국방 정보화를 위한 네트워크 중심 작전 (Network Centric Operation) 솔루션 및 프레임워크

- Transforming The Business of Defense and Security

IBM’s Approach to SOA based NCO
The Defense & Security Enterprise - required to support an ever-widening range of mission types:

- NATO, EU, Coalition Organizations
- Ministries of Defence
- Intelligence Agencies
- Custom, Ports, Borders
- Homeland Security Departments
- Police, Emergency Services

Defence

Security
Convergence in the Defence & Security Requirements

Requirements overlap - all have need for:

- Agility, Agility, Agility - Mission and Systems
- Shared situational awareness
- Command and Control of distributed assets and resources
- Inter agency collaboration
- Legacy system integration
- Data management and fusion of multiple data sources
- Intelligence activities including Identity and relations resolution and data mining
- Security on and monitoring of their networks

Mission Overlap – most are tasked to execute and sometimes share in:

- Border patrol / Immigration
- Peace keeping
- Disaster and Crisis Management
- Intelligence
- Public safety and Security
Agile, End to End Information Integration & Interoperability
Across Defense & Security Enterprise – *out to the edge*

**Static domain**
- (Joint) HQ’s
  - Situational awareness
  - Aerospace management
  - Decision support
  - Document management
  - Collaborative tools
  - HRM
  - Financial
- Hospitals
- Training sites
  - Simulations
- Schools
  - Simulations
  - e-learning
- Logistical installations
- ERP
- Situational awareness
- Governemental organizations
  - Political
  - Support
- Non-governmental organizations
  - Industry
  - Hospitals
- Research
  - R&D
  - Operations support
- International (coalitions, etc.)
  - Situational awareness
- ICT infrastructure
  - Security
  - Management

**Semi-static domain (relocatable)**
- Command posts
  - Situational awareness
  - Common OP picture
  - Decision support
  - Document management
  - Collaborative tools
  - Operational HRM
  - Operational financial
- Ships
- Deployable airstrips
- Points of debarkation
  - ERP
- Situational awareness
- Local military government
- Field hospitals
  - Situational awareness
- Local installations
  - EPP
  - Situational awareness
- Local government organizations
- Local non-governmental organizations
- Coalition partners
- Training
  - e-learning
  - ICT infrastructure

**Mobile domain**
- Command posts
  - Situational awareness/COP
- Ships
- Planes
- Vehicles
- Weapon platforms
  - Situational awareness
  - Link protocols
- Sensor systems
- Helicopter landing area
- Logistical installations
- Mobile hospitals
- Specialized
  - Situational awareness
  - Training
  - e-learning
  - Private communications
  - ICT infrastructure
  - Communications
    - Networks
      - Management
      - Security
      - Radio silence

Source: IBM Institute for Business Value.
Network Centric Operations (NCO)

- A robustly networked force improves information sharing (the new source of power)
- Information sharing enhances the quality of information and shared situational awareness
- Shared situational awareness enables collaboration and self-synchronization, and
- enhances sustainability and speed of command & decision making process
- These in turn dramatically increase mission effectiveness
- Public safety, security and military organizations ALL have NCO based requirements
Challenges in Meeting Capability Requirements

- The need to change is a constant – despite financial constraints
- Cost drivers and complexity require use of legacy systems
- Existing integration methods do not readily support constant re-engineering
  - Inflexible, poorly documented
  - Time consuming to do, and to redo
  - Too many interfaces are required to achieve the desired results
  - Very costly
- Organisational, and human factors and Doctrine must be addressed
- Doctrine, processes and procedures are not closely linked to IT capabilities - Defining what to do and where to start is the key issue – how DOES IT link to the mission needs and the operational processes?
Realizing The Defense & Security Enterprise Mission requirements and overcoming challenges

- **Defence**
  - NATO, EU, Coalition Organizations
  - Ministries of Defence

- **Net Centric**
  - Intelligence Agencies

- **Security**
  - Customs, Ports, Borders
  - Police, Emergency Services
  - Homeland Security Departments
Realizing The Defense & Security Enterprise Mission requirements

- Mission Agility & Flexibility
- Interoperability
- Shared Situational Awareness
- Collaboration
- Rapid decision making

Net Centric

IOD
- Integrated Information
- Data Mining and management
- Information Sharing

SOA
- Legacy System integration
- System Agility and Flexibility
- Operational processes aligned with Mission Systems
Just transforming technology/systems will not deliver SOA based NCO – a Transformation across the enterprise is required.

**Warfighting Benefit of Information Sharing**

- **Digital Information Sharing**
  - Communicating & sharing information via voice
  - Networked organisation can share digital information: E-Mail, Web Chat, 9 Line Messages
  - Data is integrated and its integrity is assured

- **Application Integration**
  - Applications are integrated information can be shared seamlessly: eg. Common Operational Picture

- **Data Integration**

- **Process Integration**
  - Successfully employing new processes and organizational/cultural concepts
  - Innovating and experimenting with new processes and organizations

- **Process/Org. Innovation**

- **New Enterprise Deployment**
  - Changes to Doctrine

**Innovation in:**

- **Leadership**
- **Personnel**
- **Training**
- **Organisation**
- **Doctrines P,T,T&P**

**Technology Innovation**

- **‘Social & Cognitive’ Transformation Required to move beyond this point**

Adapted from: OFT
Typical starting Point

Actual system architecture encountered in engagement with an IBM client
### The Challenge: Business and IT Alignment

#### Business Pressures:
- Deploy new and innovative services
- Shorter change cycles
- Customized systems for Defence

#### IT Constraints:
- Complex processes and systems
- Complex applications and interfaces
- IT budget priorities on maintenance, not new investments

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**Medical**
- Defence Clients
- Channels

**Personnel**
- Logistics Suppliers
- 3rd Party Providers
A New Approach is needed to extend and enhance existing capabilities and unleash more operational capability and value – *out to the edge*

- Make it easier to blend IT systems and combine best-of-breed capabilities into new solutions
- Focus on making business processes dynamic, flexible and unique rather than simply automating them
- Consolidate duplicate functionality and fill missing gaps in operational capabilities incrementally without IT systems "rip and replace"
IBM is developing the Integrated Solution Model

**Traditional, Labor-based Consulting**
- Common methodologies and generic tools for any industry or solution
- No industry-specific materials and assets

**Open Tool Box Approach**
- Primarily a labor-based engagement with no single prescribed set of assets for the solution
- Assets and materials may span disparate business, application and technical architectures

**Integrated Solution, Pre-defined SOA Vision**
- Combination of labor-based engagement and pre-built SOA assets to provide a differentiated solution
- Solution based on aligned and integrated architecture, methods, tools and SOA assets
NCO SOA Roadmap - What's Unique?

A construct for delivering mission capability and value

- **End-to-end** SOA solution from mission requirements and business strategy to operating model, based on a flexible SOA Foundation infrastructure

- Starts at capability requirements, and rapidly converts down into **innovative solutions**

- Helps to continuously align operational requirements and IT to provide ongoing flexibility and responsiveness - **AGILITY**

- Create innovative **best-of-breed** solutions based on differentiating pre-built SOA assets from IBM and partners at each level of the solution stack

- **Mitigate project risk** through incremental deployment and IT asset reuse
Government Integrated Solutions
A construct for meeting requirements & delivering Industry value

Integrated SOA Solution

IBM and Business partner Content Solution Offerings

Industry Thought Leadership
SOA & Government Thought Leadership
Business Services and Partner Content

Framework

SOA Foundation with Industry Extensions

SOA Foundation
Industry Models & Assets
SOA NCO Roadmap is built on an Flexible Framework

What is an IBM industry framework?

Industry-specific platform, based on SOA principles, comprising the core use cases for the specific mission area, and the SWG middleware, SOA assets, business services and Business Partner offerings to implement the core use cases.

- Flexible, scalable and open integration and collaboration architecture
- Addresses both business and technology by organizing the business processes and functions across an extended value chain
- Delivers offerings and technology from IBM and its Business Partners to implement business processes that improve innovation
  - Pre-built use cases
  - Application integration with ISVs
  - Portals
- Exploits market-leading IBM SOA Foundation products
  - SOA-based business integration platform offering full suite of integration capabilities
  - Maximum reliability, availability and scalability
Focus on Framework: SOA Industry Framework overview

SOA Foundation with extended industry models & Assets

Models & Asset Examples

- Research
  - Tales
  - Translation
  - Dispatcher
  - Data Models
    - C3IEDM
    - NEIMS

- IP & Bundles
  - Trusted ID
  - Intel Bundle
  - CCES
  - APA
  - “Glue code”
Focus on Framework & Foundation
Why should operators care about underlying Framework & foundation?

Maps to NATO NECS
Focus on Framework & Foundation
Why should operators care about underlying Framework & foundation?

Maps to US DoD GIG

Transforming the Business of Defence & Security
Focus on Framework & Foundation
Why should operators care about underlying Framework & foundation?

Supports MIP
Focus on Framework & Foundation
*Why should operators care about underlying Framework & foundation?*

Supports Intelligence Cycle with Information on Demand
Focus on Framework & Foundation
Why should operators care about underlying Framework & foundation?

Microbroker technology supports sense & respond logistics, Situation awareness – to the edge
Focus on Framework & Foundation
Why should operators care about underlying Framework & foundation?

Supports Multi-Link capability and COP out to non TDL capable units
Focus on Framework & Foundation
Why should operators care about underlying Framework & foundation?

- Mission Agility & Flexibility
- Interoperability
- Shared Situational Awareness
- Collaboration
- Rapid decision making
Questions?

Next: Selected NCO Solutions – Tactical Data Links
Tactical Messaging Interoperability Hub (TMIH)