - JAMD COI Support to the MSSET is Critical in Synchronizing Efforts to Bring Maximum Net-Centric Value to the JIAMD Community
  - Working Closely With:
    - CCDRs   - Joint staff
    - USA/USN/USMC/USAF/MDA   - Other COIs (e.g. Air Operations, C2 SSA)
    - JPEO IAMD/MSSET   - NATO NC3A / JCG-GBAD / ALTBMD Programme Office
  - Net-Centric SE Activities support PMs in satisfying NR KPP requirements to Realize JIAMD Capabilities
- Working to Align Initiatives in support of:
  - Joint Track Management Capability / Combat ID / Integrated Fire Control / Automated Battle Mgt Aids
  - Air and Missile Defense Integrating Authority / AMD Governance
  - NATO Territorial Missile Defense - European Phased Adaptive Approach

JAMD COI and CIXS/GSIN Namespaces are Key Enablers to Achieve JIAMD Net-Centric Operations for the Warfighter

Points of Contact/Questions

Government Action Officers

Col Robert Rogers (USAF)
IAMD Chief Advocate
USSTRATCOM-J85
Email: rogersrm@stratcom.mil
Phone: 402-294-4434

Mr. David Skidmore "Skid"
Technical Director for Net-Centric Integration
U.S. Army PEO Missiles and Space
Email: gerald.skidmore@us.army.mil
Phone: 256-313-8397

Technical Support

Mr. Matthew LeVee, CIV
Program Analyst
Missile Defense Advocacy
USSTRATCOM/J852
LEVEEM@stratcom.mil
Comm: 402-232-0812
DSN: 272-0812

Ms. Christine Schmidt, CIV
JFCC-IMD/J66
Email: christine.schmidt@jfcc-imd.stratcom.mil
Phone: (719) 721-7991

Mr. Larry Smith, CTR
PEO MS Support/JAMD COI Coordinator
BAE Systems
Email: larry.d.smith@baesystems.com
Phone: (256) 864-7060

Dr. Tim Kearns, CTR
JAMD Namespace Manager
MITRE - MDA
Email: kearns@mitre.org
Phone: (719) 277-4174

Mr. Jose "Joe" Velasquez, CTR
JAMD Namespace Admin/IAMD XML CCB Coord
BAE Systems
Email: jose.velasquez@baesystems.com
Phone: (256) 864-7038