Joint Command and Control (JC2) Capability
&
C2 Data Model

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ADUSD (Network Centric Warfare & Interoperability)

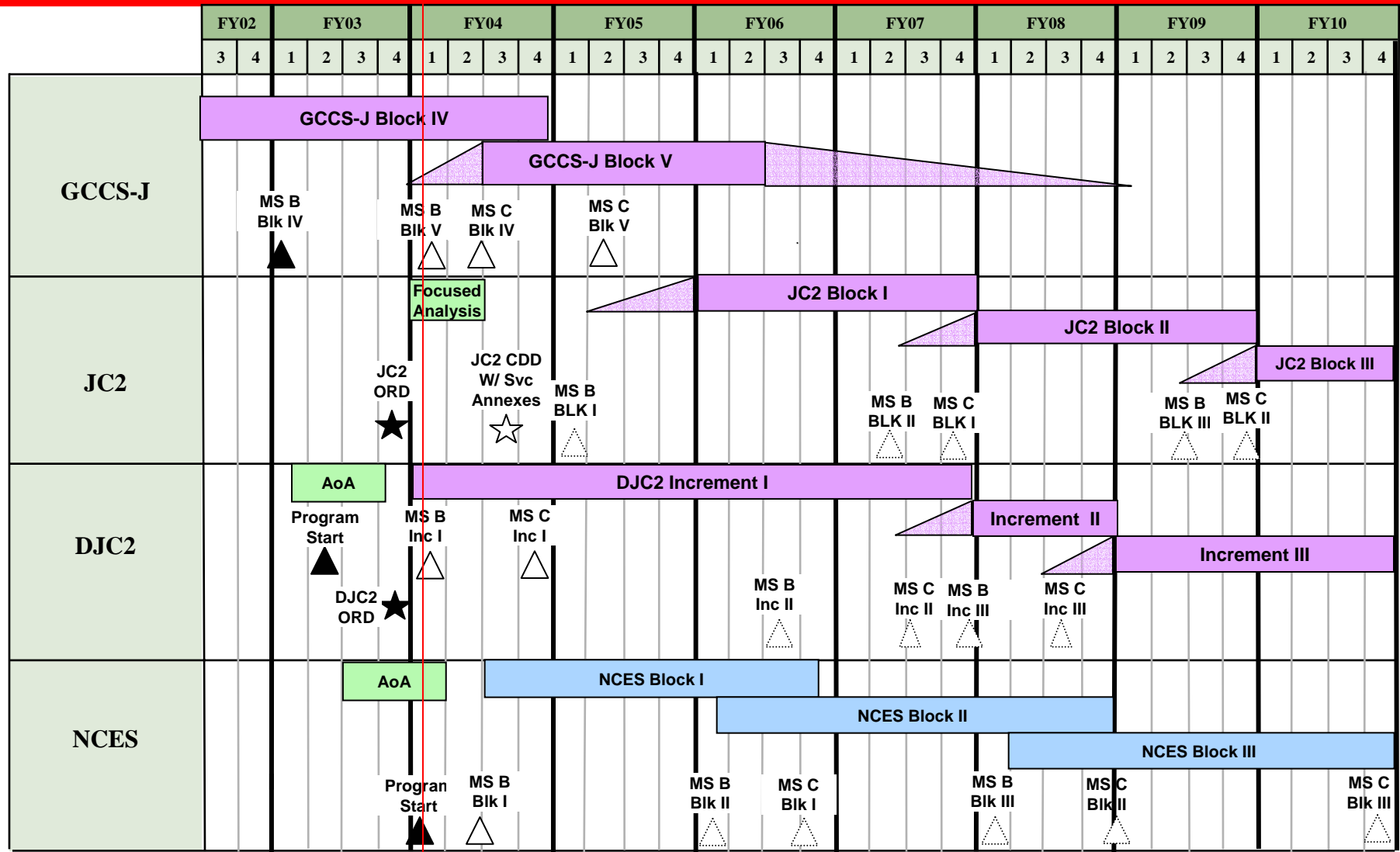ODUSD (advanced Systems & Concepts)

703-695-7938

Agenda

- Provide some background on JC2
  - Joint Command and Control capability
  - Convergence and replacement for Global Command & Control System – Joint (GCCS-J) and Service variants
- Expose emergent concepts for interoperability derived from the Multilateral Interoperability Programme
- Identify programmatic opportunities

Program Schedule Sychnronization
## GCCS-J/JC2/DJC2/NCES

Program schedule synchronization Gantt chart showing fiscal years FY02 through FY10 (by quarters) for four programs:

GCCS-J
- GCCS-J Block IV
- GCCS-J Block V
- MS B Blk IV (Actual Program Milestone)
- MS B Blk V (Projected)
- MS C Blk IV (Projected)
- MS C Blk V (Projected)

JC2
- Focused Analysis
- JC2 Block I
- JC2 Block II
- JC2 Block III
- JC2 ORD (Actual Program Milestone)
- JC2 CDD W/ Svc Annexes (Projected)
- MS B BLK I (Potential)
- MS B BLK II (Potential)
- MS C BLK I (Potential)
- MS B BLK III (Potential)
- MS C BLK II (Potential)

DJC2
- AoA
- DJC2 Increment I
- Increment II
- Increment III
- Program Start (Actual Program Milestone)
- DJC2 ORD (Actual Program Milestone)
- MS B Inc I (Projected)
- MS C Inc I (Projected)
- MS B Inc II (Potential)
- MS C Inc II (Potential)
- MS B Inc III (Potential)
- MS C Inc III (Potential)

NCES
- AoA
- NCES Block I
- NCES Block II
- NCES Block III
- Program Start (Actual Program Milestone)
- MS B Blk I (Projected)
- MS B Blk II (Potential)
- MS C Blk I (Potential)
- MS B Blk III (Potential)
- MS C Blk III (Potential)
- MS C Blk III (Potential)

Legend:
- ▲ Actual Program Milestone
- △ Projected Program Milestone
- △ (dotted) Potential Program Milestone

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Joint Command and Control (JC2)
Operational Concept

- **Migrate to a single joint C2 architecture**

- **Support joint C2 requirements from NMCS to JTF Components**

- **Organized along 7 joint Mission Capability Packages and cross-functional services**

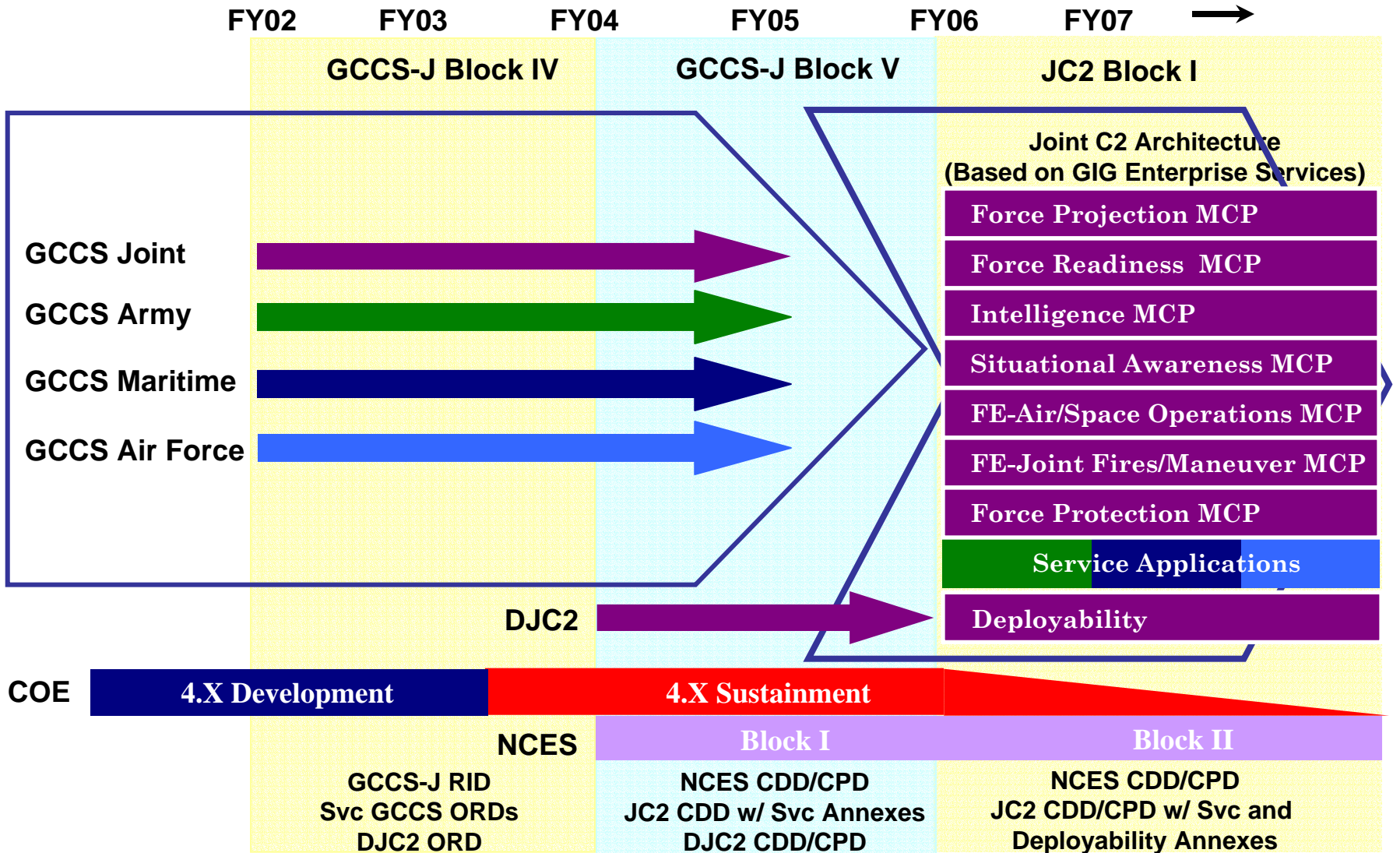- **Based upon Global Information Grid (GIG) enterprise services**
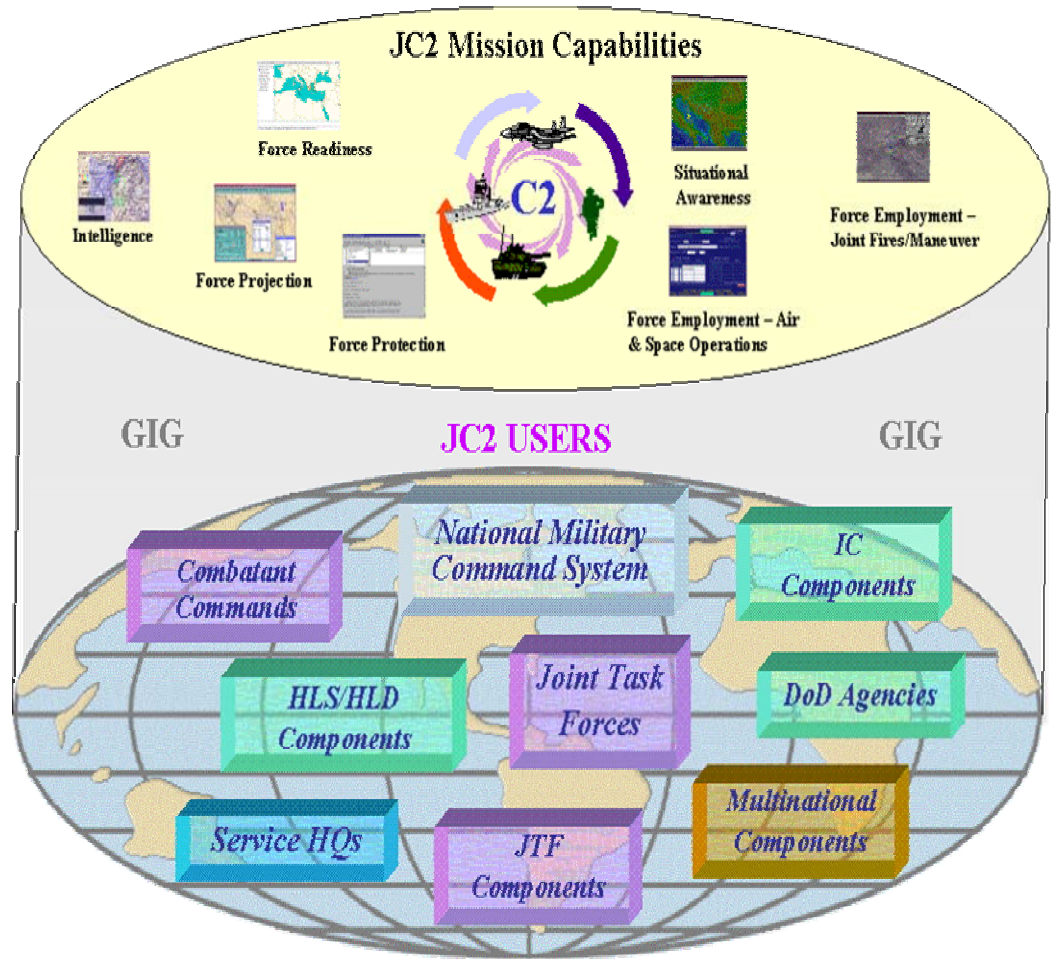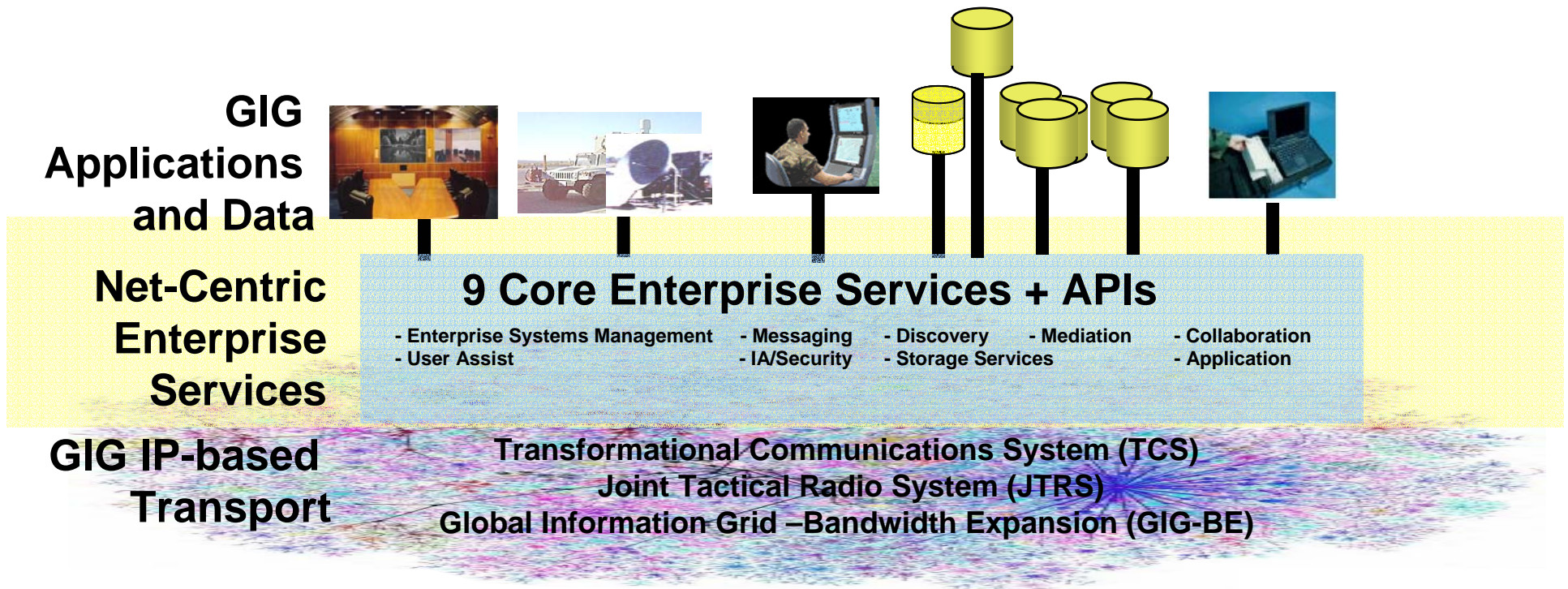

NMCS: National Military Command System
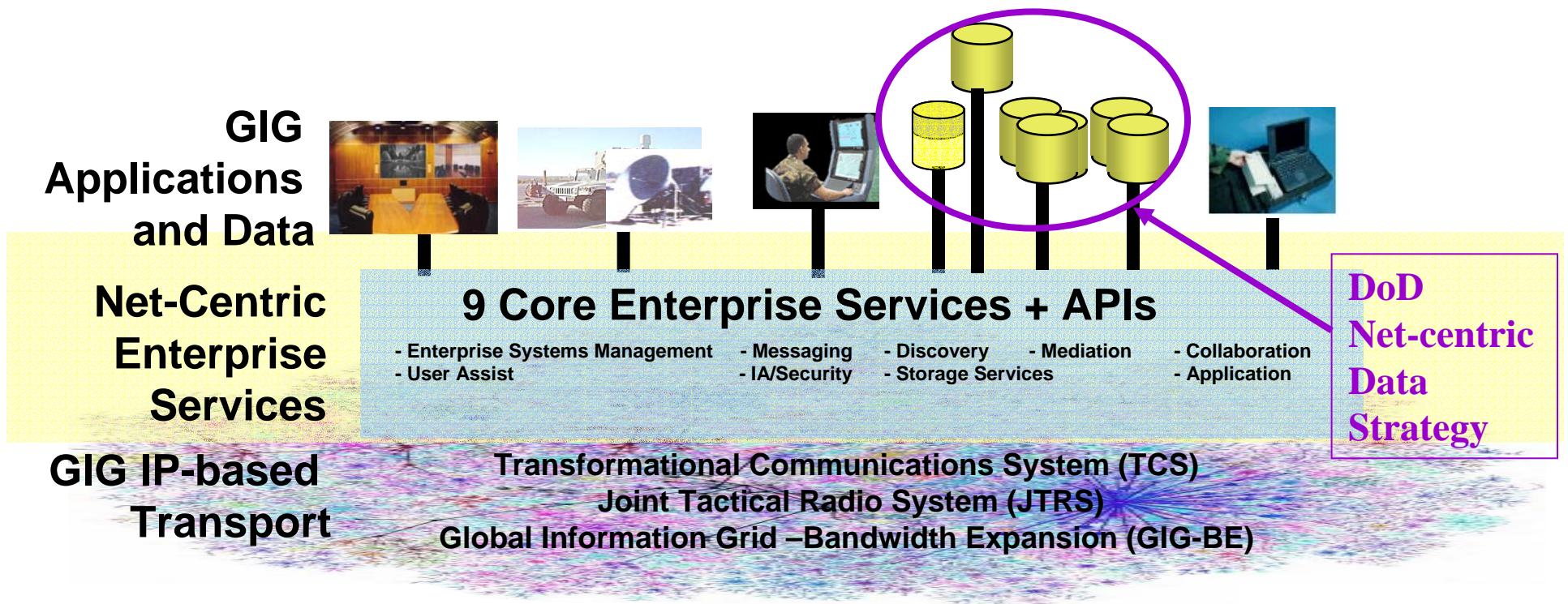
JC2 OV-1

Net-Centric Enterprise Services (NCES)

Enables rapid exploitation of diverse data sources by GIG users in a manner that can be customized to meet specific mission demands

GIG Applications and Data

Net-Centric Enterprise Services

9 Core Enterprise Services + APIs

- Enterprise Systems Management   - Messaging   - Discovery   - Mediation   - Collaboration
- User Assist   - IA/Security   - Storage Services   - Application

GIG IP-based Transport

Transformational Communications System (TCS)
Joint Tactical Radio System (JTRS)
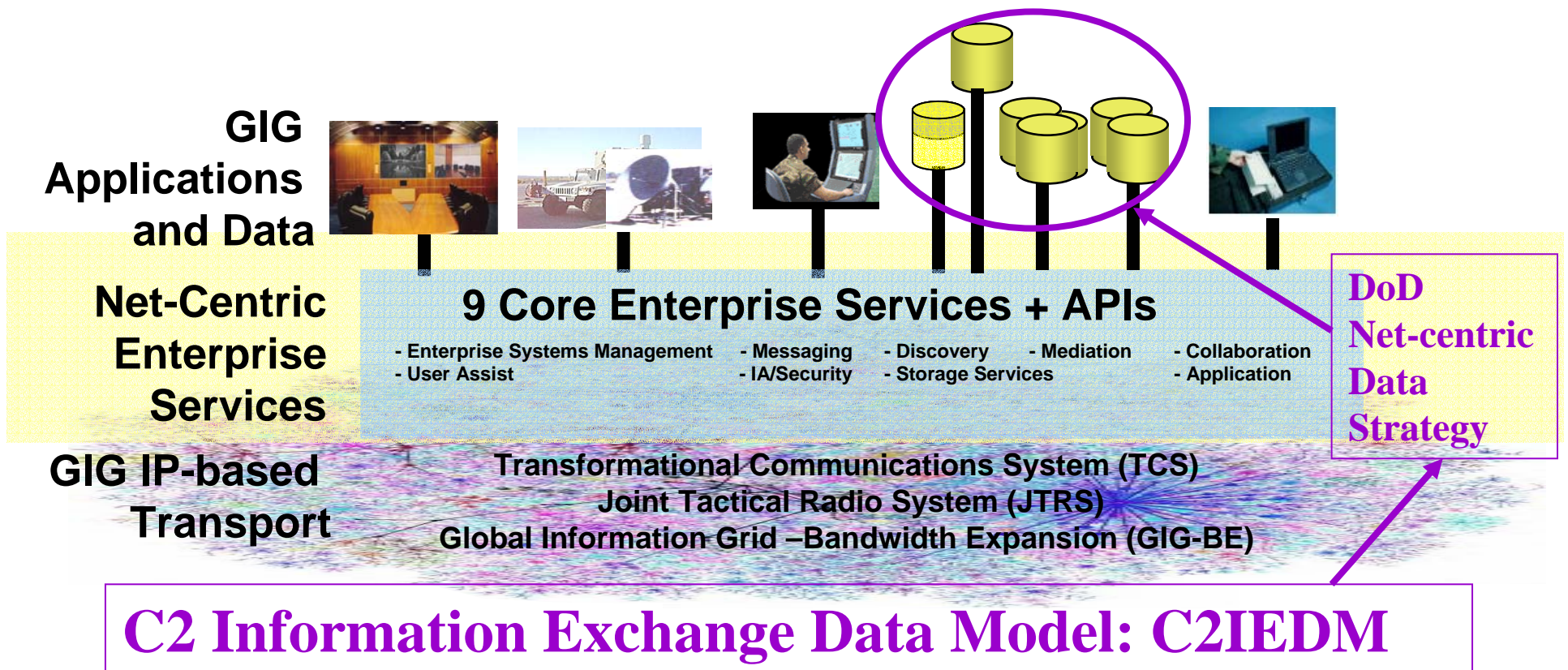**Global Information Grid –Bandwidth Expansion (GIG-BE)**
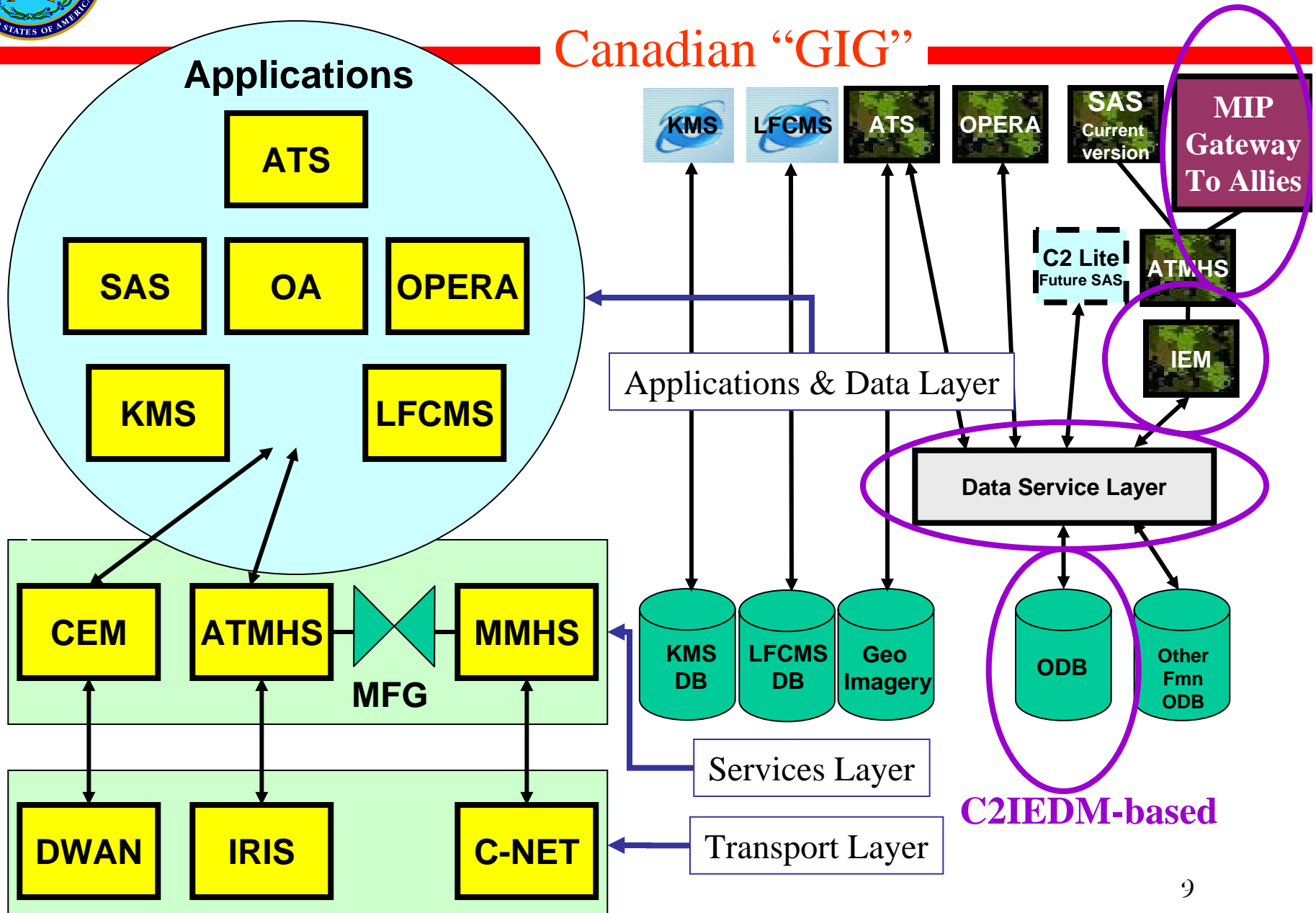
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DoD Net-centric Data Strategy

GIG IP-based Transport

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Joint Tactical Radio System (JTRS)
Global Information Grid –Bandwidth Expansion (GIG-BE)

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DoD Net-centric Data Strategy

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C2 Information Exchange Data Model: C2IEDM

Canadian Architectural Implementation

Canadian "GIG"

Applications

ATS

SAS OA OPERA

KMS LFCMS

CEM ATMHS MMHS

MFG

DWAN IRIS C-NET

KMS LFCMS ATS OPERA SAS Current version **MIP Gateway To Allies**

C2 Lite Future SAS ATMHS

IEM

Applications & Data Layer

Data Service Layer

KMS DB LFCMS DB Geo Imagery ODB Other Fmn ODB

Services Layer

C2IEDM-based

Transport Layer

ODB = (L)C2IEDM + ARM + OPERA + ATS

(L)C2IEDM ---   Core MIP Database
ARM   ---   ATCCIS Replication Model data
             ---   Metadata for integrity and replication
OPERA   ---   Planning Context
ATS   ---   Tactical Context

"Service" Extensions

"National" Extensions

LFDM

ODB

C2IEDM
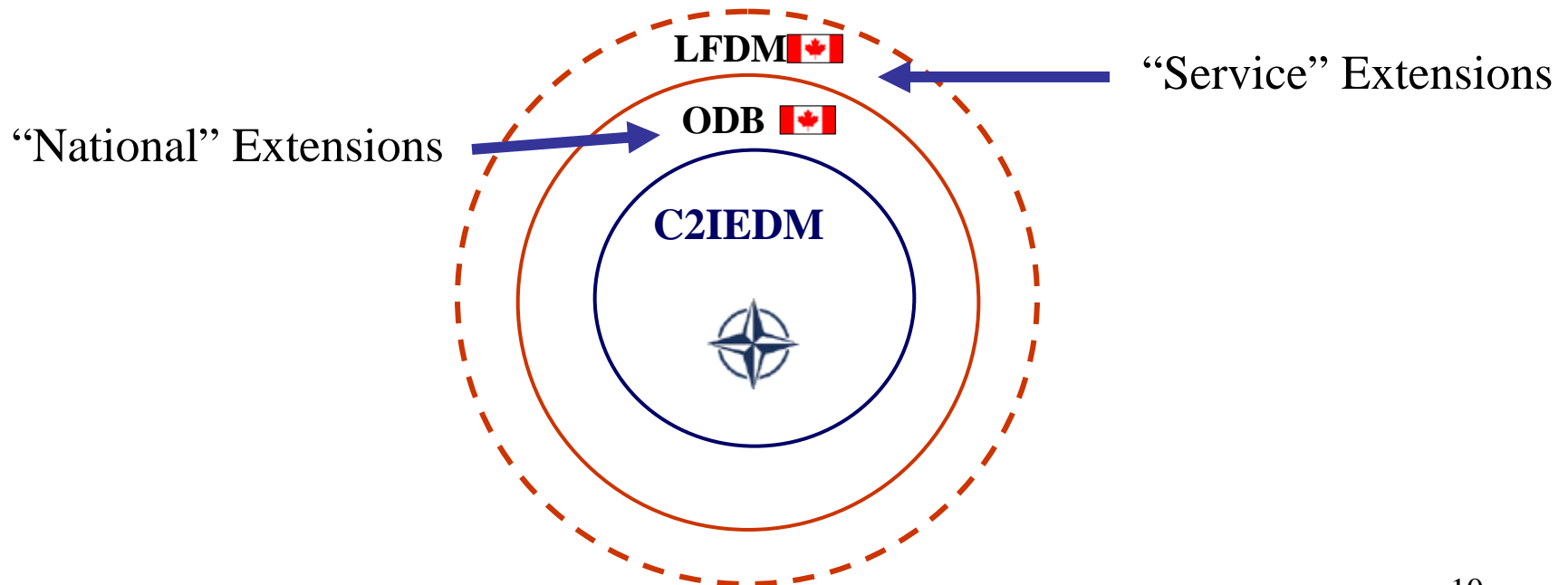
Ontologic Views of the Joint Battlespace

Other Complementary Tailored Views:
- Info Operations
- Support
- Intel

Situational Awareness View

Force Projection View

Common Language (JBMC2 Info on the GIG)

Force Readiness View

Joint Fire & Maneuver View

Air /Space Operations View

Deployability View

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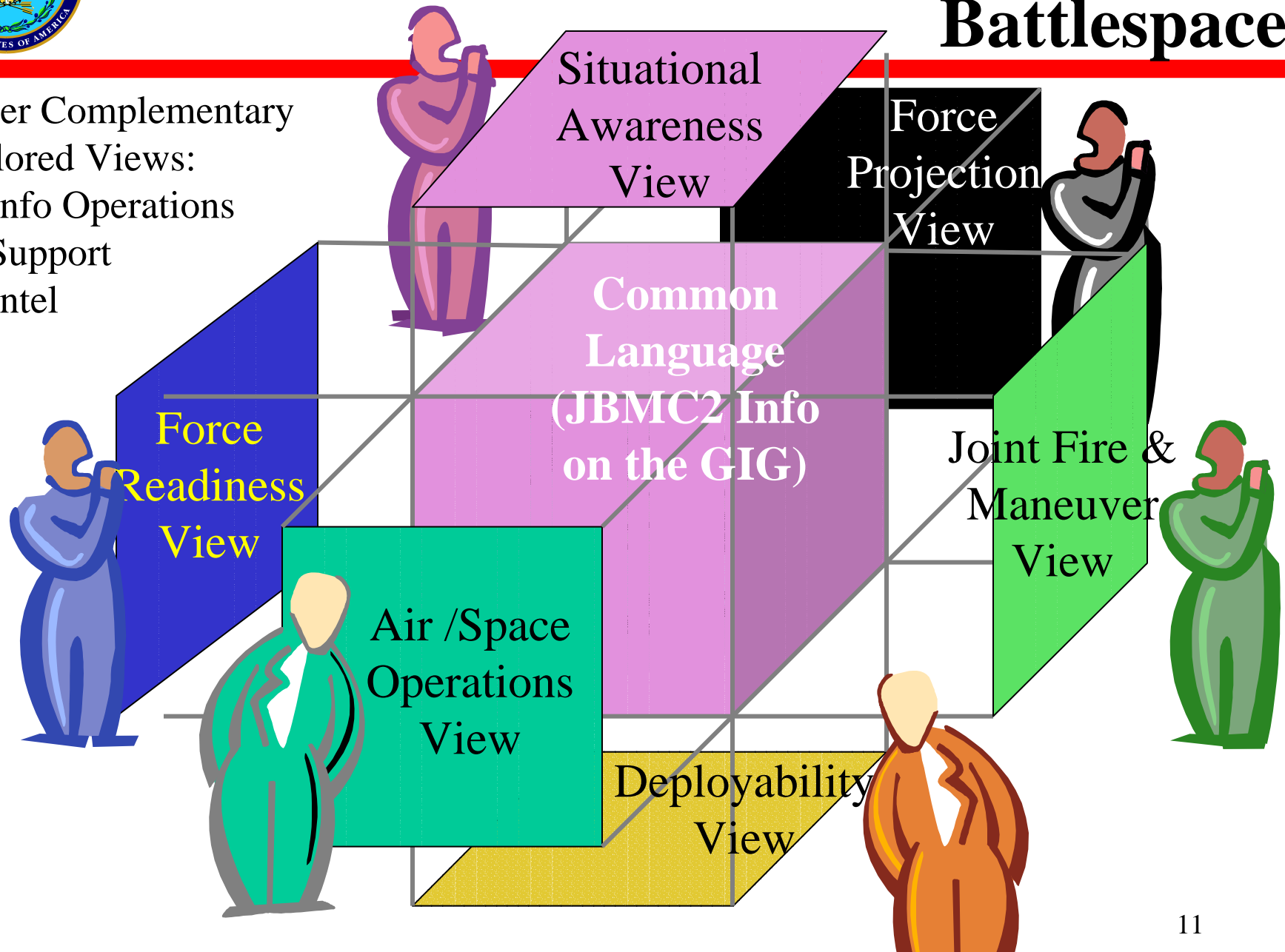
Information-Related Principles of GIG

Most Important Information-Related Principles of GIG:

1. Connect "islands of interoperability."
    (Page 1 of GIG CRD)

2. Base this interoperability on community of interest
    (COI) ontologies.
    (Page 15 of *DoD Net-Centric Data Strategy*)

3. Software agents will be used to find needed
    information.
    (Page 8 of *DoD Net-Centric Data Strategy*)

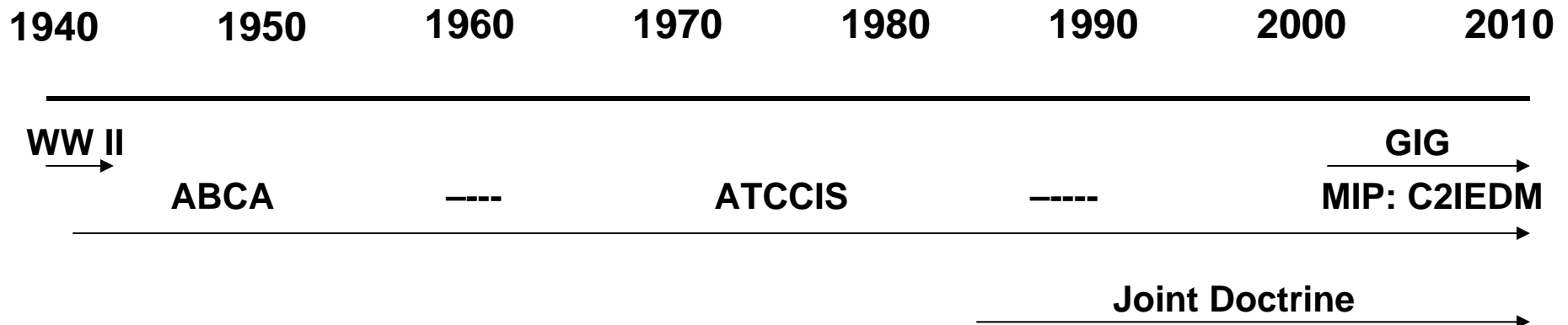Note: These principles underlie several long-running and
    successful DoD efforts.

What you can do

1. **GIG vision is sound, but FY 08 interoperability goal requires focus and full exploitation of available assets: JBMC2 challenges provide LEADERSHIP opportunities.**

2. **ACTDs and ACTD-related activities have already implemented capabilities based on GIG's information principles: continue your SUPPORT, help EDUCATE the users!**

3. **Implementation of GIG vision will require exemplars, hardware and software tools, doctrinal publications, and formal school graduates trained in the GIG's principles and TTPs: continue SUPPORT**

4. **Industry can lead by embracing the DoD Data Strategy Concepts and usability of the C2IEDM.**

Modern Interoperability / Sychnronization
Notable Programs Since Start of WWII

1940	1950	1960	1970	1980	1990	2000	2010

WW II →

GIG →

ABCA ----- **ATCCIS** ----- **MIP: C2IEDM** →

Joint Doctrine →

ABCA: Australian, British, Canadian & American Armies
C2IEDM: C2 Information Exchange Data Model

Considerations:

1. **Joint doctrine and similar efforts show that the first 4 or 5 years are often spent getting organized unless a leader promulgates and enforces a good vision.**

2. **The GIG efforts began with "Joint Vision 2010" and were formally documented with the approval of the CRD in July 2001. Data strategy was just published (2003), two years after the CRD, which indicates GIG vision is evolving, slowly.**

3. **Introduction of rifled-artillery technology by Prussians in 19th Century is example of rapid transformation that GIG needs to emulate if deadline is to be met.**

Program Schedule Sychnronization

GCCS-J/JC2/DJC2/NCES (with goal and no $ for JC2 until FY06)

80% Interoperability

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