



# Net-Centricity & Net-Ready - Beyond Info/Data Interoperability & C4ISR

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# Achieving Interoperability : A journey not a destination

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“ The ability of systems, units or forces to provide services to and accept services from other systems, units or forces and use the services to enable them to operate effectively together.”

Joint Publication 1-02  
(emphasis added)

*... the right information  
... at the right time  
... in the right format  
... to the right “warfighter”*

***Interoperability is more than just information exchange:  
it impacts systems, process, procedures,  
organizations and missions over the life cycle;  
and it must be balanced with Information Assurance***

# **Where we are going: Net-Centric Operations**

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## **Power to the Edge**

**People throughout the trusted, dependable and ubiquitous net are empowered by their ability to access information and recognized for the inputs they provide.**

### **Three goals:**

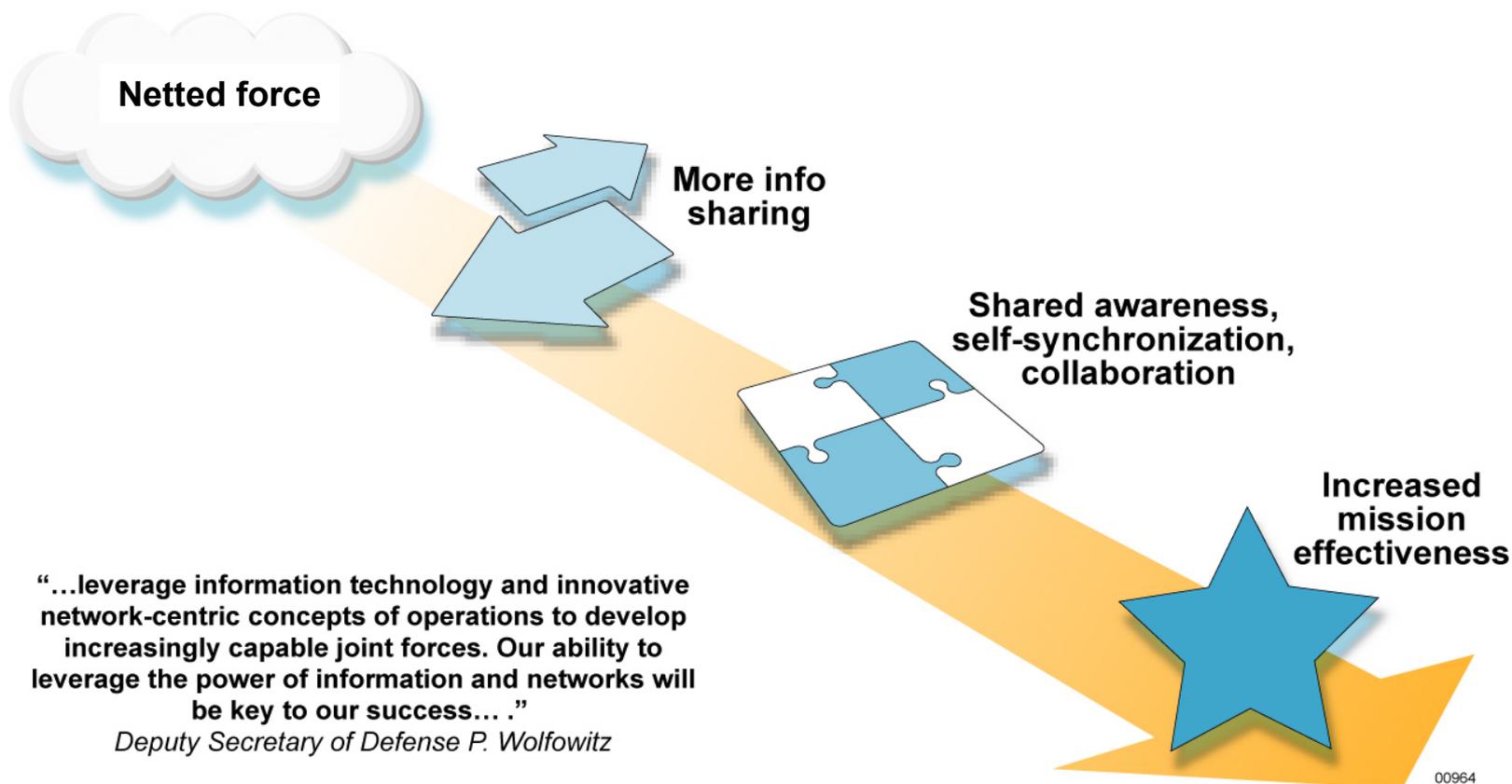
- Build the net**
- Populate it**
- Protect it**

# Net-Centric Operations

## A Transformation Enabler

**Net-Centricity** is an enabler that empowers all users with the ability to easily discover, access, integrate, correlate and fuse data/information that support their mission objectives unconstrained by geospatial location or time of day .

Information Age Evolution → Net-Centric Operations



# Future Directions For Defense



## Power to the Edge

1. Make information available on a net that people depend on and trust
2. Populate the net with new, dynamic sources of information to defeat the enemy
3. Deny the enemy advantages and exploit weaknesses



Department of Defense  
Transformation  
Planning  
Guidance

April, 2003

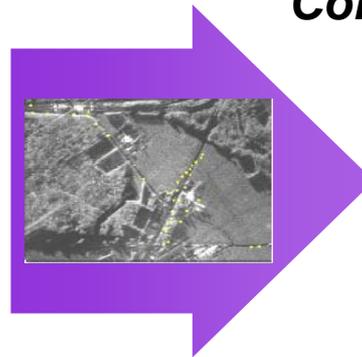
“Services will explicitly identify initiatives to improve ... adoption of “post before process” intelligence and information concepts, achievement of data level Interoperability; and deployment of “net-ready” nodes of platforms, weapons and forces.

**From**  
Supplier Dominates

Task  
Process  
Exploit  
Disseminate

**To**  
Consumer Dominates

Task  
Post  
Process  
Use



# DoD's Net-Centric Data Strategy

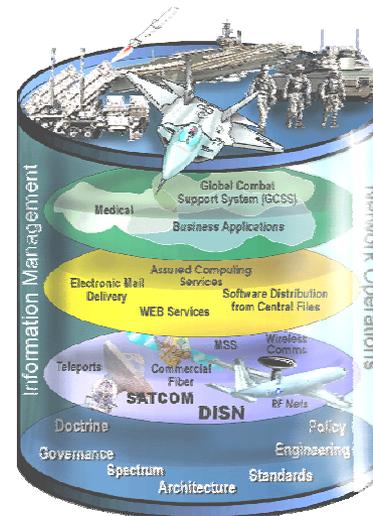
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- **The Net-Centric Data Strategy (signed May 9, 2003) is a key enabler of the Department's transformation:**
- **The Strategy provides the foundation for managing the Department's data in a net-centric environment, including:**
  - ✓ **Ensuring data 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 Warfighter, Business, and Intelligence Domains.**

# The Global Information Grid

## DoDD 8100.1



### Department of Defense DIRECTIVE

NUMBER 8100.1  
September 19, 2002

ASDC31)

SUBJECT: Global Information Grid (GIG) Overarching Policy

- References: (a) Section 2223 of title 10, United States Code  
(b) Section 1401 et seq. of title 40, United States Code  
(c) Secretary of Defense Memorandum, "Implementation of Subdivision E of the Clinger-Cohen Act of 1996," June 2, 1997  
(d) [DoD Directive 7045.14](#), "Planning, Programming, and Budgeting System (PPBS)," May 22, 1984  
(e) through (k), see enclosure 1

#### 1. PURPOSE

This Directive:

- 1.1. Implements references (a) and (b).
- 1.2. Establishes policy and assigns responsibilities under reference (c) for GIG configuration management, architecture, and the relationships with the Intelligence Community (IC) and defense intelligence components.

#### 2. APPLICABILITY AND SCOPE

This Directive applies to:

- 2.1. The Office of the Secretary of Defense, the Military Departments, the Chairman of the Joint Chiefs of Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities in the Department of Defense (hereafter referred to collectively as "the DoD Components").

DoDD 8100.1, Sept. 19, 2002

computing and communications assets  
ent.

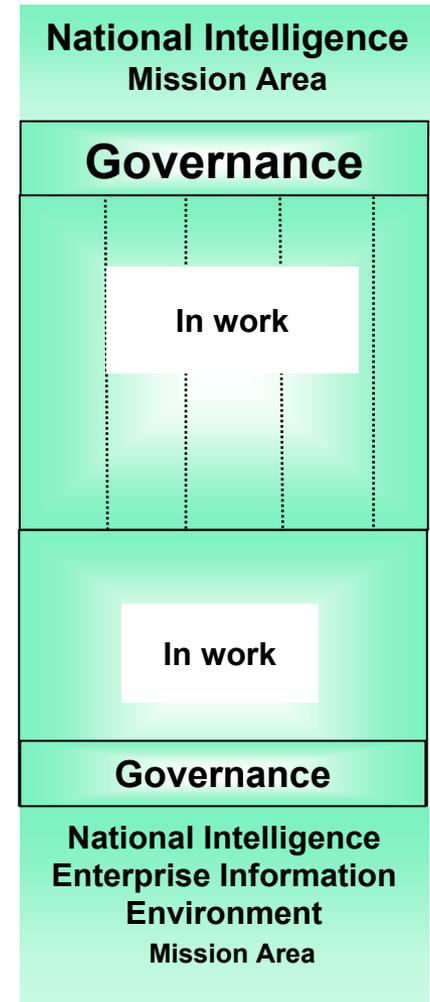
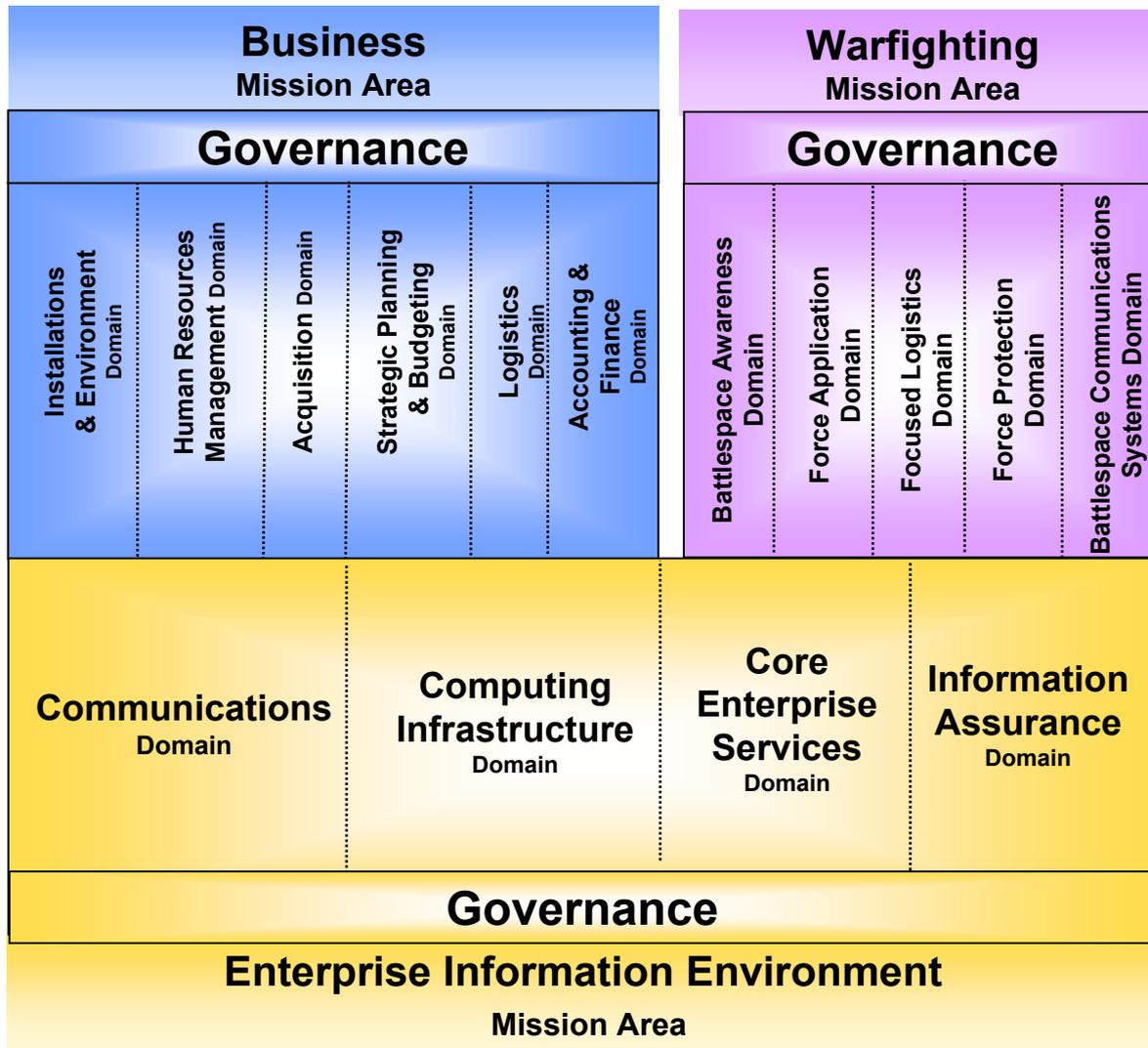
-operated, or -managed GIG  
systems or services are acquired

  
Howard M. Holtz  
Secretary of Defense

**The GIG supports all Department of Defense, National Security and related Intelligence Community missions and functions in war and in peace.**

**The GIG encompasses the globally interconnected, end-to end set of information capabilities, associated processes and personnel for collecting, posting, distributing and managing information on demand by warfighters, policy makers and support personnel.**

# Global Information Grid Governance



# Where we are moving to: The Net-Ready KPP

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Net-Ready Key Performance Parameter (NR-KPP). The **NR-KPP assesses information needs, information timeliness, information assurance, and net-enabled attributes** required for information exchange and use. The NR-KPP consists of measurable and testable characteristics and/or performance metrics required for the timely, accurate, and complete exchange and use of information to satisfy information needs for a given capability. The NR-KPP is comprised of the following elements:

- Compliance with the Net-Centric Operations and Warfare (NCOW) Reference Model (RM)
- Compliance with applicable Global Information Grid (GIG) Key Interface Profiles (KIPs)
- Verification of compliance with DoD information assurance requirements
- Supporting integrated architecture products required to assess information exchange and use for a given capability

# Required KPP Attributes

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Information needs ...

Information timeliness ...

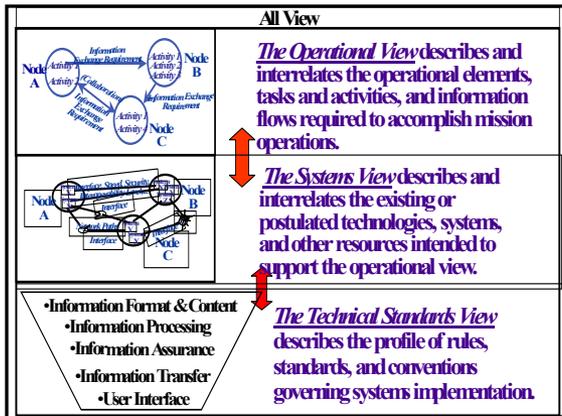
Information assurance ...

Net-enabled ...

- ☑ **Information Needs**: A condition or situation requiring knowledge or intelligence derived from received, stored, or processed facts and data.
- ☑ **Information Timeliness**: Occurring at a suitable or appropriate time for a particular condition or situation.
- ☑ **Information Assurance**: Information operations that protect and defend information and information systems by ensuring their availability, integrity, authentication, confidentiality, and non-repudiation.
- ☑ **Net-Enabled**: The continuous ability to interface and interoperate to achieve operationally secure exchanges of information in conformance with enterprise constraints.

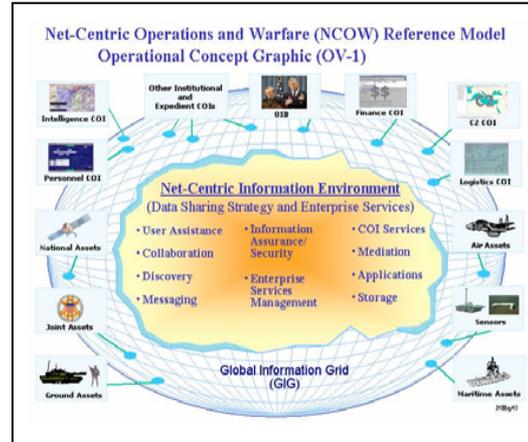
# Net-Ready KPP Verification

## Supporting Integrated Architecture(s)



- Inspection
- Analysis
- Test

## NCOW RM Compliance



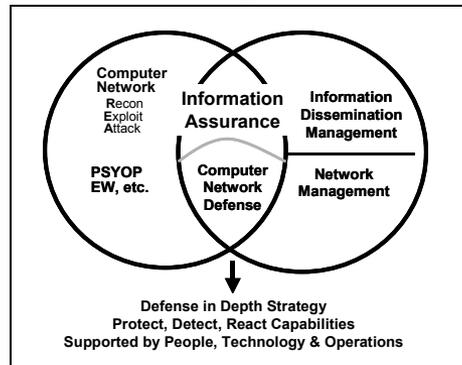
- Inspection
- Analysis

## Applicable KIP Compliance

<u>Communications KIPs</u>	
1.	Logical Networks to DISN Transport Backbone
2.	Space to Terrestrial Interface
3.	JTF to Coalition
4.	JTF Component to JTF Headquarters
5.	Teleport (i.e., deployed interface to DISN)
6.	Joint Interconnection Service
7.	DISN Service Delivery Node
8.	Secure Enclave Service Delivery Node (e.g., SCV/Collateral KIP)
<u>Computing KIPs</u>	
9.	Application Server to Database Server
10.	Client to Server
11.	Applications to COE/CCP
<u>Network Operations KIPs</u>	
12.	End System to PKI
13.	Management Systems to (Integrated) Management Systems
14.	Management Systems to Managed Systems
15.	IDM to Distribution Infrastructure
16.	Information Servers to IDM Infrastructure
<u>Applications</u>	
17.	Application Server to Shared Data - FIOP (SADI)

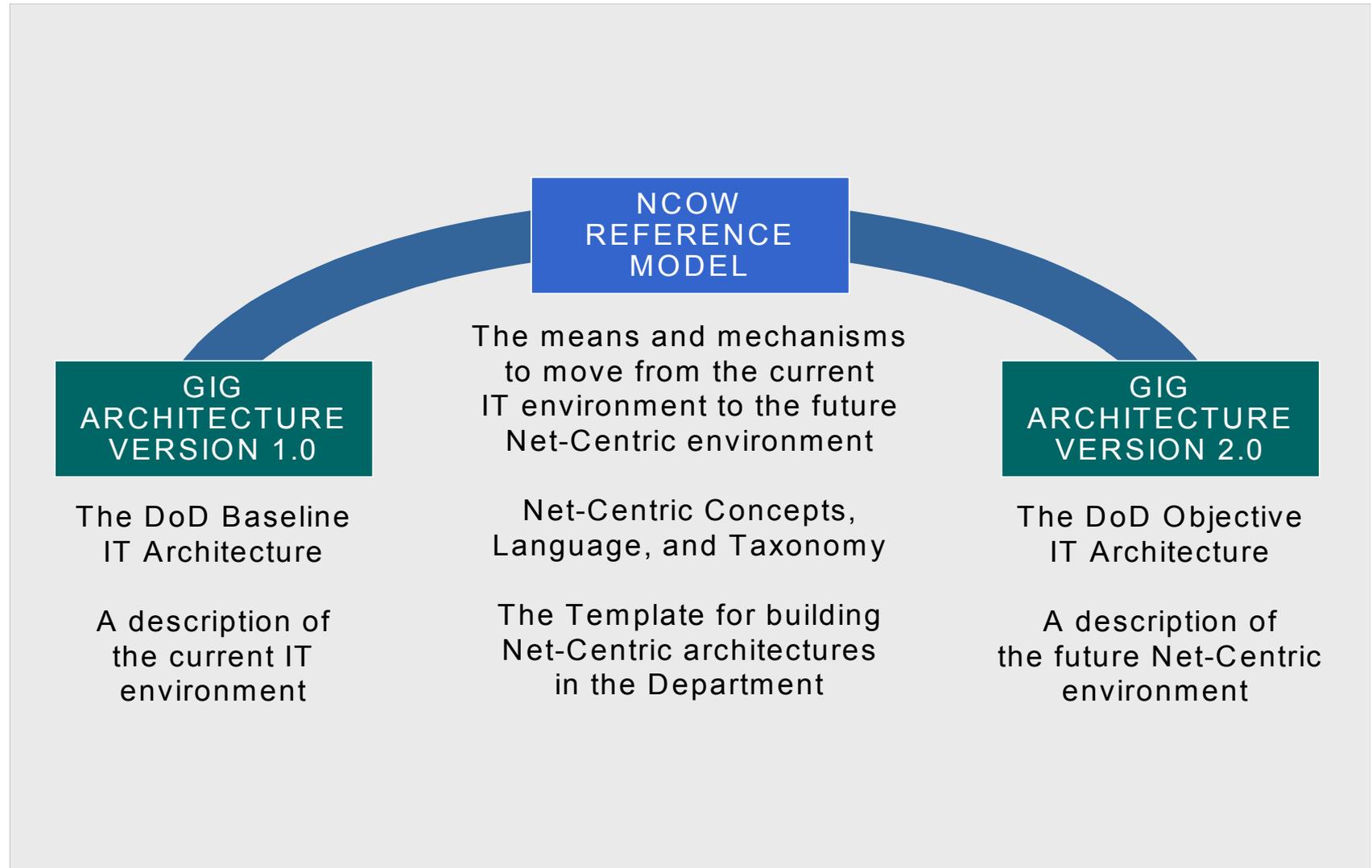
- Inspection
- Test

## IA Compliance



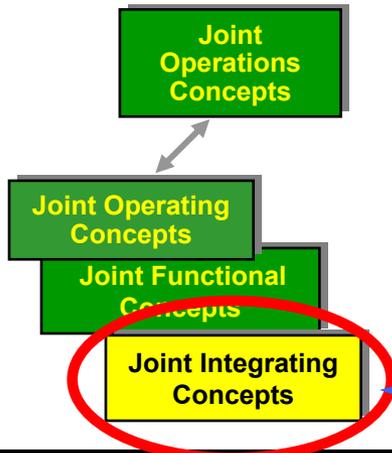
- Inspection

# Net-Centric Operations & Warfare Reference Model



# JCIDS: Capabilities-Based Methodology

## Concepts

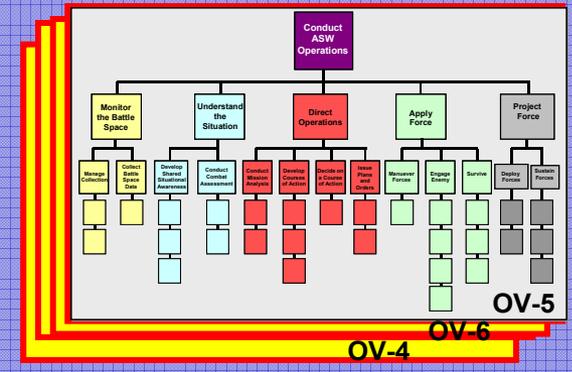


## Potential Capability Improvement Areas

- Integrated Priority Lists
- Joint Quarterly Readiness Review
- Lessons Learned
- Service Programs
- Strategic Planning Guidance
- Joint Experimentation

## Integrated Architecture

### Integrating Framework

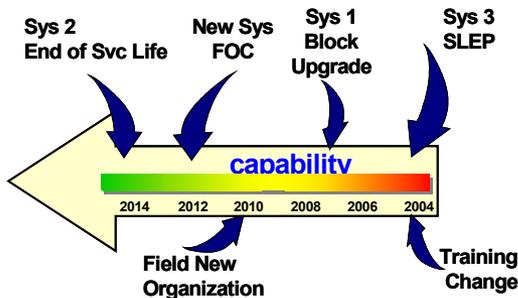


SecDef

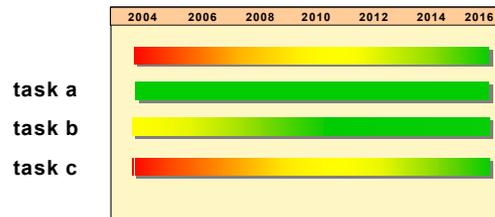
Joint Chiefs of Staff

Joint Requirements Oversight Council

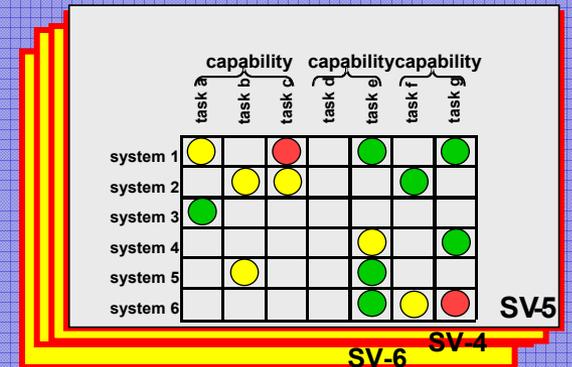
## Resource Strategy



## Capability Roadmap



## Capability Assessment



Secretary of Defense

Joint Staff and OSD

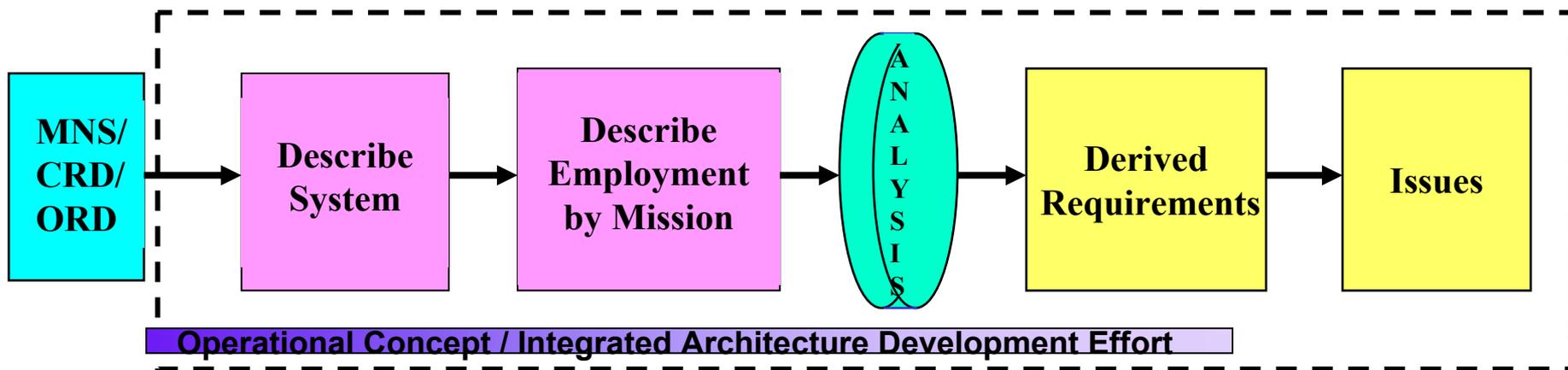
Joint Requirements Oversight Council

# Another Change: C4ISP to ISP

## C4I Support Plan

First, define and describe

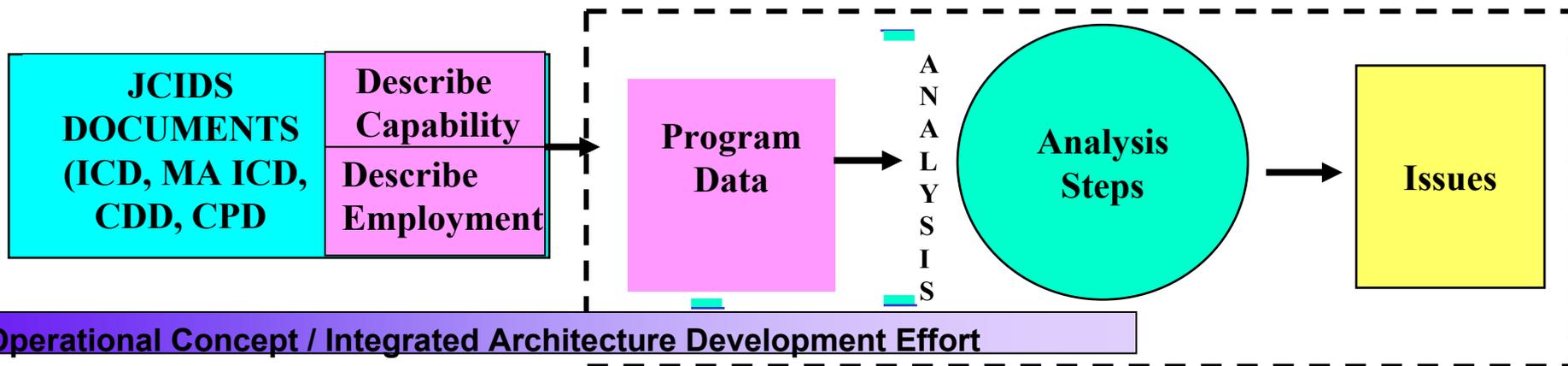
Then, analyze and evaluate



## Information Support Plan

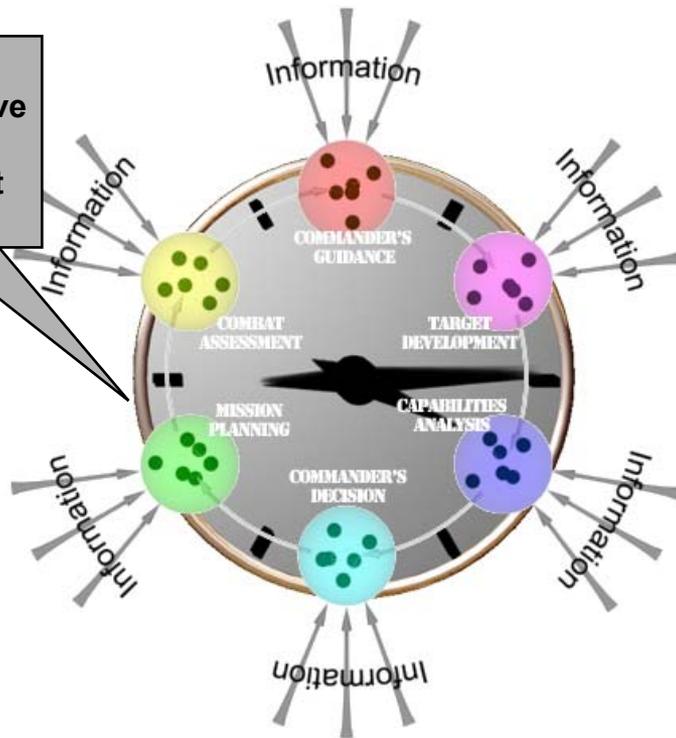
First, define and describe

Then, analyze and evaluate



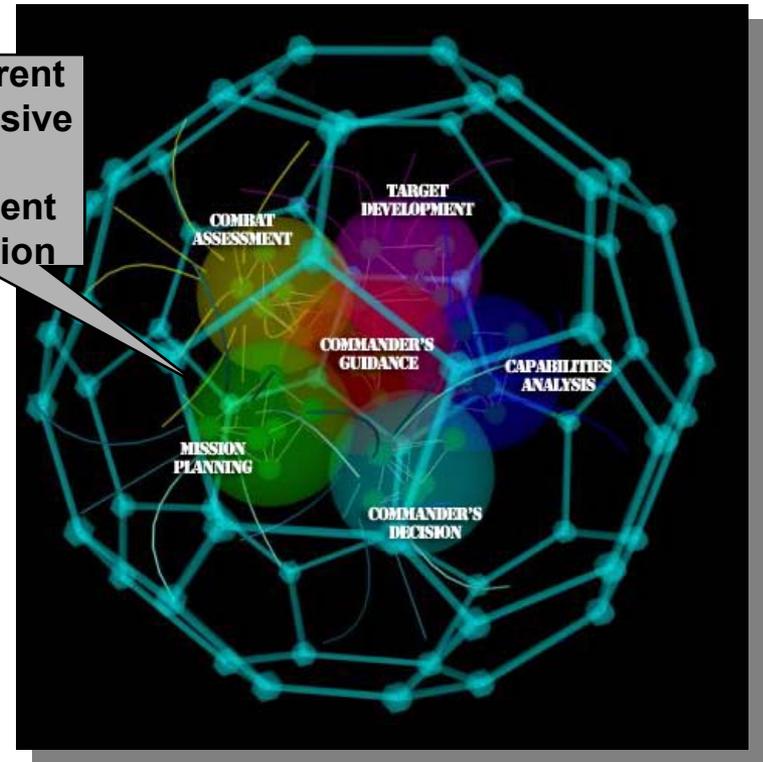
# The Joint Targeting Cycle in a Net-Centric Environment

- Sequential
- Unresponsive
- Untimely
- Inconsistent Information



“As Is”

- Concurrent
- Responsive
- Timely
- Consistent Information



“To Be”

***QUESTIONS ?***

# Net-Centric Attributes

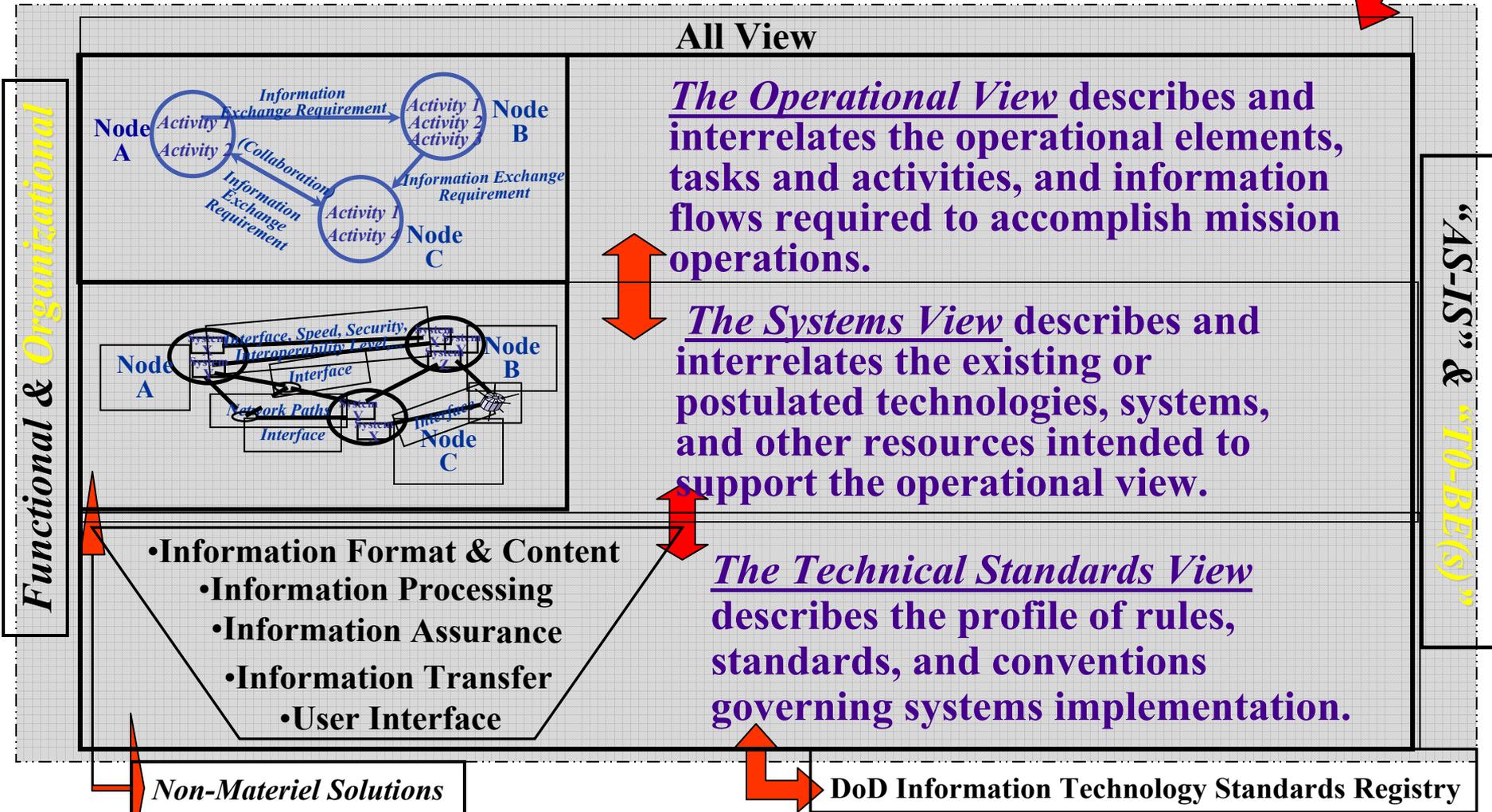
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<b>Title</b>	<b>Description</b>
<b>Internet Protocol (IP)</b>	<b>Data packets routed across network, not switched via dedicated circuits</b>
<b>Secure communications</b>	<b>Encrypted initially for core network; goal is edge-to-edge encryption</b>
<b>Only handle information once (OHIO)</b>	<b>Data posted by authoritative sources and visible, available, usable to accelerate decision making</b>
<b>Post in parallel</b>	<b>Business process owners make their data available on the net as soon as it is created</b>
<b>Smart pull (vice smart push)</b>	<b>Applications encourage discovery; users can pull data directly from the net or use value-added discovery services</b>
<b>Data centric</b>	<b>Data separate from applications; apps talk to each other by posting data</b>
<b>Application diversity</b>	<b>Users can pull multiple apps to access same data or choose same app (e.g., for collaboration)</b>
<b>Dynamic allocation of access</b>	<b>Trusted accessibility to net resources (data, services, apps, people, collaborative environment, etc.)</b>
<b>Quality of service</b>	<b>Data timeliness, accuracy, completeness, integrity, and ease of use</b>

# Integrated Architecture\* In Context

JOINT OPERATIONS CONCEPTs, JOINT OPERATING CONCEPTs,  
JOINT FUNCTIONAL CONCEPTs, **JOINT INTEGRATING CONCEPTs**



\*as described in the DoD Architecture Framework

The bottom line: keep this equation balanced:  $OV = SV + \text{Non-Materiel}$

# Architecture Products Required to Assess Information Exchange and Use

**Information needs ... (AV-1, OV-2, OV-4, OV-5, SV-4, SV-5, SV-6)**

**Information timeliness ... (OV-6c, SV-5, SV-6)**

**Information assurance ... (OV-5, SV-4, SV-5, SV-6)**

**Net-enabled ... (OV-2, SV-4, SV-5, TV-1, NCOW RM)**

Framework Product	Framework Product Name	General Description
AV-1	Overview and Summary Information	Scope, purpose, intended users, environment depicted, analytical findings
OV-2	Operational Node Connectivity Description	Operational nodes, operational activities performed at each node, connectivity and information exchange needlines between nodes
OV-4	Organizational Relationships Chart	Organizational, role, or other relationships among organizations
OV-5	Operational Activity Model	Operational Activities, relationships among activities, inputs and outputs. Overlays can show cost, performing nodes, or other pertinent information.
OV-6c	Operational Event-Trace Description	One of three products used to describe operational activity sequence and timing - traces actions in a scenario or sequence of events and specifies timing of events
SV-4	Systems Functionality Description	Functions performed by systems and the information flow among system functions
SV-5	Operational Activity to Systems Function Traceability Matrix	Mapping of systems back to operational capabilities or of system functions back to operational activities
SV-6	Systems Data Exchange Matrix	Provides details of systems data being exchanged between systems
TV-1	Technical Standards Profile	Extraction of standards that apply to the given architecture

# Empowering Known and Unanticipated Users

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## Shift Power to the User:

- Bring data consumers, producers, and system developers closer together through Communities Of Interest
- Guide data management activities through user-driven metrics, user ratings/feedback, and data sharing incentives
- Provide the infrastructure and services (e.g., GIG B/E, NCES, Shared Spaces, Catalogs) to permit the user to find and retrieve data

**Producer and Developer**



**Consumer**

