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

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NDIA SE Conference 2005

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)*

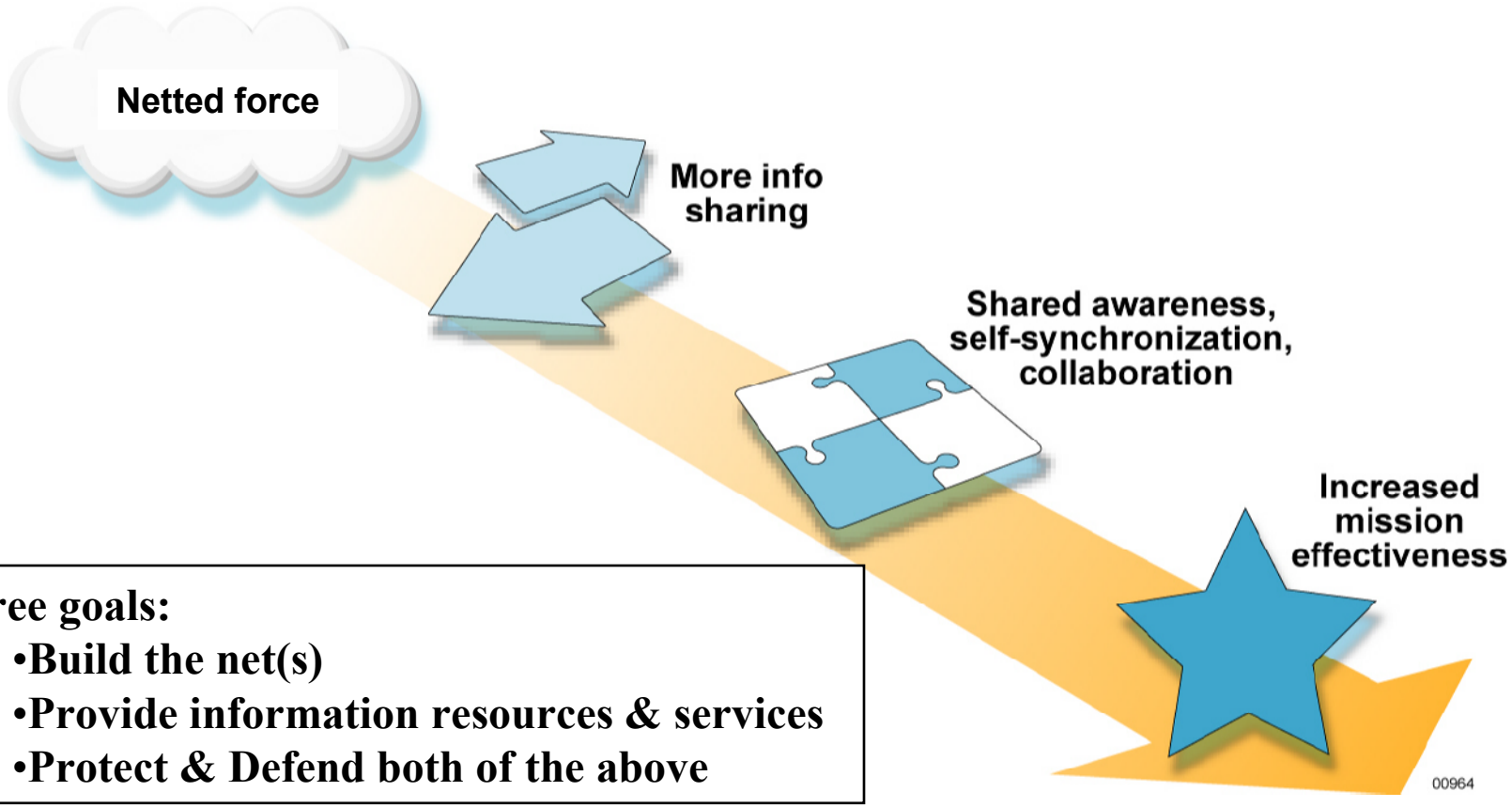
Information Assurance:
"The ability to provide the measures that protect and defend information and information systems by ensuring their availability, integrity, authentication, confidentiality, and non-repudiation. This includes providing for restoration of information systems by incorporating protection, 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 Protocol (IP) & WWW Standards based	Adapting Internet & World WideWeb standards with additions as needed for mobility, surety, and military unique features.
Protect & Defend Information & Information Systems	Ensure availability, integrity, authentication, confidentiality and non-repudiation. Provides protection, detection and reaction capabilities for restoration.
Levels 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 or use subscription services.
Information/Data centric	Data separate from applications and services.
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
Role Based access to resources.	Access to the net, 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.

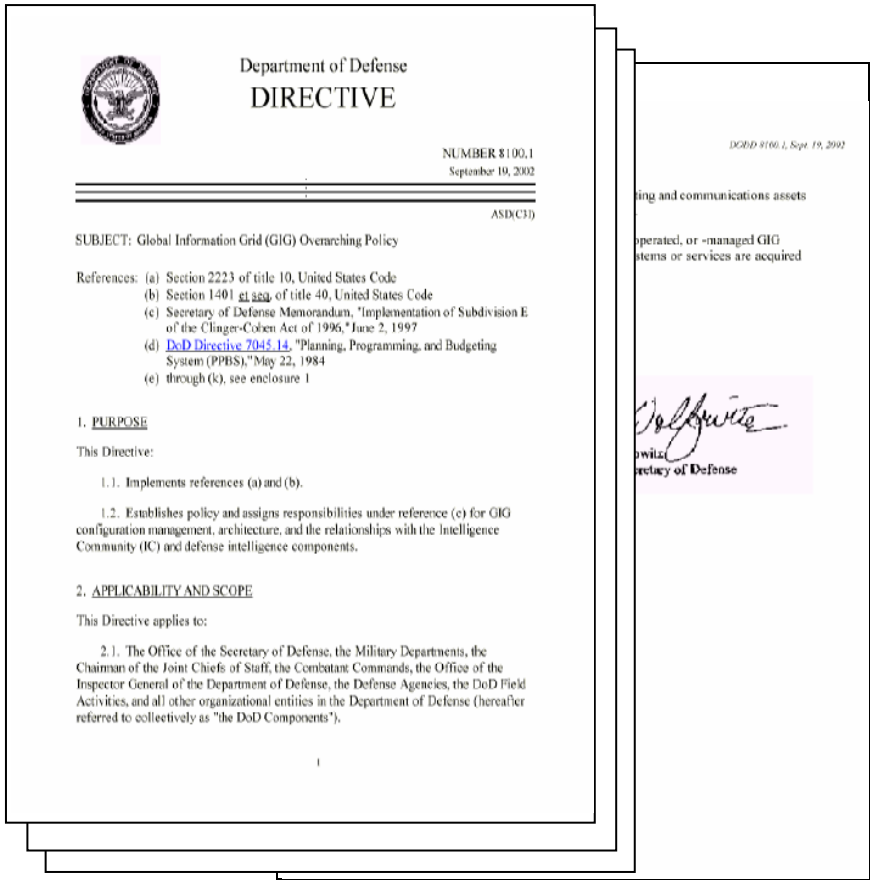
DoD's Net-Centric Data Strategy

- **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

DoDD 8100.1



Department of Defense
DIRECTIVE

NUMBER 8100.1
September 19, 2002

ASD(C3I)

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:

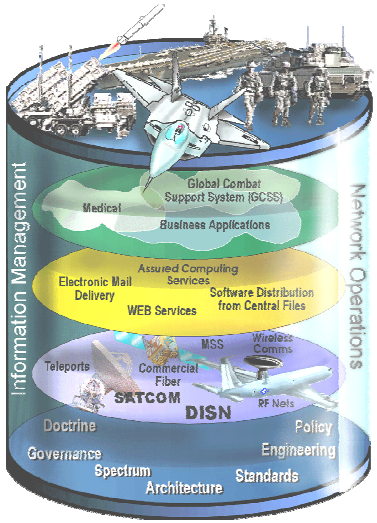
1.1. Implements references (a) and (b).

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").

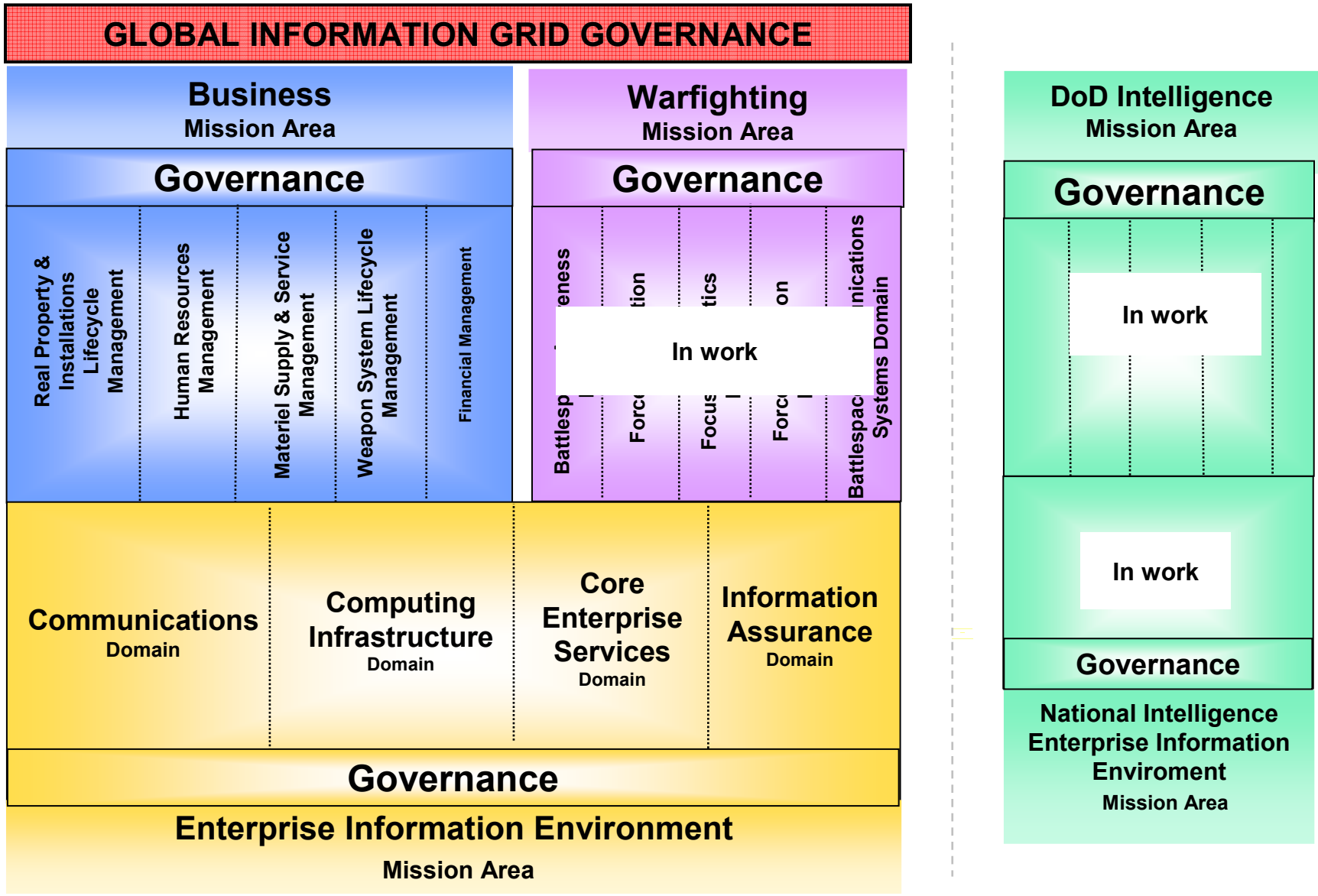


The GIG supports all Department of Defense, National Security and related Intelligence Community missions and functions in war and in peace.

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

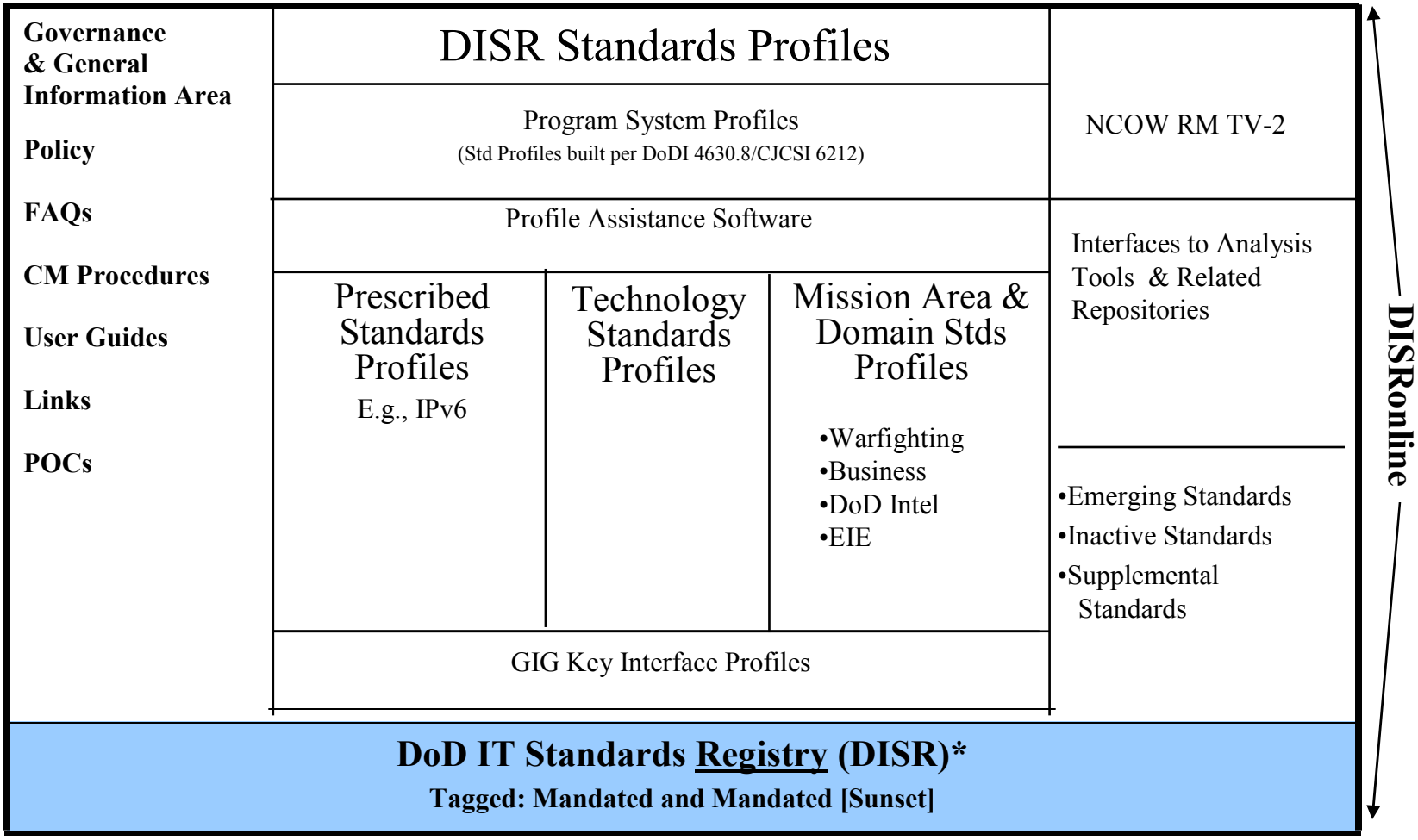
A Organizing Construct : An Integrated Architecture : Entities/Segments

Governance & Portfolios



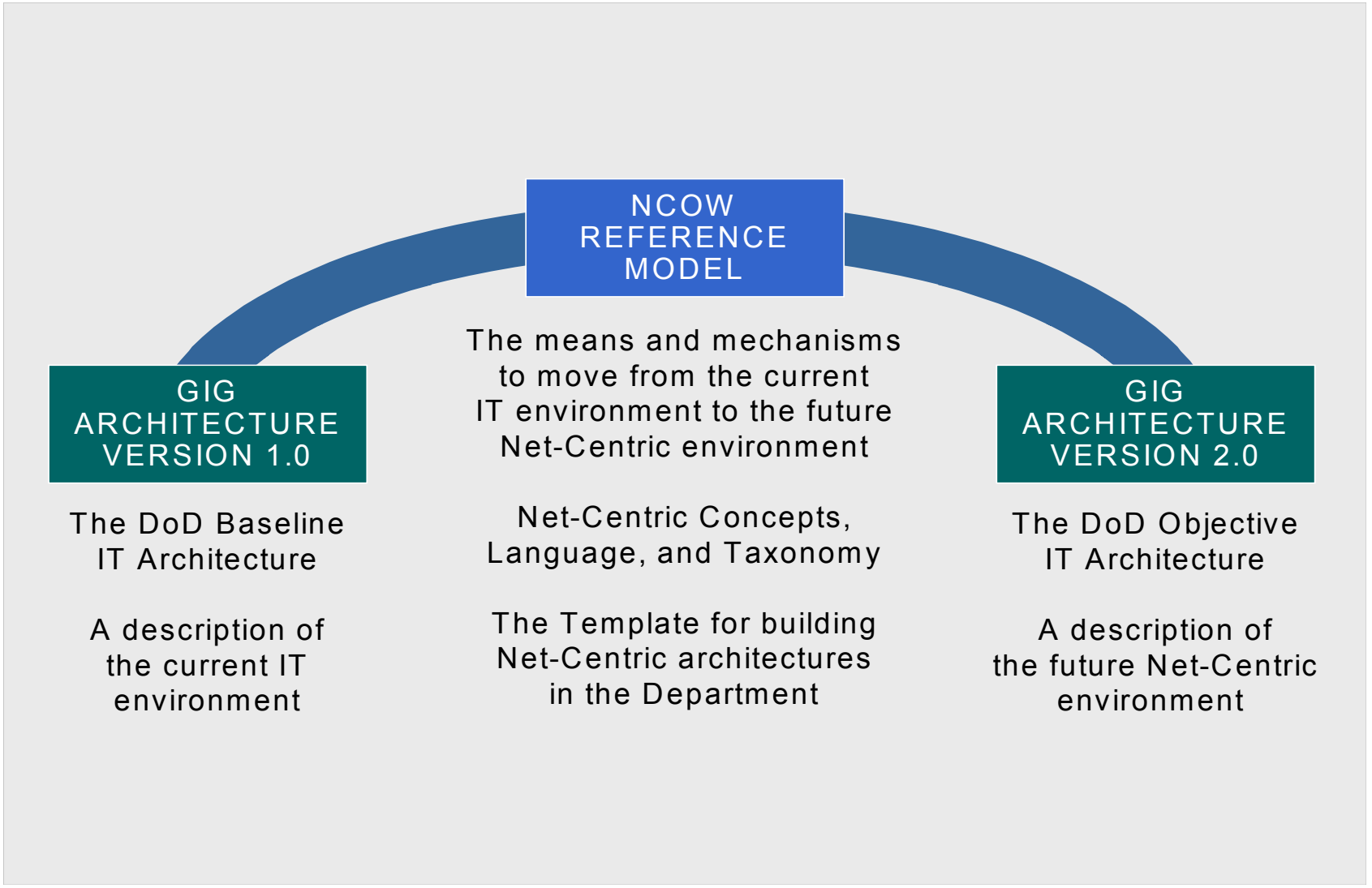
(DOD Directive 8115.01, 10 October 2005

DISR & DISRonline
(The Net-Centric IT Standards Resources)



**The content of the Joint Technical Architecture*

Net-Centric Operations & Warfare Reference Model



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

OEF/OIF Observations*

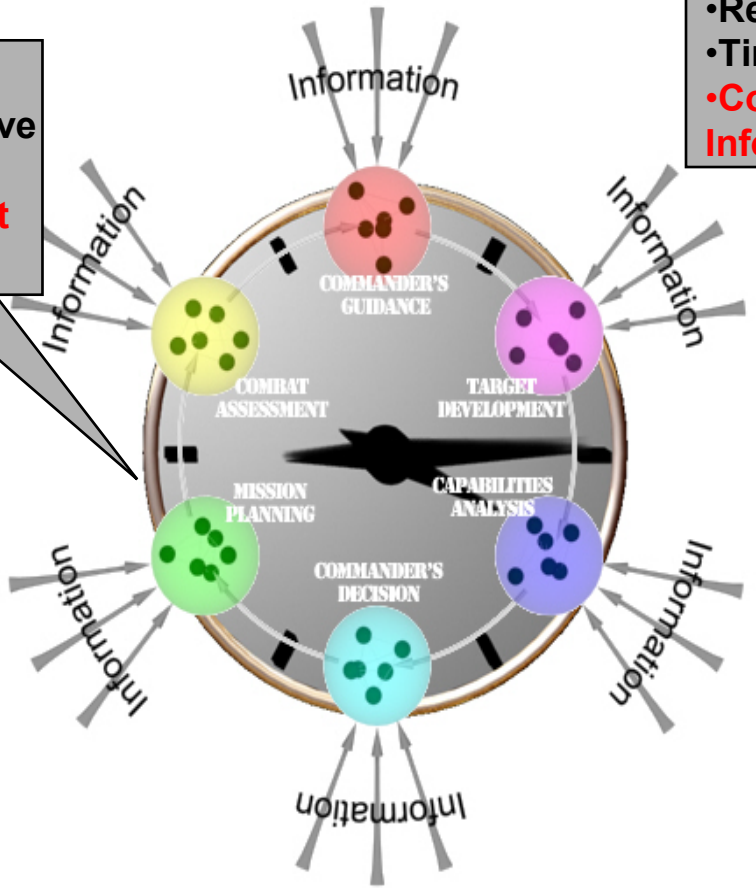
- Network Management
  - Network planning only at brigade level, not division
  - Primarily used for situational awareness.
- **Meteorological Support Team**
  - Not used. Rather USAF weather info posted on SIPRNET.
- Topographic Support
  - Provides decision makers with the products required.
  - Operators cited difficulties in operating, transporting and maintaining the system.

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

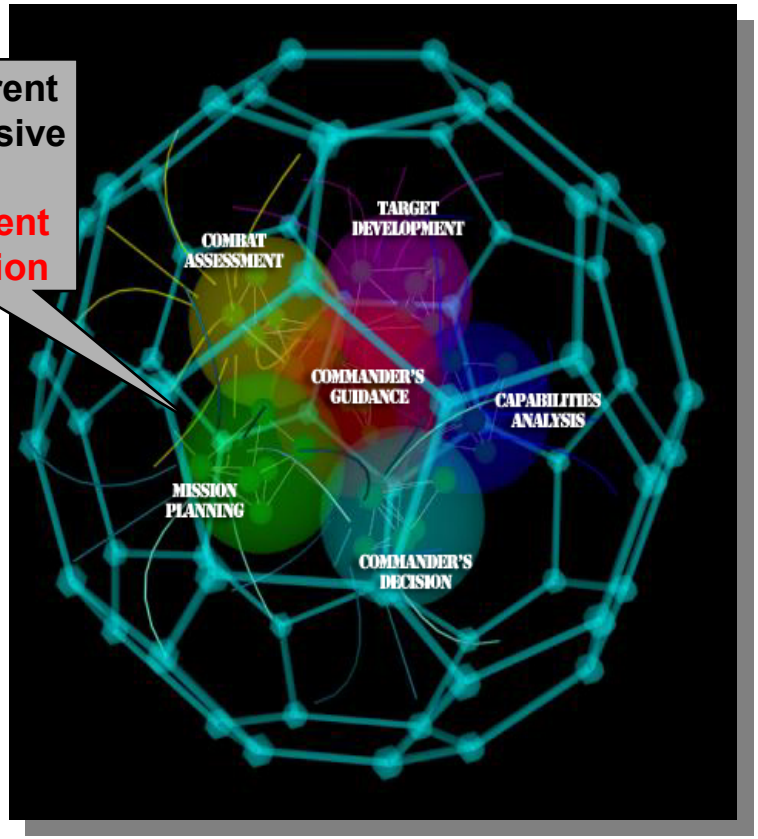
The Joint Targeting Cycle in a Net-Centric Environment

"As Is"

•Sequential
•Unresponsive
•Untimely
•Inconsistent Information



•Concurrent
•Responsive
•Timely
•Consistent Information



"To Be"

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

Net-Centric Operations Industry Forum (NCOIF)

- **NCOIF Mission**
  - **Support the migration to an open business model that supports full competition but enables horizontal integration of the resulting capabilities and systems, regardless of who developed or provides the systems.**
  - **Review and comment on industry-wide frameworks which will support horizontal integration of platforms and systems.**
  - **Provide an industry advisory service for the DoD CIO regarding the net centric strategies, programs, acquisitions, implementation, and sustainment.**
  - **Provide industry-wide critiques and analysis in response to government stakeholders.**
  - **Provide a forum for industry discussion and collaboration on evolving enterprise service models.**

OASD (NII)/DoD CIO and AFEI Charter
2/18/05

NCOIF Working Groups

Net-Centric Operations Industry Forum (NCOIF)
Dr. Jacques S. Gansler, Chairman

- **Data Sharing & Service Strategy** (GIG ES IAC)
- **Information Assurance (IA) & Security**
- **Wireless & Communications**
- **Architecture & Standards**
- **Intelligence, Surveillance and Reconnaissance**
- **Commercial Acquisition Practices**

OASD (NII)/DoD CIO and AFEI Charter
2/18/05

QUESTIONS ?

Future Direction For Defense

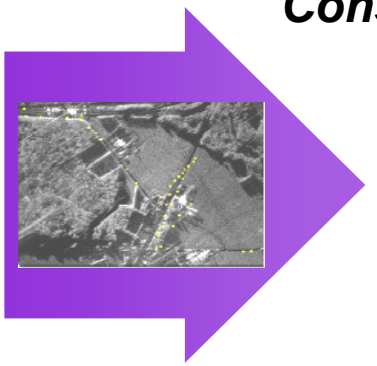
Department of Defense
Transformation
Planning
Guidance

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



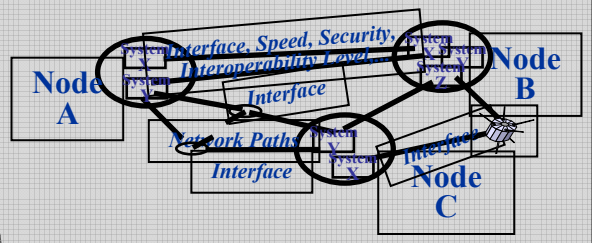
To
Consumer Dominates

Task
Post
Process
Use

Integrated Architecture* In Context

All View

The Operational View **describes and interrelates the operational elements, tasks and activities, and information flows required to accomplish mission operations.**



The Systems View **describes and interrelates the existing or postulated technologies, systems, and other resources intended to support the operational view.**

- Information Format & Content
- Information Processing
- Information Assurance
- Information Transfer
- User Interface

The Technical Standards View **describes the profile of rules, standards, and conventions governing systems implementation.**

Functional & Organizational

"AS-IS" & "TO-BE(s)"

Non-Materiel Solutions

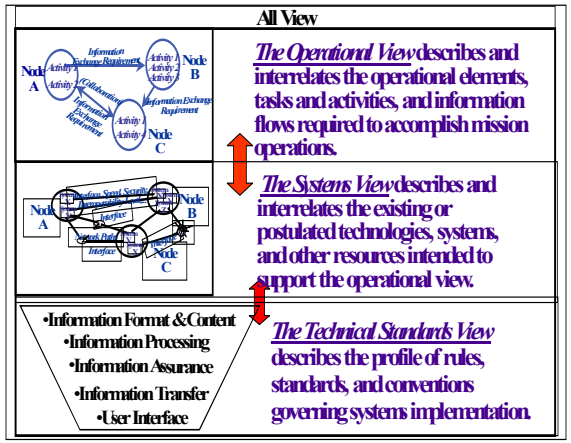
DoD Information Technology Standards Registry

*as described in theDoD Architecture Framework DoDAF V 1.0

The bottom line: keep this equation balanced:OV = SV + Non-Materiel

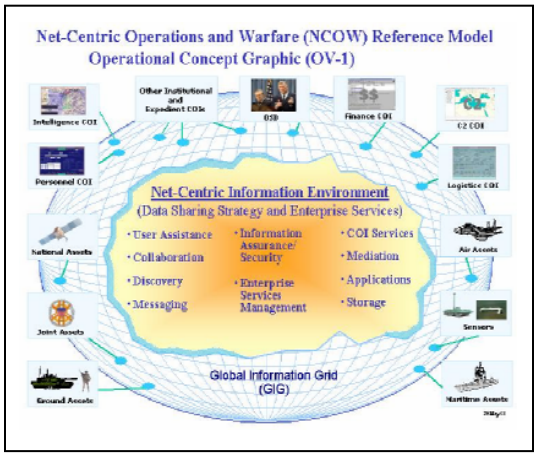
Net-Ready Key Performance Parameter Components & Verification

Supporting Integrated Architecture(s)



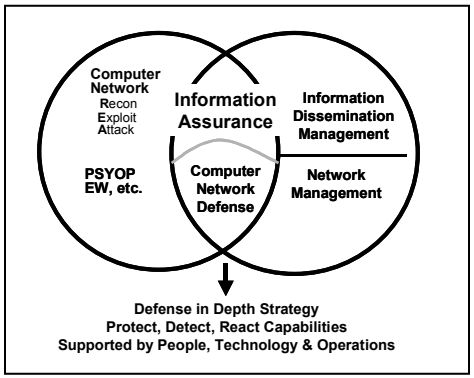
- Inspection
- Analysis
- Test

NCOW RM Compliance



- Inspection
- Analysis

IA Compliance



- Inspection
- Analysis

Compliance With Applicable Key Interface Profiles

	Communications KIPs
1.	Logical Network 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., SCI/Collateral KIP)
	Computing KIPs
9.	Application Server to Database Server
10.	Client to Server
11.	Applications to COE/CCP
	Network Operations KIPs
12.	End System to PKI
13.	Management Systems to (integrated) Management Systems
14.	Management Systems to Managed Systems
15.	ID Mgt Distribution Infrastructure
16.	Information Servers to ID Mgt Infrastructure
	Applications
17.	Application Server to Shared Data - FICP (SAD)

- Inspection
- Test