Role and Impact of Information Quality in the Department of Defense Net-Centric Environment

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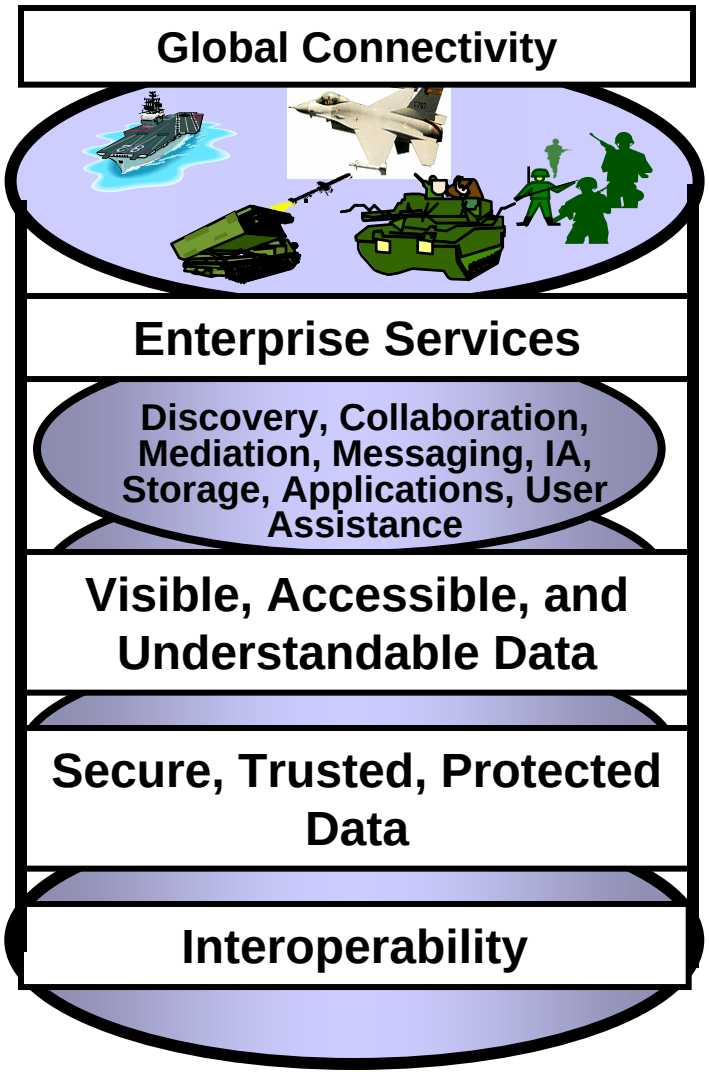
Introduction

- DoD Net-Centric Enterprise Services
- DoD Net-Centric Data Strategy
- DoD Discovery Metadata Specification
- DoD Communities of Interest
- DoD Net-Centric Information Quality Features

DoD Net-Centric Enterprise Services



A single, ubiquitous global network and information services, populated with **authoritative, relevant, and sufficient information** …capable of delivering **assured decision-ready information** across the DoD

Ability to Tap Collective Information and Collaborate

- **Sensemaking:** Ability to make sense of the situation
  - available information in context and relevant patterns
- **Situation awareness:** Ability to generate options
  - what can be done
  - predict adversary actions and reactions
  - understand the effect of particular courses of action
- **Innovative decision making:** Ability to orchestrate means to respond in timely manner
  - appropriate means to respond
- **Simultaneous collaboration:** Ability to work in a coalition environment
  - shared information and awareness

DoD Net-Centric Data Strategy

- Ensuring data are **visible, accessible, and understandable**
  - when needed and where needed to accelerate decision making
- Promoting **trust**
  - by identifying authoritative data sources, associating trust discovery metadata with data assets (pedigree metadata, security labels, rights protection metadata)
- Achieving **interoperability**
  - via mediation or translation of data between predefined and unanticipated interfaces
  - through the availability of the metadata in the **Metadata Registry** and organizing around **Communities of Interest**

The Data Problem: Barriers to Identifying, Accessing and Understanding Data

End-User Consumer

"What data exists?"

"How do I access the data"

"How do I know this data what I need?"

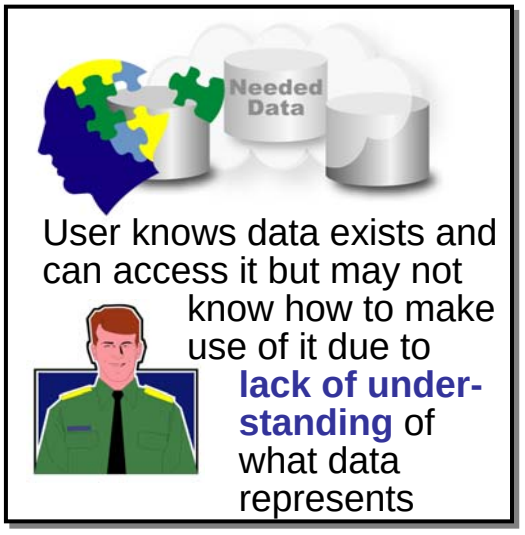
"How can I tell someone what data I need?"

End-User Producer

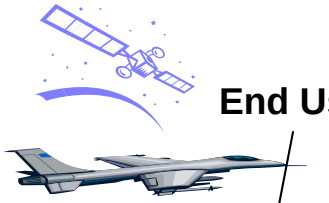
"How do I share my data with others?"

"How do I describe my data so others can understand it?"

BARRIER **BARRIER** **BARRIER** **BARRIER**



The Data Solution: Shift Power to User



End User Producer

Sends report to Post

Registries use cataloging system to Post report and provide metadata

End User Consumer

Searches COI metadata catalog

Reads metadata to understand content of products found

Pulls needed data

End User Developer

Posts/retrieves metadata about standard data and document formats

Community Of Interest Metadata Catalogs

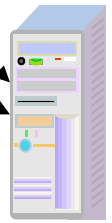
Metadata Registries

Web Sites

Global Information Grid User Services

Shared Data Storage

Web Services

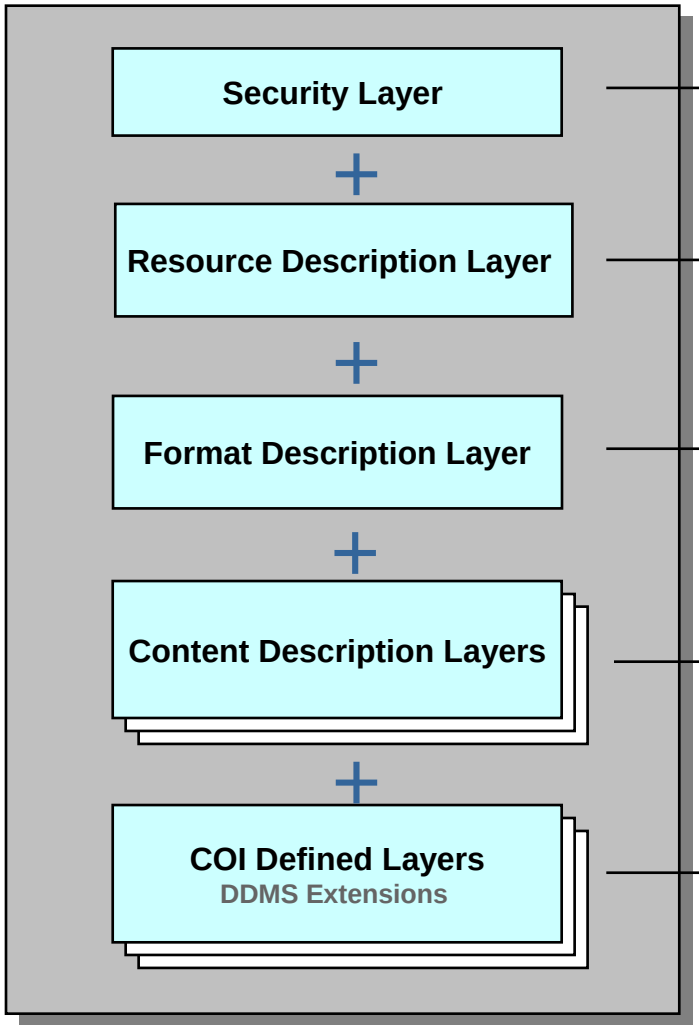


System conforms to data schemas defined in registries

DoD Discovery Metadata Specification

- **Tagging** of all data with metadata
  - to enable discovery by known and unanticipated users in the Enterprise
- **Posting** of all data to shared spaces
  - for users to access except when limited by security, policy, or regulations
- **Posting** with metadata before processing and providing Smart Pull
  - eliminating the need for owners to know what is important to whom and how to get in touch with them and eliminating need to be synchronous in time and space

Metadata Registry



Security markings layer.

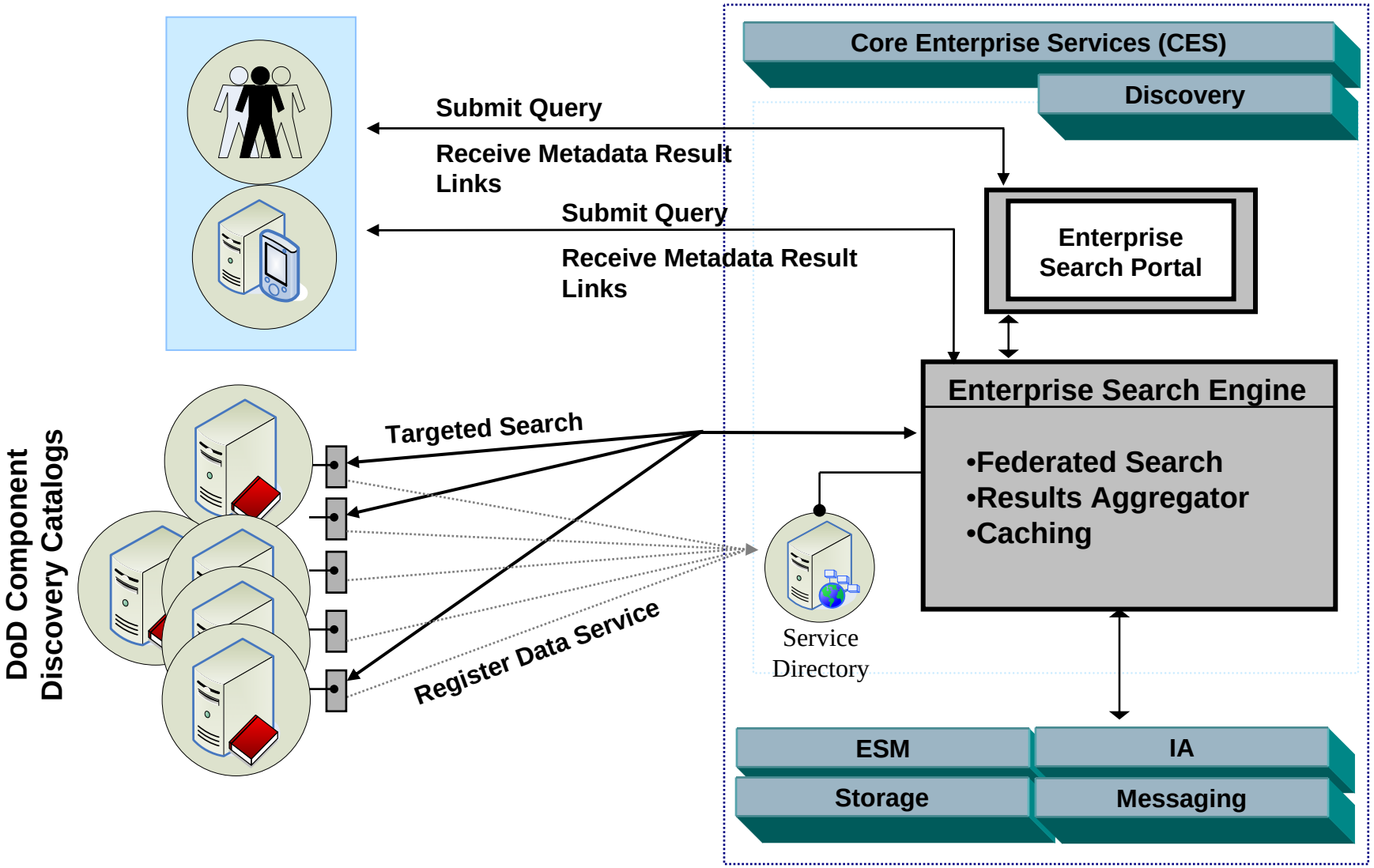
Resource maintenance and administration metadata (e.g., date created, author, publisher, title etc). Largely derived from Dublin Core.

Format-specific metadata (e.g., picture size, database record count, multimedia stream duration, file size, etc.)

Rich content descriptive metadata structure. Structured approach to provide robust method for discovery.

Community of Interest defined metadata extensions. Must be registered with DoD Metadata Registry for integration with Enterprise-wide capabilities.

Data Asset Discovery



DoD Communities of Interest

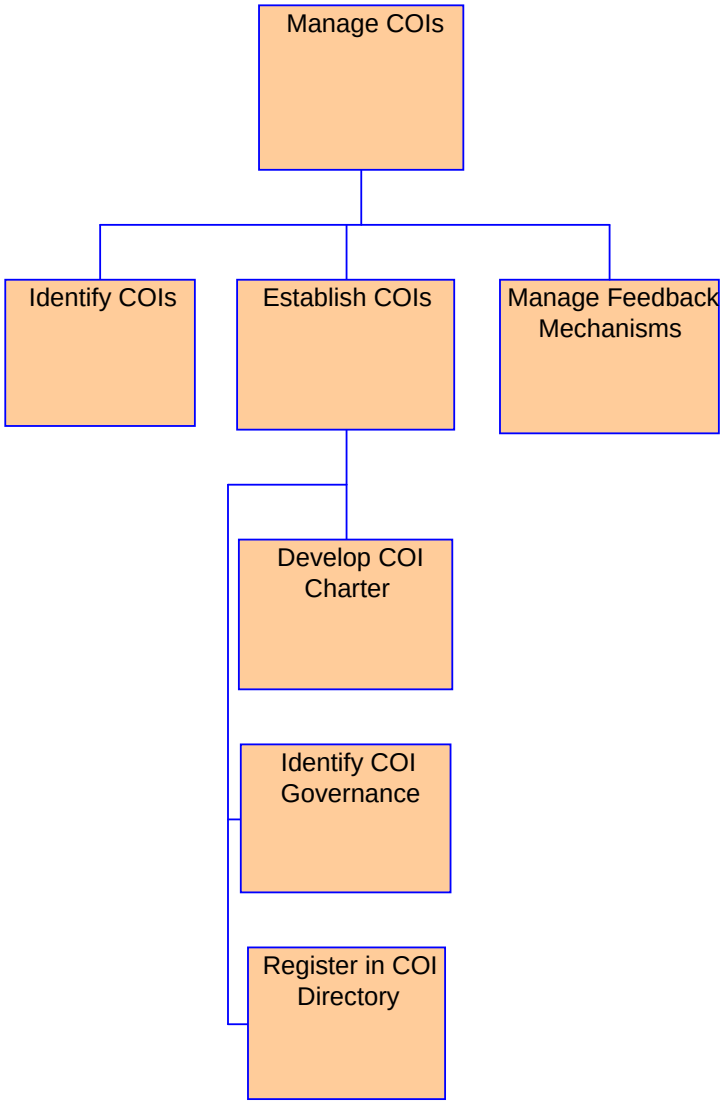
- Make the data **visible**
  - by identifying data assets to share, defining and registering metadata and focusing on creating discovery metadata
- Make the data **accessible**
  - by understanding data sharing constraints, discovering DoD resources, and posting descriptions of access mechanisms
- Make the data **understandable**
  - by gathering semantic and metadata, developing a shared understanding, and registering metadata artifacts
- Promote **trust**
  - by identifying authoritative data sources and associating trust discovery metadata
- Achieve **interoperability**
  - via mediation or translation of data between predefined and unanticipated interfaces through the availability of metadata

Communities of Interest Management

Identify COIs: Identify the appropriate groups of people that should come together to support common mission objectives

Establish COIs: Establish charters and governance structure

Manage Feedback Mechanisms: Identify and establish processes to evaluate and refine the user experience and **quality of data** assets



DoD Net-Centric Information Quality Features

Visible data	Automated tagging Catalog/Index builders Smart search engine; federated search engines
Accessible data	Metadata repository Exposed application logic and web schemas Standard protocols Technology independence Security
Understandable data	Content tagging Ontology standards Decentralized, delegated mechanisms XML registry Improved metadata management Shared meaning Integration and mediation tools
Trust	Protected, secure data Authoritative data sources Pedigree and rights protection metadata, security labels
Interoperability	Based on data standards (not application standards) to exchange information, collaborate, and achieve synchronous effects

Information Quality Capabilities

Agility	Responsive to change and volatility
Adaptation	Ability to change work processes, alter way information is distributed and involve different participants in collaboration
Collaboration	Collaborate on the fly
Communities	Virtual collaboration; federated remote portals
Data model	Machine interpretable models Extendable with metadata – dynamic location, binding, discovery Unstructured data
Flexibility	Multiple ways to succeed, more alternatives
Information Flow	Creates awareness, responds more quickly, increased collaboration
Innovation	New ways, new things, avoid predictability, mine for lessons learned and patterns

Information Quality Capabilities

Post and Smart Pull	Web services Shared space Data to unanticipated user Runtime discovery Visualization
Reach	Asynchronous in space and time, availability, distributed, reach out, reach back
Richness	Visual, audio, multimedia, tools
Robustness	Effective across range of situations
Resilience	Ability to recover (electronic interference, physical damage), self-healing networks, function under attack
Responsiveness	Reacts to change, speed, timeliness, effectiveness-shared awareness, increased capacity of sensemaking, more self-synchronized actions, rapid dissemination of intent and directives

Summary

DoD Net-Centric Enterprise Services, DoD Net Centric Data Strategy, DoD Discovery Metadata Specification, Communities of Interest, and associated guidelines and directives establish the **foundation for sharing quality information** that is:

Visible
Accessible
Understandable
Trusted
Interoperable

…for sensemaking, situation awareness, decision making and collaboration across the DoD