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# **Systems and Software Technology Conference 2006**

## **Transforming the Way DoD Manages Data**

Presented by:  
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OASD/NII  
4 May 2006

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Enabling Net-Centric Operations



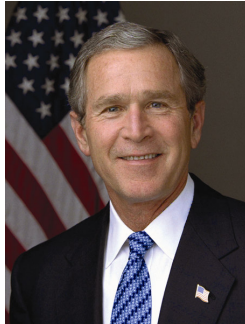
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# Transforming National Defense

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## National Security Strategy

Transform America's national security institutions to meet the challenges and opportunities of the twenty-first century.



## National Defense Strategy

We will conduct network-centric operations with compatible information and communications systems, usable data, and flexible operational constructs.

Beyond battlefield applications, a network-centric force can increase efficiency and effectiveness across defense operations, intelligence functions, and business processes...

Transforming to a network-centric force requires fundamental changes in process, policy, and culture.



## National Military Strategy

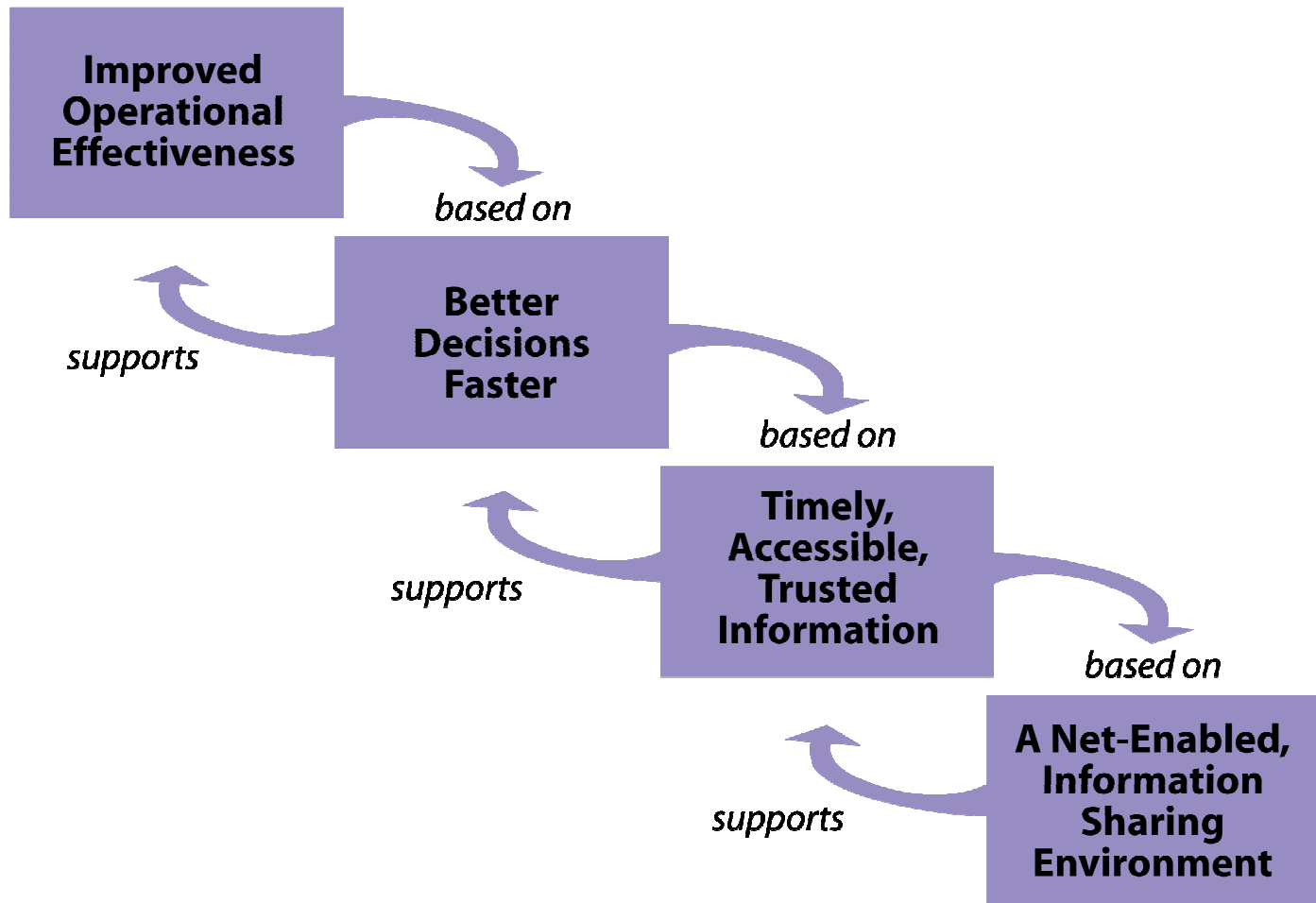
...creation of a collaborative information environment that facilitates information sharing, effective synergistic planning, and execution of simultaneous, overlapping operations... on demand to defense policymakers, warfighters and support personnel.

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# Our Nation's Security

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# Defining Net-Centricity

People, processes, and technology working together to enable timely:

- **ACCESS** to information
- **SHARING** of information
- **COLLABORATION** among those who need it most

*Connecting People to Information*





## Scope of the Challenge

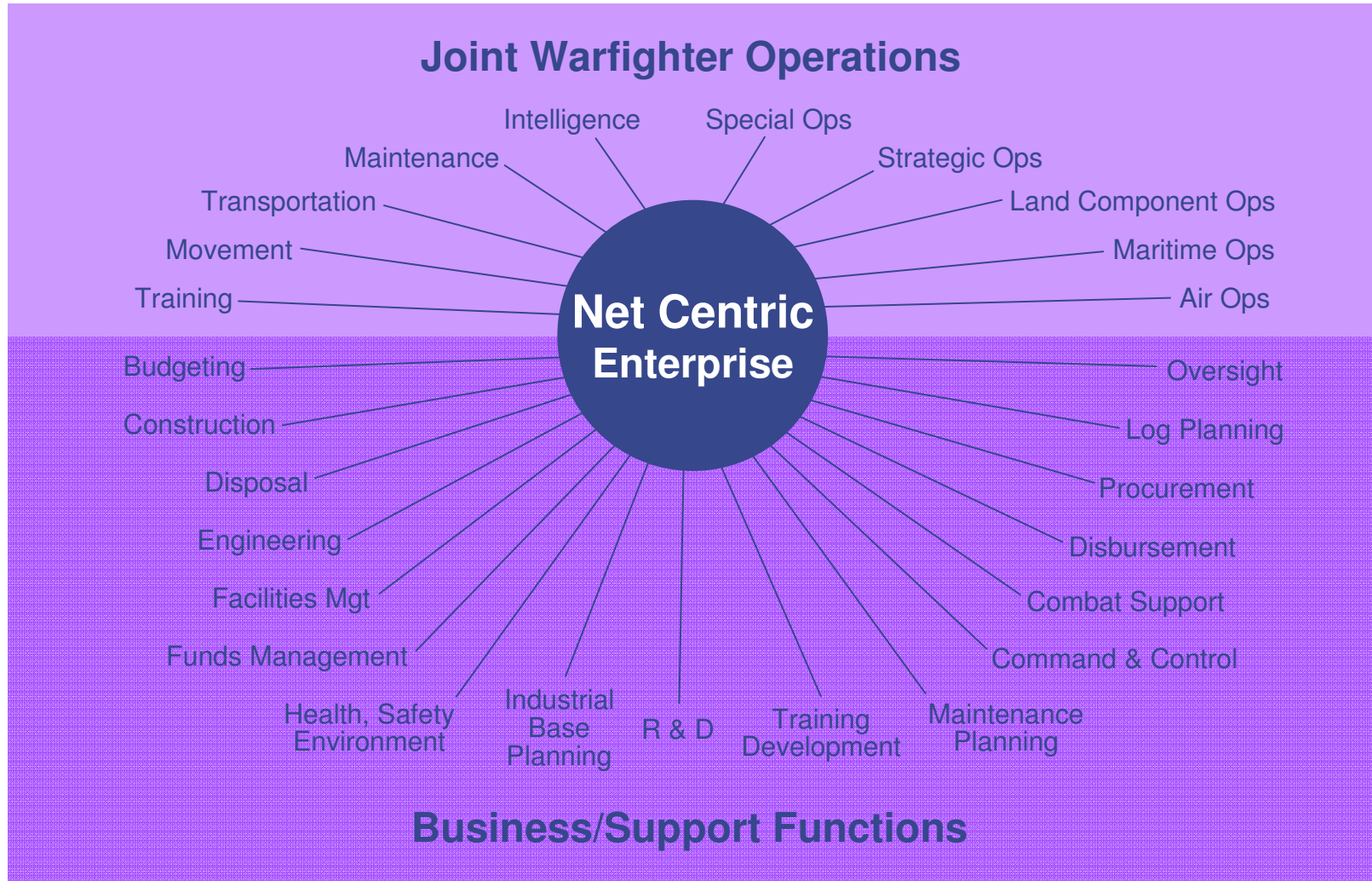
- Information Storage – equivalent of 800 MB of information stored for every person on earth each year.
- Email – 31 B sent daily; expect to double by 2006
- 1M – 592 B sent daily; expect 1,380 B by 2007
- Wireless Technology – over 1.5 B mobile phone users; expected 2 + B by 2007
- Internet – 1 B users in 2005; expect 1.35 B by 2007





# Net Centric Enterprise: *Who is involved?*

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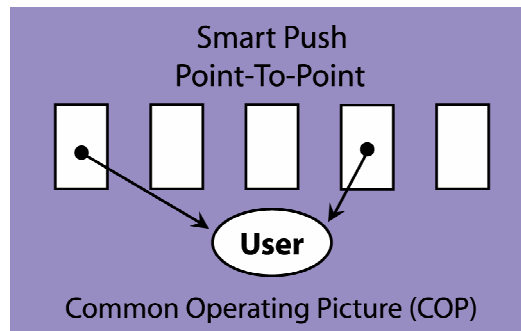


# An Information Age Approach to Net-Centricity

## Fundamental Shift:

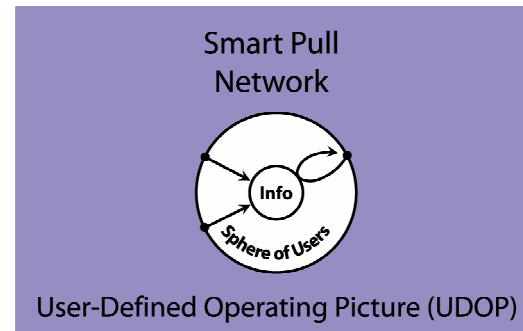
- Requires ENTERPRISE, not stovepipes
- Requires ACCESS, not exclusivity
- Requires TRUST
  - Trust in the System (availability)
  - Trust in the Information (assurability)
  - Trust in the Participants (identity)

### Today's Approach: Segregated Stovepipes



*User "gets what he gets"*

### Transformed Approach: Shared Space

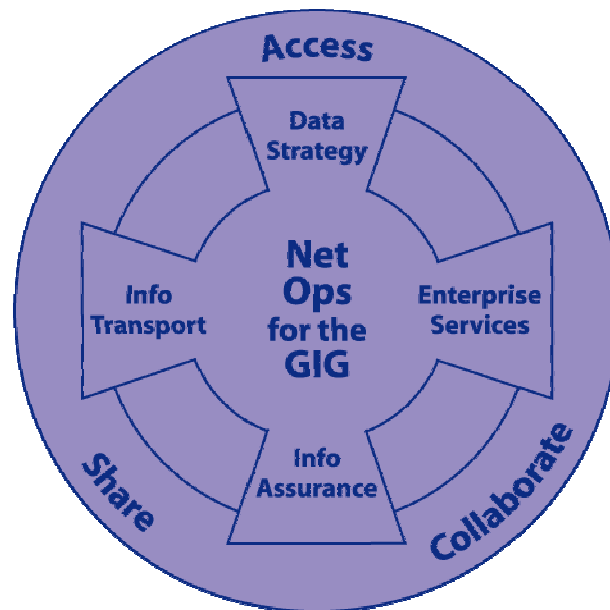


*User "takes what he needs" and  
"contributes what he knows"*

*Confront Uncertainty with Agility*



# Net-Centric Framework



- **Data Strategy:**
  - How to “*share*” the data
- **Enterprise Services:**
  - How to “*access*” the data
- **Information Transport:**
  - How to “*move*” the data
- **Network Operations:**
  - How to “*manage*” the system
- **Information Assurance:**
  - How to keep it “*dependable*”

**Data: Discoverable, Accessible, Understandable**



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# Bottom Line

Current

Net-Centric

- Information stovepipes → Shared information
- “Welded” interfaces → Unconstrained
- Predetermined needs → Accommodate uncertainty
- Fixed display formats → User-Defined info and formats
- Need to know → Need to share; right to know

Rigid

Agile

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# Barriers to Identifying, Accessing and Understanding Data

## Defining The Data Problem



**Organization “A”**

User is **unaware** this data exists

**Data Strategy Approach:**  
**Discovery Metadata**  
**Data Catalogs**

**Organization “B”**

User knows this data exists but **cannot access it** because of organizational and/or technical barriers

**Data Strategy Approach:**  
**Web Enabling,**  
**Web-service Enabling**

**Organization “C”**

User knows data exists and can access it but may not know how to make use of it due to **lack of understanding** of what data represents

**Data Strategy Approach:**  
**Communities of Interest,**  
**Metadata Registry**





## Data Sharing in a Net-Centric DoD – Existing Strategy and Policy

- DoDD 8320.2 (signed Dec 2, 2004) directs implementation of the Net-Centric Data Strategy
  - The Net-Centric Data Strategy (signed May 9, 2003) is a key enabler of the Department’s transformation
- The Strategy provides the foundation for managing the Department’s data in a net-centric environment
  - Ensuring data are **visible, accessible, and understandable** when needed and where needed to accelerate decision making
  - “Tagging” of all data (intelligence, non-intelligence, raw, and processed) 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
  - Organizing around **Communities of Interest (COIs)** that are supported by **Warfighting, Business, Enterprise Information Environment, and Intelligence Mission Areas** and their respective Domains



# Data Strategy

*Vision – A flexible and agile Net-Centric, environment of “many-to-many” exchanges and effective decisions*

*Mission – Implement a data-centric strategy allowing access to and sharing of information*

## Data Strategy: Foundation

- Ensures data are **visible, accessible, and understandable**
- Accelerates decision making by having data where needed and when needed
- Accommodates known and unanticipated users
- “Tags” data (intelligence/non-intelligence; raw/processed) with metadata to enable discovery
- Requires data and services registries to describe, post and store
- Posts data to shared spaces for users to access based on identity and role
- Organizes around Communities of Interest (COIs) using a shared vocabulary to exchange information





# Communities of Interest (COI)

- COIs are described in the DoD Net-Centric Data Strategy
- A COI ...
  - Is a *Community*
  - *Of* people
  - Who are all *Interested* in something
  - Need to *share* information
- A COI...
  - Works together to resolve the issues that affect their community
  - Is inherently cross-organizational
- Significant strategy change for DoD regarding data
  - “Bottom up” vs “Top down”  
(community)                      (enterprise)





# Communities of Interest (COI)

- A COI:
  - Works together to resolve the issues that affect their community
  - Establishes/identifies community standards on how information will be exchanged within the COI
  
- A COI does not:
  - Operate systems or provide services
  - Submit POMs
  - Direct changes to ICDs, ORDs, CDDs, or CPDs

However, members of COIs do!





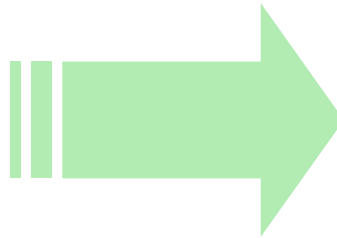
# Key DoD Net-Centric Data Strategy Goals

## Key Goals

Make Data Visible

Make Data Accessible

Enable Data to be Understandable



## Key Actions

### ✓ Make Data Assets Available to the Enterprise:

- Use metadata to describe and advertise data assets (e.g., documents, web pages, images, etc).
- Create data asset catalogs and organize by community-defined structure (ontology).
- Make Data Assets available to “shared space” where Enterprise users can access it

### ✓ Make System Data and System Processes Available to the Enterprise for re-use and extension:

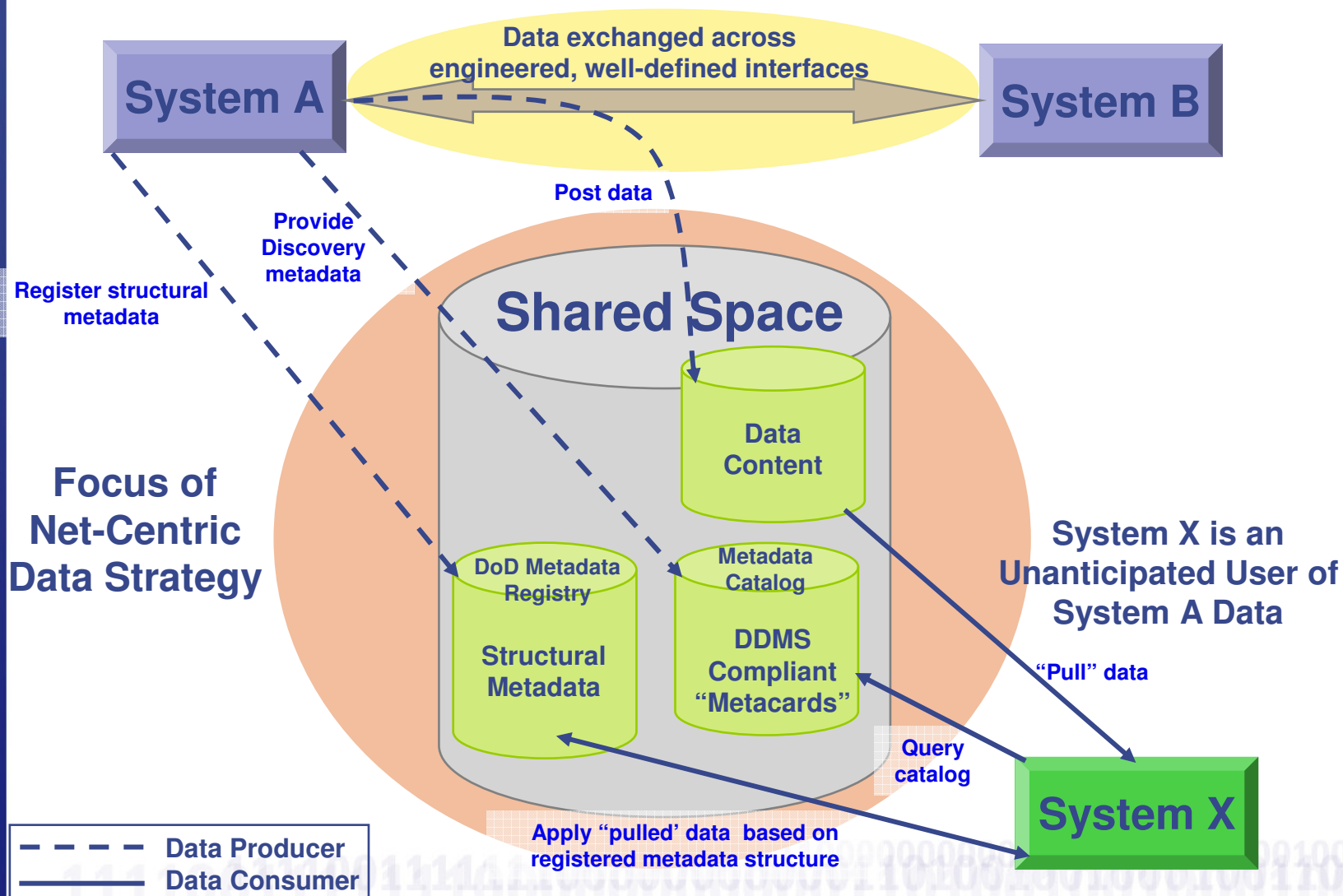
- Define and register the format and semantics of system data and processes
- Provide reusable/easy-to-call access services to make system data and processes available to the Enterprise





# Net-Centric Data Strategy CONOPS

Existing engineering approaches share data through Pre-defined Point-to-Point Interfaces



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## Change to DoDD 5000.2

- Paragraph at 3.5.4.5. (new)

“A description of the program’s approach for ensuring that data will be made visible, accessible, and understandable to any potential user as early as possible. Updates to this information will be included in the ISP at subsequent Milestones for all programs.”

- Table E3.T1 (new)

Reference to DoDD 8320.2 within Technology Development Strategy - Statutory Information Requirements





# CIO Oversight

- DoD CIO reviews programs for data strategy compliance:
  - Technology Development Strategy (TDS)
  - Acquisition Strategy
  - Systems Engineering Plan (SEP)
  - Information Support Plan (ISP)
  - Architecture views/language in ICD, CDD, CPD as appropriate
- Outcomes from CIO oversight:
  - Acquisition Decision Memorandum (ADM)
  - Specific contracting language
- Quadrennial Defense Review: “DoD CIO provide annual report to the Deputy Secretary of Defense on the progress made regarding DoD Data Strategy”

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# Program Considerations through the Acquisition Lifecycle

Pre-Milestone A

- How will the capability share information with the Enterprise?
- What shared services/core services will the capability use/provide?
- What is the cross-Component user base?

Pre-Milestone B

- What key data assets will the capability make visible to the enterprise?
- What key business and mission processes will be made visible?
- Which COIs are applicable to the capability?

Pre-Milestone C

- How will the capability leverage existing or planned net-centric capabilities?
- How will users access the capability's data and processes using web-based technologies?

Pre-Full Deployment

- Can users discover the capability and any data/services it exposes?
- Can users readily understand and interact with the capability?
- Is information made visible and tagged with the DDMS?

Adapted from Defense Acquisition Guidebook sec 7.4.3.





## Data Strategy Guidance and Reference

- DoD 8320.2G - Guidance for Implementing Net-Centric Data Sharing
  - Provides implementation guidance for the community-based transformation of information IT capabilities across the DoD in support of net-centric operations.
- Community Of Interest (COI) Toolkit on DefenseLink
  - Provides COI FAQs and best practices/lessons-learned for standing up COIs
  - Provides reference implementation for data strategy goals (e.g. visibility)
- Net-Centric Operational Warfare Reference Model (NCOW RM)
  - Provides data activities for Programs to be compliant with net-centric data strategy
- Defense Acquisition Guidebook
  - Currently provides activities to be performed at Acquisition milestones
  - In-progress updates will address COI piloting as risk reduction effort





# Point of Contact and Reference Links

**Point of Contact for Questions:**  
ASD(NII)/DoD CIO  
Information Management Directorate  
(703)602-1047

## The DoD Net-Centric Data Strategy

<http://www.defenselink.mil/nii/org/doc/Net-Centric-Data-Strategy-2003-05-092.pdf>

## Data Sharing in a Net-Centric DoD, DODD 8320.2

<http://www.dtic.mil/whs/directives/corres/html/83202.htm>

## Operation of the Defense Acquisition System, DoDI 5000.2

[http://www.dtic.mil/whs/directives/corres/pdf/i50002\\_051203/i50002p.pdf](http://www.dtic.mil/whs/directives/corres/pdf/i50002_051203/i50002p.pdf)

## COI Toolkit

<http://www.defenselink.mil/nii/coi/>

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## Summary – Contact Information

- Net Centric Operations depend on Data Strategy
  - Visible
  - Understandable
  - Accessible
- Communities of Interest: formed of users of the data
  - Develop/Set standards
  - Common interest in the sharing of data
- Point-to-point interfaces are overwhelming and costly
- Shared Data allows use by need not interface

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