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Joint Program Executive Office for Chemical and Biological Defense

Net-Centric Common Sensor Interface Concepts and Practices

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Overview

- **JPEO-CBD Overview**
- **Net-Centric Concepts**
- **Common Sensor Interface Initiatives**



Joint Service Chemical and Biological Defense Program (CBDP)

JOINT REQUIREMENTS OFFICE

JOINT PROGRAM EXECUTIVE OFFICE

JOINT COMBAT DEVELOPER

ATSD-NCB

JOINT SCIENCE AND TECHNOLOGY OFFICE

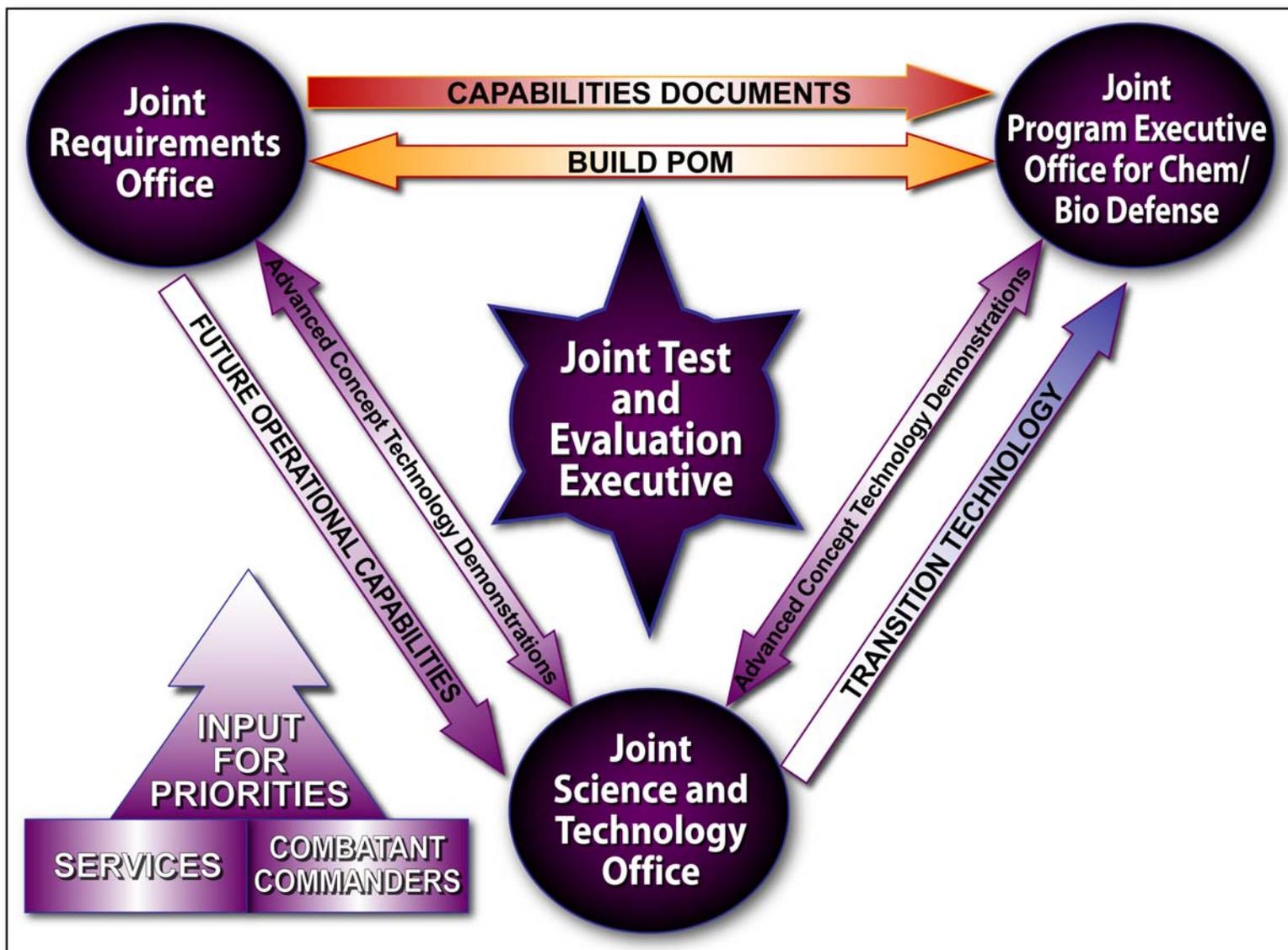
JOINT TEST AND EVALUATION EXECUTIVE

Delivering Joint Warfighting Capabilities

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Required Capabilities, Science & Technology, and Acquisition



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Joint Program Executive Office for Chemical and Biological Defense

Mission

The Joint Program Executive Office for Chemical and Biological Defense is Responsible for Research, Development, Acquisition, Fielding, and Life-Cycle Support of Chemical, Biological, Radiological, and Nuclear (CBRN) Defense Equipment, Medical Countermeasures, and Installation and Force Protection Supporting the National Military Strategy



Joint Program Executive Office Areas of Responsibility

Vaccines

Treatments

Diagnostics

Chemical & Biological Agent Detection

Weapons of Mass Destruction – Civil Support

Installation/ Force Protection

Individual Protection

Collective Protection

Decontamination

**Information
Systems**

Total Life Cycle Management

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Net-Centric Operations

Net-Centricity:

- Assured, dynamic, and shared information environment
- Access to trusted information to all users based on need
- Independent of time and place.¹

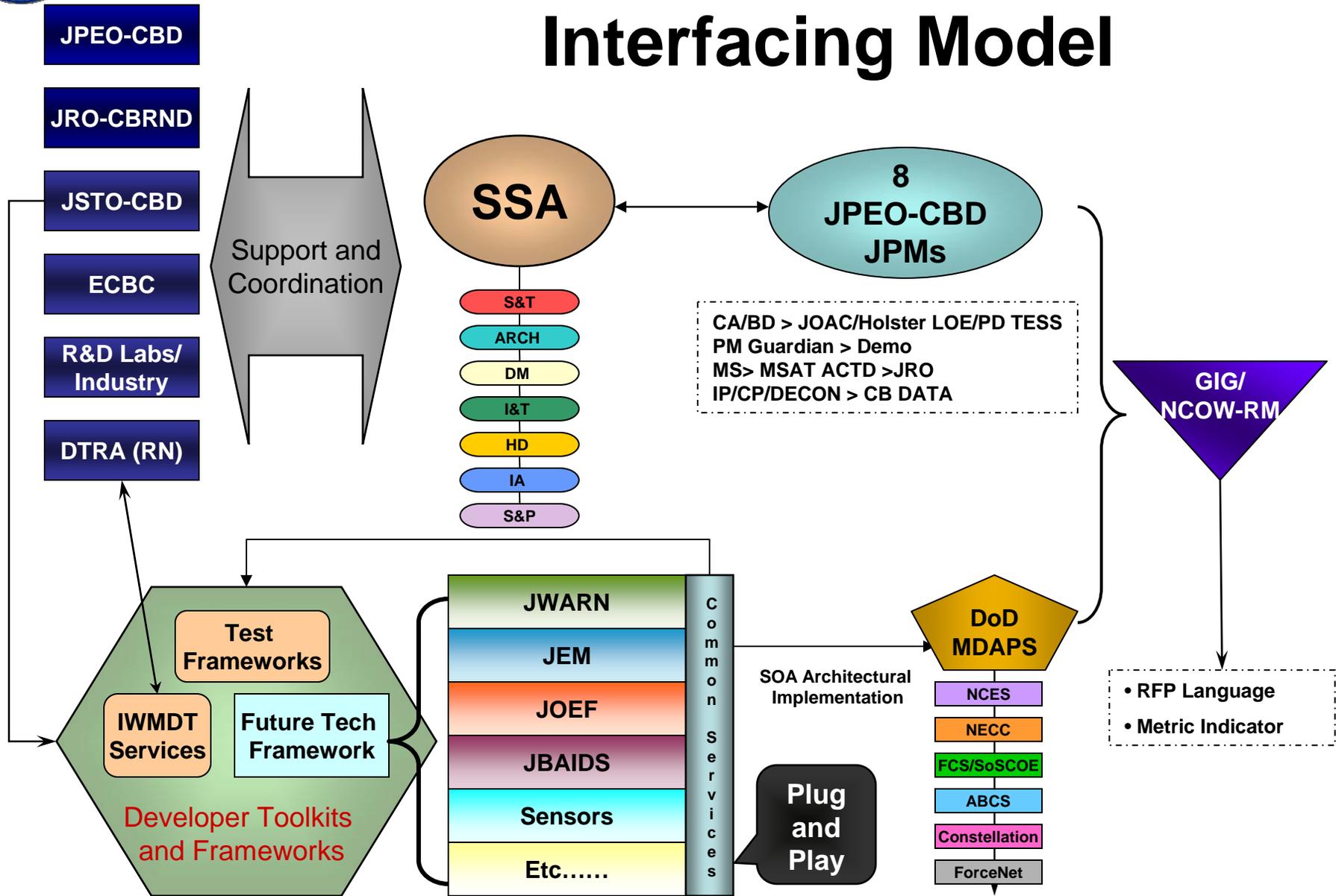
For JPEO-CBD net-centric systems:

- Architected as Service-Oriented Architectures (SOA)
- Design documents show modularity and decoupling with other components
- Web Services Definition Language (WSDL) descriptions are consistent with net-centric objectives and requirements
- Data is consistent with the CBRN Data Model
- Services are registered on the DoD Metadata Registry

¹*Net-Centric Operations and Warfare Reference Model*



Net-Centric Interfacing Model



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Net-Centric Example – Common CBRN Sensor Interface (CCSI)

Objectives:

- Develop physical and electronic standards for CBRN sensors
- Reduce the cost/schedule of integration of CBRN sensors into MDAP and upgrading sensing technology as it matures
- Let sensor vendors concentrate on sensing rather than infrastructure



CCSI Scope

Specifies

- **Host Platform Interfaces**
 - Power and ground
 - Communications
 - Connectors between components
- **Host System Interfaces**
 - Communications protocols
 - Data exchange definitions
 - Common sensor controls
- **Sensing Package Interfaces**
 - Power and ground
 - Communications
 - User interface

Does Not Specify

- **Host Platform Interfaces**
 - Mounting/Protection
 - Air Flows
- **Sensing**
 - Sensing Package Performance/Technology
 - Sensing Package Data Details
 - Power Usage
- **UI Details**
 - Buttons, displays, etc.
- **Host Electronic Interfaces**
 - Data flows
 - Data storage



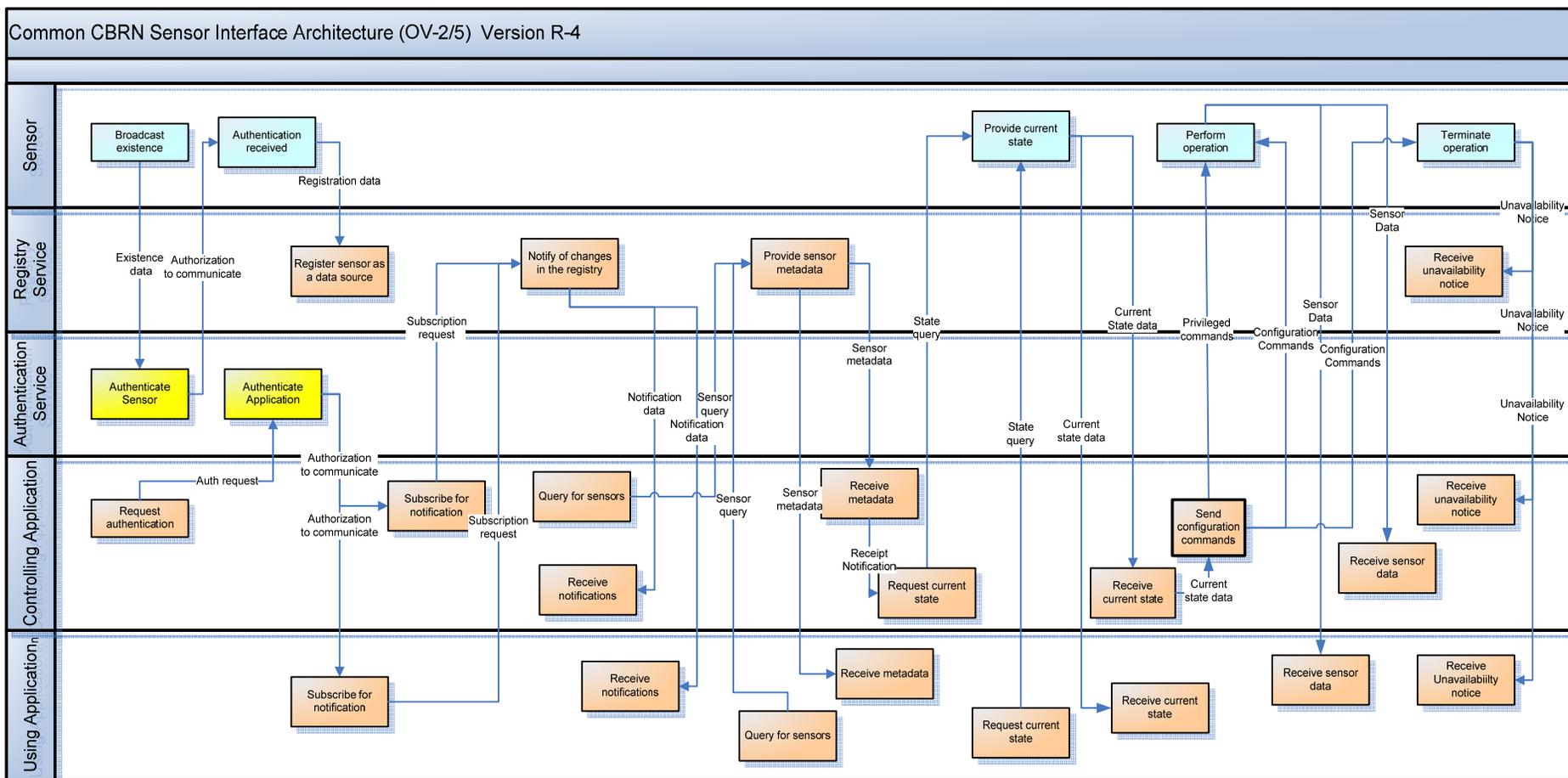
CCSI Architecture

Describes:

- Operational processes associated with CBRN sensors interacting with up-stream system components
- Operational context for sensor operations
- Information flows among operational activities
- Information flows decomposed into Data Model elements
- Systems activities and data flows associated with the operational processes
- XML schema to provide the physical description of the data flows
- Standards to support implementation of Net-Centric operations



CCSI Operational View (OV-2/5)





CCSI Information Flow Matrix (OV-3) Excerpt (Draft)

Needline ID	Exchange ID	Data Section	Data Elements / Metadata
Current State Data	Identification Channel		
		Common	Unit ID
			Manufacturer
			Sensor Type
			Model Number
			Serial Number
			Software Version
			POC Information
			Descriptive Name
Metadata-Defined			
Current State Data	Location Channel		
		Common	Location
			Location Source



Summary

The Net-Centric Common CBRN Sensor Interface:

- **Provides physical and electronic standards**
- **Provides a common XML schema for sensor communications**
- **Simplifies development of system interfaces for sensors**
- **Supports development of more cost-effective and interoperable systems based on common standards, languages, data models and integrated architectures**
- **Supports the initiatives that will make Net-Centric sensors a reality**