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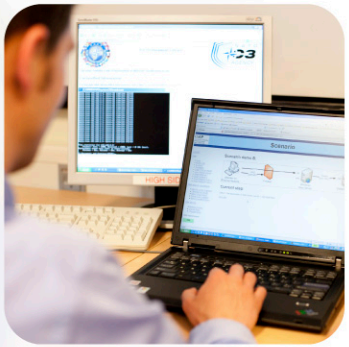
Enterprise Architecture in NATO C3 Agency

Integrated EA Conference

London 6-7 March 2012

David Burton
Chief Technology Officer



"Driving capability effectiveness, coherency and efficiency across the NATO C4ISR enterprise".

The Role of CTO

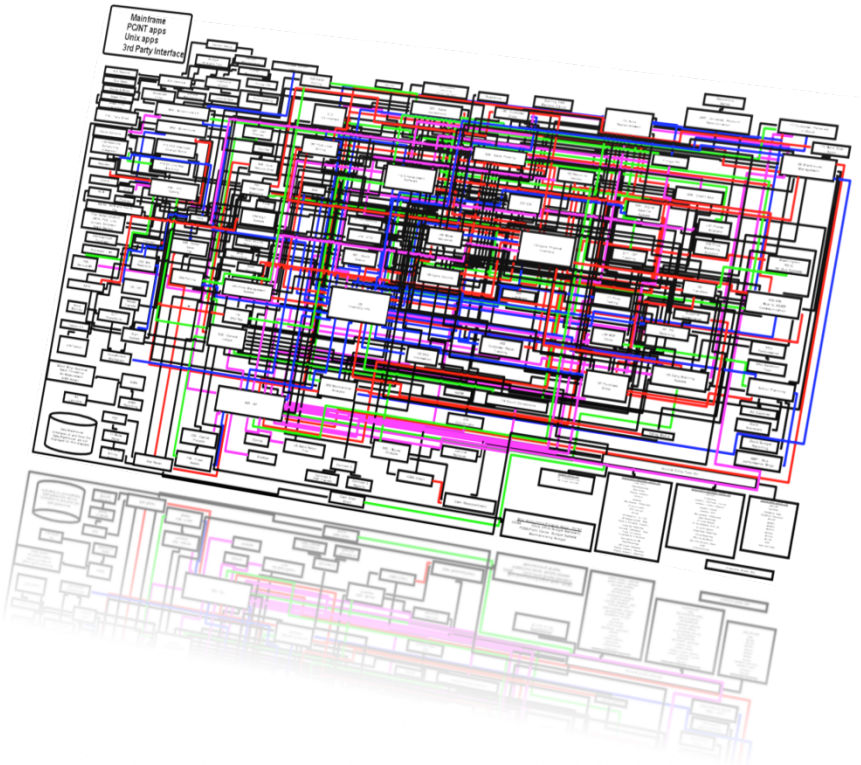
- Drive the agenda for improved interoperability
- Adopt a ‘system of systems’ approach
- Establish a CTO as NATO’s Technical Design Authority
- Provide overarching technical guidance
- Improve alignment of national and NATO programmes
- Encourage innovation opportunities

What Does This Achieve?

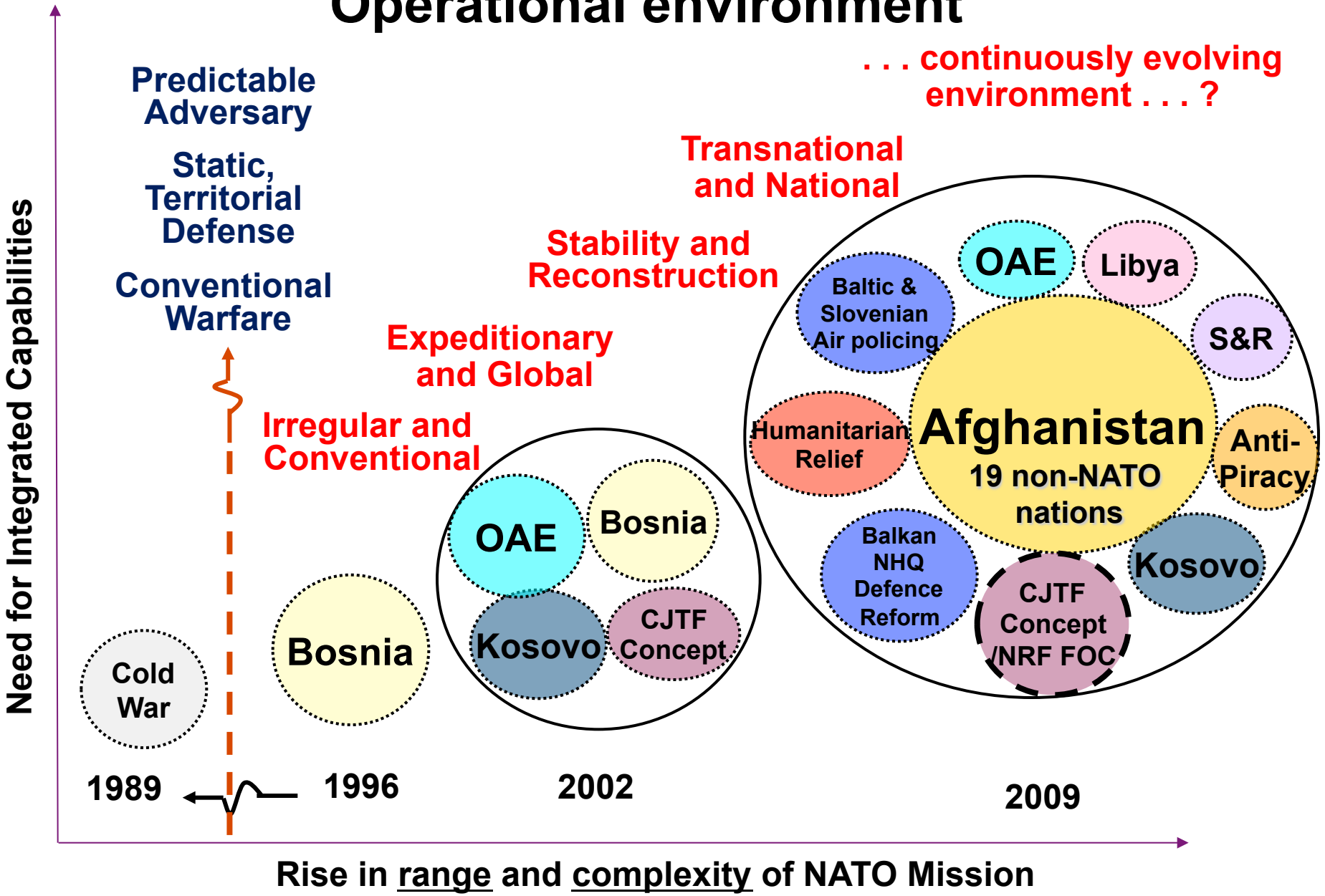
- Increases **effectiveness**
  - Meets the needs of the war fighter
- Improves **efficiency**
  - Reduce programme lifecycle costs
- Improves **coherency**
  - Ensures interoperability and capability reuse

C4ISR - Challenges

- **Legacy**
  - Accidental architecture
  - Close coupled technology and process
- **Complex environment**
  - 28 Nations
  - Capability Segmentation
  - New Strategic Concept - Vision
- **Governance**
  - Architecture
  - Prioritisation
  - Link to business outcomes
- **Cyber threats and New Technologies**



Operational environment



Future Mission Network – *the problem just got bigger!*

- **New Strategic Concept:**

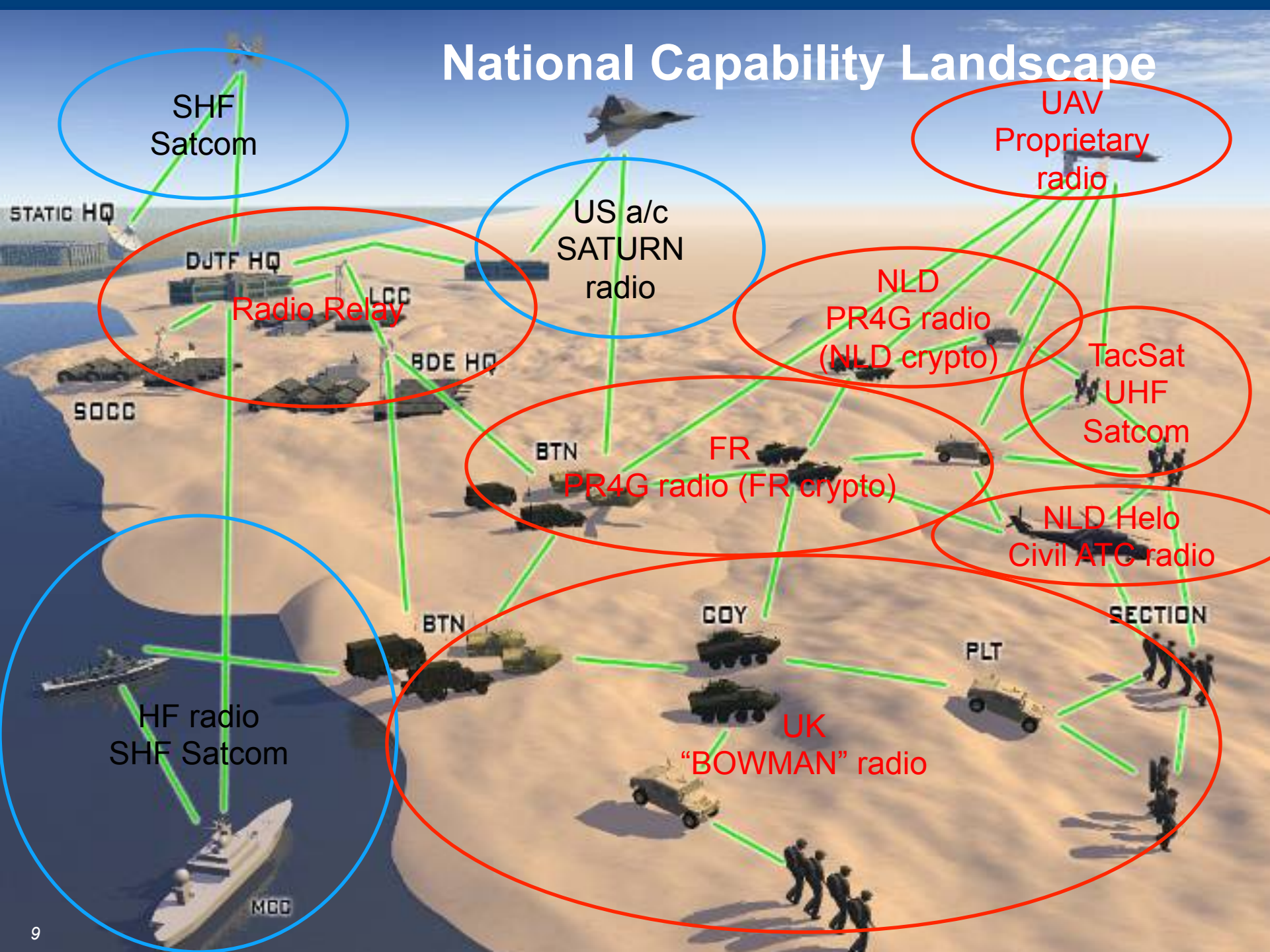
- Shift from defence to security
- Wider numbers of actors
- Responsiveness to new missions
- Increasing scope of activities
- More concurrent activities

NATO Network Enabled Capability (NNEC)

Not just about technology!

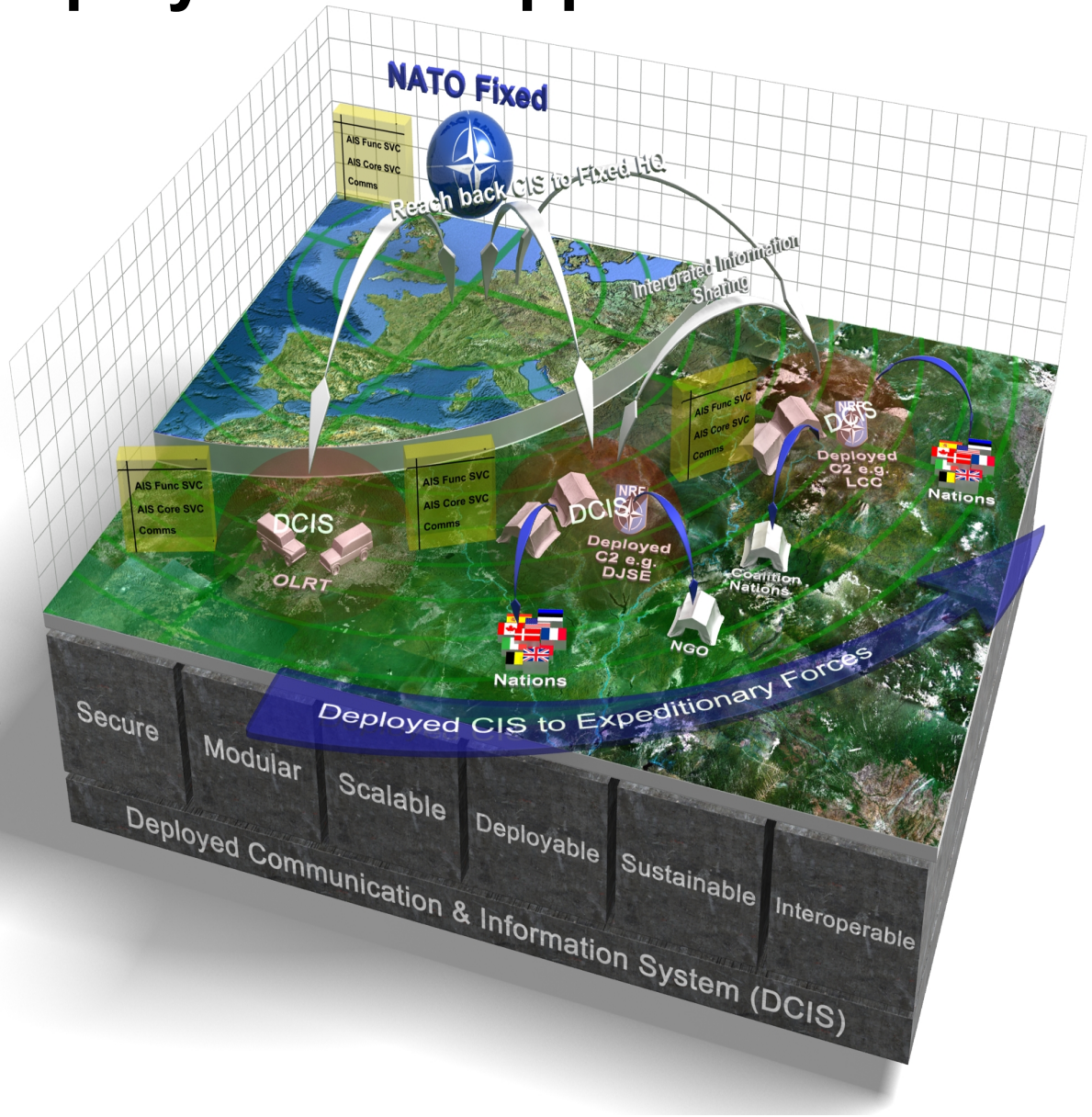
- Interoperability - a Force Multiplier
- Afghanistan Mission Network - Information sharing default
- Dimensions of NNEC:
  - People
  - Processes
  - Information

National Capability Landscape



NATO Deployed CIS support

- **NATO provides:**
  - Support to strategic and deployed operational HQs
  - Interface between NATO and National systems
  - The ‘glue’ to enabled information exchange between systems
  - Governance across operational deployed systems in theatre



Lessons Learned from ISAF

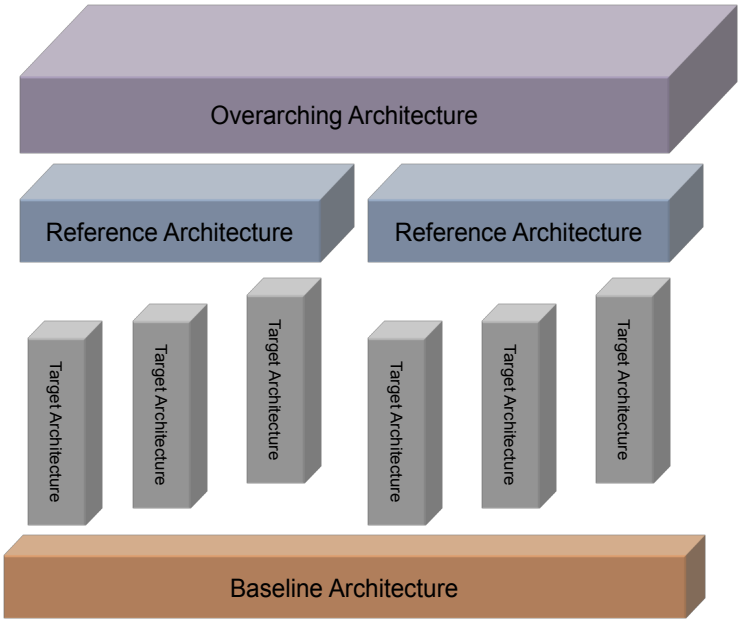
- NATO software acquisition processes lack agility
  - Not designed to meet urgent operational requirements
  - Leads to use of prototypes and national products
  - Technology struggling to keep up with operational needs
- Focus remains on systems – E2E capabilities
- No big picture!
  - No single overarching vision or roadmap
  - No single governance construct
  - Lack of alignment between nations and NATO
- Inadequate operational testing capabilities
  - Theatre becomes the test bed!

Strategies - Dealing with the Challenge of Complexity

- **Enterprise Planning**
  - Architectures
  - Design Principles Standards (SOA)
  - Rationalisation and Consolidation Agenda
  - Importance of vibrant Communities of Interest (CoIs)
- **Dealing with Uncertainty**
  - Change Management Culture
  - Battle Labs
  - Apps Store

NATO Enterprise Planning – Lessons Learned!

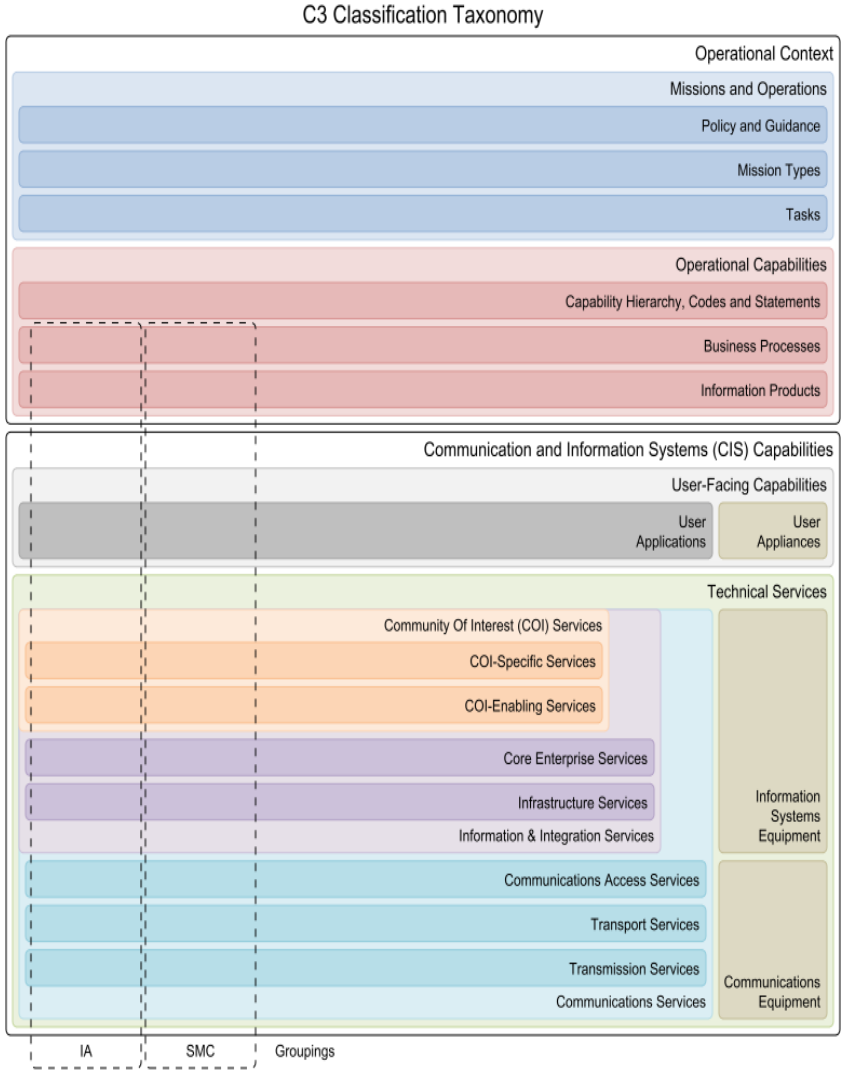
- Enterprise Architecture - vital to support strategic investment decisions and understanding boundary interfaces
- However - NAF approach sought comprehensive and detailed expression of the NATO enterprise
- Approach too complex
  - difficult to understand and use!
  - lacked buy-in and lacked on-going funding



C3 Classification Taxonomy

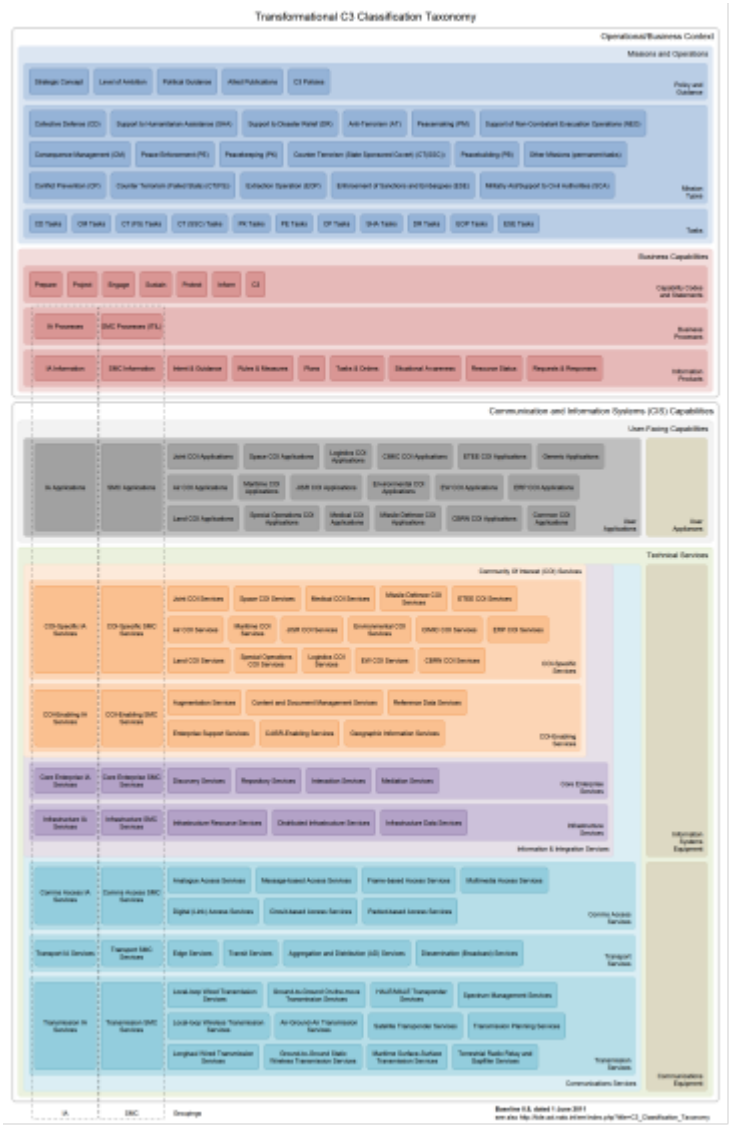
- **Purpose**
  - Support delivery of coherent C3 capabilities to NATO
  - Facilitates practical and pragmatic implementation of NNEC
  - Improve communication across planning domains and organisations
  - Simple lens for “as is”, “as programmed” and “to be” analysis

- **Status**
  - Baseline 0.9: 5 Dec 2011
  - Plan to issue Baseline 1.0 after including input from nations

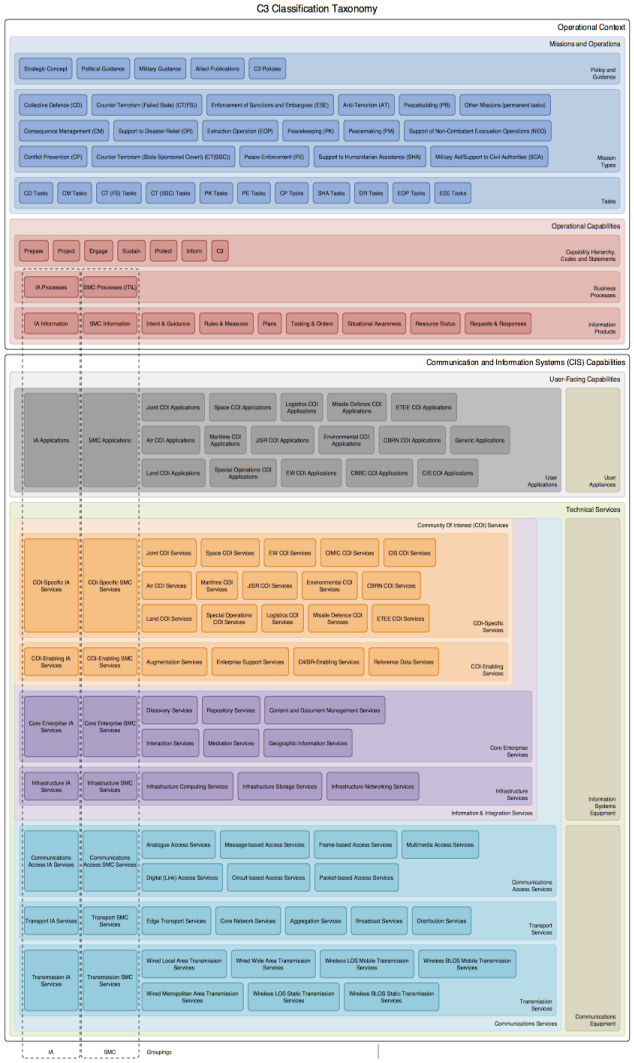


C3 Classification Taxonomy – Toward an EA

- Taxonomy now widely embraced in NATO
- Links Business areas to technical services
- On-going work on reference architectures
  - Air C2, Land C2, Maritime C2
  - JISR, Logistics
  - Information Integration
  - Communications
- Basis for Enterprise Architecture



Enterprise Architecture



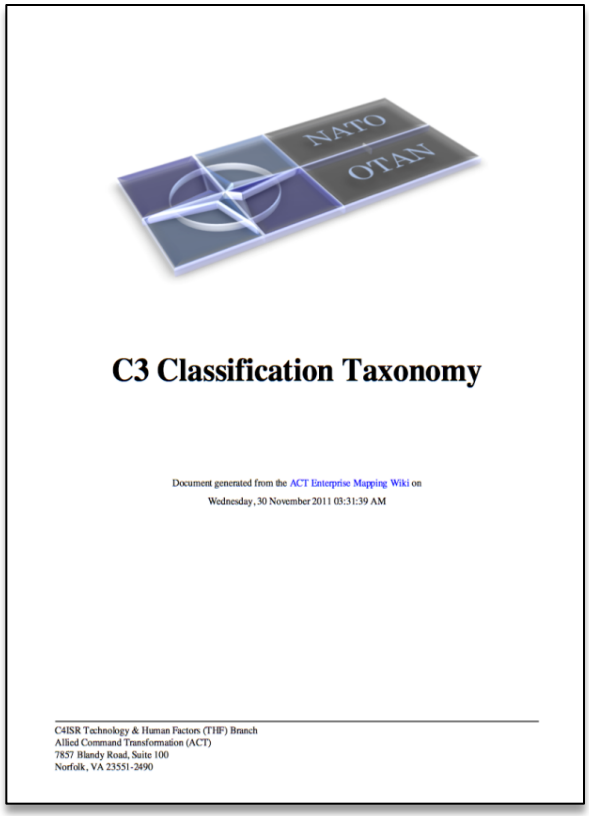
Operational Context

User Applications

+

Technical Services

40 Page Report



C3 Classification Taxonomy

Document generated from the ACT Enterprise Mapping Wiki on
Wednesday, 30 November 2011 03:31:39 AM

C4ISR Technology & Human Factors (THF) Branch
Allied Command Transformation (ACT)
7857 Blandy Road, Suite 100
Norfolk, VA 23551-2490

Main Page

Welcome to the TIDE **Enterprise Mapping** portal. This Wiki was setup to develop, maintain and disseminate simple yet powerful mapping products that semantically categorize and link information from operational, transformational, implementation and support taxonomies. Operational planners, program and project managers, capability implementers, researchers, experimenters and support organizations should use this Wiki to develop a better understanding of the complex relationships between various aspects of NATO and National NNEC programs. Please follow the appropriate link on the right to enter our woven web of knowledge.

News

- 15 November 2011 - Added Resource Requirement Impact Statements (RRIS)
- 14 November 2011 - Added NC3A Program Management Plans (PMP)
- 17 July 2011 - Updated Mission Types and created semantic links to Generic Planning Situations (GPS)
- 18 June 2011 - Added Capability Hierarchy Framework (CHF)
- 30 May 2011 - Added Generic Planning Situations (GPS) and Mission Type Papers
- 10 May 2011 - Restructured Wiki to better match emerging C3 Classification Taxonomy
- 10 May 2011 - Imported new Information Products list
- 5 May 2011 - Add more Automatically Generated Reports
- 28 March 2011 - Added Capability Codes and Statements

More...

Users

- Introduction
- User Manual
- Generated Reports

Entry Points

- C3 Classification Taxonomy
- Mission Types (MTs)
- Key Tasks (KTs)
- Capability Hierarchy Framework (CHF)
- Capability Codes (CCs)
- Capability Statements (CSs)
- Information Products
- Applications
- Services
- Standards & Profiles
- Implementation Programs
- Fielded Capabilities
- References
- More Taxonomies...

Contributers

- How To Contribute
- Proposed Edits
- Generated Reports
- Interface Points
- Portal Design

navigation
- Main page
- Recent changes

help
- User Manual
- Contributor Manual

taxonomies
- C3 Classification
- Applications
- Services
- Standards
- Programs
- References
- Others...

search
Go Search

toolbox
- What links here
- Related changes
- Upload file
- Special pages
- Printable version
- Permanent link

C3 Taxonomy in Action
Afghanistan Mission Network

- Structure of the Joining Instructions for AMN
- System usage and inter-connection per service
- AMN standards profile (NISP)

AMN learning by doing

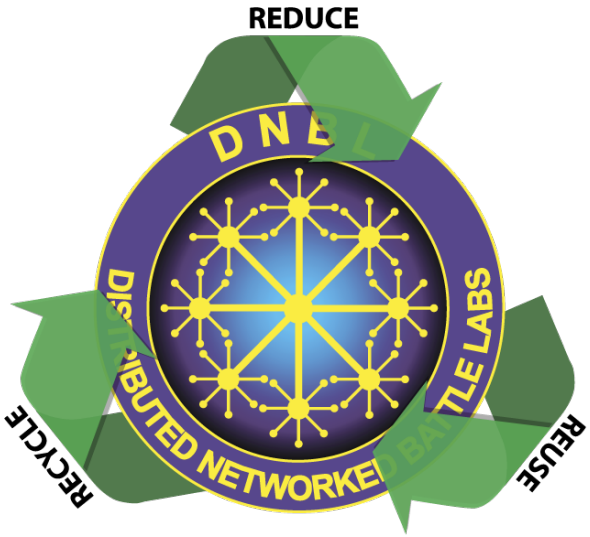
Service Orientated Architecture

- Issue of federation of **Core Enterprise Services** (CES) remains a concern
- Several on-going activities
  - Initiation of CP 9C0150 to acquire CES for BiSC-AIS
  - MAJIIC2 experimentation of ISR business process management in federated ESB context
  - On-going acquisition of ESB in AirC2 IS, Intel FS and NCOP projects
- Workshop held with key industry players to discuss how to address federation of industry solutions
  - Critical for future coalition operations
- GM NC3A Engaged NCOIC

Distributed Network Battle Labs (DNBL)

the Framework to 'speed up' and simplify Test, Experimentation and Distributed Training Events

- **Reuse:** existing capabilities and facilities through DNBL services
- **Reduce:** time and cost to prepare and conduct Test & Experimentation events
- **Recycle:** lessons learned + knowledge management from Test & Experimentation services and events in the DNBL community
- **DNBL Portal:** *https://dnbl.nc3a.nato.int*

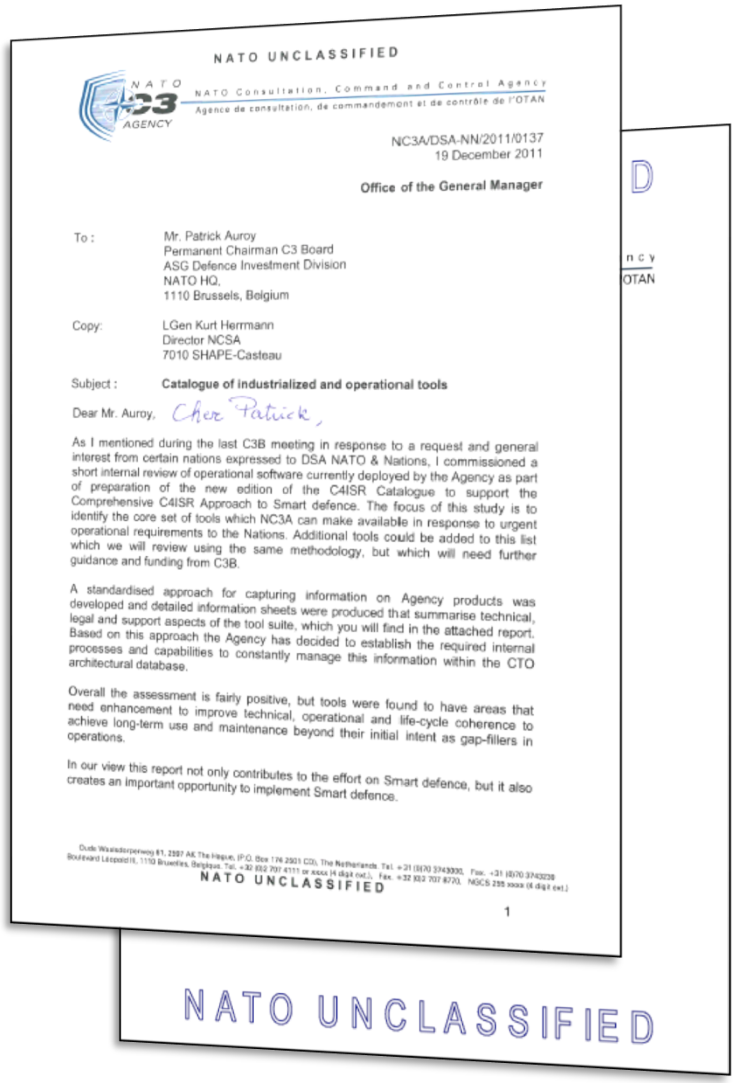


GM Letter to C3B (19 Dec 2011)

It is proposed that the following NATO C4ISR software capabilities could be released to NATO Nations in early 2012:

MCCIS, JTS, NITB JOCWatch, ICC, LOGFAS, TOPFAS, iGeoSIT, JChat, COP-IM and NIRIS

with one exception these tools are all "prototypes" and are already used by Nations for operational purpose (i.e. AMN)



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NATO C3 AGENCY — NATO Consultation, Command and Control Agency / Agence de consultation, de commandement et de contrôle de l'OTAN

NC3A/DSA-NN/2011/0137
19 December 2011

Office of the General Manager

To : Mr. Patrick Auroy
Permanent Chairman C3 Board
ASG Defence Investment Division
NATO HQ,
1110 Brussels, Belgium

Copy: LGen Kurt Herrmann
Director NCSA
7010 SHAPE-Casteau

Subject : **Catalogue of industrialized and operational tools**

Dear Mr. Auroy, Cher Patrick,

As I mentioned during the last C3B meeting in response to a request and general interest from certain nations expressed to DSA NATO & Nations, I commissioned a short internal review of operational software currently deployed by the Agency as part of preparation of the new edition of the C4ISR Catalogue to support the Comprehensive C4ISR Approach to Smart defence. The focus of this study is to identify the core set of tools which NC3A can make available in response to urgent operational requirements to the Nations. Additional tools could be added to this list which we will review using the same methodology, but which will need further guidance and funding from C3B.

A standardised approach for capturing information on Agency products was developed and detailed information sheets were produced that summarise technical, legal and support aspects of the tool suite, which you will find in the attached report. Based on this approach the Agency has decided to establish the required internal processes and capabilities to constantly manage this information within the CTO architectural database.

Overall the assessment is fairly positive, but tools were found to have areas that need enhancement to improve technical, operational and life-cycle coherence to achieve long-term use and maintenance beyond their initial intent as gap-fillers in operations.

In our view this report not only contributes to the effort on Smart defence, but it also creates an important opportunity to implement Smart defence.

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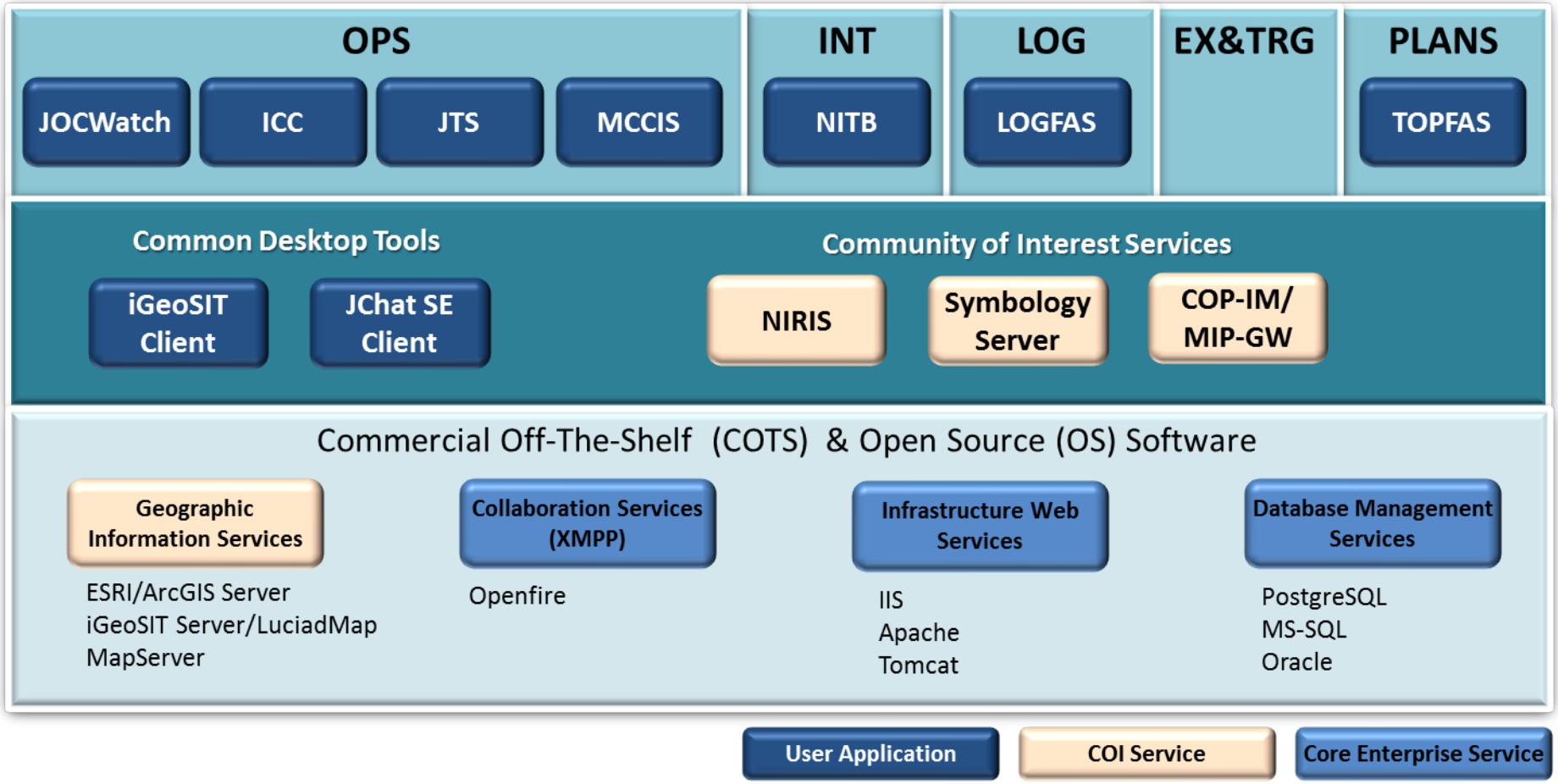
Proposed NATO C4ISR Tool Suite



Version 0.9, dated 12 Dec 2011

Take-Aways

- Highly complex environment
- Pressure to reduce costs yet increase interoperability
- NATO Architecture approach pragmatic, “just enough”, “just in time”
- Not the only approach:
  - Standards
  - Battle labs
  - NATO Apps Store?

Thank you

Questions?

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+31 70 374 3060

"Driving capability effectiveness, coherency and efficiency across the NATO C4ISR enterprise".