Open Forum for Standards Developers

ANSI
American National Standards Institute

Network Centric Operations Industry Consortium (NCOIC):
Industry working together with our customers to identify and evaluate existing and emerging open standards for Network Centric Operations

Bob Collet
Secretary, NCOIC
SVP, Engineering, Training and Logistics, SAIC

cooperation
collaboration
harmonization

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Agenda

- Network Centric Operations
  - Definition, Objectives and Attributes

- NCOIC
  - Vision and Value Proposition
  - Membership and organization
  - Deliverables
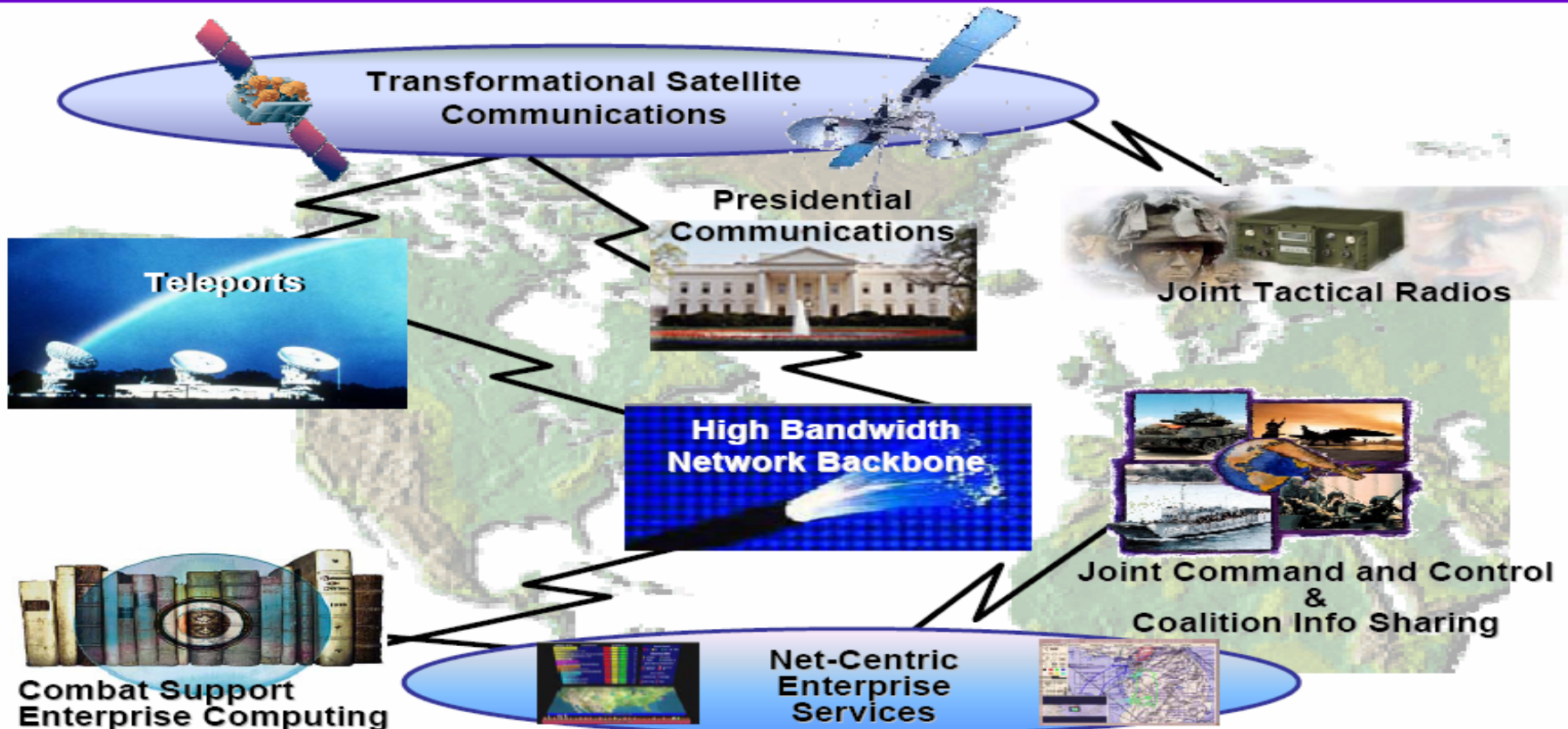 - Customer needs
  - Example

- Summary

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Network – Centric Operations

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Transforming to Net-Centricity

Transformational Satellite Communications

Presidential Communications

Joint Tactical Radios

Teleports

High Bandwidth Network Backbone

Joint Command and Control & Coalition Info Sharing

Combat Support Enterprise Computing

Net-Centric Enterprise Services

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NCOIC Vision
Collaborate on Interoperable Open Standards

- Vision:

Industry working together with our customers to provide a network centric environment where all classes of information systems interoperate by integrating existing and emerging open standards into a common evolving global framework that employs a common set of principles and processes.

- Our mission is to facilitate global realization of the benefit inherent in Network Centric Operations. To that end, we seek to enable continuously increasing levels of interoperability across the spectrum of joint, interagency, intergovermental, and multinational industrial and commercial operations. We will execute this mission in good faith as a global organization with membership open to all enterprises in quest of applying the vast potential of network centric technology to the operational challenges faced by our nations and their citizens.

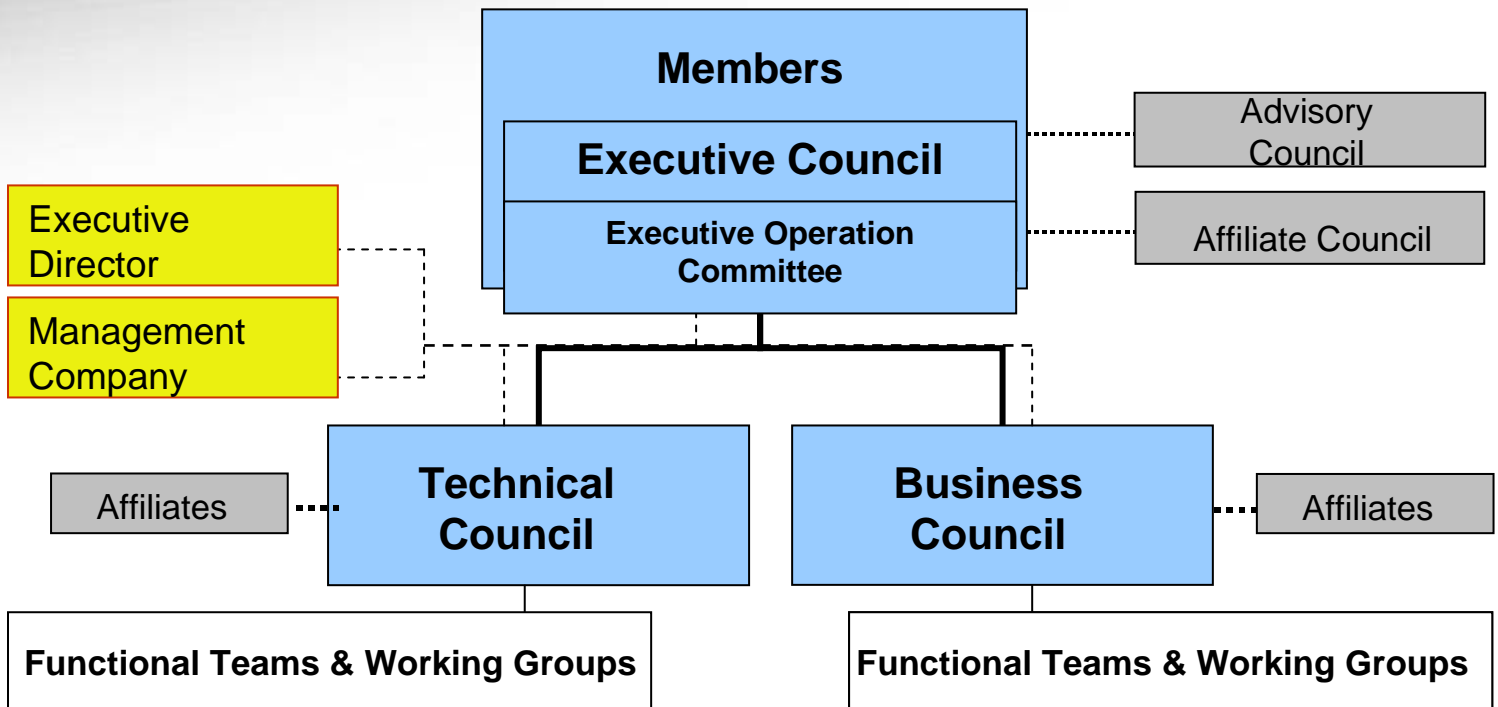**Approved for Release**

Consortium Value Proposition
Consortium Efforts Will…

- **Increase interoperability**
- **Lower Development Costs**
- **Improve Force Readiness**
- **Reduce Systems Cost and sustainability**
- **Reduce Development Risk**
- **Improve Force Effectiveness**

NCOIC Members

- Leading international aerospace, defense, IT systems, and professional services firms who have extensive experience with:
  - DoD
  - Intelligence Agencies
  - DHS
  - NATO
  - MoDs
  - International Law Enforcement Community
  - State/Provincial and Local Governments.
- New companies of all sizes, "think tanks" and academic institutions.
- Open:
  - Participation open to all,
  - Fair, equitable, and vendor-neutral processes,
  - Work based on relevant industry open standards and practices.

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Consortium Operations

Organizational chart:

- **Members**
  - **Executive Council**
    - **Executive Operation Committee**
- Advisory Council
- Affiliate Council
- Executive Director
- Management Company
- **Technical Council**
  - Affiliates
  - Functional Teams & Working Groups
- **Business Council**
  - Affiliates
  - Functional Teams & Working Groups

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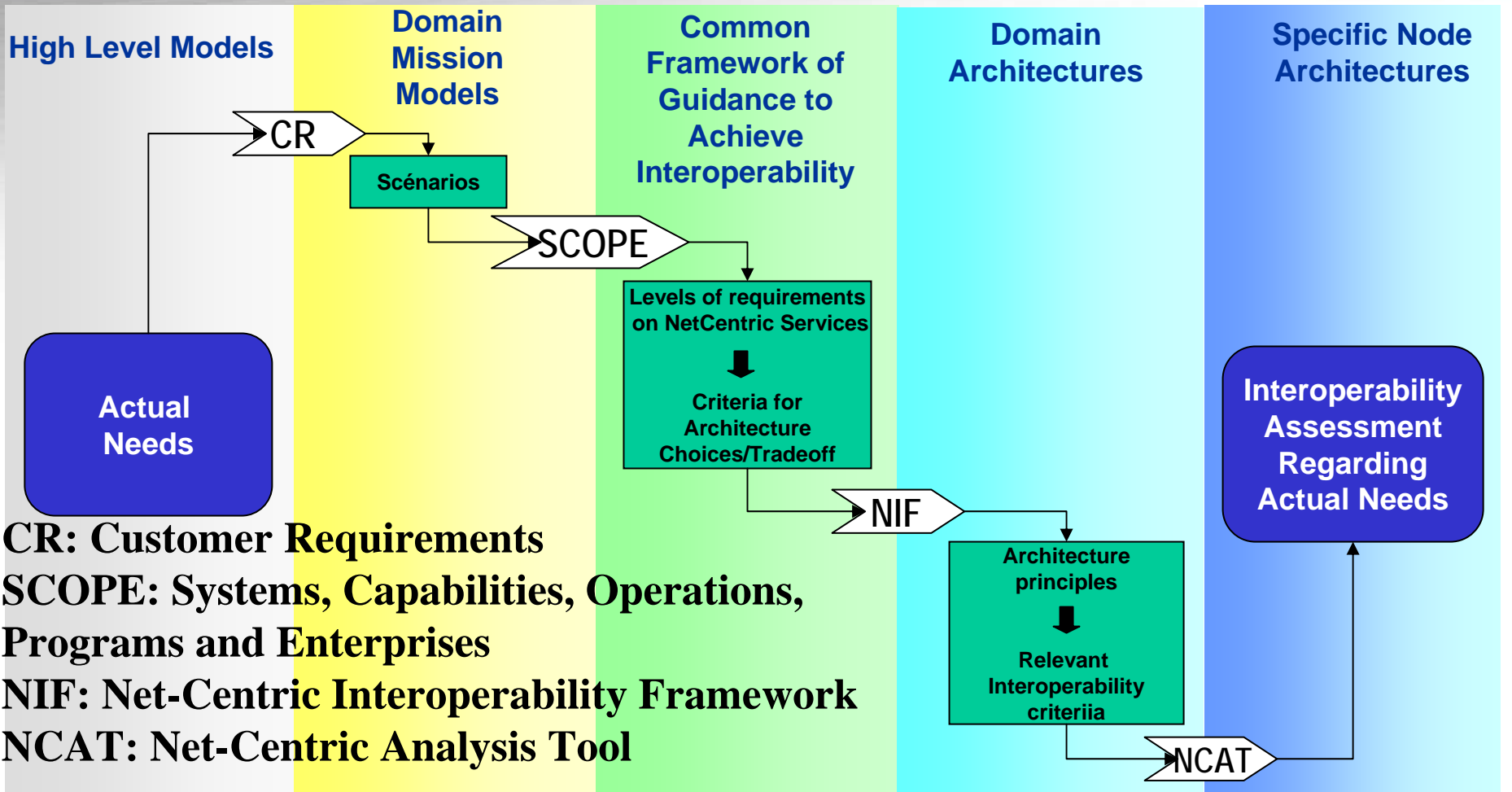
NCOIC / Government Interaction

- Advisory Council
  - Joint Executive Council / Advisory Council meetings
  - Australian and European country representation being increased
- Affiliation Relationships
  - OSD OFT
  - NATO ACT
  - W2COG/NPS
  - Emergency Interoperability Consortium (EIC)
- Cooperative R&D Agreements (CRADA)
- NCOIC participation in government activities
  - US Navy Open Architecture Review
  - OSD/NII Net-Centric Implementation Documents (NCID) Review
  - OFT and NDU Education and Outreach Initiatives
  - NATO C3 Board briefings, ACT NEC conference sponsorship/participation
- NCAT Tool approved for use by participants in
  - EUCOM-led Coalition Warrior Interoperability Demonstration (CWID)

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Consortium Technical Approach
5 "Parallel" Strategies - Helping our customers to:

- Complete a thorough and rigorous analysis of pertinent government agency architectures, capability needs, and mandated standards to identify commonalities, synergies, conflicts, gaps and potential areas for improvement.
  - **Customer Requirements Team**

- Develop a Systems Engineering framework to organize and relate the applications, data, and communication elements used by suppliers and system integrators to build and deploy interoperable NCO systems
  - Architectures and Standards Analyses Team

- Identify the widest possible community of standards-based product types
  - Building Blocks Team

- Develop a program for education for NCO
  - Education and Outreach Team

- To plan and implement strategies to develop effective collaborative engineering environments
  - Engineering Processes Team

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The Role and Value of the NCOIC

High Level Models	Domain Mission Models	Common Framework of Guidance to Achieve Interoperability	Domain Architectures	Specific Node Architectures

CR

Scénarios

SCOPE

Levels of requirements on NetCentric Services

⬇

Criteria for Architecture Choices/Tradeoff

Actual Needs

NIF

Architecture principles

⬇

Relevant Interoperability criteriia

NCAT

Interoperability Assessment Regarding Actual Needs

CR: Customer Requirements
SCOPE: Systems, Capabilities, Operations, Programs and Enterprises
NIF: Net-Centric Interoperability Framework
NCAT: Net-Centric Analysis Tool

The NCOIC Tools work together to assist in achieving interoperable systems

Advisory Council's Top Needs

1. Improved standards for waveforms software defined radios
2. Improved standards for network management
3. Improved standards network security
4. A complete understanding of how convergence of voice, video, and data affects reliability and survivability
5. Improved quality of service standards
6. Emerging standards for security at the data level
7. Video-streaming standards used in command centers
8. Understanding of standards for multiple domain processing.
9. Modeling and simulation frameworks and standards

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Topic 8: Multiple Domain Processing

- Semantic Web Standard for Semantic Domain Knowledge Representation

- Interoperability Serialization

- Semantic Web standard for individual domain data element definitions

- Clear set of standards defining different levels of semantic interoperability for business processes, web services, and domain data

- Common standards defining languages for representing metadata about services and data to enable discovery, access, and interoperability in a web architecture model

- Common Multi-agent protocol standards to enable dynamic negotiation and subsequent collaboration of software agents in different COIs with compatible domain knowledge

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Topic 8: Multiple Domain Processing (Con't)

- Common Peer to Peer protocol standards to enable distributed agents to discover each other, dynamically configure their networks, and negotiate collaborations for sharing information and tasks commitments

- Common standards for directory information structures, and multiple metadata profiles for data and services

- Common language standards for policy based business processes controlling distributed task collaborations, access to services and sharing of information

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Logistics COI Example: DoD's Supply Chain

Goal: Vertical and Horizontal Interoperability and Composability

- Architecture Views (e.g., DOD Architecture Framework)
- Use Cases in UML and SYSML
- WS-I profiles use
- Metadata to describe services
  - Web Services Description Language (WSDL): Message formats and interactions
  - WS-Policy: Interoperability at the higher-level functional operation of the service

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Logistics COI Example:
DoD's Supply Chain (Con't)

- Scope the content of the shareable services (among partners) using Universal Description and Discovery Interface (UDDI)
- Business Process Transactions
  - Task and outcome coordination
  - Business Process Execution Language (BPEL)

OUTCOME:
  - An open, scalable, loosely coupled, composable (dynamic binding) multi user and multi provider transactional supply chain
  - Re-usable service components
  - Feedback to Standards organizations, e.g., W3C, WS-I

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Summary

- The Consortium Is:
  - Focused: Our sole purpose is to partner with governments to enable transformation through NCO.
  - Dedicated to outreach and education to make identified architectures, open standards, and best practices widely available to government & industry.
  - Open: Across Industry, Across Borders
- Comprised of Members of the Production Chain:
  - Ultimately responsible for creating the NCO Solutions,
  - Uniquely capable of affecting true change in the production chain.
  - Highly Inclusive – Industry, Academia, Government.
- The Consortium Is Not:
  - A Replacement of or Competition to Government Forums and Standards Organizations
  - Closed to Non-Traditional Industry Partners.

www.ncoic.org

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