



Net-Centricity & Net-Ready: Beyond Technical Interoperability & C4ISR

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C4 is now “Communications System”

Joint Publication 6-0



Joint Communications System



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SUMMARY OF CHANGES REVISION OF JOINT PUBLICATION 6-0 DATED 30 MAY 1995

- Consolidates Joint Publication (JP) 6-02, *Joint Doctrine for Employment of Operational/Tactical Command, Control, Communications, and Computer Systems* and JP 6-0 formerly called *Doctrine for Command, Control, Communications, and Computer (C4) Systems Support to Joint Operations*
- Discontinues use of the term “command, control, communications, and computers (C4) systems” and replaces it with “communications system”
- Deconstructs the acronym “C4ISR” into its component parts: “command and control (C2),” “communications system,” and “intelligence, surveillance, and reconnaissance (ISR).” Only the component being discussed is appropriately referenced.
- Discusses information superiority
- Introduces joint force network operations (NETOPS)
- Introduces network enabled operations
- Provides more information on satellite communications (SATCOM)
- Provides a communications system estimate guide

Achieving Interoperability: A journey not a destination

***Interoperability is more than just the technical exchange of information:
Solutions Sets must cover Process, Organization, People, Information, and Materiel over the life cycle;
and it must be balanced with Information Assurance***

Interoperability:

“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.” (JP 1-02 (emphasis added))

Information Assurance:

“The ability to provide the measures that protect and defend information and information systems by ensuring their availability, integrity, authentication, confidentiality, and non-repudiation. This includes providing for restoration of information systems by incorporating protection, detection, and reaction capabilities.” (CNSSI 4009)

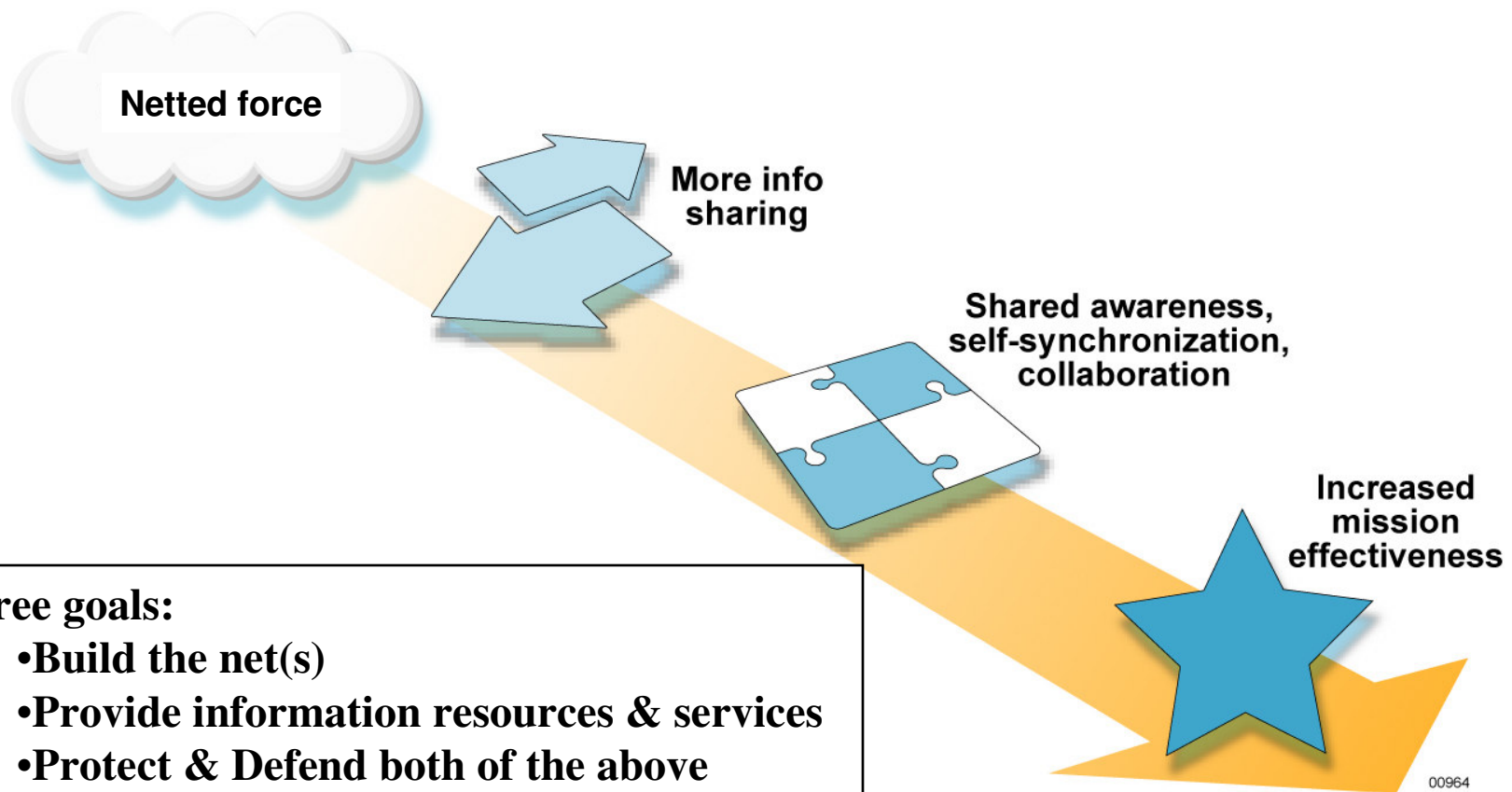
References: DoDD 4630.5, May 5, 2004 & DoDI 4630.8 , 30 June 2004

Net-Centric Operations

A Transformation Enabler

Net-Centricity is the empowerment of 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 and Warfare



Three goals:

- Build the net(s)
- Provide information resources & services
- Protect & Defend both of the above

Net-Centric Attributes

Attribute	Description
Internet & World Wide Web Like	Adapting Internet & World WideWeb standards with additions as needed for mobility, surety, and military unique features.
Secure & available information transport	Encryption initially for core transport backbone; goal is edge to edge; hardened against denial of service
Quality of protection	Data/Information tagged by originator for classification & handling instructions.
Post in parallel	Information Producers make information visible and available at the earliest point of usability
Smart pull (vice smart push)	Users can find and pull directly, subscribe or use value added services (e.g. discovery). User Defined Operational Picture v Common Operational Picture
Information/Data centric	Data separate from applications and services.
Shared Applications & Services	Users can pull multiple apps to access same data or choose same applications (e.g., for collaboration). Applications on “desktop” or as a service
Trusted & Tailored Access	Access to the information transport, data/information, applications & services tied to user’s role and identity.
Quality of service	Tailored for information form: voice, still imagery, video/moving imagery, data, and collaboration. Provide for precedence & preemption.

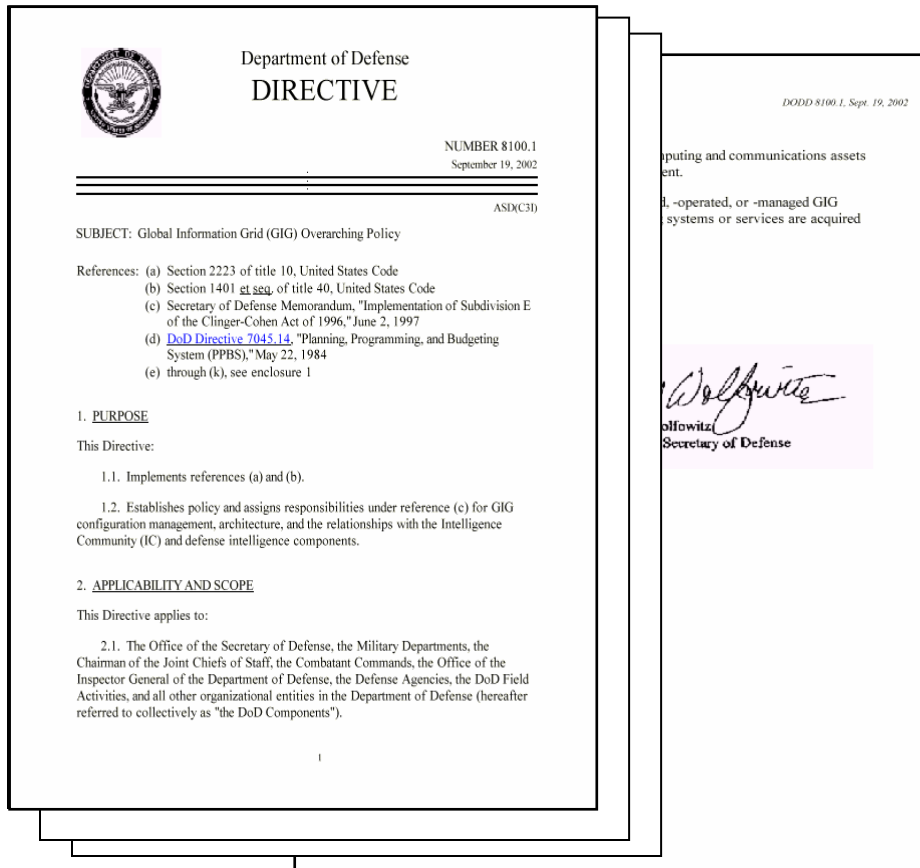
DoD's Net-Centric Data Strategy

- **The Net-Centric Data Strategy (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**
 - ✓ **"Tagging" of all data (intelligence, non-intelligence, raw, and processed) with metadata to enable discovery by known and unanticipated users in the DoD**
 - ✓ **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.**

+ DOD Directive 8320.2, December 2, 2004

The Global Information Grid

DoD Directive 8100.1



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

The GIG is the globally interconnected, end-to-end set of information capabilities, associated processes and personnel for collecting, processing, storing, disseminating, and managing information on demand by warfighters, policy makers and support personnel. It includes National Security Systems as defined in Title 40 USC.

The GIG includes all owned and leased communications and computing systems, and other associated services.

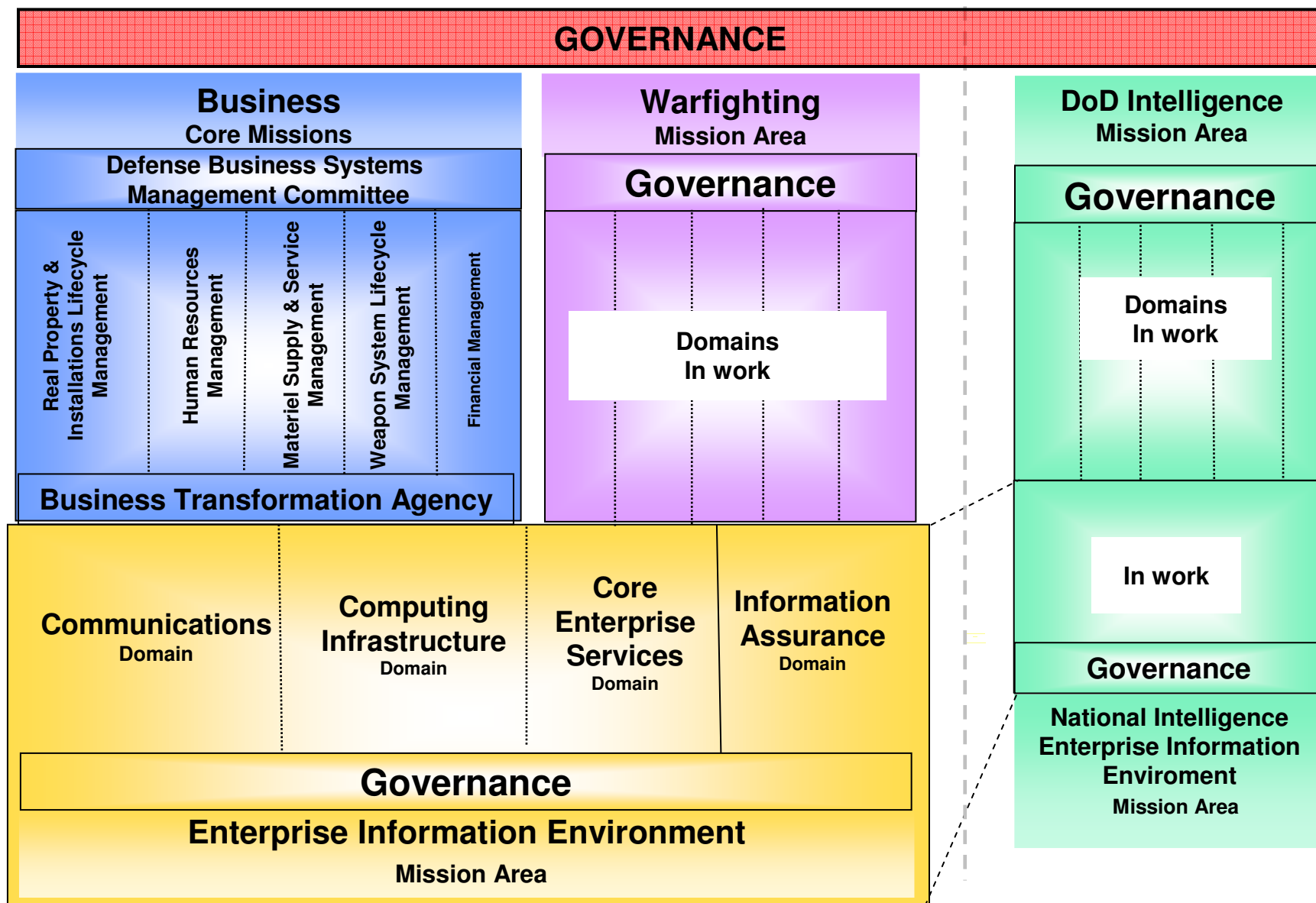
The GIG provides capabilities from all operating locations.

The GIG provides interfaces to coalition, allied, and non-DoD users and systems.

The GIG is NOT – A Program, Box, or Network. It is an Organizing Construct & Architectural Framework for managing all of DoD's Information Capabilities

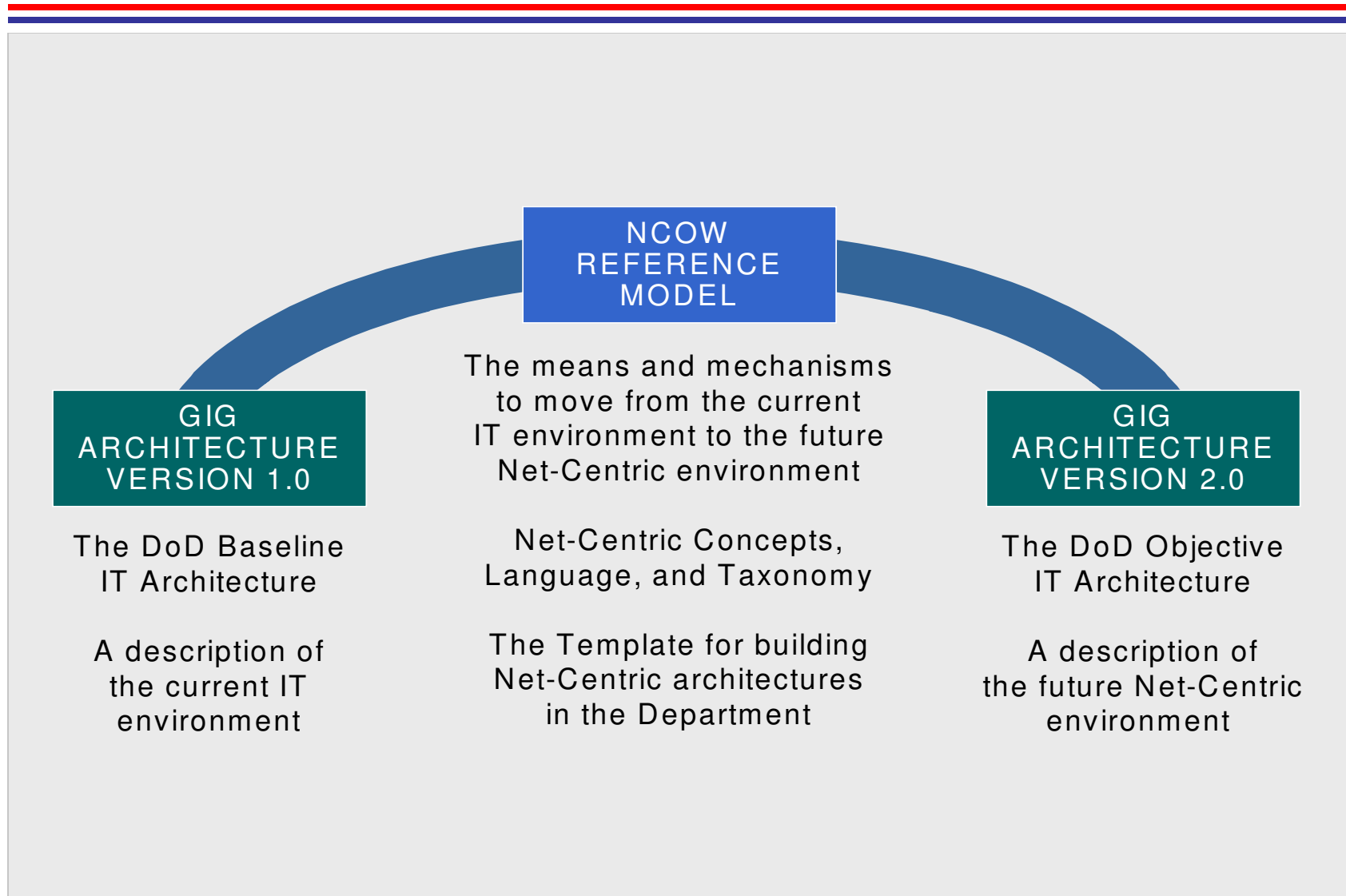
Global Information Grid

Governance & Portfolios

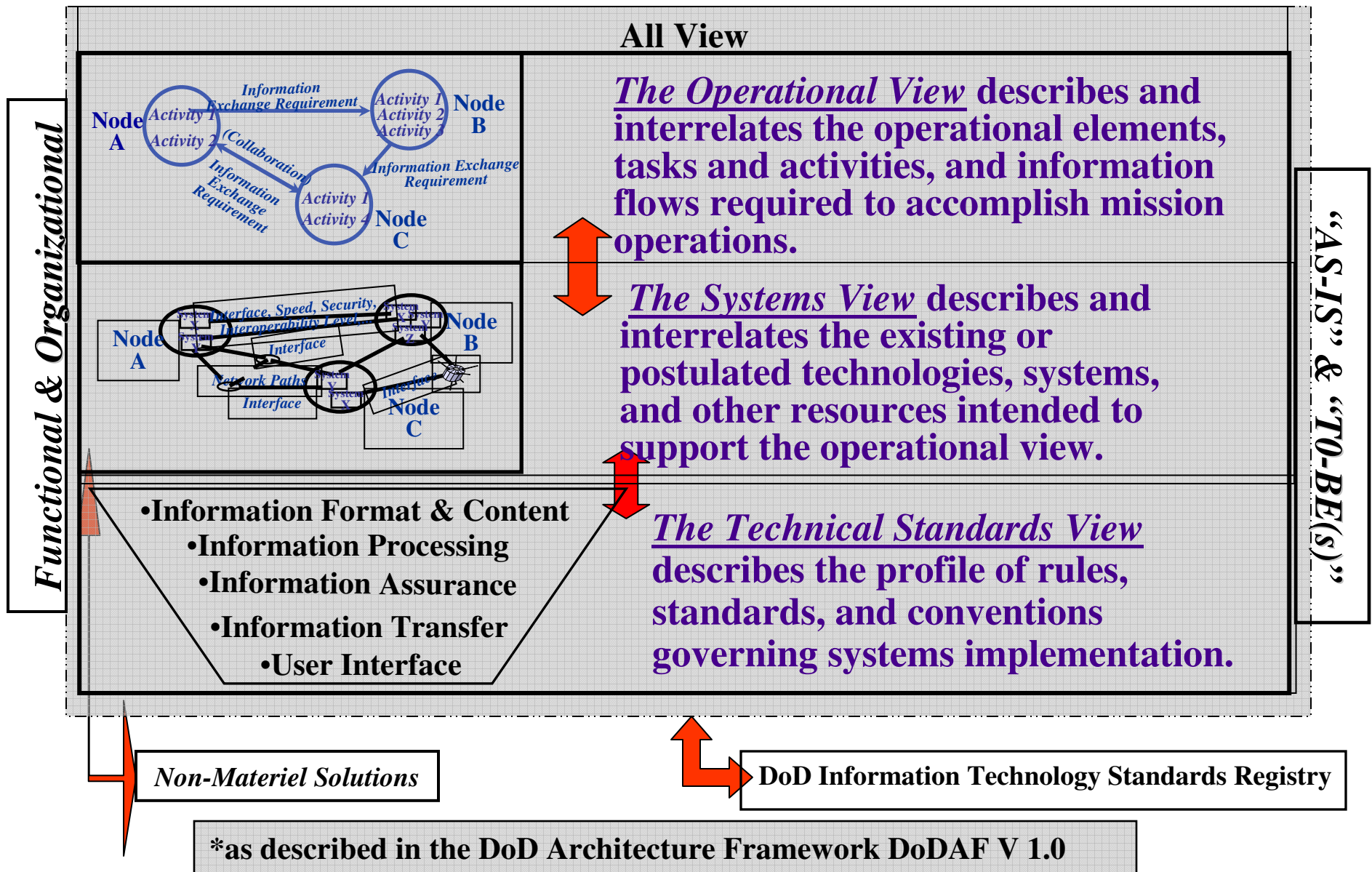


(DOD Directive 8115.01, 10 October 2005)

Net-Centric Operations & Warfare Reference Model



Integrated Architecture* In Context



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

Net-Ready Key Performance Parameter Attributes

Information needs ...

Information timeliness ...

Information assurance ...

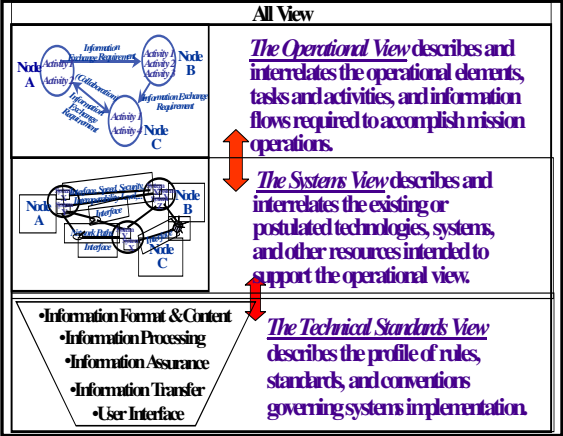
Net-enabled ...

- ☑ **Information Needs**: A condition or situation requiring knowledge or intelligence derived from received, stored, or processed data and information.
- ☑ **Information Timeliness**: Occurring at a suitable or appropriate time for a particular condition or situation.
- ☑ **Information Assurance**: Protecting and defending information and information systems by ensuring their availability, integrity, authentication, confidentiality, and non-repudiation. This includes providing for restoration of information systems by incorporating protection, detection, and reaction capabilities.
- ☑ **Net-Enabled**: The continuous ability to interface and interoperate to achieve operationally secure exchanges of information in conformance with enterprise constraints.

References: DoDD 4630.5, May 5, 2004 & DoDI 4630.8 , 30 June 2004

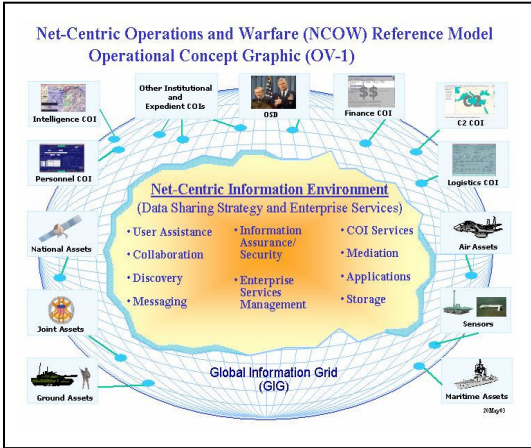
Net-Ready Key Performance Parameter Components & Verification

Supporting Integrated Architecture(s)



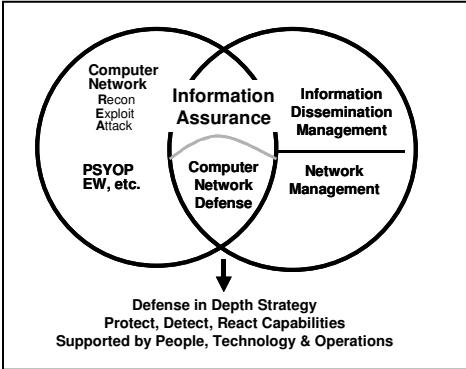
- Inspection
- Analysis
- Test

NCOW RM Compliance



- Inspection
- Analysis

IA Compliance



- Inspection
- Analysis

Compliance With Applicable Key Interface Profiles

<u>Communications IPIs</u>	
1.	Logical Network to DNS Transport Backbone
2.	Speech/Facsimile Interface
3.	JIF PoC/Gateway
4.	JIF Component to JIF Host/Queries
5.	Teletype (i.e., dtp) to Interface to LBN
6.	Kind Interconnection Service
7.	DNS Service Delivery/Node
8.	Secure Filebase Service Delivery/Node (eg. SCJ Global Mail)
<u>Computing IPIs</u>	
9.	Application Server to Database Server
10.	Client to Server
11.	Application to COI/CCP
<u>Network Operations IPIs</u>	
12.	End System to PI
13.	Management System to (Integrated) Management System
14.	Management System to Management System
15.	IDM to Distribution Infrastructure
16.	Information Server to IDM Infrastructure
<u>Applications</u>	
17.	Application Server to Shared Data - HCP(S&D)

- Inspection
- Test

OEF/OIF Observations*

- Network Management

- Network planning only at brigade level, not division.
- Primarily used for situational awareness.

- **Meteorological Support Team**

- Not used. Rather USAF weather info posted on SIPRNET.

- Topographic Support

- Provides decision makers with the products required.
- Operators cited difficulties in operating, transporting and maintaining the system.

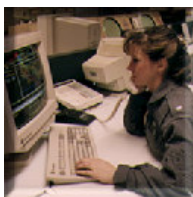
** Extract from Briefing on ABCS in OEF/OIF, Dr. Hutchison, DOT&E, NDIA Interoperability 2004*

Empowering Known and Unanticipated Users

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 BE, NCES, Shared Spaces, Catalogs) to permit the user to find and retrieve data

Producer and Developer



Consumer

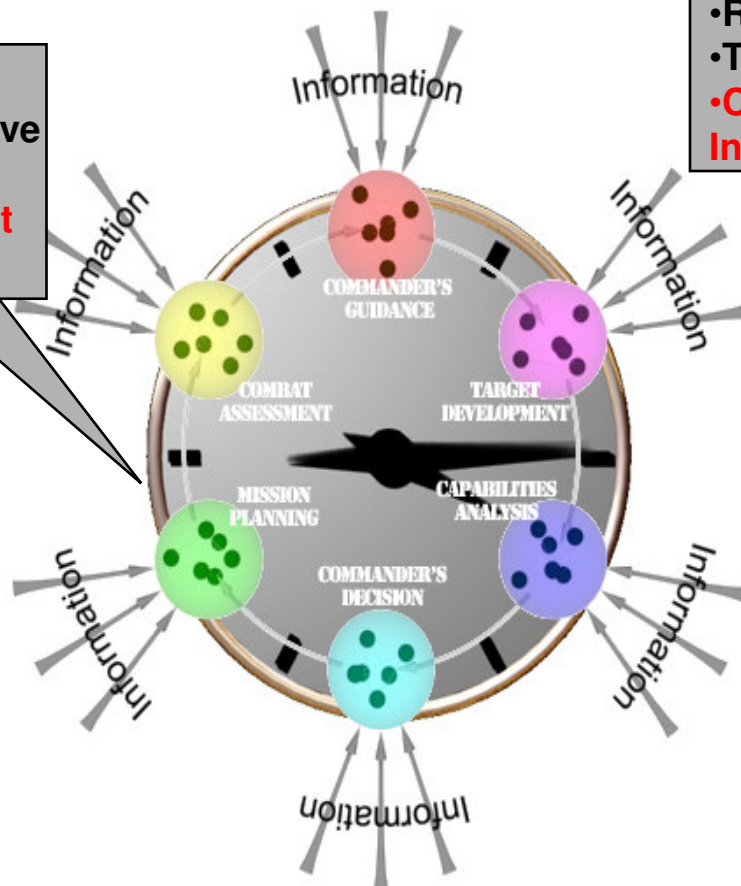


QUESTIONS ?

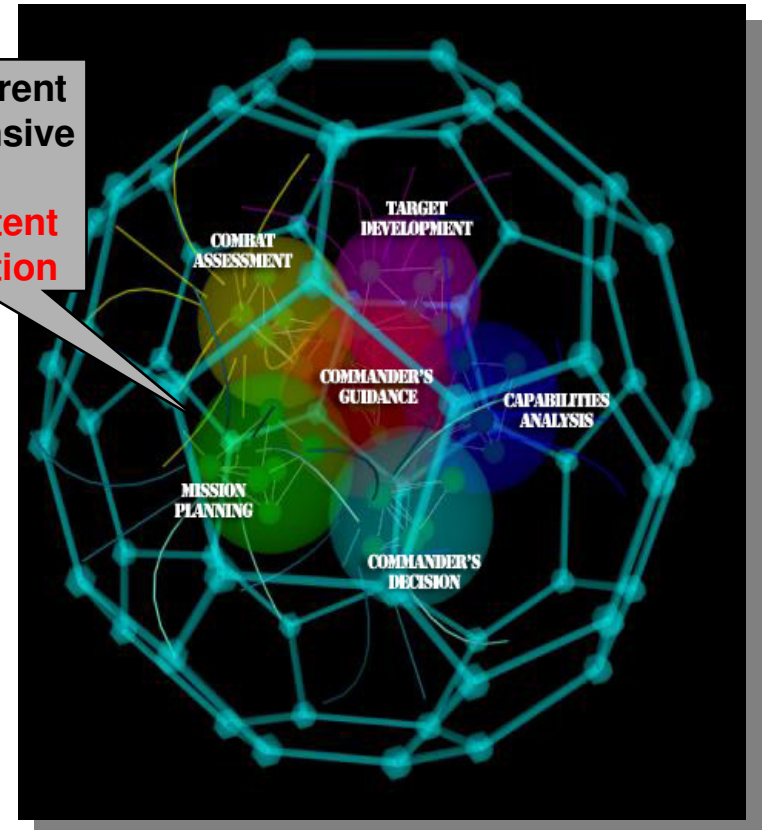
The Joint Targeting Cycle in a Net-Centric Environment

“As Is”

- Sequential
- Unresponsive
- Untimely
- Inconsistent Information**




- Concurrent
- Responsive
- Timely
- Consistent Information**



“To Be”

DISR & DISRonline

(The Net-Centric IT Standards Resources)

Governance & General Information Area Policy FAQs CM Procedures User Guides Links POCs	DISR Standards Profiles			NCOW RM TV-2	
	Program System Profiles <small>(Std Profiles built per DoDI 4630.8/CJCSI 6212)</small>				
	Profile Assistance Software			Interfaces to Analysis Tools & Related Repositories	
	Prescribed Standards Profiles E.g., IPv6	Technology Standards Profiles	Mission Area & Domain Stds Profiles <ul style="list-style-type: none"> •Warfighting •Business •DoD Intel •EIE 	<ul style="list-style-type: none"> •Emerging Standards •Inactive Standards •Supplemental Standards 	
	GIG Key Interface Profiles				
	DoD IT Standards <u>Registry</u> (DISR)* Tagged: Mandated and Mandated [Sunset]				

**The content of the Joint Technical Architecture*