



NATO Communications
and Information Agency

Introduction to the
Consolidated Catalogue of Expertise,
Products and Services



DISCLAIMER



The information presented in this Consolidated Catalogue reflect existing information as captured and used by the former constituent entities prior to their merger into the NATO Communications and Information Agency. In general, no amendment has been made to reflect the context provided by the new Agency.

General Manager's perspective on the NCIA Catalogue

Dear Readers,

This catalogue provides an overview of the expertise, products and services that are available from the NATO Communications and Information (NCI) Agency to NATO political and military bodies, but – importantly - also to Allies and Partner Nations.

As part of NATO reform, the NCI Agency brings together under one roof five institutions that until 1 July 2012 were distinct bodies; as such this catalogue provides an easier overview of the expertise, products and services that are available as part of the Secretary General's Smart Defence and Connected Forces initiatives.

Connecting Forces

In this first, consolidated version you will see three parts that represent the constituent elements: Capability Development; Service Provision, including the NATO Programming Centre; and CIS Support Brussels.

As our reform progresses, in the next, rationalized edition (to be released by the end of 2012) you will see a streamlined offering. Finally, a costed catalogue will be available to prepare for a fully customer-funded Agency in 2014. As such, this consolidated catalogue is a first step, but it is at the same time a visible demonstration of the constituent elements coming together.

The Agency's mission is to strengthen the Alliance through connecting its forces and Nations; the NCI Agency delivers secure, coherent, cost effective and interoperable communications and information systems and services in support of consultation, command & control and enabling intelligence, surveillance and reconnaissance capabilities, for NATO, where and when required.

Interoperability between our forces is more important than ever, while at the same time we all face strong downward pressure on budgets. By offering a transparent overview of the capabilities that are already available to Nations through NATO, we contribute to Smart Defence. For commands, by standardizing the offering of key services, we hope to reduce significantly the cost of these capabilities.

If you have any questions or comments, I would invite you to contact my lead Director for this effort, Dr Velizar Shalamanov:
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Kind regards,



Koen Gijsbers,
NCI Agency General Manager

Objective & Scope

The NATO Communications and Information (NCI) Agency was established on 1 July 2012 as a result of the merger of the former NATO Consultation, Command and Control Agency (NC3A), the former NATO Air Command and Control System Management Agency (NACMA), the former NATO Communications and Information Systems Services Agency (NCSA), the former Active Layered Theatre Ballistic Missile Defence (ALTBMD) Programme Office, and HQ Information, Communication, Technology Management (ICTM). The mission of this new Agency is to strengthen the Alliance through connecting its forces.

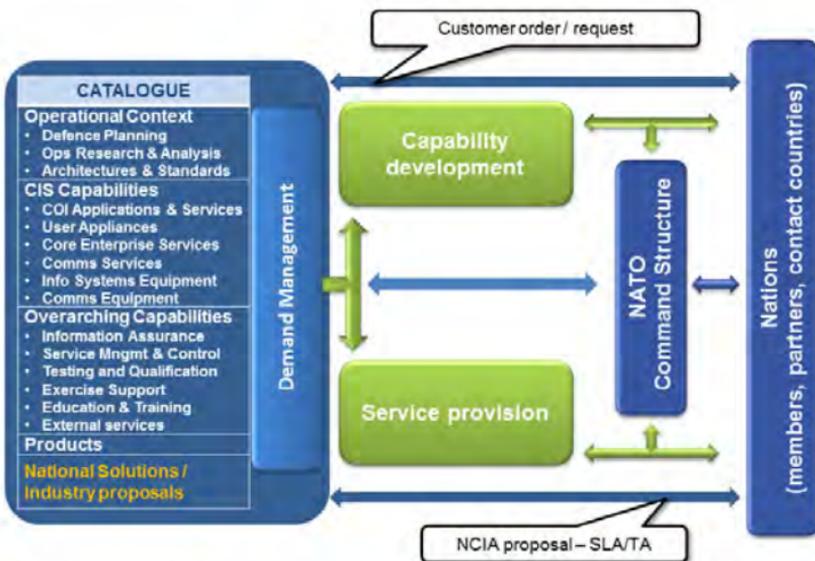


Figure 1: NCI Agency Catalogue: related entities and processes

In order to allow our customers to have a complete and concise overview of the available expertise, products and services, we are creating an Agency wide Catalogue.

This Catalogue will reflect the business scope of the NCI Agency operating under full Customer Funding Regime (CFR) and will be the single reference for all NCI Agency customers wishing to order NCI Agency expertise, products and services (E/P/S).

The NCI Agency Catalogue, used to communicate the active Service Portfolio of the Agency, will outline ICT and professional services that are available, list products that can be ordered, and provide information on expertise that can be used by our customers. Furthermore it will give guidance on how to develop an agreed scope, timeline and cost / billing for individual customers' requests.

Whilst the catalogue contains detailed descriptions of the expertise, products and services provided by the active service portfolio, it does not contain information on service delivery or performance expectations other than the information provided in the definition of service levels. Service performance expectations will be documented in individual Service Level Agreements (SLAs) between the Agency and the individual customers. All aspects of providing expertise or delivering the products are defined in Technical Agreements (TA). All NATO structures and NATO nations are eligible for the items in the Catalogue, but any other customer under the Memorandum of Understanding (MoU) approved by the Agency Supervisory Board could also be eligible to receive NCI Agency support

Versions & Structure

Achieving the single complete and concise Catalogue of expertise, products and services with related cost and to develop processes as depicted in Figure 1 will require time and effort. The development of the new NCI Agency Catalogue will therefore be conducted in an evolutionary manner.

Given that the Catalogue is essential for supporting the negotiations of the new SLAs and Technical Arrangements (TAs) (projects) for the 2014 planning cycle, an initial version of the Catalogue (referred to as Version 2.0) will be available in December 2012. It will thereafter evolve through periodic updates based on lessons learned during SLA negotiations, customer requirements for new services and NCI Agency Service Strategy.

In order to support the customers with mapping services to stated operational/mision requirements in the interim period (i.e. October-December 2012), a consolidation of existing catalogues from the constituent entities has been undertaken, resulting in the document presented herein. This Consolidated Catalogue comprises the catalogues of:

- Volume 1: Capability Development (CD) – Former NC3A;
- Volume 2: Service Provision (SP) – Former NCSA, including
- Volume 2.1: The NATO Programming Centre Glons (NPC);
- Volume 3: CIS Support Brussels – Former ICTM.

It is important to note that the information presented in the Consolidated Catalogue reflect existing information as captured and used by the former constituent entities prior to their merger into NCI Agency. In general, no amendment has been made to reflect the context provided by the new Agency.

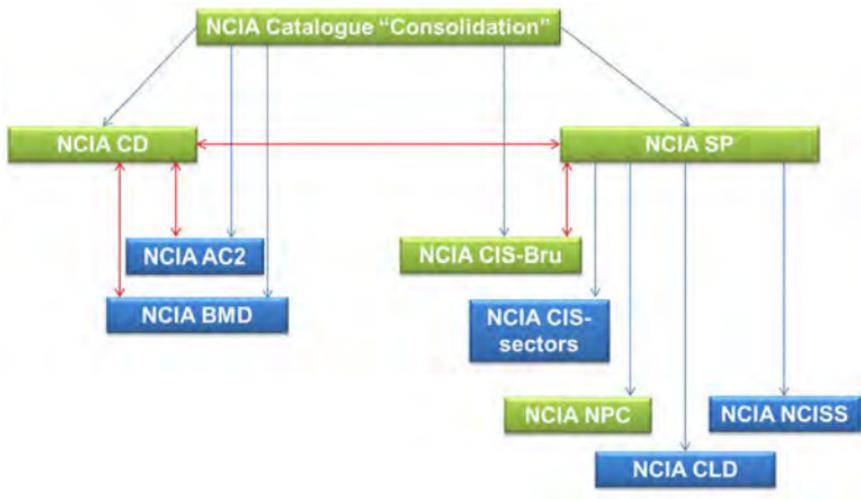


Figure 2: Consolidation of existing catalogues – an interim solution

As depicted in Figure 2, there are numerous areas of E/P/S embedded within the former agencies (including Air Command and Control (AC2), Ballistic Missile Defence (BMD), Communications and Information Systems (CIS) sectors, CIS Logistics Depot (CLD) and the NATO CIS School (NCISS) depicted in blue background in Figure 2) which are currently available but not explicitly covered within the existing catalogues used in the consolidation effort, hence not incorporated in this document (the Consolidated Catalogue). These will be adequately captured within the next iteration of the Catalogue (Version 2.0) due in December 2012.

Accessibility

In this Consolidation Phase, the NCI Agency continues the execution of all current missions and tasks, current programmes of work and projects of its constituent elements on an “as is – where is” basis. Consequently, the various parts of the Consolidated Catalogue will remain available to customers in electronic format at their respective location¹ as established prior to the merger on 1st July 2012.

A common location for an online NCI Agency Catalogue will be established for the presentation of the Rationalized Catalogue.

The Consolidated Catalogue is also available on Compact Disc (CD):
(contact LTC Frank Hilbig, DSA NN, tel: +32 2 707 8721).

1 Capability Development (CD) – Former NC3A;

www.ncia.nato.int/catalogue

Service Provision (SP) – Former NCSA,

<http://nwww.ncsa.nato.int/NCSAHQ/ServiceDel/ServiceDel539/ServiceLev0/CatalogofS>

including The NATO Programming Centre Glons (NPC);

https://www.asc.nato.int/asc/htm/docs_asc.htm

CIS Support Brussels – Former ICTM

http://infra-prod.hq.nato.int/infra/ICTM_ServiceCatalogue_EN.pdf

Who to contact

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NATO Communications
and Information Agency

Consolidated Catalogue of Expertise,
Products and Services

Volume 1 - Capability Development



September 2012

DISCLAIMER



This catalogue was first developed by the NC3A, which as of 1 July 2012 is an element of the NATO Communications and Information Agency (NCI Agency). However, the offering in the catalogue remains valid and available to NATO and Nations. Any references to NC3A should read NCI Agency Capability Development. This catalogue represents one part of the Consolidated Catalogue which has been developed by consolidating existing catalogues from constituent entities.

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NATO Deputy Secretary General: C4ISR support to NATO forces 2020



Currently, NATO is considering new ways to shape the Allied forces of the future as a reflection of the fact that the environment is becoming increasingly complex and resources remain significantly constrained. This is particularly true in the fast-changing world of C4ISR (Command, Control, Consultation, Computers, Intelligence, Surveillance and Reconnaissance).

To stay on top of these changes, the NATO Secretary General introduced the notion of Smart Defence as a way to foster multinational cooperation and an enhanced dialogue among nations that makes sovereign resource decisions more transparent in the force planning environment. The complementary concept of Connected Forces, likewise, attempts to institutionalize lessons learned over several decades of operations to ensure that we don't lose what we have gained. Together these two concepts are focused on matters that count: achieving interoperability among Allied forces. The NATO Communication and Information Agency has an important role in both initiatives as it provides valuable subject-matter expertise on the majority of common-funded capabilities in this domain. NCI Agency also offers assistance to Alliance members involved in multinational projects and programs by providing unique expertise and skill sets to assist their efforts.

The Agency Service Catalogue offers the entire lifecycle of services that nations may require, including requirements setting, implementation, testing, and exercise support. From this perspective, the Catalogue can be considered as an essential tool to making the Smart Defence and Connected Forces Initiatives a success.

A handwritten signature in black ink that reads "Alexander Vershbow". The signature is written in a cursive style and is positioned above a horizontal line.

Ambassador Alexander Vershbow

Deputy Secretary General, NATO

Chairman of the Military Committee: Smart Defence for Connected Forces: C4ISR - the operational glue



In order to fulfil NATO's Core Tasks, the Alliance must field effective and robust multinational forces. NATO's value added are the command and control capabilities, while interoperability is the key enabling factor.

The role of Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) as the 'operational glue' is particularly relevant to Smart Defence and Connected Forces. These two initiatives of the Secretary General are directly related

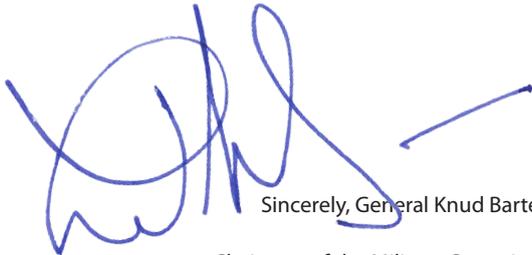
to the implementation of Active Engagement, Modern Defence – the Strategic Concept for the Defence and Security of the Members of the North Atlantic Treaty Organisation adopted by the Heads of State and Government at Lisbon in November 2010.

This new edition of the NCI Agency Catalogue explains how nations and others can access NATO C4ISR expertise and tools, demonstrating NCI Agency's role as part of the future reformed Agencies and in conjunction with the Science & Technology Organisation as a catalyst for capability development – jointly as one NATO team in support of the NATO Command Structure, the NATO Force Structure and nations – both members and partners.

The Catalogue is an instrument for more inclusive, efficient and cost-effective C4ISR capability planning, analysis and implementation

of capabilities, as well as a higher level of interoperability and connectivity of our forces in the framework of the NATO Defence Planning Process.

I recommend all member states and partners, as much as possible, under the customer funding regime presented in this Catalogue, exploit the opportunities outlined here to pursue Smarter Defence solutions for more Connected Forces. Our reformed Agencies offer nations the opportunity to leverage and build on the unique corporate knowledge and infrastructure the Alliance has developed over more than 60 years. Greater effect, at a better price.



Sincerely, General Knud Bartels

Chairman of the Military Committee

NCI Agency CD at a Glance

Tap into 60 years of NATO C4ISR expertise



With roots going back to almost 60 years, the NATO Communications and Information Agency (NCI Agency) is a valued and effective arm of the Alliance, delivering products and services across the entire Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) lifecycle.

The Agency procures and develops key systems that the leadership of NATO needs in order to perform the political consultation and military functions of command and control, that the Organizations need to carry out NATO missions where and when necessary.

From Afghanistan to the coast of Somalia, over 150,000 troops, as well as senior Alliance decision-makers, rely on systems procured or developed by the Agency. Last year, our procurement on behalf of the Alliance amounted to some 300 million Euros; total orders currently amount to some 3 billion Euros.

NCI Agency CD - unique platform for collaborative C4ISR capability development and service provision

The NCI Agency provides all aspects of capability development and service provision in the following areas:

- Consulting
- Capability Planning
- Training
- Exercises
- Experimentation and evaluation
- C4ISR R&D (in support to acquisition)
- Acquisition

Key C4ISR capabilities, supported by the Agency, are described later in this Catalogue. Important background for all these services is that either they are in the framework of support to current operations (Combat Support Agency model) or where services/expertise involve the development of future capabilities - this work is then based on representative scenarios of potential future NATO missions, consistent with the planning assumptions and operational context (types of missions, mission-to-task decomposition, representative scenarios) used to identify capability requirements in the NATO Defence Planning Process (NDPP). This way, the Agency is able to support nations/organizations and Commands, starting with capability planning, down to R&D, experiments & validation, acquisition, through training and exercises consultation (both technical and management consulting).

Additionally, in 2011 NCI Agency commissioned an initial study on software tools – both industrialized and operational prototypes, which the Agency could provide in support to the nations. Many of these tools are listed in the Catalogue. Through the combination of the above mentioned services, including when possible on-line help and configuration management (currently in cooperation with the NATO Programming Centre [NPC]/NCSA), a license agreement with support package is available for most of those to be released for national use. When the request is only for the application CD without any support, the Agency has to move from free of charge distribution to a fee-based model in order to stay in the customer funded regime.

NCI Agency is not a software development shop and is not in any way in competition with Industry. As the implementation authority for common funded C4ISR programmes / projects and C4ISR-related Programme of Work (POW) of ACT, the Agency provides added value by extending communally-developed capabilities and services to authorized nations and organizations interested in interoperable solutions in a secure NATO environment.

All these services define the Agency as a platform for collaborative capability development and service provision, supporting NATO Smart Defence implementation.

Benefits include:

- Low-cost use of NATO common-funded capabilities for national purposes;
- Multinational framework for cost-effective capability development;
- Validating “true” and secure interoperability of national capabilities and Industry products with NATO systems;
- Benefiting from the economies of scale and NATO C4ISR acquisition expertise for national procurements.;
- Robust project management for complex C4ISR acquisition, as well as delivery of capabilities into operational theatres;
- Access to almost 60 years of coalition C4ISR expertise, lessons learned and best practices.

Sample of current projects

The Agency is at the cutting edge of technology through its research, projects and extraordinary expertise of its staff. With real-world military situations serving as a very demanding customer, the Agency addresses both near-term and longer-term C4ISR solutions, and serves as testbed and capability provider for experimentation, simulation, and training services to maintain that edge. Some of the current efforts include:

- Procurement of Alliance Cyber Defences
- Development of ballistic missile defence for NATO territory and populations
- Afghanistan Mission Network
 - reliable and robust communications for NATO's Afghanistan mission
- Cutting-edge counter-IED technologies
- Friendly Force Tracking technologies for NATO forces
- Systems providing NATO commanders with single overview of all information related to their Area of Responsibility (AOR)
- Procurement of air surveillance systems for nations
- Architecture for NATO's information infrastructure network
- Interoperability testing and validation
- Industry's portal to NATO C4ISR

General inquiries on NCI Agency CD Expertise, Products, and Services should be addressed to:

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Eligible Customers



The NCI Agency is a NATO body. It is created under the NATO Communications and Information Organisation, which constitutes an integral part of NATO. The North Atlantic Council (NAC) has granted authority to conclude:

- agreements with other NATO bodies;
- agreements with a NATO member state or group of NATO member states; and
- agreements on behalf of a NATO member state or group of NATO member states.

NCI Agency also supports NATO partner nations and entities with which NATO has close ties. Under the NCIO Charter, prior NAC approval is required for agreements:

- with a nation that is not a member of NATO (or a group of such nations);
- with an international organisation; and
- for any agreement requiring parliamentary approval by a member state.

For more focused questions on legal topics, please contact:

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Agency Reform



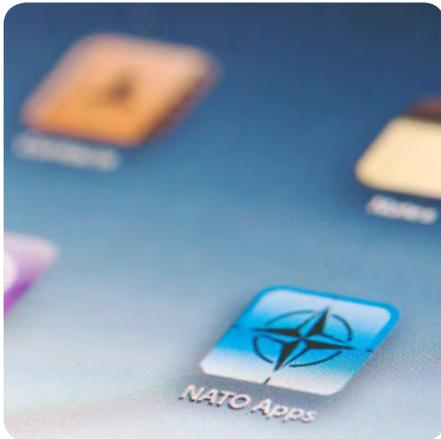
On 2 July of this year (2012), the NATO Consultation, Command and Control Agency (NCI Agency) fused together with the NATO Air Command and Control System Management Agency (NACMA), NATO Communication and Information Systems [CIS] Services Agency (NCSA [except Deployable CIS]), ALTBMD Programme Office, and Information Technology support functions at NATO HQ and NATO Agencies to form a new Agency, the NATO Communications and Information Agency (NCIA). The NCIA will be led by Major General (ret.) Koen Gijsbers.

As part of its missions, and as NATO's principal CIS service provider, the NCI Agency will in particular have to be capable of ensuring continuous CIS support to all on-going operations in which NATO is engaged, responding in particular to SACEUR's needs and taking his stated priorities into account.

Overall, the structures of the new Agencies should bring along economies of scale, with co-location and partial centralisation of functions; an integrated life-cycle approach; the sharing of best practices; increased commonalities and standardisation; a strong cooperation with relevant stakeholders, and more effective governance. Additionally, the proposed establishment should ensure improved coherence of Agencies' missions through more transparency and accountability, and better coordinated strategic direction. It will also foster a common vision and a strong sense of identity ("one NATO" culture) within the Agencies, through Shared Services amongst them.

The products and services introduced in this Catalogue will remain valid for the new Agency. In fact, based on what has been mentioned above, in the near future, NCIA should be able to deliver even more comprehensive Catalogue, encompassing the new Agency's services.

The NATO App Store



This Catalogue is the first step in a broader venture – the establishment of NATO's first ever App store. Once fully operational, the App store will be the marketplace where nations, Commanders and warfighters will be able to:

- access C4ISR capabilities that have been developed within NATO and available for use by nations and third parties;
- put certified and tested C4ISR application 'on the market' to other nations.

The App store will allow for the ultimate, continuous capability improvement via constantly updated access to all the capability development that has been taking place in NATO. As opposed to a paper or electronic publication which has a limited shelf-life, the App store will be 24/7 and updated as and when new capabilities are delivered. These will include individual capabilities as well as broader packages and mission-oriented suites.

The NATO App store will be one of several ways in which the NATO Communications and Information Agency will continue the constituent Agencies' contributions to the NATO Secretary General's 'Connected Forces' initiative. The development of the store is contingent on the development of a NOTS (NATO Off-the-shelf) Release Policy.

While the App store is still in a developmental stage, the Catalogue provides an intermediate overview of the capability within the Alliance.

C4ISR Expertise, Products, Services



NCI Agency's commitment to the Alliance missions has generated C4ISR Expertise, Products and Services, often deployed to operational theatres and instrumental to NATO success, which are available to NATO stakeholders, as summarized below by a set of outline descriptions. This set addresses capabilities overviews, brief descriptions of the relevant specific domains of expertise, the identification of the potential for leveraging capabilities, products or services, the track record of related accomplishments, and a brief statement of what NCI Agency can offer to the various stakeholders to help meeting mutual goals.

The capabilities are generally laid out by Capability Area going from planning and architectures, through communication infrastructure and services, information and integration services, cyber-defence, to higher level applications such as joint intelligence, surveillance, reconnaissance, command and control, to special services like Labs and ET&E (Experimentation, Test and Evaluation).

The descriptions are meant to be informative, but not exhaustive. General inquiries for capabilities should be addressed to DSA-NN (see pg. 10), but for detailed information on a specific capability, category, system, or combination, please contact the Director of Production Administrator:

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1. Defence Planning Support, Architectures, and Operational Analysis

As NATO's C4ISR architect, the Agency has a unique track record in developing and applying architectures. The Agency has unrivalled experience in providing analytical support to the derivation of defence capability requirements, latterly within the NATO Defence Planning Process. In support of strategic planning, it assesses missions and broad concepts over ranges of operational scenarios. In support of current operations and missions, the Agency can provide unbiased in-situ decision support, review operational effectiveness, and perform operational assessments in theatre. The organization's capabilities can also support process, organizational, and business analysis and design. By integrating with customer teams as needed, our experts can apply their knowledge to the specific problem at hand, whether the effort is common-funded or a bilateral/multinational endeavour. By leveraging their expertise, interested nations benefit from some of the best NATO expertise and tools, enable cost saving, and facilitate implementation of complex projects.

Defence Planning Support



Overview

NATO Defence Planning (DP) provides a framework for harmonising National and Alliance defence planning to meet agreed targets in the most effective way. The primary goal of DP is to facilitate the timely identification, development and delivery of the necessary range of military capabilities and associated forces that are interoperable and adequately prepared, equipped, trained and supported, along with non-military capabilities to undertake the Alliance's full spectrum of missions.

Service Description

NCI Agency has been providing analytical support to DP within NATO for 20 years, working closely with a wide range of military and Subject Matter Experts (SMEs). This continuous long-term involvement has led to extensive expertise in the development and application of methods/tools to analyse future capability requirements for the Alliance.

NCI Agency can provide analytical consultancy across the full spectrum of capability planning. More specifically NCI Agency expertise is available to:

- address specific problems, considering either the entire process, as is currently applied within NATO (i.e., identify capabilities required to meet a defined level of ambition expressed in terms of a number and type of concurrent missions or operations), or only parts of the process which includes the following components:
 - *development of representative situations for planning purposes (i.e., scenarios),*
 - *structured mission analysis (mission-to-task decomposition),*
 - *development and application of algorithms and models/tools to determine the type and amount of capabilities required,*
 - *assessment of NATO/Nations capabilities against the required capabilities,*
 - *automated mapping of existing/planned capabilities within NATO and Nations against requirements (optimization models) to identify the capabilities required along with associated shortfalls and surpluses;*
- undertake focused studies to analyse specific capabilities or capability area(s) (e.g., assess impact of introducing a new capability);
- conduct sensitivity analyses and test-bedding in specific capability area(s) (e.g., assess impact of new concepts of operation).

Track Record

NCI Agency has gained extensive knowledge and expertise in the area of DP/capability planning. This expertise, combined with a comprehensive set of supporting tools, has allowed NCI Agency to consistently deliver comprehensive and timely products to NATO and Nations in support of defence planning.

NCI Agency Offer

Analytical tools and expertise combined with NATO expert judgement to support Defence Planning. NCI Agency can provide analytical consultancy to help with the identification of capabilities required to execute various types of missions and operations (national, multinational/coalition or NATO). Agency expertise can address requirements, gap analysis, mission analysis, scenarios, and what-if exercises.

Architectures



Overview

NCI Agency develops and maintains architectures for a range of IT coherence purposes in accordance with NATO Architecture Framework (NAF) version 3 including:

- baseline systems and network architectures employed in support of current Alliance operations and missions;
- reference architectures describing communities of interests' needs, in order to support the implementation of interoperable future systems, and to support programmatic coherence.

Commercial off-the-shelf architecture tools are used.

Expertise Description

NCI Agency can provide valuable support in integrating the NATO architectures for ISAF with national architecture projects for ISAF. In particular, NCI Agency can provide the

following services:

- *Architectural support for national projects in ISAF* - NCI Agency can provide architectural core data to support the integration of national solutions into the NATO architecture for ISAF together with the required expertise to use and apply the data.
- *Integration of national architectures* - nations developing their own architectures can use NCI Agency as an integration agent for these architectures into the NATO architecture. The architecture will provide a framework of services together with the standards to be used for the implementation of these services can serve as starting or reference point for national developments.
- *Facilitation of architecture development* - based on the extensive knowledge of the NATO Architecture Framework and experience in its application, consultation services to facilitate the development of architectures can be provided.
- *Exploitation of architecture products* - based on the in-depth knowledge of operational requirements, related technical capabilities and associated architecture documentation the Agency analyses and exploits architectures identifying capability gaps and overlaps, optimizing operational architectures (organization, processes and procedures), improving coherency across enterprise portfolios.

Track Record

NCI Agency is the design authority for the Afghanistan Mission Network (AMN) and as such has a key part to play in governance of the AMN. In support of its duties on the AMN Secretariat Technical Management Office (TMO) at SHAPE, NCI Agency acts as lead architect for the AMN, working with architects from the ISAF Troop Contributing Nations (TCN) to maintain a collective architecture in support of ISAF using commercial off-the-shelf architecture tools in accordance with the NAF version 3 and in line with the developing NATO C3 Classification Taxonomy.

This architecture is used to provide a baseline for solutions being developed in response to Crisis Urgent Requirements (CUR) developed by ISAF and provides operational, systems, technical and programme views to describe the currently fielded TCN and NATO funded systems and infrastructure and the projects and solutions planned for the next 2-3 years.

The ISAF Baseline Architecture has been proven to be a valuable tool in different projects with nations, e.g., the integration of CENTRIXS-ISAF with ISAF SECRET and overtask. The ISAF Baseline Architecture project was conducted in conjunction with US Central Command and the UK Permanent Joint Headquarters.

The programmatic views within the ISAF Baseline Architecture are maintained jointly with TCN that have AMN National Network Extensions and are used to produce the quarterly AMN Strategic Roadmap that is used in the scheduling of system rollouts per AMN Service.

The interoperability information in the ISAF Baseline Architecture are used by the AMN Change Advisory Board (CAB) and to inform the Coalition Interoperability, Assurance and Validation (CIAV) testing activities that NCI Agency and NCSA conduct in the Coalition Test and Evaluation Environment (CTE2) with the TCN that have AMN National Network Extensions.

Together with ACT, the Agency has developed the NATO C3 Classification Taxonomy and a practical approach to developing reference architectures that improve the quality of system requirements specifications written for Industry implementation. The top down approach also helps to reduce programmatic duplication of capabilities and will save nations money.

NCI Agency Offer

Architectural methods and products are being maintained for coordinating services and infrastructure in support of current operations, and for improving the efficiency and effectiveness of requirements specification for future systems. The Agency can offer practical methodological advice on architectural approaches or build on existing knowledge, frameworks and tools to develop new architectures.

Operational Requirements Support



Overview

Operational analysts familiar with the operational community and their needs can assist sponsors to develop detailed operational requirements to guide product development. Operational requirements are created to define problems in the operational/business layer. They should not define potential solutions but ensure that solutions specifications can better solve stated problems. Requirements definition allows appropriate decisions about system functionality and performance to be made before significantly investing resources in developing a solution.

Once embarking on capability development operational analysts are able to support project decisions during the capability development lifecycle by monitoring how well solutions/solution options meet effectiveness criteria.

Expertise Description

NCI Agency can:

- supply analytical staff who can deploy to theatre to formally document the parameters of a capability gap (As-Is organisational, process/procedural context and detailed operational impact of system deficiencies);
- supply technical staff that can deploy to theatre to identify the underlying factors leading to system deficiencies;
- provide written documentation of the capability gap to a level of detail that can sufficiently inform sponsoring staff in theatre to develop and defend operational requirements for integration in CUR submissions to the ISAF Operational Requirements Review Board (IORRB).

Appropriate techniques are chosen from a range of available requirements-gathering options: brainstorming, document analysis, interface analysis, interview, observation, prototyping, requirements workshop, and survey/questionnaire.

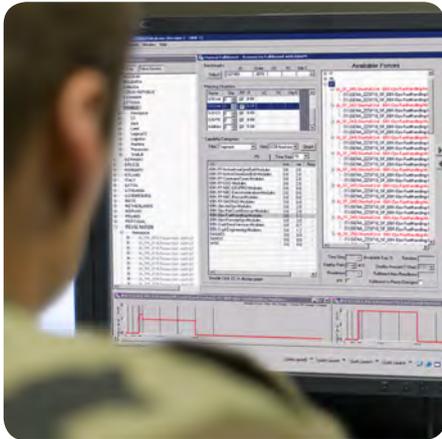
Track Record

NCI Agency has supported operational requirements analysis and documentation for Commands and sponsors supporting KFOR and ISAF missions, including those of the Afghanistan Mission Network.

NCI Agency Offer

Operational analysts familiar with NATO systems, processes, current Alliance operations and missions to work as individuals or teams alongside problem owners in theatre if needed.

Joint Defence Planning Analysis and Requirements Toolset



Overview

The NCI Agency Joint Defence Planning Analysis and Requirements Toolset (JDARTS) is an integrated federation of software applications developed to support NATO and national capability-based Defence Planning within NATO. JDARTS provides the Alliance with a unique and powerful analytical toolset. Capability requirements can be identified, quantified and subsequently compared against the spectrum of capabilities available to NATO. By supporting the identification of capability requirements and shortfalls within the NATO Defence Planning Process (NDPP), JDARTS has made a major contribution to the on-going transformation of the Alliance.

Product Description

The JDARTS toolset consists of 5 major functional components:

- *Defence Planning Mission Study Tool (D-MIST)* to support joint, capability-based mission task analysis (Military Estimate and Task Decomposition) for representative mission types and planning situations. D-MIST

supports development of a clear audit trail between the identification of capability requirements and the relevant military estimate. From the detailed military analysis, the mission is decomposed in a hierarchical structure, identifying the mandate, operational objectives, and finally all required and implied tasks for an operation.

- *Defence Planning Scenario Generation (D-SIGN)* application provides a map-based interface for the generation and development of operational scenarios, or planning situations. D-SIGN is implemented as an add-in to an advanced mapping and geospatial analysis tool.
- *Defence Planning Capability Assignment Logic Calculator (D-CALC)* provides the environment for the specification and execution of Capability Assignment Logic.
- *Defence Planning Requirements & Unit Matching (D-RUM)* support unit capability pre-processing and automatic comparison (optimization) for the generation of force/capability pool requirements.
- Shared data environment, the *Central Data Repository (CDR)*.

Track Record

JDARTS has been successfully employed within a range of high-profile coalition multinational and national defence planning studies. JDARTS use was fundamental to the delivery of both the NATO Defence Requirements Review and the EU Capability Catalogue development, and is now in successful use within a number of NATO Nations to support national defence planning activities.

NCI Agency Offer

JDARTS delivers a distributed, collaborative, networked environment for joint, capability-based defence planning. JDARTS Capability Assignment Logic consolidates output from detailed operational analysis and simulation studies with expert military assessments by NATO defence planners. The toolset provides an integrated federation of complementary applications for scenario-based analysis. This federation is flexible, fully customizable and highly adaptive to national requirements.

Campaign Assessment in Crisis Response Operations - Decision Support to Commanders



Overview

NATO Crisis Response Operations take place in the most challenging and complex geo-political environments, where military and political interventions can have strategic impacts across broader socio- economic, diplomatic, cultural and information domains. Operational and Strategic level HQs require the best possible evidence and analysis to support assessments of mission progress (campaign assessment), so that senior decision makers can act with confidence, provide credible upward briefings to higher HQs and nations, allocate resources effectively and mitigate future risks.

Expertise Description

NCI Agency's most recent activity in this domain has been the development of the ISAF Strategic Assessment Capability (ISAC) for SHAPE, which reached IOC in Dec 2009. ISAC was originally intended to use the ISAF campaign experience to underpin development of an enduring strategic campaign assessment capability for NATO. Key features of ISAC include:

- system-of-systems comprehensive assessment framework to facilitate development of appropriate measures and indicators and highlight key interacting areas in which analysis of change best indicates progress towards mission objectives;
- novel use and development of existing NATO operational planning tools and prototypes for data collation, knowledge development, archiving and assessment sharing;
- structured elicitation, synthesis and documentation of Subject Matter Expert (SME) analysis and comment;
- multiple-level outputs and products including senior officer briefings, facilitated seminars and workshops, written reports and ad-hoc analyses;
- key lessons identified on challenges facing strategic campaign assessment.

NCI Agency Offer

NCI Agency has unrivalled expertise in providing rigorous and comprehensive assessment support to NATO's senior decision makers. NCI Agency has a pool of experienced and field-deployable analysts who have supported assessment efforts embedded within operational and strategic HQs, as well as through reach-back. NCI Agency has used its analytical and technical expertise to develop innovative and rigorous assessment frameworks which blend quantitative and qualitative data with inputs from independent SMEs, most recently in the NATO ISAF mission in Afghanistan, but with a pedigree which reaches back to pioneering work in Bosnia and Kosovo in the 1990s.

Operational Analysis – Support to NATO Decision Makers



Overview

Operational analysis applies an extensive toolbox of structured quantitative and qualitative methods to solving complex problems as typically faced by organisational leaders and operational commanders. NCI Agency offers experienced operational analysts to work alongside and support decision makers, over any time period, and who can be deployed into theatres of operations if needed.

Expertise Description

A wide range of operational analysis expertise can be applied in relation to NATO and Alliance operations and missions including:

- Operational requirements analysis – capture, document and verify operational requirements for sponsors to turn into a capability requirement;
- Problem structuring – application of soft systems methodology to complex/ill-defined management problems;
- Issues prioritisation and ranking – multi-criteria decision analysis and Saaty technique
- Process improvements – process analysis and documentation of current and desired business/C2 processes, and support to change management for implementation;
- Organizational analysis/design/reform – application of functional analysis, process analysis, information mapping and knowledge management;
- Modelling and simulation – to investigate dynamic behaviour of systems of interest and conduct sensitivity analyses, often in support of requirements analysis;
- Operational planning support through war gaming course of action analysis and campaign assessment;
- Cost benefit analyses / Balance of Investment studies – quantify option trade-offs and force mixes;
- Analytics - the application of operational analysis, statistics and NATO information systems to solve problems in NATO business and Alliance operations and missions;

- Information Exchange Requirements estimating - analysis of historical communications data;
- Process and scenario driven requirements modelling;
- Experimentation with C2 concepts, scenario preparation, survey design and implementation.

Track Record

Long standing record of provision of operational analysis/decision support to Projects, Commands, NATO Authorities and Nations.

NCI Agency Offer

Deployable, skilled individuals or teams with experience of NATO and Alliance operations and missions to work alongside problem owners, in theatre if needed.

Organisational Analysis/Change Management/Reform



Overview

Operational analysts from NCI Agency have provided support to process analysis and organisational change in support of the development of headquarters (ranging from the tactical top strategic) and the redesign of the whole NATO Command structures. Through this, NCI Agency has obtained a detailed understanding of manpower processes and the application of NATO manpower policy and an expertise in organisational and manpower analysis.

Expertise Description

Typically NCI Agency operational analysts will be provided to support a team (typically military led) conducting an organizational study. The expertise can be applied to one or more of the following stages:

- *Analysis of the As-Is situation.* Examples include: conduct of a stakeholder study, As-Is process analysis, on-line staff questionnaires/surveys, analysis of current mission fulfilment, analysis of waste and duplication, identification of areas for improvement.
- *Provision of the 'To-Be' structures or changes.* Examples include: development of organisational metrics, organisational themes, HQ and Command structures, derivation and redesign of main processes, assessment of required skills and relative workload, simulation of HQ staff structures under different operational scenarios, balancing the Manpower Cap (% cut) against the requirement, derivation of sub-structures/statements of function, assessment of the scale of the change management task, derivation of individual posts and automation of the production of job descriptions (in line with agreed policy and processes), provision of statistical analysis of bids/gaps, derivation of transition plans.
- *Option development and selection.* Through the use of metrics and transparent multi-criteria decision analysis techniques the decision maker will be assisted to make auditable and evidence based decisions on structural changes.

Track Record

- HQ Immediate Reaction Task Force (Land) (IRTF (L)) Concept Development and Experimentation (CDE) (1999 – 2001);
- SHAPE Business Process Review (BPR) (2001);
- KFOR HQ Functional Restructuring (2002);
- Allied Command Europe (ACE) Functional Review (2002);
- NATO Command Structure (NCS) Peacetime Establishment Functional Review (NCS PE FR) (2003);
- JFC HQ Brunssum Business Process (Re)-Engineering (2004);
- Allied Command Operations (ACO) Further Manpower Savings Study (FMSS) (2004);
- International Military Staff (IMS) Fundamental Review (IMS FR) (2005);
- International Security Assistance Force (ISAF) HQ/CJ1 Support (2006);
- ACO Organisational Development – Command Group SHAPE Info Flow and Coordination project (2006);
- ISAF HQ/JFC HQ Brunssum/SDC Incident Reporting (2006);
- Creation and maintenance of NATO Occupational area Codes (NOC) (2003 and 2007);
- NATO INFOSEC BPR (2007 - 2008);
- Production of a manpower costing model for Phase II of the 2008 PE Review;
- ISAF HQ CJOC process study (2008);
- Evaluation of the generation and use of job description information within NATO manpower processes (2009);
- Production, development and maintenance of the Establishment Review Tool (ERT) for the production of NATO job descriptions and Civilian Classification Proposals (CCP). Incorporates integration of the ERT with the Manpower Analysis & Planning System (MAPS) (2003 – present);
- Host Nation for the procurement of the NCS Automated Personnel Management System (APMS) for the NCS (present).

NCI Agency Offer

NCI Agency can provide support ranging from short term consultancy in organisational design through to the engagement of an OA team to conduct holistic HQ experimentation, business process analysis reviews and functional reviews. NCI Agency can also develop and procure manpower and personnel systems.

Information and Knowledge Management – Policy, Concepts and Requirements



Overview

NATO faces a continual challenge presented by the increasingly knowledge-intensive and information-intensive character of modern operations. NCI Agency provides IKM expertise skilled in the development and employment of organisational IKM Policy, operational IM concepts, and the derivation and analysis of user's operational IM requirements to help address this need.

Expertise Description

- Broad and in-depth knowledge of the managerial value of relevant theories and current developments in the domain of IKM, with a focus on leveraging operational benefits from better information management and knowledge application;
- Our specialists are intimately familiar with the new NATO IM Framework and the business of static and operational HQs, operation centres and supporting NATO systems. This makes them ideally placed to propose and, working in multi-disciplinary cross capability teams, deliver tangible operational benefits by improving IM structures, skills, processes and tools in line with emerging NATO policies;
- Information use and knowledge mapping in organisations to recommend changes in structures, skills, processes and tools;
- Information Exchange Requirements estimating - analysis of historical communications data to inform information needs;
- Process, information flow, and scenario driven requirements modelling;
- IM Governance Development – Policy;
- Taxonomy and Maturity Model development and implementation.

Track Record

- IM Policy Support - supporting the creation of the NATO IM Authority and development of NATO's top level IM guidance documents, NATO Information Management Policy (NIMP), the Primary Directive on Information Management (PDIM), and the IM Strategic Plan;
- Operational IKM - identifying and addressing operational information needs in NATO Missions since 2004 (SFOR, EUFOR, KFOR and ISAF) - resulting in the definition and development of key capabilities including JOCWatch and LMTWeb;
- MSA Concepts - developed IM concepts for Maritime Situational Awareness and the operational context for trialling semantic interoperability technologies;
- Information Audit of HQ KFOR – understanding the organisation's information assets, flows and key processes to enable rationalisation and improve reuse of available information resources;
- ACO as a Knowledge Centric Organisation (KCO) - using examples and specific best-practice cases from Industry to define the characteristics, benefits and measures of a KCO in terms of people, processes and tools for application across ACO;
- NATO Information Management Capability Maturity Model – building on Industry best practice to develop a method and tools for self-assessment and organisational improvement in line with NATO IM policy;
- EIMP Programme - supported NATO HQ's Enterprise Information Management (EIM) programme with user requirements, Industry bid evaluation and taxonomy development;
- Records Retention and Disposition Schedule Development - improved records retention and disposition practices by producing taxonomy of record types, their retention and archiving requirements, drafting records retention and disposition schedule, and a plan to implement classification and retention mechanisms into existing document management tools;
- Analysis of workflow efficiency – evaluation of workload, office response times and bottle necks, based on data extracted from existing task management tools (Tasker Tracker);
- IKM Organisational Design – definition and design of a new IKM organisation for the International Military Staff, including roles, responsibilities, functions and skills.

NCI Agency Offer

NCI Agency can provide focussed, skilled IKM expertise - on an individual basis or as part of a multidisciplinary team - to investigate and address organisational Information and Knowledge Management needs by combining domain knowledge in NATO IM policy, organisations, processes and tools with current Industry best practice in IKM.

2. Communication Networks

Robust Communications Capabilities are critical to 21st century operations. The Agency is NATO's principal agent for the acquisition and development of advanced Comms Services that support political authorities, commanders, and deployed NATO forces. In addition to the expertise itself, which can greatly facilitate national projects, specific tools and capabilities are available. This section addresses the Comms Services portion of the network, which include the NII Network Layer, SATCOMs, and Deployable and Maritime capabilities.

NII Network Layer



Overview

The NATO Network Enabled Capability (NNEC) Feasibility Study includes a number of strategic requirements which must be met in order for NNEC to be achieved. One of the strategic requirement is to "Build a communications infrastructure based on converged, NATO and multinational, IP 'black core' networks, operated as a Federation of Networks", now referred to as the Communication Infrastructure layer of the Networked Information Infrastructure (NII). This is being designed as a Service-Oriented Architecture (SOA) over an ubiquitous unclassified IP network supporting all types of simultaneous services (e.g., Voice, Data, Multimedia) and available in interoperable form to all coalition members and achieved through an evolutionary approach driven by technology availability and interoperability requirements.

The primary purpose of the NII is to be the robust, evolutionary, CIS infrastructure, across NATO Nations, providing integrated interoperability within NATO and supporting interoperability with partnership nations, as well as with potential coalition forces and other organizations such as United Nations and civil authorities.

Expertise

NCI Agency has a highly-skilled, interdisciplinary team in Capability Area Team (CAT) which provides NCI Agency and NATO with unique, unbiased, scientific and technological support and acts as the acquisition and implementation agent for the Communication Infrastructure layer of the Networked Information Infrastructure (NII), in support of the Alliance's "level of ambition".

Key staff competencies include general knowledge areas: Sound knowledge of modern communications systems; system design principles and concept evaluation methods; testing; modern technology trends; modulation, digital signal processing, coding, and estimation theory and techniques; communications security; and project management methodologies.

Specialist knowledge areas include communications architectures (eTOM, SOA); network communications, including modern digital communication networking techniques, protocols and standards; routers; modern digital communication networks specification, design and testing; communication networks analysis; network administration and management requirements and Service Level Agreements (SLA); networking security; circuit switched networks; technologies, equipment, and TDM Systems.

Expertise Description

The Agency acts as an essential contributor and trusted partner within NATO to deliver coherent, integrated and flexible Communication Infrastructure in a timely, high quality and cost-effective manner. Specifically, our mission is to provide within NCI Agency a focus for all voice and data telecommunication services related activities, thereby ensuring a coherent approach to the provision of effective capability for NATO Command Structure.

Track Record

NCI Agency's experts have developed concepts and requirements, assessed emerging concepts and technologies, and procured and implemented systems NATO wide, including the Operational Theatres, in accordance with the requirements of the NATO Military Authorities as outlined in the NNEC Strategic Framework (NSF) and as approved by the nations.

NCI Agency Offer

NCI Agency offers the necessary technical expertise to support not only the initial studies, detailed technical requirements specification and acquisition processes, formalised with the definition of the Statement of Work (SoW) and the issuing of an Invitation for Bid (IFB) to Industry, but also to provide the required technical consultancy in the selection of sites and testing of the capability.

With a well-written specification, successful contract negotiations, careful risk management, a soundly defined and well-executed testing programme, and effective communication with all involved parties, NCI Agency can assist the nations to achieve highest value for money.

Military Satellite Communications



Overview

MILSATCOM is a highly complex capability and every implementation, both on the ground or in space, requires tailoring to the unique operational requirements and to the legacy environment into which it must be integrated.

This tailoring process begins with a proper requirements analysis. This analysis will examine the immediate and future operational requirements, the legacy environment, and any other relevant political and financial issues affecting the implementation and operation of the SATCOM services and their supporting assets. This process will also identify gaps in time or capabilities, and assess alternatives to fill these gaps, gather rough order of magnitude costing figures and provide costed options and recommendations for presentation to high-level decision makers.

Product Description

NCI Agency has a highly-skilled, interdisciplinary team which provides NCI Agency and NATO with unique, unbiased, scientific and technological support and acts as the specification, acquisition and implementation authority for MILSATCOM Static, Deployable and Mobile Space & Ground Segment capabilities, in support of the Alliance's "level of ambition".

Key staff competencies include sound knowledge of modern satellite communications systems, architectures, system design principles, and integration of military SATCOM with commercial SATCOM and terrestrial secure networks. NCI Agency follows proven system engineering and project management methodologies applied to the specification, procurement and acceptance of military SATCOM systems (involving ground and space assets).

Track Record

NCI Agency's experts have led or contributed to the following programmes and achievements:

- Specification and procurement of the current NATO SATCOM Post-2000 space segment capability, which is the backbone of SATCOM-based connectivity across NATO's AOR, and supports current operations in Afghanistan;
- Roll-out of the UHF DAMA SATCOM capability in the operational theatres, with nearly 1,000 radios deployed today, accessing more than 40 voice and data nets, critical to the success of on-going operations;
- Specification and procurement of NATO's Electronic Protection Measures (EPM) modem system (EMS), and the roll-out of anti-jamming anchor capabilities in the static SATCOM ground terminals (SGT) of F11, F13 and F14;
- Specification and procurement of NATO's Advanced SATCOM Network Management and Control (ASNMC), providing a centralized, highly automated capability to manage NATO's static and deployed SATCOM assets;
- Specification and procurement of an upgraded and rationalised SHF Ground SATCOM Ground Station component for NATO, to provide a more flexible, survivable and efficient capability.

NCI Agency Offer

NCI Agency offers the necessary systems engineering expertise, and programme management experience, to support the initial studies and the technical requirements specification and acquisition processes. These processes are formalized with the definition of a Statement of Work (SoW) and the issuing of an Invitation For Bid (IFB) to Industry.

NCI Agency can provide technical consultancy services during the assessment of the bids, followed by close technical advice in support of successful contract negotiations and effective management of risks. NCI Agency can act as a trusted support agent through the acquisition process, ensuring effective communication with all involved parties, and helping achieve for the Nation the highest value for money.

In these roles, NCI Agency provides an unbiased, highly dedicated team of individuals ready to deploy and work together with the Contractor and the end-user authorities during the system commissioning and operational evaluation process.

NCI Agency can provide state-of-art SATCOM testing facilities, as well as personnel versed in military and commercial SATCOM technologies, in support of National proof-of-concept initiatives, troubleshooting or improvement of existing systems, validation of SATCOM service levels, ad-hoc support to exercises, and assessment of interoperability or compatibility of SATCOM assets (e.g., modems, terminals).

Commercial Satellite Communications



Overview

The provision of commercial satellite communications to support military operations, either augmenting military SATCOM connectivity, or filling gaps in ground coverage or capacity, is a highly demanding undertaking, in terms of both identifying the right sources, and ensuring the availability and service levels that military operations uniquely require.

When capacity is provided together with a ground segment under a service provision framework, specifying the required service levels, establishing the Service Level Agreements (SLA) with the provider, and monitoring the service performance can become a daunting task for the end user, especially when the network is large, or the service is provided across multiple footprints, teleports, etc.

On a different scale, the commercial SATCOM market provides military users with opportunities to access space segment capacity on an on-demand, ad-hoc basis, using low cost terminals intended to support personal communications. In this context, both connectivity and capacity can be heavily contended, and guaranteed access may be at stake, under

certain operating conditions. Measures to cope with availability issues need to be established when such services are used to support (or back-up) critical communications.

Service Description

NCI Agency has a highly-skilled, interdisciplinary team which provides NCI Agency and NATO with unique, unbiased, scientific and technological support and acts as the specification, acquisition and implementation authority for commercial SATCOM capabilities, either for augmenting military SATCOM or terrestrial networks, or for gap-filling these networks in certain areas or for certain applications, when short-ages in coverage or capacity exist.

Track Record

NCI Agency's experts have led or contributed to the development of prototype systems based on Inmarsat GAN, BGAN and Iridium, which have later been industrialized under NATO contracts, becoming part of NATO's portable/mobile communications asset pool. Examples of those are the Theatre Liaison Kits (TLK), serving the NRF, EUFOR, KFOR, NAEW and the NATO Training Mission in Iraq (NTM-I), and the Iridium-based secure data services, providing connectivity at NATO SECRET level to NAEW (AWACS), and up to NATO CONFIDENTIAL level in ISAF.

NCI Agency Offer

NCI Agency has experience in dealing with commercial SATCOM providers, and is familiar with the principles that rule today's commercial satellite capacity markets. NCI Agency can support nations in assessing and translating their commercial SATCOM requirements into system or service level specifications in order to compete for SATCOM capability that provides reach-back or intra-theatre connectivity.

In service provision contracts, involving commercial SATCOM capacity and ground assets, NCI Agency can act as a service level monitoring agent throughout the duration of the contract, interacting with the service provider on behalf of the Nation. The Nation can delegate tasks like the formulation and follow-up of task orders to change or define new services or service levels.

NCI Agency can play the role of a broker towards one or more capacity or full service providers, by pooling short- and long-term requests from multiple nations and from NATO itself, and by assessing opportunities to benefit from long-term contracting of bulk capacity, which can then be dynamically apportioned to the nations, when and where needed.

NCI Agency is spearheading the testing and validation of personal SATCOM technologies and services for use in demanding military communications environments. These activities cover both compatibility testing with external, military-grade communications security devices, and close liaison with the commercial service providers, for terminating the links over controlled terrestrial tails, into gateways in NATO or national defence networks. Nations can leverage NCI Agency's knowledge in these areas, proven by recent successful contributions to various deployments involving secure connectivity over Iridium and Inmarsat services.

Deployable CIS Capabilities



Overview

Deployable CIS (DCIS) is a highly complex capability and every implementation must be tailored to the unique operational requirements and the legacy environment into which it must be integrated. It begins with a proper requirements analysis. This analysis will examine the operational requirements, the legacy environment, and any other relevant political or economic issues. It will identify gaps and alternatives to fill these gaps, gather rough order of magnitude costing figures and present costed options and recommendations for presentation to high-level decision makers.

Once a decision has been made to acquire a Deployable CIS capability, there is a wide range of activities required to conduct a successful implementation, including: defining target architectures, preparing formal notification of intent, developing specifications for an invitation for bid (covering technical, logistical, programme management and contractual issues), selecting a contractor, reviewing the detailed design documentation, preparation of the civil works and coordination of the civil works interface with the contractors, reviewing and approving the test procedures, physical installation, testing, training,

documentation, to ultimately final commissioning and hand-over of the DCIS capability to the Nation and handover of the logistics to the maintenance authorities.

Expertise Description

NCI Agency focuses on Deployable CIS activities to ensure a coherent approach to the provision of effective capability for NATO's expeditionary forces. This includes the development of concepts and requirements, assessment of new technologies, the engineering of viable solutions, the procurement of equipment, the implementation of systems and provision of services in accordance with the requirements of the NATO Military Authorities as outlined in the NNEC Strategic Framework (NSF) and as approved by the nations. In order to fulfil all of its responsibilities, CAT 9 is dedicated to carrying out timely best practice in architectural design, concept development, experimentation and primarily, in acquisition.

NCI Agency supplies facilities, skills and competencies in the areas of radio systems, satellite communications (SATCOM) and terrestrial transmission technologies. The overall mission is the improvement of NATO maritime/land/air communications through the application of modern, secure and cost-effective technology enhancements to existing assets and the facilitation of the efficient procurement of new systems.

- *Transmission Capabilities* - two prototypes of IP over SATCOM, with enhancements to include IP crypto and an experiment was prepared to demonstrate the capabilities of these new technologies in supporting secure and insecure voice, VTC and data services, using small highly-portable SATCOM terminals and allowing an extremely efficient use of satellite resources. In order to support the testing, extensive upgrades and modifications were made to the NCI Agency SATCOM testbed, allowing access to the IP network test infrastructure.
- *Communications for Afghanistan Operation and Mentoring Liaison Team (OMLT)* - developed a successful pilot capability to support OMLTs, small multinational NATO teams embedded with and providing mentoring to Afghani units. The successful pilot has led to the initiation of the acquisition of Iridium handsets and SENTERA security devices.
- *Support to Alliance Command Operations* - based on an extensive test campaign at NCI Agency a preferred UHF On-The-Move (OTM) antenna was selected and the acquisition of new antennas for ISAF initiated. Further support to ACO was to introduce a satellite broadcast capability for operational use; several solutions were compared.

Track Record

NCI Agency's experts have provided valuable assets to equip Operational Theatre Liaison Team with vital communications capability in the form of suitcase size terminal kits which can be transported in the cabin of commercial aircraft thereby ensuring immediate use in emergency operations.

NCI Agency Acquisition and Scientific expertise work with Industry and NATO's Operational and Support entities to successful development completion of a comprehensive Deployable CIS Target Architecture which will serve to underpin future acquisition and employment of the DCIS assets for the NATO Response Force.

NCI Agency Offer

NCI Agency offers the necessary technical expertise to support not only the initial studies, detailed technical requirements specification and acquisition processes, formalised with the definition of the Statement of Work (SoW) and the issuing of an Invitation for Bid (IFB) to Industry, but also to provide the required technical consultancy in the selection of sites and testing of the capability.

With a well written specification, successful contract negotiations, careful risk management, a soundly defined and well executed testing programme, and effective communication with all involved parties, NCI Agency can assist the nations to achieve highest value for money.

Maritime Communications Expertise and Transmission Services Implementation



Overview

Maritime Communications interoperability has been, and remains, the key to successful maritime operations. NCI Agency provides expertise in operational, technical and implementation matters relating to all aspects of Maritime Communications and Transmission Services.

Implementing and maintaining NATO Maritime shore-based Communication standards allows the fulfilment of the Information Exchange Requirements (IER) within the NATO environment, between the mobile platforms and the static Maritime Commanders ashore.

These capabilities include Wireless Maritime Communications but also In-Port Maritime Communications to support Maritime platforms while in port.

NCI Agency normally proposes the services in three phases. A first phase covering works concerning the TBCE preparation, Project Plan, and providing support for TBCE screening; a second phase covering services between fund authorisation by the appropriated NATO

body, up to and including Invitations For Bid (IFB) and Contract Award, and a third phase covering services between Contract Award up to and including Final System Acceptance (FSA) and project close-up.

The Agency also provides the required consultancy expertise for successful contract negotiations, risk and configuration management, and effective communication with all involved parties, as well as support during the Joint Final Acceptance Inspection (JFAI) of the Project.

Expertise Description

As the author and editor of the In-Port Connectivity Target Architecture (IPCTA) and the Broadcast and Ship-shore System (BRASS) Enhancement 1 Target Architecture (BREITA), NCI Agency is in a perfect position to provide engineering and implementation support to those nations adopting these capabilities to support NATO requirements.

The Agency is the Host Nation for the implementation of BRASS System Test, Integration and Verification (STIV) Facility project. This facility has been built for the replication, testing and verification of national implementations. NCI Agency can provide support for integration efforts for adaptation and verification of national BRASS implementations. This facility can be re-configured to mirror the specifics applicable to the Host Nation system being tested and perform interoperability verification tests assisting the Host Nations with the adaptation of the core BRASS software application set.

Under the role of IMA, NCI Agency has been chairing the Maritime Implementation Working Group (MIWG) since 2006. This platform is open to participation of all the NATO Maritime Community for implementations across the Maritime NATO Nations. A Maritime web portal managed by NCI Agency is available as a repository of information and lessons learned, in which relevant reference documentation, announcements and meetings minutes are made available.

The NCI Agency team of highly-skilled Maritime specialists offers decades of relevant operational and engineering experience in Maritime Communications and provide expertise to support studies, detailed technical requirements specification and acquisition processes, formalized definitions of Statement of Work (SOW) and the issuance and evaluation of IFB to Industry.

Track Record

NCI Agency has been involved in the BRASS Projects for Poland, Bulgaria, Romania and Lithuania. Specifically for Poland, NCI Agency is currently working as Procurement Agent for the implementation of the full BRASS capability, after successfully presenting the TBCE to the Investment Committee. The Agency has received a formal request to exercise the same functions for Bulgaria. Recently an antenna study was conducted for Romania to support the development of the Romania BRASS TBCE, which was successfully screened and authorized. As a consequence of this fruitful partnership, Romania has asked NCI Agency to act as Procurement Agent for the implementation of the Shore Based Maritime Communications project. The Agency is currently also working on Phase 1 (TBCE Preparation) for BRASS for Lithuania.

NCI Agency Offer

NCI Agency can provide valuable support to bridge the gap between current national capabilities and those required to allow all NATO Maritime Nations to interoperate freely.

The offer of services includes, but is not limited to, engineering, acquisition and implementation support for Maritime Communications capabilities for NATO and Nations. The Agency brings years of expertise in this area supporting the implementation of Maritime communications initiatives, such as High Frequency Beyond Line of Sight (HF BLOS) Maritime Communications services, also known as Broadcast and Ship-shore System and the In-Port Connectivity.

The NCI Agency portfolio for Maritime Communications support includes services from TBCE production up to and including Final System Acceptance. The Agency can act as the Host Nations' Procurement Agent for these projects. The increasing interest by the nations in this service area demonstrates our successful track record.

3. Information & Integration Services

This section addresses the C4ISR Infrastructure and Core Enterprise Services portion of the network, which adds building blocks of capability to the Comms Network just described, thus helping to attain the desired level of Robust Communications Capability. These capabilities include Infrastructure Services, Restricted and Remote Access Capabilities, Gateways, Enterprise Services, Testbeds, and Consultancy, amongst others, described in the following pages, as well as the expertise to help employ these capabilities most effectively in the customers' circumstances.

C4ISR Infrastructure Services



Infrastructure Services

Overview

Net enabled infrastructure services comprise processing, storage and infrastructure network services. Together with the communication and core enterprise services, they form the foundation to offer a reliable computing platform for C4ISR Applications. Key aim is to support the users' C4ISR information services and business processes needed in various locations: from static HQ main location to area of operation edge locations.

The key concepts promoted are:

- Infrastructure as a Service (IaaS) which offers a high available, flexible and managed environment. The IaaS concept supports a service based approach which is fully compliant with the NNEC paradigm and adheres to modern ways of Infrastructure Services Life Cycle Management.
- Mobility, providing support for end-users and remote locations.
- Consolidation and rationalization, to achieve support for multiple C4ISR services and security domains with the least amount of physical infrastructure to achieve lower TCO, Green IT and higher mobility. The key goal is work towards two major infrastructures (secret and business) that can serve all the C4ISRC Communities of Interest, moving away from stove piped system and single network oriented capability deployment and provisioning.
- Integrated approach for Information Assurance.
- Readiness for upcoming new capabilities and technologies such as Unified Communications and Collaboration, Cloud Services, NNEC Service Management and Control.

Service Description

- Scientific and engineering support to design and engineer Infrastructure Services Capabilities;
- Scientific and engineering support to analyse Infrastructure Services and Integration Requirements;
- Procurement and implementation support to procure and achieve infrastructure services according to agreed SLA's and service catalogue utilising various sourcing models:
 - NATO Owned / NATO Operated Services,
 - NATO Owned / Contractor Operated Services, or
 - Contractor Owned / Contractor Operated Services.

Track Record

NCI Agency has proven to be a key player in support of infrastructure services establishment for the Alliance providing key contributions to all life-cycle phases. A few highlights are presented:

Capability Implementation

- CRO datacentres and computer rooms: SFOR, KFOR, ISAF
- Bi-SC AIS NS and PA LAN environments for various Bi-SC Commands
- New NATO HQ Active Network Infrastructure (in development)
- Server virtualisation for C4ISR applications

Service Delivery

- ISAF AMN Virtualisation Services
- KFOR Service Desk

Innovation and Service Improvements

- Server, application and desktop virtualization
- Multiple-domain single client
- NATO Restricted over the Internet (NROl) and federated identity services integration
- IaaS operational and system view architectures

NCI Agency Offer

NCI Agency is offering a wide variety of scientific, engineering, contractual and services provisioning support to NATO and partner nations who need to achieve high available infrastructures services for their C4ISR applications.

Projects requiring processing, storage, or local networking capacity can make these requirements known and NCI Agency will provide the needed capacities either from available resources or through an uplift commensurate with the need.

Alliance NATO Restricted Capability and REMote ACcess Hosting – REACH



Overview

NCI Agency has been developing capabilities in support of the establishment of an Alliance NATO Restricted (NR) capability. Such a capability offers the opportunity for information sharing among NATO entities, NATO Nations, partner nations, Industry and civil authorities at a level below the secret-level. It complements the secret-level networks and infrastructures of the Alliance with a cost effective solution that allows reach-back into information from anywhere in the world. It uses available communication services, including the Internet (NATO Restricted over the Internet - NRoI), and/or federates existing (national) Restricted capabilities with the emerging NATO capabilities.

From an operational perspective, the Alliance NR capability can be subdivided into three major elements:

- NR enterprise: the Federated Capability used by NATO entities (Commands, Agencies, HQs, etc.);
- External interfaces: Cross-domain services to national and Alliance networks and Extranets;
- NRoI reach-back services, including the current available Remote Access Hosting, or REACH service.

The Agency's REACH framework enables local, remote and travelling users' access to the complete functionality which is normally available in the office environment. The REACH capability is based on the establishment of secure Virtual Private Networks (VPN) over a wired, wireless, or Universal Mobile Telecommunications System (UMTS 3G) connection to the Internet, and the usage of the NATO Public Key Infrastructure (NATO PKI) to guarantee confidentiality of data and user identification/authentication credentials. The success of the REACH capability mainly relies on its ease of use and effectiveness resulting from the investments and efforts made by the Agency in the last years, whilst continuously improving the system and adapting it to user needs.

Service Description

NATO Restricted Capability technical consulting services include:

- Scientific and engineering support to design and engineer Alliance NR solutions;
- Alliance NR interoperability services test support to validate core services (web, mail, directory services) interoperability;
- NR implementation and procurement support;
- Development of Alliance NR interfaces for Functional Services.

The REACH service provides the following features:

- Service based approach to provision of NR remote functionality and access;
- Mobile device (usually laptop computers);
- Full disk encryption;
- Advanced security firewall;
- Internet browsing and e-mail;
- NATO desktop software (MS Windows 7 and MS OFFICE 2010) and select NCI Agency Business Applications;
- Instant Messaging including chat, video, audio, white boarding and desktop sharing;
- Worldwide connectivity;
- NATO Public Key Infrastructure (NATO PKI) for encryption of NR stored and transmitted data;
- Option to get access to testbeds at NU and NR level;
- Remote NR file storage and access;
- NR e-mail between REACH enabled users and NR business network (optionally hosted by NCI Agency);
- Optional Universal Mobile Telecommunications System (UMTS) connectivity.

Track Record

In June 2009, (CWID) Norway and NATO (NAMSA and NCI Agency) executed a successful interoperability trial for core and functional services (Logistics). NCI Agency is actively collaborating with NATO Nations, industries and NITC to ensure that the latest state-of-the-art NR approved technologies are considered. Various NRoI prototypes have been developed in cooperation between NCI Agency production and the Battle Labs Services Team (BLST) which have been taken in production as a service, now designated as REACH. NCI Agency has developed a federated identity concept which is now in successful usage for the initial NR enterprise capability.

BLST operates and maintains more than 600 REACH laptops for NCI Agency Supported Staff, HQ C3 Staff, New NATO Headquarters Project Office (HQPO), KFOR, ISAF, ALTBMD PO, NATO AGS Management Agency (NAGSMA), and Industry partners.

NCI Agency Offer

NCI Agency is offering a wide variety of scientific and engineering support to NATO and partner nations as well as industries to engineer, design, accredit, implement, or test/validate Alliance NR services.

REACH capabilities on offer are tailored based on three user scenarios:

- *REACH for NCI Agency staff*, which provides NCI Agency staff members access to the same resources as if working on a regular NR workstation in the office (portal, project management tools, financial systems, email);
- *REACH for Agency supported staff/external NATO entities/NATO Nations centred around particular communities of interest*, which provides access up to and including NR level based on an explicit access control and the information sharing principle;
- *REACH for Industry/non-NATO Entities*, which is centred around the principle that an Industry partner or non-NATO entity has a requirement for limited access to the domain (for example, a contract-based obligation to share (NR) information with NATO), based on an explicit access control.

Hosting and Collaboration Services



Overview

The NCI Agency BLST virtual collaboration environments enable teams to exchange information, cooperatively develop documents, share documents and plan/execute activities around communities of interest or projects. The NCI Agency's collaboration systems combine effectiveness with ease to use and confidentiality. The collaboration environments can be provided at the desired level of classification ranging from Public via NATO Unclassified, NATO Restricted up to NATO Secret level. Comfortable and efficient mechanisms are available to manage the access to the collaboration environments for small to larger teams.

Description

The following services are available:

- Collaboration Environment with documents storage, user access management, user contacts data management, discussion and forum site, sub sites and meeting workspaces;
- Knowledge management via Wiki functionality;
- Planning and calendar tools to allocate tasks to team members and track issues;
- Workflows and circulation to manage decisions;
- Interface to MS EXCEL;
- Tailoring of the site to customer requirements;
- Workspaces with individually tailored storage space contingents;
- Layered site with Welcome Page with short description of hosted service, pictures and link to sign-in area and several layers for segmented access to information;
- Sign-in area where users can sign-in or register for access;
- Additional functionality allowing for invitation to register for access, request for access workflow, and end-user self-service password management;
- Assigned Site Sponsor that manages and maintains user privileges within the Workspace;
- Standard default template in Collaboration Workspaces.

Track Record

NATO HQ SPS project, NAEW&C E3A website, DNBL portal, MAJIC portal, AMN portals at different classification levels.

NCI Agency Offer

This service enables hosting of a collaboration environment meeting the requirements listed below. The collaboration environments are hosted on NCI Agency IT equipment and operated under NATO security procedures. The service is delivered in accordance with a Service Level Agreement (SLA) signed between the service provider and consumer.

Charges for Collaboration Environments:

For the setup and maintenance of a basic environment, NCI Agency charges 5000 Euro per year. Additional charges apply for options for extended storage capacity, for access management options, for specific import/export interfaces and for the customisation of the site. These are available from NCI Agency on request.

Information Exchange Gateways (IEGs)



Overview

The Information Exchange Gateway (IEG) is NATO's standardized approach to information exchange/Sharing between NATO system high domain, its member nations, NATO-led coalitions, and other organizations. NATO has been operating IEGs since 1998 and so has developed experience in solving problems associated with the secure transfer of information across security domains. This experience is an invaluable help for nations intending to share classified information with either NATO; NATO Missions (e.g., ISAF); other national networks.

Service Description

NATO's standardized approach to information exchange/sharing involves Universal Mobile Telecommunications System (UMTS; 3G) with four defined scenarios: a) NATO Secret to NATO Secret enclaves; b) NATO Secret to NATO Nation Secret; c) NATO Secret to NATO-led Mission Secret; d) NATO Secret to Non-NATO Nations (NNN) or International Organizations (IO). For NATO Nations and partner nations scenarios B and C are most relevant. These provide connectivity to the NATO Secret and NATO Mission Secret (ISAF) networks. Some of the many issues that NCI Agency can help with are security policies associated with the information flow, the

release mechanism many nations will require, and the testing that will be required for compliance.

Track Record

NATO has been successfully implementing IEGs since 1998 and has developed a broad experience in their operation. The IEG scenario C (the connectivity from NATO to Mission Secret) has provided experience that is directly applicable to the NATO and partner nations when they wish to connect to NATO networks. Most recently, NCI Agency completed implementation of the most successful IEG project of the last year – the EUROCORPS IEG project.

NCI Agency Offer

NCI Agency is offering the experience it has gained in the development of the cross-domain information sharing to NATO and partner nations so that they can develop their own release processes and mechanisms. This will be an internal requirement for all nations, and not all nations have experience covering the full breadth of expertise required. For example, in the near future all connectivity between NATO Nations and the NATO Secret network will have to pass through an Information Exchange Gateway scenario B (IEG-B). This will require testing against the NATO implementation of the IEG-B, understanding the protocols involved and the NATO policies, all of which the NCI Agency can support. In summary NCI Agency can offer the following services: a) advice on national release processes and mechanisms; b) advice on NATO security policies and implementation; c) testing against NATO IEG implementations (required for the IEG-B); d) advice on the issues, policy and implementation guidance of connectivity in-theatre (ISAF).

NATO Messaging System



Overview

The NATO Messaging System (NMS) is a STANAG 4406 compliant infrastructure for formal messaging within NATO, between NATO and the NATO Nations, and between NATO and non-NATO Nations and operational forces. NMS implements the military messaging business process and provides desktop-to-desktop organisation-to-organisation messaging. NMS is designed to replace the AIFS/AIMS after a smooth transition using the included ACP127 gateway. Phase 1 of the NMS project is currently underway, with the aim to deploy the system in four main sites (SHAPE, NATO HQ, CC MAR NORTH, and HQ SACT) and a range of smaller sites. Installation is due to take place in second half of 2012, followed by system commissioning in early 2013.

Product Description

NMS comprises four sub-systems: messaging, directory, PKI, and operational system support (system management). It also includes a gateway to previous ACP127 formal messaging systems, and implements ACP133 as the directory standard. In terms of physical footprint, NMS comprises the following system elements:

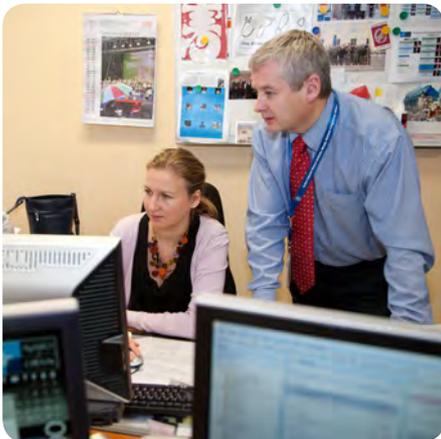
- *local elements* - infrastructure deployed in any site and providing messaging services to the site. Local elements come in different sizes to adjust to each site;
- *backbone elements* - in charge of the inter-sites traffic;
- *remote elements* - very reduced NMS footprint for very small sites;
- *border elements* - which are the bridgeheads to other STANAG 4406 formal messaging systems.

NMS has flexibility to expand and to relocate assets as necessary to adapt to operational circumstances, and is based on COTS.

NCI Agency Offer

The NATO Messaging System can be a suitable replacement to national ageing ACP127 infrastructure, or can be a fresh start for nations without legacy formal messaging systems. The system can be set to the specific preferences of the Nation, while the use of the same system as NATO can considerably facilitate interoperability between the Nation and NATO.

Tasker Tracker Enterprise



Overview

For several years, NATO has recognized the need to improve the way in which organizational work items, known as taskers, are raised, delegated, monitored and managed. NCI Agency developed a tasker management prototype solution (known as Tasker Tracker) which extended Microsoft Office SharePoint Server (MOSS) to provide such capability. More than just a tracking tool for process managers, its success comes from being a collaboration platform which provides integrated services to support production, sub-task delegation, situational awareness and business intelligence. Tasker Tracker Enterprise is the industrialised version of that prototype, providing documented web service interfaces to allow inter services communication, namely with an external Document Storage Provider like NATO DHS, and Excel Services for extended and flexible reporting capability. It also includes a new Tasker locking mechanism and an archival solution.

Product Description

Tasker Tracker Enterprise is a state based workflow and collaboration tool which extends a Microsoft SharePoint infrastructure. It is highly configurable and during roll out the solution will be aligned with the way that the organization processes taskers. It provides a complete suite of tools to assist in the collaboration process some of which, such as the integrated document management services and search engine, are standard SharePoint features. Others, such as the sub-tasking tool and the traffic light monitoring system are unique to Tasker Tracker Enterprise. Consider these services as a tool kit from which organizations are free to choose the features and services they require. No two deployments of Tasker Tracker Enterprise are the same. Furthermore, Tasker Tracker Enterprise has been designed with adaptability and flexibility, fully recognizing that organizational structures change and adapt over time.

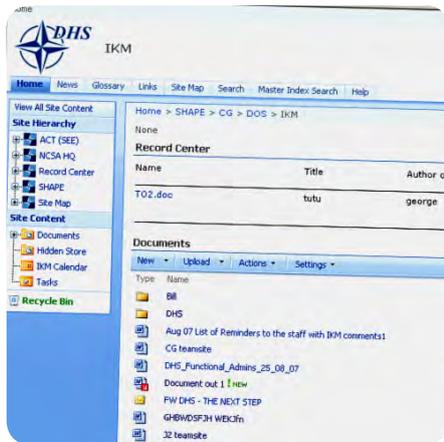
Track Record

The NCI Agency Tasker Tracker prototype, in active service since 2005, is currently deployed to over 20 organizations including all NATO static HQs in Allied Command Operations, HQ Strategic Command Transformation and several National Armed Forces HQs and MODs. Starting from February 2012 at SHAPE, Tasker Tracker Enterprise will be deployed across the new NATO Command Structure.

NCI Agency Offer

NCI Agency offers a range of services to support the implementation of Tasker Tracker Enterprise. These include business and process analysis, system installation and configuration, running a pilot deployment or user trial, training programmes and 2nd level support to deployments outside the NATO Command Structure. NCSA Configuration Management will enforce the existence of one Tasker Tracker Enterprise baseline. The software itself is free to NATO or NATO National military organizations but, as it extends a Microsoft SharePoint 2007 environment (with plans to support SharePoint 2010 in the future), the necessary commercial licences for Windows, SharePoint and SQL Server will be required. NCI Agency offers a User briefing, a 2 days Functional Administrator training course and 1 day System Administration Training Course, to provide in-depth education into how Tasker Tracker Enterprise can be maintained and evolved to meet the challenges of a changing organization.

Document Handling System (DHS)



Overview

NATO's complex organizational structure, strict security requirements and high turnover of military personnel presented numerous challenges to the exchange of information and knowledge until the delivery of the Document Handling System (DHS). The DHS is the first enterprise-wide application in NATO and provides standardized document creation, management, storage and retrieval as well as collaboration tools that are fully integrated with the user's desktop. The DHS provides services and functionality for both the staff officer and Record Centre (registry) staff. The DHS' customizable organizational and data structures, versioning, check-in/check-out functionality, alerting capability and access mechanisms integrated with the Active Directory support the day-to-day operations of the Command. The addition of a combination of robust searching and browsing capabilities improves the staff officer's ability to find, retrieve and access needed information quicker, thus improving overall information awareness and contributes to reducing the decision making process time.

Product Description

DHS solves the Commands' immediate problems of storage (structure), information access control, finding/locating information across the enterprise; and retrieving the needed information to support the Information and Knowledge Management (IKM) life-cycle. This capability helps the Bi-SC evolve into a Knowledge Centric Organization (KCO) thus supporting the NATO Network Enabled Capability goals of achieving Information Superiority and improving the decision making process. The DHS supports the command's organisational needs as it is implemented as a business service where the various DHS service modules (create, search, archive, and workflows) can be updated with minimal support effort and staff disruption to the live system. DHS is also integrated with the Active Directory where the user's information (name, command and office) is automatically populated into the content's appropriate metadata fields and traced in audit and version logs. The addition of a robust federated searching and browsing capabilities improve the staff officer's ability to find, retrieve and access needed information more quickly, thus contributing to a reduction in the overall decision making process' time and improved information awareness. The DHS provides Records Management capabilities that directly support the registry staff officer by automating the Records Management's data entry requirements through the adoption of common structures, versioning and access mechanisms. Concurrently, the DHS provides improved capabilities for the registry by automating more of their documented processes. DHS comes with 3 Feature Pack (FP) which provide archiving, key word functionality and adds 15 standard and compliant templates.

Track Record

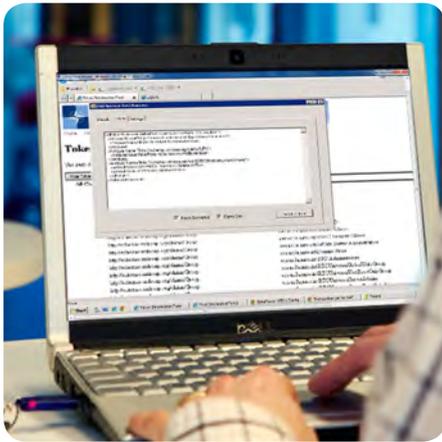
The DHS was built to conform to the various NATO Information and Records Management policies; uses the current approved taxonomy and metadata; and the DHS' templates are built in accordance with the Bi-SC AIS document standard policy. The following NATO Commands use the Document Handling System: SHAPE, JFC Naples, CC Air Izmir, CC Land Madrid, CC Maritime Naples, JFC Brunssum, CC Air Ramstein, CC Land Heidelberg, CC Maritime Northwood, JC Lisbon, JALLC, JEWCS, NATO Defence College, and the NATO School (Latina). HQ ISAF, and ISAF Joint Command as well as all 8 ISAF Commands / Regional Commands and NATO Training Mission Afghanistan use DHS. JWC and JFTC are scheduled to have DHS installed. HQ KFOR has indicated that they are working to secure funding to have DHS installed and two NATO partners have requested DHS as has the Estonian Military School.

NCI Agency Offer

The Document Handling System (DHS) is a service based application which provides NNEC compliant capabilities. DHS is designed to support the Command's needs by providing the staff officer document management and search tools and provides various rigorous records management processes supporting the Record Centre (registry). The DHS' create service is integrated with the user's desktop and provides the user the ability to draft office automation content via standardized policy compliant templates. DHS can be available in a "lite" version for operational / tactical units when the directory services management is considered an issue. This "lite" version requires less management effort and provides a more user friendly interface that requires fewer skills on SharePoint.

DHS can also be virtualised and deployed in a data centre. It has also been configured in a replication mode, synchronising its data across a wide area network, providing data sharing and data resiliency. It comes integrated with a search capability that can be used to federate search capabilities across the enterprise.

Core Enterprise Services



Core Enterprise Services Consultancy

Overview

The Core Enterprise Services (CES) will bring value to NATO by providing a flexible, standards-based and secure Service Oriented Architecture (SOA) foundation capability. The CES will bring increased reusability and interoperability across the NATO federated environment. Standardised functionalities such as transformations between different data formats, supplier and consumer authorisation/authentication, and message brokerage alleviates the tendency for projects to "reinvent" these basic functions, duplicating effort and leading to tightly coupled stove-piped solutions that are not interoperable with each other.

Expertise description

The Agency has been heavily involved in demonstrating to various functional services, Communities of Interest and nations, that standards-based Core Enterprise Services can solve real problems, increase interoperability and connectivity and mitigate the traditional stove-piped, tightly coupled approach.

Track record

The Publish/Subscribe service enables loosely coupled systems to automatically distribute information based on subscriptions and event driven notifications of changing data. A Publish/Subscribe Notification Broker was identified as one of the crucial components of the AMN (Afghanistan Mission Network) Integration Core. Also AirC2IS system (currently under procurement) is planning to implement Pub/Sub functionality based on our proposed interfaces.

Another notable adoption of our results is the usage of a Security Token Service, which is part of Information Assurance/security Core Enterprise Services. As a result of these demonstrations, NCI Agency's BLST implemented a Security Token Service in the NATO Restricted network and is operationally using it to provide access to a SharePoint portal for AMN. The technology is also currently being investigated by NIATC and NCSA with plans to deploy it in NATO WAN.

Our research on Core Enterprise Services already provides value to various NATO projects and is enabling new functionality. It is also important input into the anticipated capability package for Core Information Services for C2 (CP 9C0150), which is intended to provide many of the Core Enterprise Services in the NATO networks.

NCI Agency Offer

The CES team endeavours to apply their expertise and energy to enrich NATO and assisting its internal and external sponsors in achieving their objectives.

The CES Testbed is an investigation laboratory to ensure a representative NNEC environment with the incorporation of both Core Enterprise Services and Community of Interest applications and services.

The first instantiation of a CES is the NATO Enterprise Directory Service (NEDS) which aims to provide consistent and up-to-date information across all of the current and future NATO application directories and data repositories.

Core Enterprise Services Testbed



Overview

The CES/NNEC Testbed is a virtualized, unclassified environment for performing scientific research, validations and tests with national partners in the area of NATO Network Enabled Capabilities (NNEC), Service Oriented Architecture (SOA) and Core Enterprise Services (CES). It provides numerous components with a simulation of multiple networks and security domains. Cross-domain experiments can be performed internally using the national network simulated in the testbed, or by connecting the testbed via VPNs to external facilities of national (or Industry) partners.

Service Description

The CES/NNEC Testbed currently includes prototypes representing most of the NNEC Core Enterprise Services areas defined by the NATO Core Enterprise Services Framework, plus sample Community of Interest (Col) and end user services. Some examples are:

- Discovery/Registry Services
- Security Services
- Collaboration services
- Directory services
- Messaging services
- Cross-domain services
- Various Enterprise Service Busses (ESB) and messaging buses for SOA
- Various Col and end user services
- Composition services

Track Record

The CES/NNEC Testbed has been extensively used by several projects for MN experiments and testing. It provided the necessary infrastructure and knowledge that made many important results possible. Some notable examples are listed below:

- "NATO-Sweden Joint Experiment on NEC" in 2008;
- SOA and NNEC testing with multiple nations and preparations for live demos at exercises and conferences like Combined Endeavour and MCC;
- Alliance Replication Hub testing with nations;
- ACP 145 Gateway;
- Coalition Shared Database (CSD) and MAJIIC testing with several nations;
- Support for Afghanistan Mission Network (AMN) Integration Core prototyping and testing;
- CSD and MAJIIC testing.

NCI Agency Offer

The testbed operates as an investigation laboratory to ensure a representative NNEC environment with the incorporation of both Core Enterprise Services and Community of Interest applications and services. The NNEC Testbed is a living facility that reconfigures on demand; integrates with other testbeds and laboratories like the Distributed Networked BattleLab (DNBL) environment; participates in sandbox activities and intra-NATO/ international interoperability testing activities; and plays a key role in supporting the transition of the Bi-SC AIS Core Services environment to an NNEC Core Enterprise Services realisation.

NATO Enterprise Directory Services (NEDS)



Overview

Within NATO, there are a range of directories/data repositories that coexist, such as Network Directories (e.g., Windows Active Directory), Email directories, Human Resources data repositories and Functional Service directories. There is a sizeable overlap between the information contained in these various directories, therefore NATO has identified a need for automated synchronization, so as to ensure consistent information within the NATO enterprise and reduce the overall management overhead. The NATO Enterprise Directory Service (NEDS) is the planned service (and system) for providing consistent and up-to-date information across all of the current and future NATO application directories and data repositories. It will be responsible for interfacing with the authoritative source for each element of NATO enterprise information and publishing that information to each subscribing system on an agreed schedule and in an agreed format. The deployment of the NEDS is expected to considerably reduce the management costs of the currently independent and redundant data repositories in NATO.

Product Description

NEDS Publishers can store their authoritative information in a NEDS-specific directory service which NEDS will use to satisfy queries from subscribers. Subscribers will be able to access the NEDS information over a variety of different interfaces including file-based, Remote Procedure Call (RPC) and Service Oriented Architecture (SOA) interfaces. As well as directly accessing the information according to the NEDS schema, the NEDS will be able to map the information to alternative schemas that are already in use by existing directories or data repositories. As NEDS will be used as the repository for identity information, it will also serve as a foundation to deploy Identity Management within NATO (as an attribute store), thus adding capability to the Networking and Information Infrastructure (NII).

A generic set of requirements is now available for use in Statements of Work and System Requirements Documents of other implementation projects to facilitate the interface between NEDS and these other systems.

Track Record

The NEDS concept of synchronization of information has been piloted within the NCI Agency office automation environment, achieving beneficial results without needing to be sophisticated. This pilot has also facilitated connecting to environments of other NATO agencies by synchronization with these external data sources. In addition, the NEDS concept of synchronization has been used to support the testing of exchange of directory data between NATO and NATO Nations via the Alliance Replication Hub (ARH).

In January 2012, a contract was signed with ATOS who will be responsible for development and fielding of the NEDS solution. The initial capability will be available in mid-2013.

NCI Agency Offer

NEDS is a metadirectory and directory service server that connects to various types of data repositories, and provides synchronization and filtering mechanisms to ensure consistency of all directory information held in these data repositories as well as provision of that information upon request.

4. Cyber Defence & Assured Information Sharing

NCI Agency enables the implementation of information superiority through visible, accessible, understandable, trusted and protected information delivery to the edge. The capability provided expedites the core enablers by providing “the right information to the right people at the right time in the right form”. The Agency delivers services and capabilities in the areas of Information Assurance, Cyber Defence, Interoperability through standards-based approach and Operational requirement analysis and validation.

Cyber Security



Overview

NATO and NATO Nations are heavily dependent on communication and information systems (CIS), which, to varying degrees, are vulnerable to threats from different adversaries through their network connections and also from access by authorized and/or unauthorized insiders. A disruption or an intrusion into a CIS could seriously harm the functions of the Alliance, especially if it affects NATO or the NATO Nations' classified networks. Even if unauthorized access to the secure networks is successfully denied, cyber-attacks on critical infrastructure could degrade the functioning of national security, law and order, and lead to disturbances and losses in economic systems.

Cyber Security encompasses all activities needed to ensure that CIS are able to properly protect any information (stored, processed, or transmitted), as well as the CIS services delivered to the users. Cyber Security includes both preventive and reactive measures, meaning that it must consider the strategy for designing CIS, how they are built, as well as defending the CIS against attacks while operational (cyber defence).

Expertise Description

Cyber Security Direction and Guidance

A Cyber security strategy is necessary to establish governance and to ensure that the appropriate aspects of cyber security are addressed in a manner that best supports the operational need. Through policies, best practices, tested methodologies, and configuration baselines, the appropriate direction and guidance for Cyber security can be established. NCI Agency's expertise in this area comes from years of experience with helping to develop security policies, directives, and guidance and applying it to implementation projects.

Cyber Security Design and Implementation

The foundation for Cyber security is put in place during the design and implementation of a system. The proper capture of Cyber security requirements, followed by design and implementation of Cyber security is vital for the ability to protect and defend the CIS during operations. This activity also includes related aspects of security design and implementation associated with the supporting security management infrastructure. NCI Agency has considerable experience in architecting, engineering, and validating security solutions of an operational CIS in order to ensure a balanced security design which fully meets the demands of the CIS users. NCI Agency has also proven experience in the management and acquisition of many complex information technology security projects and in working with multiple stakeholders to ensure programmatic coherency.

Cyber Security Management

Risk management is perhaps the most fundamental part of Cyber security. Making sure that the risk to the users corresponds with what the users are willing to accept requires the correct assessment of risk and a way to mitigate any risks considered unacceptable. NCI Agency has considerable experience in the various types of risk assessments of CIS including formal security risk as well as vulnerability assessments. This also includes the preparation of security accreditation documentation and active support to all phases of the accreditation process.

Cyber Security Operations

The operation of a CIS requires constant maintenance to prevent security incidents, as well as the ability to react quickly to actual incidents. This work spans from key management and the proper configuration and patching of software to the assessment and rapid recovery from cyber-attacks. NCI Agency's experience in topics such as security labelling, cryptographic keying, incident handling

procedures, static and dynamic malware analysis, and computer and network forensics can help both preventing and reacting to cyber-attacks. NCI Agency has assisted in all aspects of incidents, from planning to crisis stage, to post incident forensics analysis.

Cyber Security Education, Training and Exercise

Technology is never perfect, and Cyber Security relies on the good judgment of the users to ensure proper operation. This can only be achieved through proper education and training of personnel. NCI Agency has experience in educating users on the aspects of Cyber security that are needed to raise awareness and keep the CIS secure as a whole. NCI Agency is an active player in the development and conduct of multiple cyber defence exercises within NATO.

Track Record

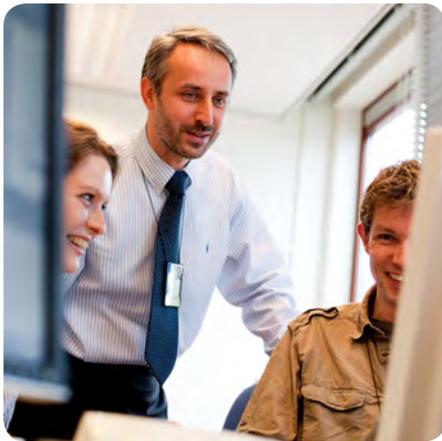
NCI Agency has a long history of successful scientific and engineering contributions to major NATO projects like the NATO Computer Incident Response Capability (NCIRC), the Afghanistan Mission Network (AMN), and the management and acquisition of information technology security solutions for NATO and NATO Nations.

NCI Agency Offer

NCI Agency provides its expertise in definition, management, execution and support of the security aspects of complex MN projects.

Subject matter expertise includes: secure CIS architecture design, cyber security policy, engineering, risk and vulnerability assessment of CIS, malware and forensics analysis, as well as project management of information technology security projects.

Interoperability Standards, Consultancy, Training, & Test Services



Overview

A global networking capability where information is shared between strategic, tactical and operational layers is essential for realizing timely end-to-end seamless information sharing. However, NATO, coalitions and nations have frequently deployed, heterogeneous forces in support of a wide range of missions. Current information exchange standards are thereby limited in terms of content quality, verification and integrity checking.

The proper implementation of interoperability standards via strategy, standards, directives and guidance lead toward key benefits that:

- reduce lifecycle, development and integration costs;
- reduce capability development timelines;
- improve interoperability among capabilities.

Interoperability standards encompass all activities needed to data and information sharing across the network and information infrastructure as described in the NATO Network Enabled Capability (NNEC) Data Strategy and Technical Services Strategy, via development and implementation of interoperability standards and specifications within NATO and national capabilities. Interoperability standards include a 360 degrees perspective from strategy to validation during operation.

Expertise Description

Interoperability and Standards Strategy, Standards, Directives and Guidance

An interoperability and standards strategy is essential for achieving the end-user need in a programmatic way. Standards, directives and guidance are foundation components for realizing the strategy (further described in section Standardization Enhancement). For decades, NCI Agency has been actively involved in supporting the development and writing of all four aspects.

Interoperability and Standards in support of Capability implementation

Applying current and emerging interoperability and standards strategy, standards, directives and guidance in a cost-effective manner leads toward the development of effective interoperable capabilities. NCI Agency has extensive experience in applying leading edge technology for automatic code and documentation generation and validation.

Interoperability Assessment Verification and Validation

The assessment, verification and validation of interoperability at various levels, ranging from physical interoperability to knowledge interoperability is required during the development and usage of the capabilities. Interoperability analysis can be performed via paper-based, out of context (e.g. Testbed, TDLITS), in context (e.g. Exercise and CIAV) and in operation analysis. NCI Agency has the facilities, tools and subject-matter expertise to support each of the four interoperability analysis phases. Capability available to support these phases is further detailed in the section entitled Interoperability Experimentation Test and Validation (IETV).

Interoperability and Standards Systems and Tools in Support of Operations

Systems and tools are required among the entire capability lifecycle framework. NCI Agency has supported NATO and national needs via the development of an interoperability and standards suite of Systems and Tools:

- NMRR: through the provision of visibility, accessibility, coherence, assurance, interoperability and effective management of metadata, the NMRR enables integration of information from various information sources, thus being key to improve situational awareness (see section NATO Metadata Registry and Repository (NMRR)).
- SID/IOM: the System Implementation Document and Interoperability Matrix tool allow the capturing of specific implementation details and it supports the paper-based interoperability analysis by comparing and contrasting NATO Standardization Agreements (STANAGs) and SID contents.
- NSCD: enables the participation in a STANAG-5602 compliant SIMPLE-network and the exchange of tactical data, synthetic data and other information across that SIMPLE-network.
- O-ANT: On-line Analyzer for Networked Tactical data link (O-ANT) is able to analyze if the network traffic related with a supported protocol is compliant or not with the selected standard and revision. O-ANT also provides specific statistics about the use of different standard and interoperability problems detected.
- SMACQ: Service to Monitor and Assess Connectivity and Quality provides a live monitoring capability assessing data-level connectivity and data quality assessment on tactical and operational information dissemination with the aim to enhance situational awareness and operational effectiveness by increasing the operators' trust in the available information.
- NIRIS: Networked Interoperable Real-time Information Services bridges the NNEC and TDL networks enabling end-to-end information sharing. It provides a middle layer for C4ISR systems via the data collection, dissemination and transformation of information (see section NATO Interoperable Real-time Information Services (NIRIS) Consultancy and Training).

NATO and nations can obtain access to and support for the aforementioned systems and tools via NCI Agency.

Interoperability and Standardization Education and Training

Well-trained and knowledgeable human resources are vital for the success of the operations. Acquiring and maintaining deep knowledge in the area of interoperability standards is not trivial and requires continuous education and training. NCI Agency has appropriate SMEs to support hands-on, ad-hoc and standard training in the area of interoperability and standardization.

Track Record

NCI Agency has a long history of successful applying the aforementioned expertise in various major scientific and engineering NATO and national projects:

- Contribution to the NNEC Data Strategy and the on-going development of the NATO Tactical Data Enterprise Services Strategy; for example, the STANAG Transformation Framework (STF) and the Afghanistan Mission Network (AMN);
- Transformation of NIRIS towards the NATO Tactical Data Enterprise Service Bus led to the deployment and usage of NIRIS in hundreds of instances in support of different forces in multiple contexts;
- NCI Agency has been one of the primary contributors to NATO and national interoperability venues, including the TDLITS, CIAV, CWIX and Empire Challenge;
- Development and support of several interoperability standards systems and tools for NATO and Nations, which have been used for decades;
- Education and training to NATO and national employees supporting the establishment and maintainability of SMEs.

NCI Agency Offer

NCI Agency provides its expertise in definition, management, execution and support of all interoperability/standardization aspects, from ad-hoc, tailored to complex, MN projects. Resources such facilities, tools and subject-matter expertise can be provided by NCI Agency to meet the requirement.

Standardization Enhancement



Overview

Within NATO, interoperability is mainly achieved via standardization. Operational needs have evolved faster than the current standards and ad hoc system-to-system solutions were adopted to temporarily fill in the gaps.

Moreover, it was recognized by several NATO standardization bodies that current information exchange standards are limited by content quality, lack of verification and integrity checking, tedious and time consuming configuration management, specific implementation challenges, limited suitability for cross-domain information exchange, and more.

NCI Agency skills and experience led the development of the information exchange STANAG framework, which provides:

- common framework for all information exchange STANAGs, structuring the information of the STANAG in a comprehensive and consistent way;
- STANAG transformation concept, encompassing the movement from traditional paper-based representations of information exchange STANAGs towards machine-interpretable representations.

The application of this framework results in more effective and efficient configuration management of standards, faster development of systems while increasing their quality, enhanced interoperability and operational usage within the NNEC environment.

Service Description

The NCI Agency consultancy supports the definition of information exchange STANAGs providing knowledge in:

- usage of current specifications leading to efficiency;
- capturing and development of change proposals based on national and NATO needs;
- interoperability enhancement via STANAG transformation;
- current movements within NATO standardization;
- application of the Information Exchange harmonization approach.

Track Record

NCI Agency has been supporting NATO and Nations in:

- addressing requirements via standards proposals;
- application of the framework in multiple venues before including the development of STANAGs in the logistics domain and in the TDL domain;
- maturing the process to represent STANAGs in a machine interpretable language as part of the Data Link Working Group.

NCI Agency's extensive experience has matured with decades of support provided to NATO and Nations in the area of local and distributed IO assessment.

NCI Agency Offer

NCI Agency can provide consultancy in the area of information exchange standardization, applying the developed framework tailored to the specific customer's situation.

Interoperability Experimentation Test and Validation (IETV) Service



Overview

The IETV (Interoperability, Experimentation, Testing and Validation) capability is a service developed by NCI Agency in support of CIS validation, interoperability enhancement and experimentation in scenarios related to multinational, NATO-led expeditionary operations. The IETV fits into the current under-development CIS validation process in support of force certification for NATO expeditionary missions.

Service Description

Within the validation process, assessment of nationally provided CIS against a reference testbed is an expressed need. Using the testbed, the nationally provided system is evaluated in terms of its ability to interconnect and interoperate with other NATO and national systems. It also allows assessing interoperability conformance of new concepts and technologies. The end result is a technically compliant CIS, ready for operational validation.

The service consists of the following parts:

- static and deployable hardware with core and functional services which are tailored to the specific venue's needs;
- documentation including interoperability testing requirement based on operational needs;
- voice, secure voice and data services;
- infrastructure and data collection, reduction and analysis tools.

Track Record

IETV has been successfully deployed and used for experimentation, testing and validation in the Coalition Warrior Interoperability Demonstrator (CWID), Steadfast Cathode exercise and other test events since 2006. It is in high demand by NATO and national entities to support interoperability and testing events.

NCI Agency Offer

NCI Agency can provide trained and experienced personnel, hardware, software and data collection, reduction and analysis tools for in-house (using NCI Agency labs, e.g. DNBL), remote (using the deployable modules) or networked (e.g. CFBLN) interoperability test of infrastructure, core and functional services to support the validation of the deployable CIS within the NATO Response Forces (NRF) context, NATO Metadata Registry and Repository (NMRR).

NATO Metadata Registry and Repository (NMRR)

Overview

Loose coupling between systems is essential to achieve the benefits envisioned by the NATO Network Enabled Capability (NNEC). Interoperability between such systems (or services) requires their metadata to be available in the shared networked environment in a machine interpretable format. The purpose of the NATO Metadata Registry & Repository (NMRR) is to provide a federated capability where structural, semantic and discovery metadata can be registered, shared and reused, in order to make it available to NATO, nations and other organizations in a secured manner. From an administrative perspective, configuration management, lifecycle management and vocabulary management are some key features. While an administrative user has a direct interface with the NMRR, an operational user will only interact indirectly with it – possibly without being aware. The NMRR is part of a set of Information and Integration Services (IIS), which together provide the foundation for the loosely coupled environment where data from different sources can be aggregated, integrated and mediated in order to provide the right information and situational awareness to the operational user, be it at strategic, mission or tactical level.

Detailed Description

The NMRR is based on the ebXML (electronic business XML) standard, which has been developed by the Organization for the Advancement of Structured Information Standards (OASIS). More specifically, it is based on the ebXML Registry Information Model (ebRIM) and the ebXML Registry Services and Protocols (ebRS) specifications. These standards have been endorsed by the NATO C3 Board (NC3B) Information Services Sub-Committee (ISSC) after recommendation by the NATO XML Management Services Working Group (XMLSWG).

Track Record

The NMRR prototype has been used in the Coalition Warrior Interoperability Demonstration (CWID) 2008 and 2009, Combined Endeavour (CE) 2009 and several informal venues focused on metadata federation with nations (e.g. Germany, Spain and the USA).

The NMRR prototype has over 80 registered users (as of end 2009) and has been approved for usage by the XMLSWG, in particular by its Namespace Managers Forum (NMF). Moreover, it will be utilised by NCI Agency to coordinate the metadata development efforts.

NCI Agency Offer

The NCI Agency can provide an NMRR prototype which allows you, as a Nation, NATO entity or non-government organization to explore the benefits – both from an operational and an administrative perspective – of having an NMRR as part of your service oriented environment. While the NMRR provides several benefits from an administrative perspective in terms of enhancing the metadata quality, sharing and reuse, it gets even more interesting when it is combined with other components from the NNEC Networked Information and Integration (NII) layer, such as semantic search, mediation and dynamic service discovery as this can greatly enhance the interoperability between loosely coupled systems. Moreover, the NMRR is a great mechanism to support the Interoperability Standardization process.

NATO Interoperable Real-time Information Services (NIRIS) Consultancy and Training



Overview

The Tactical Picture is composed of Real-Time information from Air, Maritime and Land sources, collected via different interfaces in different formats.

Collecting, generating and disseminating the Tactical Picture to all need-to-know places and systems has long been a challenge for many Command Centres due to the variety of sensors formats and transport mechanisms.

Service Description

NCI Agency has built and supports a system which collects and disseminates the recognised tactical picture to various military users, converts data between different formats, provides record and playback capabilities and provides specialised hardware components for security filtering and protocol matching. It is known as NATO Interoperable Real-time Information Services (NIRIS).

Track Record

NCI Agency experience with NIRIS consultancy has been used extensively to support installation, configuration and support of the NATO Wide Tactical Picture dissemination.

- NATO Combined Air Operation Centres
- NATO Reaction Forces
- Afghanistan

NCI Agency supported nations with NIRIS experts to integrate NIRIS components and use NIRIS product within the national operational networks. Some examples can be identified within BEL, GBR, ITA, NDL, and SWE.

NCI Agency Offer

NCI Agency can provide valuable support to nations or industries in the acquisition and implementation of a complex network system which composes the Tactical Picture. Services available include:

- Planning activities such as concept definition, architectural design, functional identifications based on operational requirements, & Interoperability Assessments;
- Implementation activities such as acquisition, mechanical assembly work, installation, configuration at user site, V & V, tailored training-to include NIRIS Administrators, and support with security paperwork;
- Post implementation;
- Exercise support;
- Operations support.

5. Intelligence, Surveillance & Reconnaissance (ISR), Force Protection

This Section portrays Joint ISR capabilities, as well as highlighting key programmes and projects in the critical area of Force Protection, including Counter-IED and Indirect Fire, and displays potential new venues for MN cooperation with the NATO Russia Council.

NATO's Bi-Strategic Commands developed a Joint Intelligence, Surveillance, and Reconnaissance (JISR) Concept Document that points the way towards seamless sharing of JISR information among national and NATO Communities of Interest (COI). This concept identifies the need to support the full range of the Intelligence Cycle: Direction, Collection, Processing, and Dissemination. NCI Agency addresses the full spectrum of capabilities required by the Concept Document; from policy review, to process and implementation support, to standards evaluation and development, to prototype development, to acquisition support. The full range of NCI Agency expertise in this arena is quite extensive, including specification, evaluation, test and acquisition of: surface, air, and space based active and passive sensor systems and capabilities; integrated and stand-alone C2ISR process support tools; data interoperability based capabilities; test & evaluation capabilities; and integration of all of the above in a holistic manner.

Intelligence Functional Services (INTEL-FS)



Overview

Advanced intelligence system capabilities are critical to allow NATO and coalition forces to see, understand and react first. The purpose of the Intelligence Functional Services (INTEL-FS) is to provide NATO Intelligence staff with an integrated, robust and flexible automated capability to support the direction, collection, processing, and dissemination of intelligence. These intelligence functional services enable the Commands and theatre headquarters staff to store, retrieve, visualize and disseminate intelligence products, including all-source products (e.g., reports, briefings, summaries); exploited imagery and video; and Requests for Information (RFI) and their associated responses. Joint Intelligence Surveillance and Reconnaissance (JISR) products exchanged via the Coalition Shared Data (CSD) server such as Collection and Exploitation Plans, imagery and video are also accessible via the intelligence functional services.

The intelligence functional services enable analysts to discover, access, and analyse information from a NATO-wide "virtual intelligence repository", including information contributed via the CSD, the Battlefield Information Collection and Exploitation System (BICES), and other

NATO core and functional services (e.g., operations, logistics). This ability to provide a "one stop shop" for intelligence information and analytical capability is the hallmark of the intelligence functional services.

Currently, intelligence functional services are supported by a collection of operational prototypes and Commercial-off-the-Shelf (COTS) applications to meet near-term intelligence requirements. For example, the NATO Intelligence Toolbox provides NATO and coalition web-enabled access to intelligence products. Other tools, including i2 Analyst Notebook, are available to support the management and analysis of structured intelligence information. Specialized tools to support the management and analysis of Signals Intelligence (SIGINT) and the management of Human Intelligence (HUMINT) sources have also been fielded.

A contractual effort to consolidate and enhance functionality and improve the interoperability of the intelligence functional services is currently underway as the INTEL-FS Spiral I project.

Service Description

NCI Agency has a highly-skilled, interdisciplinary team who can cover all aspects of implementing successful intelligence functional services, including subject matter experts, analysts, project managers, system engineers, and trainers. NCI Agency can also support the acquisition, implementation, and technical and organizational integration of NATO and Commercial-off-the-Shelf (NOTS/COTS) products. NATO intelligence functional services are based on standards and protocols that facilitate the exchange of information and help ensure analysts can find and access the information they need.

Track Record

NCI Agency has demonstrated capability in the timely delivery of intelligence functional services tailored to organizational and operational requirements and with the full complement of support. These functional services have been proven in NATO and coalition theatres of operation and are providing mission-critical value today.

NCI Agency Offer

These intelligence functional services have a broad applicability for NATO and national intelligence organizations. To gain maximum benefit from these tools, the implementation must be tailored to the unique operational requirements for the organization (e.g., domain values, information flows, data synchronization) and the legacy environment into which it must be integrated (e.g., operational processes, interoperability requirements). Personnel and training issues must also be addressed.

If a decision has been made to use NATO intelligence functional services within an organization, there is a full spectrum of activities required to conduct a successful implementation, including: coordination of the implementation, physical installation, data migration, testing, provision of documentation, and training, leading to final commissioning and hand-over of the capability to the organization. Support services are also recommended, especially during the bedding-down period.

Multi-sensor Aerospace-ground Joint ISR Interoperability Coalition (MAJIC) 2



Overview

Joint Intelligence, Surveillance and Reconnaissance (ISR) Interoperability requires joint coalition forces to collaboratively employ and exchange data from a wide variety of ISR sensors in a network-enabled manner. Effective interoperability also requires coupling between the ISR assets and Command and Control (C2) capabilities. ISR interoperability improves the commander's situation awareness, supports time-sensitive operations, and allows forces to more dynamically manage information collection, exploitation and dissemination. The MAJIC project was performed by a coalition of nine NATO Nations to maximize the military utility of surveillance and reconnaissance resources through the development of architectural, technical, and operational interoperability.

NCI Agency supported the MAJIC Project by providing technical management, subject matter expertise, document production and management, and exercise organization, evaluation, and support.

Expertise Description

- *Operational Foundation* - to ensure that the project had the strongest possible operational foundation, the efforts under MAJIC were guided by operational doctrine in the form of Concept of Employment (CONEMP) documents, Tactics, Techniques, and Procedures (TTP), and other requirements and guidelines.
- *Flexible and Wide-Reaching Approach* - MAJIC aimed at addressing any sensor platform category, ranging from small tactical systems assigned to tactical Commands and all the way up to highly capable strategic multi-user systems, including space-based, airborne, ground-based or maritime, as well as manned and unmanned subsets of these and sensor data types (e.g., GMTI, SAR, EO, IR and ESM, etc.).
- *Interoperability Principle* - MAJIC supports interoperability between ISR and C2 systems through the use of common interfaces for data formats and exchange mechanisms, leaving the inner workings of each national system untouched and requiring only minor external interface modifications to each system. The common formats and exchange mechanisms employed are based on NATO Standardization Agreements (STANAG).
- *Interfaces, networking and flexibility* - MAJIC supports interoperability using any network type or bandwidth, as well as any combination of networks and interconnections. This approach includes dissemination of near real-time and archived data, the latter by using Coalition Shared Data (CSD) servers that are synchronized at the metadata level to provide full visibility into all archived data throughout the network. MAJIC provided a true network-enabled capability, compliant with the NATO Network-Enabled Capabilities (NNEC) initiative, for a wide variety of users at different locations and levels of command to access and retrieve data in accordance with own tasks, needs, priorities, and preferences.

Track Record

The MAJIC project started on 1 April 2005 and a follow on project has commenced and will continue through 2015 as MAJIC 2. To date, the project has participated in at least one operationally-focused exercise each year in order to test, verify, and refine the developed capabilities. This has included simulated as well as live exercises involving real ISR and C2 assets. Operational deployment of the fruit of the MAJIC project has been deployed as part of JISR Step 1 and incorporated into the INTEL FS Capability Package. NCI Agency has been and is involved in technical, architectural, and operational aspects of the MAJIC project. The MAJIC nations have appointed NCI Agency as a facilitator for the project and to provide overall technical management and leadership.

NCI Agency Offer

NCI Agency provides its expertise in definition, management, execution and support of complex, MN projects. Subject matter expertise includes: architecture requirements definition, operational process modelling, architecture and system design, interface definition, exercise planning, exercise hosting, test support, evaluation support and acquisition support for interoperable ISR and C2 capabilities.

By designing and procuring interoperable ISR solutions, customers will benefit from: a seamless integration of own ISR assets with the ISR assets of coalition forces; access to a wider range of surveillance and reconnaissance data; faster access (up to near real-time) of decision makers to information derived from ISR data; and cost reduction through the re-use of standardized system and software components and interfaces.

Aerospace Ground Surveillance and Reconnaissance (AGS&R)



Overview

Aerospace Ground Surveillance and Reconnaissance (AGS&R) refers to a class of military airborne sensor systems used for long, medium, and short range theatre and tactical reconnaissance, surveillance, and target acquisition, and are capable of detecting moving, fixed, and static targets in all weather conditions, night and day. These systems transmit both near real time and archived data, imagery and information to the NATO and coalition in order to provide situational awareness for military decision making. AGS&R is conducted in order to develop an understanding of adversary, neutral, and friendly force dispositions, to survey status of infrastructure and to support operations and targeting.

The NATO-owned and -operated Alliance Ground Surveillance (AGS) Core integrated capability, consisting of an air and ground segment, will enable the Alliance to perform its own persistent surveillance.

The AGS sensor package will provide Ground Moving Target Indicator (GMTI) data and Synthetic Aperture Radar (SAR) imagery. The system will also be equipped with an extensive

suite of line-of-sight and beyond-line-of-sight long-range, wideband data links.

The ground segment will provide an interface between the AGS Core system and a wide range of C4ISR systems to interconnect with and provide data to multiple deployed and fixed operational users, including reach-back facilities, remote from the surveillance area.

AGS Core represents a core capability which will be complemented by national systems to achieve a comprehensive GS&R capability. NCI Agency will work with NATO AGS Management Agency (NAGSMA) to meet the interoperability requirements of AGS Core. AGS Core systems will be hosted at NCI Agency for interoperability testing with other NATO and national C2ISR systems.

Expertise Description

NCI Agency is a world-recognized leader in the fields of C4ISR and sensor technology and has done both theoretical and practical work in these fields. NCI Agency also has extensive experience in integrating legacy sensors with new sensors and with command and control systems.

For several years, the NCI Agency has provided valuable support in the acquisition and implementation processes of the new AGS capability, including development of a Concept of Employment (CONEMP) for the AGS. The CONEMP proposes that the NATO AGS core system be interoperable within an architecture composed of NATO and national Intelligence Surveillance Target Acquisition and Reconnaissance (ISTAR) systems operating. It provided a basis for NATO use of GMTI and SAR data.

NCI Agency provided assistance in the establishment of the NATO AGS Management Organization/Agency (NAGSMO/NAGSMA); AGS configuration management; future capability studies for the integration of NATO Airborne Early Warning and Control (NAEW&C) and AGS; system and operational architecture development for the NATO AGS capability in support of NATO Joint ISR Operations; and development of operational processes and concepts of employment.

Track Record

Recently, NCI Agency has been in the forefront of an effort to transform the NAEW&C E-3A force from an air surveillance system to a multi-mission capability which includes the development and testing of an on-board internet protocol based communications system and integration of the E-3A into Joint ISR and AGS&R experiments and exercises. Further, NCI Agency has researched and published studies pertaining to Joint ISR such as harmonization options for the NAEW&C Force and AGS and a technical and operational assessment of the AGS "UAV only" solution. Both studies explore areas of cooperation which will provide NATO commanders with a highly capable C2ISR system, enabling out of area alliance operations in support of crisis world-wide.

NCI Agency Offer

NCI Agency can cover all aspects of implementing successful airborne ground surveillance capabilities. In particular, NCI Agency can provide the following services: research and development, requirements capture, development of a NATO cost estimate, development of a SOW, issuance of an Invitation For Bid, evaluation and selection of Industry proposals, establishment of contract, monitoring and control work, and acceptance and hand-over of the final airborne ground surveillance system to the Nation.

Air Surveillance Expertise



Overview

Air Surveillance is a highly complex capability and every implementation must be tailored to the unique operational requirements and the legacy environment into which it must be integrated. It begins with a proper requirements analysis. This analysis will examine the operational requirements, the legacy environment, and any other relevant political or economic issues. It will identify gaps and alternatives to fill these gaps, gather rough order of magnitude costing figures and present costed options and recommendations for presentation to high level decision makers.

Once a decision has been made to acquire an air surveillance capability, there is a full spectrum of activities required to conduct a successful implementation, including: preparing formal notification of intent, developing specifications for an Invitation For Bid (covering technical, logistical, programme management and contractual issues), preparing the bids, selecting a contractor, reviewing the detailed design documentation, preparation of the civil works and coordination of the civil works interface with the contractors, reviewing and approving the test procedures, physical installation, testing, training, documentation, to ultimately final commis-

sioning and hand-over of the Air Surveillance capability to the Nation and handover of the logistics to the maintenance authorities.

Expertise Description

NCI Agency has a highly-skilled, interdisciplinary team who can cover all aspects of implementing successful air surveillance capabilities. In particular, NCI Agency can provide the following services: research and development, capture of user requirements, development of a cost estimate in required NATO formats, development of a Statement of Work, issuance of an Invitation For Bid, evaluation of Industry proposals and selection of best Bid, establishment of contract, monitoring and control work, and acceptance and hand-over of the final air surveillance system to the Nation.

Track Record

NCI Agency is a world-recognized leader in the field of passive sensor technology, a cost-effective supplement to traditional active radars and has done both theoretical and practical work in this field. NCI Agency also has extensive experience in integrating legacy sensors with new sensors and with command and control systems.

NCI Agency Offer

NCI Agency offers the necessary technical expertise to support not only the initial studies, detailed technical requirements specification and acquisition processes, formalized with the definition of the Statement of Work (SOW) and the issuing of an Invitation For Bid (IFB) to Industry, but also to provide the required technical consultancy in the selection of sites and testing of the capability.

With a well written specification, successful contract negotiations, careful risk management, a soundly defined and well executed testing programme, and effective communication with all involved parties NCI Agency can assist the nations to achieve highest value for money.

Airport, Border and Port Security



Overview

Airport, border and port security are critical due to the high threat posed by terrorists. The ability to correctly identify threatening situations through detection of Improvised Explosives Devices, weapons, drugs, etc. is key to stability and security.

Expertise Description

The ability to find threatening objects like explosives, radioactive material, weapons or drugs underneath or in a car, truck or cargo is fundamental to airport, border and port security. The technology and the team of knowledgeable NATO staff members with experience in deploying these sensors in Afghanistan, is available to any customer who needs to protect a checkpoint, airport, border or port against the threat of weapons, explosives, radioactive material or drug smuggling. Concepts of employment of these sensors, procurement, and installation are a sample of this expertise that the NCI Agency can offer.

Track Record

For the last five years, the NCI Agency has been responsible for the procurement and installation of numerous sensors for checkpoint and military airport security in Afghanistan through the International Competitive Bidding process and with a record of delivery ahead of schedule.

NCI Agency Offer

NCI Agency offers support in the following areas: Entry Control Point design (airport, port, prisons, special locations); Concept of Employment (CONEMP) development for these sensors; and procurement, installation and training of the sensors. An experienced team of people is available to support this activity.

Electronic Warfare Expertise



Overview

Control of the Electro-Magnetic (EM) spectrum is essential to military effectiveness. Electronic Warfare (EW) is the battle for control of the EM spectrum. EW is a complex military action and includes systems and actions to degrade or deny the usage of the EM spectrum from the adversary's combat capability and systems and actions to protect the usage of the EM spectrum from the friendly combat capability. NATO forces must also be prepared to operate in an EW environment, both to assure its own use of the EM spectrum and to deny its exploitation by adversaries. Soldiers, sailors and airmen must become familiar with the effects of Electronic Attack on their equipment and the use of Electronic Protection techniques and procedures to overcome them. Similarly, commanders must understand the constraints that Electronic Warfare can impose, and advantages it can bring, to the conduct of operations at a strategic level.

Expertise Description

Implementing an Electronic Warfare capability either as a training aid or as a combat asset requires an assessment of the unique operational requirements and the environment into which it must be integrated. It begins with a proper requirements analysis. This analysis will examine the operational requirements, the environment, and any other relevant political or economic issues. It will identify gaps and alternatives to fill these gaps and present options and recommendations. NCI Agency can participate as a subject matter expert to review the detailed design documentation, review and approve the test procedures, physical installation, testing, training, documentation, to ultimately support the final commissioning and hand-over of the EW capability to the User and handover of the logistics to the maintenance authorities.

Track Record

NCI Agency has an extensive track record on scientific and technical support projects. An example project is the support to the Electronic Support Measures (ESM) sub-system and the ESM database of the NAEW&C platform which has been crucial to the development and effective employment of the capability. Consequently, NCI Agency has become a key part of the overall team that supports the ESM system and works very closely with the E-3A Component's Operations Wing ESM (OWES) staff to assist in refinement and maintenance of the ESM database. Another example of scientific support is the development and upgrade of the NATO Emitter DB which is used by the NATO Nations to share non-communication emitter data. NCI Agency has been involved in the development of the NEDB since 1996.

NCI Agency also has an extensive record on the evaluation of Industry proposals in order to identify the most attractive Bid from the technical point of view as well as from the financial aspect. Evaluation processes are executed following standardized and proven procedures and involving multinational subject matter experts in determining the best offers. A project example is the support to the UK MoD for the acquisition of new EW Training Capability for NATO JEWCS.

NCI Agency Offer

NCI Agency offers technical and scientific expertise in areas of the development of Electronic Support Measures (ESM) to provide intelligence and threat recognition both for Radar and Communication type emitters.

EW expertise in the area of Remotely Controlled IED defeat is also available. The extensive experience NCI Agency has gained in this area throughout the recent years by working closely with ISAF and the Counter IED community in ISAF and NATO could be made available to the nations who need it.

NCI Agency provides valuable support in the acquisition and implementation processes of an EW Capability (including Jammers against Remotely Controlled IEDs) and can assist with the compilation of cost estimates for NATO common funded projects or others and the selection of Industry proposals.

NCI Agency also has a thorough knowledge of the various EW related CONOPS, STANAGs, and how they are utilised in NATO exercises and operations.

Counter Improvised Explosive Devices (C-IED)



Overview

Improvised Explosive Devices (IEDs) are one of the most-used asymmetric threats, and have the potential to achieve disproportionate effects when complemented with inexpensive, off-the-shelf technology. They represent the major cause of death in current operations of coalition forces. The proliferation of IEDs as an asymmetric threat in current and future conflicts represents a significant threat to NATO forces and NATO Nations' interests.

Counter IED (C-IED) is defined as the collective effort at all levels to defeat the IED system in order to reduce or eliminate the effects of all forms of IEDs used against friendly forces and non-combatants according to the mission. Defeating the IED System, the Device, Doctrine and Training can be accomplished in terms of key functions such as *prediction, prevention, detection, neutralization, protection/mitigation* and *exploitation*. All these functions are co-dependent and interrelated.

Service Description

NCI Agency provides technical consultancy to help determine the best technology available to

counter the specific IED threat. In particular:

- Entry Control Point sensors for Explosives and radioactive materials identification in vehicles (vehicle scanners) and personnel (body scanners);
- Jammers against Remotely Controlled IEDs (RC-IED);
- Stand-off detection of IEDs hidden beneath clothing;
- Software for frequency deconfliction to provide jammers programming advice and disruption of friendly communications;
- Research & development activities in the area of jamming deconfliction;
- Development of Concept of Employment (COEMP) and Operation (CONOPS).

Track Record

NCI Agency's extensive experience has matured in the Afghanistan Theatre of Operation with a record of delivering C-IED sensors well ahead of schedule.

NCI Agency Offer

NCI Agency can provide valuable support in the acquisition and implementation processes of a CIED capability. In addition, NCI Agency offers research and development activities in this area, including analyses, feasibility studies and field tests of promising technologies to counter the IED threat in order to validate potential, as these are key to keep up with the dynamic nature of the IED threat.

Force Protection – Counter Indirect Fire



Overview

Indirect Fire from military grade or improvised Rockets, Artillery and Mortars are commonly used by terrorists and insurgents. The effects caused by the use of such weapons are often disproportionate to the direct physical damage caused. There are often consequential effects on military bases and mobile forces and also on civilian populations. Counter Indirect Fire (C-IDF) is considered to be an integral part of Force Protection for Base Defence Operations and protection of high profile situations such as key political meetings. NATO has recognized the particular threat and has initiated a Programme of Work (POW) under the Conference of NATO Armaments Directors (CNAD) Defence Against Terrorism (DAT) Programme. NCI Agency was selected to provide technical support to this programme.

Countering such indirect fire requires consideration of the problem from a number of key functional areas. These are *Prevention, Detection, Warning, Interception, Protection and Command & Control (C2)*. All of these functional areas are interrelated; with the C2 function providing the glue to bind these functional areas together and ensuring the overall best use of the information available to deal with the threat and emergent situation.

Expertise Description

- Requirements Elicitation leading to User Requirements Documentation;
- Production of embryonic Concepts of Operations;
- Analysis of threats;
- Experimental design and execution;
- Modelling and simulation of ballistic threat objects;
- Analysis of Command and Control issues.

Track Record

NCI Agency has several years of experience in Force Protection measures against Indirect Fire. In particular, within the CNAD DAT project Defence Against Mortar Attack (DAMA), which has involved analysis of the problem domain, production of user requirements, design of experiments, participation in live firing events, development of scenarios and undertaking modelling and simulation. NCI Agency attends a number of Force Protection working groups.

NCI Agency Offer

NCI Agency can provide valuable technical support in the research and development and experimentation activities in the area of Counter Indirect Fire and Base Defence Operations, under an umbrella of Force Protection.

NATO Russia Council (NRC) Cooperative Airspace Initiative (CAI)



Overview

The CAI focuses on the fight against terrorism and boasts the first ever NATO-Russia shared radar picture of air traffic. The CAI system is designed for the early notification and coordination of suspicious air activities and offers increased visibility and transparency to rapidly ensure NATO-Russia coordination in the European airspace, specifically in case of '9/11' type of events. The CAI also incorporates common NATO-Russia Concept of Operation and procedures.

Beyond its practical objectives such as improving air safety and security, the CAI also significantly contributes to enhance transparency, confidence and trust between NATO and Russia.

Following a Feasibility Study, the System Implementation Phase II delivered a CAI Information Exchange System (IES) consisting of four units in NATO and four in Russia, which was technically validated by the NCI Agency-led Engineering and Operational Team during 2006-2008. In the Phase III, a series of exercises were executed, culminating in the successful execution of the first ever live joint air exercise between NATO and Russia called "Vigilant Skies 2011".

Expertise description

NCI Agency subject matter skills and expertise include:

- Definition, management, execution and support of complex, MN programmes and projects;
- System requirements definition and design;
- Acquisition support and procurement;
- Interface definition and design;
- Technical system testing and evaluation;
- Operational testing and evaluation;
- Civil-military expertise;
- Exercise planning, execution and evaluation;
- Team leadership and project management.

Track record

NCI Agency has performed a leading role since 2003, taking the CAI from a conceptual idea, through the establishment of a joint design for a NATO Russia system, followed by actual system implementation, training and exercising, into actual operation in 2012. At every new phase of work, NCI Agency was requested by the nations to execute the project, and lead the NATO Russia teams carrying out the work. This included the current operational phase.

NCI Agency offer

NCI Agency can act as trusted agent for the nations, both NATO and non-NATO, and International Organisations. NCI Agency can cover all aspects of system concept development, requirement capture, technical, scientific, operational and exercise support, and project management.

6. Command, Control & Operations Services

In support of NATO C4ISR, NCI Agency has acquired and developed a number of capabilities that could be available to NATO member Nations. These products are tried and tested and currently fulfil key roles in the NATO Commands and Operations. Many of them pave the way for future NATO capabilities and potential exploitation for cost-effective multinational solutions.

To name just a few, these products and skills include:

- NATO C4ISR Toolset
- Land Command and Control Information Services
- Air and Maritime Command and Control Expertise
- Integrated Command and Control System Support
- NATO Joint Targeting Capability Expertise
- Extended Air Defence Planning Tool (PlaTo)
- Logistics Functional Area Services Tool Support
- Tool for Operational Planning, Functional Area Service (TOPFAS)
- Geospatial Production and Services

The products listed here are also indicators of the types of things NCI Agency can assist Bilateral and Multinational partners with, and should not be construed as exclusive of other possible tailored or unique applications addressing customer needs.

NATO C4ISR Toolset



Overview

Based on the request of some nations and in order to improve the quality of NATO software, especially in the area of architectural coherence and interoperability, it is proposed to set up a NATO application suite that can be used by nations for national defence purposes.

Designed around the identified use of NATO tools in support of ISAF, KFOR, Operations Active Endeavour and Unified Protector and the focus on common operational processes within a multinational military command structure, a NATO C4ISR Suite (NC4IS) has been assembled.

It is expected that the toolset components will change year after year as components are added or removed in line with their roadmaps. Several capabilities will become available in 2012/2013 and should be considered as potential components for the NATO C4ISR Suite:

- Land Command & Control Information Systems (LC2IS)
- Air Command & Control Information System (AirC2IS)
- Intelligence Functional Services (IntelFS)
- NATO Common Operational Picture (NCOP)

Product Description

The 2012 NATO C4ISR Suite could consist of 12 software products:

C4ISR Systems

- Joint Targeting System (JTS)
- Joint Operations Centre Watch Tool (JOCWatch)
- Integrated Command and Control (ICC) Software for Air Operations
- NATO Intel Toolbox (NITB)
- Logistics Functional Area System (LOGFAS)
- Tool for Operational Planning, Force Activation and Simulation (TOPFAS)

Common Desktop Tools

- iGeoSIT Client
- JChat SE Client

COI-enabling Services

- NIRIS
- NATO CSD
- iGeoSIT Server (incl Databroker)
- COP-IM/MIP-GW/Symbology Server

It is anticipated that individual components will be replaced in NATO through NSIP-funded industrial capabilities, over the next decade. These industrialised capabilities would then progressively become available to nations, subject to their respective contractual arrangements through the programme.

Within the customer funding environment, it is proposed to establish a MN C4ISR Suite programme. The MN C4ISR Suite programme is to facilitate the provision of NATO's C4ISR Suite and related services for NATO and national defence purposes. The MN C4ISR Suite will address national C4ISR requirements in the near-term, in such a way as to complement and leverage NATO common funded capability, be coherent and interoperable with NATO C4ISR capability (now and in the immediate future), and realise economies of scale by sharing costs for commonly required services between multiple nations.

NCI Agency Offer

The aim of the MN C4IS Suite programme is to support participating nations in areas of acquisition, development and implementation, operation and maintenance, support and training in relation to NATO C4ISR Tool Suite and its components.

Land Command and Control Information Services (LC2IS)



Overview

LC2IS is the primary NATO C2 tool to enable and improve the effective command and control of NATO Land Forces, to support the Land Component Commander in the decision making process and to improve information exchange horizontally and vertically at all levels.

In the planning phase, LC2IS supports the collaborative production of Land Operations Plans in coordination with other component Commands, making full use of available planning tools. LC2IS supports the development of the Land element of the Joint Operation Plans and of the Force Generation Process, thus contributing to the generation of a Recognized Ground Picture shared between Allied Commands.

In the execution phase, LC2IS provides the user with multi-theatre Situation Awareness and disseminates relevant information to support ground operations through secure, high-speed and reliable information flow.

These capabilities and the additional enhancements planned for future increments ensure LC2IS is recognized as a key tool for the support of Command and Control of NATO Joint Operations with a Land focus.

Product Description

LC2IS implements NATO and MN interoperability standards, ensuring that information exchange with other NATO and national systems results in an accurate and complete RGP, coherent with other component pictures. Data replication (MIP block-2, C2IEDM), formatted text messages (ADatP-3) and graphical overlays provide accurate, timely, consistent and coherent information exchange within and between headquarters.

LC2IS makes use of the latest web-based technologies, providing secure role-based access to mission-critical information through a Web Portal tailored to each service consumer. The emerging Increment 1.1 includes also new capabilities supporting implementation of an initial "cloud" application environment.

Track Record

LC2IS Increment 1 has been deployed in the Joint Force Commands (JFC Naples, JFC Brunssum and JC Lisbon), most of the Component Commands (CC-LAND Heidelberg, CC-Land Madrid, CC-Air Izmir and CC-Mar Northwood), Operational Training Centres (JFTC Bydgoszcz, JWC Stavanger), the Joint Analysis Lessons Learned Centre (JALLC) in Monsanto and NCI Agency-NL for testing purposes since March 2010. All sites received the initial training for users, information managers and system administrators.

LC2IS is accredited for use on the NATO Secret and will be accredited (Inc 1.1) on Mission Secret Networks. Demonstrating the interoperability exchange capabilities of the system, LC2IS was successfully used during five NRF Certification exercises, several Battle Staff Trainings and two Demonstration exercises (CWID /CWIX). LC2IS is now fully part of the NRF C2 systems.

NCI Agency Offer

NCI Agency can provide support in:

- Procurement and implementation of the LC2IS Increment1 in a national environment. LC2IS relies on a Hardware and Software COTS infrastructure that usually would be provided by such environment. The implementation includes the provision of training and hand-over to national Staff.
- Contracting of additional services specifically for the nations, such as:
 - National specific developments;

- Testing national land capabilities against LC2IS as an entry point to the full set of NATO CIS, and delivering a trusted and unbiased interoperability status of national systems. This can be used as a pre-certification testing event in order to prepare for NRF.
- Definition of national military requirement including, but not limited to those, stated in Increment 1.1., and broadly defined for Increment 2. Demonstrations of the full range of current and emerging capabilities of the LC2IS allow sponsors to assess the minimum military requirement. Such demonstrations will also raise the awareness in the operational Community and ease the way ahead for developing and integrating a new national capability without risking solution oriented demonstrations provided by national Industries.

Air Command and Control Expertise



Overview

Air Command and Control (Air C2) manages scarce air assets in high tempo operations and is considered to be one of the most integrated, adaptable and flexible processes in the joint environment. The efficiency and speed of air units will play a decisive role in an operation if an accurate and coordinated air plan is prepared and executed. The entire Air C2 process aims to get air assets in the air at the correct time and place with timely information to provide the desired effect. In order for the Air C2 structure to deliver, the air power needs to be integrated from the headquarters to the cockpit. Almost all nations have their national Air C2 systems such as surveillance radar networks, tactical data links, control and reporting centres, software to process surveillance information, software to plan and execute air missions. NATO agencies acquire modern capable Air C2 systems for tactical and operational use for NATO missions as the operational need arises.

Expertise Description

NCI Agency has a highly-skilled, interdisciplinary team who follow the changes and developments in NATO Air C2 doctrine and implementation. When a new military requirement arises, the Air C2 Team works with the military owner of the requirement, to analyse its impacts on current and future Air C2 systems. Scientific studies, operational user workshops, and exercise observations are possible methods to document new concepts and propose the way ahead for future projects in acquisition or prototyping areas. Air C2 requirements and capabilities may be refined with NCI Agency support to exercises including Coalition Warrior Interoperability Exercises (CWIX). NCI Agency also has expertise in Air C2 interoperability and integration for real-time and non-real-time information exchange.

Track Record

NCI Agency has been engaged for over 30 years in concept development, process analysis, requirements capture, architecture and interoperability studies, interface development, prototyping, experimentation, exercise support, training and real-world operational support areas in NATO Air C2. NCI Agency has developed a unique knowledge base and has been providing NATO Air C2 required solutions, such as ICC, JTS, FAST, JCHAT to NATO and national HQs. NCI Agency is currently procuring a new Air C2 information system for operational level Commands (Bi-SC AISAirC2IS) planned for operational use in 2013.

NCI Agency continuously contributes to NATO's success by providing its Air C2 expertise to other NATO bodies (such as NACMA, NAPMA, NAMSA, NPC and CNAD/NAFAG) and nations in their related projects.

NCI Agency Offer

The NCI Agency Air C2 Team offers its expertise for acquisition support, scientific studies and consultancy to assist with national Air C2 systems, requirement and specification analysis, interoperability development, technical support for testing, technical support for exercise planning and execution, and training.

NATO Missile Defence Command and Control



Overview

Missile Defence operations are time critical and require a coordinated defensive strategy, planned in advance and executed in real-time, based on interoperable systems and coherent concepts, to ensure the protection of territory, populations, forces and critical assets. Many nations today have systems which can contribute to an integrated NATO MD capability. NCI Agency has been engaged for over 15 years in performing modelling and simulation (M&S) studies, analysis of MD architectures and command & control processes, and development and exercising of prototype systems, to help NATO Nations and operational users assess how best to adapt NATO command and control capabilities to make best use of national weapon and sensor systems which can help counter hostile ballistic missile threats.

Expertise Description

NCI Agency works closely with NATO and national military users in operational field exercises, such as Joint Project Optic Windmill (JPOW), and through workshops held in the NCI Agency C2 lab environment, to assist the operational community in developing MD-related CONOPS and Tactics, Techniques and Procedures (TTPs). We define and execute distributed simulation exercises connecting national and NCI Agency testbeds. Through M&S-supported tests and assessments, the Agency can assist in capturing operational and technical requirements for NATO command and control processes for MD, and explore interoperability requirements supporting integration of national weapon and sensor systems into an integrated and comprehensive MD capability to support NATO operations. Our prototypes and tools are able to focus on NATO-national interoperability issues at the level of datalinks, message exchange and XML scheme definition and allow us to explore how best to present real-time and non-real-time information to military or civilian users for optimizing effectiveness and efficiency in MD decision-making. Agency specialists have a comprehensive understanding of existing and planned national TMD weapon and sensor systems, the evolving missile defence threat environment and critical technology trends. Agency personnel devise TMD scenarios for use in M&S studies, for example, in assessing TMD concepts at theatre and architecture level, down to individual engagement level performance assessments.

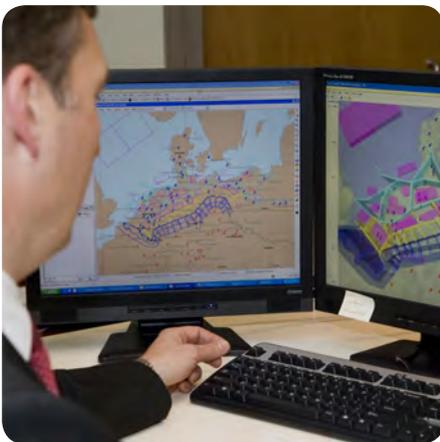
Track Record

NCI Agency has conducted and managed numerous system analysis and simulation studies to investigate C2 architectures for theatre and missile defence. The Agency has extensive experience in developing prototype TMD tools, for use in TMD operational exercises and lab tests, to explore TMD C2 requirements, interfaces with national systems, and critical aspects of user interface design for TMD. Our non-real-time TMD defence Planning and resource Allocation Tool (PlaTo) and our real-time situation awareness and display system (LSID) are core elements of the NATO MD Interim Capability (InCa) which have been fielded to meet urgent operational requirements for providing missile defence to forces deployed on NATO missions.

NCI Agency Offer

The NCI Agency technical team has a detailed understanding of MD, as part of integrated air and missile defence, from systems to concepts and procedures. The Agency can offer support to analysis of technical and operational requirements ensuring systems and mission interoperability, M&S techniques and applications based on detailed understanding of ballistic missile threat systems and their likely evolution. The Agency can host or support lab tests and field exercises, and the development and application of tools to explore and refine C2 systems interoperability for MD.

Integrated Command and Control System Support (ICC)



Overview

The NATO-wide Integrated Command and Control software for Air Operations (ICC) is an integrated Command, Control, Communications, and Intelligence (C3I) system that provides information management and decision support to NATO activities during peacetime, exercise and wartime. As the supplier of NATO's de-facto system for computer supported air C2 – with ICC being installed in over 400 sites, NCI Agency has accumulated a wide range of expertise and delivered a robust capability.

In addition to its Air Operations capabilities, ICC is a proven integrated platform for a wide range of key capabilities in NATO, including NATO's Joint Effect Tool/Joint Targeting Tool/(JFX/JTS), NATO's Flexible Air C2 Services for Time Sensitive Targeting (FAST), Joint Tactical Chat (JCHAT), Friendly Force Tracking, a TMD Planning tool (PlaTo), a TMD Situational awareness and missile engagement tool (LSID), extensions for Special Operations Forces and the Joint Planning and Execution Coordination Tools (JPECT).

Over the last years, the ICC team and the ICC family of products have been used in many projects for providing consultancy on Command & Control, Workflows & Interoperability in and between systems, Requirements Capture and HMI design. The ICC system is NATO accredited and is developed by the ICC Team NCI Agency and is maintained in a cooperative venture by the NCI Agency and the NATO Programming Centre (NPC).

Expertise Description

ICC provides capabilities for integrated planning, tasking, intelligence targeting and operations, information management and decision support to operational and tactical level air operations during peacetime, exercise, crisis and conflict. ICC also provides functional support for the most critical Air Command and Control (Air C2) functions at Air Component Command (ACC/JFACC) and Combined Air Operations Centre (CAOC) levels that include:

Generation of Air Operations Directives, Generation of Airspace Control Orders, Joint target Nomination (JTS), Generation of Air Tasking Orders, a complete current operations capability, Recognized Air Picture (RAP) via NIRIS, Automated status reporting messages, Dissemination and display of Shared Early Warning (SEW) information, Replication of C2 data between sites.

Furthermore, ICC is capable of displaying a Joint Common Operational Picture (JCOP), fully supports the joint targeting cycle (through JTS) between the Joint Force Command (JFC) and the Component Commands (CC). ICC also has interfaces to get access to Intelligence, Surveillance and Reconnaissance (ISR) data from Coalition Shared Databases (CSD - MAJIC) and display friendly force tracking information.

Track Record

Some highlights in ICC's Track Record include:

- ICC is currently being used 24 hours a day, 7 days a week in 23 countries in more than 400 locations.
- ICC is mandated for NATO high readiness forces (Land) and is Minimum Military Requirement for major surface fleets under NATO flag.
- NCI Agency has multiple support contracts with NATO Nations and PFP nations.
- The ICC Team provided consultancy to the NATO ACCS project on HMI improvements and the Air C2 workflows.
- ICC has been adopted as national COP viewer system for use by worldwide UK forces and is a viewer of the NATO JCOP.
- ICC is being used in ISAF for interoperability with US systems and standards.
- ICC has been used in Operation Unified Protector (OUP-Libya) as the NATO tool for the planning and execution of the entire air campaign.

NCI Agency Offer

The NCI Agency ICC Team works closely together with other NATO organizations to produce the best in the interest of NATO. Via support to exercises, workshops and frequent contact with the operational community of users, the ICC Team is well able to combine Command and Control expertise with the latest developments in the area of Information Technology. This allows the team to efficiently translate requirements into working prototypes, provide support to exercises, provide implementation support for new sites, etc. The ICC system is available free of charge from NATO to NATO and NATO Nations. NCI Agency offers tailored support services to nations in support of using, interfacing, or adapting ICC in a national context. Plans are underway to combine the current bilateral national ICC support contracts into a shared Multinational ICC Project managed by NCI Agency.

Extended Air Defence Planning Tool (PlaTo)



Overview

The Extended Air Defence Planning and Tasking Tool (PlaTo) was developed by NCI Agency as a prototype with the intent to gather requirements to be used to enhance the Bi-Strategic Command Automated Information System (Bi-SC AIS) Air Command and Control Information Services (AirC2IS) and Air Command and Control System (ACCS) beyond Level of Capability (LOC) 1 with the required TMD planning functions. Requirements identified through the prototyping effort, include data requirements, functionality and user interface design Requirements, and information exchange requirements have been fed into the programmes implementing the enhancements to the above mentioned systems. In order to capture as much requirements-related information from the operational community as possible, PlaTo has been used in the past three Joint Project Optic Windmill (JPOW) exercises, the major integrated air and missile defence exercise in the world.

Product Description

PlaTo is mainly used to generate a Defence Design, following a militarily sound active defence planning process, using information on enemy ballistic missiles, friendly asset data and available TMD capable resource (interceptors and sensors) data. PlaTo supports the planning process conducted in NATO today, and has been useful in providing a toolbox for NATO operators to establish the detailed procedures, or business process, for executing defence design in support of NATO operations. Within the tool, data handling is divided in three groups: asset management to deal with friendly high value assets, which must be protected against an opponent's ballistic threats; resource management that handles friendly defensive interceptor and sensor systems; and threat management that is used to characterise enemy threat weapon systems and potential launch areas. Modules in PlaTo support the operator to generate Prioritised Critical Asset List (PCAL), Joint PCAL (JPCAL) and Joint Prioritised Defended Asset List (JPDAL); perform Threat Analysis; develop an initial or refined Defence Design, generate Mission Tasks from this, consolidate the resulting Mission Reports into a detailed or final Defence Design, and issue to subordinate units for execution. The Intelligence Preparation of the Battlespace (IPB) module, which monitors and records BM activity during operations, and allows assessment of opponent's possible courses of action, is an important input to the primary planning functions.

Track Record

NCI Agency has deployed PlaTo as part of the NATO TMD Interim Capability (InCa) now fielded in at least 12 NATO operational and tactical level headquarters.

NCI Agency Offer

PlaTo allows planners to conduct Active Defence planning and tasking of TMD Capable weapons and sensors against tactical ballistic missile threats. It is designed to support both the operational and tactical levels of command (Joint Forces Commander, Component Commander and CAOC).

Maritime Command and Control Expertise



Overview

Maritime Command and Control is a complex process which interacts with and influences all dimensions of warfare. The NCI Agency provides expertise in operational, technical and implementation matters relating to all aspects of maritime command and control.

Expertise Description

The Agency is the host nation for the implantation of NATO's future maritime services suite of tools intended to modernize the NATO maritime headquarters. Working closely with Industry and nations and utilizing the latest technologies these tools are being designed from the outset for seamless interoperability with existing NATO and national joint systems. NCI Agency is also the host and Executing Agent for the Multinational Maritime Information Services Programme (MN MIS), a proposed multinational effort to maximize the military utility of maritime command and control resources through the development, evaluation and implementation of operational and technical means for interoperability of a wide range of maritime resources. In close cooperation with Industry, the nations participating in the MN MIS combine their resources to further their collective interests and investment in maritime systems. The NCI Agency will act

as facilitator and executing agent for the MN MIS project and provides overall technical management for the member nations.

The NCI Agency team of highly-skilled maritime specialists offers decades of relevant experience in maritime C2 issues and provide expertise to support studies, detailed technical requirements specification and acquisition processes, formalized definitions of Statement of Work (SOW) and the issuance and evaluation of Invitations For Bid (IFB) to Industry in all matters pertaining to maritime and joint C2. The Agency also provides the required technical consultancy in the testing of the capabilities, written specification development, successful contract negotiations, risk and configuration management, and effective communication with all involved parties.

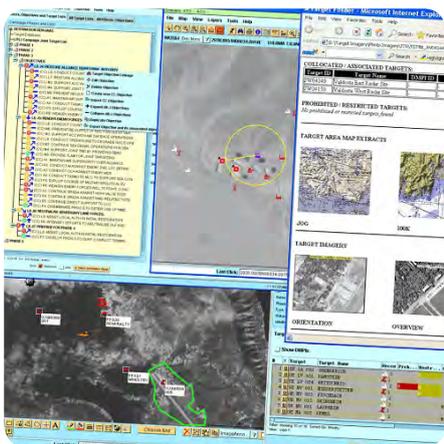
Track Record

NCI Agency has been involved in the technical and operational aspects of maritime C2 for over 15 years. Beginning with the initial implementation of MCCIS in the 1990s, the Agency has worked closely with NATO and national maritime professionals to deliver the latest technologies to support joint and maritime C2 to the operational warfighter.

NCI Agency Offer

NCI Agency can provide valuable support in the acquisition and implementation of maritime C2 capabilities for NATO and the nations. The Agency brings years of expertise in managing research and development activities in this area, as well as analysis, feasibility study and field tests of promising technology to support the implementation of Maritime C2 initiatives such as Maritime Situational Awareness/Maritime Domain Awareness to support counter-terrorism or counter-piracy operations.

NATO Joint Targeting Capability Expertise



Overview

Joint Targeting is the process of selecting targets and matching the appropriate response to them, taking into account operational and legal limitations. The process comprises the identification of a system, structure, person, group or object in which an appropriate critical element or vulnerable point is selected, against which the application of the least possible military force should achieve the desired political/military goal.

The NATO Joint Targeting System (JTS) provides a network-enabled capability for integrated joint objective and effects-based targeting, target development, target list management, target folder preparation, target imagery management and battle damage assessment. JTS is in compliance with the ACE Directive 80-70 "Campaign Synchronization and Joint Targeting" and covers the full NATO Joint Targeting Cycle. Furthermore, JTS includes a module for Dynamic or Time-Sensitive Targeting (TST): the Flexible, Advanced C2 Services for NATO Time-Sensitive Targeting, or FAST. This module is designed as a coordination tool to aid in the tracking and prosecuting of time-sensitive targets and enables collaboration, and efficient and timely exchange of critical information between personnel participating in the TST process. JTS

is used throughout all command levels in NATO, and multiple nations have chosen JTS as their national targeting system.

Expertise Description

NCI Agency can host JTS and FAST training courses or provide training support on-site. The following courses are available:

- JTS System Administrator Course
- JTS End-User Course
- AST End-User Course

Furthermore, NCI Agency can:

- provide consultancy services for system integration and configuration;
- develop the required JTS extensions and interfaces to the national systems;
- provide JTS localization services (translating JTS User Interface);
- provide JTS operational support during the preparation and conduct of exercises and operations;
- conduct research and development activities in the Joint Targeting area.

Track Record

NCI Agency has developed the NATO Joint Targeting System (JTS) and will continue follow the latest developments in the Joint Targeting Area. The software is currently deployed and in use by NATO headquarters and NATO Nations and was successfully used during Operation Unified Protector (OUP).

NCI Agency Offer

NCI Agency is able to provide valuable support in the implementation, integration and customization of JTS. In particular, NCI Agency can assist with the installation of JTS, provide localisation of the capability or support the integration with national systems. Furthermore, NCI Agency can provide JTS and FAST training courses either at NCI Agency or on-site, support its users during exercises or operations, or conduct in-depth research, analysis or development activities in this Joint Targeting area.

Logistics Functional Area Services Tool Support



Overview

Logistic Functional Area Services (LOGFAS) is NATO's suite of software that supports logistical planning, execution, tracking and reporting, using an integrated series of computer programmes. The programmes use a common LOGFAS database (LogBase) so all data can be easily shared and used for various functions, from stockpile planning to logistical reporting, to support various logistics related processes.

LOGFAS provides:

- Database which consists of logistics reference as well as planning and execution data;
- Algorithms for deployment and RSOM planning and de-confliction;
- Models and simulations to assess and analyse logistics and movement & transportation plans;
- Visualization through the use of built-in SHAPE J2/Geo Section endorsed maps and/or web map services for extended maps and hi-res imagery;
- Movement and Transportation execution management and movement visibility through the utilization of tracking and event servers, handling of critical or congestion alerts. This includes all movement, deployment, redeployment, sustainment and rotation of forces, to a level of granularity to be determined for each specific operation.

Product Description

There is a need for flexible, responsive and mobile NATO forces that can be rapidly deployed and employed, both within NATO's historic area of responsibility and beyond. The standardization of data formats and their timely exchange is key to the success of complex logistics operations, especially to facilitate the coordination between the many deploying forces, when the resources such as strategic lift assets and infrastructure (e.g. Air/Sea Ports of Debarkation (A/SPOD), Lines of Communication (LOC), etc.) are limited, must be shared or are restricted in their use. For effective coordination or control of multinational logistics operations, the commander should be equipped with C4I systems that provide the ability to manage the rate of flow of and facilitate in-transit display, documentation and reporting, via an overarching, comprehensive and robust networking architecture.

Track Record

NCI Agency provided LOGFAS installation and configuration services to various nations, organizations and agencies. NCI Agency specialists have also participated in various exercises.

NCI Agency Offer

LOGFAS is available to all NATO/PfP nations and the other nations and organizations whose use of the system has been approved by the NATO bodies. NCI Agency can provide valuable support in the implementation processes involved in adopting the LOGFAS tool.

Based on its experience in many NATO operations and exercises, NCI Agency offers the necessary technical expertise to support the installation, configuration, customization and the adaptation of the tool to national processes. In particular:

- networked use of the system, the data administration and user management mechanisms;
- establishment of national logistics databases through building interfaces to the national logistics information sources;
- development of national CONOPS for the use of the system;
- configuration and customization of the tool according to national procedures;
- development of the required extensions and interfaces to the national reporting systems;
- system administration or user support in the use of the tool.

Tool for Operational Planning, Functional Area Service (TOPFAS)



Overview

21st Century conflicts are complex and long lasting involving both state and non-state actors. To resolve them, a multilateral and comprehensive approach to system analysis, planning and assessment is needed. This requires a new breed of intuitive but powerful tools that are network enabled and collaborative.

Tools for Operations Planning Functional Services (TOPFAS) is a NATO tool suite and designed to provide an integrated set of tools to support systems analysis, planning, execution and assessment of operational campaigns. Information objects created in any one of the tools are available in all others, providing seamless transition of products between various functions of the operations planning group).

During the development and implementation of TOPFAS, NCI Agency has gained invaluable knowledge and is offering this technical and functional expertise.

Service Description

NCI Agency can host TOPFAS training courses or provide training support on-site. The following courses are available:

- TOPFAS Operations Planning Tool Practitioner Course (4.5 days)
- TOPFAS Operations Planning Tool Advanced Course (4.5 days)
- TOPFAS Operations Planning Tool Collective Course (3 days)
- TOPFAS Systems Analysis Tool Practitioner Course (4.5 days)
- TOPFAS Campaign Assessment Tool Practitioner Course (4.5 days)

Furthermore, NCI Agency can:

- assist with the implementation TOPFAS and integration of TOPFAS with national C2 systems;
- provide TOPFAS localization services (e.g. translating TOPFAS User Interface to another language);
- provide TOPFAS support during the preparation and conduct of exercises and experiments (e.g. assist preparing the TOPFAS exercise or experiment database, or support users);
- provide TOPFAS support to operations;
- conduct research and development activities in the Joint Planning and Engagement area including knowledge development and assessment.

Track Record

- NCI Agency is following the latest developments in the operations planning arena closely and has been since 2001 when TOPFAS was first fielded.
- NCI Agency has conducted regular TOPFAS training courses at NCI Agency as well as on-site at NATO or national headquarters.
- NCI Agency has provided TOPFAS support to numerous NATO and national exercises as well as to operations and participated in numerous multinational and national experiments.
- NCI Agency is working closely together with several nations, including Bulgaria, Greece, Finland, France, Germany, Italy, Norway, Sweden, Turkey and United Kingdom, to integrate TOPFAS with national command and control systems or to provide TOPFAS customization.

NCI Agency Offer

NCI Agency can provide valuable support in the implementation, integration and customization of TOPFAS. In particular, NCI Agency can assist with the installation of TOPFAS and the integration of national C2 systems into TOPFAS and provide localization of TOPFAS. Additionally, NCI Agency can provide TOPFAS training courses either at NCI Agency or on-site and support TOPFAS users during exercises or operations as well as conduct research and development activities related to Joint Planning and Engagement.

Geospatial Production and Services



mosaicking, and compression.

Overview

All military forces require digital and hardcopy maps for use by decision makers at the strategic, operational, and tactical levels. These maps display a variety of information about features on the terrain, as well as the terrain itself - information must be created, manipulated and packaged for use. NCI Agency supports the production of vector data, raster data and imagery data for use in geospatial systems, hardcopy maps, or other means of dissemination.

Service Description

Production of Geospatial Information can include many types of analyses. The following are recent examples of NCI Agency geospatial production efforts:

- Creation of complete sets of synthetic standard military map products for NATO exercises to include, JOGs, ONCs and TLMs;
- Creation of road network information from aerial and satellite imagery areas of operational interest;
- Processing of commercial satellite imagery including ortho-rectification, colour-balancing,

Track Record

- Joint Warfare Centre Exercise Support (2005-2010) - NCI Agency provides complete sets of synthetic standard military map products, including ONCs, JOGs, TPCs, TLMs, Nautical Charts, and Townplans, to support the requirements for NATO exercise scenarios. For each scenario, over 50 individual sheets are digitally produced in multiple formats and delivered to NATO's Joint Warfare Centre.
- KFOR TLM50 Overprints (2009-2010) – since the latest TLMs were produced for the Kosovo area, almost ten years ago, the road network and areas that are built-up have changed greatly. In close collaboration with the NATO military forces and the US NGA, updated map-sheets were produced for KFOR forces reflecting these important changes on the landscape.

NCI Agency Offer

The accuracy and reliability of mapping products cannot be understated. For many years, NCI Agency has been supporting the NATO military structure with the highest quality data and products in support of operations and exercises around the world.

Special Operations Command and Control Support



Overview

The NATO Special Operations Force (NATO SOF) is a fairly young organization as Special Operations Forces are traditionally a national strategic asset, operating under high secrecy.

With the NATO SOF Transformation Initiative in 2006 (NSTI), the NATO SOF Coordination Centre (NSCC) in Mons was stood up and started breaking this tradition by developing NATO SOF policies and doctrine, providing common training and emphasizing a culture of multinational sharing.

NCI Agency has been supporting the NATO SOF Training and Education Programme (NSTEP) as part of the NATO SOF Transformation Initiative from the start and is now supporting the next step in the transformation – turning the NSCC into a Component Command - by providing interim capabilities and supporting training for the SOF Joint Operations Centre (JOC) course.

Expertise Description

NCI Agency can and has provided the following SOF specific services to NATO and NATO Nations:

- Training on NATO C2 systems for SOF;
- Exercise support;
- Supporting exercises with simulation systems;
- Supporting the participants who use the NATO C2 systems;
- Prototype development for improved requirements capture;
- Systems and services integration;
- Support for systems implementation in headquarters (human and technical process);
- Development of interim capabilities (SOF C2IS) based on existing robust tools for situational awareness and C2, offering among other services sophisticated mapping capabilities and access to NATO's COP and Friendly Force Tracking information.

Track Record

NATO initiatives:

NCI Agency has been supporting NATO SOF since 2005, starting with the SHAPE Special Operations Office and later the NATO SOF Coordination Centre (NSCC). This effort includes workshops, interim capability development and training support. NCI Agency also supported NATO SOF during several NRF exercises - specifically the various Host Nations providing a CJFSOCC for the NRF rotations (US, UK, Spain, Italy and France to date). The support consisted of on-site training and system support as well as the initial procurement of equipment and provision of software for an interim capability in situational awareness and command and control.

National initiatives:

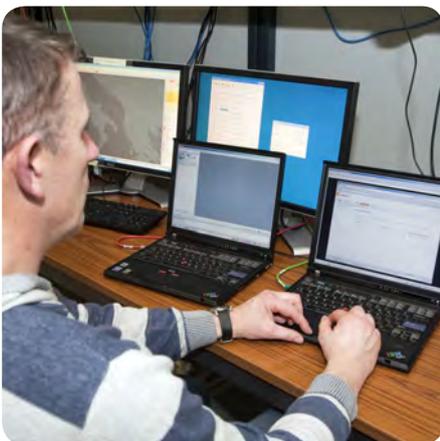
Since 2008 NCI Agency has been supporting the German Joint Special Operations Command in their preparations for becoming a SOCC host nation. This support included implementing NATO C2 systems for SOF in their headquarters, training staff on the systems and supporting exercises, most notably European Endeavour 2009 and Green Dagger 2011.

NCI Agency Offer

NCI Agency can provide a wide range of services in the area of SOF Command and Control including:

- High level process analysis and architecture development down to prototype development and training support;
- Planning and monitoring support at the strategic level down to the component command level;
- Large procurements to interim capabilities.

Secure Joint Tactical Chat Services



Overview

Use of interoperable communications and collaboration systems has become a key centre of gravity for military effectiveness, covering all aspects of command and control ranging from the tactical to the strategic level of military operations. Within ISAF, network chat applications are used in a similar manner to Combat Net Radio, allowing all-informed exchange of information within specific groups. They are used both informally, for staff level coordination and collaboration, and formally, for rapid all-informed reporting and tasking.

A common chat capability is required for joint NATO operations, interoperable amongst the troop contributing nations and covering different operating platforms to connect single soldiers on the ground with their fellow sailors and airmen in an austere environment. Such a chat capability is provided by the NATO Joint Tactical Chat (JChat).

Product Description

JChat is centred around time critical operations in order to prevent casualties and to minimize reaction time. Currently, Air C2 in ISAF is coordinated using Global Counter-Terrorism Force

(GCTF) mIRC chat on the Combined Enterprise Regional Information Exchange System (CENTRIXS). NATO and CENTCOM are keen to reduce the GCTF footprint in ISAF, but doing so must not impact Air C2. NATO and Troop Contributing Nations (TCNs) maintain multiple chat servers on the Afghanistan Mission Network (AMN), which are used in a federated network. This makes it possible that users, who are typically connected to a local server, can join chat rooms on local and remote servers. It also allows that user accounts may be manually managed by each source (NATO, Nation or organization) within their individual context and at the respective security classification level. The NATO C2 suite includes the eXtensible Messaging and Presence Protocol (XMPP)-based JChat capability. JChat aims to meet the demands of the expanding operational mission of the ISAF Air Coordination Element (ACE) and CJOC-Air-Ops in accordance with the OPLAN. It is providing a seamless communication chat facility between components in support of:

- Close Air Support;
- Intra-Theatre Airlift System (ITAS) missions;
- Joint Fires/Artillery coordination;
- Joint Targeting/Time Sensitive and Dynamic Targeting;
- Joint Personnel Recovery/MEDEVAC missions;
- Unmanned Aerial System (UAS)/Sensor Search Request and coordination.

JChat applications could support multiple-operating systems in the future but at this point only Microsoft Windows platforms are supported. The JChat software suite runs on Commercial-off-the-Shelf (COTS) workstations connected to a Local Area Network (LAN). The LANs JChat operates on, may be interconnected via the NATO Secure Wide Area Network (NS WAN), thus allowing any nations to federate with the NATO chat system. In conjunction with the Collaboration Gateway (CG) and a Data Sync Guard (DSG), the JChat client may also be used for cross-domain chat as it has been developed to supports security labelling.

Track Record

NCI Agency has enhanced the capability of JChat to provide an interim chat capability for Command and Control that is fielded in ISAF and used in at least 12 NATO operational and tactical level headquarters. As part of the 2008 - 2009 Programme of Work (POW), JALLC completed an analysis report on NRF Command and Control, in which a number of lessons were identified. HQ SACT has reviewed the report and recognized JChat and other collaborative tools are an essential element for effective Command and Control (C2) in a distributed operational environment. This requirement has been validated by current operations in ISAF and KFOR as well as several NRF exercises.

NCI Agency Offer

NCI Agency can provide valuable support in the acquisition and implementation processes of the new security enhanced JChat capability. NCI Agency offers the necessary technical expertise to support not only the detailed technical requirements specification and acquisition processes, formalized with the definition of the Statement of Work (SOW) and the issuing of an Invitation For Bid (IFB) to Industry, but also to provide the required technical consultancy in the best technology available to enable for C4ISR integrated chat solution.

Common Operational Picture (COP) expertise



Overview

The COP encompasses the activities, information products and people related to the provision and increase of situational awareness in support of the C2 processes within active missions and for the situation monitoring of the Commands. The expertise of NCI Agency in this area includes the delivery and support of systems for managing, disseminating and using the COP, as well as organisational implementation of a COP capability covering the area of training, process analysis and development.

The major NATO COP tools, iGeoSIT and JCOP are being maintained and implemented with the support of NCI Agency in several operation centres. ('NCOP' – next generation COP tool - is currently being delivered with NCI Agency as the host Nation and will be available in the upcoming year). These tools provide an integrated capability to organise and manage the Common Operational Picture for a mission, integrate different information sources for non-real time, real time and geo-data into the COP, disseminate it to the various C2 tools that require it for situation awareness and coordination across echelons and Commands, and finally provide an end-user capability to visualize and exploit the COP at any level of Commands.

During the requirement definition, delivery and implementation of the COP tools, NCI Agency has gained valuable experience with a wide community of operational users and is offering this technical and functional expertise to nations.

Service Description

NCI Agency can host JCOP and iGeoSIT training courses and provide on-site training support. The following set of courses is available: COP System administrator (~ 3 days), COP end-user (~ 2 days), and COP manager (~ 3 days). Courses and training materials can be customized to best meet national interest.

Furthermore, NCI Agency can provide tailored services:

- assist with the implementation of NATO COP tools and integration with national C2 systems;
- provide support during the preparation and conduct of exercises, experiments, in technical and functional areas of expertise;
- provide NATO COP tools support to operations (pre-deployment, deployment, on-site implementation, remote support);
- conduct concept development, analysis and experiments to deliver studies and research work for implementation of NATO tools into national organisations.

Product description

iGeoSIT: Geospatial visualization and exploitation of the COP, includes data access components and map server to provide geo-data in complement of other NATO or national geo-data providers. iGeoSIT supports direct connection to non-real data sources (databases, NVG services, ICC), real-time tracks using NIRIS and geo-data providers (WMS).

JCOP: Management and dissemination (integration with C2 systems) of mission-specific COP, cross-echelon sharing of the COP. Includes data-access components for specific C2 information products. ('COP-IM' is a component part of JCOP).

JCOP and iGeoSIT are integrated to be capable of a full integration of data sources into the COP and provides for a unified management and distribution of the mission-COP to all C2 systems.

Track Record

NCI Agency is closely working with NATO Commands and Nations to implement the COP tools across the operation centres and adapt to the evolving requirements. NCI Agency regularly provides training and support to exercises and deployment on the COP tools for different profiles and experience of users.

Since 2005, iGeoSIT is deployed and operationally used for situational awareness in all NATO Joint Commands, in the Balkans (KFOR mission) and in Afghanistan (ISAF mission, all headquarters). iGeoSIT and JCOP are being used in several experiments and exercises since more than 5 years and are the support to several national studies and roll-out of a COP capability.

NCI Agency Offer

NCI Agency provides valuable support in the implementation, integration and customization of NATO COP tools. In particular, NCI Agency can assist in the installation and integration of the COP tools with national C2 systems, provide custom configuration to meet a mission- or nation-specific context of their usage. NCI Agency provides on-site training courses and support to the COP tools during NATO or national exercises or experiments. NCI Agency provides a range of technical and functional specialist services to conduct research and studies related to the improvement of situational awareness and the integration of the COP tools in a national environment.

Incident management (JOCWatch)



Overview

JOCWatch (Joint Operations Centre Watch) is a web-based incident/event logging and monitoring tool for the Joint Operations Centre. Incident/event information can be updated over time, correlated and exported in various formats. JOCWatch maintains the "legal log" for the Commander.

JOCWatch is designed to support Watch Keepers and Shift Directors in CJOCs to record incident information in a standardised and structured manner. Theatre-wide JOCWatch capability facilitates greater situational awareness for decision makers from Tactical to Strategic level Headquarters and provides event data for analysis of the battle space for future adaptations of operational tactics, techniques and procedures.

Service Description

NCI Agency can host JOCWatch training courses or provide training support on-site. The following courses are available:

- User training package, incl. scenarios and example data;
- System administrators training package.

Furthermore, NCI Agency can:

- provide consultancy services for system integration and configuration;
- develop the required extensions and interfaces to the national reporting systems;
- provide JOCWatch localization services (translating JOCWatch User Interface);
- provide Incident Analysis tools and services;
- provide JOCWatch support during the preparation and conduct of exercises and experiments;
- conduct research and development activities in this incident management area.

Track Record

- JOCWatch is used as the main incident reporting system in ISAF since 2008. JOCWatch is currently deployed and used in many NATO and

national HQs including JFC Naples, JFC Brunssum, HQ KFOR, 1GE/NL Corps, NLMARFOR, FR EMIA-FE, NRDC-IT STRIKFORNATO.

- NCI Agency has developed and conducted regular JOCWatch training courses either at NCI Agency or on-site at NATO or national headquarters.
- NCI Agency has provided JOCWatch support to numerous NATO and national exercises as well as to operations and participated in several (multi-)national experiments.
- NCI Agency is working closely together with several nations, including France, Germany, Italy, and the United Kingdom, to integrate JOCWatch with national command and control systems or to provide JOCWatch customization.

NCI Agency Offer

NCI Agency can provide valuable support in the implementation, integration and customization of JOCWatch. In particular, NCI Agency can assist with the installation of JOCWatch and the integration with national systems or portals and provide localization of JOCWatch. This can include the customization of the incident reporting form to support custom data and/or support to data analysis. Additionally, NCI Agency can provide JOCWatch training courses either at NCI Agency or on-site and support JOCWatch users during exercises or operations.

Recognized Environmental Picture



Overview

NATO missions demand that military forces operate with integrated and coherent environmental support across the spectrum of military operations inside and outside NATO territory. The term "Recognized Environmental Picture (REP)" is defined in AAP-6 as "The complete and seamless depiction of geospatial, oceanographic and meteorological information designated for the planning and conduct of joint operations in a specific area at a specific time and which supports the unity of effort across the joint Battlespace" [AAP-6]

The architecture to support the REP concept has been developed by NCI Agency through experimentation programme within the NATO Joint Warrior Interoperability Demonstration (JWID) 04, Coalition Warrior Interoperability Demonstration (CWID) 05, and Steadfast Jackpot and Steadfast Jaguar 06 exercises. The NCI Agency Geo-Team has managed the system design and executed the XREP fielding experiments. Prototyping and enhancement of Functional Area Systems (FAS) with meteorological capabilities is also another area where NCI Agency has successfully been supporting ACO.

Expertise Description

The REP architecture developed by NCI Agency is based on open standards defined by the Open Geospatial Consortium (OGC), the World Wide Web Consortium (W3C) and ISO. The architecture supports cross-domain/cross-security geospatial data transfer. Within this architecture, the REP products, as well as all geospatial baseline data, are stored in advanced DBMSs. Catalogue services allow efficient data search and query functionalities, while OGC Web Map, OGC Web Feature and OGC Web Coverage services support network-based and application-embedded data visualizations.

Track Record

The architecture to support the REP concept has been developed by NCI Agency through experimentation programme within the NATO Joint Warrior Interoperability Demonstration (JWID) 04, Coalition Warrior Interoperability Demonstration (CWID) 05, and Steadfast Jackpot and Steadfast Jaguar 06 exercises. The NCI Agency Geo-Team has managed the system design and executed the XREP fielding experiments. Prototyping and enhancement of Functional Area Systems (FAS) with meteorological capabilities is also another area where NCI Agency has successfully been supporting ACO.

NCI Agency Offer

The expertise built at NCI Agency in the REP field can support the NATO Military Command Structure and NATO Nations in the following domains:

Situational Awareness Development

- production of a Recognized Environmental Picture (REP) which provides users access to accurate, timely, relevant and reliable oceanography, meteorology, geospatial and supporting remote sensing data and products required at the joint level to conduct military operations;
- integration of the REP in the Common Operational Picture (COP).

Decision making process support

- establishment of the Environmental information superiority and support of the decision making process.

NCI Agency can provide the technical expertise necessary to advise on the best solutions for the integration of GeoMETOC systems and implement customized solutions according the users' requirements.

7. Experimentation, Exercise, Lab, and Test Services

This Section includes some of the key integrating capabilities that NCI Agency has to offer, covering **Hosting and Collaboration Services; Experimentation, Test and Evaluation (ETE);** and the extraordinary capabilities available in the **Distributed Networked Battle Labs (DNBL)** [a services network for Test and Experimentation], and through the **Combined Federated Battle Laboratories Network (CFBLNet)** [network services for RDT&A , Exercises, Testing, and Training]. These collaborative experimental, test, exercise and Training venues can optimize National or MN investments by leveraging substantial R&D resources and infrastructure in the development of their specific project. Additionally, these capabilities support and promote interoperability and early capability fielding by providing secured and controlled but configurable and realistic test environments.

Experimentation, Test and Evaluation Centre (ETE Centre)



Overview

The Battle Laboratory Services Team (BLST) offers services for Experimentation, Test and Evaluation (ETE) of C4ISR capabilities. BLST provides access to the NCI Agency Battle Laboratory collaborative environment, NCI Agency technologies and acquired C4ISR capabilities. In addition, as a key player within the Distributed Networked Battle Laboratories (DNBL) Framework, BLST actively leverage scope of its services for NATO Organisations and Nations, Partnership for Peace (PfP) countries, Industry and academia.

Available services range from simple test support up to conducting medium scale test and experimentation projects.

NCI Agency, as a DNBL member, provides ETE services for all members of the framework. Since 2010, the NCI Agency has supported multiple test events in the area of JISR. The Agency's services support rapid and cost efficient experimentation, test and evaluation for major projects (such as Coalition Interoperability Assurance and Validation (CIAV) or Afghanistan Mission Network) in accordance to NATO standards and requirements. Offered services are

listed in the portal based DNBL Service Catalogue: <https://dnbl.nc3a.nato.int>.

Current DNBL Services conducted by BLST:

- Infrastructure and Security Service
- NCI Agency Test & Experimentation Service
- JISR Step 1 Testing Edition 2.0
- NCI Agency DNBL FFT (Friendly Force Tracking) Testing

Description

The BLST services cover all aspects of experimentation, test and evaluation, ranging from consultancy, project management, test management, coordination, security, technical support, and distributed testing. Its service model is focused on best practises of the ITIL v3 model for service management. Service Management is achieved through three loops – continuous development of the service strategy – specific cycle for each service to address the design, transition and operation of the service and continuous service improvement.

- *Infrastructure and Security Service:* BLST offers the possibility to run experimentation, test and evaluation at various levels of security classification;
- *NCI Agency Test & Experimentation Service:* Tests range from demonstrations (low fidelity, NU level) up to certification of systems and components for deployment to operational theatres;
- *Joint Intelligence, Surveillance and Reconnaissance (JISR) Step 1 Testing Edition 2.0:* NCI Agency DNBL offers interoperability testing of national ISR systems against the NATO ISR system and the identification of the level of compliance and related limitations of national ISR products. In addition, NCI Agency DNBL offers interoperability the testing of a NSIL compliant data exploitation product against the NATO Coalition Shared Database (CSD) server implementation;
- *NCI Agency DNBL FFT Testing:* NCI Agency offers compliance testing of Friendly Force Tracking system (FFT) products. National systems are tested against STANAG 5527 (NATO Friendly Force Information (NFFI) Standard for Interoperability of Force Tracking Systems (FTS)). The end-to-end Interoperability assessment and validation is addressed from an end-to-end perspective, where the end user (the operational community) is the focus of the results - the improved dissemination of FFT information. The scope of the testing can be extended from the verification of the Friendly Land Tracks to include airborne and naval systems and forces on customer request.

BLST services include: • ETE Manager • Experimentation Test and Evaluation Plan development • Data Analysis Concept • Test Support and/or Execution • Presentation of Results and Reporting • Coordination of participating Elements/Facilities • Security accreditation • Networking of involved Facilities.

Track Record

NCI Agency BLST has a solid track record with a number of supported projects – e.g., AMN CIAV, MAJIC 2, Medics, Cyber Defence and exercises CWID/CWIX, MAJIC and CIAV. NCI Agency Offer

BLST offers support and execution for ETE services throughout the validated system and project life cycle. From project start-up, BLST provides ETE expertise to define requirements, equipment and environment (HW/SW/communications/networking), test configurations, plans, and tools. For the preparation phase, BLST can provide Hardware and Software procurement support, security accreditation, and reference to the most current operational IT system configurations and settings. During the execution, the set of BLST services includes but is not limited to:

- ETE Management and Laboratory Facility Management;
- Set-up and configuration management of the Laboratory;
- System Administration;
- Connectivity and interoperability with internal and/or external Laboratory Facilities;
- Network connectivity to external stakeholders via CFBLNet, NS WAN or Internet.

Distributed Networked Battle Labs (DNBL): Experimentation, Test and Evaluation Services



Overview

DNBL is an initiative led by the NATO Consultation Command and Control Agency (NCI Agency) with sponsor support from Headquarters Supreme Allied Command Transformation (HQ SACT). It has been created in order to tighten cooperation on preparation and conduct of Experimentation, Test and Evaluation (ETE) services between the members of the framework. The DNBL Framework provides the operating model to enable the federated use of capabilities and systems for a wide range of user groups and to exchange ETE services available in the DNBL Service Catalogue. In light of the NATO Smart Defence concept, this initiative is open for NATO organisations, NATO and PfP countries, their Industry and academia.

Service Description

The DNBL Service model is focused on best practises of the ITIL v3 model (IT Infrastructure Library) for service management. Service Management is achieved through three loops – continuous development of the service strategy – specific cycle for each service to address the design, transition and operation of the service and continuous service improvement.

NCI Agency plays an important role in shaping and supporting the framework on a daily basis. NCI Agency leads of the Technical Authority (TA) which supports the governance of the DNBL and manages the DNBL Framework at the technical and operational level. It supports the community with current framework documents and collaborative workspace - the DNBL Portal.

The Service Level Agreement (SLA) provides the conditions for the delivery of the service by the Service Provider and will be tailored to the specific event on the basis of the related Service Description. The SLA describes in detail the service to be provided, its quality requirements, timelines and costs agreed upon by the Service Provider and Service Subscriber, as well as roles and responsibilities of involved parties, and their Points of Contact.

Once both entities agree on SLA terms and conditions, the Technical authority creates a site on the DNBL portal to support this event.

DNBL Framework provides the operating model to enable the federated use of capabilities and systems for a wide range of user groups and to exchange ETE services available in the DNBL Service Catalogue. Services may range from single services that are delivered by a particular Service Provider or Battle Lab, to large complex composite services that combine multiple services from multiple Service Providers, multiple Battle Labs, multiple Service Subscribers and complex networking infrastructure.

Layered DNBL Service Model

The DNBL services integrate very well with the CFBLNet framework. The DNBL Framework provides the complete set of services including the network layer for event processing unclassified information for a range of communities, thus reducing the effort through the legal and administrative arrangements and the defined services.

The operation of DNBL services within the CFBLNet framework allows benefiting from the security arrangements especially for events processing of classified information and the core network services. This combination reduces the effort for the establishment of Test and Experimentation events and allows the implementation of complex event in a very cost and time effective way.

Track Record

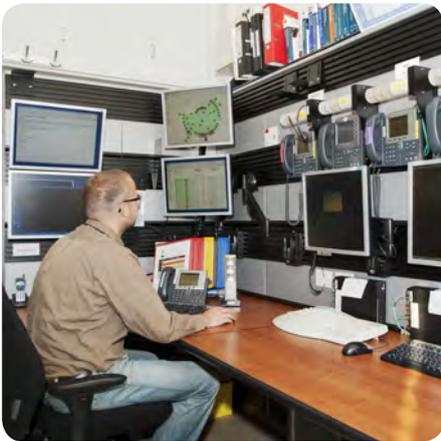
The DNBL framework has been in operation since 2010, and has supported multiple test events in the area of Joint Intelligence, Surveillance and Reconnaissance (JISR) and Friendly Force Tracking (FFT). It has also been used to verify and validate the interoperability of NATO and national C4ISR capabilities prior to their deployment to Afghanistan.

NCI Agency Offer

- Subject Specific services providing specific capabilities and subject matter expertise for ETE;
- Infrastructure & Security services for connecting capabilities and systems;
- DNBL Events handled by an ETE Manager.

Offered services are available for all DNBL Members and can be found on the portal based DNBL Service Catalogue: <https://dnbl.nc3a.nato.int>.

Combined Federated Battle Laboratories Network (CFBLNet)



The Assured End-To-End Coalition Framework for Testing, Exercises, Training and Network Services.

Overview

CFBLNet is NATO and Nations' preferred global assured end-to-end coalition network of choice for Testing, Exercises and Training. The CFBLNet Charter provides the assured end-to-end Coalition Framework for bi-lateral and multilateral initiatives crossing more than 33 nations and NATO. In addition, the NATO and European CFBLNet Network Operation Centre at NCI Agency provides national CFBLNet Point of Presence and NATO CFBLNet Access Nodes, connectivity to the CFBLNet Core. As a true federated capability the nations re-uses the national infrastructure to interconnect their battle labs via the national Point of Presence (PoP) into the various CFBLNet community enclave. The CFBLNet Framework and Network Services powers several significant key initiatives in the NATO and Coalition community, including Afghanistan Mission Network Testing and Coalition Interoperability Assurance Validation (CIAV), AMN Training, Training Federation, Coalition Warrior Interoperability Exercise, NATO – ALTBMD and many more.

CFBLNet fully supports the SMART Defence principles by interconnecting the coalition battle labs in a true federation. This capability creates synergy, efficiency and provides the most cost effective solution and security for the current and future participating members. CFBLNet is collectively led by the participating mission partners and under the executive direction of NATO, CCEB and US.

Service Description

You get an established, stable international network with proven information assurance measures, and the support of a robust environment built to support your Training, Exercise, Event and Distributed Simulation Initiative. CFBLNet provides a sustainable and accreditable architecture to effectively field equipment and services and can operate from Unclassified up to and including classified SECRET. CFBLNet follows ITILv3 best practices for continuous services improvement. CFBLNet has been used to minimize risk in systems prior to deployment with the warfighter (reducing costs and countless hours of development) or for exercises and training. CFBLNet offers services in a published service catalogue. CFBLNet offers an effective method for integrating and improving interoperability with allied and coalition partners.

CFBLNet Subscription Services: Comprehensive CFBLNet Permanent Subscription (calendar year) or Temporary Monthly Subscription and extensions and bandwidth options.

Track Record

CFBLNet has hosted many MN C4ISR events and has a track record of success that speaks for itself: CWID, Fleet Synthetic Training-Joint, MN Experiment, Empire Challenge, MAJIC, Blue Force Tracker, IEG testing, MN NATO and Partner Federated Tactical Data Links trials. In addition CFBLNet has supported several key warfighting Initiatives, including: MN connectivity for air picture; messaging services; collaboration; multi-level security Initiatives; homeland defence and crisis response tools; ship-to-ship command and control; unmanned aerial vehicle imagery; and situational awareness via enhanced tactical data link interoperability. Imagery and video systems proven on CFBLNet are currently supporting operations in Afghanistan and Iraq. CFBLNet support the builds, validation and verification of the NATO ALTBMD programme with high speed simulations. CFBLNet also supported key second-tier warfighting objectives including on-line distributed war gaming and multinational training exercises. Some specific success stories include the following: The ALTBMD Integration Test Bed has been a high profile interoperability and requirements validation capability for the Programme and for NATO. The effectiveness of the ITB has been further enhanced by the turnkey

solutions and capability offered by the CFBLNet and its network management team. The existence of a test network with connections already in place to the majority of ALTBMD national Labs and system sites facilitated the ITB connection to hardware-in-the-loop testing some 9 months earlier than originally planned.

The CFBLNet is, and will continue to be, a major enabler of our test programme. Intelligence, Reconnaissance and Surveillance (ISR) lessons-learned in live and unmanned aircraft and satellite surveillance in Empire Challenge were applied immediately in support of International Security Assistance Force (ISAF) – Afghanistan.

Typically, a minimum set of services is used in an event building on a networking layer, an infrastructure as a service layer and subject of matter services. The CFBLNet Network Services can be supplemented by DNBL Services within the CFBLNet Framework. Such combination provides a strong integrate solution for your initiatives and create the synergy and saving to focus on your initiative, Testing, Exercise or Training objectives.

NCI Agency Offer

The NATO and European CFBLNet services subscriptions offers your nation or organisation the capability to reach more than 225 distributed Battle Labs. It allows your nation or organisation to select the Infrastructure services you require, ranging from Temporary subscription to a Single CFBLNet Initiative Domain up to the Permanent Annual Subscription including all applicable CFBLNet Initiative Domains of your choice. All these domains include core network services like Routing services, encryption, WAN Network Management and Monitoring and value added services like DNS, Mail, Web, VoIP and NTP. In addition, CFBLNet offers custom solutions and services like Video teleconferencing, directory services, Traffic Prioritization through Quality of Service, Configuration Support, and additional helpdesk support and high availability custom designs. A subscription to CFBLNet allows your initiatives to fully concentrate on their business. You can connect to CFBLNet using Leased lines, VPN's, Managed services or public infrastructures. The Agency will be glad to advise you on the best way to connect your Nation or organisation.

For a full CFBLNet Service catalogue, please contact CFBLNetman@nc3a.nato.int.

Web: <http://CFBLNet.info>

8. Exercises & Training

NCI Agency has over in 20 years of exercise support and training expertise, ranging from Collective Training & Exercises Development and Support, to Modelling and Simulation Support, and FAS Training. These training services leverage the expertise of NCI Agency and apply it to the hosts' specific needs. Training and exercises become force multipliers for products and services acquired through NCI Agency by integrating the inherent product capabilities into the force structure and end-use state, permitting maximum effective utilization of the product/service investment.

Collective Training & Exercises Development and Support



Overview

NCI Agency has a very experienced team in the areas of collective training and exercises (CT&E). The key strength is the close relationship between capability development in this area and strong involvement in NATO and national collective exercises. Over time, a mature set of processes has been developed for conducting collective exercises, and a wide range of support tools to support these processes has been acquired and developed.

As part of NCI Agency, the team is well-linked to developments in the area of C4ISR, resulting in an extensive competency base with respect to stimulating C4ISR systems with modelling and simulation tools.

The allied areas of CT&E Capability Development, CT&E Support, and M&S Support are each described below, with a Collective Offering immediately following.

a. Collective Training and Exercises Capability Development

Description

Based on the NATO capability for collective training and exercises, NCI Agency develops specific capabilities for customers. The capability is a mix of commercial-off-the-shelf systems and tools developed within NATO over the years through strong involvement of the users and insertion of state-of-the art technology. It allows NCI Agency to provide the following services in the area of capability development:

- develop and document architectures for collective exercises, including processes, C4ISR capabilities, infrastructure and exercise support tools;
- develop requirements for training and exercises capabilities to be developed;
- prototype functionality to address specific exercise areas that have not been dealt with in the past;

- implement capabilities by using the tools available within the NATO capability and /or conducting an acquisition process with Industry based;
- conduct configuration management to ensure a reliable and up-to-date capability for the wide range of collective exercises within NATO.

The functional areas supported by the NATO capability for collective training and exercises are focussed on preparation and management of exercises, and the active stimulation of the training audience. Specifically, tools to develop the setting (geographical, political etc.) and scenarios help to prepare for exercises. Management of events and incidents, provision of situational awareness and facilitating the workflow of the exercise staff support both preparation and execution phases. Simulations and their interfaces to the participating C4ISR systems are used to make sure the entire training audience gets value out of the exercise.

Track record

NCI Agency has developed the NATO capability for collective training and exercises and is currently the host nation for the industrial consolidation of the capability through NSIP.

b. Collective Training and Exercises Support

Description

The collective training and exercises support NCI Agency delivers to its customers ranges from training on the use of the NATO capability for collective training and exercises, through provision of support to the usage of the capability, to taking responsibility of the exercise control cell.

Training on usage of the capability or parts thereof is given to personnel of the customer in the form of tutorials, workshops, and on-the-job training. If operators are not available in the command hosting the exercise, the NCI Agency training and exercises team provides highly skilled people to prepare the usage of the capability, to operate the tools or to provide a help-desk service.

In case a command is not experienced in running exercises or short in personnel, NCI Agency offers the possibility to conduct workshops in preparation of the exercise, e.g. on the development of setting and scenario, events, incidents, CIS architecture or the setup of the exercise control organisation. Also, NCI Agency personnel can conduct specific roles during an exercise or coach inexperienced personnel in the execution of these roles. Examples are exercise control manager, cell manager, operator of exercise support tools or functional services or CIS manager.

A service NCI Agency is very respected for is to evaluate exercises, in particular with respect to the use of capabilities during preparation and execution of the exercise. Thanks to their extensive experience, members of the NCI Agency training and exercises team make sharp observations and do effective recommendations for improvement of future exercises.

Track record

NCI Agency has supported exercises at the NATO joint operational level at JWC and JFTC, Battle Staff Training events for individual NATO and national joint headquarters, and integrated training events for NATO and national COACs and Air Commands.

c. Modelling and Simulation (M&S) Support

Description

NCI Agency offers a wide set of services in the area of Modelling and Simulation for C4ISR. The basis is a robust set of models, simulations and data sets. These replicate current NATO missions or form the basis for NATO exercises. Using these simulated mission environments, NCI Agency stimulates C4ISR systems for a variety of applications. Services based on this include:

- develop concepts for employing C4ISR systems;
- experiment with C4ISR systems for current or future NATO missions;
- conduct operational testing of C4ISR systems in acquisition efforts;
- conduct scenario-based C4ISR interoperability before exercises or deployment to theatre;
- conduct exercises involving real or simulated C4ISR systems;
- develop architectures and infrastructures for modelling and simulation environments;
- develop standards for specific M&S interoperability areas;
- support acquisition of modelling and simulation environments.

The provision of services in this area builds on people with a vast experience in modelling and simulation, methodologies for testing, acquisition, training and exercising and the other applications mentioned above. Another area of expertise is the development and management of federations of simulations. This allows the Agency to integrate many simulations from participating nations and Commands into a coherent environment for specific events. Assets available in support of the services are a dedicated M&S interoperability lab, C4ISR test labs, infrastructures such as DNBL, CFBLNet, NGCS and others.

Track record

NCI Agency supports NATO AWACS in the definition of an environment for Mission Training through Distributed Simulation (MTDS). Other support delivered includes exercises as specified above, MAJIC ISR interoperability events, CWIX, ACT and multinational experiments. NCI Agency has a wide network in this area through involvement in RTO, NIAG and NAFAG activities.

NCI Agency Offer

NATO Commands and Nations can leverage the experience built in 20 years of exercise support by calling on the NCI Agency training and exercises team. The capabilities that the team provides are built on the NATO capability for collective training and exercises, facilitating efficient and coherent use of resources as outlined in the SMART Defence Initiative. Using the NATO capability ensures standardisation in the area of collective training throughout the NATO Command Structure and the NATO Force Structure. This effect is strengthened by the use of common, validated data sets for the representation of real assets and activities.

The use of common NATO capability is complemented with a range of services in support of the actual preparation and exercises. Depending on the situation of the customer, the team can provide tailored services to develop and conduct collective exercises and to stimulate C4ISR systems through modelling and simulation. The training and exercises team is often engaged as a continuous source of knowledge in support of rotating military positions. The scope of support ranges from full responsibility for the execution of exercise control functions to targeted interventions for specific roles. Involving the NCI Agency training and exercises team facilitates the use of common processes all over NATO, thus enabling the Synchronised Forces Initiative.

NATO Functional Area Service (FAS) Training



Overview

NATO employs an integrated and interoperable suite of Functional Area Service (FAS) systems supporting the NCS and NRF training, exercises and operations. Proper training on both technical and operational aspects of the NATO FASes is critical to enabling those systems to be prepared, configured and employed properly and thereby supporting mission success. FAS training involves not only the technical training for system and data managers, but also includes operational training for end-users on standard system capabilities and operational employment concepts. For the full view of integrated NATO FAS system operation, training on "Electronic Working Practices (EWP)" is provided to show the interactions between different systems within the context of operational staff standard operating procedures.

Expertise Description

NCI Agency's experience in FAS training is as old as the systems themselves. With NCI Agency involved in every step of FAS system development from initial requirements definition through prototyping to acquisition acceptance testing and finally to operational field acceptance, there is no aspect of a NATO FAS system that NCI Agency is not familiar with. NCI Agency is involved in nearly every initial installation of a NATO FAS and routinely provides the gaining command and site training on the technical complexities, initial configuration and advanced system administration and maintenance.

NCI Agency personnel are involved in every NATO operation and many NCI Agency personnel are deployed with the NATO and national military and civil authorities to official NATO deployment sites. With this real-world and current operational experience, NCI Agency personnel are ideally suited to provide the full range of operational training from basic operator training through command center integrated EWP training.

Track Record

Without going into every event involving NATO FAS training NCI Agency has supported over the years, it would be best to highlight the recent training provided to the NATO ISAF and the AMN.

NCI Agency has been involved in no fewer than 10 major ISAF pre-deployment training events supporting the full range of FAS training from basic operator through advanced EWP training for ISAF "IJC" and "RC" Commands. These events involve use of real-world information and scenarios to stress the interoperability and interdependence of NATO FASes in the command centers. These training events are supported by an integrated technical and operational team of four to six NCI Agency personnel who provide a great deal of flexibility in addressing the range of system operational aspects. NCI Agency personnel providing the training often deploy to the same site as the ISAF training audience for a period of time to provide on-site, over-the-shoulder final training in the actual operations center to ensure the end-user is best prepared to perform the assigned duties.

Nations joining the AMN are offered and always accept an integrated training package for the technical installation, configuration and administration for the NATO FASes designated for that nation's AMN connections. Additional training support is provided on the technical interfaces

enabling designated national systems to exchange appropriate information with the NATO FASes as approved in the AMN architecture and joining instructions. FAS training services frequently takes advantage of the capabilities of DNBL and the CFBLNet as the enabling platforms for the provision of these and other services in non-NATO and deployed locations.

NCI Agency Offer

NCI Agency can provide FAS training on the spectrum of C4ISR systems and capabilities, to almost any level desired by the customer. The following are the generic categories of FAS training available with any customer able to tailor their support package to meet any specific needs.

Title of Service	Service Description
FAS System Administration (Level 1)	Provision of system administration training for a single FAS providing instruction on system requirements, system installation, and initial system configuration and run-time management and support procedures.
FAS System Administration (Level 2)	Provision of system administration training for a single FAS providing instruction on system requirements, system installation, system configuration and run-time/remote network management and support procedures.
FAS Basic Operator (Single System)	Provision of basic FAS overview and operator training. Training will support the "button ology" as well as an initial introduction to operational employment principles and practices.
FAS Advanced Operator (Single System)	FAS Basic Operator training plus advanced operational employment training and tailored training to adapt procedures for the sponsor command's concepts of operations.
FAS System Train the Trainer	Provides a shortened version of the FAS Advanced Operator course with additional instruction on training techniques and detailed review of available training materials from the instructor view.
Joint Task Force Command Level FAS-Training Support	Provides flexible and tailored support to FAS training for the JTF staff in an exercise environment.
Domain Component Level FAS-Only Support	Provides flexible and tailored support to FAS training for a single Component staff in an exercise environment.
Operational Electronic Working Practices (EWP) Training (single location, on-site support)	Provides a FAS Advanced Operator Course with an expanded operationally-focused EWP training to provide the full information and systems management view of the combined FAS architecture.
Operational "MRE" FAS Phase 1 (single location, on-site support)	Provides a standard multi-purpose FAS training team to provide operationally-appropriate FAS basic training in preparation for a formal "Mission Rehearsal Exercise (MRE)".
Operational "MRE" FAS Phase 2 (single location, on-site support)	Provides a standard multi-purpose FAS training team to provide operationally-appropriate FAS advanced training and "Electronic Working Practices (EWP)" training in preparation for a formal "MRE".
Operational "MRE" Full Cycle Support (single location, on-site support)	Provides a combined package of MRE Phase 1 and Phase 2 training.

9. Transition from Stovepipe Tools and Services to Integrated Mission Oriented Solutions

For a very long time, NCI Agency was fully focussed on stovepipe projects, because of the division between customers and customer funding.



Recently, the provision of Combat Support in Afghanistan and the direction of COMISAF leadership to establish AMN marked a serious shift in that paradigm. With the coming evolution of the Future Mission Network (FMN) from the AMN, it is clear that mission networks will exist not only as a concept, but also as real, deployable capability. Experience from Operation Unified Protector (OUP) added the airborne dimension, and maritime operations are proving the need for new integrated Maritime CIS. So actually, FMN will encompass all domains, with land, air and maritime-specific elements, developed as integrated mission-oriented solutions.

This operational requirement and final authorisation from the Programme Management and Integration Contractor (PMIC) gave new life to the Bi SC AIS programme, which is to provide integrated infrastructure and applications solution for NCS, currently on offer to NFS and nations, as well available through national and multinational funding paths.

But even deep in its roots, Shape Air Defence Technical centre was established to support an integrated air defence system. Currently NCI Agency supports NACMA, hosts ALTBMD, and is implementing an air defence system programme for Poland, the Czech Republic and Hungary on a project basis. The Agency has developed an integrated proposal to Adriatic five nations on Balkan Regional Approach to Air Defence (to include radar acquisition, ground-air-ground comms, C2, ATC capabilities and Civil-Military Interoperability in Air Traffic Management, with options for logistics support, training, extension to GBAD, etc. – a truly integrated Air Defence solution for the Balkan area, that according to planners, could be extended to Maritime Defence).

There is a new mission area rapidly evolving – Cyber Defence, where a comprehensive tool suite is under development around the NATO Computer Incident Response Capability (NCIRC) and Cyber Defence Capability Development (MN CD2), a project supported by the ACT Programme of Work, as well as for HQ and ACO.

Another critical mission-oriented capability area to be addressed is support to transition (from military to civilian control), including cross-cutting Defence Support to Civilian Authorities, and Civil-Military Interoperability. There are several tools available through NCI Agency, but with the SACEUR initiative for CCOMC (Complex Crisis Operations Management Centre), the Agency could come in a similar way as with AMN, with a toolset to support the Comprehensive approach to Crisis Management.

These are potential programme offices in the future C&I Agency, addressing mission-oriented, fixed and deployable solutions for HQ, NCS, NFS, and supporting nations through Smart Defence concepts to build, train, maintain and deploy / redeploy connected forces.

In the next revision to this Catalogue, presentation of mission-oriented suites for the following capabilities should have a more prominent role:

1. Future Mission Network (FMN)
 - Joint C4ISR (potential architecture for integrated C4ISR Tool suite)
 - Land operations (AMN experience)
 - Air operations (OUP experience around TOPFAS/ICC)
 - Maritime operations (OOS, OAE experience)
2. AIS for NCS – Bi-SC AIS
3. Integrated Air Defence solution – BRAAD proposal
4. Integrated Missile Defence solution – TMD IOC
5. Integrated Cyber Defence solution – NCIRC FOC/MN CD2
6. Civil military interoperability tool suit – experience of MN CMI, incl. NRC CAI and NATO-Sweden experiment
7. Exercises, experiments and validation solutions – DNBL/CFBLNet and CAX experience

Additional MN projects are included in the listing in Appendix F.

The shift to mission-oriented suites could happen procedurally, through the change in requirements focus from NCS, and/or in the funding priorities of IC/BC; but it is already happening through bilateral and multinational programmes with both member and partner nations, e.g. the recent MY POW with Finland, and the BRAAD, MN CD2 work.

NCI Agency is poised to exploit the force-multiplying effects of such collaborations.

APPENDIX A. About NCI Agency

The NCI Agency is a valued and effective arm of the Alliance, delivering products and services across the entire Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) life-cycle. We acquire key systems that the leadership of NATO needs in order to perform the political consultation and military functions of command and control, and to carry out NATO missions where and when necessary.

Mission/Vision/Values/Structure

MISSION

(Why we exist)

To enable NATO's success through the unbiased provision of comprehensive C4ISR capabilities.

VISION

(What we want to be)

The NCI Agency as an essential contributor to NATO success.

VALUES

(What we believe in)

One team; one motive: NATO's success.

STRUCTURE

(How we are aligned to mission)

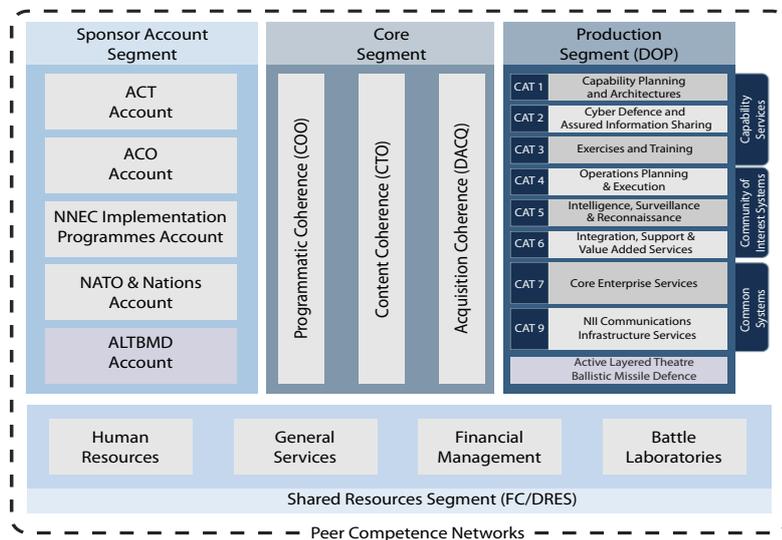
Position NCI Agency to support NATO's new Strategic Concept; underpin NC3B's C3 Capability Objectives; consolidate as a Strategy-Focused Organisation, while Retaining Operations as Our Primary Focus.

Location and structure

The Agency operates from two locations under single management; one in Brussels, Belgium, and the other in The Hague, Netherlands, as well as field offices in NATO's two Strategic Commands and Afghanistan.

Our assets include a pool of highly talented and experienced staff (approximately 600), a unique skill set, over 54 employees with PhDs and 5.2 year of average post graduate education, 27 laboratories and 25 major communication assets.

The Agency's structure is based on four principal segments, displayed below, with many levels of intersection and integration available to average Agency and Customer goals:



NCI Agency Roles in capability development and service provision

NCI Agency takes three major roles in the delivery of services and products to customers. First, it plays a critical role during the development and execution of the NATO Defence Planning Process; it provides Portfolio/Programme/Project Management Support for customers in and out of the NDPP arena to acquire existing and future capability; and it also provides Services (e.g., IT) to customers.

The Role of NCI Agency in the NDPP

NCI Agency, as a platform for collaborative C4ISR capability development, is implementing a Comprehensive C4ISR Approach to Smart Defence in the framework of the NATO Defence Planning Process (NDPP) [Reference A].

More specifically, the role of NCI Agency in NDPP is threefold:

1) Operational Analysis (OA) support to Allied Command Transformation (ACT) for the overall implementation of NDPP

NCI Agency has been providing unbiased analytical expertise to support Defence Planning (DP) within NATO for 20 years. The analytical support, captured within the Capability Requirements Review (CRR), includes the following:

- Interpretation of the Political Guidance;
- Analysis of the operational context derived from the future security environment assessment;

- Analysis of the type and amount of capabilities required to meet NATO's level of ambition;
- Assessment of existing and planned capabilities within NATO and the Nations against the requirements; and
- Analytical expertise and models/tools to support the Strategic Commanders (SCs) in their prioritisation of capability shortfalls.

In the initial part of NDPP process, NCI Agency provides analytical expertise and supporting tools to ACT, leading to Targets for the maintenance and/or improvement of existing/planned capabilities, and the development of new capabilities.

2) Support to nations for their national defence planning and contribution to NDPP through the use of NATO analytical expertise and tools for defence planning.

The analytical expertise and supporting tools available at NCI Agency have, in recent years, been exploited by a number of nations to support their own national defence planning activities. The use by nations of the same methodology/approach and tools for defence planning as applied in NATO provides a common basis which helps increase coherency in capability development across the Alliance.

NCI Agency has developed the Joint Defence Planning Analysis and Requirements Toolset (JDARTS), which is an integrated federation of complementary software applications used to support a joint, capability-based approach to capability requirements analysis. Whilst this tool was developed to support DP within NATO, and particularly the NDPP, it is available to nations and has in recent years been adopted by a number of nations. Complementary to JDARTS is the analytical expertise which is also made available to nations to support them in addressing specific national problems related to capability requirements analysis.

3) Support to NATO and Nations with implementation of C4ISR related targets (National, Multinational and Common funded) – including with partner nations.

NDPP Step 4 (Facilitating Implementation) is meant to assist national efforts and facilitate multinational and collective efforts to satisfy agreed targets and priorities in a coherent and timely manner. NCI Agency's mission is to enable NATO success through the provision of comprehensive C4ISR capabilities.

The development of C4ISR capabilities undertaken at NCI Agency exploits the DP analytical expertise and products discussed above. NCI Agency's broader Operations Research / Operational Analysis (OR/OA) expertise is also used to support the development of C4ISR capabilities to be implemented within the Nations and NATO, leading eventually to enhanced interoperability within the Alliance.

Portfolio/Programme/Project Management Support to Existing & Future Capability

In addition to acquisition of new capabilities or releasing of existing NATO tools to Nations, Organizations, Commands, the Agency can provide support on a project basis to customers in the areas of expertise defined in this Catalogue.

Consultation

There are an increasing number of requests for Agency consulting on C4ISR capability development / service provision. In order to improve the quality and level of availability of such support, the Agency has included this as a standard package in the Multi-Year Program of Work (MYPOW) on the customer side, and is developing pools of experts around key programmes on the Agency side.

Capability Planning

Support to capability planning using a toolset such as JDARTS is difficult to be fully standardized, so with the growing number of customers, the Agency is developing support packages which will be tailored to the customer requirements.

Training

Training is a high-growth area; and in cooperation with NATO Communications and Information Systems School (CISS) and the NATO Communication and Information Systems Services Agency (NCSA)--the existing network of Centre of Excellence (CoE), a unified training courses catalogue will be developed to improve service to customers. Training is an essential element of the support package for any NATO tool provided to customer through the Agency.

Exercises

In addition to individual training, exercises are the main venues for improvement of the overall capabilities of the forces, and for maintaining their readiness. With fewer operations, and more exercises, especially on a national and multinational basis, it will be critical to have a unified approach to exercises in NATO. Not surprisingly, the distributed training and exercises and shared scenario projects from the MNA TF list are the 2 most supported projects. NCI Agency supports more than 30 users of Joint Exercise Management Module (JEMM) and is providing currently universal NATO Environment for eExercises Toolbox (NEXT).

Experimentation and Evaluation

Experimentation and evaluation using the NATO C4ISR reference facility in The Hague through Distributed Networked Battle Labs (DNBL) and Combined Federated Battle Laboratory (CFBLNet) arrangements is another growing area of support required by nations and organizations from NCI Agency. In this area is the support provided to Coalition Warrior Interoperability eExercise, eXamination, eXperimentation, eXploration (CWIX) for ACT, C3B and individual nations. There is clear opportunity to move from project based to service based approach for experimentation and evaluation.

C4ISR R&D

C4ISR R&D (in support to acquisition) is mostly done for ACT and some multinational (MN) projects (such as Multi-Sensor Aerospace/Ground ISR Interoperability Coalition - MAJIC), but with the trend to have more MN projects, there is an opportunity for nations to use the NCI Agency labs and experienced staff as well as large knowledge base for informing national / MN acquisition decisions and actually achieving interoperable solutions through federation / service orchestration in a secure environment using many existing NATO or national tools.

Service Management, Service Provision, IT Services, ITIL v.3

Originally, NCI Agency was a highly project-centric Agency (under the PRINCE2 standard), working for 2-3 main customers under common funding processes. During the last 2-3 years, the Agency has rapidly re-learned the service management approach, when faced with a growing number of customers (currently above 70) from nations and various organizations, where the support required is mostly of a service type rather than product delivery. ITIL v.3 is approved as a Service Management Framework (SMF) for service provision in NCI Agency.

Acquisition Support



For nearly two decades, the NCI Agency's adaptability to changing technology and the need for fast-tracking delivery of capability has required the implementation of innovative procurement procedures, which have been agreed and institutionalised by all the nations of the NATO Alliance, through the NATO Investment Committee. As a result, the NCI Agency has also been recognised for its adaptability and flexibility in response to the ever-changing procurement challenges.

Acquisitions in the NCI Agency are conducted in accordance with the following principles:

- a. Business has to be open to all NATO participating countries;
- b. Establishment of fair and reasonable prices;
- c. Ensure the integrity of the procurement process by:
 - i. Following NATO and NCI Agency procurement procedures,
 - ii. Documenting and reporting on work performed,
- d. Expect scrutiny of NATO Committees and the International Board of Auditors.

The NCI Agency applies these principles in a variety of acquisition roles for a wide variety of customers:

- a. Host Nation for Common NATO Funded Projects;
- b. Procurement Agent for other NATO Bodies and other NATO Nations;
- c. Host Nation or Procurement Agent for NATO assigned projects in co-operation with non NATO Nations.

Acquisition in the NCI Agency covers from the inception of the project, including working with customers to develop requirements, the procurement strategy, project schedules and estimates, through the solicitation of bids, evaluation of bids, contract award, contract implementation, warranty, and handover phases of the life cycle of the capability.

The NCI Agency Acquisition Support Group (ASG) maintains automated tools which provide for reporting capability and the ability to perform queries on the data related to the procurement actions.

The NCI Agency ASG maintains a variety of competitively awarded contracts covering the full range of C4ISR capability. These competitive contracts are set up as Standing Ordering Agreements (SOAs) which can be easily amended to add similar requirements without having to re-compete.

Some of the most successful SOAs in the NCI Agency are the Support Services Contracts. These three contracts cover the full range of the Agency's consultancy requirements and have been awarded for a three year period of time. They can be used by other activities, with the permission of the companies involved, to quickly and efficiently procure the complete range of support services.

In addition ASG maintains Basic Ordering Agreements (BOAs) and Enterprise Agreements with the major suppliers of communications and information technology products and services. These framework contracts offer Most-Favoured Customer prices and terms based upon volume on a NATO-wide basis (see Authorizing Agreements/BOA's).

Information on these contracts is available via the NCI Agency web page. In the near future, the NCI Agency plans to offer these contract vehicles for use in an automated on-line format via the NCI Agency web page.

What the NCI Agency Acquisition Support Group (ASG) can do for you:

- Act as an advisor on state of the art acquisition and procurement processes and procedures;
- Act as either Host Nation (responsible for the entire acquisition) or as appointed Procurement Agent on NATO or national projects;
- Make our Standing Ordering Agreements, Basic Ordering Programme, and Enterprise Agreements available for use and guide you through the process.

There may be a requirement for a (n) MoU and a related price proposal for Agency products/services in accordance with your requirements, in keeping with our status as a Customer-Funded organisation.

For Acquisition process-specific questions, please contact:

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Coherence and Cooperation with National / International R&D Bodies and Industry

Relations with NC3B on standards and interoperability

The CTO coordinates the capture of relevant information on standards and profiles used by NATO systems. This information is made available through ADatP-34, the NATO Interoperability Standards and Profiles (NISP) list, which is maintained by the NC3B Interoperability Profiles Capability Team (IPCaT). This document describes the standards configuration profiles used for many NATO systems and capabilities, including the Afghanistan Mission Network.

Through the NC3B architecture capability team (ArchCaT) and support for the NATO architecture repository, CTO guides the use of architecture and collates C3 architectural data for use by the Alliance.

Standardisation activities to improve interoperability and technical coherence between NATO and Nations are supported by the NC3B POW, which is managed by CTO.



Supporting the Nations

Interaction to support the nations (especially important during the current fiscal downturn) in order for them to realise the full potential of their investments in NATO and national capabilities while improving interoperability and coherency.

NCI Agency, the future NCIA and specifically the CTO and his team, continue to have a mandate for engagement and cooperation with national CIOs/CTOs, NATO and national R&D organisations and the Industries operating within the NATO Nations.

To fulfil that mandate, CTO proactively seeks engagement with the national CIOs and CTOs, International R&D bodies and Industry. The purpose of these engagements is to ensure technical and programmatic coherency across NATO and where possible, with the nations.

These engagements are facilitated and guided by the development of a common Vision and Strategy which in turn is used to produce Roadmaps, Reference Architectures, Standards and a common Taxonomy, so that all parties can benefit from a harmonised way to develop capabilities that fill a capability gap and are interoperable out-of-the-box.

These engagements are essential so that the various NATO (ACT, C3B, RTO) and national scientific/developmental Programmes of Work can be leveraged into and complement the NATO Security Investment Programme, as well as national procurements, to support the warfighter.

Good examples of what can be realised out of these engagements, is the significant interest generated in the Tool Suite and the realisation that Multinational projects, coordinated via the Agency, deliver capability to the front-line soldier, sailor and airman in a much more efficient manner.

Consultation with Industry, via open and frank dialogue, is essential to ensure NCI delivers state of art, robust, supportable and fully interoperable capabilities for NATO and Nations.

This active consultation will continue to be conducted via Industry Conferences, Technology Watch Days, AFCEA, NCOIC, TM Forum, NIAG and various other fora that are open to all interested industrial partners.

NCIA is and will never be a competitor of national Industries. Any prototypes developed, to fill an immediate operational need, are ideally incorporated into an NSIP acquisition and the prototype capability is then industrialised by the successful industrial bidder.

NCI Agency, in conjunction with other NATO entities, will engage transparently and effectively with nations, national R&D organisations and their Industries to deliver interoperable and effective C4ISR capabilities for NATO and Nations.

Cooperation with National / International R&D Bodies and Industry

Interoperability is at the centre of NATO's vision – but the realities of NATO's, nations' and international partner's existing capabilities levels, and the ability to influence their future harmonization, present real obstacles to realizing that goal. Current and legacy capabilities are based on (at best) a 'systems' rather than a 'system of systems' view of requirements. This situation poorly suits the provision of rapidly-evolving communications and information technologies of modern warfare, which require coherent leadership and direction to make an integrated "whole greater than the sum of its parts". This begins with a defined vision for future C3 capabilities, aligns to operational concepts, and includes a clear strategy for delivery and implementation.

The transition from a defence to a security posture as identified in the New Strategic Concept for NATO has wide-ranging implications for C3 delivery. An architectural view of the enterprise is essential to understand the relationships and interfaces between individual capabilities, and guidance on technical policy and standards is required to ensure interoperability. That discussion must include engagement with national Ministries of Defence and Industry bodies to facilitate the strategic alignment of NATO and national C3 delivery programmes, to ensure effective and interoperable coalition capabilities in-theatre, and to facilitate wise and prudent investment across NATO, Nations, and potential Partners. Within NCI Agency, the Chief Technology Office (CTO) has the charge to step back from the turmoil of individual project delivery, and to adopt a more strategic 'system of systems' view of the portfolio, focusing on cross-project and cross-programme issues, in order to improve interoperability, the effectiveness of the overall capability delivered to the warfighter, and to deliver greater efficiency by removing waste and duplication

Technical Coherence of NCI Agency Products and Services



Key projects benefitting from CTO influence are highlighted throughout this document, and include major Instances of MN Cooperation such as MAJIC, AWACS and Air Surveillance, Support to NATO Russia Council (NRC CAI) and the Ministry for the Kosovo Security Force (MKSF MIS), and promotion of integrating infrastructure such as DNBL/ CFBLNet. And many more have potential for MN Cooperation (MN C-IED, BRAAD, NEXT, MN MIS, to name but a few).

In the larger perspective, CTO forms a bridge between transformational aims and implementation activities by acting as the Design Authority for C3, leveraging the annual scientific programme of work, and developing a top-down, high-level design for C&I capability delivery that ensures interoperability, coherent implementation and maximum reuse.

In the future, CTO will help provide the management of the C&I Agency with the authoritative 'business intelligence' on the C3 portfolio, broadening the current focus of time and cost to one that considers all three sides of the cost—schedule—technical triangle that defines a programme. And by looking across the portfolio, at the technical relationships and dependencies between projects and programmes, and considering the opportunities for prioritisation

and consolidation, a more efficient roadmap to future capabilities can be charted.

Inquiries for specific capabilities should generally be addressed to DSA-NN, but for complex, cross-cutting services or acquisitions, the CTO office below can be contacted for assistance in promoting technical and programmatic coherency with Agency or national programs/projects:

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APPENDIX B. Acquiring NCI Agency Expertise, Products and Services

This document presents in later sections examples of the expertise, tools and services that NCI Agency can provide. This section of the document provides information on mechanisms put in place for acquiring this expertise

Authorizing Agreements for Acquiring NCI Agency Services and Expertise



NCI Agency has already established the framework C4ISR Agreement with a large number of NATO Nations and some partners to cover full cooperation on C4ISR activities. This framework defines the collaboration terms in advance, allows for the conclusion of Technical Arrangements and/or Task Orders to define the project level and can also be used for MN programmes. Outside this framework, NCI Agency can conclude Memoranda of Agreement, Memoranda of Understanding, Memoranda of Working Arrangements or Letters of Agreement, as required, to define the terms and scope of other relationships.

The NCI Agency operates within NATO under a North Atlantic Council (NAC)-approved financial construct commonly referred to as a Customer (or sponsor) Funding Regime (CFR). (Reference: AC/322-D(2011)0025 NCI Agency Financial Plan 2012.) The NCI Agency does not receive a fixed budgetary allocation from the NATO financial committees but rather receives its income from a variety of mainly NATO common-funded sources on a programme or project basis.

The customer-funded nature of the NCI Agency funding regime requires that the price the Agency charges its customers be based on its total cost to serve. Applying service Industry best practices, the NCI Agency develops its charge-out rates based on a standard labour cost by grade and an amount to recover the indirect (support) expenditures (see section Pricing).

All member states have full access to what was developed under common funding and the opportunity to use the expertise of the Agency to build or extend any national capabilities, using the results of NATO-funded Research and Development (R&D) in the Agency, with involvement of their respective national R&D bodies and industries.

For partner nations, approval of the NAC is required to establish cooperative efforts between the nation and NCI Agency. When it comes to release of NATO tools – pricing policy is responsibility of the Consultation, Command and Control Board (C3B).

Organizations can use common or joint (multinational) funding, and if they are NATO bodies, they are treated as member nations. If they are external to NATO – they are treated as a Partner Nation.

The following types of Agreements are used to implement various types of work:

Comprehensive Approach: Framework Agreements on C4ISR (Task Order)

While the negotiation and conclusion of a framework usually takes more time than a project-specific agreement, it allows NCI Agency and the Nation(s) to start cooperation on a new matter very quickly once it has been signed. At this stage, only the scope of the work and the associated financial aspects need to be agreed upon.

Ad-hoc Approach: Project-Specific Agreements (LOA)

In the absence of a framework agreement described above, cooperation with a Nation can be authorized and agreed on the basis of an agreement tailored to the specific activity (e.g. procurement of equipment) or all work related to a specific project (e.g. procurement, installation and training on a certain capability). In addition to the description of these activities to be carried out and the associated financial aspects, each of these agreements would also need to cover all general aspects that form the content of the framework agreement.

Service Level Agreement (SLA)

When a service is to be procured from NCI Agency, a Service Level Agreement (SLA) is provided as a basis for contract, where the basic services of the Service can be included and adapted. The SLA provides the conditions for the delivery of the service and describes the way of proceeding, the organisation of the service itself including roles and responsibilities, the Point of Contact as well as the service charges. It is negotiated and signed by both the Service Provider (NCI Agency) and the Service Subscriber. The format of the SLA can be a standalone document, be part of a task order Letter of Agreement (LOA) or a Price Proposal. Additionally, Industry access via an agreement with a national POC can be made available.

Basic Ordering Agreements (BOA)

NCI Agency's Basic Ordering Agreement programme provides national government organisations and NATO entities with a procurement tool for acquiring supplies and services from a vast pool of international companies. It is recognised and used in the NATO Investment Committee, NATO Agencies and NATO Nations.

Each basic agreement is negotiated with companies from NATO Nations on the basis of the most favourable customer terms including discounted prices that remain unmatched on the market.

In spite of its "framework agreement" nature, the standard terms are binding on the part of the company, so NATO or national organisations that elect to use the BOA as a vehicle for its procurements will be entitled to the same favourable prices and conditions as a larger NATO customer without the necessity to commit to large quantity purchases.

NCI Agency offers NATO and national organisations immediate access to the vast number of companies that elected to negotiate and sign a basic ordering agreement with NCI Agency.

Main Models of Capability Development and Service Provision



There are three main models of capability development and service provision:

- Common funded programmes
- Bilateral programmes/projects for Nation or Organization
- MN programmes/projects

In the area of service provision – IT and Communications services as well as some training and consulting services, support to experiments and validation, even support to exercises, SMF is used as a specific in-practice MN model of operation, following the ITIL standard.

In all these models there is a universal costing method used by FMRC, based on project service cost / service cost calculation as explained in the section following. However, pricing of the NATO (common funded) tools released to partner nations is decided by the C3B.

In addition to a project-based approach, which requires an agreement for each project assigned to NCI Agency, the Agency developed a framework agreement on C4ISR allowing

wide cooperation across the whole spectrum of C4ISR. The framework agreement covers general matters such as the scope and objectives of the collaboration, management, financial aspects, contracting, liability and claims, intellectual property rights, third party sales, security, taxes and customs exemptions, visits and dispute resolutions.

Common Funded (CF) Programmes / Projects

NATO utilizes the implementation programmes and projects to develop enduring capabilities for the NATO Command Structure (NCS). These projects include all capabilities used by NCS, including Crisis Response Operations (CRO), which addresses urgently needed capabilities in on-going theatre operations (i.e. International Security Assistance Force [ISAF]).

The development of the enduring capabilities follows a life-cycle governance model between four key stakeholders, called the Management Authorities. The governance model ensures compliance of these capabilities to NATO's strategic vision and objectives as reflected in the respective Management Authorities' mission. NCI Agency is the Implementation Authority (IA) for these capabilities.

The enduring capabilities receive NATO common funding for capability development. Similar to varying governance models for different programmes / projects, the capability initiation process also varies with programmes and projects.

As touched on in NCI Agency's Role in the NDPP, gaps in NATO capabilities are identified in NDPP Step 2. A course of action to address each to the identified gap is then defined, resulting in the setting to targets to nations, groups of nations and NATO (for collective efforts). Some of the gaps that are to be addressed through collective efforts will lead to the initiation of a Capability Package (CP) and subsequent Project Mandates for the NATO Security Investment Programme (NSIP) Static Capability; and CURs for the capability gap in on-going operations. The Capability Package serves as a programming document for the appropriate agent. Once CPs are formally approved, specific projects in the CP may be further defined and initiated in Project Mandate (i.e. NATO Common Operational Picture [NCOP], Air Command and Control Information Services [AirC2IS], etc.) Similarly, capability gaps in on-going operations that cannot be remedied by the NSIP development process may be defined by ACO through the CURs to provide a stop-gap solution.

Project Planning transforms the Project Mandate and CURs into business cases to initiate project(s) to develop and deliver the required capability. A Host Nation may be identified during this phase to implement the capability development, and usually through international competition with Industry partner(s).

Once the Investment Committee authorizes the implementation strategy, the Host Nation may initiate contracts with Industry to develop and deliver the needed capability. During this phase, the programme-level governance structure oversees the overarching implementation strategy while the individual projects are managed through the projects' Integrated Project Management Team (IPMT). The implementation of the capability concludes with the Final System Acceptance by the using command (i.e. ACT, ACO, or subordinate Commands) and Service Provisioning Authority (SPA), and documented by the NATO Office of Resources (NOR) through the Joint Final Acceptance Inventory (JFAI) process.

More and more, NCI Agency is experiencing a paradigm shift from supporting mainly common funded targets to national and MN targets with respective programmes / projects. This shift brings both the challenge as well as the opportunity to provide de-confliction with pooling and shared-initiative projects, in consonance with the Smart Defence concept.

Bilateral Programmes/Projects for Nations or Organization

Support to nations and organizations on a bilateral basis is divided in three areas:

- Member states
- Partners
- Organizations

In order to increase efficiency and effectiveness, and attain more savings via cooperation with nations, two important mechanisms are established:

1. Framework C4ISR Memorandum of Understanding (MoU) on Intellectual Property Rights (IPR) between the Nation and NCI Agency
2. Multi-Year Programme of Work (MY POW) between the Nation and NCI Agency

The MoU establishes all framework arrangements on Governance, Management, Security, IPR and other areas, leaving specific projects to be dealt with in Technical Arrangements (TA) at the Project Management level. Currently (April 2012) NCI Agency has 17 MoU – 13 with NATO Nations and 4 with PfP (Partnership for Peace) nations.

The next step in streamlining the process and overcoming the difficulties in balancing requirements and resources within NCI Agency (internal prioritization process) is the introduction of MY POW, based on multiple annual TA's to support planning and preparation for the next year's Annual Programme of Work (APOW) as a leading activity in the current year.

Recently, a full-fledged 5-year C4 (Command, Control, Communications and Computers) Interoperability programme of work was undertaken with Finland, and many others are in the final stages of negotiation.

Multinational Programmes/Projects

A further step in increasing effectiveness, efficiency and incurring savings is achieved through MN arrangements. The Agency has a lot of experience in MN Cooperation Development (MNCD). It recently released its 24-month report to nations on lessons learned in this area, as a contribution to the debate on Smart Defence in the C4ISR Arena. There are many on-going, well established MN projects and several initiatives – either from inside Agency teams or from nations (including mandates from the regional defence cooperation organizations) as well as initiated by other NATO bodies / committees, such as ACT, CNAD (Conference of National Armament Directors), C3B, etc. For list of current and on-going projects please see Annex F.

In principle, MN projects are based on extension of common funded programmes, or decisions of nations to take the initiative and to proceed together building on existing NATO or national R&D results or goals to develop a capability not covered by common funding, but important from a national prospective.

The Agency is flexible in providing the best possible environment and support to nations to work on MN C4ISR projects under a customer funding regime, but the effort is expected to follow best practices and to work within the framework. With the establishment of MN Approach Task Force (MNA TF) and current Smart Defence arrangements, the potential projects are registered in the ACT Data Base and established procedures are followed to support nations (including the Lead Nation, when identified).

Another very promising MN arena is the effort to support Regional Cooperation between nations in C4ISR. Currently the Agency has identified opportunities to support SEDM (South-eastern Europe Defence Ministerial Process), A5, NORDICO, BDC (Baltic Defence College), Visegrad group (VG), DACH, and Franco-British cooperation.

A special case for MN projects is the use of the Trust fund, following the general framework of the NATO Trust Fund Policy, adapted for the C4ISR area – defined in a special brochure on NATO C4ISR Integration Fund (NCIF). One example is the use of Kosovo Trust Fund for building MIS (Management Information System) capabilities for the ministry for the Kosovo Security Force (mKSF).

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APPENDIX C. Pricing and Payment in Customer Funded Agency

The customer-funded nature of the NCI Agency funding regime requires the price the Agency charges its customers be based on its total cost to serve. The NAC approved sponsor-funding regime mandates NCI Agency to break-even over time. This requires planning both total annual work and individual project work accurately.

Applying service Industry best practices, the NCI Agency develops its charge-out rates based on a standard labour cost by grade and an amount to recover the indirect (support) expenditures. NCI Agency pricing is competitive and delivers high value. A significant component of NCI Agency value resides in its unique knowledge of NATO, the core competences of its staff and the processes through which it enacts work.

Pricing Elements and Methodology



NCI Agency develops standard charge-out rates for the person-days of effort associated with project execution. NCI Agency makes use of several types of resources in executing the work for sponsors.

- Project Effort Price Estimation: Estimate amount of resources required to produce the project's outputs.
- Portfolio and Coherency Management: It is a form of direct cost, which is partially implemented as a segmented overhead. Portfolio and coherency management comprises activities such as portfolio planning and reporting, architecture, information assurance and other forms of coherency, which benefit the project.
- Risk and Uncertainty Management: an appropriate risk management or contingency factor is built into the project plan and reflected in the proposed price.

The charge-out rates include a portion for the direct expenditures associated with the level of effort required from direct resources and a component to recover the NCI Agency indirect resource costs.

- Direct Resources: All resources and associated costs directly assigned to the project, comprised of civilian and military staff and contracted workforce utilized as necessary, and other Direct costs (NCI Agency does not charge any direct costs for military personnel.)
- Indirect Resources: All the support functions which cannot be directly assigned to the project. Includes resources associated with the management of NCI Agency and its staff

Terms and Conditions



NCI Agency is a NATO entity as described in section Eligible Customers. With limited own financial resources and being fully customer funded, NCI Agency needs to maintain a positive cash flow from its operations so to be able to respect its commitments to its staff and its suppliers. Furthermore, the Agency needs to preserve the use of NATO common funds towards its designated purposes. For these reasons the following general terms and conditions apply:

- For fixed price projects with a total value of up to 100.000 Euro or with a planned duration shorter than 12 months; NCI Agency requests payment in full upon formal signature of the NCI Agency price proposal.
- For fixed price projects with a total value above 100.000 Euro or with a planned duration longer than 12 months, NCI Agency will invoice at the beginning of each year on the basis of the project plan annual payments. A maximum of 10% of the total project value could be made contingent upon formal sponsor acceptance of the final project deliverable(s) demonstrated by acceptance of the final project closure report.
- For cost reimbursable projects, billing is done on a monthly basis in arrears for costs incurred during the preceding month. For less significant amounts, NCI Agency may invoice quarterly.

Exceptionally, for projects above 500.000 Euro, the Agency may request a cash deposit equal to about one trimester of activity.

- In those cases where either because of the high value of the project and/or constraints imposed by national regulations, upfront payment of the entire project value is not possible, NCI Agency will negotiate payment milestones based on deliverables with a maximum of one invoice per calendar quarter. The Financial Controller, or the Finance department on his/her behalf, is the final authority responsible for payment terms and conditions relating to Agency price proposals.
- The NCI Agency operational currency is the Euro. Payment terms are on 30 days of date of invoice.

APPENDIX D. Current Customer Base and MOU

The sponsor accounts within NCI Agency are the single entry point for NCI Agency's sponsors, consisting of NATO Headquarters (Committees, International Staff, International Military Staff, Delegations of NATO Nations and partners and NATO bodies), Allied Command Organization (ACO) and Allied Command Transformation (ACT), including their sub-structure commands; NATO Nations and partners, as well as international organizations. The customer base for nations and partners is divided in five regions/ categories: Western Region, North-East Region, South-East Region, Organizations and the Multinational projects category. NATO Nations and partners are categorized as follows according to the NATO partnership policy:

- *NATO Member Nations and NATO bodies;*
- *Partners:*
 - Partnership for Peace nations, Mediterranean Dialogue (MD) countries and the Istanbul Cooperation Initiative (ICI) countries;
 - Partners with whom NATO has signed a special security agreements, i.e. Austria, Finland, Ireland, Sweden and Switzerland.
 - The Member Action Plan (MAP) nations: the Former Yugoslav Republic of Macedonia, Georgia, Montenegro, Bosnia & Herzegovina.
- *Special councils and/or commissions* (NATO Russia Council, the NATO Ukraine Commission, the NATO Georgia Commission);
- *NATO Mission partners:* International Security Assistance Force in Afghanistan (ISAF), Kosovo Force (KFOR), Operation Active Endeavour, Operation Ocean Shield and support to African Union Mission in Somalia (AMISOM);
- *Contact countries:* Australia and New Zealand: The "Five Eyes" community is formed under the Technical Cooperation Program (TCP) is a long standing international organisation concerned with cooperation on defence science and technology matters, including national security and civil defence. Its membership consists of Australia, Canada, New Zealand, the United Kingdom and the United States. Other contact nations and "partners across the globe" include Argentina, Japan, the Republic of Korea, Pakistan, Iraq, and Mongolia;
- *The Area of Operation countries:* Afghanistan and Kosovo, whom are supported through coordination with NATO International Staff.

Memorandum of Agreement/Understanding

The Memorandum of Understanding /Memorandum of Agreement serves as a framework agreement for subsequent technical arrangements on specific projects with nations or international organizations. The MoU/MoA is the foundation of the multi-year programme of work (MYPOW) and multinational projects using bilateral arrangements for the legal framework.

The MoUs/MoAs signed between a nation and NCI Agency went from three in 2009, to currently 17 with Albania, Bulgaria, Czech Republic, Croatia, Denmark, Estonia, France, Italy, Netherlands, Norway, Poland, Romania, Slovenia and United Kingdom; and as well as with three Partnership for Peace (PfP) nations Finland, Sweden and the Former Yugoslav Republic of Macedonia. Moreover, we are in the process of concluding additional framework agreements with two NATO Nations.

The signature of MoUs/MoAs has proven to be quite successful as part of our CRM strategy in enhancing our relations with nations in bilateral and multinational efforts. The benefits are:

- Cost-saving: enhanced planning and coherence of project management;
- Time-saving: the elimination of the time-consuming processes of staffing every agreement between nations and the Agency.

In addition to the MoUs/MoAs with nations, we have signed three cooperation agreements with national Research & Development agencies: the Bulgarian Academy of Sciences (BAS), the Italian Consortium for Telecommunications (CNIT) and the German Fraunhofer Institute. The objective of these cooperation agreements is to combine national R&D expertise with the Agency's unique C4ISR competence in specific projects. For instance, NCI Agency tasked CNIT in May 2011 to develop a study on Grid Technologies which can be applicable to the NNEC context.

Finally, we have an additional framework agreements under consultation with several nations. These dialogues take place through regular meetings with Senior Representative and with Focal Points between the respective nation and the Agency.

For further information on opportunities for NATO and Nations, please go to our website at: <http://www.nc3a.nato.int/Opportunities/Pages/NationsAndNATOBodies.aspx>.

For more information on customer relations, please contact:

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APPENDIX E. Additional Information on Status of Products Released and Available Training Courses

The Agency intends to incrementally add Appendices to this document to provide information on availability and prices of some of the products and services cited in this Catalogue which might become available in the near future, and continue with updates as required. While many of these same items could be available under the umbrella of a framework agreement and subsequent project, it is our intent to try to make them more openly available through a set pricing model.

Status of Products Released

The release policy for the products listed is under development.

List of Tools by NC3A	
JDARTS	Joint Defence Planning Analysis and Requirements
TOPFAS	Toll for Operational Planning, Force Activation and Simulation
LOGFAS	Logistic Functional Area Services
EVE	Effective Visible Execution
JEMM	Joint Exercise Management Module
JEST	Joint Exercise Scenario Tool
JPECT / FLAMES	Joint Planning and Execution Coordination Tools / Flexible Analysis, Modelling and Exercise System
ITC	Integrated Training Capability
HMART	Human Intelligence Management and Reporting Tool
NITB	NATO Intelligence Tool Box
ICC	NATO-wide Integrated Command and Control Software for Air
ICOP	Joint Common Operational Picture
NIRIS	Networked Interoperable Real-Time Information Services
IGEOSIT	Interim Geo-Spatial Intelligence Tool
JOCWATCH	Joint Operation Center Watch
JCHAT	Secure Joint Tactical Chat
JTS	Joint Targeting System
JOIIS	Joint Operations and Intelligence Information System
TT	Tasker Tracker
LC2IS	Land Command and Control Information System
MCCIS	Maritime Command and Control Information System
MUB	Map and Unit Builder
JTLS ORBAT Editor	Joint Theatre Level Simulation
CSD	Coalition Share Data
OANT	Online Analyser for Networked Tactical Data Link
IBAR	ISAF Baseline Architecture Repository
DHS	Document Handling System

DELIVERED
IN PROGRESS
REQUESTED

2010 - current

Country	Segment	JDARTS	TOPFAS	LOGFAS	EVE-Web	JEMM	JEST	JPECT/FLAMES	ITC	HMART	NITB	ICC	ICOP	NIRIS	IGEOSIT	JOCWATCH	JCHAT	JTS	JOIIS	TT	LC2IS	MCCIS	MUB	JTLS ORBAT Editor	CSD (Through MAJIC)	OANT	IBAR	DHS
ALBANIA	SER																											
AUSTRALIA	Contact																											
AUSTRIA	Partner																											
BELGIUM	WR																											
BOSNIA - HERZEGOVINA	Partner																											
BULGARIA	SER																											
CANADA	WR																											
CROATIA	SER																											
CZECH REPUBLIC	NER																											
DENMARK	NER																											
ESTONIA	NER																											
FINLAND	Partner																											
Former Yugoslav Republic of Macedonia*	Partner																											
FRANCE	WR																											
GERMANY	NER																											
GREECE	SER																											
HUNGARY	NER																											
ICELAND																												
ITALY	SER																											
LATVIA	NER																											
LITHUANIA	NER																											
LUXEMBOURG	WR																											
MOLDOVA																												
MONTENEGRO																												
NETHERLANDS	WR																											
NEW ZEALAND	Contact																											
NORWAY	NER																											
POLAND	NER																											
PORTUGAL	WR																											
ROMANIA	SER																											
RUSSIAN FEDERATION																												
SERBIA	Partner																											
SINGAPORE																												
SLOVAKIA	NER																											
SLOVENIA	SER																											
SPAIN	WR																											
SWEDEN	Partner																											
SWITZERLAND	Partner																											
TURKEY	SER																											
UK	WR																											
USA	WR																											

* Turkey Recognizes the Republic of Macedonia with its constitutional name.

Nations in Cooperation	30																											
Tool Set	27																											
Tools delivered	100	3	7	2	0	27	2	2	1	6	1	7	1	7	5	7	1	2	0	4	0	6	1	1	5	2	0	0

Available Training Courses

Type of Service	Title of Service	Basic Service Duration in Calendar Days	Basic Service Cost	Basic Costs for Service On-site (travel and per diem)	Service Description
Single FAS System Training	FAS System Administration (Level 1)	5 days	7000	3000	Provision of system administration training for a single FAS providing instruction on system requirements, system installation, and initial system configuration and run-time management and support procedures.
	FAS System Administration (Level 2)	10 days	29000	10000	Provision of system administration training for a single FAS providing instruction on system requirements, system installation, system configuration and run-time/remote network management and support procedures.
	FAS Basic Operator (Single System)	3 days	7000	2000	Provision of basic FAS overview and operator training. Training will support the "buttonology" as well as an initial introduction to operational employment principles and practices.
	FAS Advanced Operator (Single System)	5 days	17000	10000	FAS Basic Operator training plus advanced operational employment training and tailored training to adapt procedures for the sponsor command's concepts of operations.
	Train the Trainer	10 days	17000	5400	Provides a shortened version of the FAS Advanced Operator course with additional instruction on training techniques and detailed review of available training materials from the instructor view.
NATO Exercise and Training Concept and Procedure Training	Simulation-Based CAX Basic Concepts Training	2 days	17000	5500	Provides overviews of NC3A simulation-based CAX tools including all simulations and management tools. Demonstrations of all available tools are provided.
	Advanced Exercise Control Tools and Procedures (JTLS Based)	5 days	50000	11000	Provides detailed training on the set-up, configuration and employment of NC3A tools supporting and interfacing with the JTLS system. Demonstrations and hands-on practical use of all available tools is provided.
	Advanced Exercise Control Tools and Procedures (JPECT/FLAMES Based)	5 days	29000	8200	Provides detailed training on the set-up, configuration and employment of NC3A tools supporting and interfacing with the JPECT/FLAMES system. Demonstrations and hands-on practical use of all available tools is provided.
	Exercise Control Tools and Procedures (DTE/CTE/HLA Concepts and Techniques)	5 days	29000	8200	Provides detailed training on tools and software supporting interactive simulation architectures in distributive training and exercises.
	Scenario Definition and Scripting (MEL/MIL)	3 days	12000	7000	Provides expert instruction on the principles and techniques for exercise scenario scripting and MEL/MIL management
	Individual CAX Tools Overview and Concept Training (i.e. JEMM, JEST, JPECT)	2 days	5000	2000	Provision of basic overview and operator training of the designated tool. Training will support the "buttonology" as well as an initial introduction to operational employment principles and practices.
Exercise and Training Event Support	Joint Task Force Level Full-Spectrum Support (FAS, MEL/MIL and Sim-CAX JTLS-Based)	15 days	230000	55000	Provides flexible and tailored support across all aspects of the exercise and training aspects of a JTLS-based JTF level exercise.
	Joint Task Force Level FAS-Only Support	15 days	95000	38000	Provides flexible and tailored support to FAS training for the JTF staff in an exercise environment.
	Joint Task Force Level MEL/MIL-Only Support	15 days	26000	8000	Provides flexible and tailored support to scenario and MEL/MIL management during a JTF-level exercise.
	Joint Task Force Level Full-Spectrum Sim-CAX Only Support	15 days	155,000	48000	Provides flexible and tailored support to employment of the JTLS-based CAX suite during a JTF- exercise.
	Domain Component Level Full-Spectrum Support (FAS, MEL/MIL and Sim-CAX)	12 days	137000	38000	Provides flexible and tailored support across all aspects of the exercise and training aspects of a simulation-based Component level exercise concentrating on a single component domain.
	Domain Component Level FAS-Only Support	12 days	36000	10000	Provides flexible and tailored support to FAS training for a single Component staff in an exercise environment.

Level-of-Effort based Support

Domain Component Level MEL/MIL-Only Support	12 days	21000	5500	Provides flexible and tailored support to scenario and MEL/MIL management during a Component-level exercise.
Domain Component Full-Spectrum Sim-CAX Only Support (JTLS-Based)	12 days	61000	15000	Provides flexible and tailored support to employment of the JTLS-based CAX suite during a JTF- exercise.
Domain Component Full-Spectrum Sim-CAX Only Support (JPECT/FLAMES Based)	12 days	36000	10000	Provides flexible and tailored support to employment of the JPECT/FLAMES-based CAX suite during a Component-level exercise.
Operational Electronic Working Practices (EWP) Training (single location, on-site support)	12 days	36000	20000	Provides a FAS Advanced Operator Course with an expanded operationally-focused EWP training to provide the full information and systems management view of the combined FAS architecture.
Operational "MRE" FAS Phase 1 (single location, on-site support)	12 days	36000	20000	Provides a standard multi-purpose FAS training team to provide operationally-appropriate FAS basic training in preparation for a formal "MRE".
Operational "MRE" FAS Phase 2 (single location, on-site support)	17 days	82000	30000	Provides a standard multi-purpose FAS training team to provide operationally-appropriate FAS advanced training and "Electronic Working Practices (EWP)" training in preparation for a formal "MRE".
Operational "MRE" Full Cycle Support (single location, on-site support)	39 days	118000	50000	Provides a combined package of MRE Phase 1 and Phase 2 training.
Generic On-Site Exercise and Training Support Level 1-1	3 days	7000	2000	Fixed price service for tailored support provided on site. Mutually agreed services could include specific tools training, installation, configuration, testing and/or participation in conferences and workshops as well as general consultation.
Generic On-Site Exercise and Training Support Level 1-2	3 days	12000	4000	Fixed price service for tailored support provided on site. Mutually agreed services could include specific tools training, installation, configuration, testing and/or participation in conferences and workshops as well as general consultation.
Generic On-Site Exercise and Training Support Level 2-1	5 days	11000	3000	Fixed price service for tailored support provided on site. Mutually agreed services could include specific tools training, installation, configuration, testing and/or participation in conferences and workshops as well as general consultation.
Generic On-Site Exercise and Training Support Level 2-2	5 days	19000	6000	Fixed price service for tailored support provided on site. Mutually agreed services could include specific tools training, installation, configuration, testing and/or participation in conferences and workshops as well as general consultation.
Generic On-Site Exercise and Training Support Level 3-1	12 days	21000	5400	Fixed price service for tailored support provided on site. Mutually agreed services could include specific tools training, installation, configuration, testing and/or participation in conferences and workshops as well as general consultation.
Generic On-Site Exercise and Training Support Level 3-2	12 days	36000	10000	Fixed price service for tailored support provided on site. Mutually agreed services could include specific tools training, installation, configuration, testing and/or participation in conferences and workshops as well as general consultation.
Generic On-Site Exercise and Training Support Level 4-1	19 days	33000	11300	Fixed price service for tailored support provided on site. Mutually agreed services could include specific tools training, installation, configuration, testing and/or participation in conferences and workshops as well as general consultation.
Generic On-Site Exercise and Training Support Level 4-2	19 days	57000	21000	Fixed price service for tailored support provided on site. Mutually agreed services could include specific tools training, installation, configuration, testing and/or participation in conferences and workshops as well as general consultation.
Dedicated Exercise and Training Consultation and Remote Support - Level 1	Variable	25000	0	Fixed price service for tailored support provided remotely. Mutually agreed services could include specific tools development or integration, report or study provisions and general consultation.
Dedicated Exercise and Training Consultation and Remote Support - Level 2	Variable	50000	0	Fixed price service for tailored support provided remotely. Mutually agreed services could include specific tools development or integration, report or study provisions and general consultation.
Dedicated Exercise and Training Consultation and Remote Support - Level 3	Variable	75000	0	Fixed price service for tailored support provided remotely. Mutually agreed services could include specific tools development or integration, report or study provisions and general consultation.
Dedicated Exercise and Training Consultation and Remote Support - Level 4	Variable	100000	0	Fixed price service for tailored support provided remotely. Mutually agreed services could include specific tools development or integration, report or study provisions and general consultation.

APPENDIX F. NCI Agency Multinational Projects

On-going Multinational Projects

MAJIC - Multi-Intelligence All-Source Joint Intelligence Surveillance and Reconnaissance Interoperability Coalition - Ability to collaboratively employ and exchange data from a wide variety of ISR sensors in a network-enabled manner
 Support to AWACS - NCI Agency support to the Airborne Warning And Control System Project
 Air Surveillance - Radars Acquisition and integration
 GAG - Acquisition of Ground-Air-Ground communications capabilities
 Support to NRC CAI - Support to the NATO-Russia Council Cooperative Airspace Initiative - Fight against terrorism and provision of a shared radar picture and early notification of suspicious air activities
 TACOMS - Generation of standards for information transport over federations of multinational networks
 DNBL - Distributed Network Battle Laboratories
 CFBLNet - Combined Federated Battle Laboratories Network
 MCCIS FTN - Maritime Command and Control Information System For the Nations - Joint Software Procurement and Contract Management
 Support to MKSF MIS - Management Information System for Ministry for the Kosovo Security Forces - Integrated information management system for improved governance / management under Kosovo Trust Fund / NATO Advisory Team (NAT)
 AMN NE - Afghanistan Mission Network National Extensions, including extension to SEEBRIG C4ISR for expeditionary operations.

Multinational Project Proposals

MN ICC – Multinational Integrated Command and Control
 MN C-IED – Multinational Countering Improvised Explosive Devices
 MN CD2 – Multinational Cyber Defence Capability Development
 MN CMIOP - Multinational Civil Military Interoperability
 BRAAD - Balkan Regional Approach to Air Defence
 MN NEXT - Multinational Collaboration in Exercises and Training
 MN ADAPT - Alliance Defence Analysis and Planning for Transformation
 ANWI NE - Active Network Infrastructure National Extensions
 MN MIS – Multinational Maritime Information System
 TFTN - Tempest Equipment Acquisitions For the Nations

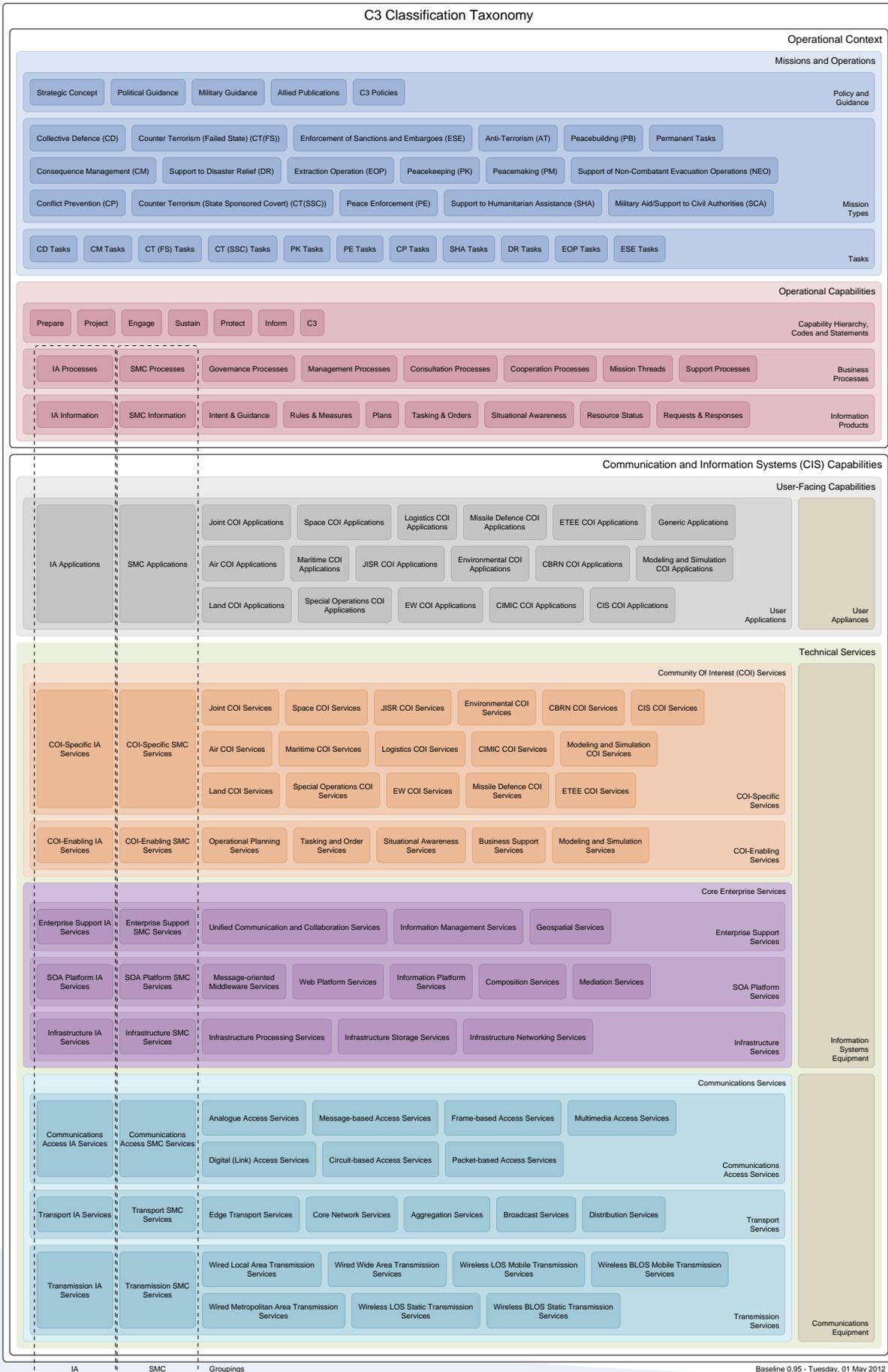
Lisbon Critical Capabilities Commitments

All the NCI Agency Multinational projects are aligned with the Lisbon Critical Capabilities Commitments (LCCCs) areas:

AC2 - Air Command and Control
 ALTBMD - Active Layered Theatre Ballistic Missile Defence
 AMN – Afghanistan Mission Network
 BI-SC – Bi- Strategic Commands
 C-IED – Countering Improvised Explosive Devices
 CA – Comprehensive Approach
 CD – Cyber Defence
 JISR - Joint Intelligence, Surveillance and Reconnaissance

Further information on Multinational Projects refer to 24 Months Report on Lessons Learned in C4ISR Multinational Cooperation Development for Connected Forces, issued to Nations in February 2012.

APPENDIX G. C3 Classification Taxonomy



APPENDIX H. List of Acronyms

ACRONYM	MEANING		
		ASG ¹	Assistant Secretary General
AAP	Allied Administrative Publication	ASG ²	Acquisition Support Group
ACCS	Air Command and Control System	A/SPOD	Air/Sea Ports of Debarkation
ACO	Allied Command Operations	AV	Air Vehicle
ACOS	Assistant Chief of Staff	AWACS	Airborne Warning and Control System
ACP	Aflood Command Platform	AWC	Air Warfare centre
ACT	Allied Command Transformation	A5	Albania, Bosnia and Herzegovina, Croatia, Macedonia and Montenegro
ADAPT	Alliance Defence Analysis and Planning for Transformation	BAS	Bulgarian Academy of Science
ADEM	Architecture Data Exchange Mechanism	BCP	Business Continuity Plan
ADP	Automated Data Processing	BDC	Baltic Defence College
AFG	Afghanistan	BET	Bi-SC Evaluation Team
AGS	Allied Ground Surveillance	BICES	Battlefield Information Collection and Exploitation System
AGS&R	Aerospace Ground Surveillance and Reconnaissance	Bi-SC	Bi-Strategic Command
AIRC2IS	Air Command and Control Information Services	Bi-SC AIS	Bi-Strategic Command Automated Information System
AIS	Automated Information System	BLCD	Bi-lateral Cooperation Development
ALTBMD	Active Layered Theatre Ballistic Missile Defence	BLST	Battle Laboratory Services Team
AMISOM	African Union Mission in Somalia	BMD	Ballistic Missile Defence
AMN	Afghanistan Mission Network	BOA	Basic Ordering Agreement
ANA	Afghan National Army	BOA ²	Board of Auditors
ANWI NE	Active Network Infrastructure National Extensions	BR	Budget Report
AOM	Alliance Operations and Missions	BRAAD	Balkan Regional Approach to Air Defence
APF	Advance Pre Financing	BRASS	Broadcast and Ship-shore System
APMS	Automated Personnel Management System	BREITA	BRASS Enhancement 1 Target Architecture
APOW	Annual Programme of Work	CA	Comprehensive Approach
ARH	Alliance Replication Hub	CAB	Change Advisory Board
ASNMC	Advanced SATCOM Network Management and Control	CAI	Cooperative Airspace Initiative

CAOC	Combined Air Operations Centre	CIMIC	Civil Military Cooperation
CAPCO	Capability Package Coordinator	CIS	Communication and Information Systems
CAT	Capability Area Team	CISS	Communication and Information Systems School
CAX	Computer Aided eXercises	CIS ESG	Communication and Information Systems Executive Steering Group
CBC	Civil Budget Committee	CIAP	Consolidated Information Assurance Picture
CBR	Chemical, Biological and Radiological	CJHQ	Combined Joint Headquarters
CBRN	Chemical, Biological, Radiological and Nuclear	CMB	Capabilities Management Board
CCP ¹	Comprehensive Campaign Plan	CMC	Chairman of the Military Committee
CCP ²	Civilian Classification Proposal	CMI	Civil-Military Interoperability
CD	Cyber Defence	CMI in ATM	Civil-Military Interoperability in Air Traffic Management
CDE	Concept Development and Experimentation	CMM	Capability Maturity Model
CDR	Central Data Repository	CMP	Configuration Management Plan
CDXI	Cyber Defence Data Collaboration and Exchange Infrastructure	CMRB	Crisis Management Resources Board
CE	Combined Endeavour	CMSG	Configuration Management Steering Group
CENTRIXS	Combined Enterprise Regional Information Exchange System	CNAD	Conference of National Armaments Directors
CEP	Civil Emergency Planning	CNR	Combat Net Radio
CES	Core Enterprise Services	CO	Contracting Officer
CF	Common Funded	COB	Close of Business
CFR	Customer Funding Regime	COC	Certificate of Conformance
CFBLNet	Combined Federated Battle Laboratories Network	COE	Centre of Excellence
CFS	Core Financial System	COI	Community of Interest
CHOD	Chiefs of Defence	COIAT	Consequences of Intercept Analysis Team
CIAP	Consolidated Information Assurance Picture	COIN	Counter Insurgency
CIAV	Coalition Interoperability Assurance and Validation	COM JFC Brunssum	Commander Allied Joint Force Command Brunssum
C-IDF	Counter Indirect Fire	COM JFC Naples	Commander Allied Joint Force Command Naples
C-IED	Counter Improvised Explosive Devices	COM NAEW&C	Commander NATO Airborne Early Warning and Control

COMPLAN	Communication Plan	CWIED	Command Wire Improvised Explosive Device
COMPUSEC	Computer Security	CWID	Coalition Warrior Interoperability Demonstration
COMSAT	Communication Satellite	CWIX	Coalition Warrior Interoperability eXercise, eXamination, eXperimentation, eXploration
COMSEC	Communications Security	C2COE	Command and Control Centre of Excellence
COMSITREP	Communications Situation Report	C2CS	Command and Control Communication System
CONEMP	Concept of Employment	C2IS	Command and Control Information System
CONOPLAN	Contingency Operation Plan	C2ISR	Command and Control, Intelligence, Surveillance and Reconnaissance
CONOPS	Concept of Operations	C3	Consultation, Command and Control
COS	Chief of Staff	C3B	Consultation, Command and Control Board
COTC	Chief of Transformation Conference	C3CMB	Consultation, Command and Control Capabilities Management Board
COTS	Commercial Off The Shelf	C3S	Consultation, Command and Control Systems
CP	Capability Package	C4	Command, Control, Communications and Computers
CPAO	Chief Public Affairs Officer	C4I	Command, Control, Communications, Computers and Intelligence
CPB	Capability Package Board	C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance
CPC	Civil Protection Committee	C5G	Consultation, Command and Control Capability Coordination Group
CPG	CNAD Partnership Group	DA	Director of Acquisition
CPO	Civilian Personnel Office	DACH	Germany, Austria, Switzerland
CPR	Civilian Personnel Regulations	DAT	Defence Against Terrorism
CR	Cost Reimbursable	DCIS	Deployable Communication and Information Systems
CRCB	Crisis Resources Coordination Board	DCOS	Deputy Chief of Staff
CRO	Crisis Response Operations	DG	Director General
CRONOS	Crisis Response Operations in NATO Open Systems	DGI	Digital Geographic Information
CSA	Civilian Staff Association	DGM	Deputy General Manager
CSD	Coalition Shared Database	DHS	Document Handling System
CSG	Capability Steering Group	DJSE	Deployable Joint Staff Elements
CTO	Chief Technology Officer	DNBL	Distributed Networked Battle Lab
CUR	Crisis Urgent Requirement	DND	Department of National Defence

DoD	Department of Defence	ESC	Emerging Security Challenges Division
DOORS	Dynamic Object Oriented Requirements System	ESM	Electronic Support Measures
DOP	Director of Production	ESRI	Environmental Systems Research Institute
DOTMLPFI	Doctrine, Organisation, Training, Material, Leadership, Personnel, Facilities and Interoperability	ETE	Experimentation, Test and Evaluation
DPC	Defence Planning Committee	EU	European Union
DPS	Defence Policy and Strategy	EWP	Electronic Working Practices
DPST	Defence Planning Staff Team	FAI	Final Acceptance Inspection
DRA	Dynamic Risk Assessment	FAS	Functional Area System
DRR	Defence Requirements Review	FCA	Functional Configuration Audit
DS	Decision Sheet	FEMA	Federal Emergency Management Agency
DSA ACO	Director Sponsor Account Allied Command Operations	FFP	Firm Fixed Price
DSA ACT	Director Sponsor Account Allied Command Transformation	FFT	Friendly Force Tracking
DSA NIP	Director Sponsor Account NATO Network Enabled Capability Implementation Programme	FMN	Future Mission Network
DSA NN	Director Sponsor Account NATO and Nations	FMRB	Financial Management and Resource Board
DSG	Deputy Secretary General	FMRC	Financial Management Resource Centre
D-CALC	Defence Planning Capability Assignment Logic Calculator	FOC	Full Operational Capability
D-MIST	Defence Planning Mission Study Tool	FPP	Formal Project Proposal
D-RUM	Defence Planning Requirements & Unit Matching	FSA	Final System Acceptance
D-SIGN	Defence Planning Scenario Generation	FTS	Force Tracking System
EAPC	Euro Atlantic Partnership Council	GAR	General Assessment Report
EDA	European Defence Agency	GCOS	General Chief of Staff
EIM	Enterprise Information Management	GCTF	Global Counter-Terrorism Force
EM	Electro-Magnetic	GeoMetOc	Geospatial, Meteorological and Oceanographic
EMS	EPM Modem System	GMTI	Ground Moving Target Indicator
EPM	Electronic Protection Measures	GPRS	General Pocket Radio Service
EPOW	Experimentation Programme of Work	GSRC	General Services RC
ERT	Establishment Review Tool	HF BLOS	High Frequency Beyond Line of Sight

HLA	High Level Architecture	ILS	Integrated Logistics Support
HMMWV	High Mobility Multipurpose Wheeled Vehicle	IM	Information Management
HN	Host Nation	IMF	International Monetary Fund
HQ	Headquarters	IMIS	Internal Management Information System
HQPO	Headquarters Project Office	IMPREP	Implementation Report
HR	Human Resources	IMS	International Military Staff
IA	Implementation Authority	INFOSEC	Information Security
IaaS	Infrastructure as a Service	IntelFS	Intelligence Functional Services
I&I	Interoperability and Integration	IO	International Organization
IBAN	International Board of Auditors	IOC	Initial Operational Capability
IC	Investment Committee	IOM	Interoperability Matrix
ICB	International Competitive Bidding	IORRB	ISAF Operational Requirements Review Board
ICC	Integrated Command and Control	IP	Internet Protocol
ICDT	Integrated Capability Development Team	IPB	Intelligence Preparation of the Battlespace
ICI	Istanbul Cooperation Initiative	IPC	Industrial Planning Committee
ICT	Information and Communication Technologies	IPCAT	Interoperability Profiles Capability Team
ICTM	Information and Communication Technologies Management	IPCTA	In-Port Connectivity Target Architecture
IED	Improvised Explosive Device	IPG	Initial Planning Guidance
IEG	Information Exchange Gateway	IPG ²	International Planning Group
IERs	Information Exchange Requirements	IPMT	Integrated Project Management Team
IES	Information Exchange System	IPR	Intellectual Property Rights
IETV	Interoperability Experimentation Test and Validation	IPRB	Infrastructure Project Review Board
IFB	Invitation for Bid	IPT	Integrated Project Team
IG	Implementation Group	IRB	Infrastructure Review Board
IIS	Information and Integration Services	IRT	Immediate Response Team
IKM	Information and Knowledge Management	IS	International Staff
ILK	ISAF LNO Kit	ISAC	ISAF Strategic Assessment Capability

ISAF	International Security Assistance Force	JOCWatch	Joint Operations Centre Watch Tool
ISDN	Integrated Services Digital Network	JOPG	Joint Operations Planning Group
ISO	International Organization for Standardization	JPCAL	Joint Prioritised Critical Asset List
ISR	Intelligence, Surveillance and Reconnaissance	JPDAL	Joint Prioritised Defended Asset List
IT	Information Technology	JPECT	Joint Planning and Execution Coordination Tools
ITIL	IT Infrastructure Library	JSSR	Joint Staff Screening Report
ITAS	Intra-Theatre Airlift System	JSTARS	Joint Surveillance and Target Attack Radar System
IV&V	Independent Verification and Validation	JTS	Joint Targeting System
JAC	Joint Analysis Centre	JWC	Joint Warfare Centre
JALLC	Joint Analysis Lessons Learned Centre	JWID	Joint Warrior Interoperability Demonstration
JAT	Joint Assessment Team	KAIA	Kabul Afghanistan International Airport
JCB	Joint Consultative Board	KCO	Knowledge Centric Organisation
JCHAT	Joint Tactical Chat	KE	Kinetic Energy
JCG	Joint Consultative Board	KFOR	Kosovo Forces
JCOP	Joint Common Operational Picture	KMC	Key Mission Component
JD	Job Description	LAN	Local Area Network
JDARTS	Joint Defence Planning Analysis and Requirements Toolset	L&G	Leadership and Guidance
JDISS	Joint Deployable Intelligence Support System	LC2IS	Land Command & Control Information Systems
JEMM	Joint Exercise Management Module	LEGAD	Legal Advisor
JFAI	Joint Final Acceptance Inventory	LO	Liaison Officer
JFC	Joint Force Command	LOA	Letter of Agreement
JFHQ	Joint Force Headquarters	LOC	Level of Capability
JFLCC	Joint Forces Land Component Command	LOC ²	Lines of Communication
JFTC	Joint Force Training Centre	LOGFAS	Logistic Area Functional Services
JICC	Joint Information Coordination Committee	LOI	Letter of Intent
JISR	Joint Intelligence, Surveillance and Reconnaissance	LPI	Limited Probability of Intercept
JOC	Joint Operations Centre	LTBMD	Layered Theatre Ballistic Missile Defence

MAJIC	Multi-sensor Aerospace-ground Joint ISR Interoperability Coalition	MPB	Management Policy Board
MAP	Member Action Plan	MRE	Mission Rehearsal Exercise
M&A	Monitoring and Assessment	MS	Mission Secret
M&S	Modelling and Simulation	MSA	Maritime Situational Awareness
MB	Military Budget	MSP	Managing Successful Programmes
MBC	Military Budget Committee	MTDS	Mission Training through Distributed Simulation
MC	Military Committee	MYPOW	Multi-Year Programme of Work
MD	Missile Defence	NAA	North Atlantic Assembly
MDPG	Missile Defence Project Group	NAC	North Atlantic Council
MEADS	Medium Extended Air Defence System	NACMA	NATO Air Command and Control System Management Agency
MEDEVAC	Medical Evacuation	NACMO	NATO Air Command and Control System Management Organization
MILREP	Military Representative	NACMO BOD	NATO Air Command & Control Management Organization Board of Directors
MIS	Management Information System	NADC	NATO Air Defence Committee
MISPO	Mission Sponsor	NADREPs	National Armaments Directors' Representatives
MIWG	Maritime Implementation Working Group	NAEW&CF	NATO Airborne Early Warning and Control Force
MKSF	Ministry for the Kosovo Security Force	NAEW&CS	NATO Airborne Early Warning and Control Systems
MMR	Minimum Military Requirements	NAGSMA	NATO Alliance Ground Surveillance Management Agency
MN	Multinational	NAHEMA	NATO Helicopter Management Agency
MN ATF	Multinational Approach Task Force	NAMEADSMA	NATO Medium Extended Air Defence System Management Agency
MN CD	Multinational Cooperation Development	NAMP	NATO Annual Manpower Plan
MN CD ²	Multinational Cyber Defence Cooperation Development	NAMSA	NATO Maintenance and Supply Agency
MN CMIOP	Multinational Civil Military Interoperability	NAMSO	NATO Maintenance and Supply Organization
MN POW	Multinational Programme of Work	NAPMA	NATO Airborne Early Warning and Control Programme Management Agency
MOA	Memorandum of Agreement	NAT	NATO Advisory Team
MOD	Ministry of Defence	NATEX	National Experts
MOSS	Microsoft Office Sharepoint Server	NATO	North Atlantic Treaty Organization
MOU	Memorandum of Understanding	NATO FORACS	NATO Naval Forces Sensors and Weapons Accuracy Check Site

NATO HQ	North Atlantic Treaty Organization Headquarters	NETMA	NATO Eurofighter and Tornado Management Agency
NAVEX	Naval Exercise	NEWAC	NATO Electronic Warfare Advisory Committee
NAVSAT	Navigation Satellite	NEXT	NATO Environment for eXercise Toolbox
NC	NATO Confidential	NFC	NATO Fusion Centre
NCI Agency	NATO Communications and Information Agency	NFFI	NATO Friendly Force Information
NC3A	NATO Command & Control Agency	NFS	NATO Force Structure
NC3B	NATO Consultation, Command and Control Board	NFZ	No Fly Zone
NC4ISR	NATO C4ISR Suite	NG	Naval Group
NC3O	NATO C3 Organisation	NGC	NATO Geospatial Conference
NCB	National Competitive Bidding	NGCS	NATO General Communications System
NCCAP	NATO Communication and Information Systems Contingency Assets Pool	NGO	Non-Governmental Organization
NCIA	NATO Communications and Information Agency	NHQC3S	NATO Headquarters C3 Staff
NCIF	NATO C4ISR Integration Fund	NIAG	NATO Industrial Advisory Group
NCIRC	NATO Computer Incident Response Capability	NIATC	NATO Information Assurance Technical Centre
NCISS	NATO Communications and Information Systems School	NICS	NATO Integrated Communication System
NCOIC	Network Centric Operations Industry Consortium	NIDS	NATO Integrated Data Service
NCOP	NATO Common Operational Picture	NII	NATO Information Infrastructure
NCS	NATO Command Structure	NIMCP	NATO Information Management Control Point
NCSA	NATO Communication and Information Systems Services Agency	NIMP	NATO Information Management Policy
NCSREPs	NATO Committee for Standardization Representatives	NIRIS	Networked Interoperable Real-time Information Services
NCW	Network Centric Warfare	NISP	National Industrial Security Programme
NDMC	NATO Defence Manpower Committee	NITB	NATO Intel Toolbox
NDPP	NATO Defence Planning Process	NMB	NATO Military Body
NEC	Network Enabled Capability	NMC	NATO Military Committee
NEDP	NATO wide Executive Development Plan	NMF	Namespace Managers Forum
NEDS	NATO Enterprise Directory Service	NMM	NATO Architecture Framework Meta Model
NES	NATO Electronic Warfare Support Measures System	NMRR	NATO Metadata Registry and Repository

NMS	NATO Messaging System	OA ²	Operational Analysis
NNCC	NATO Network Control Centre	OAE	Operation Active Endeavour
NNCS	NATO Network Control System	O-ANT	On-line Analyzer for Networked Tactical data link
NNEC	NATO Network Enabled Capability	OASIS	Organization for the Advancement of Structured Information Standards
NNN	Non-NATO Nations	OCC	Operational Capabilities Concept
NOC	NATO Occupational area Code	OCD	Operational Concept Document
NOI	Notification of Intent	OCO	Operational Coordinator
NOR	NATO Office of Resources	OCRI	Operational Concepts and Requirements Implications
NOTS	NATO Off-The-Shelf	OECD	Organisation for Economic Cooperation and Development
NOS	NATO Office of Security	OLCM	Operational Logistics Chain Management
NPC	NATO Programming Centre	OML	Operational Maturity Level
NPKI	NATO Public Key Infrastructure	OMLT	Operation and Mentoring Liaison Team
NR	NATO Restricted	OOS	Operation Ocean Shield
NRC	NATO Russia Council	OPP	Operations Planning Process
NRF	NATO Response Force	OPSEC	Operations Security
NROI	NATO Restricted Over the Internet	OR	Operations Research
NS	NATO Secret	ORRB	Operational Requirements Resources Board
NSA	NATO Standardization Agency	OSCE	Organisation for Security and Cooperation in Europe
NSCC	NATO SOF Coordination Centre	OTAN	Organisation du Traité de l'Atlantique Nord
NSF	NNEC Strategic Framework	OTM	On-The-Move
NSIP	NATO Security Investment Programme	OUP	Operation Unified Protector
NSTI	NATO SOF Transformation Initiative	OWES	Operations Wing Electronic Support Measures
NTF	NATO Task Force	P3B	Project, Programme and Portfolio Board
NU	NATO Unclassified	P&I	Privileges and Immunities
NURC	NATO Undersea Research Centre	PAO	Public Affairs Office
O&M	Operational and Maintenance	PAPS	Phased Armaments Programming System
OA	Operational Authority	PCAL	Prioritised Critical Asset List

PCG	Policy Coordination Group	QM	Quality Manager
PCN	Peer Competency Network	QMS	Quality Management System
PD	Passive Defence	RA	Reference Architecture
PDIM	Primary Directive on Information Management	R&D	Research and Development
PEA	Peacetime Establishment Authority	R&R	Repair and Recovery
PfP	Partnership for Peace	R&S	Reconnaissance and Surveillance
PG	Project Group	R&T	Research and Technology
PID	Project Initiation Document	RC-IED	Remotely Controlled Improvised Explosive Device
PKI	Public Key Infrastructure	RCM	Radar Counter-Measures
PlaTo	Planning and resource Allocation Tool	REP	Recognized Environmental Picture
PM	Project Manager	REW	Radio Electronic Warfare
PMG	Programme Management Group	RPC	Remote Procedure Call
PMIC	Programme Management and Integration Contractor	RPPB	Resource Policy and Planning Board
PMO	Project Management Office	RTA	Research and Technology Agency
POC	Point of Contact	RTB	Research and Technology Board
PoP	Point of Presence	RTO	Research and Technology Organisation
POW	Programme of Work	R2P2	Rapid Response Planning Process
PR/PI	Public Relations/Public Information	SACT	Supreme Allied Commander Transformation
PRB	Policy Review Board	SAR	Synthetic Aperture Radar
PSC	Programme Steering Committee	SATCOM	Satellite Communication
PSC ²	Project Service Costs	SC	Strategic Command
PSG	Programme Steering Group	SCEP	Senior Civil Emergency Planning Committee
PSO	Project Support Office	SDL	Standard Distribution List
PSR	Project Submission Requirements	SecGen	Secretary General
PSYOPS	Psychological Operation	SecOP	Security Operating Procedure
QA	Quality Assurance	SEE	South Eastern Europe
Q&A	Questions and Answers	SEDM	South-eastern Europe Defence Ministerial

SESIM	South-eastern Europe Simulation	SOR	Statement of Operational Requirement
SETN	South-eastern Europe Training Network	SOW	Statement of Work
SEP	Selective Employment Plan	SPA	Service Provisioning Authority
SEW	Shared Early Warning	SPOC	Single Point of Contact
SF	Special Forces	SPOW	Scientific Programme of Work
SFOR	Stabilization Force	SRB	Senior Resources Board
SGS	Satellite Ground Segment	SSTTCSS	Supply &Stores, Travel, Transport, and Conference Support Section
SGT	SATCOM Ground Terminals	STANAG	NATO Standardization Agreement
SHAPE	Supreme Headquarters Allied Powers Europe	STF	STANAG Transformation Framework
SID	System Implementation Document	STIV	System Test, Integration and Verification
SIP	Security Investment Programme	SVTC	Secure Video Tele-Conferencing
SITREP	Situation Report	TA ¹	Target Architecture
SLA	Service Level Agreement	TA ²	Transformational Authority
SMACQ	Service to Monitor and Assess Connectivity and Quality	TA ³	Technical Authority
SMC	Service Management and Control	TA ⁴	Technical Arrangement
SME	Subject Matter Expert	TAB	Technology Advisory Board
SMF	Service Management Framework	TACOM	Tactical Command
SMR	Senior Military Representative	TACON	Tactical Control
SNAC	Standing North Atlantic Council	TACSATCOM	Tactical Satellite Communications
SNLC	Senior NATO Logisticians Conference	TAS	Time Accounting System
SNR	Senior National Representative	TBC	To Be Confirmed
SNTOR	Support to Near Term Operations	TBCE	Type 'B' Cost Estimate
SO	Strategic Objective	TBD	To Be Discussed
SOA ¹	Service Oriented Architecture	TBMD	Tactical Ballistic Missile Defence
SOA ²	Standing Ordering Agreement	TCN	Troop Contributing Nations
SOF	Special Operations Force	TCP	Technical Cooperation Program
SOP	Standing Operating Procedures	TDY	Temporary Duty

TMAP	Traffic Monitoring and Analysis Platform
TMO	Technical Management Office
TOPFAS	Tool for Operations Planning Functional Area Service
TOR	Terms of Reference
TQM	Total Quality Management
TRANSEC	Transmission Security
TSGT	Transportable Satellite Ground Terminal
TST	Time Sensitive Targeting
TTP	Tactics, Techniques, and Procedures
TTX	Table Top eXercise
UAS	Unmanned Aerial System
UAV	Unmanned Aerial Vehicle
UMTS	Universal Mobile Telecommunications System (3G, or 3rd Generation mobile telecommunications)
UN	United Nations
UNAMA	United Nations Assistance Mission in Afghanistan
UVBIED	Unmanned Vehicle Borne Improvised Explosive Device
VA	Vulnerability Assessment
VMR	Virtual Meeting Room
VNC	Voluntary National Contribution
VG	Visegrad Group
VPN	Virtual Private Network
WAN	Wide Area Network
WG	Working Group
WGNTTE	Working Group of National Technical Experts
WGNTTE (ADP)	Working Group of National Technical Experts (Automated Data Processing)
WGNTTE (COM)	Working Group of National Technical Experts (Communications)
WMD	Weapon(s) of Mass Destruction

