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CBRN Data Model: Implementation Approach (presentation)

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JPEO-CBD

CBRN Data Model Implementation Approach

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Briefing Agenda

- Introduction
- CBRN Data Model Background
- Why this paper?
- A Phased Approach
- Create Data Model and XML Schema
- Data Structures and Data Sets
- RDBMS XML Interface
- Security and Information Assurance (IA)
- Develop Discovery and Web Services
- Integration with Other COIs
- Future Direction
- Questions



CBRN Data Model Background

- **For improved interoperability the JPEO CBD needed a common data representation for the 3 Programs of Record**
 - JWARN, JEM and JOEF
- **Based on Command and Control Information Exchange Data Model (C2IEDM) and being extended to meet the CBRN COI data needs**
- **Migrating the baseline to J3IEDM**
- **Common data model in the community provides common semantics and syntax as per DoD Net-Centric Data Strategy**
- **Adopted by NATO ATP45 Panel**
- **Adopted by the JPEO CBD and JRO as 'THE' DODAF OV-7**

Why this paper?

- **How do I implement the Data Model?**
- **Educate the community to the concept of Net-Centric Enterprise Services (NCES) and DoD's Net-Centric Data Strategy**
- **Show a progressive path starting from the data model to a Service Oriented Architecture (SOA)**

A Phased Approach

- 1) Create the Data Model and the XML Schema**
- 2) Create a Physical Data Structure and Accredited Datasets**
- 3) Create a Relational Database Management System (RDBMS) XML Interface**
- 4) Security and Information Assurance**
- 5) Develop CBRN Discovery and Web-Services**
- 6) Integration with Other Discovery and Data Services**

Create Data Model and XML Schema

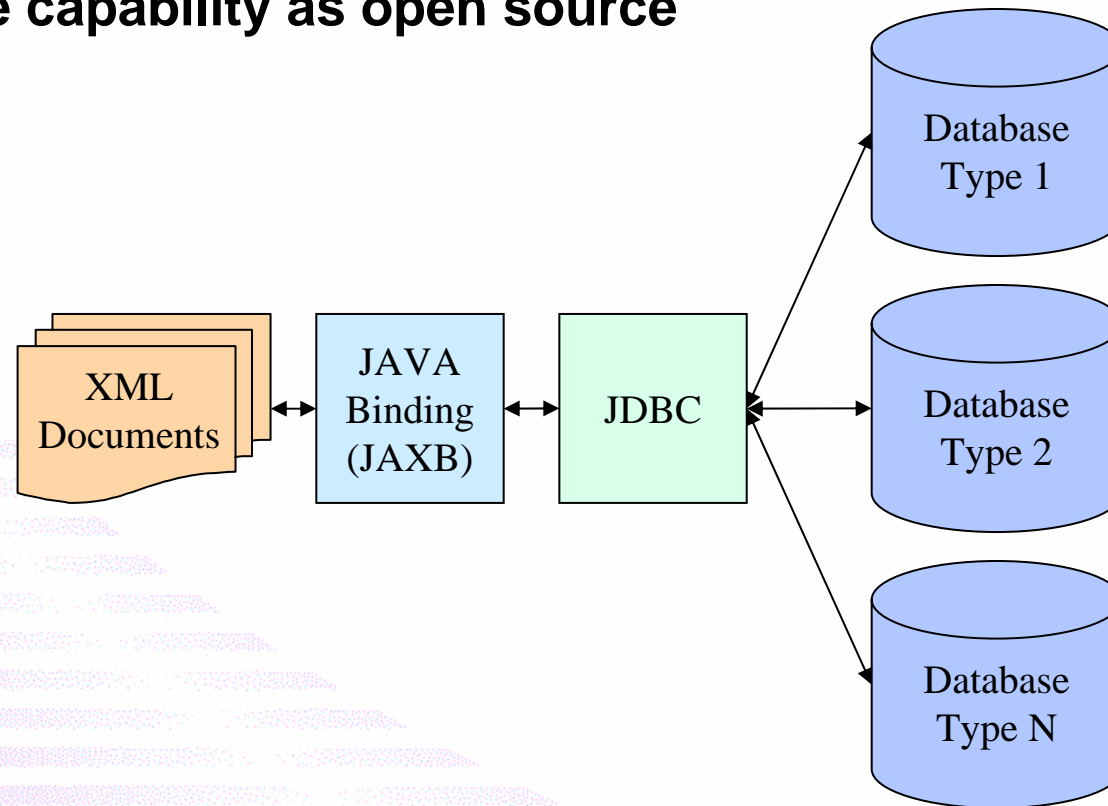
- **Create the CBRN Data Model**
- **Generate the CBRN XML Schema**
- **Develop a Configuration Management Process**
 - Internally uses UDPs for tracking modifications and requirements
 - Externally uses JPM IS Data Team's CM process but will transition to the JCBRN CMP process
- **Verify, Validate and Accredite the Data Model**
 - Data APM holds periodic technical reviews
 - V&V through the armed services by way of a JRO JSAP task
 - NATO V&V through the U.K. Defense Science and Technology Laboratory (DSTL)
- **Life-cycle Maintenance**
 - The data model is still being rapidly expanded in numerous subject areas.

Data Structure and Datasets

- **Create a Physical Data Structure**
 - Object Oriented Database (OODB)
 - Relational Database Management System (RDBMS)
 - ERwin modeling tool generates database creation scripts
- **Test (Range and Boundary) Dataset**
 - All ranges, data types and enumerations
- **Use-Case (Scenario) Dataset**
 - Application and scenario specific
- **Legacy Data Structures**
 - Will need to convert or create an XSLT design document that maps the legacy structure to the CBRN XML Schema
 - XSLT design document will be provided to JPM IS Data Team and JCBRN Architectural Working Group (JCBRN AWG)

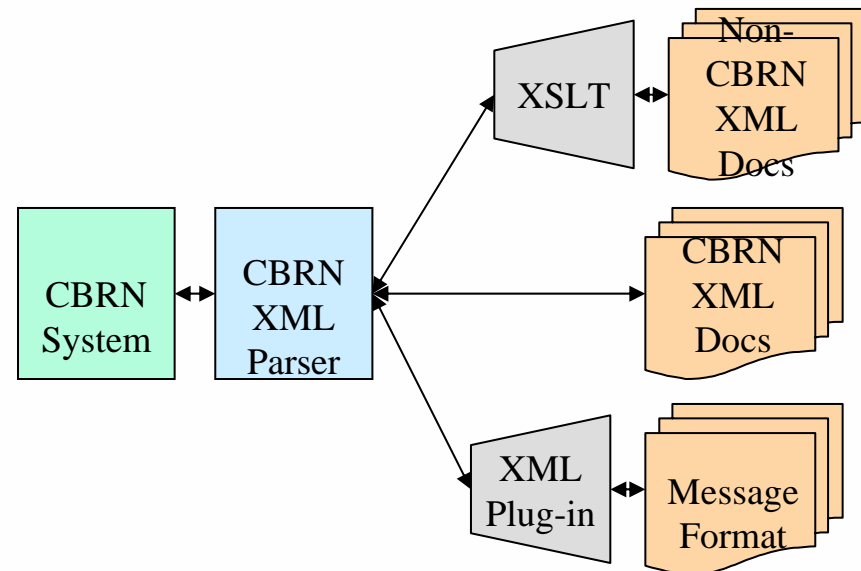
RDBMS XML Interface

- **Create an XML Interface**
 - DoD mandates XML for data exchange
 - Recommend development of a JAVA Binding (JAXB) in conjunction with JAVA Database Connectivity (JDBC)
 - Provide capability as open source



RDBMS XML Interface

- **Legacy Systems**
 - Need to develop a web service interface to include an XSLT
 - Non-XML messaging formats will require XML plug-ins
- **Establish a JPM IS Test Bed to test XML interfaces and all CBRN web services**
 - Formal testing provided by the Joint Interoperability Test Command (JITC)



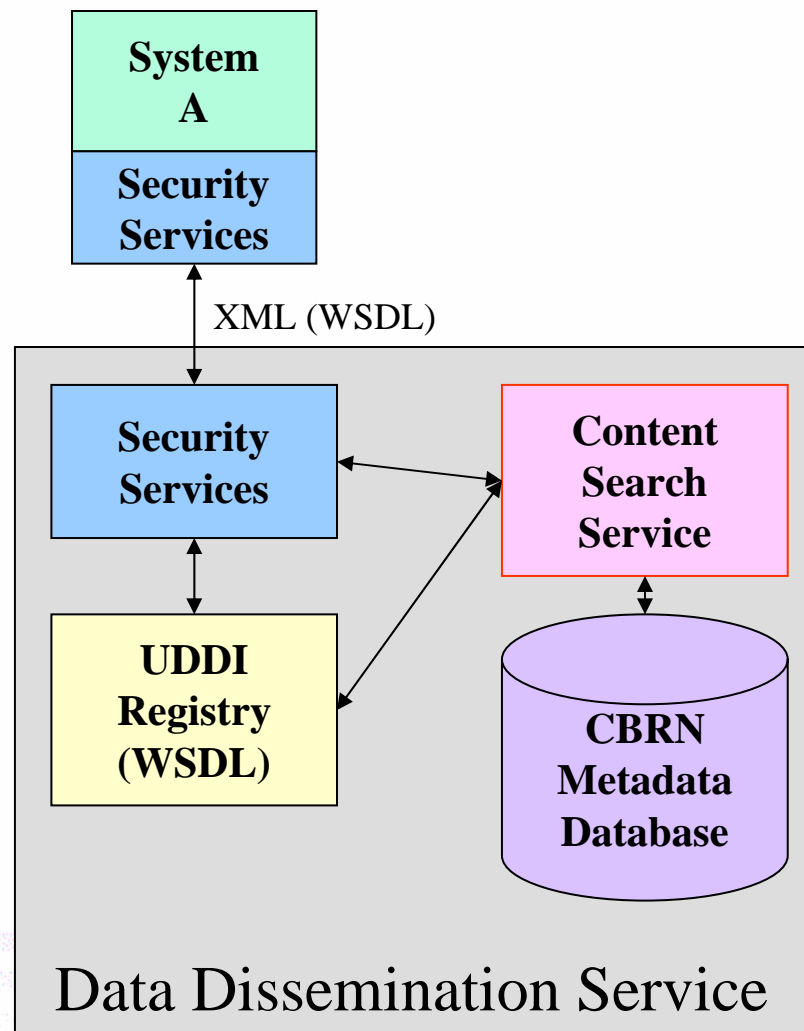
Security and Information Assurance (IA)

- **NCES IA Services**
 - Utilize and integrate with available NCES Security Services
- **Role-Based Access**
 - CBRN Discovery Metadata can support the development of role based access
 - Monitor NCES Security Services capabilities as it migrates from role-based to attribute-based access

Develop Discovery and Web Services

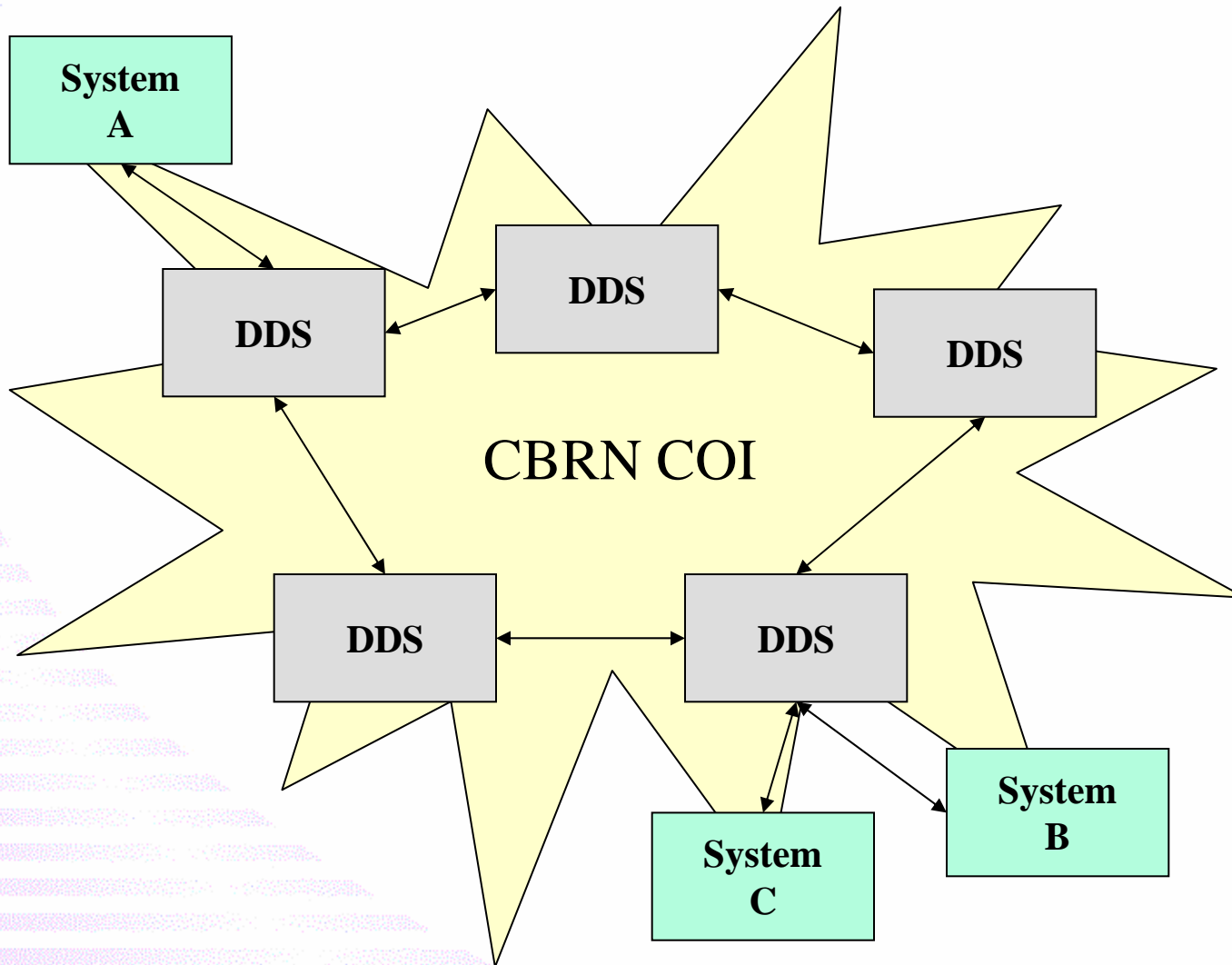
- **Develop Data Services for Authoritative and Content Data**
- **Publish a Web Service**
 - Develop and publish service using Web Service Description Language (WSDL)
 - Register web services on a Universal Description Discovery and Integration (UDDI) Registry
- **Develop a Discovery Service**
 - Needed for web services and data content
 - CBRN metadata used in search engine to discover local data content
 - Leverage existing NCES Discovery Services

Data Dissemination Services (DDS)



Leverage Net-Centric Enterprise Services to develop a DDS

DDS Enterprise



DDS will broadcast web services and discovery metadata

Integration with Other COIs

- **How do I interact with other COIs?**
- **Mapping and Discovery Services**
 - Mapping between COIs will utilize XSLTs for both discovery metadata and data content
- **Three Methods of Sharing Data Elements**
 - **Translated Approach**
 - No coordination
 - Usage of XSLTs and NCES Mediation Service
 - **Formal Coordinated Approach**
 - COIs agree to share the data element with one acting as the Steward
 - Stakeholder submits modification thru CM process and is voting member of the CCB
 - **Informal Coordinated Approach**
 - Steward maintains the data element
 - Stakeholder monitors the element for changes

Future Direction

- **There is a need for follow on papers**
 - **CBRN COI Implementation Strategy**
 - A technical plan that describes the components used to create the CBRN COI and how they will interact. This will also include operational recommendations on how to utilize the CBRN COI components.
 - **CBRN COI Implementation Plan**
 - Would address the programmatic, scheduling and responsibilities for implementing the pieces of the CBRN COI and when those pieces will be fielded. This paper should also include an overall deployment plan.
 - **CBRN Data Model Implementation Use-Case(s)**
 - These papers should provide a specific example of how the data model was actually implemented. Additional use-case papers should be written describing other aspects of the CBRN COI as the COI matures.

Questions

- Questions?

