Joint Space Operations Center (JSpOC) Mission System (JMS) Common Data Model:
Foundation for Interoperable Data Sharing for Space Situational Awareness

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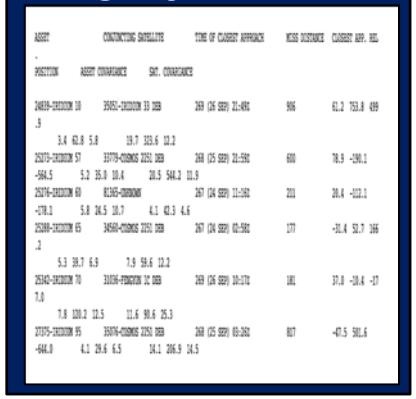
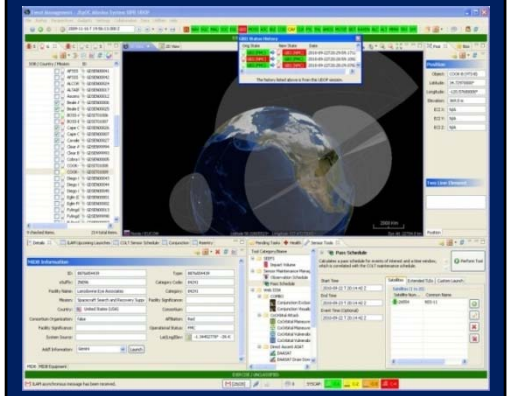
JMS Program Description

- Top Level Description:
  - *Integrated, net-centric Space Situational Awareness (SSA) and Command & Control (C2) capability*
    - Rapidly detect, track, & characterize objects of interest—NRT high accuracy catalog
    - Provide timely space effects in support of joint ops on tactical timelines
    - ID/exploit traditional & non-traditional sources
    - Produce User-Defined Operational Picture and Space Order of Battle
    - Perform space threat analysis
    - Conduct C2 of space forces in dynamic environment

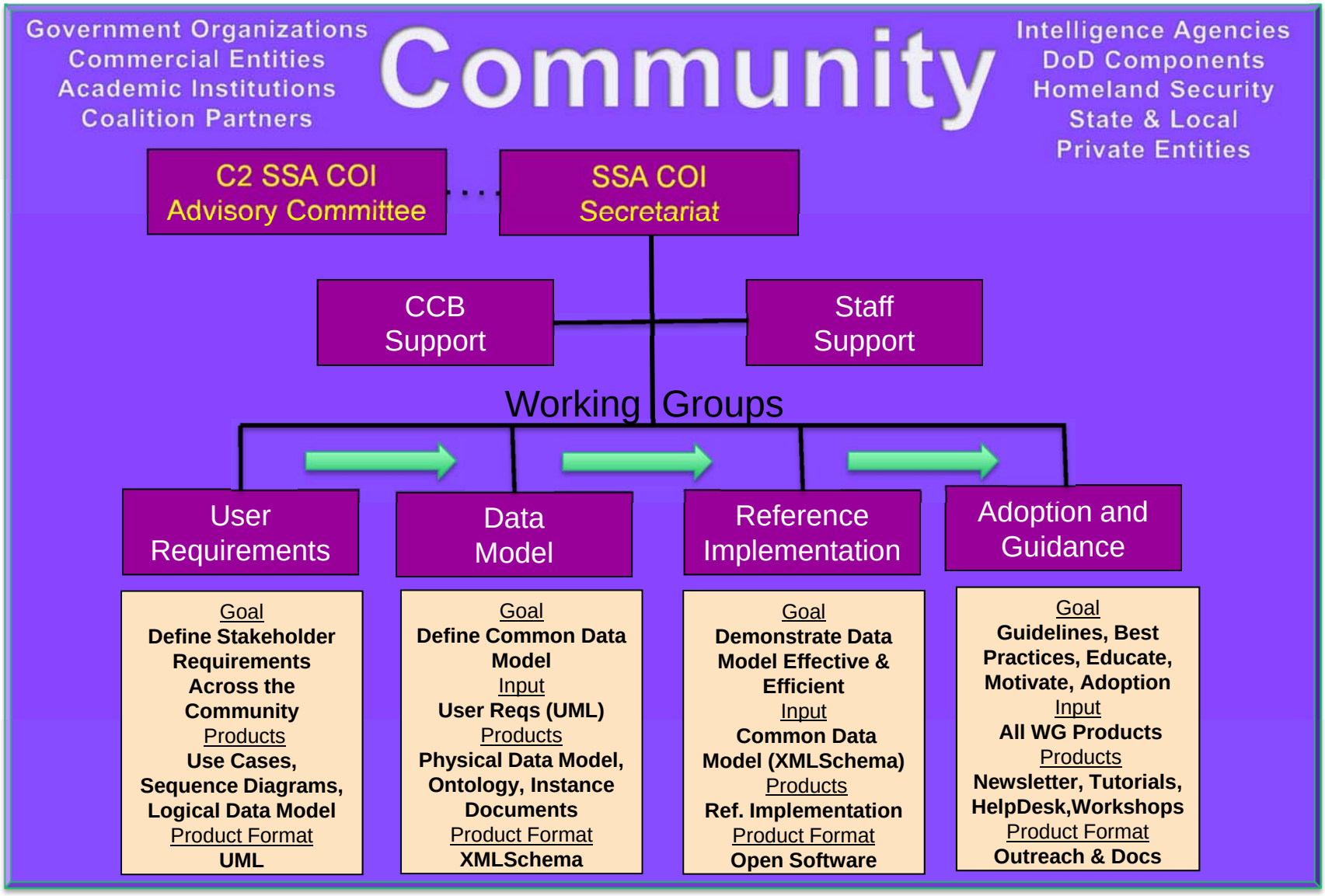
Legacy SPADOC



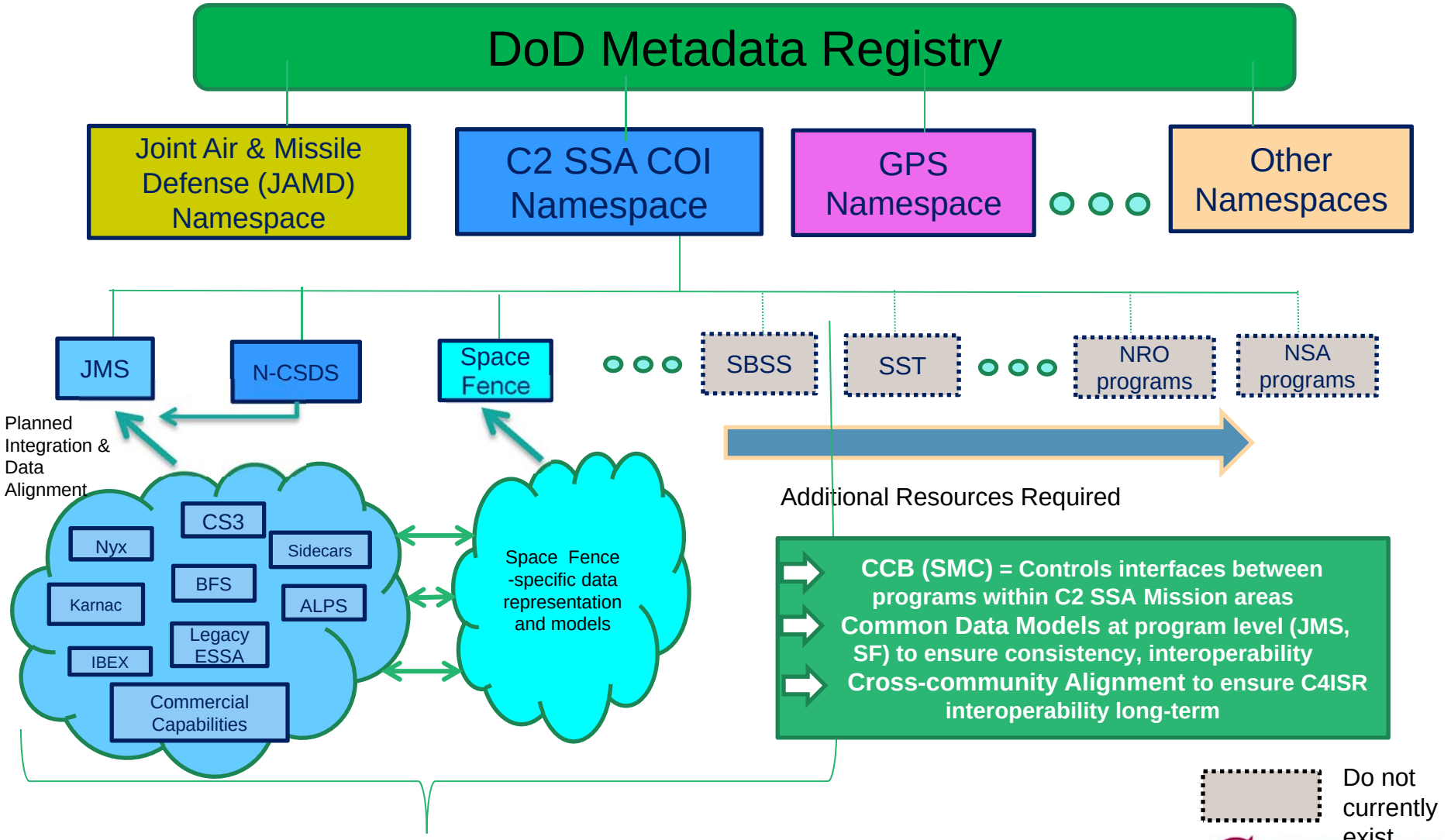
JMS



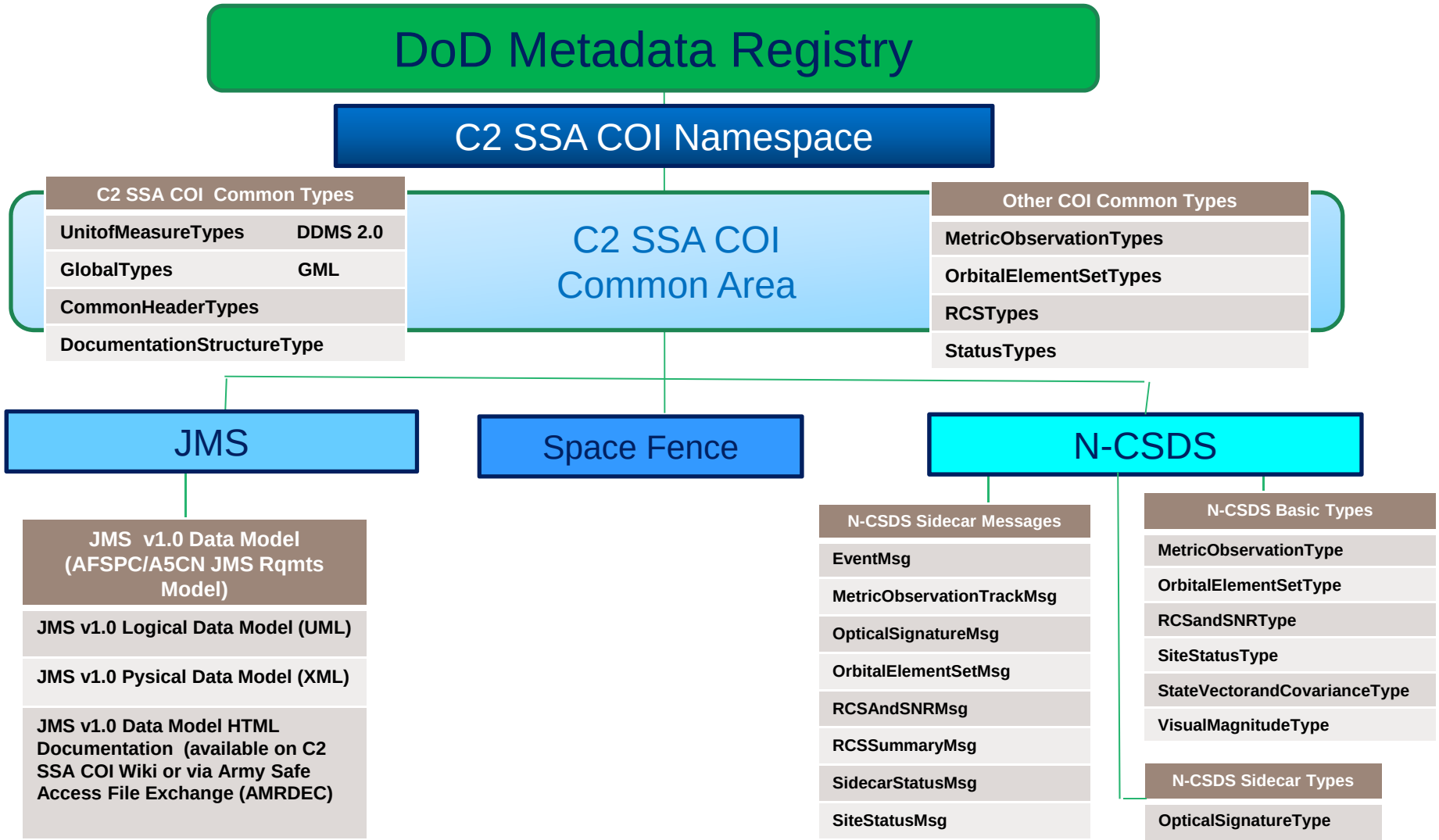
C2 SSA COI Structure



DoD MDR Namespace Structure



DoD MDR C2 SSA COI Namespace Data Products



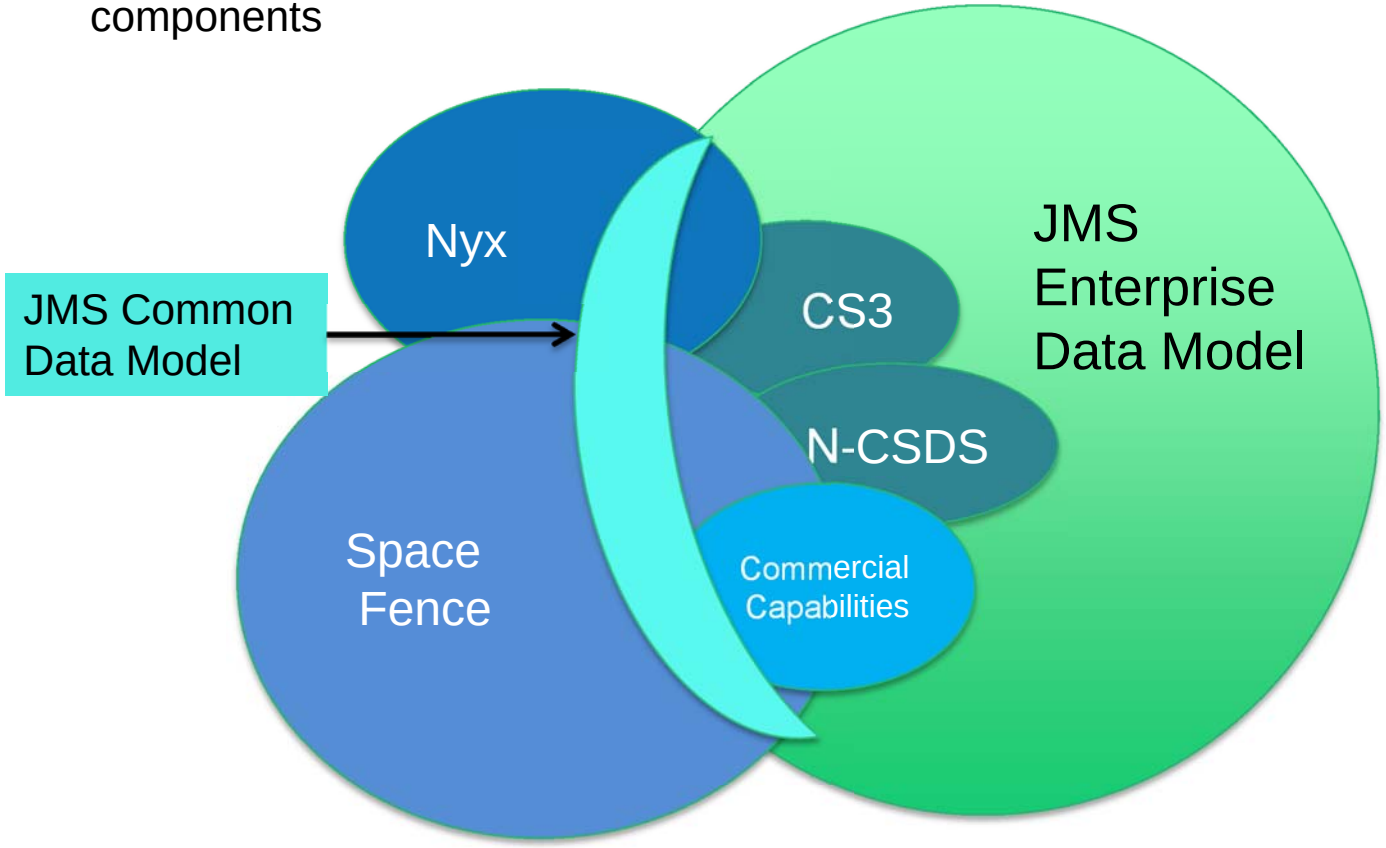
All products registered on the MDR are made available to the community to foster interoperability

JMS Enterprise Data Model v1.0 supports Future Capability Integration

- JMS Data Model v1.0 originates in the approved AFSPC/ A5CN JMS Requirements Model
  - *JMS Requirements Model is outcome of 5-year development effort beginning with conceptual model creation based on National SSA mission threads*
  - *All capabilities in JMS Requirements Model have been mapped to the JMS CDD program requirements.*
  - *JMS Requirements Conceptual model used to create logical UML model of data entities, attributes and relationships*
  - *Logical UML model was used to generate Physical model (XML schema) for JMS Data Model v1.0*
- JMS Data Model v1.0 is only approved data model which
  - *Spans all required capabilities for JMS*
  - *Provides relational data framework for data consistency across the JMS enterprise*

JMS Common Data Model

Common Data Model refers to data structures, definitions, attributes, XML schema, WSDLs, etc. which are common across JMS and one or more of its components



Goal: Interoperable Information Exchange

Advantages of Implementing a Common Data Model

- Data elements are normalized, reducing redundancy and providing consistent metadata structure to support reliable decision-making by operators
- Elimination of inconsistent data structure reduces/eliminates the need for data translators, supports distributed data stores, more efficient allocation to virtual machines (VMs)
- Web services based on common data take advantage of efficiencies in program structure, enabling better system performance
- A common enterprise data framework supports data accuracy and the extension of system capabilities

Keys to Data Modeling Success

- Engage the community in an open, collaborative approach
  - *Regular face-to-face meetings in key location(s)*
  - *Actively solicit and incorporate stakeholder feedback*
- Bring together a high quality team, including leadership
- Start with Mission Threads
  - *Provides "big-picture" context*
- Focus on showing your model is implementable
  - *Provides grounding in reality*
- Tailor the "perfect" process to fit within your resource constraints
  - *Create the minimum essential set of products*
- Find tools to help manage the large volumes of information
- Be prepared to deal with the doubters – "This is not the way we do business, and it will never be certified."
  - *Persist – your success will prove why data modeling is essential*

Summary

- JMS current and planned component capabilities have created numerous data type packages and XML schema to meet baseline data exchange requirements for programs of record
  - *JMS Enterprise Data Model v1.0 provides a framework for net-centric information exchange to ensure accuracy & performance*
- The C2 SSA COI provides a forum for collaboration to foster interoperability across the community
  - *C2 SSA COI Namespace working groups and configuration management for community data products through the DoD MDR*
- C2 SSA COI team members (PoR resources) are a coalition of the willing who welcome participation by all members of the community
  - *DoD, Gov agencies, civil and commercial entities, Homeland Security, state and local entities, universities, coalition partners*

Acronyms

ACTD	Advanced Concept Technology Demonstration
BFS	Blue Force Status
C2 SSA	Command & Control Space Situational Awareness
CDM	Common Data Model
CMU/SEI	Carnegie Mellon University/ The Software Engineering Institute
COI	Community of Interest
DMWG	Data Management Working Group
ESSA	Extended Space Sensor Architecture
GSIN	Global Sensor Integration Network
GML	Geography Markup Language
ICISM	Intelligence Community MetaData Standard for Information Security Marking
JSpOC	Joint Space Operations Center
MDA	Missile Defense Agency
N-CSDS	Net-Centric Sensors and Data Sources
NASIC	National Air and Space Intelligence Center
NRO	National Reconnaissance Office
SMDC	Space and Missile Defense Command
XML	eXtensible Markup Language

For Further Information

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