10TH ICCRTS

THE TENTH INTERNATIONAL COMMAND AND CONTROL RESEARCH AND TECHNOLOGY SYMPOSIUM

**Network Centric Operations
Industry Consortium**

Keynote Address
Network Centric Operations:
Foundation for C2

*Lieutenant General Carl G. O'Berry, USAF (Ret.),
Vice President, Network Centric Architectures,
Boeing Integrated Defense Systems*

Network Centric Operations

… the Information Age transformation enabler

Interoperability Tools and Rules

- **Reference Models**
  - Defining & integrating architectures
  - Enabling networks and their integration on demand

- **Minimum Level of Interoperability (Necessity)**
  - Connect
  - Communicate
  - Register and Discover

- **Higher Capability Nodes and Network Integration (Sufficiency)**
  - Meeting operational needs on demand, wherever required
  - Enabling integration of many nodes for increased capability
  - Reducing operational costs and continuously improving effectiveness

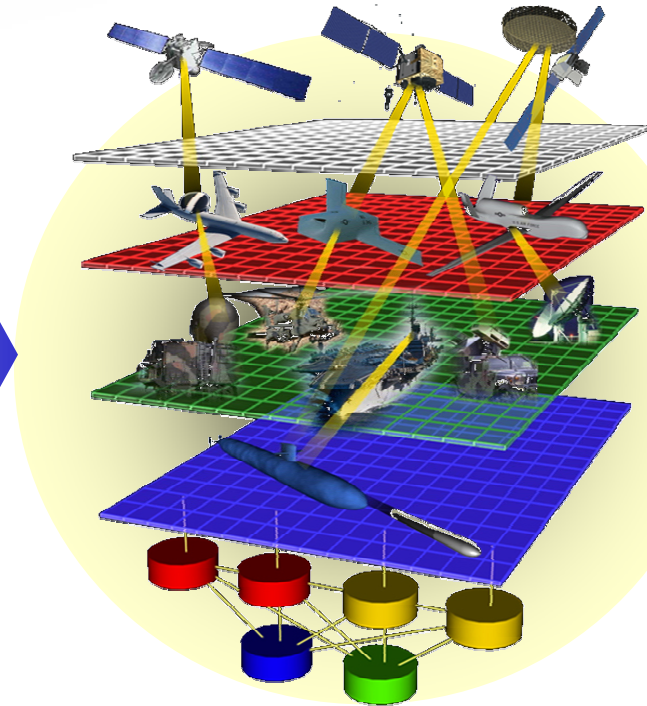# Advancement of Military Transformation Objectives

Today

Tomorrow

Fighters

Transport

Helicopters

Communication

Surveillance

Bombers

Command & Control

Launch

Weapons

Transformational Programs

Ground Missile Defense

Future Combat System

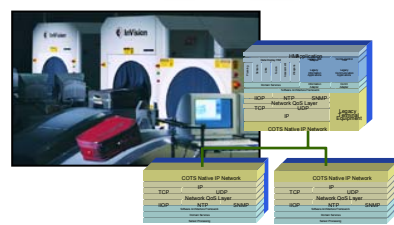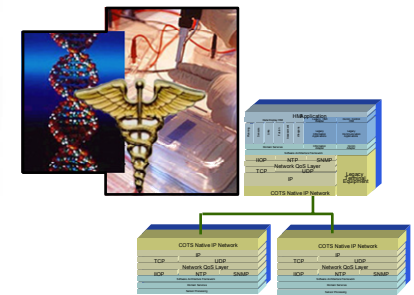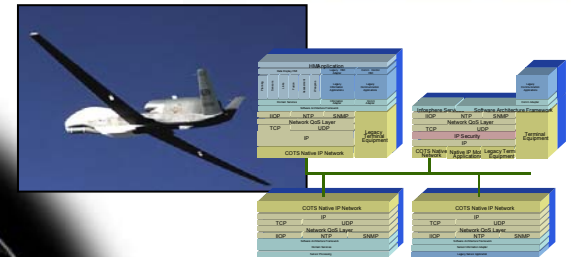Joint Tactical Radio System

FAmily of Beyond LOS - Terminals

Platforms Evolving to Integrated Systems

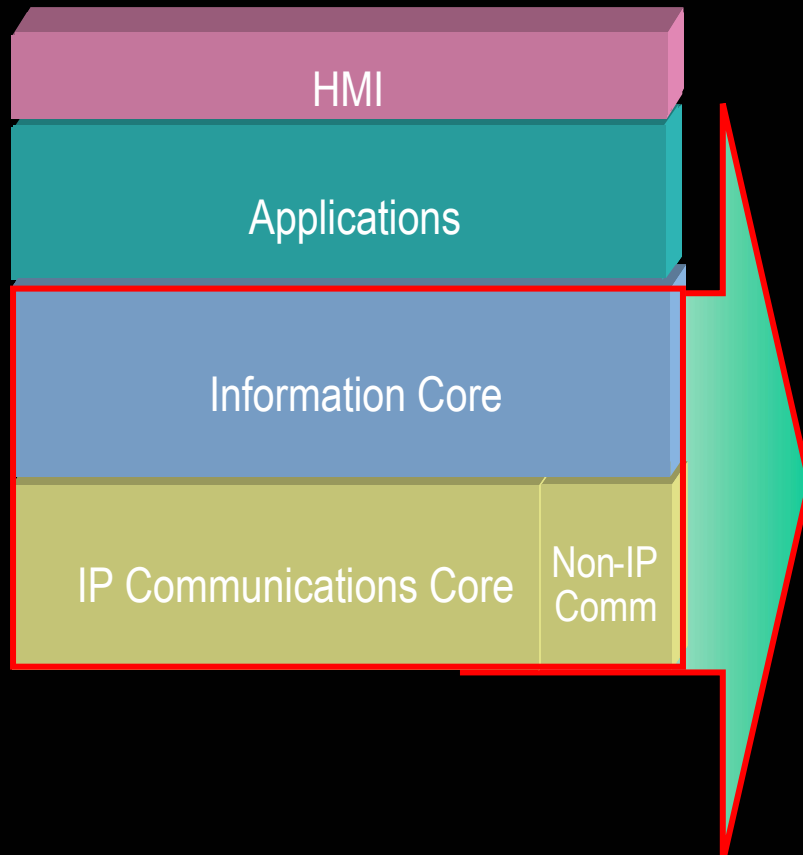# Advancing *Global* Interoperability

* **Products/platforms are shown here for informational purposes only.**
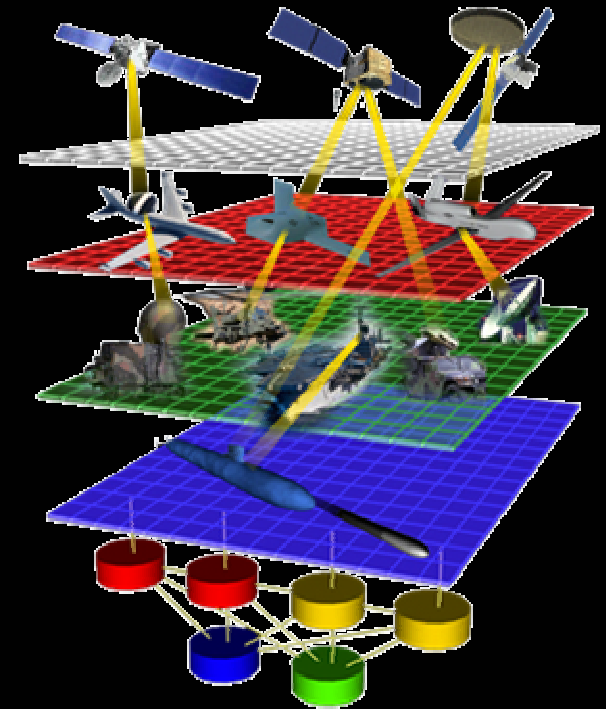
Industry's Role as an Enabler

- Keep emergent standards watch-list, impart common "DNA" in new products
- Employ best commercial technology & IT practices for both current and emerging capabilities
- Provide ad hoc infrastructure-enabling resources
- Collectively deploy and evolve effective infrastructure architectures

Network Centric Operations Industry Consortium (NCOIC)

HMI

Applications

Information Core

IP Communications Core

Non-IP Comm

NCOIC

Accelerate Interoperability in Systems that Serve Military, Homeland Security, Civil, and Commercial Users

Founding Members of NCOIC

NCOIC Members – June 2, 2005

Total Members: 72

Tier 1 Members (24)

- BAE Systems North America
- Boeing
- CACI
- Cisco Systems
- EADS
- EFW
- EMC
- General Dynamics
- Harris Corporation
- Hewlett-Packard
- IBM
- Intel Corp.
- ITT Industries
- L-3 Communications Integrated Systems
- Lockheed Martin
- Northrop Grumman
- Oracle
- Raytheon
- Rockwell Collins
- Saab
- SAIC
- Sun Microsystems
- Thales
- Themis Computer

Tier 2 Members (3)

- Alcatel Government Solutions
- Factiva
- Israel Aircraft Industries

Tier 3 Members (45)

- The Aerospace Corporation
- AeroVironment Inc
- Argon ST
- Ball Solutions Group
- Bay Microsystems Inc
- BearingPoint
- Camber Corporation
- CB Technologies
- Ciena Government Solutions
- Cryptek, Inc
- Crystal Group
- EDISOFT S.A.
- Engenio Information Technologies
- Ericsson
- Finmeccanica
- FlightSafety International
- Honeywell
- INDRA
- Innerwall
- Innovative Concepts, Inc
- Institute for Defense Analyses
- Johns Hopkins U. Applied Physics Lab
- Marconi Communications Federal Inc
- MBL International, Ltd.
- McDonald Bradley, Inc
- Microsoft
- MITRE
- Motorola
- Objective Interface Systems, Inc.
- PTC
- Real-Time Innovations, Inc
- Rheinmetall Defence Electronics GmbH
- SRI International
- RUAG Electronics
- SAP Labs, Inc.
- Sikorsky Aircraft
- Smiths Aerospace
- Software Engineering Institute/Carnegie Mellon University
- SPARTA, Inc
- SuprTEK
- Systematic Software Engineering A/S
- Terma A/S
- Wakelight Technologies, Inc
- West Virginia High Tech. Consortium Foundation
- Wind River Systems

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Major NCOIC Success Factor – The Customer Advisory Council

- Represents U.S. and allied government agency interests to the NCOIC in its pursuit of open systems applications through NCO.

- Advises NCOIC leadership on customer NCO/NCW issues, needs, requirements and direction

- Provides thought leadership to the Consortium in developing innovative concepts and strategic direction

- Encourages participation of NCO/NCW thought leaders, industry, and associated organizations with the NCOIC

- Encourages and leverages openness of communication at all levels of the Consortium

Current Advisory Council Composition

- **Dr. Paul G. Kaminski**   **AC Chairman**
- **LTG Steven W. Boutelle**   **U.S. Army**
- **VADM (USN Ret) Arthur K. Cebrowski**   **OFT**
- **Lt Gen (USAF, Ret) James R. Clapper, Jr.**   **NGA**
- **Mr. Bill Dawson**   **Intelligence Community**
- **Maj Gen Georges D'hollander**   **NATO HQC3S**
- **Dr. Vitalij Garber**   **OUSD (A, T, &L)**
- **Ms. Priscilla E. Guthrie**   **OASD (NII)**
- **Lt Gen William T. Hobbins,**   **U.S. Air Force**
- **Mr. Lee Holcomb**   **DHS**
- **VADM James D. McArthur, Jr.,**   **U.S. Navy**
- **Gen (USAF, Ret) James P. McCarthy**   **USAFA**
- **Mr. Arthur L. Money**   **At large**
- **Maj Gen (ret) Staffan Näsström**   **Swedish DMA**
- **Lt Gen Harry D. Raduege, Jr.,**   **DISA**
- **LtGen Robert M. Shea, USMC**   **JCS**
- **Maj Gen Ruud van Dam, AF Netherlands**   **NATO SACT**
- **LTG Robert W. Wagner, USA**   **JFCOM**
- **Dr. Dag Wilhelmsen**   **NATO C3 Agency**

Numerous Complementary NCO Consortia

NCOIF – discussion/study group

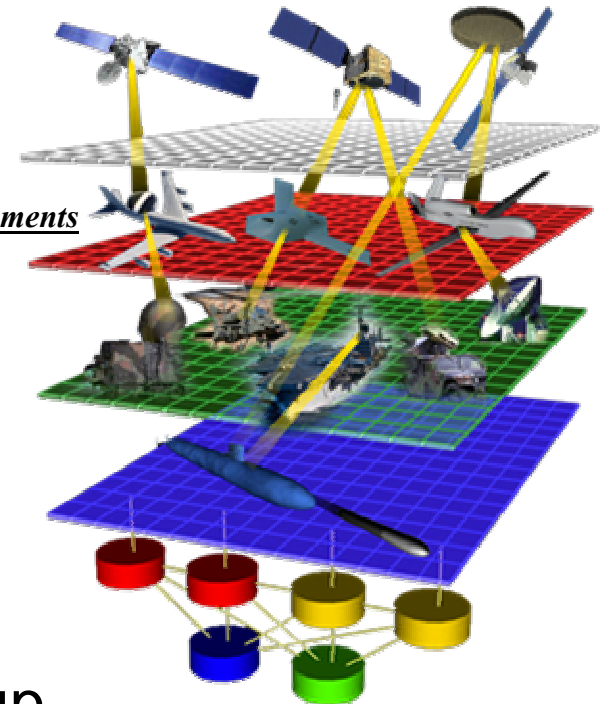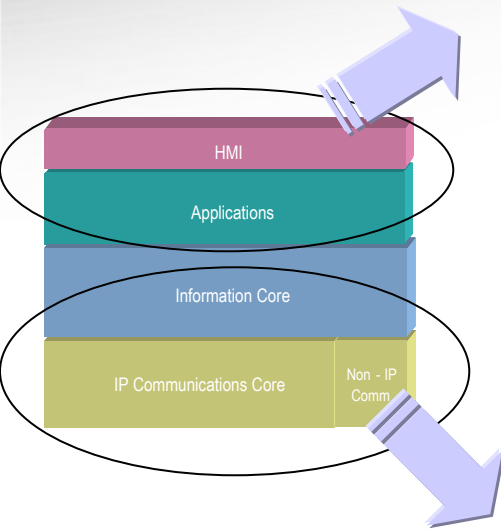*Impacts of net-centric operations*

AFEI – consensus group

Advance enterprise integration for industries and governments

W2COG – liaison to DoD for engineering groups

Harmonizing efforts to engineer an environment

NCOIC – engineering group

Information networks/platforms interoperability - Engineering interoperability

HMI

Applications

Information Core

IP Communications Core

Non - IP Comm

Vision for a Global NCO Environment

Space

Air

Terrestrial

Military

Commercial & Civil

Industry is involved, committed, and investing!