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# NATO Interoperability Standards and Profiles

## Volume 1

# Introduction and Management

**Version 2.0**

**Date: 7 February 2008**

**C3 CCSC NATO Open Systems Working Group**

# Table of Contents

# 1. INTRODUCTION

## 1.1. BACKGROUND

### 1.1.1. NATO C3 Technical Architecture

001. In December 2005 the NATO Open System Working Group completed version 7 of the NATO C3 Technical Architecture (NC3TA). In May 2006 the Information Systems Sub Committee (ISSC) approved version 7 of the NC3TA on behalf of the NATO C3 Board (NC3B). Due to the reasons described below, this was the last version of the NC3TA. In December 2006 The NOSWG completed the first version of the NATO Interoperability Standards and Profiles (NISP) which is the replacement for the NC3TA. The first version of the NISP was noted by the C3 Capabilities Coherence Sub-Committee. At its meeting on 28 September 2007, The NC3REPS agreed that they would, on behalf of the NC3B, approve future versions of the NISP.

## 1.2. NEED FOR TRANSFORMING THE NC3TA

002. The current structure of the NC3TA is based on a platform centric environment. This structure has with stood the test of time, as indicated in the seven versions of the NC3TA published to date. At the Prague Summit in November 2002, Heads of State agreed to the Prague Capability Commitment (PCC) which put into place a series of measures to increase the deployability and usability of NATO forces. Two major measures to reach these goals are The NATO Response Force (NRF) and net-enabled capabilities. NATO, Nations and industry are all adopting Service Oriented Architecture (SOA), and its loose coupling, approach to system development as a means to achieve net-enabled capabilities. It is recognised that the required changes cannot be implemented overnight. A controlled transformation through a series of maturity stages need to be achieved, responding to evolutionary sets of operational objectives. This gradual transformation to a network enabled environment based on SOA leading to better support for the NRF has resulted in the need to restructure the NC3TA.

003. During the transformation to a network enabled environment there will be a need to support both platform centric and network enabled environments for a number of years. Since both of these environments are based upon providing services, this leads to confusion when trying to differentiate what is a service in each of the environment. The distinction between services in a platform or system centric environment and a service oriented environment is described in NISP Annex A.

# 2. PURPOSE OF THE NISP

004. The NATO interoperability Standards and Profile (NISP) will provide the necessary guidance and technical components to support project implementations and transition to NATO Network Enabled Capability (NNEC). Also the Combined Communications Electronics Board (CCEB) nations will use the NISP to publish the interoperability standards for the CCEB under the provisions of the NATO-CCEB List of Understandings (LoU) detailed in Appendix A of this document. In addition, in order to support the PCC, more emphasis is placed on interoperability profiles to support the NRF and transition from today's legacy systems to NNEC.

005. The purpose of the NISP is to:

- Serve as the principal source of technical guidance for management of NATO CIS project implementations and transition to NNEC;
- Track technology developments in order to optimise application development;
- Compile all applicable CIS standards as baseline for optimising programmes and project selection and adherence;
- Assess applicable CIS products for system application;
- Support architecture-based CIS programme development and evolution;
- Provision of technical reference and rationale to promote and optimise NATO CIS systems interoperability;
- Promote NATO internal, Nation to NATO and Nation to Nation interoperability;
- Provide guidance on transformation to NNEC.

006. The principle stakeholders of the NISP are as follows:

- NAC
- NC3B
- ACO/ACT
- NCSA
- NC3A

- NACMA
- NAGSMA
- NATO, Partner, CCEB Nations
- NSA
- CNAD
- RTO
- Industry

007. This document describes the second version of the NISP. Volume 1 of the four volumes deals with the NISP background, the structure and the process of collecting standards from stakeholders, including the configuration management and publication of the NISP. Volume 2 focuses on near term implementation (i.e. present[1] to 2 years in the future), Volume 3 focuses on mid-term implementation (2 to 6 years in the future), and Volume 4 focuses on long term implementations (greater than 6 years in the future). A supporting Rationale Document describes the rationale for the content of volumes 2, 3 and 4; and an Annex Volume contains a number of appendices relevant to the NISP.

008. The mandatory standards and profiles in Volume 2 will be used in the implementation of NATO Common Funded Systems. These standards and profiles also apply to nations wishing to interoperate with NATO and other national systems. Nations indicate their intent to use the mandatory standards in volume 2 by ratifying STANAG 5524 and its associated ADatP 34. Only Volume 2's interoperability standards are applicable to the CCEB.

009. A NISP profile contains more than a technical standards profile with a protocol stack and implementation options and settings. It also includes refined operational view depicting the placement of the profile and its relationships with other profiles; and a refined system view identifying the service components and their descriptions.

[1]Date of Approval by the NC3REPS on behalf of the NC3B

# 3. NISP STRUCTURE

010. The structure of the NISP is determined by several factors:

- Ease of use for the users of the NISP
- Implementation strategy of the NNEC vision
- Nature of standards

011. Partitioning the NISP into timeframes of near, mid and far term was greatly influenced by the NNEC FS, national NEC development and industry best practices. One common thread through all these efforts is the need to partition NATO CIS implementations and transition to NNEC into well defined time periods which are:

- Near-term: 0 to 2 years
- Mid-term: 2 to 6 years
- Far-term: more than 6 years out

012. The NISP reflects these timeframes in individual volumes. To provide consistency between these volumes and ease of tracking technology trends and influences, each of these three volumes has similar structures containing major sections dealing with:

- Technology
- Standards
- Profiles
- Transition

013. These similar structures enable one to focus in on an area of interest (i.e. NRF profile) and to track this area of interest from today's legacy systems transforming towards the NNEC paradigm.

014. Standards and profiles are the centrepiece of each volume. The standards part of each volume provides an overview of those standards that must be taken into account when developing architectures that cover systems having their life-cycle within the period of time applicable for this volume.

015. The profiles are derived based on operational requirements which influence required services and interoperability points.

016. The NISP is composed of the four following volumes:

017. **Volume 1 - Overview and Management**: This volume provides the management framework for the development and configuration control of the NISP and includes the general management procedures for the application of the NISP in NATO C3 systems development and the process for handling Request for Change Proposals (RFCP).

018. **Volume 2 - Near-term**: This volume provides the interoperability standards and profiles in the near-term period with the emphasis on platform centric environment. This is the short-term step describing the state of-the-art of NATO and National systems today and the framework for new systems actually under procurement or specification. For new systems, it contains near-term standards, profiles, and technologies to support the initial steps towards Networking and Information Infrastructure (NII).

019. **Volume 3 - Mid-term**: This volume will describe the evolution from the platform based NCOE to the loosely coupled Network Enabled Capabilities environment where the functionality of the interconnected systems is made generally available as "services on the net". Ultimately the goal is that all systems shall be connected. By means of real time configuration of interacting systems, it is possible to combine the functionality of the most useful systems in each situation.

020. **Volume 4 - Far-term**: This volume of the document focus is on the long-term perspective. The long-term perspective has a time frame of 7 to 10 years into the future from the publication of this version of the NISP. This is the concluding step to the realization of a fully network enabled NATO coalition environment.

021. In addition to these four volumes, the NISP is supported by a Rational Document that describes the rational for the selection of the standards and profiles contained in Volumes 2 through 4; and an annex volume containing the following appendicies:

- Services and Interoperability Points in Platform Oriented and SOA Environments
- NATO, National and Industry NEC Implementation Approaches
- Reference Models used in volumes 2 through 4 to structure and organise the standards and technologies.

022. Technology standards will transition through a life-cycle. This life-cycle is used to refine the categorisation of standards within the volumes 2 through 4 and is also a key to providing guidance on the use of standards in the development and transition of NATO CIS. The NISP has adopted the four categories of in the life-cycle of standards shown below in Figure 3.1.

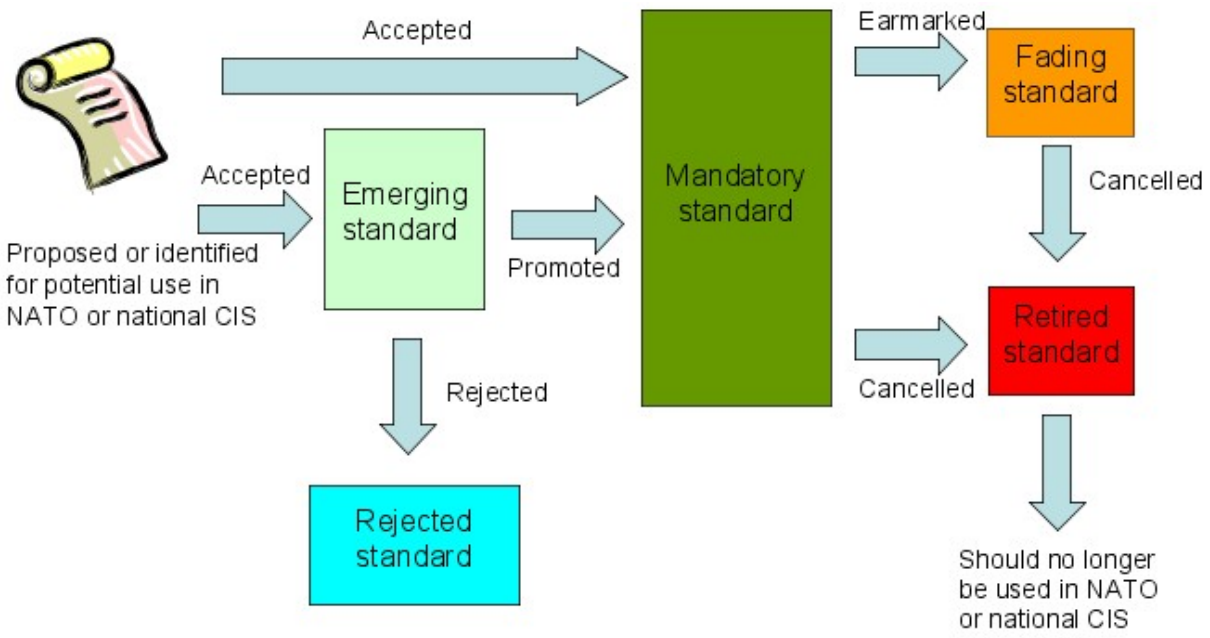


**Figure 3.1. Standards Categories**

023. Proposed standards can be accepted as Emerging standards in order to follow their developments and decide if they can be promoted to mandatory standards. In some cases proposed standards can be readily accepted as Mandatory standards. Emerging standards have been partitioned into finer granularity categories of emerging near term, emerging midterm and emerging far term to better support the transition to NNEC. Similarly, containment standards have been classified as either fading or retiring.

024. A short description of each category is described below:

- **Mandatory**: A standard is considered **mandatory** if it is mature to be used immediately. This means that it may both be applied within existing systems and in within future midterm planned systems.
- **Emerging near term**: A standard is considered **emerging near term** if it is mature enough to be used within the 0- 2 year time frame of Volume 2.
- **Emerging midterm**: A standard is considered **emerging midterm** if it is sufficiently mature to be used within the current or next planned systems. This means that it may be applied within future midterm planned systems.
- **Emerging far term**: A standard is considered **emerging far term** if it deals with technology that is expected to be useful in the long term to NATO. Use of this standard in systems is not allowed, for example because there is insufficient lack of support from commercial companies or because the underlying technology is considered not mature enough.

- **Fading**: A standard is considered **fading** if the standard is still applicable for existing systems. The standard however is becoming obsolete or will be replaced by a newer version or another standard. Except for legacy systems or interoperability with legacy systems, the standard may not be used any more.
- **Retired**: A standard is considered **retired** if the standard, that has been used in the past, but is not applicable any more for existing systems.
- **Rejected**: A standard is considered **rejected** if, while it was still emerging, it is considered unsuitable for use within NATO.

025. Each standard in the NISP has a set of categories allocated to it that are applicable to the timeframe covered:

- Volume 2 - Near-term: Category can be "Mandatory", "Emerging near term", "Fading" or "Retired";
- Volume 3 - Mid-term: Category can be "Emerging midterm"; and "rejected".
- Volume 4 - Far-term: Category can be "Emerging far term" and "rejected".

## 3.1. NISP STRUCTURE DRIVERS

026. In general, systems development approaches suggest a clean line of reasoning from requirements capturing to architecture, to design and build via testing to implementation and utilisation and finally to retirement. In practice there is not always an opportunity (time or money) for such a "clean" approach and sometimes corners need be cut: from requirements immediately to build and implementation. In recognition of this fact NATO has develop a parallel track approach, which allows degrees of freedom in the systems development approach. Although variations in sequence and speed of the different steps in the approach are possible some elements need to be present in one form or another. Architecture, including the selection of appropriate standards and technologies, is such a mandatory step.

027. In a top-down execution of the systems development approach, architecture will provide guidance and overview to the re uired functionality and the solution patterns, based on long-standing and visionary operational requirements. In a bottom-up execution of the approach, usually responding to urgent requirements and operational imperatives, architecture will be used to assess and validate chosen solution in order to align with the longer term vision.

028. The NISP is a major tool for the architecture work and must be suitable for use in the different variations of the systems development approach.

## 3.2. NATO RESPONSE FORCE (NRF)

029. The NISP is intended to expedite the process of establishing an NRF component command and interconnecting NATO and coalition partners serving in support of that command. As one of the strategic initiatives within NATO, the NRF introduces several challenges. Due to the NRF command rotations, and the majority of CIS capability to be provided by Nations (90%), the NISP will focus its products on the Interoperability Point (IOP) between these entities. By defining interface profiles at the IOP between NATO and Nations, an agreed upon technical solution can be identified, agreed upon, tested, and implemented in a joint forum, prior to deployment. In this way, a relevant product is always available for use by the NRF community, and a vehicle for ongoing improvement is in place to accommodate requests for change proposals and lessons learned for future rotations. The NRF Interface Profiles based upon the NISP profile guidance document serves as a tool for assessing interoperability, conducting certification and approval by NRF CIS Planners, and accelerating capability fielding by NRF commands.

## 3.3. MANAGEMENT AND IMPLEMENTATION APPROACHES

030. The Management Approach to NNEC has identified four coherance areas as a management mechanism to organize information about NNEC developments in order to facilitate NNEC governance. The four NNEC Coherance Areas are:

- Operational Concepts and Requirements Implications (OCRI),
- Architecture and Service Definitions and Specification (ASDS),
- Implementation, and
- Leadership and Guidance (L & G)

031. The purpose of the OCRI Coherence Area is to improve coherence across the operational community of all activities which need to address NNEC. The goals of OCRI are to ensure that NNEC principles are addressed in all concept development, identify and derive common NNEC service requirements from operational concepts and requirements, to provide NNEC concepts and technological advances for use by developers of operational concepts, doctrine and organization, to define operational interoperability metrics, and to recommend operational improvements.

032. The purpose of the ASDS Coherence Area is to improve the coherence of interoperability standards. The goals of ASDS are to oversee the development of a common service-oriented architectural framework and set of service definitions based on operational needs, to update these as new technologies and operational needs are developed, and to define service-based maturity levels.

033. The purpose of the Implementation Coherence area is to improve NNEC coherence across all capability delivery programs. The goals of Implementation are to identify current

and future service availability, to identify services shortfalls, to perform interoperability evaluation and assessment, and make recommendations for changes.

034. The purpose of the L & G Coherence Area is to support NNEC governance and to ensure overall coherence. The goals of L & G are to establish levels of ambition, to establish high level NNEC policies, to provide coordination between all four Coherence Areas, and to provide widespread awareness of information about NNEC.

035. The NOSWG could support the C3CCSC as a coordination body for the ASDS by Identifying Standards appropriate for all architectures and profiles supporting implementation solutions.

036. The Implementation Coherence area also needs to adhere to the standards, grouped in profiles that are placed in the NISP as 'agreements'.

037. However the role of coordination bodies for the four Coherence Areas will require significant additional staff work. Although it is expected that the NATO C3 Representatives (NC3Reps) will become the coordination body for Leadership and Guidance (L & G), the coordination bodies have not been agreed for the other Coherence Areas. Once identified and agreed, each designated coordination body will need to determine whether the work can be achieved by reallocating personnel from existing tasks or whether there is a need to hire additional staff.

038. NATO, Nations and industry have all recognized the necessity to migrate to a Service Oriented Architecture (SOA) based implementation to support NNEC. The granularity of the standards and profiles currently used in the platform based approach is not adequate to support either the SOA or the NNEC concept. It was therefore a necessity to reorganize and rework the NISP. During this rework it came apparent that the NISP needs to support not only a time phased implementation, but also the ongoing work on developing a maturity model to help NATO and Nations to develop roadmaps for NII achievement.

039. Partitioning the NISP into timeframes of near, mid and far term was greatly influenced by the NNEC FS, NATO Architecture approach, national NEC development and industry best practices. One common thread through all these efforts is the need to partition NATO CIS implementations into well defined time periods in order to transition to NII.

040. NATO, Nations and industry have adopted a time phased approach achieving their respective goals for system implementations. Although using different terminologies and time frames, these approaches are based on the same concept of mapping of standards and profiles to timeframes. The NISP has adopted this approach as a guiding concept for its development.

041. In addition there is another strong need to develop Roadmaps for NNEC implementation. These roadmaps will describe which level of maturity that either NATO or the Nation shall achieve at a specific point in time. The identified maturity level will point or map to specific standards and profiles that are required in order to be interoperable and compliant.

042. The following sub-sections contain some representative examples of the maturity level model and of the time phased approach for specifying standards and technologies.

## 3.3.1. NII Maturity Level (NML) Model [1]

043. The concept of a NII Maturity Level was one of the two main components of the NII Interoperability Framework (NIIF), the other component being the Information Interoperability (I-Squared) Index. In general terms, the NML supports Programme planning and auditing activities across NATO and the nations, while the I-Squared Index will be a more detailed technical reference document.

044. One of the challenges in implementing an effective NEC involving NATO, NATO nations, coalition partners, government agencies, and non-government organizations is to ensure a common understanding of information infrastructure capabilities including interoperability, based on objective criteria. This challenge is particularly difficult in an alliance context where there is no overall authority so policies, procedures, and standards cannot be directed from a central authority. NATO does not have any guaranteed insight into nor any responsibilities towards national infrastructure programs. In response to this challenge a time-phased NML approach is proposed as a solution to ensuring this common understanding.

045. The NML approach uses a five-level definition of capabilities numbered from 1 to 5, defining increasing levels of capabilities. This five level approach provides an intuitive and easily understood measurement of a complex capability and is extremely useful for effective communications between diverse audiences. It must be noted, however, that the NML approach is designed to improve processes and not to measure actual physical infrastructure. However the use of a five level model with defined information infrastructure capabilities for each level with specific objective criteria is a simple and powerful approach.

046. It should also be noted that this NML approach to NNEC capability could be expanded to cover not only the NII but the complete spectrum of capabilities, perhaps divided into the Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities (DOTMLPF) categories currently used in assessing a force capability. This would provide a more complete model to assess the capabilities of a force but was beyond the scope of the NNEC Feasibility study.

047. A five level model can be related to the overall vision of NNEC which defines four levels of mission capability, namely Deconflict, Coordinate, Collaborate, and Coherent. A fifth level of capability, reflecting a rudimentary capability, called "Stand-Alone" could be added, below Deconflict. This would reflect an organization or military unit with little or no capabilities, procedures, nor experience in interoperating with other military forces or organizations. It is anticipated, (indeed hoped) that there will be few forces or organizations that fit into this rudimentary capability category.

048. The NML presented in the NNEC Feasibility Study Volume II Annex G consisted of two major components. The first was the time-independent NML itself which was derived directly from the overall time-independent NNEC NML developed in Volume 1 of the study and is in turn tied into the required NNEC operational capabilities expressed as Mission Capability Packages (MCPs). The second component was the time-dependent Infrastructure Implementation (I-Squared) Index which was derived from the first NML component, but provides measurable criteria for use in defining and implementing an NII roadmap. Note that full comple-

[1]Referred to as the NII Capability Maturity Model in the NNEC Feasibility Study, Annex G to Volume II, October 2005

tion of the I-Squared Index including validation of the criteria values would take considerable effort and was not within the scope of the NNEC Feasibility study.

## 3.3.2. NML and I-Squared Index Relationship to NNEC

049. It is essential that any users of the NML and the I-Squared Index understand the relation of these two tools, in the context of the overall NNEC maturity model specified in Volume 1 of the NNEC Feasibility Study. The NNEC Feasibility Study introduced the concept of a C3 maturity model using "Transformational Maturity Levels", described in terms of unifying themes presented against the backdrop of assumed organizational and doctrinal changes (Figure 3.2 below). In summary the four transformational maturity levels are defined as:

- Deconflict Phase - Functional "Stovepipes"
- Coordinate Phase - Communicate and Inform
- Integrate Phase - Collaborate and Plan
- Coherent Phase - Sense and Respond

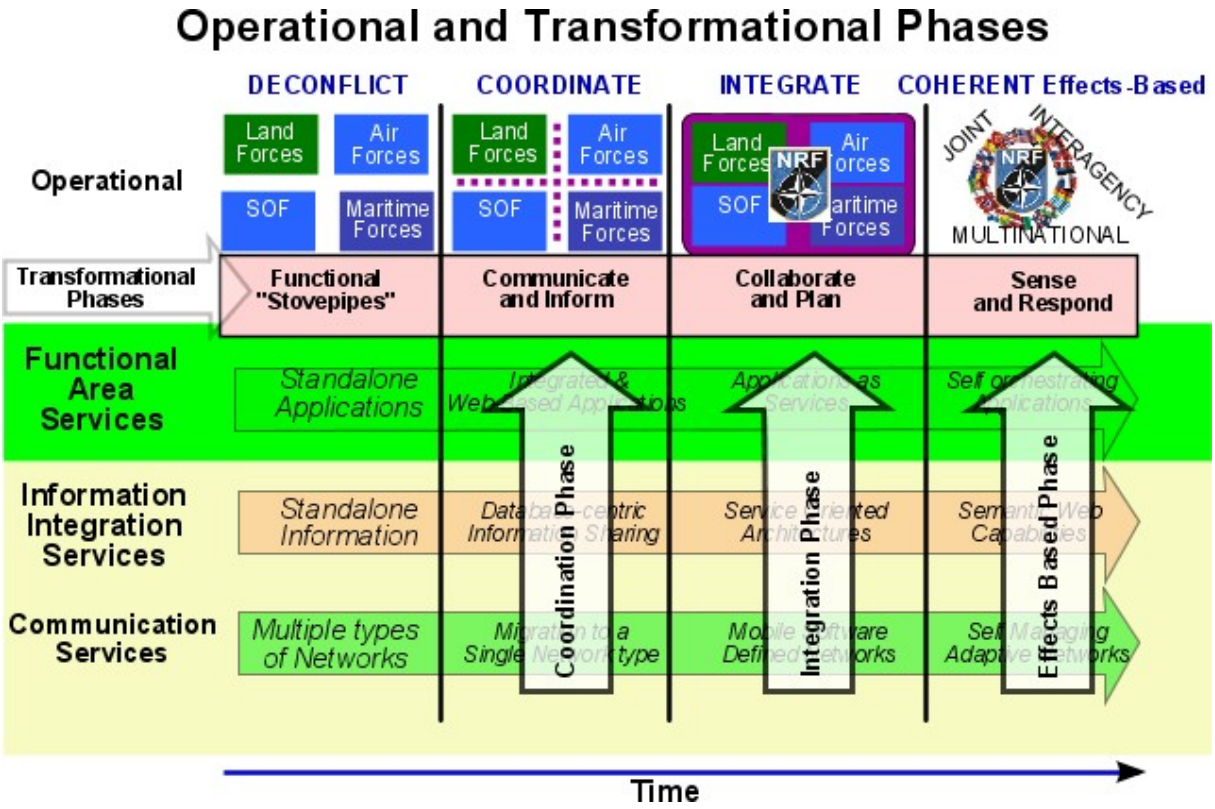


**Figure 3.2. Operational and Transformational Phases**

050. An important point to note is that both the operational phases and the transformational maturity levels are "time independent", in the sense that they are not fixed a particular point in time. The capabilities described are those required to reach a maturity level independent of what point in time they are required to be reached. For example, achieving a 'collaborate and plan' maturity level could be established as a goal for 2012 or 2020. The actual technological solution to achieve these capabilities will obviously change as time progresses. This gives rise to the concept of using a time dependent I-Squared Index which specifies in short, medium, and far time frames the actual technical requirements required to satisfy a given NII maturity level. It is, of course, also true that the higher levels of operational capability may not be reachable with current technology.

## 3.3.3. I-Squared Index Definition Table

051. Each level of capability can be divided into several components of capability, covering both the NII requirements including policy and procedures, and architectures. This results in a capability definition table as illustrated below.

| | **Standalone (SAL)** | **Deconflict (DEC)** | **Coordinate (COO)** | **Integrate (INT)** | **Coherent Effects Based (CEB)** |
|---|---|---|---|---|---|
| **Component** | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| Communication Services | | | | | |
| Information Assurance | | | | | |
| CIS Management | | | | | |
| Information Systems | | | | | |
| Policies and Procedures | | | | | |
| Architecture | | | | | |

**Table 3.1. I-Squared Index Definition Table**

052. For each component and level combination, a number of specific requirements can be defined which match the unique characteristics to be implemented in order to satisfy the defined level of capability. These specific requirements should be based on objectively-measurable criteria for which metrics could be used in evaluating whether a given level has been reached. If a designated force or organization meets all the requirements for each of the component areas for a given level, then that force or organization may be declared as meeting that given level. Interoperability Performance Parameters (IPPs), Service Interface Profiles (SIPs), and implementation of STANAGs are examples of what might be interpreted as requirements.

Meanwhile, each component and level combination might conceivably have a large number of requirements to be met to achieve that given level of capability. However, use of this aggregate model provides an effective communication tool.

## 3.3.4. Time Dimension of I-Squared Index

053. The additional dimension of time must exist in this model approach. As technology progresses, the requirements for each of the component areas will evolve as a result of changing operational requirements and the resultant NII upgrades to meet these requirements. This will result in requirements, standards, and capabilities for each level becoming obsolete as time progresses. Clearly it is impossible to adopt a static model of infrastructure capabilities. Therefore it is proposed to adopt a time-phased approach to the NATO NML whereby a model is defined not only in terms of component, level, and requirements but also in a time-dependent implementation index. The approach taken within the NNEC Feasibility Study consists of defining a five level capability model in three relevant time frames, namely 2008, 2012, and 2020. These timeframes correspond broadly to the current capabilities of forces today, the capabilities for forces for which architectures and procurement activities are to be initiated within the next several years, and finally the longer term. The models are given firm dates in order to have unambiguous criteria even though the dates are somewhat arbitrary. There would be no automatic change of the ranking of a force at the rollover date, e.g. on midnight 31 Dec 2011. A ranked force would keep its ranking according the original I-Squared Index until it was re-evaluated against the new criteria. These three models are designated as:

- NATO NII I-Squared Index Year 2008
- NATO NII I-Squared Index Year 2012, and
- NATO NII I-Squared Index Year 2020

054. There will of course be a natural degradation in the ranking of a force's capabilities in accordance with the models over time if its networking and information infrastructure is not upgraded. For example, a force ranked as Level 3 against the NII I-Squared Index for Year 2008 might require a minimum of 64 kbps secure IP network connectivity down to company headquarter level along with interoperability into a coalition network. If this capability were not upgraded, the force could drop to Level 2 in year 2012 if the requirement evolved for example into a 2 Mbps to company level and 512 kbps to platoon level in order to meet the Level 3 requirements for the 2012 NII I-Squared Index. Note that again, these figures are for illustration only and are not agreed nor used as reference.

## 3.4. NATO INTEROPERABILITY STANDARDS AND PROFILES APPLICATION TO ARCHITECTURES

055. The NATO Interoperability Directive (NID) defines what types of architectures are to be developed within NATO: namely Baseline Architectecture (BA), Target Architecture (TA),

Reference Architecture (RA), and Overarching Architecture (OA). These architecture types can be related to the NISP Volumes 2, 3 and 4 as follows:

- Volume 2 contains the standards mostly applicable to the TA's and BA's.
- Volume 3 contains the standards mostly applicable to the RA's;
- Volume 4 contains the standards mostly applicable to the OA;

056. In particular the relationship with the Overarching Architecture is of a reciprocal nature. The OA also provides inputs to the NISP by identifying the technology areas that in the future will require standards. The OA also provides guidance on the coherence of standards by indicating in which timeframe certain standards and profiles are required.

057. The work on RA's and TA's will benefit from the NISP by selecting coherent sets of standards for solution patterns.

# 4. NISP AND CONFIGURATION MANAGEMENT PROCESS

058. The NISP has to be periodically updated to account for enhancements in technology. Updates to the NISP are handled through Requests For Change Proposal (RFCP). RFCPs are usually reviewed at regularly scheduled NOSWG meetings. RFCPs deemed urgent are handled in an expedited manner, outside the normal meeting schedule of the NOSWG with a reply to the RFCP originator within two weeks.

059. The four volume paper version of the NISP and its supporting Rational Document will be submitted to the NC3 Board by 15 December of each year. The paper version is a snapshot in time of the status of standards and profiles. The NISP database of standards and profiles is the definitive source of the currents status of standards and profiles. The database will be updated as soon as the RFCP has been approved by the appropriate authority (NC3 Board).

## 4.1. NISP UPDATE PROCESS

060. Updating of the NISP and its associated database will be conducted by a managed, rolling review process which will take into account information on standards available from a wide variety of sources. The NOSWG acts as the hub for this maintenance activity, supported by the NHQC3Staff and NC3A personnel as required. The information updating process is based on Requests For Change Proposal (RFCP's).

## 4.2. REQUEST FOR CHANGE PROPOSAL (RFCP)

061. Request for Changes Proposal (RFCP) to the NISP will be processed by the NOSWG following the process outlined in the Figure 4.1 below:

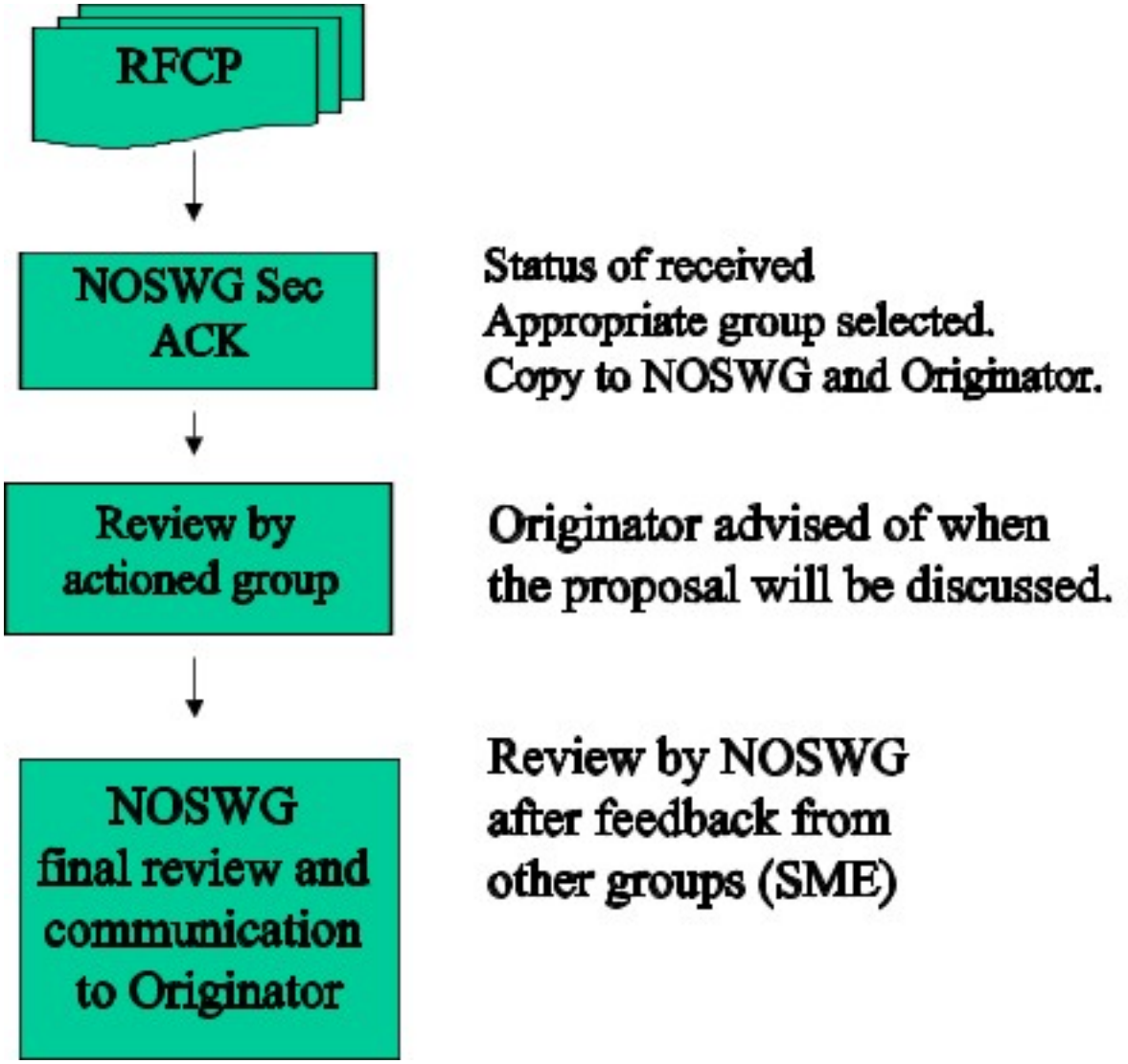


**Figure 4.1. RFCP Handling Process**

062. The primary point of contact for RFCP submission is the Secretary NOSWG. RFCP's may be submitted to the NOSWG through a number of channels, including:

- NOSWG National representatives (for non-voting National representatives see NATO-CCEB List of Understandings (LoU) at Appendix A);
- Strategic Command representatives;
- NATO Agency representatives;

- Other Sub Committees of the NC3 Board, and their substructures;
- NC3Board Staff representatives;
- NATO working groups / committees responsible for a specific standards domain;
- Industry

063. Approval of RFCP's will be coordinated with the responsible sub-committees where appropriate. In situations where a timely response is requested by the RFCP submitter, the NOSWG will make its recommendation directly to the NC3REPS. Appendix B contains a detailed description of the RFCP process and the form for submitting RFCPs.

## 4.3. COORDINATION WITH NATO PMOS

064. The co-ordination with the NATO Programme Management Offices (PMOs) is primarily realized through the Strategic Commands representatives to the NOSWG. In addition, the NOSWG POW development takes into account the requirements of NATO programmes, which is derived from the programme increment currently under design.

## 4.4. NATIONAL SYSTEMS INTEROPERABILITY COORDINATION

065. Each of the national NOSWG representatives is responsible for:

- Providing the NOSWG with the appropriate and timely inputs with respect to interoperability with national systems;
- Co-ordination of the national position, including co-ordination with national representatives of other sub-committees;
- Providing the NOSWG with the appropriate technical information based on the national IT market assessment.

# A. NATO-CCEB LIST OF UNDERSTANDINGS (LOU)

066. Editorial Note: In 2007 the NC3TA title changed to the NISP however the intent of the NATO-CCEB LoU remains extant.

# A.1. LIST OF UNDERSTANDINGS BETWEEN NATO AND THE CCEB

067. References:

1. NATO Letter AC/322(SC/5)L/144 of 18 October 2000

2. CCEB Letter D/CCEB/WS/1/16 of 9 November 2000

3. NATO Letter AC/322(SC/5)L/157 of 13 February 2001

068. Purpose

069. The purpose of this document is to provide an enduring record of the understandings that have been reached between NATO and the Combined Communications Electronics Board (CCEB) in regard to the harmonization of the NATO and CCEB technical architectures

070. Background

071. At reference A, NATO (through the ISSC) noted the parallel activities in NATO and the CCEB to develop a multi-national technical architecture. As this represented an opportunity to converge on a single technical architecture NATO extended an invitation to Australia and New Zealand, as non-NATO members of the CCEB, to participate as non-voting observers in the NATO Open Systems Working Group (NOSWG) meetings and on-line discussions. NATO (via the ISSC) assured Australia and New Zealand that their technical contributions would be accorded the same consideration as all other participants in NOSWG meetings.

072. The CCEB, at reference B, accepted these invitations and confirmed that it was a CCEB priority to develop a single technical architecture to enhance interoperability between NATO and CCEB nations. Collaborative work with NATO and CCEB subject matter experts in early 2001 demonstrated that harmonization of the relevant sections of the CCEB and NATO technical architectures was achievable. Further collaborative effort throughout 2001 resulted in a harmonized technical architecture consisting relevant portions of NCSP Ver 2, ACP140A and CCEB Pub 1007.

073. To ensure that a single technical architecture would recognize the needs of all CCEB nations, the CCEB sought clarification on Australia and New Zealand participation in technical architecture development and maintenance. Of particular note were the equity arrangements

and opportunities for Australia and New Zealand to contribute to and influence future technical architecture development, and access to all relevant standards and documents referenced in the NATO technical architecture. The ISSC has assured the CCEB that technical contributions from Australia and New Zealand will be accorded the same consideration as those submitted by all other participants at NOSWG meetings at reference C and that the ISSC will support the release of relevant NATO documents to Australia and New Zealand, subject to NATO Policy regarding the release of NATO documents to non-NATO nations and NATO Security Policy. Subsequently the CCEB confirmed its intention, subject to acceptance of the NATO NCSP Vol 4 version 3 by all CCEB nations, to adopt it as its technical architecture.

074. The September 2001 NOSWG meeting drafted a List of Understandings to document agreements and processes that would provide an enduring record for future NOSWG participants of the background of the technical architecture harmonization initiative, and the continuing role of Australia and New Zealand (as non-NATO nations) in this activity.

075. List of Understandings

076. The following understandings and undertakings have been agreed between NATO and the CCEB in regard to the harmonization of current and future versions the NATO and CCEB technical architectures:

a. NATO desires that the NC3TA be acceptable to all the CCEB nations.

b. The CCEB intends to adopt NC3TA Volume 4 (NCSP) as the CCEB technical architecture following its acceptance by the all CCEB member nations.

c. The CCEB desires that the scope of NC3TA Volume 4 (NCSP) be comparable to ACP140A and the rationale for NCSP standards selection be detailed in a NATO document able to be referenced in CCEB policy.

d. Australia and New Zealand, as non-NATO members of the CCEB, are invited to participate as observers and their technical contributions will be accorded the same consideration as those submitted from all other participants in NOSWG meetings. Being non-NATO nations, Australia and New Zealand acknowledge that they are not able to vote in NOSWG matters.

e. The CCEB will note any variances in CCEB interoperability standards in the remarks column of the NCSP standards tables with the remark 'For CCEB interoperability the standard is ...'

f. If necessary, Australia and New Zealand will develop and publish national supplements to document national variances or exceptions to NC3TA NCSP standards. These instances are expected to be rare. Any nationally approved Australian and New Zealand national supplements to the NC3TA NCSP will be forwarded to the NOSWG Secretary for formal distribution to all NATO nations.

g. Any Request For Change Proposals (RFCPs) or amendments proposed to the NC3TA NC-

SP (Volume 4) by NATO nations will be distributed in accordance with NATO policy for the release of NATO documents to non-NATO nations (via email to the maximum extent possible in accordance with NATO Policy on the use of the Internet) by the NOSWG Secretary to the Australian and New Zealand representatives to the NOSWG for staffing nationally within Australia and New Zealand.

h. Australia and New Zealand will be provided access (in a readable electronic format wherever possible) to all standards and documents listed in the NC3TA NCSP to the maximum extent possible in accordance with NATO policy for the release of NATO documents to non-NATO nations and NATO Security Policy. The United Kingdom will sponsor release of the relevant NATO documents to Australia and New Zealand.

i. As necessary, the United Kingdom Mission in NATO will act as the Point of Contact for distribution of all NC3TA NCSP documents between NATO and Australia and New Zealand.

# B. CONFIGURATION MANAGEMENT OF NISP

## B.1. INTRODUCTION

077. Updating of the NISP and its associated database will be conducted by a managed, rolling review process which will take into account information on standards available from a wide variety of sources. The NOSWG acts as the hub for this maintenance activity, supported by the NHQC3Staff and NC3A personnel as required.

## B.2. CM ORGANIZATION

078. For the NISP, authority to act as the Configuration Management Board (CMB) lies with C3 CC SC on behalf of the NC3 Board, since this is the lowest level at which national endorsement can be given to any proposed changes to the NISP contents. The NOSWG acts as the Configuration Control Board (CCB), to which all RFCP's must be submitted for evaluation, approval and inclusion. In conducting this task, the NOSWG will be supported by the NC3A (in technical and procedural considerations) and in particular instances by working groups where specific technical advice and reference may be required. Thus the CM organisation for the NISP may be represented as follows:

079. **CMB for the NISP is responsible for:**

- National Endorsement of the NISP
- Reporting to the NC3B
- Promulgation of the NISP throughout NATO
- Monitoring and highlighting project elements which are not in conformance with the NISP
- Replying to originators as to the acceptance/modification/rejection of their RFCPs

080. **CCB for the NISP is responsible for:**

- Processing Change Requests
- Updating and Maintaining the NISP documents
- Assessing related technical developments for inclusion
- Coordination with NC3Staff, Sub-committees and Working Groups

- Review and evaluate projects compliance with NISP
- Technical advice and support
- Reporting/recommending new versions to SC/1

081. The information updating process is based on Requests For Change Proposal (RFCP's).

082. Approval of RFCP's will be coordinated with the responsible subject matter experts when appropriate. In situations where a timely response is requested by the RFCP submitter, the NOSWG will make its recommendation directly to the NC3REPS. The paragraphs below contain a detailed description of the RFCP process and the form for submitting RFCPs.

## B.3. REQUEST FOR CHANGE PROPOSAL (RFCP)

083. Updates to the NISP are handled through Requests For Change Proposal (RFCP). RFCPs are usually reviewed at regularly scheduled NOSWG meetings. RFCPs deemed urgent are handled in an expedited manner, outside the normal meeting schedule of the NOSWG with a reply to the RFCP originator within two weeks. Requests for Changes Proposal (RFCP) to the NISP will be processed by the NOSWG following the process outlined in Figure B.1.

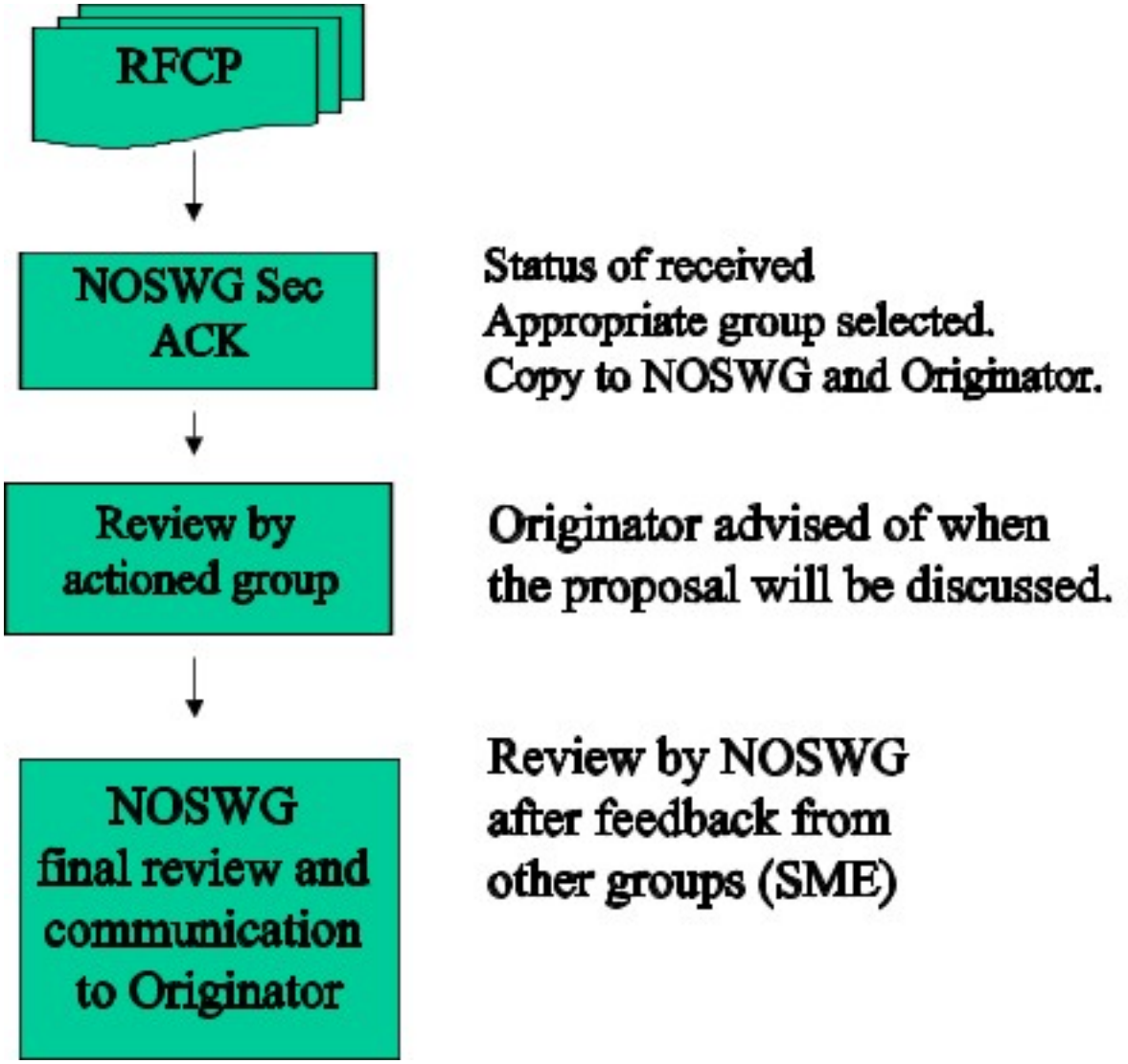


**Figure B.1. RFCP Handling Process**

## B.4. ROLE AND RESPONSIBILITIES OF THE NC3B SUB-STRUCTURE

084. The NC3B sub-committees will contribute to the development of the NISP in their respective C3 areas of responsibility by responding to the RFCP as indicated above. The co-ordination of NISP development effort throughout the NC3B sub-structure should be based on the following guidance.

085. RFCPs are handled at the NOSWG and national levels. The normal procedure for handling RFCPs call for the NOSWG to review the status of the RFCPs presented at its previous

meeting, their content is discussed and the NOSWG defines its position with respect to these RFCPs. If the RFCP issue is covered by other working groups, these groups must be formally requested to provide comments. National representatives may look for some additional review of the RFCPs at a national level. Significant problems identified in this process should be brought to the attention of the NOSWG within a period of eight weeks. The final deadline is however the date of the meeting of the final review of the NISP. This period is meant to encourage tasking of national experts to verify national positions and to co-ordinate with national representatives in other working groups.

086. The secretaries of the SCs will constitute the primary point of co-ordination with the NOSWG, to help the ISSC/NOSWG to obtain the adequate support from each SCs working structure;

087. In special cases, specific requests for information or even questionnaires will be sent to the relevant Committees/WGs, in order to receive expert views on specific issues, technologies, or other relevant information.

088. The NOSWG Chairman (or suitably delegated NOSWG representatives) will be available to participate in any SCs or SC/WGs meeting when necessary or required.

089. RFCPs requiring a response in a more timely manner will be handled by the NOSWG outside its scheduled meetings and within a two week period from receipt of the RFCP. The NOSWG will use a web based collaboration tool, providing a virtual meeting room, to discuss and develop a recommendation regarding these urgent RFCPs. The NOSWG recommendation will be passed directly to the NC3REPS, via its secretary, for approval by the NC3REPS. Once approved by the NC3REPS, the NISP database will be updated to reflect the NC3REPS decision.

090. The chairman NOSWG will give an annual update to the NC3REPS and all Sub-Committees (SC) highlighting the RFCPS handled by the NOSWG including:

- RFCPS related to the POW of Sub-Committees
- NOSWG recommendations for standard status to be reviewed by Sub-Committee

## B.5. RESOURCES

091. As described above, the CM organisation is dependent on resource contributions from NATO and the NATO nations through their participation in the various committees and working groups involved in the CM process. This support will typically take the form of reviews and submitting RFCPs and to exercise the responsibilities of the CMB and CCB.

092. As NISP custodian, the NOSWG annually determines the overall update task requirement and associated resources necessary for its completion. Tasks that will be undertaken by national sources will be initially consolidated under the NOSWG. Those that can be more effectively undertaken by the NC3A (e.g. specialist technical or procedural support), will be en-

dorsed by the NOSWG as part of the NC3A Programme of Work, and funded from NC3B resources.

## B.6. BASELINE

093. The rationale for establishing a formal NISP Baseline derives from the interdependency of all volumes, and the need to maintain coherence throughout their individual and collective content, in particular across Volumes 2, 3 and 4.

094. When a version of the NISP is considered updated, that is, all applicable RFCP's submitted have been actioned, it will be baselined by the NOSWG for release to the NC3B and recommended for promulgation to NATO. This Baseline applies to the NISP in its entirety, regardless of whether any particular volume has been subject to RFCP procedure or not since the previous Baseline was issued, and replaces the previous Baseline in totality. It signifies a specific point in the update cycle of the NISP asdescribed previously.

095. Standards and profiles will be maintained in an online database that will be updated when approved by the authorized authority.

## B.7. REQUEST FOR CHANGE PROPOSAL (RFCP) GUIDANCE

096. In order to process any RFCP it is important to provide as much information as possible.

097. Changes to Volume 4 should outline the key elements of the proposed change(s), references to associated documentation and description of perceived technology trend (if appropriate). Changes should only be proposed in areas where a technology is gaining a broad market acceptance and mature product base.

098. For Volume 3 requests for new standards will address details such as a full specification title, description of applicability, and reference to a Web address or other source. Changes to, or deletion, of existing component standards will require appropriate support justification.

099. Under normal circumstances, changes to Volume 2 will have already been reflected in Volume 3, for example a standard possibly proposed as maturing from 'emerging' to 'mandatory'.

100. Rationale for changes must be adequately supported with implementation evidence in order to allow the review process to proceed.

## B.8. RFCP FORM

101. The form for submitting RFCPs is shown below:

| **REQUESTING ORGANIZATION** | |
|---|---|
| | |

| | |
|---|---|
| **REQUESTING ORGANIZATION** | |
| Point of Contact<br>Full Address<br>Tel, fax, email | |
| Date of Request | |
| Urgency of Request<br>Normal<br>Urgent | |
| Which Volume (1,2,3,4) | |
| Type of Change<br>(e.g. mandatory standard, emerging near term standard, new profile, new product) | |
| Classification of change request | |
| Rational for change (add supporting text as appropriate) | |
| **NOSWG RESPONSE** | |
| Date of response to originator | |
| Acceptance/refusal (with rationale for decision) | |
| For urgent RFCPs<br>Date of NC3B decision<br>Date of database update | |

**Table B.1. NATO Interoperability Standards and Profiles (NISP) Request For Change Proposal**

102. Submit form to: Secretary NOSWG Email: iss@hq.nato.int