Enabling Transformation
Achieving Net-Centric Operations and Warfighting
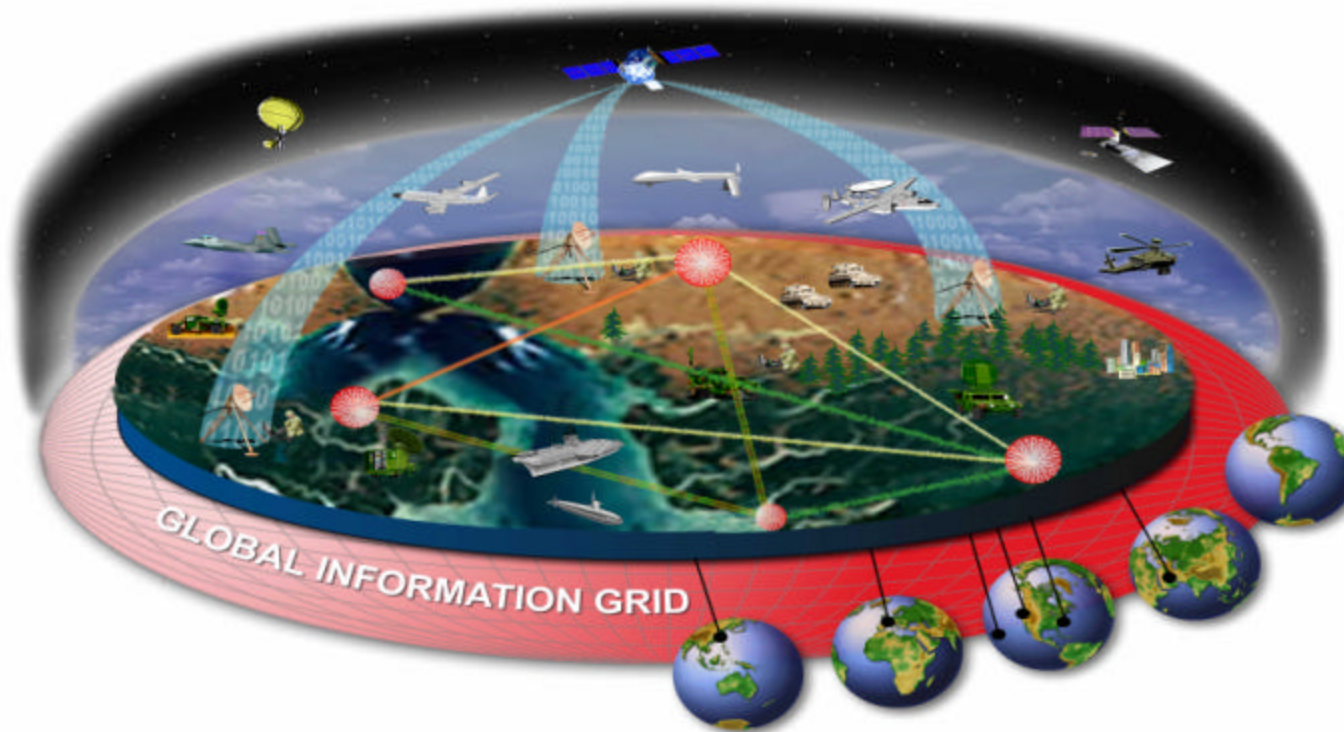
John L. Osterholz

Director, Architecture & Interoperability

OSD(C3I)

Enabling Transformation
What's Going On Here?

- **Power to the Edge - a new Defense paradigm**

- **Getting past the "n-squared" problem**

- **Becoming "net-ready"**

- **Coordinating interoperability actions**

- **Implementing the Global Information Grid**

Power To The Edge

GLOBAL INFORMATION GRID
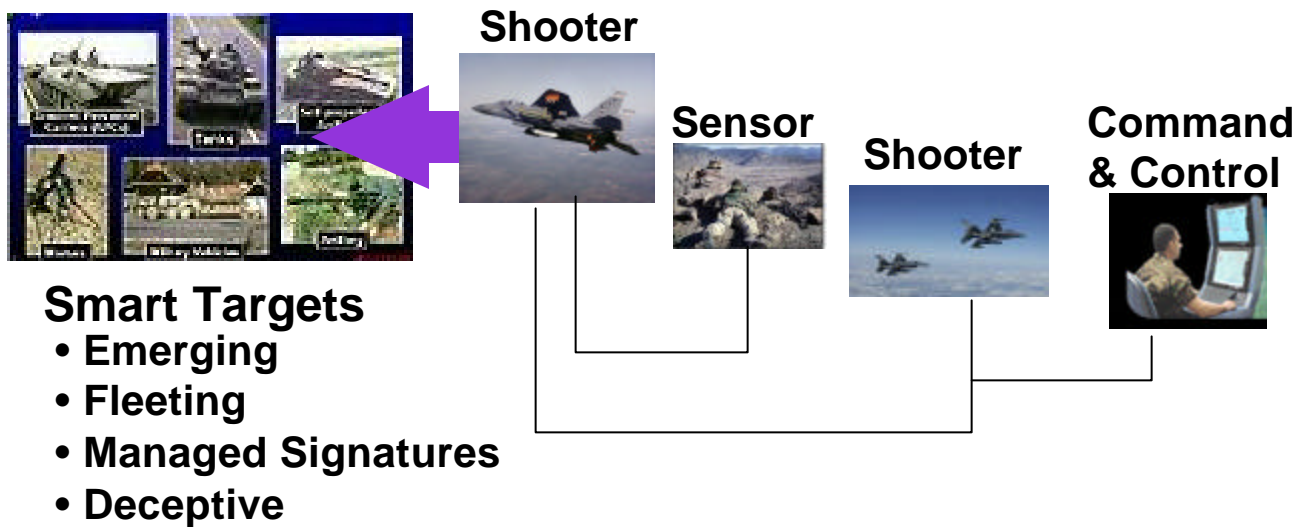
"…leverage information technology and innovative network-centric concepts of operations to develop increasingly capable joint forces. Our ability to leverage the power of information and networks will be key to our success… ."

Deputy Secretary of Defense P. Wolfowitz

The System of Systems Approach

Shooter

Sensor

Shooter

Command & Control

Smart Targets
- Emerging
- Fleeting
- Managed Signatures
- Deceptive

The System of Systems
A Little More Complex

ISR Opns

Shooter

Sensor

Shooter

Command & Control

ISR Data

Smart Targets
- Emerging
- Fleeting
- Managed Signatures
- Deceptive
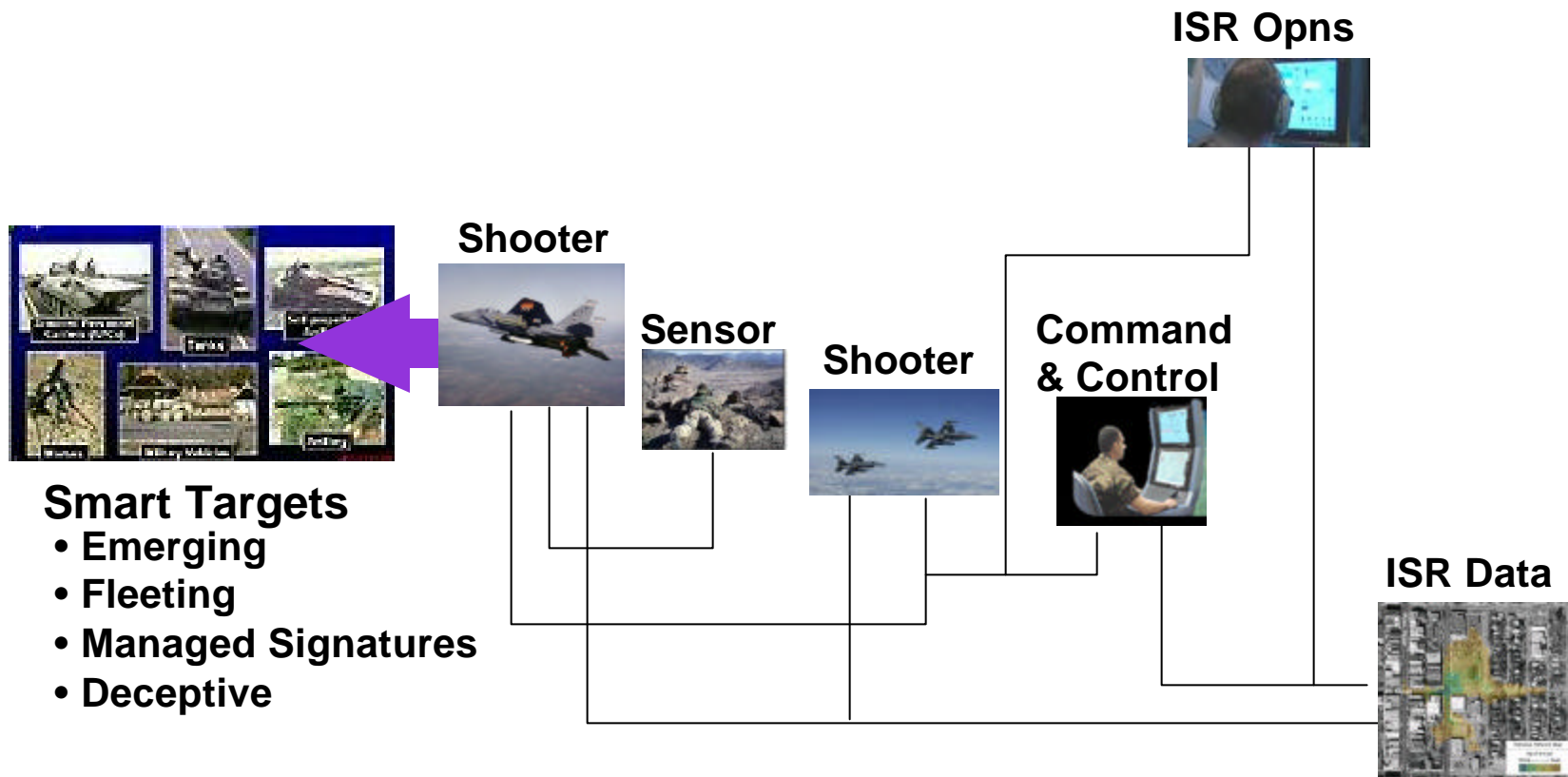
The System of Systems Much More Complex

Smart Targets
- Emerging
- Fleeting
- Managed Signatures
- Deceptive

The System of Systems N-squared Problem

Space, power, weight constraints make a pre-defined "System of Systems" approach impractical over the long run

Smart Targets
- Emerging
- Fleeting
- Managed Signatures
- Deceptive

The Solution
Net-Centric Operations & Warfare

Smart Targets
- Emerging
- Fleeting
- Managed Signatures
- Deceptive

Making Data Accessible

Consumer
Automated search of data based on core metadata standard. Pulls data of interest. Based on producer registered format and definitions, translates into needed structure.

Producer
Streaming video available for use, tagged and stored in shared space. Metadata added to catalog based on registered format.

Describes content using metadata

Posts metadata in catalogs and data in shared space

Searches metadata catalogs to find data (e.g., community and enterprise-wide search services)

Analyzes metadata to determine context of data found

Pulls selected data based on understanding of metadata

Security Services (e.g., PKI, SAML)

Metadata Catalogs

Enterprise & Community Web Sites

Application Services (e.g., Web)

Shared Data Space

Metadata Registries

Ubiquitous Global Network

Posts to and uses metadata registries to structure data and document formats for reuse and interoperability

Developer
Understand the data format to build applications that post, process, exchange, and display target information.
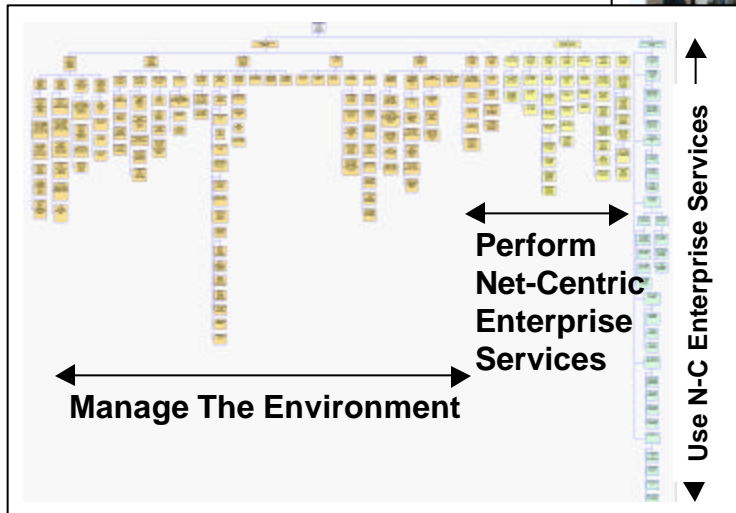
Becoming "GIG Net Ready"

Net-Centric Operations and Warfare Reference Model

- Top Level Graphic (OV-1)
- Integrated Dictionary (AV-2)
- Activity Model Node Tree (OV-5)
- Standards Technology Forecast (TV-2).

OV-5

Provide Net-Centric Information Environment

Perform Net-Centric Enterprise Services

Manage The Environment

Use N-C Enterprise Services

OV-1

Net-Centric Operations and Warfare Reference Model

OV-1 Operational Concept Graphic

SecDef Force Allocation

Korean Architecture

Achieve Information Dominance
Net Centric Enterprise Services

SW Asia Warfare Architecture

TV-2

NCOW Reference Model Integrated Technical View

16 Emerging Commercial Standards

Policy Framework Protocol

Directory Enabled Protocol (DEN)

Common Open Service Protocol (COPS)

Common Information Model Schemas (CIM)

Class of Service Protocol (CoS)

Routing Specification Language Protocol (RPSL)

IP Security Policy Protocol (SPP)

Service Level Agreement (SLA)

IP Version 6 (IPv6)

Network Data Management Protocol (NDMP)

Universal Discovery Integration Protocol (UDDI)

Open Object Database Access Protocol (SOAP)

Web Services Language Protocol (WSDL)

Uni-Directional Link Routing Protocol (UDLR)

Multi-Protocol Label Switching Protocol (MPLS)

Mobile Ad hoc Protocol (MANET)

Description of net-centricity at the enterprise level.

Proposed Net-centric KPP

Background
2002 PEO/SYSCOM

PEO/SYSCOM Panel: Information Assurance and Network Centric Warfare

Panel Members and Participants

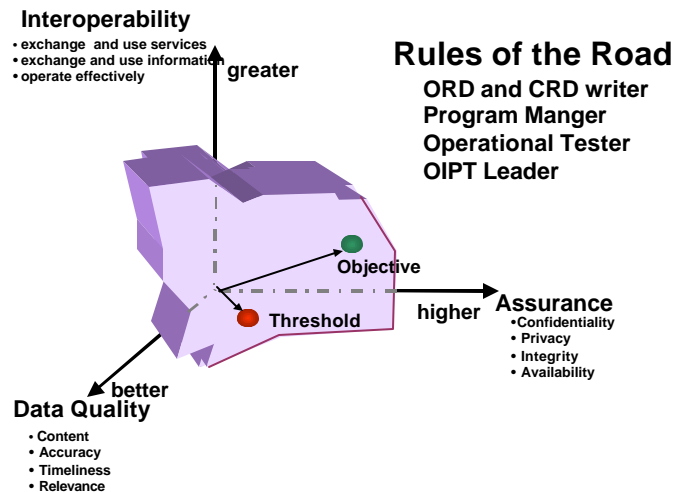| OASD(C3I)/IA | DOT&E | IDA (panel secretariat) |
| DIA | OUSD(AT&L) | PMs and PEOs |
| JS/J6 | DOD CIO | Industry Partners |

Findings

- Net-centricity challenges Defense Acquisition Process
- Need for evolving interoperability KPP to ensure consid[...]
  of IA and data
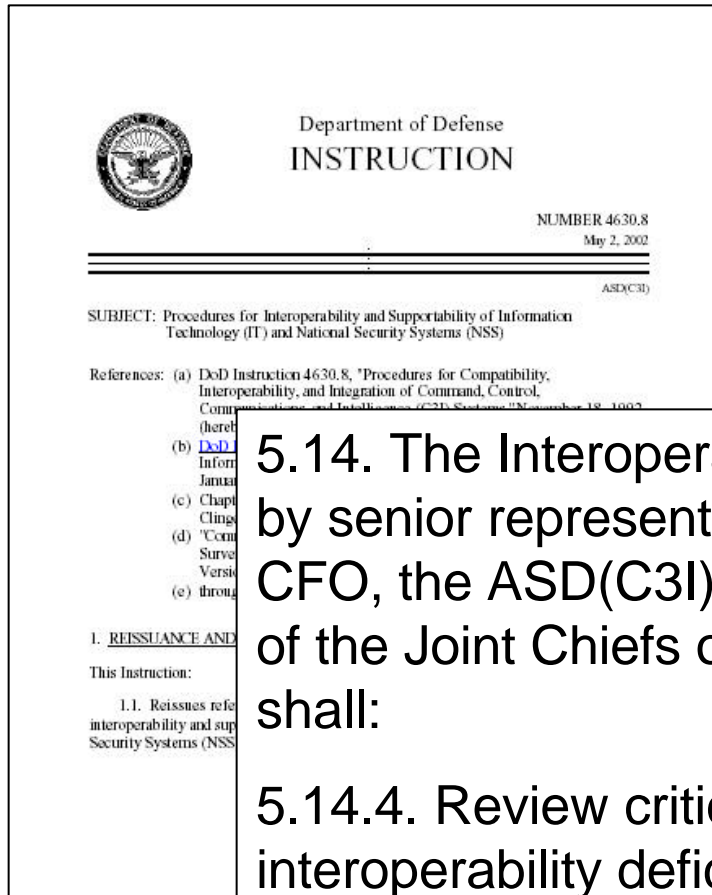- Intelligence Support to IA Assessments needs improvem[...]

KPP includes interoperability; adds data format and content plus Information Assurance

Evolving The Interoperability Key Performance Parameter

Interoperability
- exchange and use services
- exchange and use information
- operate effectively

greater

Rules of the Road
ORD and CRD writer
Program Manger
Operational Tester
OIPT Leader

Objective

Threshold

higher **Assurance**
- Confidentiality
- Privacy
- Integrity
- Availability

better

Data Quality
- Content
- Accuracy
- Timeliness
- Relevance

8

Coordinating Interoperability Actions in DoD - ISRP

Department of Defense
INSTRUCTION

NUMBER 4630.8
May 2, 2002

ASD(C3I)

SUBJECT: Procedures for Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)

References: (a) DoD Instruction 4630.8, "Procedures for Compatibility, Interoperability, and Integration of Command, Control, Communications, and Intelligence (C3I) Systems," November 18, 1992 (hereby...

(b) DoD...
Infor...
Janua...
(c) Chapt...
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1. REISSUANCE AND...

This Instruction:

1.1. Reissues refe...
interoperability and sup...
Security Systems (NSS...

DODI 4630.8

5.14. The Interoperability Senior Review Panel (ISRP), co-chaired by senior representatives from the USD(AT&L), the USD(C)/DoD CFO, the ASD(C3I), as the DoD CIO, the DOT&E, the Chairman of the Joint Chiefs of Staff, and the U.S. Joint Forces Command, shall:

5.14.4. Review critical systems and programs with significant interoperability deficiencies and approve appropriate candidates for the Interoperability Watch List (IWL).

GIG Implementation Roadmap
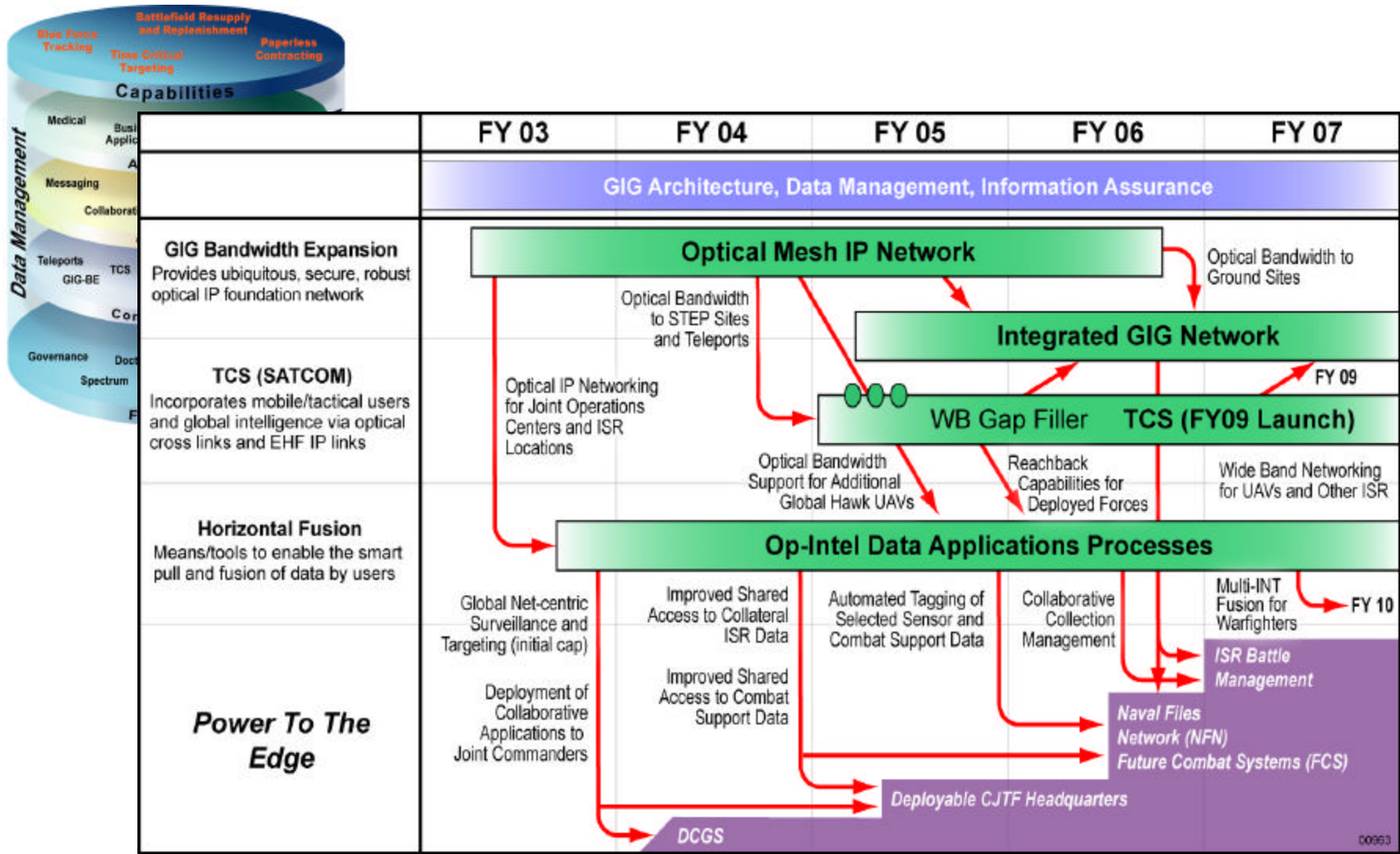
Summary

"The two truly transforming things might be in information technology and information operation and networking… connecting things in ways that they function totally differently than they had previously.

And if that's possible…then possibly the single-most transforming thing in our force will not be a weapon system, but a set of interconnections and a substantially enhance capability because of that awareness."